2013 Manpower Survey Report

Electrical And Mechanical Services Industry

機電工程業

2013年人力調查報告

Electrical And Mechanical Services Training Board

Vocational Training Council

職業訓練局

機電工程業訓練委員會

CONTENTS

目錄

LIST OF APPENDICES

附錄表

Executive Summary of the Report on the 2013 Manpower Survey of the Electrical and Mechanical Services Industry

Objective

This survey was conducted between 18th March and 19th July 2013 to collect the latest manpower information of the electrical and mechanical services industry.

Coverage

2. The fieldwork of the manpower survey covered 1 210 establishments which were selected by a stratified random sampling method from a total of 9 425 establishments. These samples employed about 79% of the total workforce in the following sectors of the industry:

I. Sector A: Electrical and Mechanical Engineering

Branch 1: Contracting (E & M) Branch

Contractors dealing with electrical and mechanical systems and equipment including:

(i) electrical wiring and fitting;

(ii) fire-alarm and fire-fighting equipment installation and maintenance;

(iii) telecommunications equipment, installation and maintenance; and

(iv) air-conditioning/ventilation systems installation and maintenance.

Branch 2: Electrical Fitting with Water Plumbing Branch

Engineering companies of electrical fitting with water plumbing.

Branch 3: Servicing (E & M) Branch

Servicing companies of electrical and mechanical engineering services including:

(i) aircraft assembly and manufacture of related machinery;

(ii) repair of electrical equipment;

(iii) electrical power generation, transmission and distribution;

(iv) combined and other installation and maintenance of electrical and mechanical equipment;

(v) lift/escalator installation and maintenance;

(vi) railways and cable transport;

(vii) building services engineering; and

(viii) repair of household appliances, home and garden equipment.

Branch 4: Supplementary Samples – Other Relevant Organizations in E & M Engineering Sector

Other relevant organizations in the electrical and mechanical engineering sector including:

(i) major trading companies of electrical products, equipment and systems having associated service workshops;

(ii) real estate management companies which have building services maintenance workers; and

(iii) relevant divisions of government departments and educational institutions.

II. Sector B: Shipbuilding and Ship Repair

Branch 5: Shipyards and Boatyards, including:

(i) building of ships and floating structures;

(ii) building of pleasure and sporting boats; and

(iii) repair of water transport equipment.

Branch 6: Supplementary Samples

Shipping firms and fleet operators employing local shore-based technical staff, consulting firms, classification societies of ships, government agencies and educational institutions.

III. Sector C: Gas

Establishments include:

Branch 7: Gas manufacturing and distribution companies;

Branch 8: Gas installation and maintenance companies; and

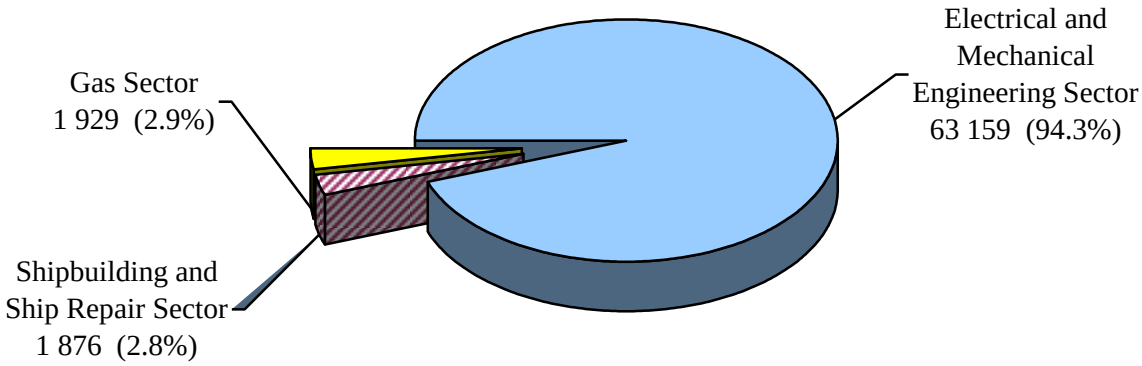
Branch 9: Supplementary Samples.

Trading companies of gas equipment having associated servicing workshops, and relevant divisions of government departments and educational institutions.

Survey Findings

3. The Survey revealed that at the time of survey, a total of 66 964 workers were employed in the principal jobs of electrical/mechanical engineering and related disciplines of the electrical and mechanical services industry in Hong Kong. Of these 66 964 workers, 63 159 workers (94.3%) were employed in the electrical and mechanical engineering sector, 1 876 workers (2.8%) in the shipbuilding and ship repair sector, and 1 929 workers (2.9%) in the gas sector. The distribution of electrical and mechanical engineering workers by sector is shown in Figure 1.

Figure 1 Distribution of Electrical and Mechanical Engineering Workers by Sector



4. The survey also revealed that there were 31 005 workers of other disciplines working in the electrical and mechanical services industry. Among the 31 005 workers, 28 653 workers were employed in the electrical and mechanical engineering sector, 1 203 workers in the shipbuilding and ship repair sector and 1 149 workers in the gas sector. As a whole, the electrical and mechanical services industry employed a total of 97 969 workers at the time of the survey.

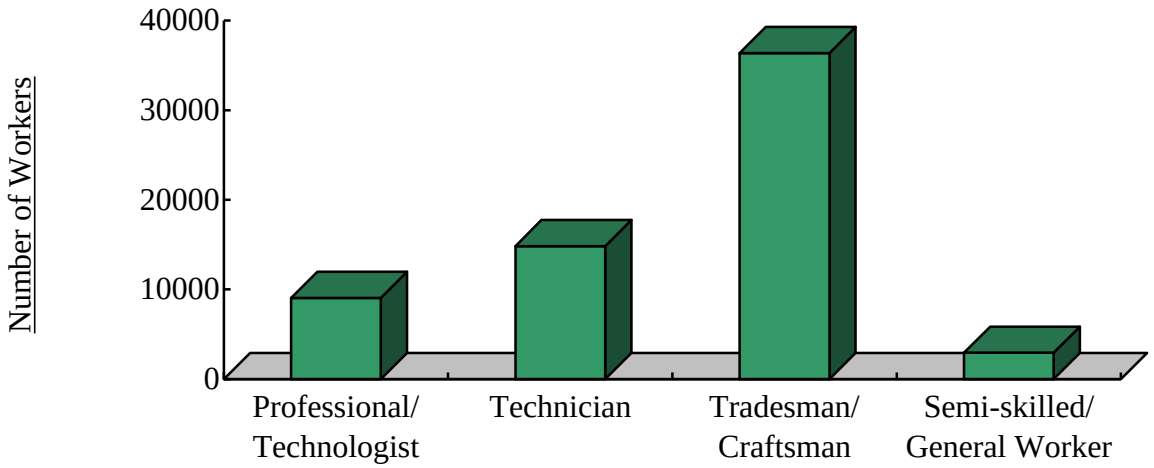
Electrical and Mechanical Engineering Sector

5. The distribution of workers by skill level of the electrical and mechanical engineering sector is shown in Table 1 and Figure 2.

Table 1 Distribution of Workers by Job Level of the Electrical and Mechanical Engineering Sector

	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	Total
	9 042	14 828	36 362	2 927	63 159
Percentage of total number of workers	14%	23%	58%	5%	100%

Figure 2 Distribution of Workers by Job Level of the Electrical and Mechanical Engineering Sector



6. Employers in the electrical and mechanical engineering sector reported a total of 2 179 trainees and 3 725 vacancies, amounting to 3.5% and 5.9% respectively of the total manpower. Besides, employers forecasted that the sector would require a total of 66 617 technical workers by mid-2014.

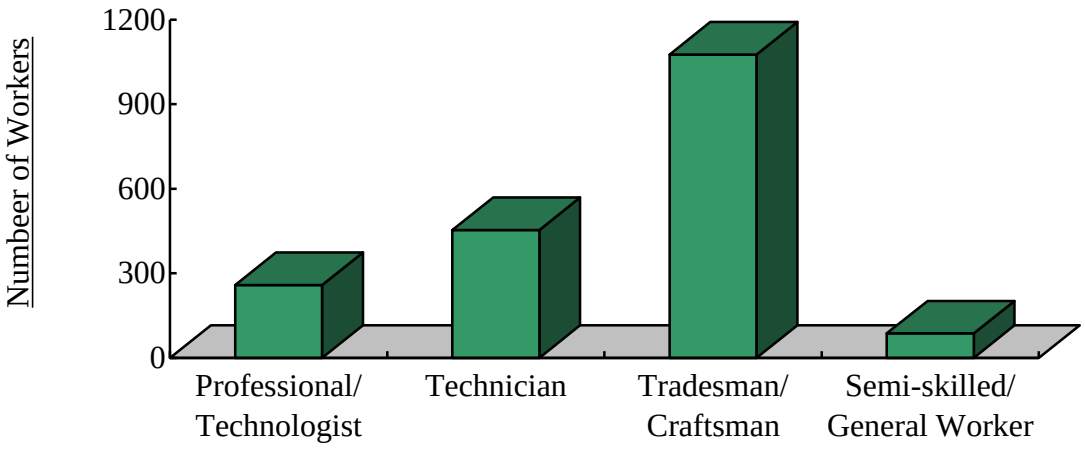
Shipbuilding and Ship Repair Sector

7. The distribution of workers by skill level of the shipbuilding and ship repair sector is shown in Table 2 and Figure 3.

Table 2 Distribution of E & M Workers by Job Level of the Shipbuilding and Ship Repair Sector

	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	Total
	259	454	1 076	87	1 876
Percentage of total number of workers	14%	24%	57%	5%	100%

Figure 3 Distribution of E & M Workers by Job Level of the Shipbuilding and Ship Repair Sector



8. At the time of the survey, the reported numbers of trainees and job vacancies in this sector were 58 and 107 respectively which represented 3.1% and 5.7% of the total number of workers. Employers anticipated that by mid-2014, the number of technical workers would be 1 943.

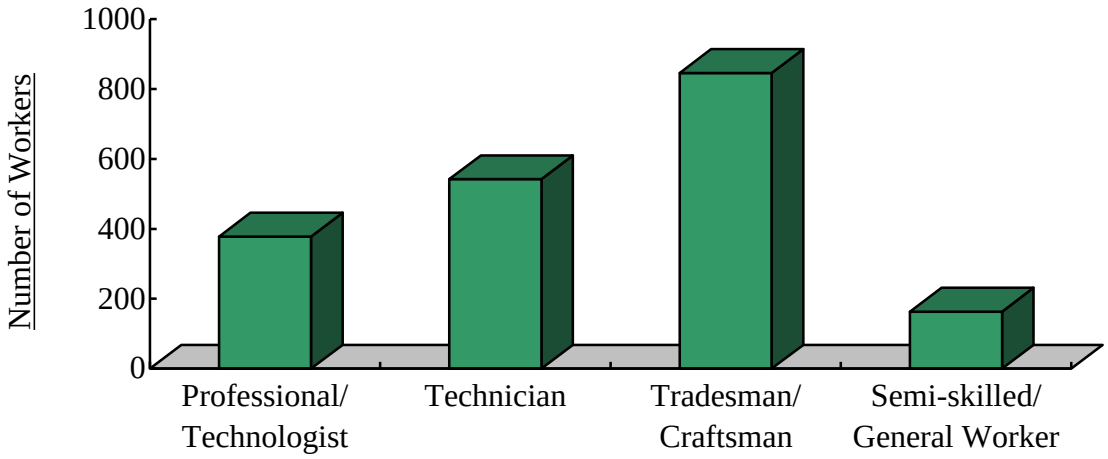
Gas Sector

9. The distribution of workers by skill level of the gas sector is shown in Table 3 and Figure 4.

Table 3 Distribution of E & M workers by Job Level of the Gas Sector

	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	Total
	378	542	846	163	1 929
Percentage of total number of workers	20%	28%	44%	8%	100%

Figure 4 Distribution of E & M Workers by Job Level of the Gas Sector



10. At the time of the survey, there were 25 trainees and 49 vacancies in the gas sector, representing 1.3% and 2.5% of the total manpower. Employers forecasted that the total workforce by mid-2014 would be 1 978.

Projected Manpower Training Requirements

Electrical and Mechanical Engineering Sector

11. The survey findings showed an increase of 2.6% per annum in the overall technical manpower of electrical/mechanical engineering and related disciplines from year 2011 to 2013. By skill level, the average change per annum was 8.2% increase in professional/technologist, 4.8% increase in technician, 0.8% increase in tradesman/craftsman and 1.4% decrease in semi-skilled/general worker. During the same period, the number of vacancies rose 59%, from 2 344 to 3 725, indicating that the manpower increase has been limited by the manpower supply.

12. With the planned completion of several rail projects from 2014 to 2017, the Training Board anticipates that the trend of manpower increase will continue. In particular, a sharp rise of manpower demand at the tradesman/craftsman and semi-skilled/general worker levels is expected for 2014 and 2015. Based on past and present survey data, the Training Board has computed the average annual training requirements of E&M manpower at the professional/technologist, technician and tradesman/craftsman levels for year 2014 to 2016 as shown in Table 4.

Table 4 Projected Annual E & M Manpower Training Requirement of the Electrical and Mechanical Engineering Sector

Skill Level	No. of Workers at the Time of Survey	Projected Average Annual Training Requirements for 2014 – 2016
Professional/Technologist	9 042	606 – 740
Technician	14 828	762 – 931
Tradesman/Craftsman	36 362	1 234 – 1 509

13. The projection by the Training Board was based on trend analysis, assuming no dramatic change on the manpower supply model to cope with the sudden surge of manpower demand in 2014 and 2015. According to employers' one-year manpower forecast, some 1 600 extra tradesmen/craftsmen are required in 2014.

Shipbuilding and Ship Repair Sector

14. The survey revealed that from year 2011 to 2013, the overall technical manpower of this sector had a significant drop of 13.5% per annum. The average changes per annum were -9.3%, -10.4%, -11.9% and -39.9% respectively in professional/technologist, technician, tradesman/craftsman and semi-skilled/general worker skill levels.

15. Based on past and present survey data as well as employers' one-year manpower forecast figures, the Training Board has projected the average annual training requirements of E&M manpower for the shipbuilding and ship repair sector from 2014 to 2016 as shown in Table 5.

Table 5 Projected Annual E & M Manpower Training Requirement of the Shipbuilding and Ship Repair Sector

Skill Level	No. of Workers at the Time of Survey	Projected Average Annual Training Requirements for 2014 – 2016
Professional/Technologist	259	16 – 19
Technician	454	28 – 34
Tradesman/Craftsman	1 076	66 – 80

Gas Sector

16. The survey reflected that the overall employment of the gas sector had a decrease of 3.1% per annum in the past two years, due to the shrinkage in the domestic LPG market. By skill level, the average change per annum was 0.4% decrease in professional/technologist, 6.0% decrease in technician, 5.8% decrease in tradesman/craftsman and 22.3% increase in semi-skilled/general worker.

17. The Training Board anticipates that the demand for technical workers in the gas sector will maintain a mild growth in the coming years. The Training Board has projected the average annual training requirements for year 2014 to 2016 as shown in Table 6.

Table 6 Projected Annual E&M Manpower Training Requirement of the Gas Sector

Skill Level	No. of Workers at the Time of Survey	Projected Average Annual Training Requirements for 2014 – 2016
Professional/Technologist	378	13 – 15
Technician	542	18 – 22
Tradesman/Craftsman	846	28 – 35

Major Conclusions and Recommendations

18. The Training Board's major conclusions and recommendations are summarised below:

(a) Business Outlook
The demand of E&M workers, especially in the contracting branch of the E&M engineering sector is expected to grow significantly in 2014 and 2015 when several rail projects are scheduled to be completed.

(b) Training of Professionals/Technologists
The supply of local university graduates in 2013 to 2015 meets about 60% to 70% of the projected training requirements of major disciplines of the E&M services industry. The shortage is to be supplemented by overseas graduates and technicians who upgrade themselves to professionals/technologists through part-time degree programmes.

(c) Training of Technicians
The output of graduates from technician level programmes offered by local universities, Hong Kong Institute of Vocational Education, Youth College and the Construction Industry Council (CIC) in major disciplines of the E&M services industry will be greater than the projected training requirements for 2013 to 2015. Considering that some of these graduates will join other industry sectors or establishments outside the scope of the survey, the manpower supply is considered as matching with the market demand.

(d) Training of Tradesmen/Craftsmen
(i) Based on trend analysis, the supply of tradesman/craftsman through formal training programmes in 2013 to 2015 can meet about 70% of the demand from the E&M engineering sector and the shipbuilding and ship repair sector. On the other hand, the supply will only meet 33% of the demand forecasted by employers for 2014. Although some semi-skilled/general workers can upgrade themselves to the tradesman/craftsman level by means of on-the-job training/skills upgrading training or passing relevant trade tests, the supply is still considered as inadequate for supporting the major infrastructure projects in the coming few years.

(ii) The training capacities of pre-employment training programmes should be increased and more skills upgrading courses should be offered to in-service semi-skilled workers so that they can upgrade to tradesmen/craftsmen. Anyway, training providers should consider recent years' enrolment and employment rates when planning their training capacity.

(e) Training of Semi-skilled/General Workers
In view of the manpower shortage in the coming few years, more semi-skilled/general workers should be trained up via retraining programmes and /or short courses in order to relieve the workload of

tradesmen/craftsmen. To boost the enrolment rate of retraining programmes, more attractive incentive/subsidizing schemes should be introduced. CIC's Contractor Cooperative Training Scheme is considered as a good example.

(f) Trade Tests
E&M workers should be encouraged to take trade tests recognized by the Government.

(g) Registration of Construction Workers
Employers should encourage their E&M workers working in construction site to register as qualified workers under the Construction Workers Registration Ordinance.

機電工程業
2013年人力調查報告摘要

目的

是次調查於2013年3月18日至7月19日期間進行，旨在蒐集機電工程業的最新人力資料。

調查範圍

2. 調查採用分層隨機抽樣法，從合共9 425間機構中抽選出1 210間作為調查對象。這些抽樣機構的僱員人數，約佔機電工程業總人力的79%，分屬下列行業：

I. 行業 A：機電工程

門類 I：承造

負責下列機電系統及設備的承造商：

(i) 電線鋪設及電器裝設；

(ii) 火警及滅火設備安裝及保養；

(iii) 電訊設備安裝及保養；以及

(iv) 空氣調節／通風系統安裝及保養。

門類 II：水電工程

電器裝設兼水管鋪設。

門類 III：服務

提供下列機電工程服務的機構：

(i) 飛行器裝嵌及相關機械的製造；

(ii) 電力設備維修；

(iii) 發電、輸電及配電；

(iv) 綜合及其他電器及機械設備安裝及保養；

(v) 升降機／電動扶梯安裝及保養；

(vi) 鐵路及纜索運輸；

(vii) 屋宇設備工程服務；以及

(viii) 家用器具及庭園設備修理。

門類 IV：補充抽樣 – 其他與機電工程行業相關之機構

包括下列與機電工程行業相關之機構：

(i) 專營電氣產品、設備與系統，並設有維修服務工場的主要貿易公司；

(ii) 聘有屋宇設備保養人員的物業管理公司；以及

(iii) 有關政府部門及教育機構。

II. 行業 B：船舶修建

門類 V：包括下列船廠及艇廠：

(i) 船舶及浮動結構體的製造；

(ii) 娛樂及運動用小艇的製造；以及

(iii) 海上運輸設備維修。

門類 VI：補充抽樣 – 聘用本地駐岸技術人員的船務公司及操作船隊機構；船舶顧問公司、船級協會、政府機構及教育院校。

III. 行業 C：氣體燃料

包括下列機構：

門類 VII：燃氣製造及配送公司；

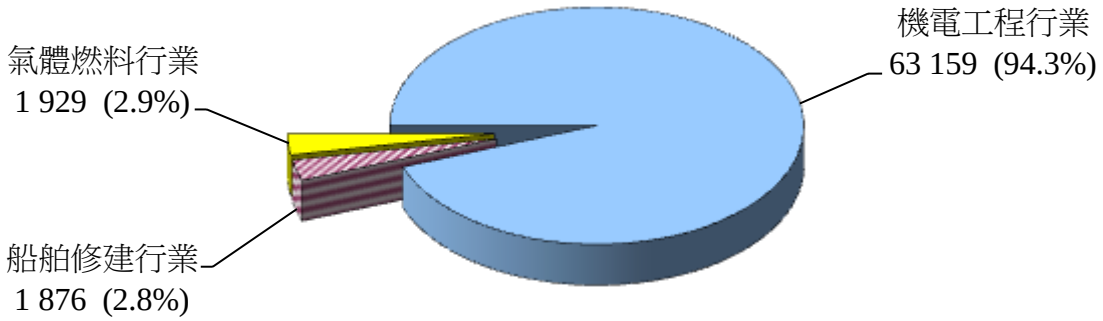
門類 VIII：燃氣供應系統安裝及保養公司 ；以及

門類 IX：補充抽樣 – 設有維修服務工場的氣體燃料設備貿易公司，以及有關政府部門及教育機構。

調查結果

3. 是次調查顯示，調查期間，在整個機電工程業中，從事機電工程工種及相關主要職務的從業員共有66 964人，其中63 159人（94.3%）屬機電工程行業，1 876人（2.8%）屬船舶修建行業，1 929人（2.9%）屬氣體燃料行業。機電工程僱員按行業劃分的分布見圖1：

圖 1 機電工程僱員按行業劃分的分布情況



4. 調查亦顯示，業內從事其他職務的僱員共有31 005人，其中28 653人從事機電工程行業，1 203人從事船舶修建行業，1 149人從事氣體燃料行業。整體而言，調查期間，整個機電工程業共僱有97 969人。

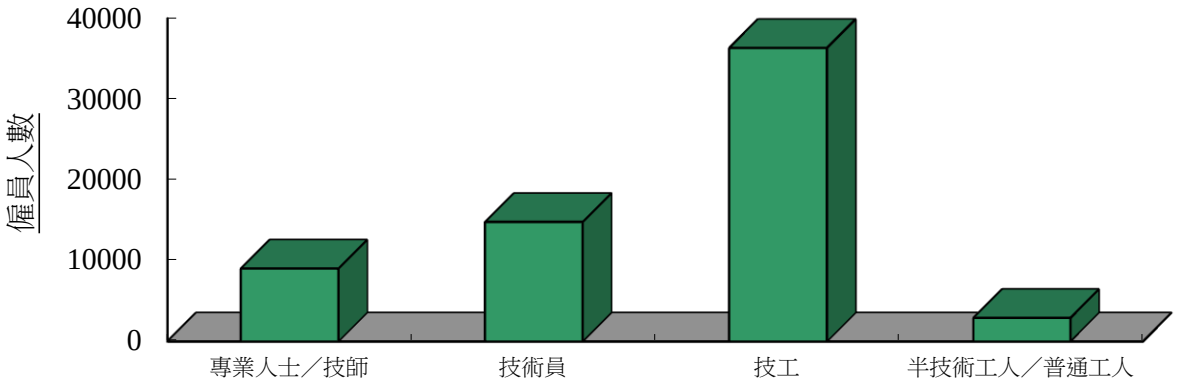
機電工程行業

5. 機電工程行業各技能等級僱員分布情況見表1及圖2：

表 1 機電工程行業各技能等級僱員分布情況

	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
	9 042	14 828	36 362	2 927	63 159
佔僱員總數百分比	14%	23%	58%	5%	100%

圖 2　　機電工程行業各技能等級僱員分布情況



6.　　根據僱主填報的資料，機電工程行業共有2 179名受訓者及 3 725個空缺，分別佔該行業總人力的3.5%及5.9%。 此外，僱主預測至2014年中時，機電工程行業將需要合共66 617名機電僱員。

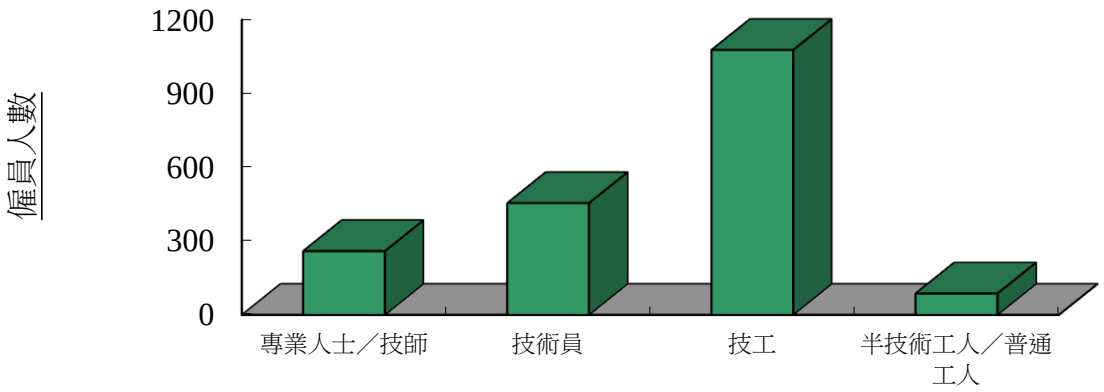
船舶修建行業

7.　　船舶修建行業各技能等級僱員分布情況見表2及圖3。

表 2　　船舶修建行業各技能等級機電僱員的分布情況

	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
	259	454	1 076	87	1 876
佔僱員總數百分比	14%	24%	57%	5%	100%

圖 3　　船舶修建行業各技能等級機電僱員的分布情況



8. 調查期間，僱主填報的受訓者人數及空缺數目分別為58人及107個，佔船舶修建行業僱員總數的3.1%及5.7%。僱主預測至2014年中時，該行業的機電僱員人數將為1 943人。

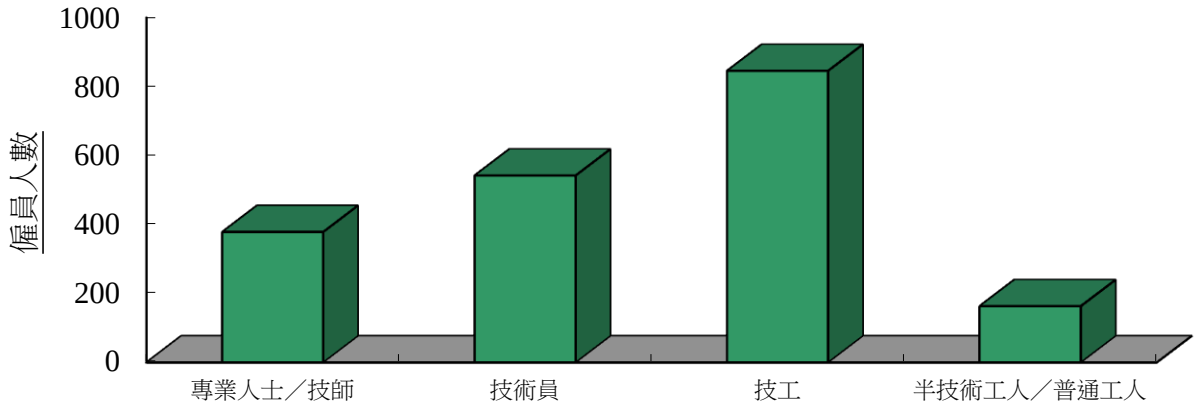
氣體燃料行業

9. 氣體燃料行業各技能等級僱員分布情況見表3及圖4。

表 3 氣體燃料行業各技能等級機電僱員的分布情況

	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
	378	542	846	163	1 929
佔僱員總數百分比	20%	28%	44%	8%	100%

圖 4 氣體燃料行業各技能等級機電僱員的分布情況



10. 調查期間，氣體燃料行業共有25名受訓者及49個空缺，分別佔該行業總人力的1.3%及2.5%。僱主預測至2014年中時，業內的總人力將為1 978人。

推算未來人力訓練需求

機電工程行業

11. 調查結果顯示，2011至2013年間，機電工程工種及相關職務的整體技術人力錄得升幅，平均每年增加2.6%。若按技能等級劃分，則專業人士／技師、技術員及技工級的僱員人數每年平均增長8.2%、4.8%及0.8%，而半技術工人／普通工人級僱員的人數則平均每年下跌1.4%。同期，空缺額由2 344 個增至3 725個，增幅達59%，顯示業內的人力增長或因人手供應不足而受限制。

12. 由於多個鐵路項目將於2014至2017年間竣工，本會預計業內的人力升勢將會持續，當中技工及半技術工人／普通工人的需求更可能於2014及2015年大增。本會根據以往及最新的人力調查數據，推算2014至2016年各技能等級（專業人士／技師、技術員、技工）平均每年所需訓練的機電僱員數目，結果見表4。

表 4 推算機電工程行業每年所需訓練的機電僱員數目

技能等級	調查期間的僱員人數	推算2014至2016年平均每年需要訓練的人手
專業人士／技師	9 042	606 – 740
技術員	14 828	762 – 931
技工	36 362	1 234 – 1 509

13. 上述推算乃按趨勢分析得出，因此在處理 2014 及 2015 年人力需求急增的情況時，會假設人力供應模型並無出現重大變化。相對而言，根據僱主對未來一年技工級人力的預測，2014 年約需額外 1 600 人。

船舶修建行業

14. 調查顯示，船舶修建行業的整體技術人力於2011至2013年間平均減少達13.5%。若按技能等級劃分，則專業人士／技師、技術員、技工、半技術工人／普通工人級的僱員人數每年平均減幅分別為9.3%、10.4%、11.9%及39.9%。

15. 本會根據以往及最新的人力調查數據，以及僱主對未來一年的平均訓練需求預測，推算2014至2016年業內平均每年所需訓練的機電僱員數目，結果見表5。

表 5 推算船舶修建行業每年所需訓練的機電僱員數目

技能等級	調查期間的僱員人數	推算2014至2016年平均每年需要訓練的人手
專業人士／技師	259	16 – 19
技術員	454	28 – 34
技工	1 076	66 – 80

氣體燃料行業

16. 調查反映過去兩年，由於家用石油氣市場收縮，氣體燃料行業的僱員總數平均每年減少3.1%。若按技能等級劃分，則專業人士／技師、技術員及技工級的僱員人數年均下跌0.4%、6.0%及5.8%，而半技術工人／普通工人級僱員則每年平均增加22.3%。

17. 本會預期未來數年，氣體燃料行業對技術僱員的需求將保持溫和的增長。本會推算2014至2016年業內平均每年所需訓練的機電僱員數目，結果見表6。

表 6 推算氣體燃料行業每年所需訓練的機電僱員數目

技能等級	調查期間的僱員人數	推算2014至2016年平均每年需要訓練的人手
專業人士／技師	378	13 – 15
技術員	542	18 – 22
技工	846	28 – 35

主要結論及建議

18. 本會的主要結論及建議扼述如下：

(a) 業務展望
隨著2014及2015年大量鐵路項目陸續竣工，預期業界對機電從業員，特別是機電工程行業內「承造門類」從業員的需求將大增。

(b) 專業人士／技師訓練
2013至2015年間，本地大學相關學科的畢業生人數，大致能應付六至七成預計的機電工程業主要職務訓練需求。加上海外畢業生，以及通過修讀兼讀制學士課程而晉身專業人士／技師的技術員，大致能應付預計的訓練需求。

(c) 技術員訓練
預計修讀本地大學、香港專業教育學院*[IVE]*、建造業議會*[CIC]*及青年學院機電學科技術員課程的畢業生人數，將較2013至2015年間的推算人力訓練需求為高。不過，由於部分畢業生會投身其他並不屬是次調查範圍內的行業或機構，故畢業生的供應或大致能配合市場需求。

(d) 技工訓練
(i) 2013至2015年間，完成正式訓練後投身機電工程及船舶修建行業的技工級人力，將能滿足按趨勢分析推算所得訓練需求的70%。然而根據僱主對2014年的預測，有關技工人數卻只能滿足33%的預測需求。雖然部分半技術工人／普通工人會透過在職培訓、技

能提升訓練或通過相關技能測驗而成為合格技工，但相信仍不足以應付未來幾年大型基建項目的人力需求。

(ii) 本會建議增加職前訓練課程的學額，並開辦更多技能提升訓練課程，以協助現職半技術工人取得認可資歷，成為合格技工。然而，訓練機構擬訂訓練名額時，應同時考慮近年的報讀人數及畢業生就業率。

(e) 半技術工人／普通工人訓練

考慮到未來幾年人手短缺，本會建議透過開辦再培訓課程及／或短期課程，訓練更多半技術工人／普通工人，以紓緩技工的工作量。為改善本業再培訓課程的報讀情況，本會建議推出更具吸引力的獎勵／津貼計劃。CIC推出的「承建商合作培訓計劃」是可作參考的成功例子。

(f) 技能測驗

機電工程業僱主應鼓勵工人參加技能測驗，以取得政府認可的資格。

(g) 建造業工人註冊

僱主應鼓勵在建築地盤工作的機電工人根據《建造業工人註冊條例》的規定，註冊成為合資格工人。

SECTION I

INTRODUCTION

The Training Board

1.1 The Electrical and Mechanical Services Training Board of the Vocational Training Council is required by its terms of reference to determine the manpower demand of the electrical and mechanical services industry and to make recommendations to the Council for the development of training facilities to meet the demand. The Training Board comprises members nominated by major trade associations, trade unions, professional bodies, educational/training institutions and government departments. The Training Board's membership and terms of reference are listed in Appendices 1 and 2 respectively.

The Survey

1.2 In pursuance of its terms of reference, the Training Board conducted a survey of the electrical and mechanical services industry between 18th March and 19th July 2013 to collect up-to-date manpower information with a view to assessing the industry's manpower requirements and training needs. The survey was carried out with the assistance of the Census and Statistics Department.

1.3 The following information was collected from the survey:

(i) the number of employees at the time of the survey;

(ii) employers' forecast of the number of employees by 12 months after the survey;

(iii) the number of vacancies at the time of the survey;

(iv) the number of employees under training;

(v) employers' forecast of the number of employees under training by 12 months after the survey; and

(vi) the average income of employees.

Scope of the Survey

1.4 The survey covered the following sectors and branches of the industry:

I. Sector A: Electrical and Mechanical Engineering

Branch 1: Contracting (E&M) Branch

Contractors dealing with electrical and mechanical systems and equipment including:

(i) electrical wiring and fitting (HSIC : 432101);

(ii) fire-alarm and fire-fighting equipment installation and maintenance (HSIC : 432103);

(iii) telecommunications equipment installation and maintenance (HSIC : 432106); and

(iv) air-conditioning and ventilation systems installation and maintenance (HSIC : 432201).

Branch 2: Electrical Fitting with Water Plumbing Branch

Engineering companies of electrical fitting with water plumbing (HSIC : 432102).

Branch 3: Servicing (E&M) Branch

Servicing companies of electrical and mechanical engineering services including:

(i) aircraft assembly and manufacture of related machinery (HSIC : 303000);

(ii) repair of electrical equipment (HSIC : 331400);

(iii) electrical power generation, transmission and distribution (HSIC : 351000);

(iv) combined and other installation and maintenance of electrical and mechanical equipment (HSIC : 432199);

(v) lift and escalator installation and maintenance (HSIC : 432901);

(vi) railway and cable transport (HSIC : 491000);

(vii) building services engineering (HSIC : 711400); and

(viii) repair of household appliances, home and garden equipment (HSIC : 953200).

Branch 4: Supplementary Samples – Other Relevant Organizations in E&M Engineering Sector

Other relevant organizations in the electrical and mechanical engineering sector including:

(i) major trading companies of electrical products, equipment and systems having associated service workshops;

(ii) real estate management companies which have building services maintenance workers; and

(iii) relevant divisions of government departments and educational institutions.

II. Sector B: Shipbuilding and Ship Repair

Branch 5: Shipyards and Boatyards, including:

(i) building of ships and floating structures (HSIC : 301100);

(ii) building of pleasure and sporting boats (HSIC : 301200); and

(iii) repair of water transport equipment (HSIC : 331500).

Branch 6: Supplementary Samples - Shipping firms and fleet operators employing local shore-based technical staff, consulting firms, classification societies of ships, government agencies and educational institutions.

III. Sector C: Gas

Establishments include:

Branch 7: Gas manufacturing and distribution companies (HSIC : 352000);

Branch 8: Gas installation and maintenance companies (HSIC : 432204); and

Branch 9: Supplementary Samples - Trading companies of gas equipment having associated servicing workshops, and relevant divisions of government departments and educational institutions.

1.5 The survey covered a total of 9 425 establishments, including 8 958 establishments in the electrical and mechanical engineering sector, 284 in the shipbuilding and ship repair sector, and 183 in the gas sector. Of these 9 425 establishments, 9 319 were included in the Hong Kong Standard Classification (HSIC) listed in paragraph 1.4.

1.6 In view of the limited manpower available for the fieldwork, a stratified random sampling method was adopted to select about 1 100 samples out of the 9 319 establishments in the HSICs. Together with some 100 supplementary samples, a total of about 1 200 establishments were included and they employed 79% of the total workforce of the industry.

Method of the Survey

1.7 Two weeks before the fieldwork, a questionnaire together with explanatory notes, and a description of the principal jobs and other survey documents (Appendices 19A, 19B, 19C and 19D) were sent to the chosen organisations.

1.8 During the fieldwork period, officers of the Census and Statistics Department visited the establishments by appointment to collect the completed questionnaires and to help employers complete them.

1.9 After the survey, the completed questionnaires were checked and, where necessary, verified with the respondents before being processed by the Census and Statistics Department. The survey data were scaled up by appropriate factors to reflect the overall manpower situation of various sectors in the electrical and mechanical services industry.

Publicity

1.10 Relevant employers and trade associations were requested to publicize the survey among their members.

Survey Response

1.11 Of the 1 210 selected establishments, 890 supplied the information and 20 refused to do so. The remaining ones were either closed, no technical manpower, engaged in other trades, failure to contact or temporarily ceased operation. The effective response rate was 98.3%.

The Manpower Survey Report

1.12 This full report presents the findings of the survey, the Training Board's forecast of the annual training requirements of various sectors in the electrical and mechanical services industry and recommendations on measures to meet the requirements. In this report, both the terms 'employees' and 'workers' refer to personnel engaged in the principal jobs, whereas the term 'trainees' includes both trainees under any form of training and apprentices.

1.13 After data collecting and processing, the Training Board mounted the 2013 manpower statistical report which presented a summary of the survey findings of the electrical and mechanical services industry on the web site of the Vocational Training Council in October 2013 for public access.

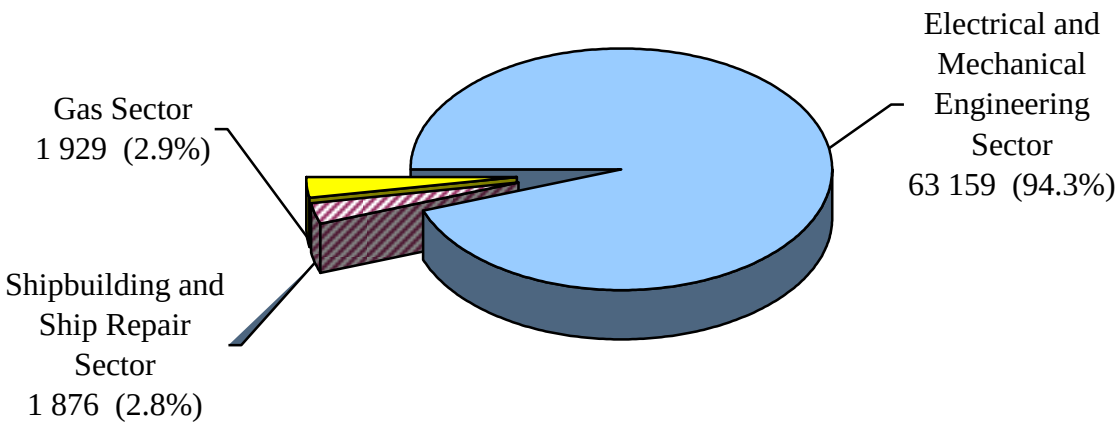
SECTION II

SUMMARY OF SURVEY FINDINGS

Number of Workers Employed

2.1 The survey revealed that in the period of 18th March to 19th July 2013, a total of 66 964 workers were employed in the principal jobs of electrical/mechanical engineering and related disciplines in the electrical and mechanical services industry in Hong Kong. Of the 66 964 workers, 63 159 workers (94.3%) were employed in the electrical and mechanical engineering sector, 1 876 workers (2.8%) in the shipbuilding and ship repair sector, and 1 929 workers (2.9%) in the gas sector. The distribution of electrical and mechanical engineering workers by sector is shown in Figure 2.1.

Figure 2.1 Distribution of Electrical and Mechanical Engineering Workers by Sector



2.2 The survey also revealed that there were 31 005 workers of other disciplines working in the electrical and mechanical services industry at the time of survey. Among the 31 005 workers, 28 653 workers were employed in the electrical and mechanical engineering sector, 1 203 workers in the shipbuilding and ship repair sector and 1 149 workers in the gas sector.

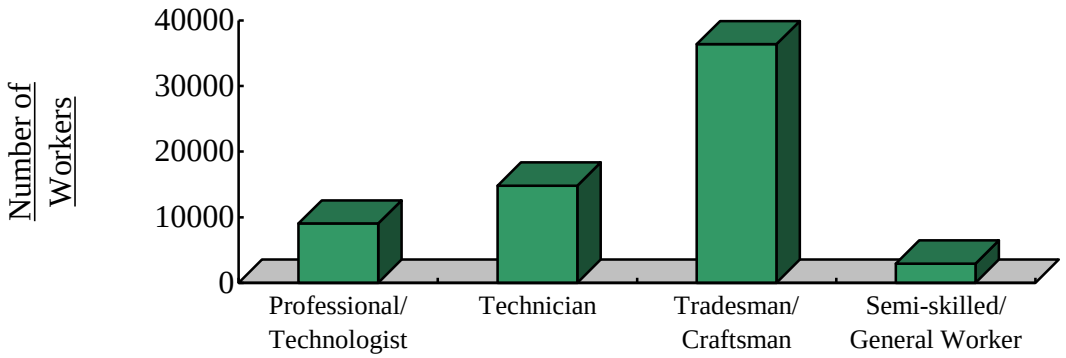
Electrical and Mechanical Engineering Sector

2.3 The distribution of workers according to job level in the electrical and mechanical engineering sector is shown in Table 2.1 and Figure 2.2.

Table 2.1 Distribution of Workers by Job Level of the Electrical and Mechanical Engineering Sector

	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	Total
	9 042	14 828	36 362	2 927	63 159
Percentage of total number of workers	14%	23%	58%	5%	100%

Figure 2.2 Distribution of Workers by Job Level of the Electrical and Mechanical Engineering Sector



2.4 The manpower statistics of the whole electrical and mechanical engineering sector are tabulated in Appendix 3 while that of its Contracting (E&M) branch, Electrical Fitting with Water Plumbing branch, Servicing (E&M) branch and Supplementary Samples are in Appendices 5, 6, 7 and 8 respectively.

2.5 Similar to last round, respondents of the 2013 manpower survey were asked to estimate their manpower devoted to contracting and servicing businesses. The finding was that within the E&M Engineering sector, about 43% and 57% of manpower were devoted to contracting and servicing works respectively, representing 27 282 and 35 877 workers in terms of headcount. The detailed breakdown is shown in Table 2.2.

Table 2.2 Distribution of Workers by Job Level of the Electrical and Mechanical Engineering Sector

Job Level	Number of Workers Employed	Estimated Manpower for Contracting	Estimated Manpower for Servicing
Professional/Technologist	9 042	5 475 (61%)	3 567 (39%)
Technician	14 828	5 439 (37%)	9 389 (63%)
Tradesman/Craftsman	36 362	14 880 (41%)	21 482 (59%)
Semi-skilled/General Worker	2 927	1 488 (51%)	1 439 (49%)
Total	63 159	27 282 (43%)	35 877 (57%)

2.6 For comparison, with the classification method adopted in 2009 and before, i.e. assuming all workers of each industry code serve solely for either contracting or servicing[1], the distribution of workers in the E&M Engineering Sector is shown in Table 2.3.

Table 2.3 Distribution of Workers by Job Level of the Electrical and Mechanical Engineering Sector

Job Level	Number of Workers Employed	Estimated Manpower for Contracting	Estimated Manpower for Servicing
Professional/Technologist	9 042	3 275 (36%)	5 767 (64%)
Technician	14 828	5 094 (34%)	9 734 (66%)
Tradesman/Craftsman	36 362	17 465 (48%)	18 897 (52%)
Semi-skilled/General Worker	2 927	1 807 (62%)	1 120 (38%)
Total	63 159	27 641 (44%)	35 518 (56%)

2.7 The breakdown of manpower engaged in contracting and servicing work of different branches of the electrical and mechanical engineering sector is tabulated in Appendix 9.

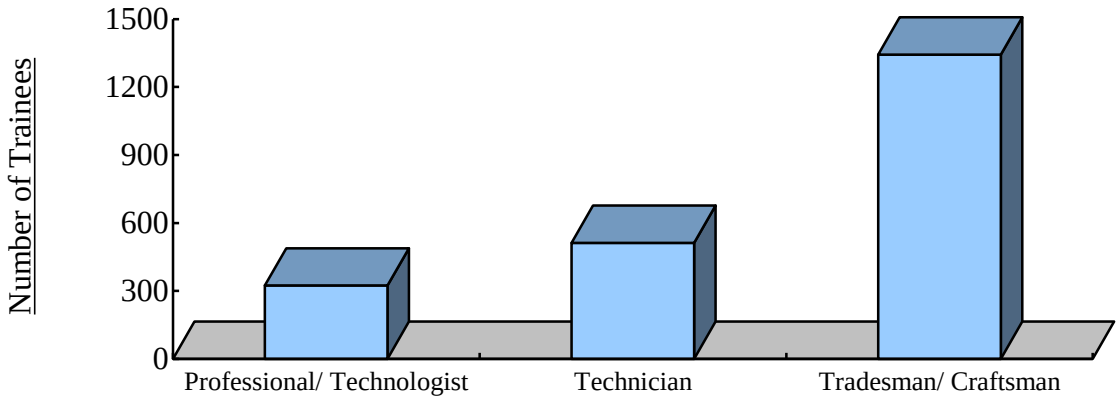
[1] Branch 1 and 50% of Branch 3(iv), i.e. Industry Code 432199 (combined and other installation and maintenance of electrical and mechanical equipment) are classified as contracting while the others are classified as servicing.

2.8 At the time of the survey, there were 2 179 trainees under various forms of training in the electrical and mechanical engineering sector, representing 3.5% of the total workforce. Their distribution by job level is shown in Table 2.4 and Figure 2.3.

Table 2.4 Distribution of Trainees by Job Level of the Electrical and Mechanical Engineering Sector

Job Level	Number of Workers Employed	Number of Trainees	Percentage of Workers at the Same Level
Professional/Technologist	9 042	324	3.6%
Technician	14 828	512	3.5%
Tradesman/Craftsman	36 362	1 343	3.7%
Semi-skilled/General Worker	2 927	-	-
Total	63 159	2 179	3.5%

Figure 2.3 Distribution of Trainees by Job Level of the Electrical and Mechanical Engineering Sector

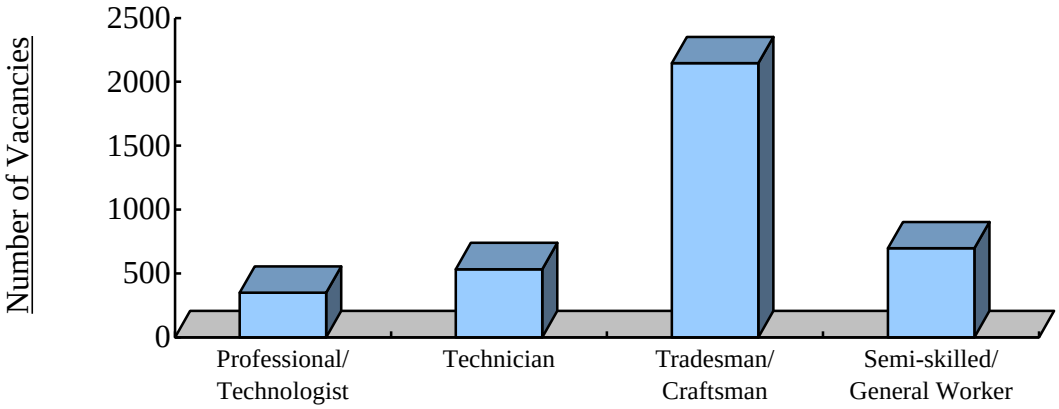


2.9 Employers reported a total of 3 725 vacancies, representing about 5.9% of the total manpower of the electrical and mechanical engineering sector. The distribution of the vacancies by job level is shown in Table 2.5 and Figure 2.4.

Table 2.5 Distribution of Vacancies by Job Level of the Electrical and Mechanical Engineering Sector

Job Level	Number of Workers Employed	Number of Vacancies	Percentage of Workers at the Same Level
Professional/Technologist	9 042	349	3.9%
Technician	14 828	533	3.6%
Tradesman/Craftsman	36 362	2 147	5.9%
Semi-skilled/General Worker	2 927	696	23.8%
Total	63 159	3 725	5.9%

Figure 2.4 Distribution of Vacancies by Job Level of the Electrical and Mechanical Engineering Sector

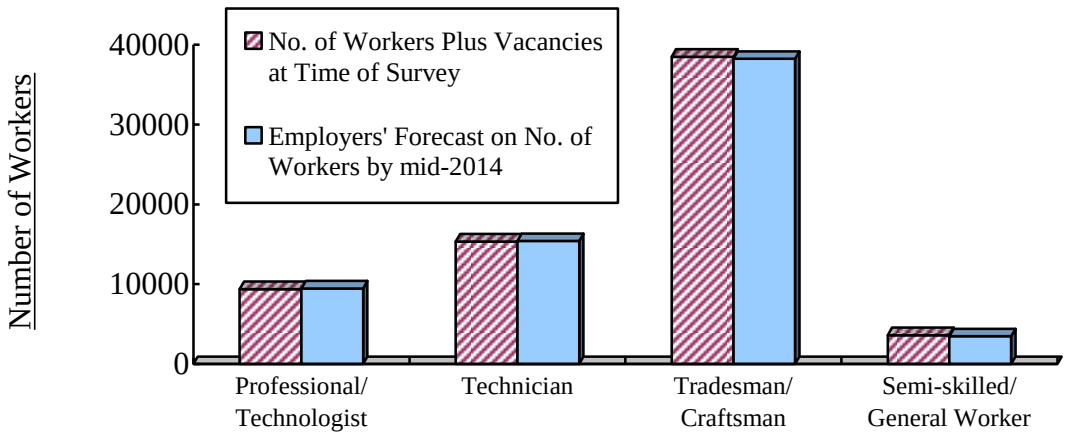


2.10 Employers forecasted a total of 66 617 E&M workers by mid-2014 in the electrical and mechanical engineering sector. The number is very close to the sum of the employed manpower and vacancies at the time of survey, indicating that employers anticipated that the vacancies would be filled within 12 months. The distribution of the forecasted manpower by job level is shown in Table 2.6 and Figure 2.5.

Table 2.6 Distribution of Forecasted Number of Workers by Job Level of the Electrical and Mechanical Engineering Sector

Job Level	Number of Workers Plus Vacancies at Time of Survey	Employers' Forecast on Number of Workers by Mid-2014
Professional/Technologist	9 391	9 468
Technician	15 361	15 412
Tradesman/Craftsman	38 509	38 255
Semi-skilled/General Worker	3 623	3 482
Total	66 884	66 617

Figure 2.5 Distribution of Forecasted Number of Workers by Job Level of the Electrical and Mechanical Engineering Sector



2.11 The distribution of trainees among the principal jobs, the number of vacancies at the time of survey and the forecasted number of workers by mid-2014 at each principal job of the electrical and mechanical engineering sector are given in Appendix 3.

2.12 The monthly income range of E&M workers at each job level of the electrical and mechanical engineering sector is shown in Table 2.7:

Table 2.7 Average Monthly Income of Workers of the Electrical and Mechanical Engineering Sector

Monthly Average Income Range	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	All
Under $9 000	-	-	446	198	644
$9 001 - $12 000	-	211	2 484	1 096	3 791
$12 001 - $15 000	30	1 859	8 829	667	11 385
$15 001 - $18 000	156	1 622	11 820	657	14 255
$18 001 - $25 000	1 467	5 121	8 556	50	15 194
$25 001 - $35 000	1 441	3 476	333	-	5 250
$35 001 - $45 000	2 520	321	4	-	2 845
$45 001 - $60 000	1 506	1	-	-	1 507
Over $60 000	606	6	-	-	612
Unspecified	1 316	2 211	3 890	259	7 676
Total	9 042	14 828	36 362	2 927	63 159

2.13 The distribution of E&M workers by their total monthly income range for each principal job of the electrical and mechanical engineering sector is tabulated in Appendix 4.

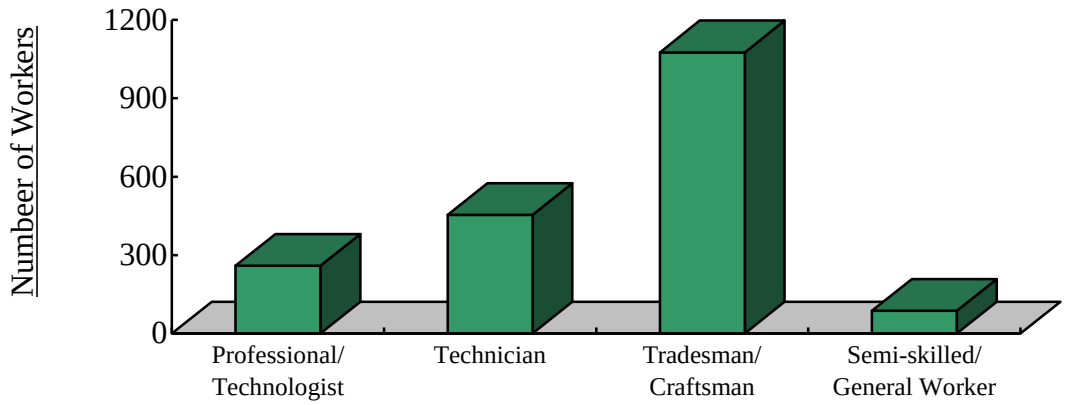
Shipbuilding and Ship Repair Sector

2.14 The manpower statistics of the shipbuilding and ship repair sector are tabulated in Appendix 11. The distribution of E&M workers by job level of the sector is shown in Table 2.8 and Figure 2.6.

Table 2.8 Distribution of E&M Workers by Job Level of the Shipbuilding and Ship Repair Sector

	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	Total
	259	454	1 076	87	1 876
Percentage of total number of workers	14%	24%	57%	5%	100%

Figure 2.6 Distribution of E&M Workers by Job Level of the Shipbuilding and Ship Repair Sector



2.15 At the time of the survey, there were 58 trainees under various forms of training in the shipbuilding and ship repair sector, representing 3.1% of the total workforce. Their distribution by job level is shown in Table 2.9.

Table 2.9 Distribution of E&M Trainees by Job Level of the Shipbuilding and Ship Repair Sector

Job Level	Number of Workers Employed	Number of Trainees	Percentage of Workers at the Same Level
Professional/Technologist	259	-	-
Technician	454	20	4.4%
Tradesman/Craftsman	1 076	38	3.5%
Semi-skilled/General Worker	87	-	-
Total	1 876	58	3.1%

2.16 Employers reported a total of 107 vacancies, representing about 5.7% of the total E&M workforce of the shipbuilding and ship repair sector. Their distribution by job level is shown in Table 2.10.

Table 2.10 Distribution of E&M Vacancies by Job Level of the Shipbuilding and Ship Repair Sector

Job Level	Number of Workers Employed	Number of Vacancies	Percentage of Workers at the Same Level
Professional/Technologist	259	3	1.2%
Technician	454	28	6.2%
Tradesman/Craftsman	1 076	75	7.0%
Semi-skilled/General Worker	87	1	1.1%
Total	1 876	107	5.7%

2.17 Employers forecasted a total of 1 943 E&M workers by mid-2014 in the shipbuilding and ship repair sector, indicating about 63% of the vacancies at the time of survey would be filled within 12 months. The distribution of the forecasted manpower by job level is shown in Table 2.11.

Table 2.11 Distribution of Forecasted Number of E&M Workers by Job Level of the Shipbuilding and Ship Repair Sector

Job Level	Number of Workers Plus Vacancies at Time of Survey	Employers' Forecast on Number of Workers by Mid-2014
Professional/Technologist	262	258
Technician	482	473
Tradesman/Craftsman	1 151	1 124
Semi-skilled/General Worker	88	88
Total	1 983	1 943

2.18 The distribution of trainees among the principal jobs, the number of vacancies at the time of survey and the forecasted number of workers by mid-2014 at each principal job of the shipbuilding and ship repair sector are given in Appendix 11.

2.19 The monthly income range of E&M workers at each job level of the shipbuilding and ship repair sector is shown in Table 2.12.

Table 2.12 Average Monthly Income of E&M Workers of the Shipbuilding and Ship Repair Sector

Monthly Average Income Range	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	All
Under $9 000	-	-	25	19	44
$9 001 - $12 000	-	6	73	46	125
$12 001 - $15 000	-	11	538	-	549
$15 001 - $18 000	2	117	160	9	288
$18 001 - $25 000	32	58	106	-	196
$25 001 - $35 000	58	27	9	-	94
$35 001 - $45 000	34	27	-	-	61
$45 001 - $60 000	16	-	-	-	16
Over $60 000	16	-	-	-	16
Unspecified	101	208	165	13	487
Total	259	454	1 076	87	1 876

2.20 The distribution of E&M workers by their total monthly income range for each principal job of the shipbuilding and ship repair sector is tabulated in Appendix 12.

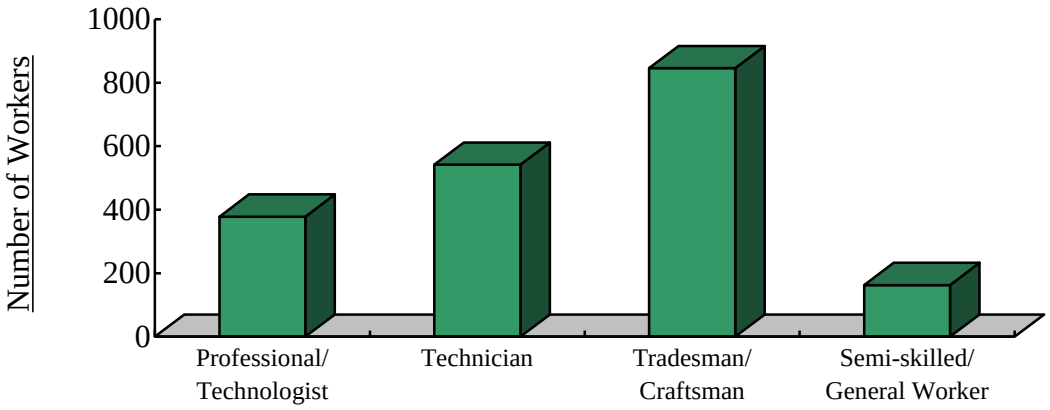
Gas Sector

2.21 The manpower statistics of the gas sector are tabulated in Appendix 13. The distribution of E&M workers by job level of the sector is shown in Table 2.13 and Figure 2.7.

Table 2.13 Distribution of E&M workers by Job Level of the Gas Sector

	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	Total
	378	542	846	163	1 929
Percentage of total number of workers	20%	28%	44%	8%	100%

Figure 2.7 Distribution of E&M Workers by Job Level of the Gas Sector



2.22 At the time of the survey, there were 25 trainees under various forms of training in the gas sector, representing 1.3% of the total workforce. Their distribution by job level is shown in Table 2.14.

Table 2.14 Distribution of E&M Trainees by Job Level of the Gas Sector

Job Level	Number of Workers Employed	Number of Trainees	Percentage of Workers at the Same Level
Professional/Technologist	378	2	0.5%
Technician	542	5	0.9%
Tradesman/Craftsman	846	18	2.1%
Semi-skilled/General Worker	163	-	-
Total	1 929	25	1.3%

2.23 Employers reported 49 vacancies at the time of the survey, representing about 2.5% of the total E&M manpower of the gas sector. The distribution by job level is shown in Table 2.15.

Table 2.15 Distribution of E&M Vacancies by Job Level of the Gas Sector

Job Level	Number of Workers Employed	Number of Vacancies	Percentage of Workers at the Same Level
Professional/Technologist	378	4	1.1%
Technician	542	6	1.1%
Tradesman/Craftsman	846	33	3.9%
Semi-skilled/General Worker	163	6	3.7%
Total	1 929	49	2.5%

2.24 Employers forecasted a total of 1 978 E&M workers by mid-2014 in the gas sector, indicating the vacancies at the time of survey would be completely filled within 12 months. The distribution of the forecasted manpower by job level is shown in Table 2.16.

Table 2.16 Distribution of Forecasted Number of E&M Workers by Job Level of the Gas Sector

Job Level	Number of Workers Plus Vacancies at Time of Survey	Employers' Forecast on Number of Workers by Mid-2014
Professional/Technologist	382	385
Technician	548	548
Tradesman/Craftsman	879	876
Semi-skilled/General Worker	169	169
Total	1 978	1 978

2.25 The distribution of trainees among the principal jobs, the number of vacancies at the time of the survey and the forecasted number of workers by mid-2014 at each principal job of the gas sector are given in Appendix 13.

2.26 The monthly income range of E&M workers at each job level of the gas sector is shown in Table 2.17.

Table 2.17 Average Monthly Income of E&M Workers of the Gas Sector

Monthly Average Income Range	Professional/ Technologist	Technician	Tradesman/ Craftsman	Semi-skilled/ General Worker	All
Under $9 000	-	-	-	-	-
$9 001 - $12 000	-	12	241	92	345
$12 001 - $15 000	-	44	244	66	354
$15 001 - $18 000	2	289	140	-	431
$18 001 - $25 000	4	178	149	1	332
$25 001 - $35 000	365	5	5	-	375
$35 001 - $45 000	7	5	-	-	12
$45 001 - $60 000	-	-	-	-	-
Over $60 000	-	-	-	-	-
Unspecified	-	9	67	4	80
Total	378	542	846	163	1 929

2.27 The distribution of E&M workers by their total monthly income range for each principal job of the gas sector is tabulated in Appendix 14.

E&M Workers Working in Construction Sites

2.28 For assessing E&M workers participating in construction works, the Training Board conducted its eighth supplementary manpower survey in 2013 to collect up-to-date manpower data of E&M workers working in construction sites. The collected data facilitated more comprehensive analysis of the manpower situation of the electrical and mechanical services industry. The supplementary survey covered all 1 030 building sites and 487 civil engineering and other sites recorded by the Census and Statistics Department at the time of the survey.

2.29 The supplementary survey revealed that on 10th April 2013, i.e. the reference date of the survey, there were 6 911 E&M workers of electrical/mechanical engineering and related disciplines working in the construction sites. Of the 6 911 workers, 5 926 workers (85.7%) were employed in 209 building sites and 985 workers (14.3%) in 99 civil engineering and other sites. It should be noted that the workers counted in the supplementary survey were subset of the manpower of the E&M engineering sector which was estimated in the main manpower survey on establishment basis.

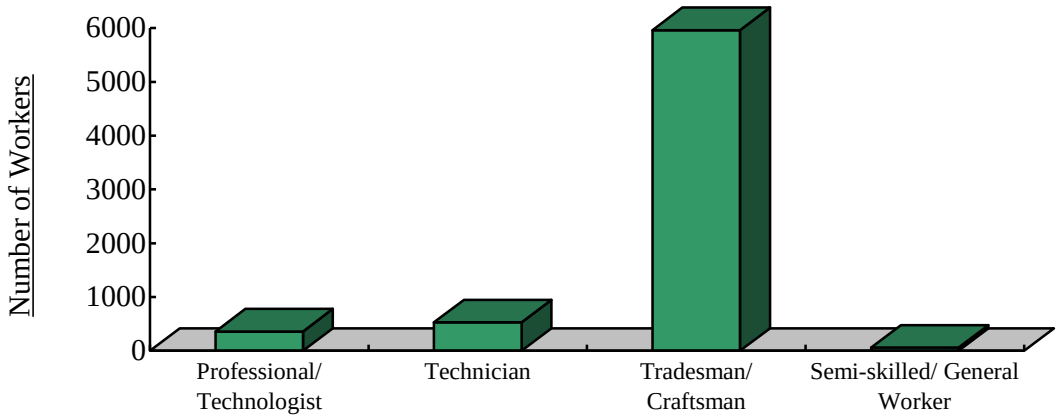
2.30 The distribution of workers by job level is shown in Table 2.18 and Figure 2.8.

Table 2.18 Distribution of E&M Workers Working in Construction Sites

Job Level	Number of Workers		Percentage of Total Number Employed
Professional/Technologist	361	(240)	5.2%
Technician	529	(395)	7.7%
Tradesman/Craftsman	5 960	(5 706)	86.2%
Semi-skilled/General Worker	61	(244)	0.9%
Total:	6 911	(6 585)	100%

(Figures in brackets are the corresponding data collected in the seventh supplementary manpower survey conducted in March 2011).

Figure 2.8 Distribution of E&M Workers Working in Construction Sites



2.31 The manpower statistics of E&M workers working in construction sites are tabulated in Appendix 10.

Manpower Supply Situation in 2012/13

2.32 Employers' view on the manpower supply situation during the 12 months before the survey is listed in Appendix 15.

SECTION III

OBSERVATIONS AND CONCLUSIONS

General

3.1 The Training Board has carefully examined the survey findings and is of the view that the data collected generally reflect the employment situation of the electrical and mechanical engineering sector, the shipbuilding and ship repair sector, and the gas sector of the electrical and mechanical services industry at the time of the survey.

Electrical and Mechanical Engineering Sector

3.2 Between 18th March and 19th July 2013, the electrical and mechanical engineering sector employed a total of 63 159 E&M workers, representing an increase of 2.55% per annum when compared with 60 060 E&M workers found in the last survey conducted in 2011. The distribution of the workforce by job level and by branch in 2013 is shown in Table 3.1.

Table 3.1: Distribution of E&M Workers in the Electrical and Mechanical Engineering Sector by Job Level and by Branch

Job Level	Contracting Branch	Servicing Branch	Total
Professional/Technologist	3 275 (5 475)	5 767 (3 567)	9 042
Technician	5 094 (5 439)	9 734 (9 389)	14 828
Tradesman/Craftsman	17 465 (14 880)	18 897 (21 482)	36 362
Semi-Skilled/General Worker	1 807 (1 488)	1 120 (1 439)	2 927
Total	27 641 (27 282)	35 518 (35 877)	63 159

Note:
(a) Contracting branch refers to Branch 1 and 50% of Branch 3(iv) under the scope of the 2013 E&M Services Industry Manpower Survey (see paragraph 1.4).

(b) The numbers in brackets were estimated by employers according to their manpower devoted to contracting and servicing works.

Manpower Changes of the E&M Engineering Sector

3.3 The survey revealed that there was an increase of 2.55% per annum in the overall employment of the electrical and mechanical engineering sector in the past two years. The annual manpower increase in professional/technologist, technician and tradesman/craftsman levels were 8.2%, 4.8% and 0.8% respectively. On the other hand, the number of semi-skilled/general workers recorded a decline of 1.4% per annum as some workers might have upgraded themselves to tradesmen/craftsmen during the past two years.

3.4 At the time of survey, one third of the principal jobs had vacancy rates of 5% or higher. Five principal jobs, namely (i) Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System), (ii) Lift Mechanic, (iii) Fire Services Electrical Fitter, (iv) Labourer and (v) Semi-skilled Worker recorded vacancy rates of higher than 10%.

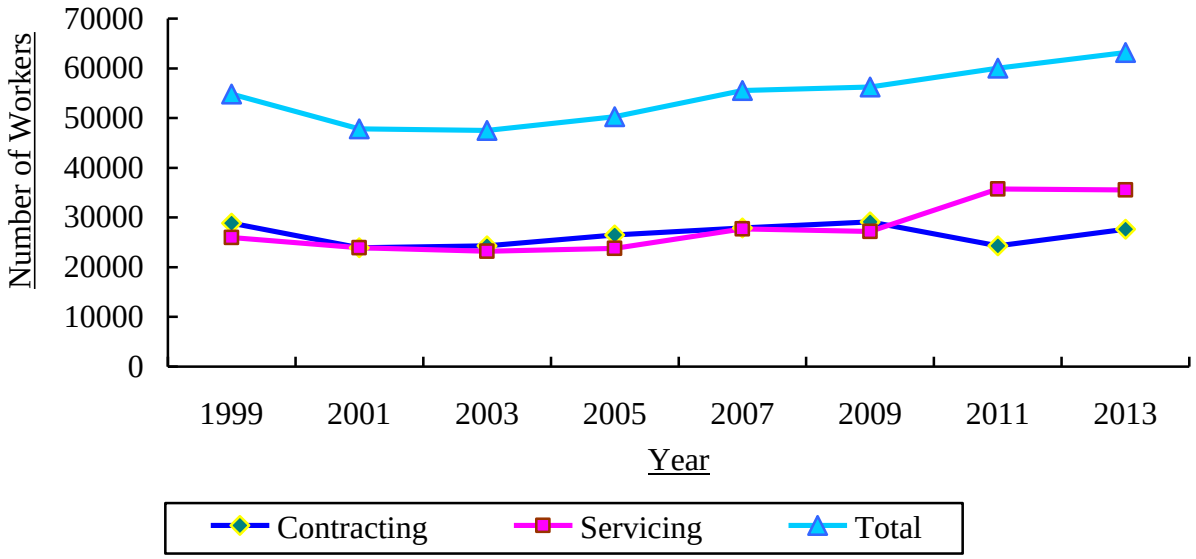
3.5 The manpower changes of the E&M engineering sector from 1999 to 2013 are shown in Table 3.2 and Figure 3.1.

Table 3.2 Manpower Changes of the Electrical and Mechanical Engineering Sector between 1999 and 2013

Year of Survey	Contracting Branch[1]	Servicing Branch	Total
1999	28 838	25 976	54 814
2001	23 889	23 910	47 799
2003	24 288	23 204	47 492
2005	26 514	23 754	50 268
2007	27 880	27 683	55 563
2009	29 101	27 159	56 260
2011[1]	24 317	35 743	60 060
2013	27 641	35 518	63 159

[1] The composition of the contracting and servicing branches was revised since the 2011 manpower survey. In particular, HSIC 432901 (Lift and Escalator Installation and Maintenance) was changed from contracting to servicing.

Figure 3.1 Manpower Changes of the Electrical and Mechanical Engineering Sector between 1999 and 2013



3.6 The manpower employed in the E&M engineering sector had seen its peak and trough in 1999 and 2003 respectively. Following the upturn of the economy of Hong Kong and vicinity regions after 2003, the number of workers rebounded and in the 2007 manpower survey had overtaken the peak figure recorded in 1999. The number of workers is still in the rising trend. As major infrastructure projects have been in full swing one after another, the rising trend has aggravated and the number of workers increased by 2.55% per annum during the past two years.

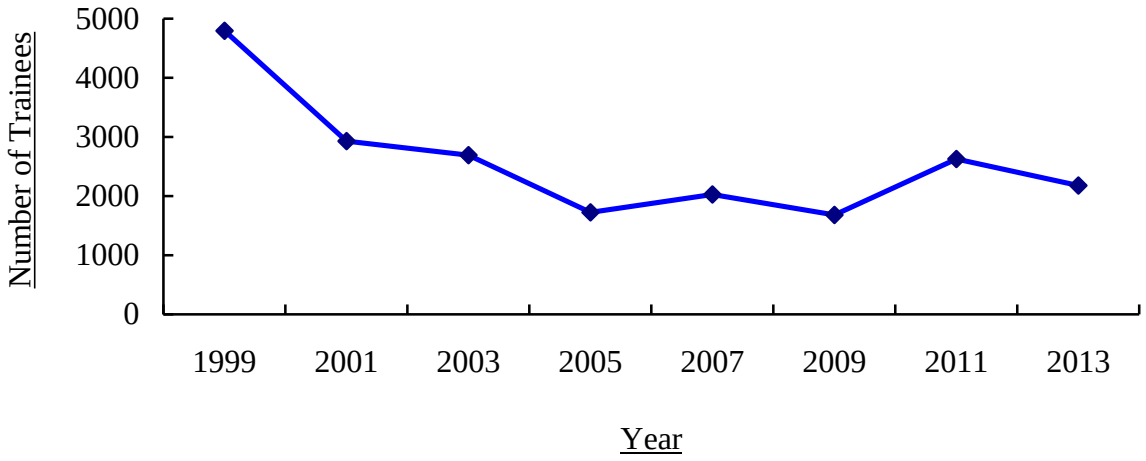
3.7 The numbers of trainees in the E&M engineering sector reported in the manpower surveys since 1999 showed a persistent decline except 2007 when more workers and trainees in mechanical engineering and aircraft engineering services trades were employed to cope with the demand arising from the launch of large scale hangar. Since 2011, the number of trainees has rebounded (Table 3.3 and Figure 3.2), particularly in the tradesman/craftsman level.

Table 3.3 Number of Trainees in the E&M Engineering Sector

Year of Survey	Number of Workers Employed	Number of Trainees	Percentage of Workers
1999	54 814	4 794	8.7%
2001	47 799	2 931	6.1%
2003	47 492	2 694	5.7%
2005	50 268	1 722	3.4%

2007	55 563	2 028	3.6%
2009	56 260	1 679	3.0%
2011	60 060	2 629	4.4%
2013	63 159	2 179	3.5%

Figure 3.2 Number of Trainees in the Electrical and Mechanical Engineering Sector



Business Outlook of the E&M Engineering Sector

3.8 Several rail projects were planned to complete from 2014 to 2017. The demand of E&M workers in the contracting branch of the E&M engineering sector is expected to reach its peak in 2014 and 2015.

3.9 The government's subsidizing schemes like "Operation Building Bright" and "Building Maintenance Grant Scheme for Elderly Owners" will continue to create more job opportunities for the servicing branch. A steady manpower growth is anticipated.

Reported Vacancies and Employers' One-year Manpower Forecast

3.10 The number of vacancies reported by employers of the E&M engineering sector kept on rising during the past two years (Table 3.4). Employers were also optimistic on the prospects of the sector as reflected by employers' one-year manpower forecast shown in Table 3.5.

Table 3.4 Changes on Number of Vacancies in the E&M Engineering Sector

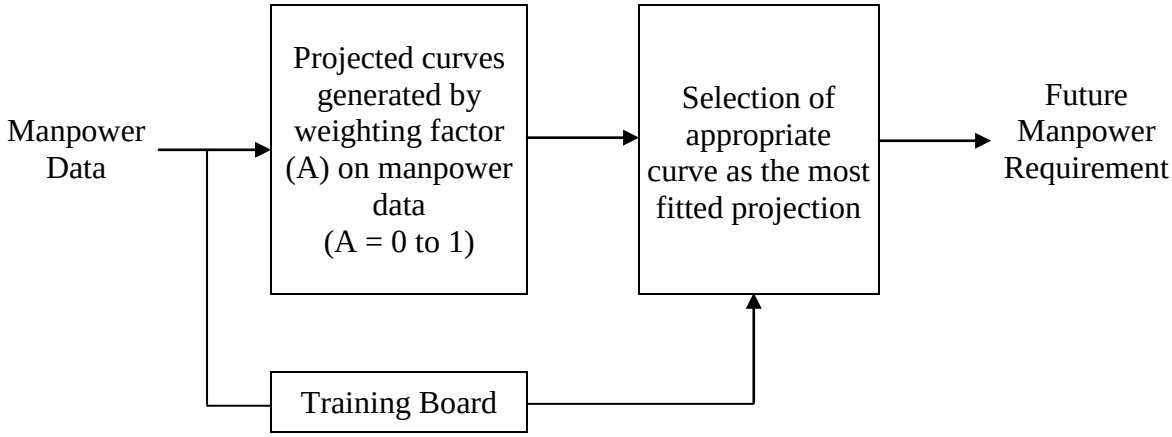
Job Level	No. of Vacancies in 2011	No. of Vacancies in 2013	Change during the past 2 years
Professional / Technologist	252	349	+38%
Technician	335	533	+59%
Tradesman / Craftsman	1 663	2 147	+29%
Semi-skilled / General Worker	94	696	+640%
Total	2 344	3 725	+59%

Table 3.5 Distribution of Vacancies and Employers' One-Year Manpower Forecast of the Electrical and Mechanical Engineering Sector

Skill Level	No. Employed at the Time of Survey	Reported No. of Vacancies		Employers' Forecast of Workers by Mid-2014
		Number	Percentage	
Professional/Technologist	9 042	349	3.9%	9 468 (+4.7%)
Technician	14 828	533	3.6%	15 412 (+3.9%)
Tradesman/Craftsman	36 362	2 147	5.9%	38 255 (+5.2%)
Semi-skilled/General Worker	2 927	696	23.8%	3 482 (+19.0%)
Total	63 159	3 725	5.9%	66 617 (+5.5%)

Projected Manpower Training Requirements for the E&M Engineering Sector

3.11 In previous rounds of manpower survey of the E&M engineering sector, the 'adaptive filtering method' (AFM) were frequently adopted for projecting the future manpower requirements. The AFM is a trend analysis technique. It is a 'curve fitting' method using weighted exponential smoothing. The method is illustrated in the following diagram:



Past manpower data are weighted. Heavier weightings are given to the data from more recent surveys. Thus the forecast is more dependent on the more recent manpower information. The degree of emphasis on the more recent survey data can however be varied by adjusting the weighting factor (A). Based on factors such as market trends, technological developments, and other social-economical factors, the Training Board decides on the most appropriate manpower projections.

3.12 In 1997 and 2001, the Training Board adopted the 'linear regression method' (LRM) which was based on the correlation of the manpower with construction costs of all types of buildings to project the manpower requirements of the contracting branch of the E&M engineering sector. The total future manpower requirements of the E&M engineering sector for each year was established by aggregating the manpower projection of the contracting branch and the manpower projection of the servicing branch which was derived by AFM.

3.13 In 2003, the Training Board adopted statistical modeling for projecting the manpower requirements. Statistical modeling was based on the correlation of the overall technical manpower employed in the E&M engineering sector with the principal component 'Gross value of construction works on building at construction sites (GVCW)'.

3.14 In 2005, 2007 and 2009, as a result of the shift of technical manpower distribution from new construction sub-sector to renovation and decoration sub-sector, the confidence level of the correlation of the overall technical manpower employed in the E&M engineering sector with the principal component GVCW fell below the recommended criteria for application. With consideration of the uncertainty on the volume of construction projects and external factors, as well as the availability of manpower projection methods, the Training Board decided to adopt the AFM for projecting the manpower requirements.

3.15 In 2011 and this round of manpower survey, with consideration of the factors similar to previous rounds of manpower surveys, the Training Board decided to adopt the AFM again for projecting the manpower requirements for year 2014 to 2016.

3.16 Based on the findings of the 2013 and previous rounds of manpower surveys, the manpower at different skill levels projected by AFM are shown in Figure 3.3 to Figure 3.5.

Figure 3.3 Manpower Projection of Professional/Technologist for the E&M Engineering Sector

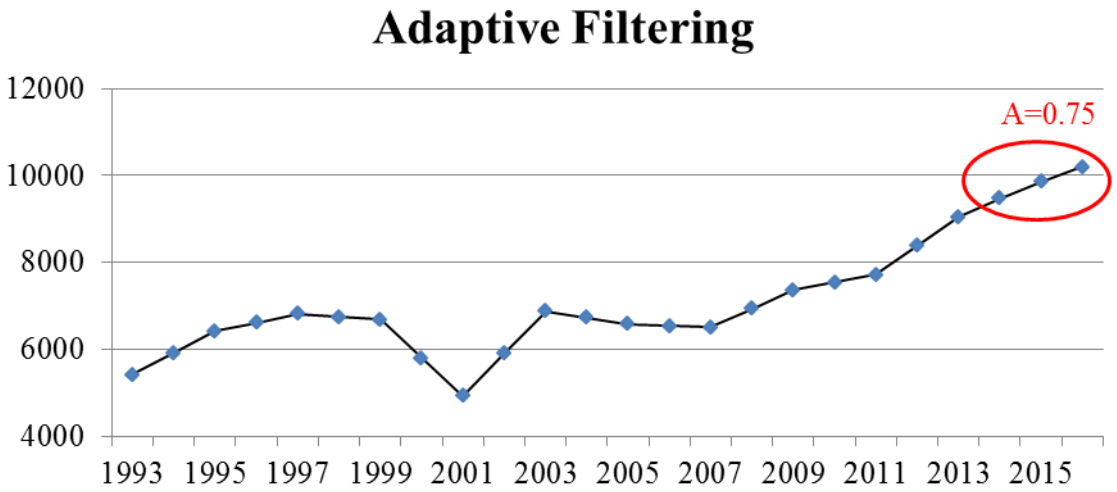


Figure 3.4 Manpower Projection of Technician for the E&M Engineering Sector

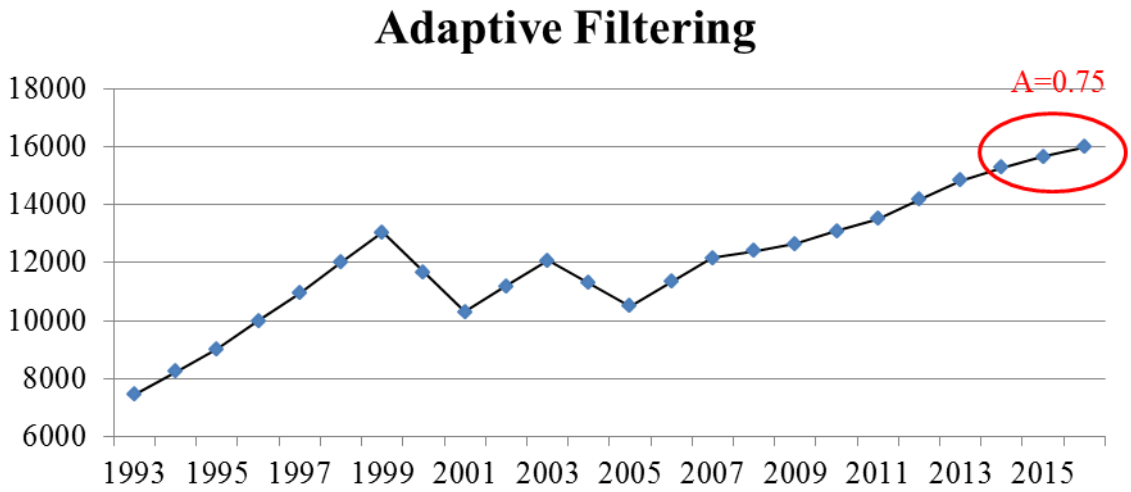
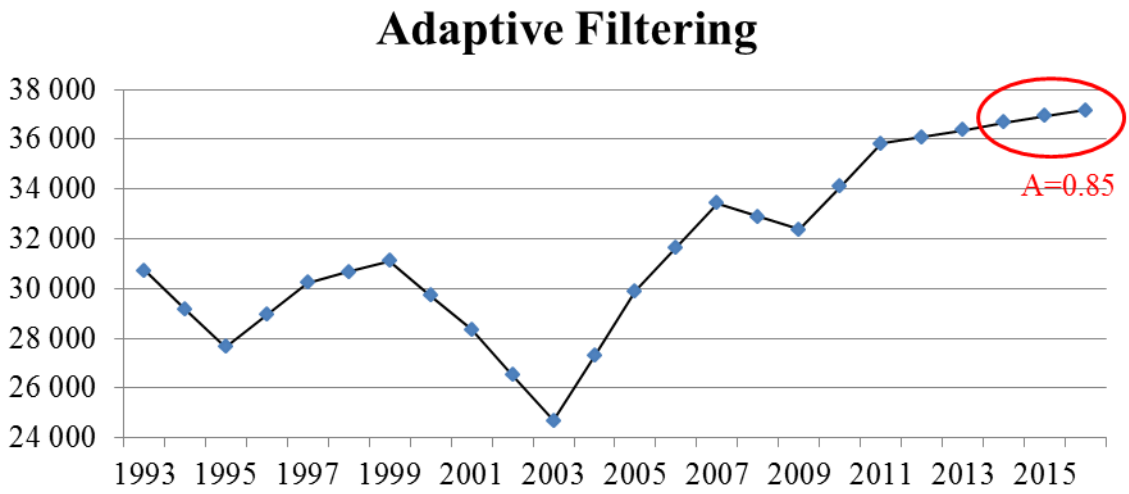


Figure 3.5 Manpower Projection of Tradesman/Craftsman for the E&M Engineering Sector



3.17 After taking into consideration the number of vacancies at the time of survey and employers' one-year manpower forecast figures, the Training Board decided to adopt A=0.75 for the manpower projection of professional/technologist and technician skill levels whereas A=0.85 was adopted for the tradesman/craftsman skill level. It should be noted that AFM is a trend analysis algorithm which assumes no dramatic change on the manpower supply model to cope with the sudden surge of manpower requirements for 2014 and 2015. Comparing AFM's projection with employers' one-year manpower forecast for the tradesman/craftsman skill level, there is a significant discrepancy of 1 584 workers for 2014.

3.18 Overall speaking, the percentage of technical workers of age over 50 in the E&M engineering sector was not particularly high (with the exception of fire service mechanical fitter, general welder, mechanical fitter, RACV mechanic (thermal insulation)), the Training Board recommended 3% be adopted for the wastage rate.

3.19 Based on the above considerations, the annual training requirements of manpower to cover the growth (projected with AFM) and the replacement for wastage (3%) at the professional/ technologist, technician and tradesman/craftsman skill levels from year 2014 to 2016 for the E&M engineering sector are calculated and shown in Table 3.6.

Table 3.6 Projected Annual Training Requirement of E&M Workers for the Electrical and Mechanical Engineering Sector

Skill Level	No. of Workers at the Time of Survey	Projected Average Annual Training Requirements for 2014 - 2016
Professional/Technologist	9 042	606 – 740 (*318 - 389*)[1]
Technician	14 828	762 - 931 (514 - 629)
Tradesman/Craftsman	36 362	1 234 – 1 509 (2 285 - 2792)

Shipbuilding and Ship Repair Sector

Manpower Changes

3.20 The manpower changes at professional/technologist, technician and tradesman/craftsman levels of the shipbuilding and ship repair sector from 1992 to 2013 are shown in Table 3.7 and Figure 3.6.

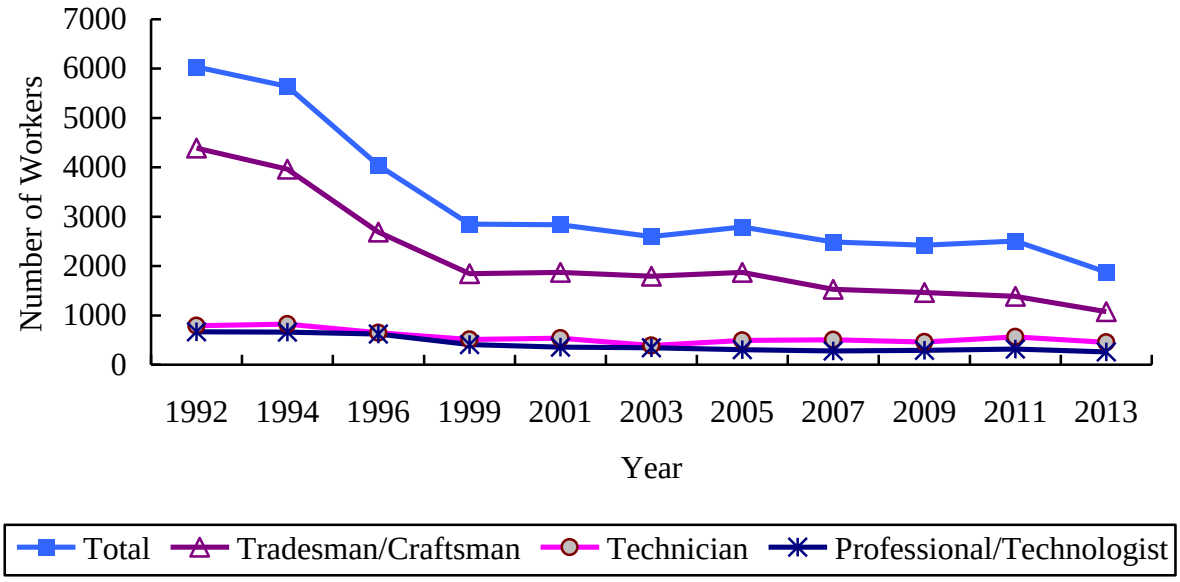
Table 3.7 E&M Manpower Changes of the Shipbuilding and Ship Repair Sector

Year of Survey	Professional/ Technologist	Technician	Tradesman/ Craftsman	Total Manpower[2]
1992	668	790	4 392	6 034
1994	659	825	3 966	5 641
1996	624	647	2 690	4 038
1999	407	513	1 844	2 849
2001	354	539	1 872	2 834
2003	344	387	1 791	2 597
2005	307	490	1 871	2 794
2007	281	502	1 526	2 488
2009	294	457	1 463	2 421
2011	315	566	1 387	2 509
2013	259	454	1 076	1 876

[1] The numbers in brackets were the annual training requirements for 2012-2014 projected by the E&M Services Training Board in 2011.

[2] including semi-skilled / general workers

Figure 3.6 Manpower Changes of the Shipbuilding and Ship Repair Sector between 1992 and 2013



3.21 The figures indicate that the workforce of the sector had significant dropped 13.5% per annum during the past two years. The number of vacancies decreased from 116 to 107 during this period. Still, it amounted to 5.7% of the workforce and half of the principal jobs had vacancy rates of 5% or higher. Five principal jobs, namely (i) Ship Designer/ Naval Architect, (ii) Draughtsman, (iii) Electrical Engineering Technician, (iv) Supervisor/ Foreman and (v) Welder had vacancy rates of higher than 10%.

Business Outlook of the Shipbuilding and Ship Repair Sector

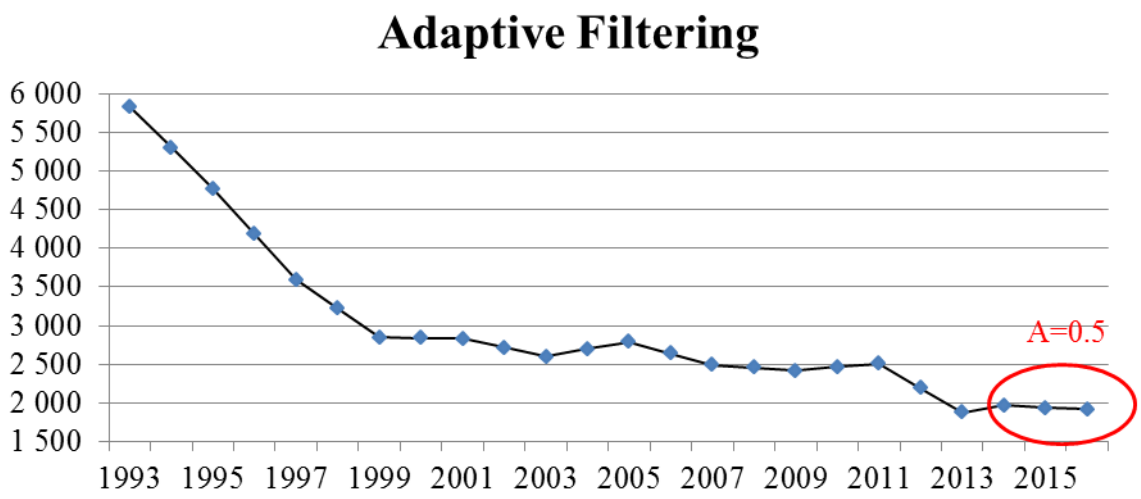
3.22 The shipbuilding and ship repair sector has been encountering fierce competitions from Mainland as well as difficulties to retain their workers and attract new bloods. Nevertheless, employers remained optimistic and anticipated a positive manpower growth of 3.6% by mid-2014.

Projected Manpower Training Requirements for the Shipbuilding and Ship Repair Sector

3.23 Considering that the size of the workforce is relatively small, the Training Board applied 'adaptive filtering method' (AFM) to the total manpower of the sector for manpower forecast. The result is shown in Figure 3.7.

3.24 The Training Board decided to adopt A=0.5 as to dilute the abrupt change in manpower during the past 2 years and better match employers' one-year forecast figures.

Figure 3.7 Manpower Projection for the Shipbuilding and Ship Repair Sector



3.25 The annual wastage rate of 6% was applied to the Shipbuilding and Ship Repair sector since 2001 as to reflect the aging problem of the workforce. Although many aged workers have already retired in recent years, the wastage rate of the sector is still relatively high as some workers moved to the E&M engineering sector or the construction industry. The Training Board decided to keep the annual wastage rate at 6% for the shipbuilding and ship repair sector.

3.26 Based on the above considerations, the Training Board has determined the average annual training requirements of E&M manpower for the shipbuilding and ship repair sector from 2014 to 2016 which are shown in Table 3.8.

Table 3.8 Projected Annual E&M Manpower Training Requirement of the Shipbuilding and Ship Repair Sector

Skill Level	No. of Workers at the Date of Survey	Projected Average Annual Training Requirements for 2014 - 2016
Professional/Technologist	259	16 – 19 *(22 – 27)*[1]
Technician	454	28 – 34 *(40 – 49)*
Tradesman/Craftsman	1 076	66 – 80 *(98 – 120)*

[1] The numbers in brackets were the annual training requirements for 2012-2014 projected by the E&M Services Training Board in 2011

Gas Sector

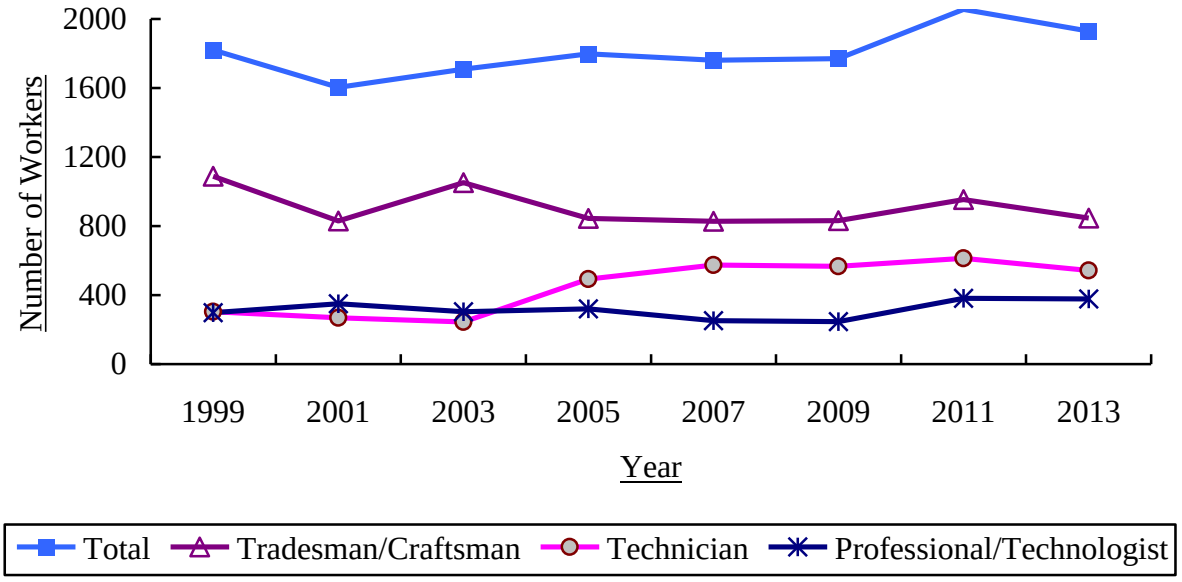
Manpower Changes

3.27 The manpower changes at the three skill levels of the gas sector from the first survey in 1999 to this round are shown in Table 3.9 and Figure 3.8.

Table 3.9 E&M Manpower Changes of the Gas Sector

Year of Survey	Professional/ Technologist	Technician	Tradesman/ Craftsman	Total Manpower[1]
1999	298	304	1 088	1 820
2001	350	268	830	1 604
2003	304	245	1 052	1 710
2005	320	493	845	1 799
2007	252	575	828	1 762
2009	246	567	832	1 770
2011	381	613	953	2 056
2013	378	542	846	1 929

Figure 3.8 E&M Manpower Changes of the Gas Sector



3.28 The figures show that the overall manpower of the gas sector had no significant change during the past two years.

[1] including semi-skilled / general workers

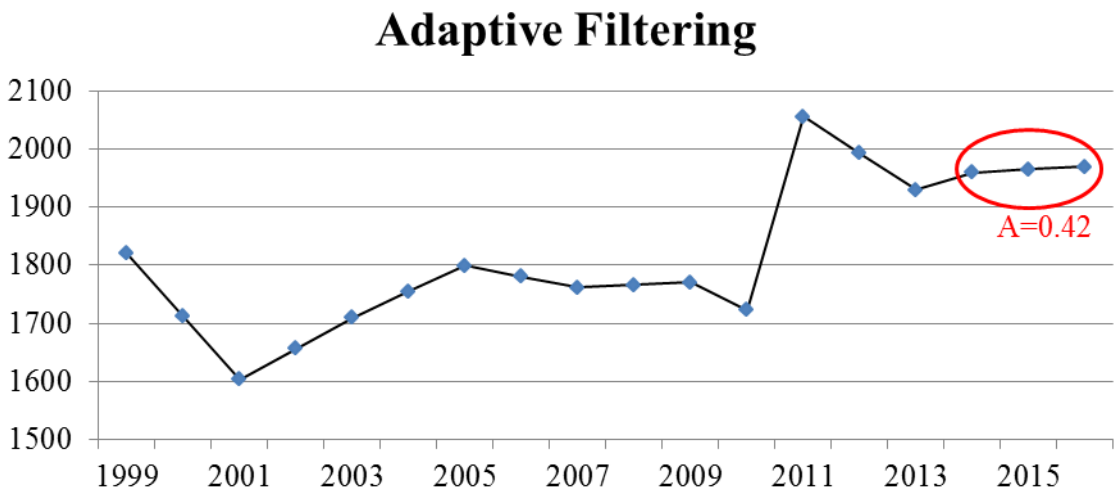
Business Outlook of the Gas Sector

3.29 With the significant increase of public housing supply in FY2015/16 and FY2016/17, it is anticipated that there will be a positive manpower growth in the Gas sector.

Projected Manpower Training Requirements for the Gas Sector

3.30 Considering that the size of the workforce is relatively small, the Training Board applied 'adaptive filtering method' (AFM) to the total manpower of the sector for manpower forecast. The result is shown in Figure 3.9

Figure 3.9 Manpower Projection for the Gas Sector



3.31 The Training Board decided to adopt the best fitted curve (A=0.42) and 3% annual wastage rate for projecting the future training requirements from 2014 to 2016. The calculated results are shown in Table 3.10.

Table 3.10 Projected Annual E&M Manpower Training Requirement of the Gas Sector

Skill Level	No. of Workers at the Time of Survey	Projected Average Annual Training Requirements for 2014 - 2016
Professional/Technologist	378	13 – 15 (*15 - 19*)[1]
Technician	542	18 – 22 (*25 - 30*)
Tradesman/Craftsman	846	28 – 35 (*39 - 47*)

3.32 The Training Board will conduct another manpower survey in 2015 to review and update the manpower requirements of the electrical and mechanical services industry.

[1] The numbers in brackets were the annual training requirements for 2012-2014 projected by the E&M Services Training Board in 2011

SECTION IV

RECOMMENDATIONS

4.1 With consideration on the local economic situation as well as the business nature of the electrical and mechanical (E&M) services industry, the Training Board anticipates the demand for properly trained technical manpower for the three sectors of the industry from 2014 to 2016 will be as follows:

(i) E&M engineering sector: several rail projects are planned to complete in the coming few years, including:

Rail Project		Year of Completion
a.	West Island Line	2014
b.	Guangzhou - Shenzhen - Hong Kong Express Rail Link	2015
c.	Kwun Tong Line Extension	2015
d.	South Island Line (East)	2015
e.	Shatin to Central Link	2017

Considering that E&M contracting works are normally conducted during the last phase of these projects, i.e. 18 months before the completion dates, it is anticipated that there will be an abrupt surge of manpower demand in 2014 and 2015. After that, some of the workers will be engaged in new building works and some others will be absorbed by the servicing branches of the E&M engineering sector.

(ii) Shipbuilding and ship repair sector: this sector experienced a hard time during the past 2 years. There was fierce business competition from Mainland competitors. Many experienced workers retired or switched to the E&M engineering sector or the construction industry. Employers have been offering better remuneration packages to retain their workers. According to the survey findings, a positive manpower growth (+3.6%) in 2014 was expected, indicating that employers were optimistic about the prospect of the sector.

(iii) Gas sector: according to the forecast by the Hong Kong Housing Authority and the Rating and Valuation Department, there will be a consistent growth in the supply of public and private housing for the coming few years. In particular, in FY2015/16 and FY2016/17, there will be a big increment in the supply of public housing, from about

13 000 flats per year (for FY2012/13 and FY2014/15) to 20 500 flats per year. With the growth in new residential flats, the demand for technical workers in the Gas sector should rise.

4.2 Manpower training is a long-term investment. To become a professional/ technologist, a university graduate is required to receive 2 years recognised on-the-job training and a minimum of 2 years experience in a responsible position. For a technician or a tradesman/craftsman, the training normally takes 2 to 4 years. Properly trained manpower is particularly crucial to the E&M services industry which has stringent requirements on quality and safety at work. If the industry is to secure an adequate supply of skilled manpower, the industry should embark on organized manpower training programmes at the scale recommended in paragraphs 3.19, 3.26 and 3.31. The breakdowns into the principal jobs for the three sectors are given in Appendices 16, 17 and 18 respectively.

4.3 For manpower planning at the company level, employers can take Table 4.1 as reference which expresses the number of trainees, as recommended by the Adaptive Filtering Method (AFM), in professional/technologist, technician and tradesman/craftsman levels in terms of the existing manpower of these job levels.

Table 4.1 Annual Intake of Trainees by Job Level and by Sector

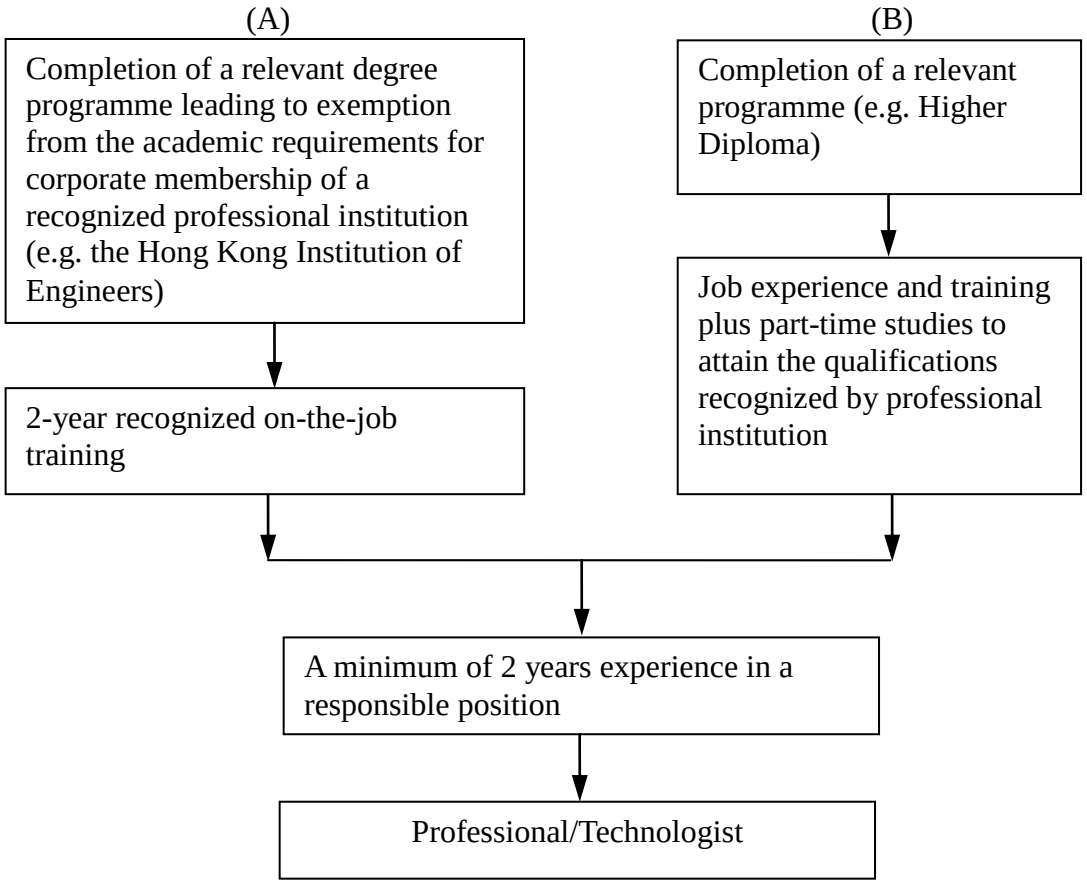
	Professional/Technologist	Technician	Tradesman/Craftsman
E&M Engineering Sector	7.4%	5.7%	3.8%
Shipbuilding and Ship Repair Sector	6.8%	6.8%	6.8%
Gas Sector	3.7%	3.7%	3.7%

Training of Professionals/Technologists

4.4 A professional/technologist is a person who has the qualification and experience required for corporate membership of a professional institution. He should be competent in analyzing and solving a wide range of technical problems. Furthermore, he should be able to assume personal responsibility for the development and application of engineering principles, to exercise original thought and judgement, to keep abreast of technology, to apply the latest techniques and to supervise/develop his sub-ordinates.

4.5 Professionals/technologists play an important role in bringing about improvements in management and technological innovations. The Training Board recommends that professional/technologists should be trained as shown in Figure 4.1.

Figure 4.1: Training of Professionals/Technologists



4.6 With reference to the figures in Appendices 16 to 18, the projected average annual training requirements of principal jobs at professionals/technologists level in major disciplines of the E&M services industry, from 2014 to 2016, are listed in Table 4.2.

Table 4.2: Projected Average Annual Training Requirement of Professionals/Technologists in Major Disciplines of the E&M Services Industry from 2014 to 2016

Job Title	No. Employed at 2013 Manpower Survey	Projected Average Annual Training Requirement
Building Services Engineer	932	62 - 76
Electrical Engineer		
(E&M Engineering Sector)	2 455	164 - 201
(Shipbuilding & Repair Sector)	22	1 - 2
Refrigeration/Air-conditioning/ Ventilation Engineer	1 190	80 - 97
Mechanical Engineer		
(E&M Engineering Sector)	664	45 - 54
(Shipbuilding & Repair Sector)[1]	131	8 - 9
(Gas Sector)	99	3 - 4
Plumbing and Drainage Engineer	153	10 - 13
Lift/Escalator Engineer	324	22 - 27
Fire Services Engineer	477	32 - 39
Control and Instrumentation Engineer	124	8 - 10
Engineering Manager[2]		
(E&M Engineering Sector)	1 469	98 - 120
(Shipbuilding & Repair Sector)	82	5 - 6
Safety Officer		
(E&M Engineering Sector)	143	10 - 12
(Shipbuilding & Repair Sector)	13	1
(Gas Sector)	20	1
Aircraft Maintenance Engineer[3]	504	34 - 41
Gas Engineer	252	9 - 10
Total	9 054	593 - 723

[1] Including Marine Engineer
[2] The training requirement is to fill up the vacancies left by engineers who are promoted to managers.
[3] The aircraft maintenance sector informed after the survey that due to business growth, the estimated training requirement for Aircraft Maintenance Engineer would be 80 for 2014.

4.7 Table 4.3 lists the estimated number of graduates from full-time programmes of local universities in major E&M disciplines. Due to the decline in demand, local universities no longer offer degree programmes in marine engineering. Anyway, graduates from mechanical engineering programmes can take up the post of marine engineers.

Table 4.3: Estimated No. of Local University Graduates (Full-time Degree Programmes) from 2013 to 2015 for Major Disciplines of the E&M Services Industry

		Estimated No. of Local Graduates		
Institution	Programme	2013	2014	2015
City University of Hong Kong, HK Polytechnic University, The University of Hong Kong	B Eng - Building Services Engineering	105	110	120
HK Polytechnic University, The University of Hong Kong	B Eng - Electrical Engineering	85	95	95
HK Polytechnic University, The University of Hong Kong, HK University of Science & Technology	B Eng - Mechanical Engineering	210	180	250
	Total	400	385	465

4.8 It is found that the supply of local university graduates from full-time programmes can fill up about 60% to 70% of the projected training requirements of major disciplines of the E&M services industry in 2014 and 2015 respectively. The shortage is to be supplemented by overseas graduates and workers at technician level who upgrade themselves to professionals/technologists through part-time degree programmes.

Engineering Graduate Training Scheme (EGTS)

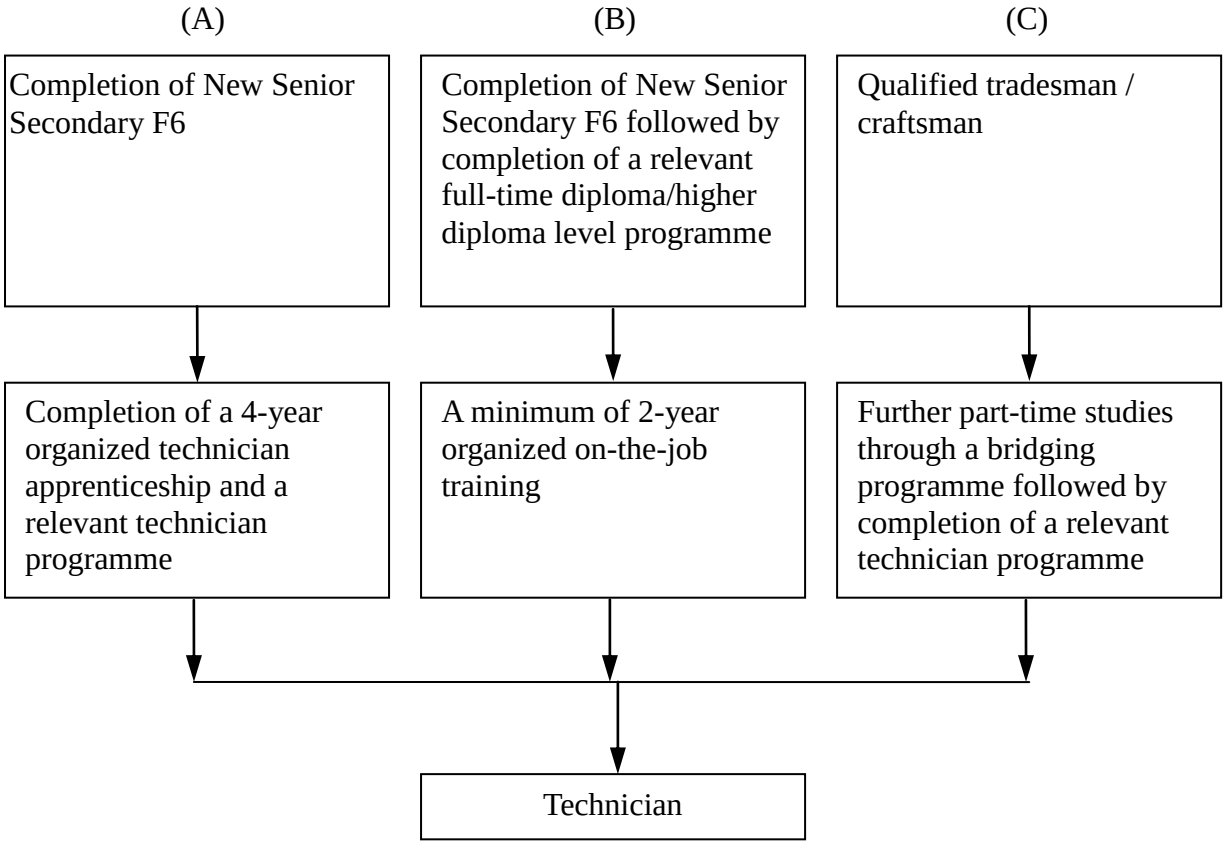
4.9 To bring about more well-structured practical training opportunities for engineering graduates, the Committee on Technologist Training of the Vocational Training Council is operating a subsidy scheme in providing engineering graduates with 18 months of practical training of a standard acceptable to the Hong Kong Institution of Engineers for corporate membership. Each graduate receiving training under the scheme is granted a subsidy through his employer as part of his salary. The Technologist Training Unit of the Council offers a free placement service to help employers recruit graduates and to provide assistance on all other matters concerning the training of engineering graduates. The Training Board strongly recommends employers to make use of the scheme in training their engineers.

Training of Technicians

4.10 A technician is one who occupies a position between the professional/ technologist and the tradesman/craftsman. His education, training and practical experience enable him to apply proven techniques and procedures to carry out technical tasks, normally under the guidance of a professional/technologist.

4.11 The three normal routes for training technicians are listed in Figure 4.2.

Figure 4.2: Training of Technicians



4.12 The Hong Kong Polytechnic University and City University of Hong Kong offer full-time Higher Diploma / Associate Degree technician level programmes in building services engineering and electrical engineering.

4.13 The Hong Kong Institute of Vocational Education (IVE) of the Vocational Training Council offers full-time and part-time Higher Diploma technician level programmes in aircraft maintenance engineering, electrical engineering, mechanical engineering and building services engineering.

4.14 The Youth College (YC) of the Vocational Training Council offers Diploma in Vocational Education (DVE) Programme in aircraft maintenance, electrical engineering, mechanical engineering and building services engineering. Graduates with DVE or

Technician Foundation Certificate (TFC) awards may take up technician trainee posts in the E&M services industry. Employers are urged to employ these graduates as technician trainees, technician apprentices, or supervisor trainees because they have received proper basic training before joining the industry.

4.15 With reference to Appendices 16 to 18, the projected average annual training requirements of principal jobs at technician level in major disciplines of the E&M services industry, from 2014 to 2016, are listed in table 4.4.

Table 4.4: Projected Average Annual Training Requirement of Technicians in Major Disciplines of the E&M Services Industry from 2014 to 2016

Job Title	No. Employed at 2013 Manpower Survey	Projected Average Annual Training Requirement
Supervisor		
(E&M Engineering Sector)	3 755	194 - 237
(Shipbuilding & Repair Sector)	179	11 - 13
(Gas Sector)	174	6 - 7
Building Services Technician	1 582	81 - 99
Draughtsman	495	25 - 31
Electrical Engineering Technician		
(E&M Engineering Sector)	2 227	114 - 140
(Shipbuilding & Repair Sector)	36	2 - 3
(Gas Sector)	13	1
Refrigeration/Air-conditioning/ Ventilation Technician	1 406	72 - 88
Mechanical Engineering Technician		
(E&M Engineering Sector)	829	43 - 52
(Shipbuilding & Repair Sector)	202	12 - 15
Lift/Escalator Technician	838	43 - 53
Fire Services Technician	797	41 - 50
Electrical Instrument & Meter Technician	50	3
Office Equipment Service Technician	85	4 - 5
Assistant Safety Officer/Safety Supervisor		
(E&M Engineering Sector)	68	3 - 4
(Shipbuilding & Repair Sector)	10	1
(Gas Sector)	33	1

Aircraft Maintenance Technician[1]	370	19 - 23
Rolling Stock Technician	675	35 - 42
Railway Signalling Technician	251	13 - 16
Gas Engineering Technician	314	10 - 13
Total	14 389	734 - 897

4.16 The estimated supply of technicians from 2013 to 2015 for key E&M trades is shown in Table 4.5. In view of small market size, there is no specific technician programme in gas engineering offered by local institutions. The majority of existing engineering technicians in the gas sector were graduates from building services or mechanical engineering programmes. Similarly, since 2004, the technician programmes for marine engineering and maritime technology had ceased because of diminishing demand. However, graduates from electrical or mechanical engineering technician programmes can take up jobs as shipbuilding and ship repair technicians.

Table 4.5: Estimated Local Supply of Technicians for Key E&M Trades from 2013 to 2015

		Estimated No. of Graduates Entering E&M Services Industry as Technicians		
Institution	Programme	2013	2014	2015
HK Polytechnic University, City University of Hong Kong	Full-time HD /ASc programmes[(a)]:			
	- Building Services Engineering	65	60	55
	- Electrical Engineering	20	15	15
	Sub-total	85	75	70
IVE	Full-time HD programmes[(b)]:			
	- Aircraft Maintenance Engineering	35	80	75
	- Building Services Engineering	110	165	170
	- Electrical Engineering	315	385	420
	- Mechanical Engineering	145	300	170
	Sub-total	605	930	835

[1] The aircraft maintenance sector informed after the survey that due to business growth, the estimated training requirement for Aircraft Maintenance Technician would be 100 for 2014.

Youth College	Full-time DVE Programme[(c)] (graduates with DVE award):			
	- Aircraft Maintenance	35	40	40
	- Building Services Engineering (specialized in Air-conditioning & Refrigeration or Building Services)	70	50	50
	- Electrical Engineering (specialized in Electrical Installation or Lift & Escalator)	85	40	40
	- Mechanical Engineering	70	35	35
	Sub-total	260	165	165
Construction Industry Council	Full-time Diploma programme:			
	- Building Services Supervision	35	35	35
Grand Total		985	1 205	1 105

Note

(a) The numbers refer to the 40% Higher Diploma / Associate Degree graduates from the universities who choose to enter employment upon graduation. The remaining 60% are assumed to pursue further study in Degree programmes.

(b) Students' further study rate and employment rate in 2011 and 2012 have been referenced when determining the estimates. The numbers in Table 4.5 reflect the actual number of IVE graduates who may join the E&M Services Industry as technicians.

(c) The majority of graduates with the DVE award are S6 intakes. The numbers in Table 4.5 were estimated based on the further study rate and employment rate in AY2012/13.

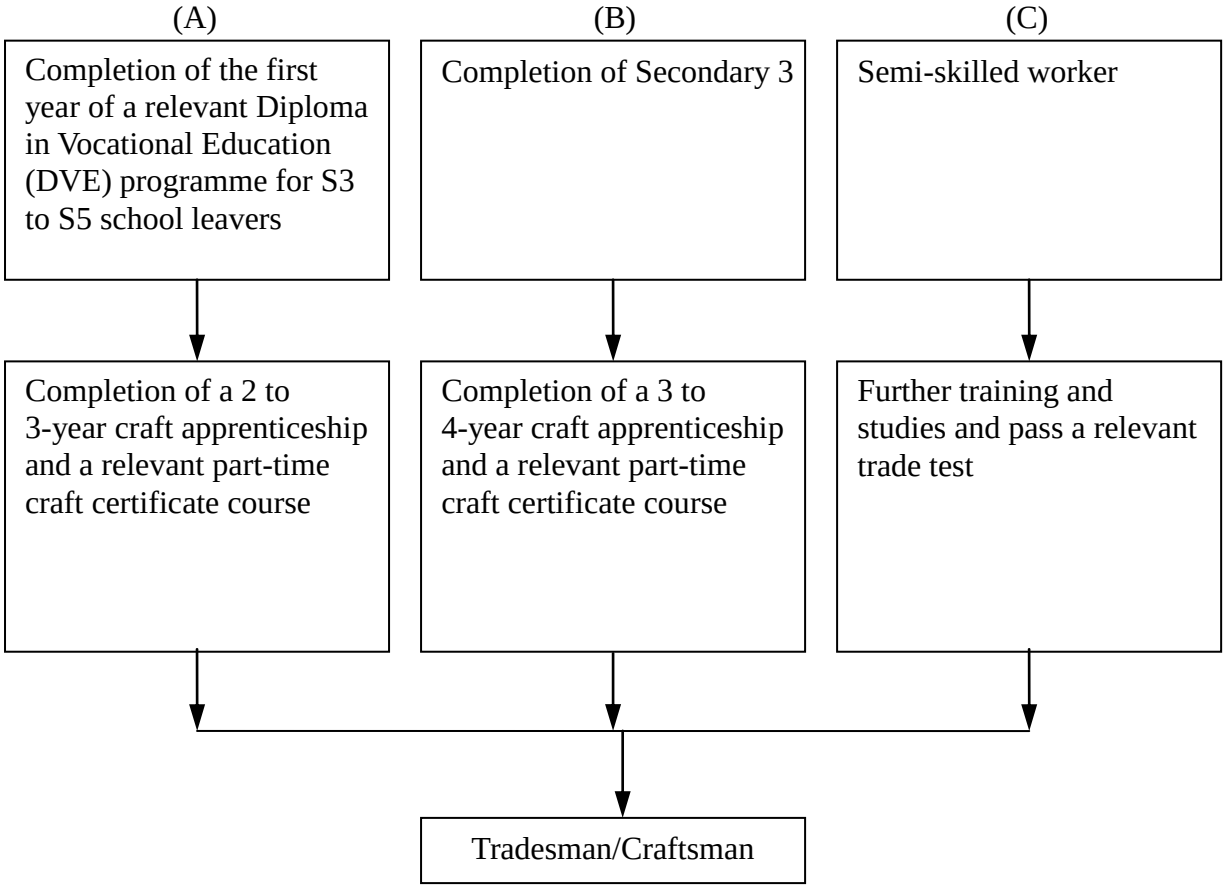
4.17 From Tables 4.4 and 4.5, it looks that the average output of graduates from technician programmes in major disciplines of the E&M services industry exceeds the projected training requirements in 2014 and 2015, for about 35%. Nevertheless, it should be noted that there are some employers, in particular those from the estate and property management sector, who do not fall into the scope of this survey but actually employ substantial number of graduates studying E&M engineering. Secondly, some DVE graduates may join the industry as craft apprentices, instead of technician apprentices. Besides, some graduates may choose jobs which are not related to their studies in E&M engineering. Taking all these factors into account, the supply of graduates from technician programmes is considered as roughly matching with the market demand.

Training of Tradesmen/Craftsmen

4.18 A tradesman/craftsman is a skilled worker in a particular occupation, trade or craft. He is expected to apply a wide range of skills to his work with minimum direction and supervision. He requires not only practical skills, but also related theoretical knowledge to enable him to adapt himself to new technologies. The Training Board recommends that young persons should join the apprenticeship scheme which ensures that they will receive the necessary practical training and technical education to become qualified tradesmen/ craftsmen.

4.19 The common routes for training tradesmen/craftsmen are shown in Figure 4.3.

Figure 4.3: Training of Tradesmen/Craftsmen



4.20 The Training Board recommends route (A) because training period is shorter and the apprentices who have already undergone basic training will be productive right from the start of their apprenticeship.

4.21 Craft level training programmes in various trades of the E&M services industry are mainly offered by the Youth College of the Vocational Training Council for S3 to S5 school leavers. Apart from the full-time DVE programme (i.e. pre-employment training programme), Craft Certificate courses are offered in part-time day mode for registered craft apprentices. The Construction Industry Council (CIC) also offers two Basic Craft courses

on E&M trades, namely electrical installation, plumbing and pipe-fitting.

4.22 With reference to Appendices 16 to 18, the projected average annual training requirements of principal jobs at tradesman/craftsman level in major disciplines of the E&M services industry, from 2014 to 2016, are listed in Table 4.6. As mentioned in Section 3, there is a significant discrepancy (1 584 workers) between AFM (a trend analysis algorithm) and employers' forecast for the manpower at tradesman / craftsman skill level for 2014. The training requirements for both projection methods are presented in Table 4.6.

Table 4.6: Projected Average Annual Training Requirement[1] of Tradesmen/Craftsmen in Major Disciplines of the E&M Services Industry from 2014 to 2016

Job Title	No. Employed at 2013 Manpower Survey	Projected Average Annual Training Requirement	
Foreman/Chargehand	4 459	151 – 185	*(345 – 380)*
Building Services Mechanic	2 156	73 – 89	*(167 – 183)*
Electrician/Electrical Fitter			
(E&M Engineering Sector)	9 026	307 – 376	*(699 – 769)*
(Shipbuilding & Ship Repair Sector)	112	7 – 8	(7 – 8)
Control Panel Assembler	254	9 – 11	*(20 – 22)*
Electrical Wireman	1 177	40 – 49	*(91 – 100)*
Refrigeration/Air-conditioning/ Ventilation Mechanic			
(E&M Engineering Sector)			
- Electrical Control	3 500	119 – 145	*(271 – 298)*
- Unitary System	1 728	59 – 72	*(134 – 147)*
- Air System	660	22 – 27	*(51 – 56)*
- Thermal Insulation	292	10 – 12	*(23 – 25)*
- Water System	251	9 – 10	*(19 – 21)*
(Shipbuilding & Ship Repair Sector)	16	1 – 2	(1 – 2)
Plumber and Pipe Fitter			
(E&M Engineering Sector)	481	16 – 20	*(37 – 41)*
(Shipbuilding & Ship Repair Sector)	77	5 – 6	(5 – 6)
Mechanical Fitter/Machinist			
(E&M Engineering Sector)	1 814	62 - 75	*(141 – 154)*
(Shipbuilding & Ship Repair Sector)	437	26 - 33	(26 – 33)
(Gas Sector)	54	2 - 3	(2 – 3)

[1] The projected figures by the AFM algorithm, i.e. trend analysis, and employers' forecast in 2014 (shown in brackets) are both presented for comparison.

Job Title	No. Employed at 2013 Manpower Survey	Projected Average Annual Training Requirement	
Lift/Escalator Mechanic	2 493	85 – 103	*(193 – 212)*
Fire Services Mechanical Fitter	654	22 – 27	*(51 – 56)*
Fire Services Electrical Fitter	1 122	38 – 47	*(87 – 95)*
Cable Jointer (Power)	237	8 – 10	*(18 – 20)*
Overhead Linesman	362	12 – 15	*(28 – 31)*
Electrical Appliances Service Mechanic	769	26 – 32	*(60 – 65)*
Welder			
(E&M Engineering Sector)	61	2 – 3	*(5)*
(Shipbuilding & Ship Repair Sector)	53	3 – 4	(3 – 4)
Aircraft Maintenance Mechanic[1]	1 811	61 – 75	*(140 – 154)*
Rolling Stock Tradesman	604	20 – 25	*(47 – 51)*
Railway Signalling Tradesman	15	1	*(1)*
Ship Classification Qualified Welder	20	1	(1)
Gas Distribution Fitter (LPG)	73	2 – 3	(2 – 3)
Gas Distribution Fitter (Town Gas)	205	7 – 8	(7 – 8)
Gas Utilization Fitter (Domestic)	383	13 – 16	(13 – 16)
Gas Utilization Fitter (Non-domestic)	114	4 – 5	(4 – 5)
Total	35 470	1 223 – 1 498	*(2 699 – 2 975)*

4.23 Table 4.7 show the estimated average annual supply of tradesmen/craftsmen trainees for key E&M trades from full-time training programmes in 2013 to 2015. It is expected that most of the graduates will work as craft apprentices and continue to receive formal training by enrolling in part-time-day mode Craft Certificate courses. There are craft apprentices who enter into employment without studying in full-time DVE programme before (i.e. path B in Figure 4.3). Based on the estimated enrolment figures of Craft Certificate courses, the overall supply of craftsman / tradesman trainees in 2013 to 2015 is listed in Table 4.8.

[1] The aircraft maintenance sector informed after the survey that due to business growth, the estimated training requirement for Aircraft Maintenance Mechanic would be 380 for 2014.

Table 4.7: Estimated Local Supply of Tradesman/Craftsman Trainees for Key E&M Trades from Full-time Training Programmes in 2013 to 2015

Institution	Programme	Estimated No. of Graduates Entering E&M Services Industry as Craftsmen/Tradesmen Trainees 2013	2014	2015
Youth College	DVE (Building Services Engineering Stream) – specialized in Air-conditioning & Refrigeration or Building Services	105	145	145
	DVE (Electrical Engineering Stream) – specialized in Electrical Installation or Lift & Escalator	125	195	195
	DVE (Mechanical Engineering Stream)	55	90	90
	DVE (Gas Services Engineering Stream)	25	30	30
	Sub-total	310	460	460
Construction Industry Council	Basic Craft Programmes:			
	- Electrical Installation	90	95	95
	- Plumbing and Pipe-fitting	20	75	95
	Sub-total	110	170	190
Grand Total		420	630	650

Note

(a) The number of graduates entering job market in 2013 was based on the placement figures reported by the Pro-Act Training and Development Centres.

(b) The number of graduates entering job market in 2014 and 2015 was projected based on the enrolment figures of AY2013/14 when the Trainee Subsidy Scheme was first introduced. It is estimated that some 60% to 70% of the students will join the E&M Services Industry after one year full-time study in the DVE programme.

Table 4.8: Estimated Number of Newly Registered Apprentices of E&M Trades Enrolling in PTD Mode Craft Certificate Courses in 2013 to 2015

Institution	Programme	Estimated Annual Enrolments
Youth College	Craft Certificate in Air-conditioning & Refrigeration	210
	Craft Certificate in Building Services	85
	Craft Certificate in Electrical Engineering	300
	Craft Certificate in Lift and Escalator Engineering	90
	Craft Certificate in Mechanical Engineering	240
	Craft Certificate in Gas Services Engineering	25
	Total	950

Note
(a) The projection is based on the enrolment figures of AY2013/14.
(b) The numbers include tradesman/craftsman trainees in paths (A) and (B) of Figure 4.3.

4.24 Comparing the numbers in Table 4.6 and Table 4.8, it is found that the estimated number of newly-registered craft apprentices of E&M trades in 2014 and 2015 amounts to 70% of AFM's projected annual training requirement. When compared to employers' forecast figure for 2014, the manpower supply can only fill up 33% of the demand. Although there are some qualified tradesmen/craftsmen who attained their qualifications through on-the-job training / skills upgrading training or passing relevant trade tests, the supply is still considered to be inadequate for supporting the rail projects in 2014 and 2015.

4.25 To provide sufficient qualified tradesmen/craftsmen to the E&M services industry for sustainable development, the Training Board recommends training providers to increase their pre-employment training places for E&M disciplines and offer more skills upgrading programmes for in-service semi-skilled workers so that they can migrate to qualified tradesmen/craftsmen.

4.26 Considering that youngsters have more choices nowadays, employers should keep on promoting the image and prospects of the industry so that more secondary school leavers will consider E&M services industry for their career.

Training of Semi-skilled/General Workers

4.27 Semi-skilled/general workers are normally assigned to repetitive work requiring only a narrow range of skills and short period of training. In view of the manpower shortage in the coming years, the Training Board recommends more semi-skilled / general workers be trained up to help relieving the workload of tradesmen/craftsmen. This can be achieved by means of retraining programmes and short programmes. Due to the relatively unpleasant working environment and more demanding knowledge and skills, not many people will consider E&M services as their choice for retraining. The Training Board recommends more attractive incentive/subsidizing schemes be offered so as to boost the enrolment of the retraining programmes. A good example was CIC's Contractor Cooperative Training Scheme (CCTS) which was extended to cover E&M trades with some 1 100 training places offered in FY2013/14.

4.28 In an increasingly competitive environment, it is imperative for employers to provide continuous on-the-job upgrading/updating training, and job enrichment to retain and raise the productivity of their semi-skilled/general workers. The Training Board recommends that the HKSAR Government should consider providing more resources for upgrading training of semi-skilled workers and unqualified craftsmen to improve their work quality and hence the safety and quality standard of work carried out by the E&M services industry. The Skills Upgrading Scheme (now known as SUS-Plus) established in 2001 may help semi-skilled/general workers in the industry to upgrade their skills and technical knowledge with a view to improving their competitiveness and job security.

Pro-Act Training and Development Centres of the Vocational Training Council

4.29 The Pro-Act(Electrical), Pro-Act(Mechanical), Pro-Act(Gas) and Pro-Act(Welding) Centres of the Vocational Training Council provide the following types of training and skill assessment for the E&M services industry:

(a) Credit based multi-entry/multi-exit training programmes on vocational education in E&M disciplines at technician and craft levels for new entrants of the industry.

(b) Upgrading programmes for upgrading and updating the knowledge and skills of in-service personnel in the industry.

(c) Basic practical training for engineering students of the tertiary institutions and engineering graduate trainees.

(d) Trade testing for skill assessment of in-service workers.

Trade Testing for Electricians, Lift and Escalator Workers

4.30 The Vocational Training Council has been operating a voluntary trade testing and certification system since 1989. The objectives of the trade testing are:

(a) to help industry in the selection of workers,

(b) to facilitate workers having had no formal training acquiring recognized qualifications,

(c) to set standards for skilled workers and to enhance their status,

(d) to facilitate the recognition of skill standards for licensing/registration purpose with the agreement of relevant authorities, and

(e) to facilitate the establishment of skill hierarchy for the career advancement of skilled workers.

4.31 The E&M Services Training Board is responsible for designing and conducting trade tests for electricians. The trade test certificate of electrician has been recognized by the government for the purpose of registration of Grade A and Grade R (Air-conditioning) electrical workers respectively.

4.32 To support workers' registration under the Lifts and Escalators Ordinance (Cap. 618), the E&M Services Training Board launched 2 new trade tests for lift mechanics and escalator mechanics respectively on 17 December 2012.

4.33 Employers are urged to encourage their electricians, lift and escalator workers to take the trade test so that their tradesman/craftsman status can be formally recognized.

Specified Training Courses and Trade Tests for Construction Workers of E&M Trades

4.34 CIC offers Specified Training Courses (STC) to registered skilled workers (provisional) under the Construction Workers Registration Ordinance (CWRO) for equipping them for registration before expiry of the 3-year provisional period.

4.35 Before September 2010, VTC was entrusted by CIC to conduct trade tests (TT) and intermediate trade tests (ITT) for 12 E&M trades of the construction industry. Although these TT and ITT are now conducted by CIC, Pro-Act Centres of VTC continue to train up DVE students to attempt ITT so that they can be registered as qualified workers under the CWRO.

4.36 E&M contractors for construction works are urged to encourage their E&M workers to take the TT and ITT, as well as their registered skilled workers (provisional) to attend the specified training courses, so as to meet the CWRO requirements.

New Technology Training Scheme (NTTS)

4.37 The New Technology Training Scheme provides financial assistance to local companies up to a maximum of 50% of the training cost for their employees to be trained in new technologies. The Scheme covers various types of training mode including overseas training programmes or working attachments; and tailor-made local training programmes/working attachments for individual companies. The Training Board recommends employers to make use of the Scheme for training their staff in new technologies.

Summary of Major Conclusions and Recommendations

4.38 The Training Boards' major conclusions and recommendations for manpower training of 2014 and 2015 are summarised below:

(a) Training of Professionals/Technologists:

The supply of local university graduates in 2014 to 2015 can fill up 60% to 70% of the projected training requirements of major disciplines of the E&M services industry. The inadequacy will be supplemented by overseas graduates and workers at technician level who upgrade themselves to professionals / technologists through part-time degree programmes.

(b) Training of Technicians:

The supply of graduates in 2014 and 2015 from technician programmes in major disciplines of the E&M services industry will exceed the projected training requirements by about 35%. Considering that some graduates may join other industry sectors and some DVE awardees may choose to begin their career as craft apprentices, the supply and demand are considered as matching.

(c) Training of Tradesmen/Craftsmen:

(i) The supply of tradesman/craftsman trainees via formal training programmes like DVE and Craft Certificate will meet 70% of the training requirements projected by trend analysis. On the other hand, several rail projects have been scheduled to complete in 2014 and 2015. According to employers' manpower forecast for 2014, the training requirements should be doubled and only 33% of which can be met by the supply. Although there are some qualified tradesmen/craftsmen who attained their qualifications through on-the-job training / skills upgrading training or passing relevant trade tests, the supply is still considered to be inadequate.

(ii) It is recommended that training capacities of pre-employment training programmes at tradesmen/craftsmen level be increased and more skills

upgrading programmes be offered to in-service semi-skilled workers so as to enable them to attain recognized qualifications as tradesmen/craftsmen.

(iii) The training capacity of the DVE programme (Gas Services Engineering stream) may need to be gradually increased, given the rise in public housing supply in FY2015/16 and FY2016/17.

(d) Training of Semi-skilled/General Workers:

In view of the manpower shortage in tradesman/craftsman level, it is recommended that more semi-skilled / general workers be trained up to help relieving the workload of tradesmen/craftsmen. This can be achieved by means of CIC's Contractor Cooperative Training Scheme (CCTS).

(e) The projected training requirements listed in Tables 4.2, 4.4 and 4.6 are for reference purpose only. Training providers should consider the enrolment figures and employment rates of the graduates when planning their training capacities.

(f) The Qualifications Framework (QF) launched by the HKSAR Government is a seven-level cross-sector hierarchy covering both academic and vocational qualifications. With unified standards of qualifications and clear indication of the articulation ladders between them, the QF enables learners to set clear goals and direction for obtaining quality-assured qualifications. With the establishment of QF for the E&M industry, employees will be able to acquire knowledge and skills according to industry needs and pursue their career development with a clear learning pathway.

(g) Employers should encourage their employees to take trade tests recognized by the Government.

(h) E&M contractors for construction works should encourage their E&M workers to register as qualified workers under the Construction Workers Registration Ordinance.

第一章

緒論

機電工程業訓練委員會

1.1 機電工程業訓練委員會隸屬職業訓練局*[VTC]*。根據職權範圍，本會須負責調查機電工程業的人力需求，並向 VTC 提供有關發展訓練設施的建議，以應付業界的需要。本會委員由主要行業公會、職工會、專業團體、教育／培訓機構及政府部門提名出任。委員名單及職權範圍分別載於附錄 1 及附錄 2。

人力調查

1.2 本會按照職權規定，於 2013 年 3 月 18 日至 7 月 19 日期間進行機電工程業人力調查，蒐集最新人力資料，以評估業內的人力需求及培訓需要。是次調查由政府統計處*[統計處]*協助進行。

1.3 調查所得資料如下：

(i) 調查期間機電工程業的僱員人數；

(ii) 僱主預測未來 12 個月的僱員人數；

(iii) 調查期間的空缺數目；

(iv) 調查期間正在受訓的僱員人數；

(v) 僱主預測未來 12 個月正在受訓的僱員人數；以及

(vi) 僱員的平均收入。

調查範圍

1.4 是次調查涵蓋下列行業及門類：

I. 行業 A：機電工程

門類 I：承造

負責下列機電系統及設備的承造商：

(i) 電線鋪設及電器裝設（HSIC：432101）；

(ii) 火警及滅火設備安裝及保養（HSIC：432103）；

(iii) 電訊設備安裝及保養（HSIC：432106）；以及

(iv) 空氣調節／通風系統安裝及保養（HSIC：432201）。

門類 II：水電工程

電器裝設兼水管鋪設（HSIC：432102）。

門類 III：服務

提供下列機電工程服務的機構：

(i) 飛行器裝嵌及相關機械的製造（HSIC：303000）；

(ii) 電力設備維修（HSIC：331400）；

(iii) 發電、輸電及配電（HSIC：351000）；

(iv) 綜合及其他電器及機械設備安裝及保養（HSIC：432199）；

(v) 升降機／電動扶梯安裝及保養（HSIC：432901）；

(vi) 鐵路及纜索運輸（HSIC：491000）；

(vii) 屋宇設備工程服務（HSIC：711400）；以及

(viii) 家用器具及庭園設備修理（HSIC：953200）。

門類 IV：補充抽樣 – 其他與機電工程行業相關之機構

包括下列與機電工程行業相關之機構：

(i) 專營電氣產品、設備與系統，並設有維修服務工場的主要貿易公司；

(ii) 聘有屋宇設備保養人員的物業管理公司；以及

(iii) 有關政府部門及教育機構。

II. 行業 B：船舶修建

門類 V：包括下列船廠及艇廠：

(i) 船舶及浮動結構體的製造（HSIC：301100）；

(ii) 娛樂及運動用小艇的製造（HSIC：301200）；以及

(iii) 海上運輸設備維修（HSIC：331500）。

門類 VI：補充抽樣 － 聘用本地駐岸技術人員的船務公司及操作船隊機構；船舶顧問公司、船級協會、政府機構及教育院校。

III. 行業 C：氣體燃料

包括下列機構：

門類 VII：燃氣製造及配送公司
（HSIC：352000）；

門類 VIII：燃氣供應系統安裝及保養公司
（HSIC：432204）；以及

門類 IX：補充抽樣 － 設有維修服務工場的氣體燃料設備貿易公司，以及有關政府部門及教育機構。

1.5 是次調查的對象涵蓋業內合共 9 425 間機構，包括 8 958 間機電工程業機構、284 間船舶修建行業機構，以及 183 間氣體燃料業機構。在 9 425 間機構中，9 319 間列載於《香港標準行業分類》*[Hong Kong Standard Industrial Classification, HSIC]*內（見本章第 1.4 段的列表）。

1.6 鑑於調查人手有限，本會採用分層隨機抽樣法，從 HSIC 所載的 9 319 間機構中，抽選出近 1 100 間作為調查對象；再加上約 100 間補充抽樣機構，即合共涵蓋約 1 200 間機構，而涉及的僱員人數約佔業內總人力的 79%。

調查方法

1.7 實地調查展開前兩周，本會將調查表連同附註、各主要職務的工作說明，以及其他調查文件（見附錄 19A、19B、19C 及 19D）一併寄給各選定機構。

1.8 實地調查進行期間，統計處的人員預約到訪各選定機構，收集填妥的調查表，並協助僱主填報相關資料。

1.9 調查完畢後，負責人員複查所有填妥的調查表，並在有需要時與填覆機構核實。調查表隨後由統計處整理，並把所得數字用適當因數倍大，以反映機電工程業內各行業的整體人力狀況。

宣傳

1.10 本會於調查進行前聯絡有關僱主協會及行業公會，籲請向其會員宣傳是次調查。

調查反應

1.11 1 210 間抽樣機構中，890 間提供所需資料、20 間拒絕回覆，其餘則已結業、沒有聘請技術人員、轉營其他行業、未能聯絡上或暫時停業。是次調查的有效回應率為 98.3%。

人力調查報告

1.12 本報告刊載有關人力調查的結果、本會對機電工程業內三大行業的每年訓練需求預測，以及為應付該些需求而提出的建議措施。報告內提及的「僱員」和「從業員」均指從事機電工程業主要職務的人員，而「受訓者」 則指正在接受各種訓練的僱員及學徒。

1.13 本會在完成資料蒐集及整理後，隨即於 2013 年 10 月，將載有調查結果摘要的《2013 年機電工程業人力統計報告書》上載 VTC 網頁，供公眾參閱。

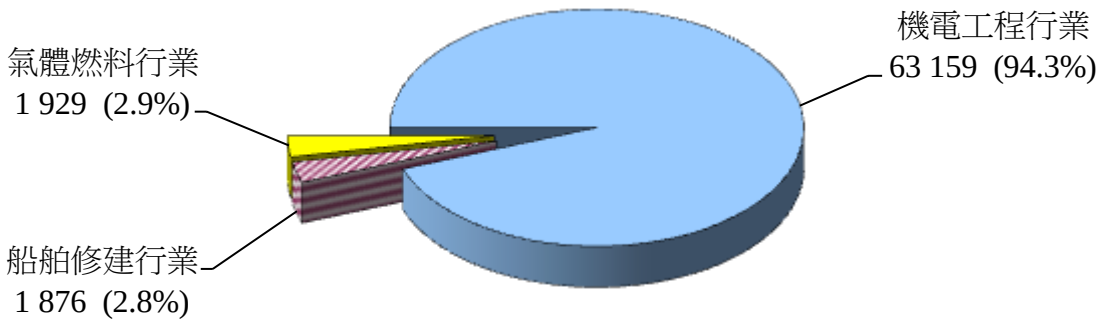
第二章

調查結果摘要

僱員人數

2.1　　是次調查顯示，於 2013 年 3 月 18 日至 7 月 19 日期間，在整個機電工程業中，從事機電工程工種及相關主要職務的從業員共有 66 964 人，其中 63 159 人（94.3%）屬機電工程行業，1 876 人（2.8%）屬船舶修建行業，1 929 人（2.9%）屬氣體燃料行業。機電工程僱員按行業劃分的分布見圖 2.1。

圖 2.1　　機電工程僱員按行業劃分的分布情況



2.2　　調查又顯示，調查期間業內從事其他職務的僱員共有 31 005 人，其中 28 653 人從事機電工程行業，1 203 人從事船舶修建行業，1 149 人從事氣體燃料行業。

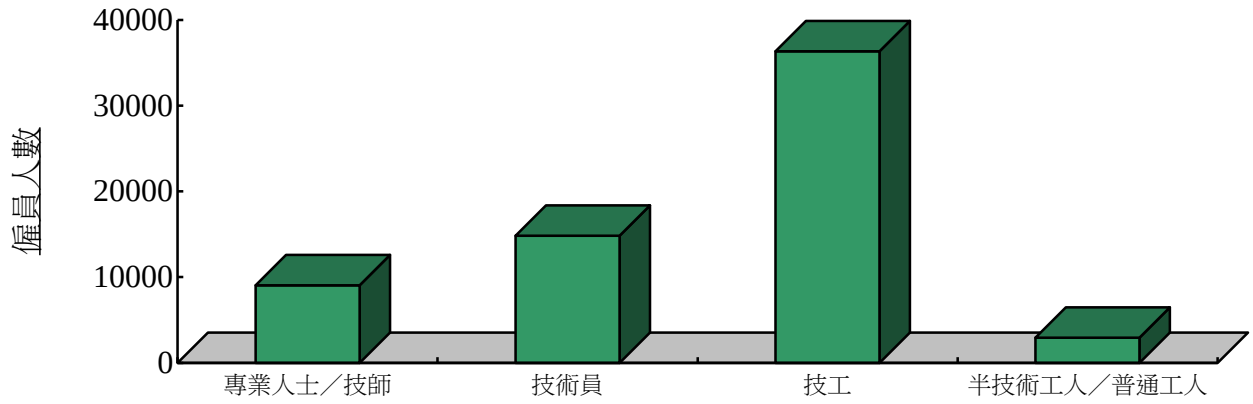
機電工程行業

2.3 機電工程行業各技能等級僱員分布情況見表 2.1 及圖 2.2。

表 2.1 機電工程行業各技能等級僱員分布情況

	專業人士／技師	技術員	技 工	半技術工人／普通工人	總 數
	9 042	14 828	36 362	2 927	63 159
佔僱員總數百分比	14%	23%	58%	5%	100%

圖 2.2 機電工程行業各技能等級僱員分布情況



2.4 整個機電工程行業的人力統計數字見附錄 3；而承造、電器裝設兼水管鋪設、服務門類，以及補充抽樣機構的人力統計數字，分別見附錄 5、6、7、8。

2.5 與上次調查相同，是次調查請受訪機構估計分別負責承造及服務兩個門類工作的人力數字。結果顯示，機電工程行業的人力中，有約 43% 從事承造門類工作，其餘約 57% 則從事服務門類工作，僱員人數分別為 27 282 及 35 877 人。詳細數字見表 2.2。

表 2.2　機電工程行業各技能等級僱員分布情況

技能等級	僱員人數	從事承造門類的估計僱員人數	從事服務門類的估計僱員人數
專業人士／技師	9 042	5 475 (61%)	3 567 (39%)
技術員	14 828	5 439 (37%)	9 389 (63%)
技工	36 362	14 880 (41%)	21 482 (59%)
半技術工人／普通工人	2 927	1 488 (51%)	1 439 (49%)
總數	63 159	27 282 (43%)	35 877 (57%)

2.6　為便於比較，現採用於 2009 年及先前調查相同的分類方法，即假設每一行業分類機構只單一從事承造或服務門類[1]工作。按此假設得出的機電工程行業僱員分布數字載於表 2.3。

表 2.3　機電工程行業各技能等級僱員分布情況

技能等級	僱員人數	從事承造門類的估計僱員人數	從事服務門類的估計僱員人數
專業人士／技師	9 042	3 275 (36%)	5 767 (64%)
技術員	14 828	5 094 (34%)	9 734 (66%)
技工	36 362	17 465 (48%)	18 897 (52%)
半技術工人／普通工人	2 927	1 807 (62%)	1 120 (38%)
總數	63 159	27 641 (44%)	35 518 (56%)

2.7　機電工程行業各門類中，從事承造及服務工作的人力分布數字，詳載於附錄 9。

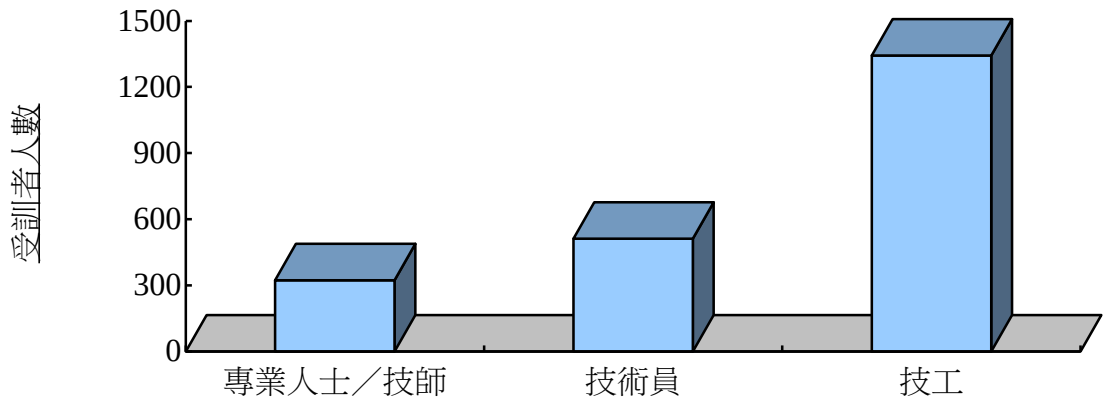
2.8　調查期間，機電工程行業有 2 179 人接受各類訓練，佔總人力的 3.5%。各技能等級的分布情況見表 2.4 及圖 2.3。

[1]除門類 I 的機構外，門類 III（iv）（行業編碼 432199：綜合及其他電器及機械設備安裝及保養）中 50%的機構亦歸入「承造門類」，其餘歸類為「服務門類」。

表 2.4　機電工程行業各技能等級受訓者的分布情況

技能等級	僱員人數	受訓者人數	佔同級僱員人數百分比
專業人士／技師	9 042	324	3.6%
技術員	14 828	512	3.5%
技工	36 362	1 343	3.7%
半技術工人／普通工人	2 927	-	-
總數	63 159	2 179	3.5%

圖 2.3　機電工程行業各技能等級受訓者的分布情況

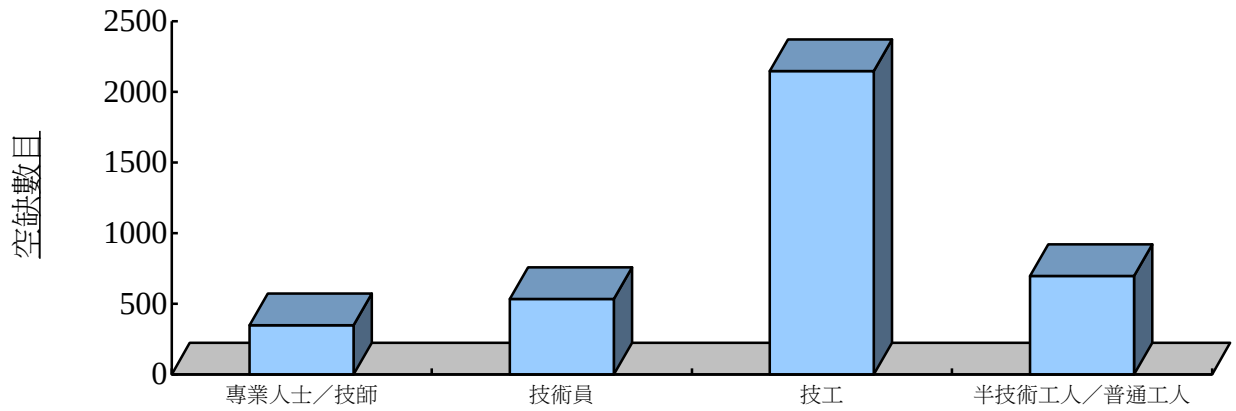


2.9　僱主填報的空缺有 3 725 個，約佔機電工程行業僱員總數的 5.9%。各技能等級空缺數目的分布情況見表 2.5 及圖 2.4。

表 2.5　機電工程行業各技能等級空缺數目的分布情況

技能等級	僱員人數	空缺數目	佔同級僱員人數百分比
專業人士／技師	9 042	349	3.9%
技術員	14 828	533	3.6%
技工	36 362	2 147	5.9%
半技術工人／普通工人	2 927	696	23.8%
總數	63 159	3 725	5.9%

圖 2.4　機電工程行業各技能等級空缺數目的分布情況

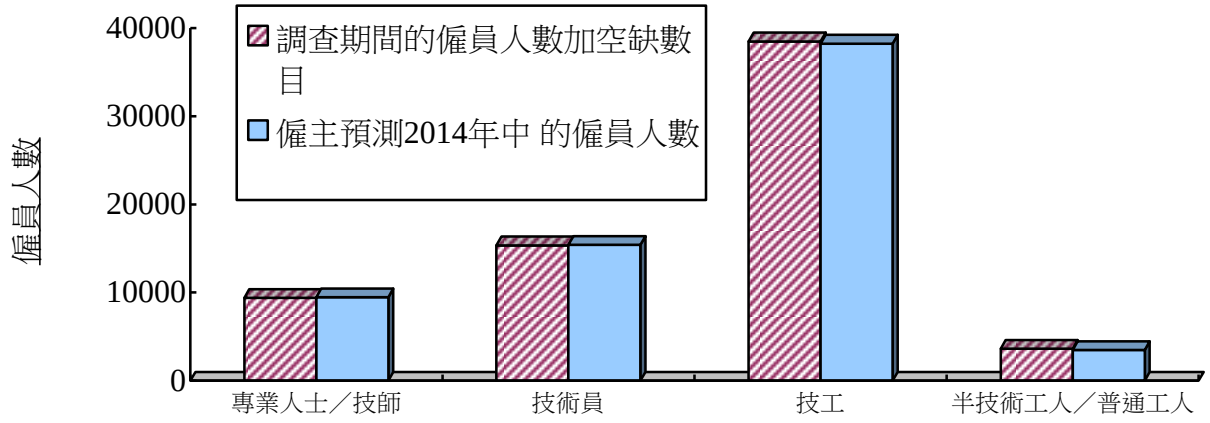


2.10　僱主預測至 2014 年中，機電工程行業將有機電僱員 66 617 人，數字與調查期間的僱員人數及空缺額總和非常接近，反映僱主預期空缺可於 12 個月內填補。各技能等級的預測僱員人數見表 2.6 及圖 2.5。

表 2.6　機電工程行業預測僱員人數(按技能等級劃分)

技能等級	調查期間僱員人數加空缺數目	僱主預測 2014 年中的僱員人數
專業人士／技師	9 391	9 468
技術員	15 361	15 412
技工	38 509	38 255
半技術工人／普通工人	3 623	3 482
總數	66 884	66 617

圖 2.5　機電工程行業預測僱員人數(按技能等級劃分)



2.11　在調查期間，機電工程行業各主要職務的受訓者人數及空缺數目，以及預測至 2014 年中時各工種的僱員人數，可參考附錄 3。

2.12　機電工程行業各技能等級的機電僱員每月收入幅度載於表 2.7。

表 2.7　機電工程僱員平均每月收入

每月平均收入幅度	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
$9 000 以下	-	-	446	198	644
$9 001 - $12 000	-	211	2 484	1 096	3 791
$12 001 - $15 000	30	1 859	8 829	667	11 385
$15 001 - $18 000	156	1 622	11 820	657	14 255
$18 001 - $25 000	1 467	5 121	8 556	50	15 194
$25 001 - $35 000	1 441	3 476	333	-	5 250
$35 001 - $45 000	2 520	321	4	-	2 845
$45 001 - $60 000	1 506	1	-	-	1 507
$60 000 以上	606	6	-	-	612
未有說明	1 316	2 211	3 890	259	7 676
總數	9 042	14 828	36 362	2 927	63 159

2.13　根據每月總收入幅度劃分的機電工程行業各主要職務僱員分布情況，可參考附錄 4。

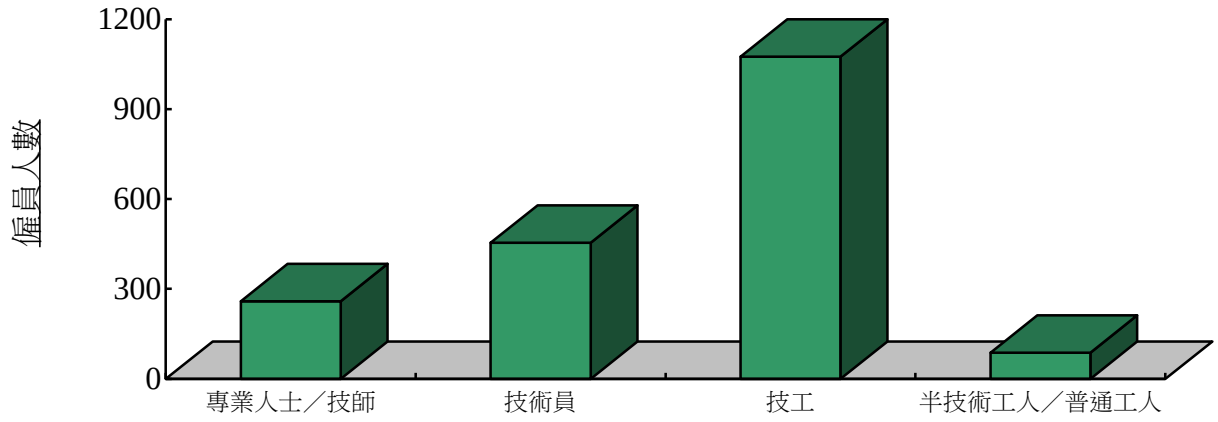
船舶修建行業

2.14 船舶修建行業的人力統計數字見附錄 11。各技能等級機電僱員的分布情況見表 2.8 及圖 2.6。

表 2.8 船舶修建行業各技能等級機電僱員的分布情況

	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
	259	454	1 076	87	1 876
佔僱員總數百分比	14%	24%	57%	5%	100%

圖 2.6 船舶修建行業各技能等級機電僱員的分布情況



2.15 調查期間，業內有 58 人接受各類訓練，佔行業總人力的 3.1%。各技能等級的分布情況載於表 2.9。

表 2.9　船舶修建行業各技能等級機電工程受訓者的分布情況

技能等級	僱員人數	受訓者人數	佔同級僱員人數百分比
專業人士／技師	259	-	-
技術員	454	20	4.4%
技工	1 076	38	3.5%
半技術工人／普通工人	87	-	-
總數	1 876	58	3.1%

2.16　僱主填報的空缺數目有 107 個，約佔船舶修建行業內機電僱員總數的 5.7%。各技能等級空缺數目的分布載於表 2.10。

表 2.10　船舶修建行業機電僱員空缺數目(按技能等級劃分)

技能等級	僱員人數	空缺數目	佔同級僱員人數百分比
專業人士／技師	259	3	1.2%
技術員	454	28	6.2%
技工	1 076	75	7.0%
半技術工人／普通工人	87	1	1.1%
總數	1 876	107	5.7%

2.17　僱主預測至 2014 年中時，船舶修建行業會有機電僱員 1 943 人，顯示調查期間約 63%的空缺將於 12 個月內填補。各技能等級的僱員預測人數見表 2.11。

表 2.11　船舶修建行業機電僱員的預測人數(按技能等級劃分)

技能等級	調查期間僱員人數加空缺數目	僱主預測2014年中的僱員人數
專業人士／技師	262	258
技術員	482	473
技工	1 151	1 124
半技術工人／普通工人	88	88
總數	1 983	1 943

2.18　在調查期間，船舶修建行業各主要職務的受訓者人數及空缺數目，以及預測至2014年中時各工種的僱員人數，可參考附錄11。

2.19　各技能等級的機電僱員每月收入幅度載於表2.12。

表 2.12　船舶修建行業機電僱員的平均每月收入

每月平均收入幅度	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
$9 000以下	-	-	25	19	44
$9 001 - $12 000	-	6	73	46	125
$12 001 - $15 000	-	11	538	-	549
$15 001 - $18 000	2	117	160	9	288
$18 001 - $25 000	32	58	106	-	196
$25 001 - $35 000	58	27	9	-	94
$35 001 - $45 000	34	27	-	-	61
$45 001 - $60 000	16	-	-	-	16
$60 000以上	16	-	-	-	16
未有說明	101	208	165	13	487
總數	259	454	1 076	87	1 876

2.20　根據每月總收入幅度劃分的各主要職務僱員分布情況，可參考附錄12。

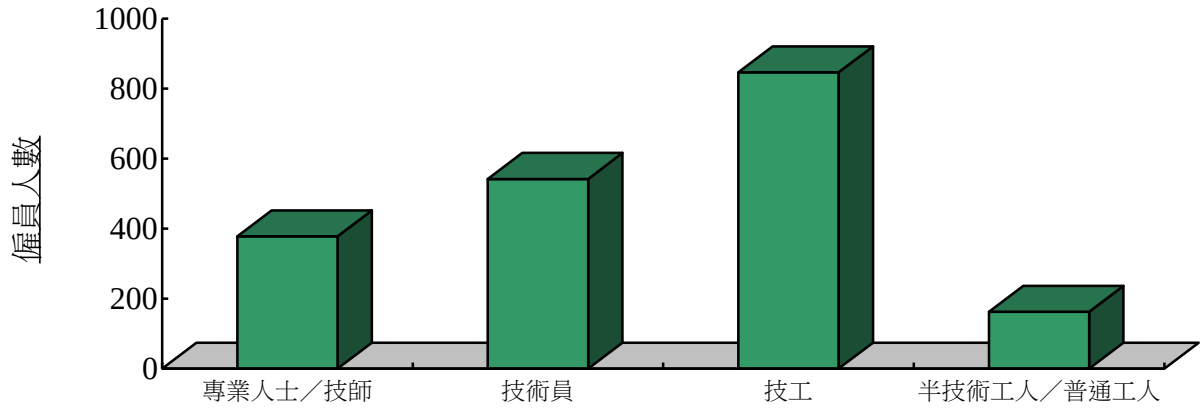
氣體燃料行業

2.21 氣體燃料行業的人力統計數字見附錄 13。該業各技能等級機電僱員的分布情況見表 2.13 及圖 2.7。

表 2.13 氣體燃料行業各技能等級機電僱員的分布情況

	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
	378	542	846	163	1 929
佔僱員總數百分比	20%	28%	44%	8%	100%

圖 2.7 氣體燃料行業各技能等級機電僱員的分布情況



2.22 調查期間，業內有 25 人接受各類訓練，佔僱員總數的 1.3%。各技能等級的分布情況見表 2.14。

表 2.14　氣體燃料行業各技能等級機電工程受訓者的分布情況

技能等級	僱員人數	受訓者人數	佔同級僱員人數百分比
專業人士／技師	378	2	0.5%
技術員	542	5	0.9%
技工	846	18	2.1%
半技術工人／普通工人	163	-	-
總數	1 929	25	1.3%

2.23　僱主填報的空缺有 49 個，約佔氣體燃料行業機電僱員總數的 2.5%。各技能等級空缺數目的分布情況見表 2.15。

表 2.15　氣體燃料行業機電僱員空缺數目(按技能等級劃分)

技能等級	僱員人數	空缺數目	佔同級僱員人數百分比
專業人士／技師	378	4	1.1%
技術員	542	6	1.1%
技工	846	33	3.9%
半技術工人／普通工人	163	6	3.7%
總數	1 929	49	2.5%

2.24　僱主預測至 2014 年中時，氣體燃料行業將有機電僱員 1 978 人，顯示調查期間的空缺將於 12 個月內全數填補。各技能等級的預測僱員人數見表 2.16。

表 2.16 氣體燃料行業機電僱員的預測人數(按技能等級劃分)

技能等級	調查期間僱員人數加空缺數目	僱主預測2014年中的僱員人數
專業人士／技師	382	385
技術員	548	548
技工	879	876
半技術工人／普通工人	169	169
總數	1 978	1 978

2.25 在調查期間，氣體燃料行業各主要職務的受訓者人數及空缺數目，以及預測至2014年中時各工種的僱員人數，可參考附錄13。

2.26 氣體燃料行業各技能等級的機電僱員每月收入幅度見表2.17。

表 2.17 氣體燃料行業的機電僱員平均每月收入

每月平均收入幅度	專業人士／技師	技術員	技工	半技術工人／普通工人	總數
$9 000以下	-	-	-	-	-
$9 001 - $12 000	-	12	241	92	345
$12 001 - $15 000	-	44	244	66	354
$15 001 - $18 000	2	289	140	-	431
$18 001 - $25 000	4	178	149	1	332
$25 001 - $35 000	365	5	5	-	375
$35 001 - $45 000	7	5	-	-	12
$45 001 - $60 000	-	-	-	-	-
$60 000以上	-	-	-	-	-
未有說明	-	9	67	4	80
總數	378	542	846	163	1 929

2.27 根據每月總收入幅度劃分的各主要職務僱員分布情況，可參考附錄14。

地盤機電人力

2.28 為評估地盤機電人力狀況，本會在 2013 年進行第八次補充調查，蒐集於地盤工作的機電從業員最新人力資料。蒐集所得的資料有助更全面地分析機電工程業的人力狀況。補充調查包括於調查期間，政府統計處紀錄的所有 1 030 個屋宇地盤，以及 487 個土木工程及其他地盤。

2.29 補充調查顯示，於 2013 年 4 月 10 日(即調查的特定參考日)，共有 6 911 名機電從業員在地盤從事機電工程工種及相關主要職務，其中 5 926 人 (85.7%) 在 209 個屋宇地盤工作，985 人(14.3%)在 99 個土木工程及其他地盤工作。補充調查的人力數據，已包括在是次人力調查各受訪機構填報的人力資料內，並納入為機電工程行業統計數字。

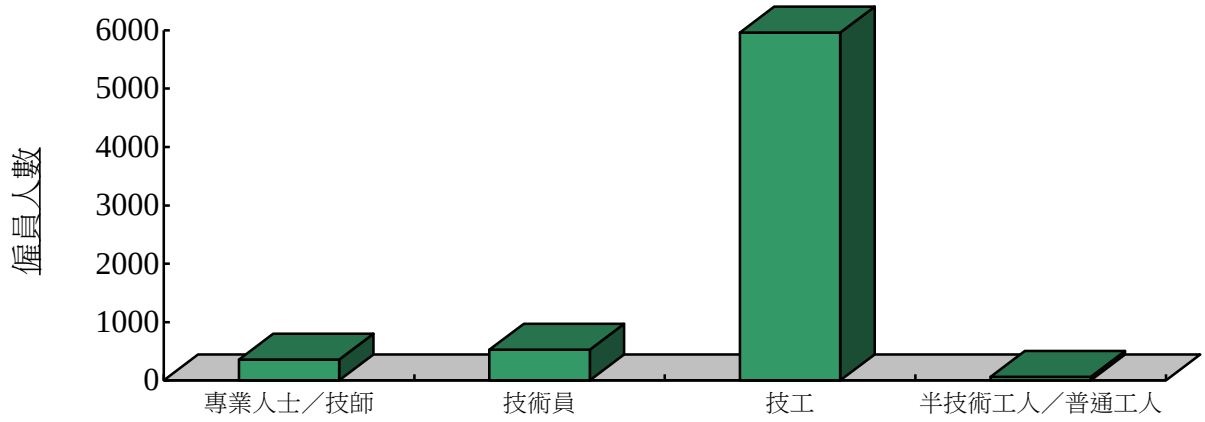
2.30 各技能等級從業員的分布情況見表 2.18 及圖 2.8。

表 2.18 地盤機電從業員的分布情況

技能等級	僱員人數		佔僱員總數百分比
專業人士／技師	361	(240)	5.2%
技術員	529	(395)	7.7%
技工	5 960	(5 706)	86.2%
半技術工人／普通工人	61	(244)	0.9%
總數	6 911	(6 585)	100%

（括號內數字為 2011 年 3 月第七次補充調查所得的同類數據。）

圖 2.8　地盤機電從業員的分布情況



2.31　地盤機電人力統計數字見附錄 10。

2012/13 年人力供應情況

2.32　有關僱主對調查進行前 12 個月業內人力供應情況的看法，可參考附錄 15。

第三章

觀察所得與結論

概況

3.1 本會仔細審閱是次調查結果，認為所得資料大致可反映調查期間機電工程業內機電工程、船舶修建、以及氣體燃料三大行業的就業情況。

機電工程行業

3.2 2013 年 3 月 18 日至 7 月 19 日期間，機電工程行業共僱有 63 159 名從業員，與上次 2011 年調查所錄得的 60 060 人比較，平均每年增長 2.55%。表 3.1 按技能等級及門類列載機電工程行業 2013 年的人力分布情況。

表 3.1: 機電工程行業的人力分布情況
（按技能等級及門類劃分）

技能等級	承造門類	服務門類	總數
專業人士／技師	3 275 (5 475)	5 767 (3 567)	9 042
技術員	5 094 (5 439)	9 734 (9 389)	14 828
技工	17 465 (14 880)	18 897 (21 482)	36 362
半技術工人／ 普通工人	1 807 (1 488)	1 120 (1 439)	2 927
總數	27 641 (27 282)	35 518 (35 877)	63 159

註：

(a) 「承造門類」是指 2013 年人力調查範圍內被歸類為門類 I，以及門類 III（iv）其中 50% 的機構（詳情請參閱第一章第 1.4 段）。

(b) 括號內的數字由僱主提供，反映僱主預計投放於「承造」及「服務」門類工程的人力。

機電工程行業的人力變化

3.3 調查顯示，機電工程行業在過去兩年的整體僱員人數平均每年增長 2.55%。其中，專業人士／技師、技術員、技工級的僱員人數每年分別增長 8.2%、4.8% 及 0.8%。然而，半技術工人／普通工人級的僱員人數則有所減少，平均每年下降 1.4%，這或由於部分工人在提升技能後獲晉升為技工。

3.4 調查期間，業內三分之一主要職務錄得 5% 或以上的空缺率，其中五個主要職務的空缺率超過 10% ，包括 (i) 空調製冷設備技工（獨立系統）；(ii) 升降機技工；(iii) 消防電氣裝配工；(iv) 雜工；以及 (v) 半技術工人。

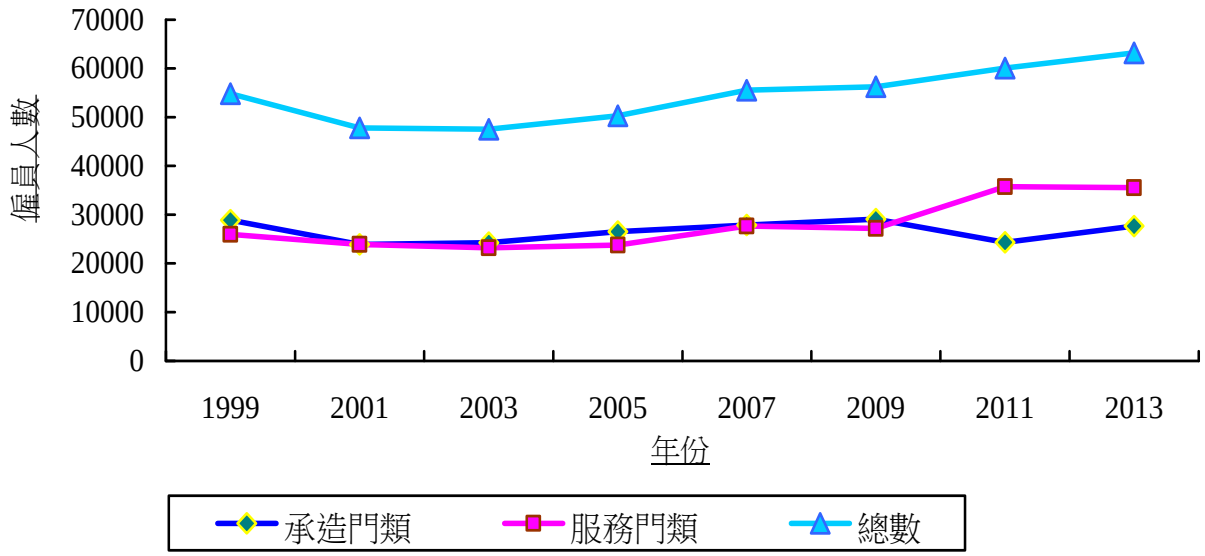
3.5 1999 年至 2013 年間，機電工程行業的人力變化見表 3.2 及圖 3.1。

表 3.2 機電工程行業的人力變化（1999 年至 2013 年）

調查年份	承造門類[1]	服務門類	總數
1999	28 838	25 976	54 814
2001	23 889	23 910	47 799
2003	24 288	23 204	47 492
2005	26 514	23 754	50 268
2007	27 880	27 683	55 563
2009	29 101	27 159	56 260
2011[1]	24 317	35 743	60 060
2013	27 641	35 518	63 159

[1] 本會於 2011 年調查修訂了「承造」及「服務」門類所涵蓋的機構，最主要的變動為將「升降機及電動扶梯安裝及保養」（HSIC 432901）由「承造」門類修訂為「服務」門類。

圖 3.1　　機電工程行業的人力變化（1999 年至 2013 年）



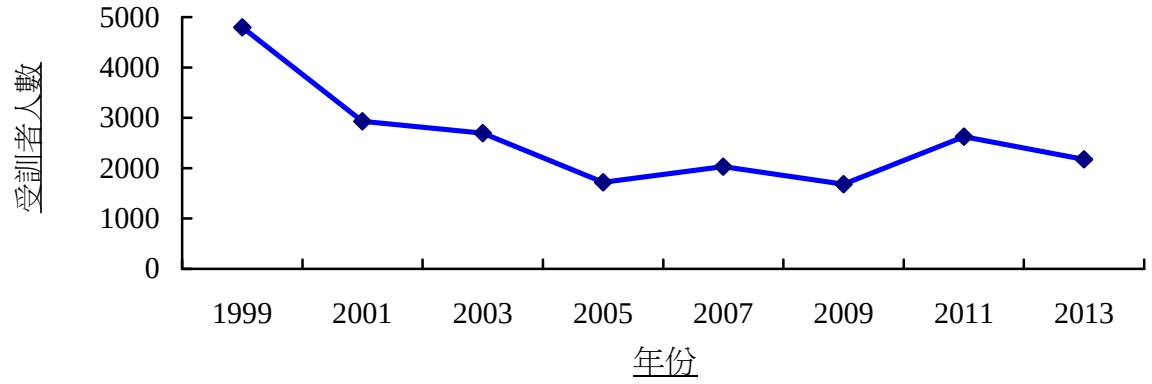
3.6　　機電工程行業的僱員人數於 1999 年攀升至高峰，隨後於 2003 年跌至低谷。隨著香港與鄰近地區的經濟於 2003 年後轉趨蓬勃，業內的僱員人數逐漸回升；2007 年調查錄得的僱員人數更超越 1999 年的數字。其後，業內的僱員人數仍然保持升勢。過去兩年，由於大型基建項目陸續上馬，僱員人數的升勢加劇，平均每年增加 2.55%。

3.7　　自 1999 年起的人力調查顯示，機電工程行業的受訓者人數持續下跌，直至 2007 年，業界因採用大型飛機庫而須僱用更多機械工程、飛機工程維修服務技工及受訓者以應付需要，故此受訓人數有所回升。自 2011 年起，業內受訓者的人數有所增加，當中以「技工級」的回升幅度尤為顯著（見表 3.3 及圖 3.2）。

表 3.3　　機電工程行業受訓者人數

調查年份	僱員人數	受訓者人數	佔僱員人數的百分比
1999	54 814	4 794	8.7%
2001	47 799	2 931	6.1%
2003	47 492	2 694	5.7%
2005	50 268	1 722	3.4%
2007	55 563	2 028	3.6%
2009	56 260	1 679	3.0%
2011	60 060	2 629	4.4%
2013	63 159	2 179	3.5%

圖 3.2　機電工程行業受訓者人數



機電工程行業的業務展望

3.8　多個鐵路項目將於 2014 年至 2017 年間陸續竣工。預計 2014 年及 2015 年，業界對「承造門類」機電從業員的需求將達高峰。

3.9　政府推行的資助計劃，如「樓宇更新大行動」及「長者維修自住物業津貼計劃」，將繼續為「服務門類」的機電從業員創造更多就業機會。本會預期該門類的人力將錄得穩定增長。

僱主填報的空缺數目及對未來一年機電工程行業的人力預測

3.10　據僱主填報的資料，機電工程行業在過去兩年的職位空缺數目持續上升（見表 3.4）；而從表 3.5 所載僱主對未來一年機電工程行業的人力預測可見，業界對業務前景感到樂觀。

表 3.4　機電工程行業空缺數目的變化

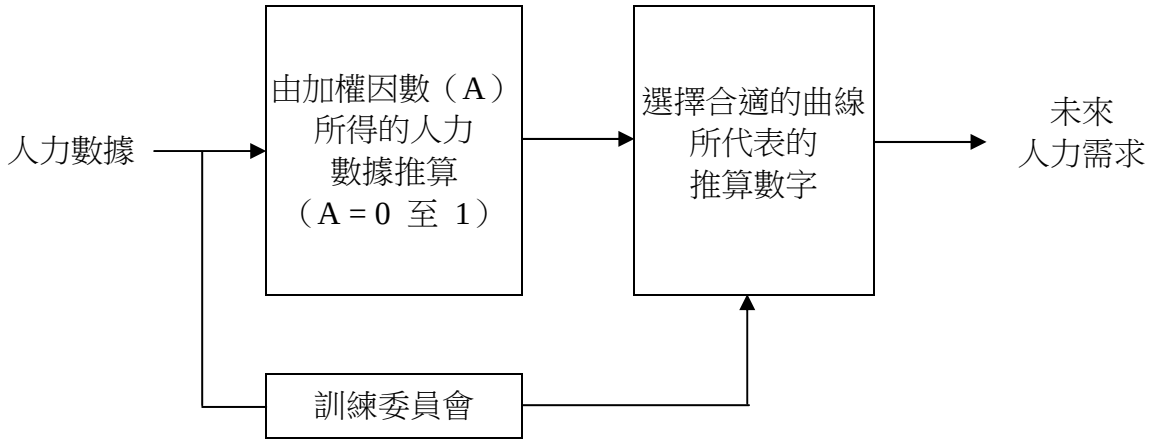
技能等級	2011 年 空缺數目	2013 年 空缺數目	過去兩年的變幅
專業人士／技師	252	349	+38%
技術員	335	533	+59%
技工	1 663	2 147	+29%
半技術工人／普通工人	94	696	+640%
總數	2 344	3 725	+59%

表 3.5　機電工程行業的空缺分布及僱主預測未來一年的人力情況

技能等級	調查期間的僱員人數	僱主填報的空缺數目		僱主預測2014年中時的僱員人數
		人數	百分比	
專業人士／技師	9 042	349	3.9%	9 468 (+4.7%)
技術員	14 828	533	3.6%	15 412 (+3.9%)
技工	36 362	2 147	5.9%	38 255 (+5.2%)
半技術工人／普通工人	2 927	696	23.8%	3 482 (+19.0%)
總數	63 159	3 725	5.9%	66 617 (+5.5%)

機電工程行業的人力訓練需求推算

3.11　機電工程行業以往的人力調查多數採用「調節過濾法」*[Adaptive Filtering Method, AFM]* 來推算未來的人力需求。AFM 是一種趨勢分析技巧，以加權指數平滑法進行「曲線擬合」，詳細說明如下：



AFM 將過往的人力數據加以權衡，愈新近的數據所佔的比重愈大，因此對推算結果的影響亦較大。不過，較新近的數據所佔的比重亦可透過加權因數（A）來調節。本會根據市場趨勢、技術發展及其他社會經濟因素，選定最合適的人力推算數字。

3.12　1997 年與 2001 年，本會採用「線性回歸法」*[Linear Regression Method, LRM]*推算出機電工程行業「承造門類」的人力需求（此方法根據人力需求與各類樓宇建築成本之間的相互關係推算出人力需求數字）；而「服務門類」的人力需求則以 AFM 來推算。本會將兩個門類的人力推算數字相加，得出機電工程行業未來每年的整體人力需求。

3.13 2003 年，本會採用統計模型分析法推算人力需求。此方法是根據機電工程行業整體技術人力與主要因素－「地盤樓宇建築工程總值」*[GVCW]*之間的相互關係推算出人力需求。

3.14 2005、2007 及 2009 年，機電工程行業的技術人力分布有所改變，由新建築工程轉移至樓宇翻新及裝修工程，因而導致整體技術人力與主要因素 GVCW 之間的相互關係可信指數下跌（低於建議採用的標準）。本會在考慮過建造項目數量、外圍影響等不明朗因素，以及可供使用的人力推算方法後，決定採用 AFM 來推算人力需求。

3.15 在 2011 年及是次人力調查中，由於各項因素皆與往年調查的情況相若，因此本會決定再次採用 AFM，以推算 2014 年至 2016 年的人力需求。

3.16 本會根據 2013 年及以往人力調查結果，採用 AFM 推算各技能等級的人力，所得數字載於圖 3.3 至圖 3.5。

圖 3.3 機電工程行業人力推算（專業人士／技師）

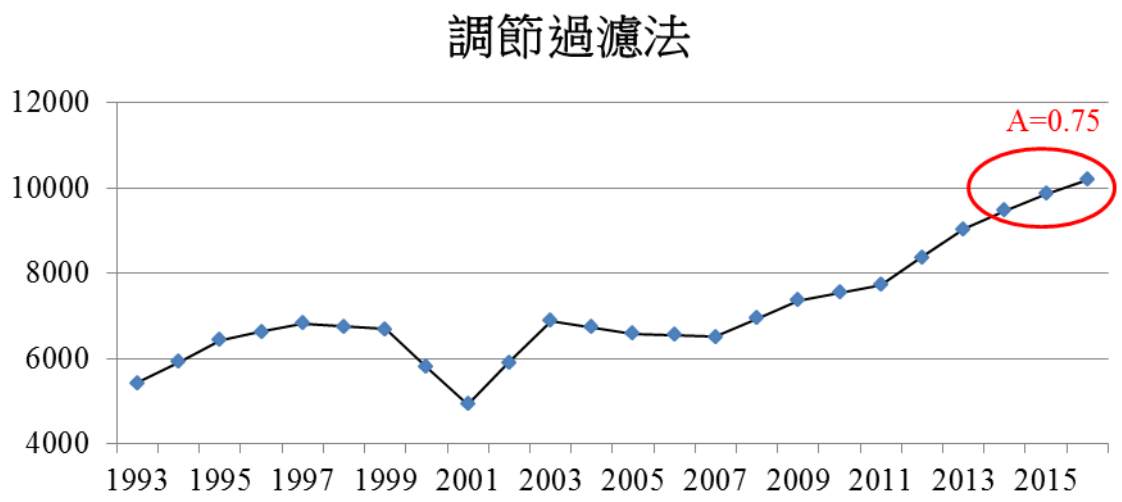


圖 3.4　機電工程行業人力推算（技術員）

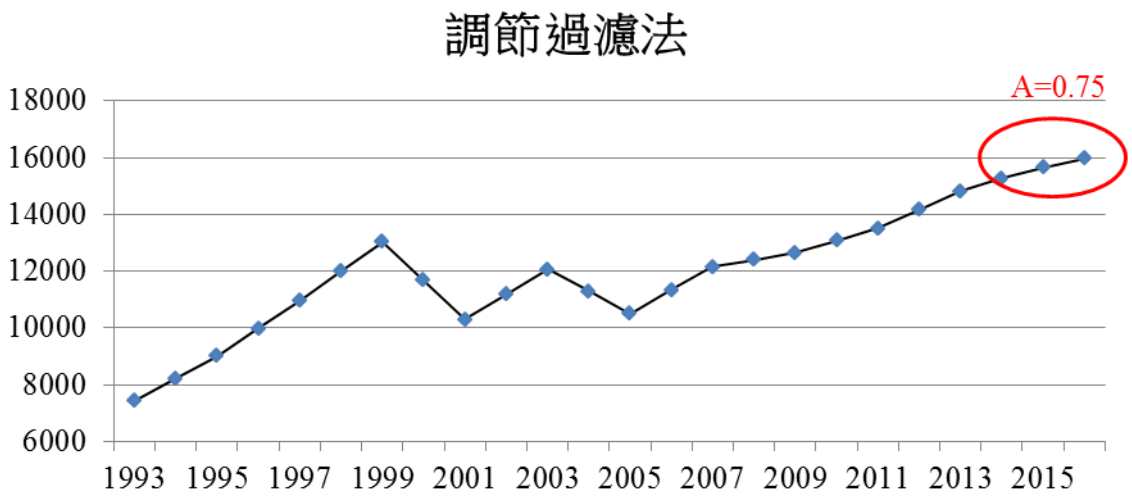
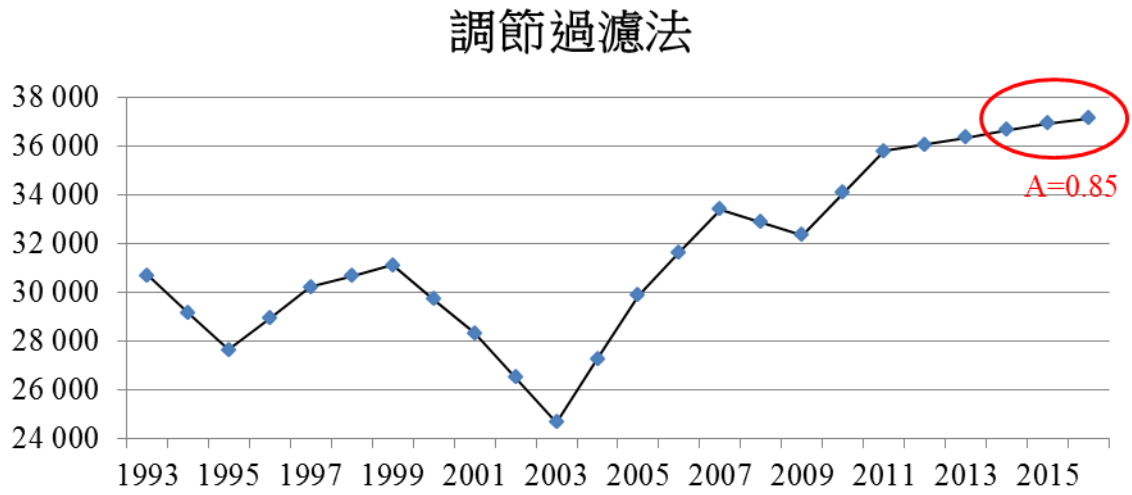


圖 3.5　機電工程行業人力推算（技工）



3.17　考慮到調查期間業界的空缺額，以及僱主對未來一年的人力預測數字後，本會決定採用 A = 0.75 推算專業人士／技師與技術員兩個技能等級的人力，並採用 A = 0.85 以推算技工級的人力。請注意，AFM 乃趨勢分析推算法，因此在處理 2014 年及 2015 年人力需求急增的情況時，會假設人力供應模型並無出現重大變化。AFM 推算所得 2014 年技工級的人力，與僱主對未來一年該級別的預測人力存在明顯差距，相差 1 584 人。

3.18　整體而言，機電工程行業內 50 歲以上的技術人員所佔的比率並不特別高（「消防機械裝配工」、「一般焊接工」、「機械打磨裝配工」及「空調製冷設備技工（保溫）」等職務除外）。因此，本會建議將流失率定於 3%。

3.19 鑑於上述因素，機電工程行業於 2014 年至 2016 年，為應付人力需求增長（AFM 推算所得數字）及填補各技能等級（專業人士／技師、技術員、技工）的流失人力（3%），平均每年需要訓練的僱員人數見表 3.6。

表 3.6 推算機電工程行業每年所需訓練的機電僱員數目

技能等級	調查期間的僱員人數	推算 2014 年至 2016 年平均每年需要訓練的人手
專業人士／技師	9 042	606 – 740 (*318 - 389*)[1]
技術員	14 828	762 - 931 (514 - 629)
技工	36 362	1 234 – 1 509 (2 285 - 2792)

船舶修建行業

人力變化

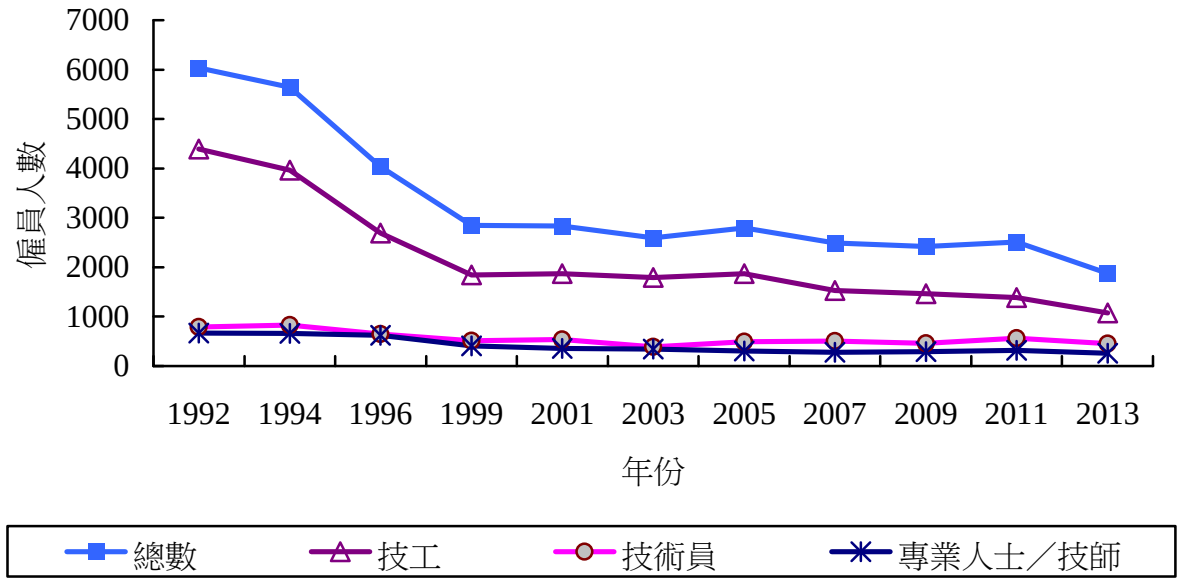
3.20 1992 年至 2013 年間，船舶修建行業各技能等級（專業人士／技師、技術員、技工）的人力變化見表 3.7 及圖 3.6。

表 3.7 船舶修建行業機電人力的變化

調查年份	專業人士／技師	技術員	技工	總人力[2]
1992	668	790	4 392	6 034
1994	659	825	3 966	5 641
1996	624	647	2 690	4 038
1999	407	513	1 844	2 849
2001	354	539	1 872	2 834
2003	344	387	1 791	2 597
2005	307	490	1 871	2 794
2007	281	502	1 526	2 488
2009	294	457	1 463	2 421
2011	315	566	1 387	2 509
2013	259	454	1 076	1 876

[1] 括號內的數字為本會於 2011 年時對本業 2012 年至 2014 年每年訓練需求的推算數字。
[2] 包括半技術工人／普通工人

圖 3.6　　船舶修建行業的人力變化（1992 年至 2013 年）



3.21　　上述數字顯示，船舶修建行業在過去兩年的僱員人數大幅下降，平均每年減少 13.5%。同期，業內空缺額由 116 個跌至 107 個，但仍佔整體人力的 5.7%，半數主要職務的空缺率達 5% 或以上。其中五個主要職務的空缺率超越 10%，包括： (i) 船舶設計師／造船工程師；(ii) 繪圖員；(iii) 電機工程技術員；(iv) 監督／管工；以及 (v) 焊接技工。

船舶修建行業的業務展望

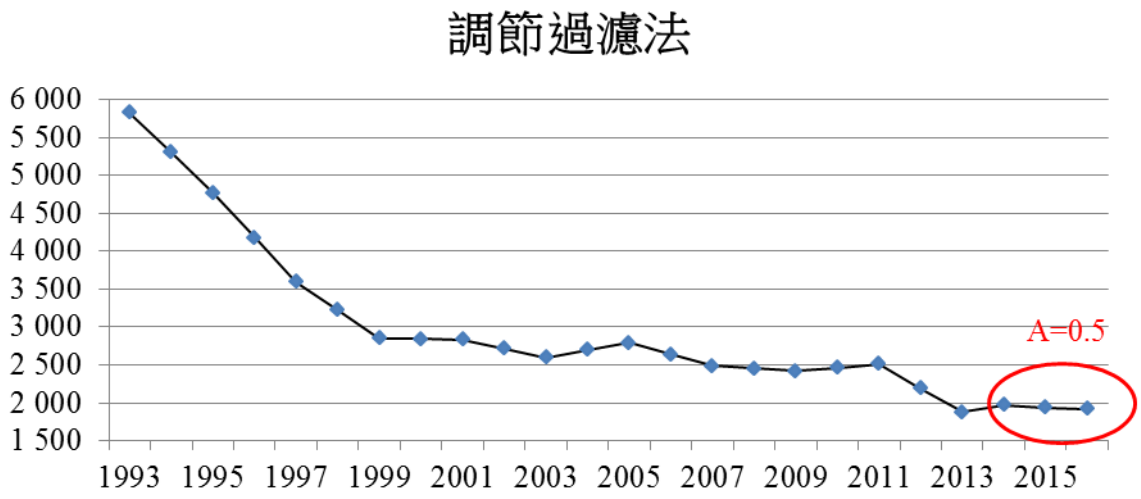
3.22　　近年，船舶修建行業面對內地同業的激烈競爭，在挽留人手及吸納新血方面亦遇上重重困難。儘管如此，僱主對業務前景仍抱樂觀態度，並預期 2014 年中業內的人力將錄得 3.6% 的增長。

船舶修建行業的人力訓練需求推算

3.23　　由於船舶修建行業的僱員人數相對較少，故本會決定採用 AFM 推算本業的總人力需求，有關結果見圖 3.7。

3.24　　本會決定採用 A = 0.5，以降低過去兩年人力急劇轉變的影響，亦更能配合僱主對未來一年的人力預測數字。

圖 3.7　　船舶修建行業人力推算



3.25　　本會自 2001 年起將船舶修建行業的每年流失率定為 6%，以反映業內人力老化的問題。雖然近年不少年老僱員已退休，但流失率仍然相對高企，主要由於部分業內僱員轉投機電工程或建造行業。因此，本會決定維持船舶修建行業的每年流失率為 6%。

3.26　　綜合上述因素，本會推算 2014 年至 2016 年船舶修建行業平均每年所需訓練的機電僱員數目載於表 3.8。

表 3.8　　推算船舶修建行業每年所需訓練的機電僱員數目

技能等級	調查期間的僱員人數	推算 2014 年至 2016 年平均每年需要訓練的人手
專業人士／技師	259	16 – 19 *(22 – 27)*[1]
技術員	454	28 – 34 *(40 – 49)*
技工	1 076	66 – 80 *(98 – 120)*

[1] 括號內的數字為本會於 2011 年時對本業 2012 年至 2014 年每年訓練需求的推算數字。

氣體燃料行業

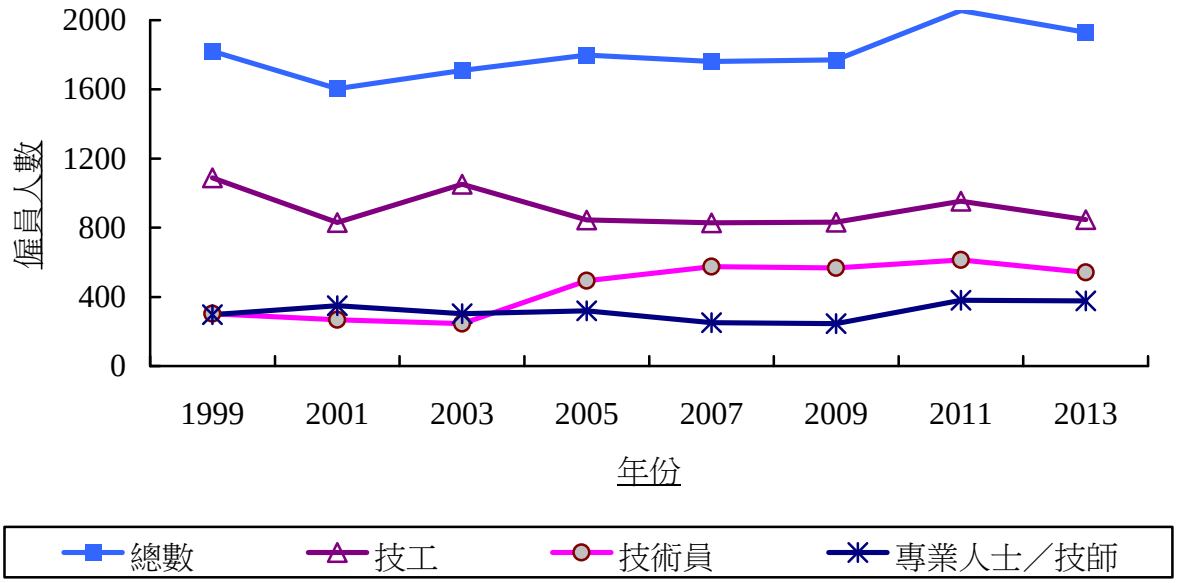
人力變化

3.27 1999 年氣體燃料行業首次進行人力調查至今，業內三個技能等級的人力變化見表 3.9 及圖 3.8。

表 3.9 氣體燃料行業機電人力的變化

調查年份	專業人士／技師	技術員	技工	總人力[1]
1999	298	304	1 088	1 820
2001	350	268	830	1 604
2003	304	245	1 052	1 710
2005	320	493	845	1 799
2007	252	575	828	1 762
2009	246	567	832	1 770
2011	381	613	953	2 056
2013	378	542	846	1 929

圖 3.8 氣體燃料行業機電人力的變化



3.28 上述數字顯示，過去兩年，氣體燃料行業的整體人力變化不大。

[1] 包括半技術工人／普通工人

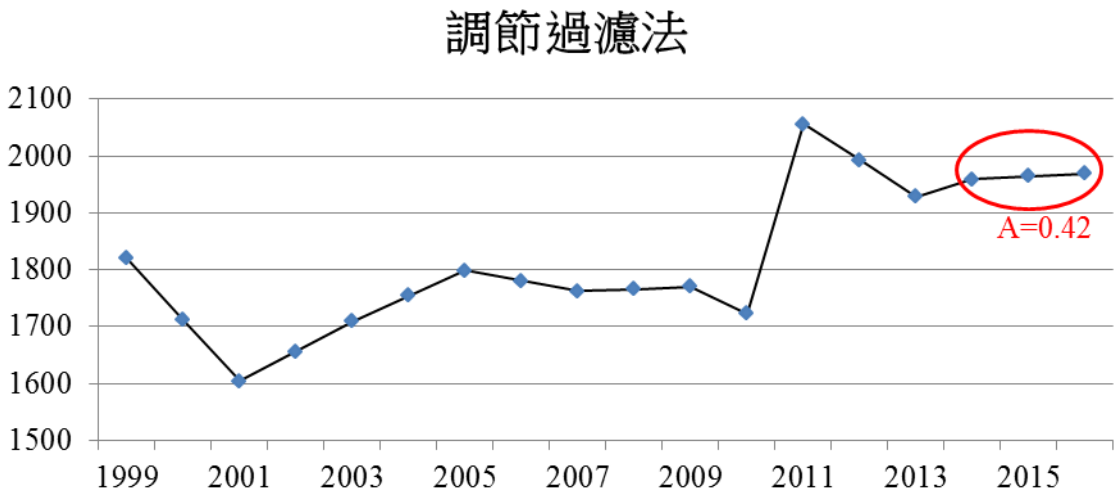
氣體燃料行業的業務展望

3.29 由於 2015/16 及 2016/17 財政年度公共房屋的供應量估計會大幅上升，預計氣體燃料行業的人力亦將錄得正增長。

氣體燃料行業的人力訓練需求推算

3.30 由於氣體燃料行業的僱員人數相對較少，故本會決定採用 AFM 推算本業的總人力需求，有關結果見圖 3.9。

圖 3.9 氣體燃料行業人力推算



3.31 本會決定採用 A = 0.42 為最合適的曲線，並將每年流失率定為 3%，以推算本業 2014 年至 2016 年的訓練需求，詳細結果載於表 3.10。

表 3.10 推算氣體燃料行業每年所需訓練的機電僱員數目

技能等級	調查期間的僱員人數	推算 2014 年至 2016 年平均每年需要訓練的人手
專業人士／技師	378	13 – 15 (*15 - 19*)[1]
技術員	542	18 – 22 (*25 - 30*)
技工	846	28 – 35 (*39 - 47*)

[1] 括號內的數字為本會於 2011 年時對本業 2012 年至 2014 年每年訓練需求的推算數字。

3.32 本會將於 2015 年進行另一次機電工程業人力調查，以評估及更新業內的人力需求。

第四章

建議

4.1 考慮到本地經濟狀況，以及機電工程的業務性質，本會預計 2014 年至 2016 年三大行業對曾接受適當訓練技術人員的需求如下：

(i) 機電工程行業 – 多個鐵路項目將於未來幾年陸續竣工，包括：

鐵路項目	竣工年份
a. 西港島綫	2014
b. 廣深港高速鐵路	2015
c. 觀塘綫延綫	2015
d. 南港島綫（東段）	2015
e. 沙田至中環綫	2017

由於上述鐵路項目的機電承造工程一般會於最後階段進行（大約於竣工日前 18 個月），故預計業界的人力需求會於 2014 年及 2015 年激增。及後，估計部分人員將會轉投新建樓宇工程項目，另一部分則會為機電工程行業的「服務」門類所吸納。

(ii) 船舶修建行業：過去兩年行業經歷艱難時期，不但面對內地同行的激烈競爭，亦有不少幹練員工退休或轉投機電工程及建造行業。因此，船舶修建行業的僱主積極提供更佳的薪酬福利條件挽留人手。是次調查顯示，業內僱主預計 2014 年的人力將會錄得 3.6%的增長，顯示他們對行業的發展前景感到樂觀。

(iii) 氣體燃料行業：根據香港房屋委員會及差餉物業估價署的估計，未來幾年的公私營房屋供應量將會持續上升，特別是 2015/16 及 2016/17 財政年度，公共房屋的供應量將會大增，由每年供應約 13 000 個新建單位（2012/13 及 2014/15 財政年度）增至每年 20 500 個單位。隨著新建成住宅單位數目增多，估計氣體燃料行業對技術人力的需求亦會相應上升。

4.2 人力訓練是長遠的投資。大學畢業生一般須接受兩年認可在職訓練，以及最少兩年擔任要職的經驗，才能成為專業人士／技師。訓練技術員或技工則需兩至四年。機電工程業尤其需要受過良好訓練的人力，才能滿足工作質素及安全方面的嚴格要

求。為確保有足夠的技術人力，本會建議業界根據第 3.19、3.26 及 3.31 各段所列數字，推行有系統的人力訓練方案。附錄 16、17 及 18 則以三大行業的主要職務劃分，列出有關數字。

4.3 表 4.1 列載 AFM 推算所得每年需要培訓的專業人士／技師、技術員及技工人數佔現有人手的百分比。僱主為機構策劃人力時，可參考有關數字。

表 4.1 每年需要培訓的人數
（按技能等級及行業劃分）

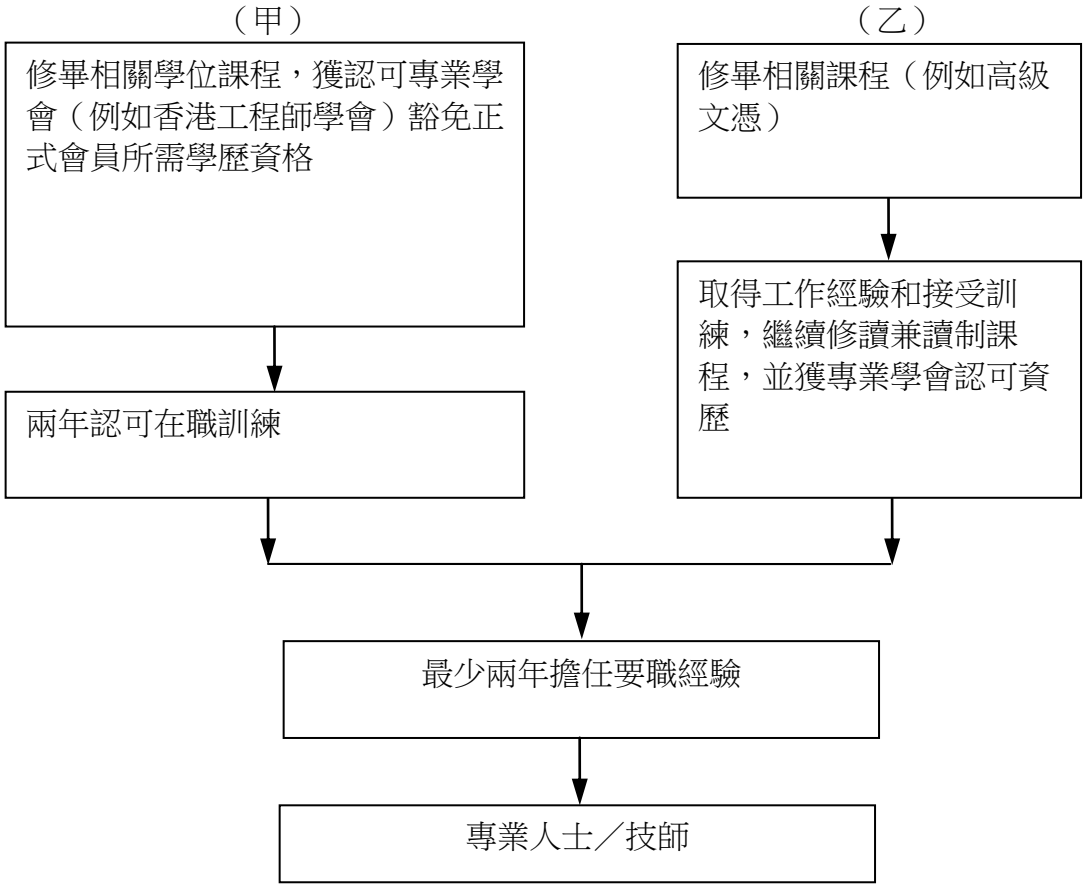
	專業人士／技師	技術員	技工
機電工程行業	7.4%	5.7%	3.8%
船舶修建行業	6.8%	6.8%	6.8%
氣體燃料行業	3.7%	3.7%	3.7%

專業人士／技師訓練

4.4 專業人士／技師須具備有關專業學會正式會員所需的資歷及經驗，並能分析及解決各類技術上的問題。此外，亦須負責發展及應用工程原理，具創見和判斷力，緊貼科技發展，應用最新技術，以及督導和培訓下屬。

4.5 專業人士／技師在改進管理及創新技術方面，擔當十分重要的角色。本會建議採用圖 4.1 的訓練途徑。

圖 4.1: 專業人士／技師訓練



4.6 按附錄 16 至 18 的數字，2014 年至 2016 年間機電工程業專業人士／技師級主要職務的推算每年平均訓練需求見表 4.2。

表 4.2: 機電工程業專業人士／技師級主要職務
推算 2014 年至 2016 年間平均每年訓練需求

職稱	2013 年人力調查時的僱員人數	推算平均每年訓練人數
屋宇設備工程師	932	62 - 76
電機工程師		
（機電工程行業）	2 455	164 – 201
（船舶修建行業）	22	1 - 2
冷凝／空氣調節／通風設備工程師	1 190	80 - 97
機械工程師		
（機電工程行業）	664	45 - 54
（船舶修建行業）[1]	131	8 - 9
（氣體燃料行業）	99	3 - 4
水喉及渠務工程師	153	10 - 13
升降機／自動梯工程師	324	22 - 27
消防設備工程師	477	32 - 39
控制及儀器工程師	124	8 - 10
工程經理[2]		
（機電工程行業）	1 469	98 - 120
（船舶修建行業）	82	5 - 6
安全主任		
（機電工程行業）	143	10 - 12
（船舶修建行業）	13	1
（氣體燃料行業）	20	1
飛機維修工程師[3]	504	34 - 41
氣體工程師	252	9 - 10
總數	9 054	593 - 723

[1] 包括輪機工程師

[2] 有關訓練需求是用以填補工程師晉升為經理所騰出的空缺。

[3] 飛機維修界別於是次人力調查完成後始通知本會，由於業務增長，估計 2014 年需要訓練 80 位飛機維修工程師。

4.7 表 4.3 列出本地大學機電工程相關學科全日制課程的預計畢業生人數。由於需求下降，本地大學不再開辦輪機工程學位課程，然而，輪機工程師可由機械工程畢業生擔任。

表 4.3: 本地大學全日制學位課程
推算 2013 年至 2015 年間畢業生人數
（擔任機電工程業主要職務）

院校	課程	預計本地畢業生人數 2013 年	2014 年	2015 年
香港城市大學 香港理工大學 香港大學	工學士 （屋宇裝備工程學）	105	110	120
香港理工大學 香港大學	工學士 （電機工程學）	85	95	95
香港理工大學 香港大學 香港科技大學	工學士 （機械工程學）	210	180	250
	總數	400	385	465

4.8 資料顯示，2014 年及 2015 年，本地大學相關學科全日制課程的畢業生人數，大致可應付約六至七成預計的機電工程業主要職務人力需求。不足之數可由海外畢業生及修讀兼讀制學士課程晉身專業人士／技師的技術員填補。

工科畢業生訓練計劃

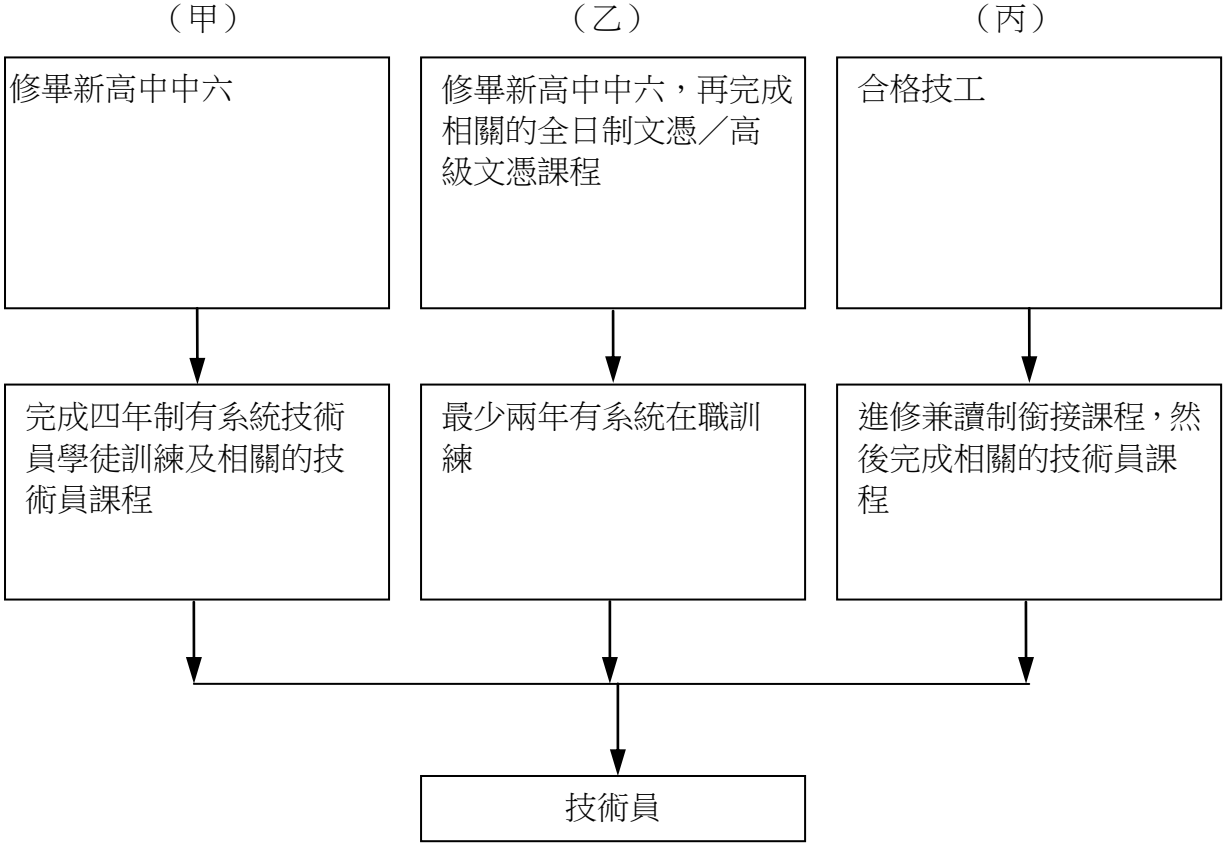
4.9 職業訓練局*[VTC]*轄下技師訓練委員會推行此項資助計劃，讓工科畢業生有更多機會接受有系統的實務訓練。工科畢業生可接受為期 18 個月的實務訓練，以符合香港工程師學會正式會員的資格標準。受訓的畢業生可經由僱主獲得薪金津貼。VTC 的技師訓練組亦提供免費服務，協助僱主招聘畢業生並支援與工科畢業生訓練有關事宜。本會籲請僱主利用此項計劃訓練工程師。

技術員訓練

4.10 技術員的職級介乎專業人士／技師與技工之間，須具備相當學歷、工作經驗及曾接受實務訓練，一般可在專業人士／技師的督導下，運用已確立的技術和方法去完成工作。

4.11 訓練技術員的三大途徑見圖 4.2。

圖 4.2: 技術員訓練



4.12 香港理工大學及香港城市大學均有開辦技術員程度的屋宇裝備工程及電機工程全日制高級文憑／副學士課程。

4.13 VTC 轄下香港專業教育學院*[IVE]*開辦技術員程度的飛機維修工程、電機工程、機械工程、屋宇裝備工程全日制和兼讀制高級文憑課程。

4.14 VTC 的青年學院開辦飛機維修、電機工程、機械工程及屋宇裝備工程中專教育文憑[DVE]課程。持有 DVE 或技術員基礎證書[TFC]的畢業生，可在業內擔任見習技術員職位。這類畢業生在入職前已接受適當的基本訓練，本會促請僱主聘請他們為見習技術員、技術員學徒或見習監督。

4.15 按附錄 16 至 18 的數字，機電工程業技術員級主要職務 2014 年至 2016 年間平均每年的推算訓練需求見表 4.4。

表 4.4: 機電工程業技術員級主要職務
推算 2014 年至 2016 年間平均每年訓練需求

職稱	2013 年人力調查時的僱員人數	推算平均每年訓練人數
監督		
（機電工程行業）	3 755	194 - 237
（船舶修建行業）	179	11 - 13
（氣體燃料行業）	174	6 - 7
屋宇設備技術員	1 582	81 - 99
繪圖員	495	25 - 31
電機工程技術員		
（機電工程行業）	2 227	114 - 140
（船舶修建行業）	36	2 - 3
（氣體燃料行業）	13	1
冷凝／空氣調節／通風設備技術員	1 406	72 - 88
機械工程技術員		
（機電工程行業）	829	43 - 52
（船舶修建行業）	202	12 - 15
升降機／自動梯技術員	838	43 - 53
消防設備技術員	797	41 - 50
電工儀器技術員	50	3
辦公室設備維修技術員	85	4 - 5
助理安全主任／安全督導員		
（機電工程行業）	68	3 - 4
（船舶修建行業）	10	1
（氣體燃料行業）	33	1
飛機維修技術員[1]	370	19 - 23

[1] 飛機維修界別於是次人力調查完成後始通知本會，由於業務增長，估計 2014 年需要訓練 100 位飛機維修技術員。

鐵道車輛技術員	675	35 - 42
鐵路訊號技術員	251	13 - 16
氣體燃料工程技術員	314	10 - 13
總數	14 389	734 - 897

4.16 2013 年至 2015 年間可投身機電工程業的相關技術員課程畢業生估計人數見表 4.5。由於氣體燃料工程市場規模小，本地院校並無開辦這類技術員課程。現職氣體燃料工程技術員大多為屋宇裝備或機械工程學科畢業生。輪機工程及海事科技技術員課程亦因需求日減，自 2004 年起已停辦；所需的船舶修建技術員職位可由電機或機械工程技術員課程畢業生擔任。

表 4.5: 機電工程相關學科技術員課程
2013 年至 2015 年間
預計本地畢業生人數

院校	課程	估計可投身機電工程業的相關學科技術員畢業生人數 2013 年	2014 年	2015 年
香港理工大學 香港城市大學	全日制高級文憑／副學士課程[(a)]:			
	- 屋宇裝備工程學	65	60	55
	- 電機工程學	20	15	15
	小計	85	75	70
IVE	全日制高級文憑課程[(b)]:			
	- 飛機維修工程	35	80	75
	- 屋宇裝備工程	110	165	170
	- 電機工程	315	385	420
	- 機械工程	145	300	170
	小計	605	930	835

青年學院	全日制 DVE 課程 [(c)]（取得 DVE 學歷的畢業生）：			
	- 飛機維修	35	40	40
	- 屋宇裝備工程（專修空調製冷或屋宇裝備）	70	50	50
	- 電機工程（專修電氣安裝或升降機及自動梯）	85	40	40
	- 機械工程	70	35	35
	小計	260	165	165
建造業議會	全日制文憑課程：			
	- 屋宇裝備監工	35	35	35
總計		985	1 205	1 105

註

(a) 指 40%選擇就業的大學高級文憑／副學士課程畢業生；假設其餘 60%畢業生繼續升讀學位課程。

(b) 在推算有關數字時，本會參考了 2011 年及 2012 年的升學及就業比率。上表所列的數字為 IVE 畢業生實際有機會投身機電工程業擔任技術員的數目。

(c) 大部分取得 DVE 學歷的畢業生曾於中學時完成中六。上表所列的數字是根據 2012/13 學年的升學及就業比率推算所得。

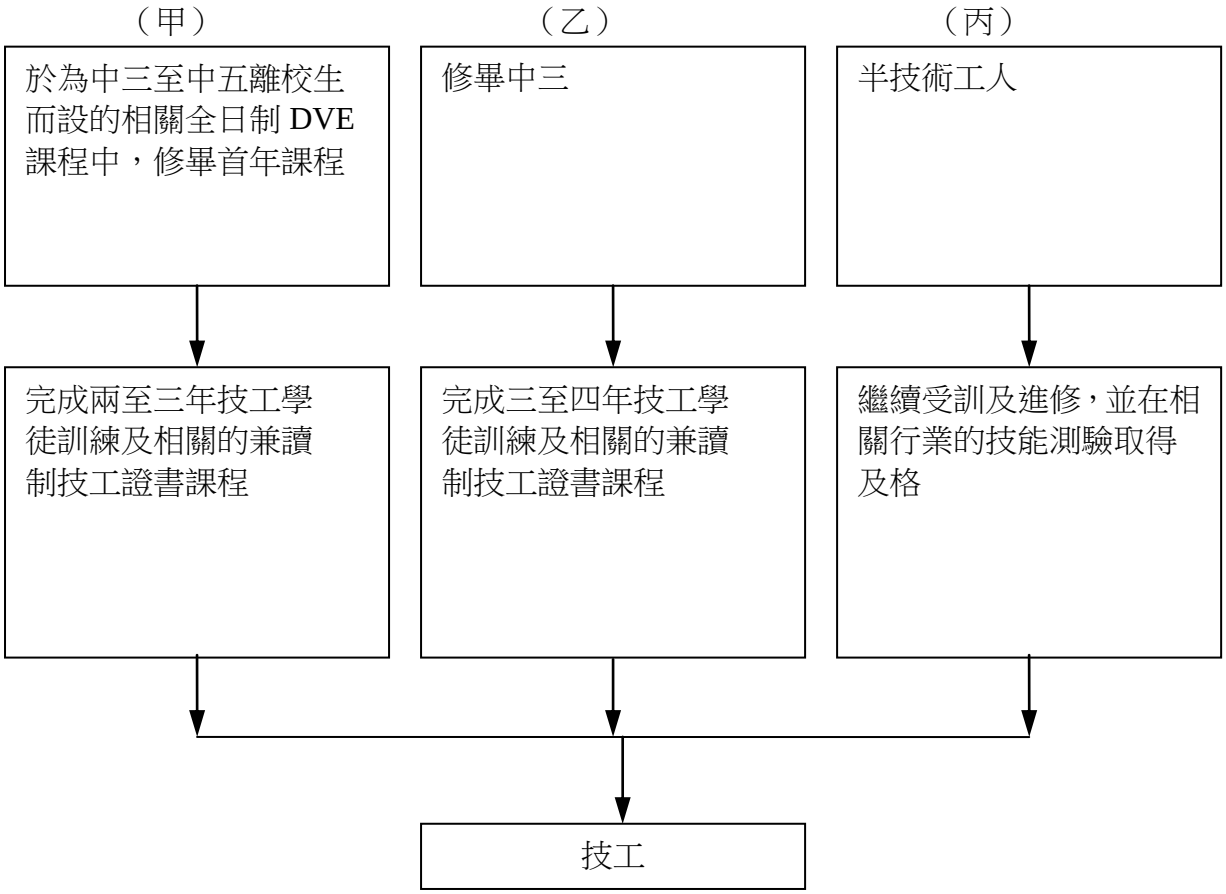
4.17 從表 4.4 及表 4.5 可見，可投身機電工程業擔任主要職務的相關技術員課程畢業生平均推算數字超越 2014 年及 2015 年的預計所需人力（高出約 35%）。儘管如此，讀者宜注意，在是次調查中，部分僱有不少機電工程學科畢業生的僱主（特別是地產及物業管理行業的僱主）並未納入受訪範圍內。此外，一些 DVE 畢業生會受聘為技工學徒，而非技術員學徒。另外，部分畢業生或會選擇與機電工程無關的工作。考慮到這些因素，技術員課程的畢業生供應量亦可算大致配合市場需求。

技工訓練

4.18 技工是指熟練工人，能在有限度的指示及督導下，應用各種技能執行個別行業的職務。技工除須具備實際技能外，亦需有相關的理論知識，以便能適應日新月異的科技發展。本會建議青年人參加學徒訓練計劃，接受所需實務訓練及技術教育，以成為合格技工。

4.19 訓練技工的一般途徑見圖 4.3。

圖 4.3: 技工訓練



4.20 本會建議採用訓練途徑（甲），因為訓練期較短，而且受聘者已接受過若干基本訓練，在學徒訓練之初，即可擔任工作。

4.21 以中三至中五離校生為對象的機電工程業各類技工課程，主要由 VTC 轄下青年學院提供。除了開辦全日制 DVE 課程（屬職前訓練課程），亦設有日間兼讀制技工證書課程，供註冊技工學徒修讀。此外，建造業議會*[CIC]*開設了電器裝置及水喉潔具兩項基本工藝課程。

4.22 按附錄 16 至 18 的數字，機電工程業技工級主要職務 2014 年至 2016 年間的推算平均每年訓練需求見表 4.6。如第三章所述，AFM（趨勢分析法）推算所得的人力數字與僱主對 2014 年技工級人力的預測存在明顯差距（相差 1 584 人）。兩種方法推算所得的訓練需求結果見表 4.6。

表 4.6: 機電工程業技工級主要職務
推算 2014 年至 2016 年間平均每年訓練需求[1]

職稱	2013 年人力調查時的僱員人數	推算平均每年訓練人數	
管工／領工	4 459	151 – 185	*(345 – 380)*
屋宇設備技工	2 156	73 – 89	*(167 – 183)*
電工／電氣打磨裝配工			
（機電工程行業）	9 026	307 – 376	*(699 – 769)*
（船舶修建行業）	112	7 – 8	(7 – 8)
控制板裝配工	254	9 – 11	*(20 – 22)*
電氣佈線工	1 177	40 – 49	*(91 – 100)*
空調製冷設備技工			
（機電工程行業）			
- 電力控制	3 500	119 – 145	*(271 – 298)*
- 獨立系統	1 728	59 – 72	*(134 – 147)*
- 送風系統	660	22 – 27	*(51 – 56)*
- 保溫	292	10 – 12	*(23 – 25)*
- 水系統	251	9 – 10	*(19 – 21)*
（船舶修建行業）	16	1 – 2	(1 – 2)
喉管工			
（機電工程行業）	481	16 – 20	*(37 – 41)*
（船舶修建行業）	77	5 – 6	(5 – 6)
機械打磨裝配工／機床工			
（機電工程行業）	1 814	62 - 75	*(141 – 154)*
（船舶修建行業）	437	26 - 33	(26 – 33)
（氣體燃料行業）	54	2 - 3	(2 – 3)
升降機／自動梯技工	2 493	85 – 103	*(193 – 212)*

[1] 表內列載 AFM（趨勢分析法）推算所得的數字，以及僱主對 2014 年人力預測的結果（括號內），以作比較。

職稱	2013 年人力調查時的僱員人數	推算平均每年訓練人數	
消防機械裝配工	654	22 – 27	*(51 – 56)*
消防電氣裝配工	1 122	38 – 47	*(87 – 95)*
強電流電纜接駁技工	237	8 – 10	*(18 – 20)*
架空電線技工	362	12 – 15	*(28 – 31)*
電器用具維修技工	769	26 – 32	*(60 – 65)*
焊接工			
（機電工程行業）	61	2 – 3	*(5)*
（船舶修建行業）	53	3 – 4	(3 – 4)
飛機維修技工[1]	1 811	61 – 75	*(140 – 154)*
鐵道車輛技工	604	20 – 25	*(47 – 51)*
鐵路訊號技工	15	1	*(1)*
船級協會認可焊接工	20	1	(1)
氣體燃料輸送技工（石油氣）	73	2 – 3	(2 – 3)
氣體燃料輸送技工（煤氣）	205	7 – 8	(7 – 8)
氣體燃料用戶裝置技工（住宅式）	383	13 – 16	(13 – 16)
氣體燃料用戶裝置技工（非住宅式）	114	4 – 5	(4 – 5)
總數	35 470	1 223 – 1 498	*(2 699 – 2 975)*

4.23 表 4.7 列載 2013 年至 2015 年間可擔任機電工程業主要職務的相關全日制技工課程畢業生平均推算數字。預計大部分畢業生將會受聘為技工學徒，並透過修讀日間兼讀制技工證書課程，繼續接受正規訓練。此外，受僱的技工學徒中，有部分人未曾修讀過全日制 DVE 課程（即圖 4.3 所示的訓練途徑（乙））。表 4.8 根據技工證書課程的預計入讀人數，列載 2013 年至 2015 年技工學徒的總人數。

[1] 飛機維修界別於是次人力調查完成後始通知本會，由於業務增長，估計 2014 年需要訓練 380 位飛機維修技工。

表 4.7: 機電工程相關學科全日制技工課程
推算 2013 年至 2015 年間本地畢業生人數

院校	課程	估計可投身機電工程業的技工畢業生人數		
		2013 年	2014 年	2015 年
青年學院	DVE（屋宇裝備工程分流）– 專修空調製冷或屋宇裝備	105	145	145
	DVE（電機工程分流）– 專修電氣裝置或升降機及自動梯	125	195	195
	DVE（機械工程分流）	55	90	90
	DVE（氣體燃料工程分流）	25	30	30
	小計	310	460	460
建造業議會	基本工藝課程			
	- 電器裝置科	90	95	95
	- 水喉潔具科	20	75	95
	小計	110	170	190
總計		420	630	650

註
(a) 2013 年的畢業生就業人數由卓越培訓發展中心提供。
(b) 2014 年及 2015 年的畢業生就業人數乃根據 2013/14 學年首次推出「機電業訓練津貼計劃」後的入讀人數推算。估計約六至七成學生將於修畢一年全日制 DVE 課程後投身機電工程業。

表 4.8: 2013 年至 2015 年間
修讀日間兼讀制技工證書課程的
機電工程新註冊學徒推算人數

院校	課程	估計每年入讀人數
青年學院	空調製冷技工證書	210
	屋宇裝備技工證書	85
	電機工程技工證書	300
	升降機及自動梯技工證書	90
	機械工程技工證書	240
	氣體燃料工程技工證書	25
	總數	950

註
(a) 按 2013/14 學年入讀人數推算所得。
(b) 數字包括圖 4.3 所示途徑（甲）及（乙）的技工學徒。

4.24 本會比較表 4.6 及表 4.8 的數字，發現 2014 年及 2015 年機電工程新註冊技工學徒的估計人數可滿足 AFM 推算每年所需訓練人手的 70%。然而，與僱主 2014 年人力預測數字相比，新註冊技工學徒的數目只能填補約 33%所需人力。雖然部分從業員會透過在職培訓、技能提升訓練或通過相關技能測驗而成為合格技工，但相信仍不足以應付 2014 及 2015 年大量鐵路項目施工時業界所需的人力。

4.25 為培訓足夠合格技工支援機電工程業持續發展，本會建議培訓機構增加機電學科職前培訓名額，以及為現職半技術工人開辦更多技能提升課程，訓練他們成為合格技工。

4.26 青年人現今的出路選擇較以往多，僱主應繼續宣傳機電工程業的形象及前景，以吸引更多中學離校生考慮入行。

半技術工人／普通工人訓練

4.27 半技術工人／普通工人通常獲指派擔任性質重複的工作，要求的技能較少，訓練時間亦較短。考慮到未來幾年人手短缺，本會建議培訓更多半技術工人／普通工人，以紓緩技工的工作量；為此，須開辦更多再培訓課程及短期課程。不過，鑑於業

內工作環境相對欠佳，知識及技能要求又較高，選擇機電工程行業再培訓課程的人為數不多。本會建議推出更具吸引力的獎勵／津貼計劃，以改善本業再培訓課程的報讀情況。CIC 推出的「承建商合作培訓計劃」屬成功例子，現已擴展至機電工程業，並於2013/14 財政年度提供約 1 100 個訓練名額。

4.28 現時市場競爭日趨激烈，僱主應為半技術工人／普通工人提供在職增修訓練，充實他們的工作內容，以挽留員工並提高他們的生產力。另一方面，本會建議特區政府應考慮撥出更多資源，為半技術工人及未合資格的技工提供技能提升訓練，改進他們的工作質素，從而提升機電工程業的作業水平及安全標準。2001 年設立的技能提升計劃（現稱「新技能提升計劃」），有助業內半技術工人／普通工人提升技能和專業知識，增強競爭力和就業保障。

VTC 轄下的卓越培訓發展中心

4.29 VTC 轄下的多間卓越培訓發展中心，如電機業、機械業、氣體燃料業、焊接業等，為機電工程業提供以下幾方面的訓練及技能評估：

(a) 為本業初入行人士而設的學分制多階進出機電工程學科專業教育訓練課程（包括技術員及技工程度）；

(b) 有助增進知識和技能的在職技能提升課程；

(c) 大專院校工科生及工科畢業生基本實務訓練；

(d) 評估從業員技能水平的技能測驗。

電工、升降機及自動梯工人技能測驗

4.30 VTC 自 1989 年起，推行自願參加性質的技能測驗及證書頒發制度，目的如下：

(a) 協助業界選聘合適人才；

(b) 使未受過正規訓練的人士亦能取得認可資格；

(c) 釐定技術水平，並提高技術人員的地位；

(d) 使技術人員的技術水平獲得認可，並能獲有關機構發牌或准予註冊；

(e) 為技術人員設立技能等級，作為事業晉升階梯。

4.31 本會負責設計及推行電工技能測驗。電工技能測驗證書已獲政府認可，分

別作為 A 級及 R 級（空氣調節）兩類電工註冊之用。

4.32 為協助從業員按《升降機及自動梯條例》（第 618 章）進行註冊，本會特別為升降機技工及自動梯技工於 2012 年 12 月 17 日推出兩項新的技能測驗。

4.33 僱主應鼓勵屬下電工、升降機及自動梯工人參加技能測驗，以便取得獲正式認可的技工資格。

為從事機電工種的建築工人而設的指明訓練課程及技能測驗

4.34 CIC 開辦指明訓練課程，供根據《建造業工人註冊條例》「臨時註冊」的技術工人修讀，協助他們於三年臨時期限屆滿前取得註冊資格。

4.35 2010 年 9 月前，VTC 受 CIC 所託，為建造業 12 個機電工種舉辦技能測驗及中級工藝測試。目前，有關技能測驗及中工測試已交由 CIC 負責，但 VTC 各卓越培訓發展中心仍繼續提供培訓，讓 DVE 課程學生參加中工測試，以便他們能符合《建造業工人註冊條例》的要求，註冊為合格工人。

4.36 本會籲請承造建築工程機電項目的承辦商支持工人參加技能測驗及中工測試，並鼓勵臨時註冊技術工人參加指明訓練課程，從而符合《建造業工人註冊條例》的規定。

新科技培訓計劃

4.37 新科技培訓計劃向本地僱主提供最高達訓練開支 50%的資助，讓僱員學習新科技。合資格申請資助的訓練方式包括：海外訓練或在職實習，以及為個別公司特設的本地課程／在職實習。本會建議僱主利用這項計劃讓僱員接受新科技培訓。

主要結論及建議摘要

4.38 本會對 2014 年及 2015 年人力訓練的主要結論及建議扼述如下：

(a) 專業人士／技師訓練：

本地大學 2014 年至 2015 年相關學科的畢業生人數，大致能應付六至七成預計的機電工程業主要職務訓練需求。不足之數可由海外畢業生，以及技術員通過修讀兼讀制學士課程晉身專業人士／技師填補。

(b) 技術員訓練：

本地技術員課程 2014 年至 2015 年的畢業生人數，將會較預計的機電工程業主要職務訓練需求高出約 35%。不過，部分畢業生會投身其他行業，而且部分 DVE 畢業生或會入職為技工學徒。考慮到這些因素，畢業生的供應或大致能配合市場需求。

(c) 技工訓練：

(i) 透過正式訓練（如 DVE 及技工證書課程）所提供的技工人數，將能滿足按趨勢分析推算所得訓練需求的 70%。此外，多個鐵路項目將於 2014 年及 2015 年陸續竣工。根據僱主對 2014 年的預測，訓練需求會增加一倍，然而供應卻只能滿足 33%的預測需求。雖然部分從業員會透過在職培訓、技能提升訓練或通過相關技能測驗而成為合格技工，但相信仍不足以應付業界的人力需求。

(ii) 本會建議增加技工級職前訓練課程的學額，開辦更多技能提升訓練課程，以協助現職半技術工人取得認可資歷，成為合格技工。

(iii) 由於公共房屋供應量預計於 2015/16 及 2016/17 財政年度會有所增加，故本會建議培訓機構逐步增加 DVE 課程（氣體燃料工程分流）的學額。

(d) 半技術工人／普通工人訓練

由於技工人手短缺，本會建議透過 CIC 的「承建商合作培訓計劃」，培訓更多半技術工人／普通工人，以紓緩技工的工作量。

(e) 表 4.2、表 4.4 及表 4.6 的訓練需求推算只可作為參考；培訓機構擬訂訓練名額時，應同時考慮報讀人數及畢業生的就業率。

(f) 香港特區政府推出跨界別七級制資歷架構*[QF]*，涵蓋學術及職業資歷。資歷架構提供統一的資歷標準，清楚展示各級的銜接階梯，讓進修人士定下清晰目標及方向，取得具質素保證的資歷。機電業設立資歷架構後，僱員可根據行業需要學習知識及技能，循清晰的進修途徑發展事業。

(g) 僱主應鼓勵僱員參加獲政府認可的技能測驗，取得相關資格。

(h) 承造建築工程機電項目的承辦商，應鼓勵工人根據《建造業工人註冊條例》的規定，註冊為合資格工人。

Appendix 1

Electrical and Mechanical Services Training Board

Membership
(As at 1st November 2013)

Chairman

Ir SYNN Raymond Cheung	(nominated by the Hong Kong Air Conditioning and Refrigeration Association Ltd)

Members

Mr CHAN Yun-fu	(nominated by the Hong Kong and Kowloon Electrical Engineering and Appliances Trade Workers Union)
Ir Dr CHUNG Wai-nang	(nominated by an Aircraft Engineering Company)
Mr KWAN Sun-chuen	(nominated by Hong Kong Electrical Contractors' Association Ltd)
Ir Dr LAI Hung-kit, Joseph	(nominated by a Professional Body of the Building Services Operation and Maintenance Sector)
Mr LAI Wah-hing	(nominated by the Lift and Escalator Contractors Association)
Mr LAU Siu-hung, Anthony	(nominated by the Hong Kong & Kowloon Electric Trade Association)
Ir LEE Chun-ming, Angus	(nominated by an Electric Railway Company)
Mr LEUNG Chung-fai, Fernando	(nominated by an Ocean-going Vessel Repairing Company)
Mr MAK Chi-chui	(nominated by a Local Craft Repairing Company)
Ir Dr PONG Wing-tat	(nominated by a Local University)
Ir Raymond TAM Siu-lun	(nominated by the Hong Kong Institution of Engineers)

Ir TO Wang-kam	(nominated by an Electrical and Mechanical Engineering Consulting Company)
Ir TO Wing-ming, James	(nominated by the Hong Kong and China Gas Company Ltd.)
Ir TO Yip-lam	(nominated by an Electricity Supply Company)
Ir TSANG Hing-chueng, Gilbert	(nominated by the Hong Kong Electrical and Mechanical Contractors' Association)
Mr YIU Chow-leung	(nominated by a LP Gas Supply Company)
Mr YU Hing-wai	(nominated by the Association of Registered Fire Service Installation Contractors of Hong Kong Ltd.)
Mr HO Pak-chuen	(representative of the Commissioner for Labour)
Mr YAN Man-kit, Andrew	(representative of the Director of Electrical and Mechanical Services)
Ir TANG Sing-sum	(representative of the Executive Director of the Vocational Training Council)

Secretary

Mr FUNG Ming-kong, Steve	(Vocational Training Council)

機電工程業訓練委員會
委員名單

(二零一三年十一月一日)

主席 ：

冼泳霖工程師	(香港空調及冷凍商會有限公司提名)

委員 ：

陳潤富先生	(港九電器工程電業器材職工會提名)
鍾偉能博士工程師	(一間飛機工程公司提名)
關新全先生	(香港電器工程商會有限公司提名)
黎鴻傑博士工程師	(一間屋宇設備運行及裝修專業團體提名)
黎華興先生	(電梯業協會提名)
劉少雄先生	(港九電業總會提名)
李俊明工程師	(一間電氣化鐵路公司提名)
梁仲徽先生	(一間遠洋輪船維修公司提名)
麥志釗先生	(一間本地船隻維修公司提名)
龐永達博士工程師	(一間本地大學提名)
譚兆麟工程師	(香港工程師學會提名)
杜宏金工程師	(一間電機及機械工程顧問公司提名)
杜永明工程師	(香港中華煤氣有限公司提名)
杜業林工程師	(一間電力公司提名)
曾慶祥工程師	(香港機電工程商協會提名)
姚秋樑先生	(一間石油氣供應商)
余慶為先生	(香港註冊消防工程公司商會有限公司提名)
賀百川先生	(勞工處處長代表)
甄文傑先生	(機電工程署署長代表)
鄧勝森工程師	(職業訓練局執行幹事代表)

秘書

馮明港先生	(職業訓練局)

Electrical and Mechanical Services Training Board

Terms of Reference

1. To determine the manpower demand of the industry, including the collection and analysis of relevant manpower and student/trainee statistics and information on socio-economic, technological and labour market developments.

2. To assess and review whether the manpower supply for the industry matches with the manpower demand.

3. To recommend to the Vocational Training Council the development of vocational education and training facilities to meet the assessed manpower demand.

4. To advise the Hong Kong Institute of Vocational Education (IVE) and training & development centres on the direction and strategic development of their programmes in the relevant disciplines.

5. To advise on the course planning, curriculum development and quality assurance systems of the IVE and training & development centres.

6. To prescribe job specifications for the principal jobs in the industry defining the skills, knowledge and training required.

7. To advise on training programmes for the principal jobs in the industry specifying the time a trainee needs to spend on each skill elements.

8. To tender advice in respect of skill assessments, trade tests and certification for in-service workers, apprentices and trainees, for the purpose of ascertaining that the specified skill standards have been attained.

9. To advise on the conduct of skill competitions in key trades in the industry for the promotion of vocational education and training as well as participation in international competitions.

10. To liaise with relevant bodies on matters pertaining to the development and promotion of vocational education and training in the industry, including employers, employers' associations, trade unions, professional institutions, training and educational institutions and government departments.

11. To organize seminars/conferences/symposia on vocational education and training for the industry.

12. To advise on the publicity relating to the activities of the Training Board and relevant vocational education and training programmes of the VTC.

13. To submit to the Council an annual report on the Training Board's work and its recommendations on the strategies for programmes in the relevant disciplines.

14. To undertake any other functions delegated by the Council in accordance with Section 7 of the Vocational Training Council Ordinance.

附錄 2

機電工程業訓練委員會

職權範圍

1. 確定業內的人力需求，包括收集、分析相關的人力和學生／學員統計數字，以及關於社會經濟、科技及人力市場發展的資料。

2. 評估及研究本業的人力供求是否平衡。

3. 就發展業內專業教育及訓練設施應付人力需求，向職業訓練局提供意見。

4. 就相關學科的課程發展方向及策略，向香港專業教育學院(IVE)、訓練及發展中心提出建議。

5. 就 IVE、訓練及發展中心的課程策劃、課程發展及質素保證制度提供意見。

6. 擬訂本業主要職務的工作範圍，界定所需的技能、知識及訓練。

7. 建議本業主要職務訓練方案，訂定每種技能所需的訓練期。

8. 對技術評估、技能測驗及證書頒發制度提供意見，以確定從業員、學徒及見習員的技能水平。

9. 就本業主要行業舉辦技能比賽提供意見，以推廣專業教育與訓練和派員參加國際賽事。

10. 就本業專業教育及訓練的發展與推廣事宜，與僱主、僱主聯會、工會、專業團體、訓練及教育機構、政府部門等聯絡。

11. 為本業舉辦有關專業教育及訓練的研討會與會議。

12. 就業內訓練委員會工作、有關職訓局專業教育及訓練課程的宣傳事宜提供意見。

13. 每年向局方呈交訓練委員會工作報告，以及相關學科課程發展策略建議。

14. 根據《職業訓練局條例》第 7 條，負責局方所委派的其他工作。

Appendix 3
附錄 3

THE WHOLE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
整 個 機 電 工 程 行 業

MANPOWER STATISTICS
人 力 狀 況

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Building Services Engineer 屋宇設備工程師	932	58	36	33	970
Electrical Engineer 電機工程師	2 455	87	88	74	2 569
Refrigeration/Air-conditioning/ Ventilation Engineer 冷凝／空氣調節／通風設備工程師	1 190	58	70	62	1 258
Mechanical Engineer 機械工程師	664	57	21	42	691
Plumbing and Drainage Engineer 水喉及渠務工程師	153	1	15	1	168
Lift/Escalator Engineer 升降機／自動梯工程師	324	-	2	-	326
Fire Services Engineer 消防設備工程師	477	10	14	31	492
Electronics Engineer 電子工程師	607	51	20	20	656
Control and Instrumentation Engineer 控制及儀器工程師	124	2	5	6	129
Engineering Manager 工程經理	1 469	-	37	-	1 515
Safety Officer 安全主任	143	-	-	-	143
Aircraft Maintenance Engineer 飛機維修工程師	504	-	41	-	551

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Sub-total 小計	**9 042**	**324**	**349**	**269**	**9 468**
TECHNICIAN LEVEL 技術員級					
Supervisor 監督	3 755	8	60	7	3 821
Building Services Technician 屋宇設備技術員	1 582	22	61	21	1 653
Draughtsman 繪圖員	495	13	35	12	531
Electrical Engineering Technician 電機工程技術員	2 227	148	109	192	2 336
Refrigeration/Air-conditioning/ Ventilation Technician 冷凝／空氣調節／通風設備技術員	1 406	89	55	90	1 469
Mechanical Engineering Technician 機械工程技術員	829	67	53	70	877
Lift/Escalator Technician 升降機／自動梯技術員	838	-	44	-	882
Fire Services Technician 消防設備技術員	797	26	23	26	822
Electrical Instrument and Meter Technician 電工儀器技術員	50	-	-	6	50
Electronics Technician 電子技術員	878	79	28	81	903
Telecommunication Technician 電訊技術員	519	60	29	78	578
Office Equipment Service Technician 辦公室設備維修技術員	85	-	-	-	85
Assistant Safety Officer/Safety Supervisor 助理安全主任/安全督導員	68	-	1	-	69

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Aircraft Maintenance Technician 飛機維修技術員	370	-	12	-	384
Rolling Stock Technician 鐵道車輛技術員	675	-	12	-	687
Railway Signalling Technician 鐵路訊號技術員	251	-	11	-	262
Supervisor/Chargehand 監督／管工	3	-	-	-	3
Sub-total 小計	**14 828**	**512**	**533**	**583**	**15 412**
TRADESMAN/CRAFTSMAN LEVEL 技工級					
Foreman/Chargehand 管工／領工	4 459	-	165	-	4 561
Building Services Mechanic 屋宇設備技工	2 156	43	56	105	2 235
Electrician/Electrical Fitter 電工／電氣打磨裝配工	9 026	521	568	783	9 519
Control Panel Assembler 控制板裝配工	254	8	3	8	257
Electrical Wireman 電氣佈線工	1 177	23	28	68	1 200
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	3 500	161	154	158	3 612
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	1 728	87	245	264	1 972
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Air System)/ Sheet Metal Worker 空調製冷設備技工(送風系統) ／簿片金屬構造工	660	20	12	20	672

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/ Thermal Insulation Craftsman 空調製冷設備技工(保溫) ／保溫技工	292	5	18	10	310
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	251	-	3	-	254
Plumber and Pipe Fitter 喉管工	481	12	16	8	497
Mechanical Fitter/Machinist 機械打磨裝配工／機床工	1 814	134	180	154	1 950
Lift Mechanic 升降機技工	1 650	7	172	14	1 823
Escalator Mechanic 自動梯技工	843	-	81	12	925
Fire Services Electrical Fitter 消防電氣裝配工	654	28	147	31	799
Fire Services Mechanical Fitter 消防機械裝配工	1 122	2	60	22	1 182
Cable Jointer (Power) 強電流電纜接駁技工	237	11	2	16	239
Overhead Linesman 架空電線技工	362	4	2	7	364
Electrical Appliances Service Mechanic 電器用具維修技工	769	11	51	12	779
Welder 焊接工	61	-	1	-	62
Carpenter 木工	22	-	2	-	24
Painter 髹漆工	176	-	2	-	178
AV and RF Mechanic 影音及射頻技工	188	3	3	3	188

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Building Security System Mechanic 屋宇防盜系統技工	12	-	-	-	12
Communication System Mechanic 電訊系統裝配工	2 026	10	11	40	2 034
Aircraft Maintenance Mechanic 飛機維修技工	1 811	253	148	450	1 959
Rolling Stock Tradesman 鐵道車輛技工	604	-	17	-	621
Railway Signalling Tradesman 鐵路訊號技工	15	-	-	-	15
Gas Utilization Fitter (Domestic) 氣體燃料用戶裝置技工（住宅式）	12	-	-	-	12
Sub-total 小計	**36 362**	**1 343**	**2 147**	**2 185**	**38 255**
SEMI-SKILLED WORKER/GENERAL WORKER 半技術工人／普通工人					
Labourer 雜工	993	-	128	-	1 104
Semi-skilled Worker 半技術工人	1 934	-	568	-	2 378
Sub-total 小計	**2 927**	**-**	**696**	**-**	**3 482**
GRAND TOTAL 總 計	**63 159**	**2 179**	**3 725**	**3 037**	**66 617**

THE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
機電工程行業

DISTRIBUTION OF EMPLOYEES BY MONTHLYINCOMERANGE
按每月收入幅度劃分的僱員人數分布情況

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級										
Building Services Engineer 屋宇設備工程師	-	-	-	-	196	101	385	171	18	61
Electrical Engineer 電機工程師	-	-	3	84	490	334	363	740	53	388
Refrigeration/ Air-conditioning/ Ventilation Engineer 冷凝／空氣調節／通風設備工程師	-	-	-	15	238	370	386	21	2	158
Mechanical Engineer 機械工程師	-	-	-	12	124	85	228	32	76	107
Plumbing and Drainage Engineer 水喉及渠務工程師	-	-	12	-	21	67	39	10	-	4
Lift/Escalator Engineer 升降機／自動梯工程師	-	-	15	-	-	35	10	-	-	264
Fire Services Engineer 消防設備工程師	-	-	-	40	115	194	47	25	-	56
Electronics Engineer 電子工程師	-	-	-	1	217	45	122	208	2	12
Control and Instrumentation Engineer控制及儀器工程師	-	-	-	1	8	9	51	25	-	30
Engineering Manager 工程經理	-	-	-	1	43	125	394	266	455	185
Safety Officer 安全主任	-	-	-	2	15	64	27	8	-	27
Aircraft Maintenance Engineer 飛機維修工程師	-	-	-	-	-	12	468	-	-	24
Sub-total 小計	**-**	**-**	**30**	**156**	**1 467**	**1 441**	**2 520**	**1 506**	**606**	**1 316**
TECHNICIAN LEVEL 技術員級										
Supervisor 監督	-	-	86	255	1 089	1 833	27	1	6	458
Building Services Technician 屋宇設備技術員	-	1	340	149	578	235	111	-	-	168

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
Draughtsman 繪圖員	-	37	207	44	54	73	-	-	-	80
Electrical Engineering Technician 電機工程技術員	-	20	350	247	947	321	42	-	-	300
Refrigeration/ Air-conditioning/ Ventilation Technician 冷凝／空氣調節／通風設備技術員	-	111	347	287	269	226	16	-	-	150
Mechanical Engineering Technician 機械工程技術員	-	12	61	26	281	233	90	-	-	126
Lift/Escalator Technician 升降機／自動梯技術員	-	-	-	-	124	-	11	-	-	703
Fire Services Technician 消防設備技術員	-	10	80	417	166	38	-	-	-	86
Electrical Instrument and Meter Technician 電工儀器技術員	-	-	4	4	18	-	24	-	-	-
Electronics Technician 電子技術員	-	8	72	116	74	506	-	-	-	102
Telecommunication Technician 電訊技術員	-	12	212	60	222	8	-	-	-	5
Office Equipment Service Technician 辦公室設備維修技術員	-	-	84	1	-	-	-	-	-	-
Assistant Safety Officer/ Safety Supervisor 助理安全主任／安全監督	-	-	16	16	10	3	-	-	-	23
Aircraft Maintenance Technician 飛機維修技術員	-	-	-	-	360	-	-	-	-	10
Rolling Stock Technician 鐵道車輛技術員	-	-	-	-	675	-	-	-	-	-
Railway Signalling Technician 鐵路訊號技術員	-	-	-	-	251	-	-	-	-	-
Supervisor/Chargehand 監督／管工	-	-	-	-	3	-	-	-	-	-
Sub-total 小計	**-**	**211**	**1 859**	**1 622**	**5 121**	**3 476**	**321**	**1**	**6**	**2 211**
TRADESMAN/CRAFTSMAN LEVEL 技工級										
Foreman/Chargehand 管工／領工	4	12	213	2 206	1 511	108	4	-	-	401
Building Services Mechanic 屋宇設備技工	8	202	1 207	328	280	24	-	-	-	107
Electrician/Electrical Fitter 電工／電氣打磨裝配工	168	403	1 364	2 857	3 333	164	-	-	-	737
Control Panel Assembler 控制板裝配工	-	-	38	16	200	-	-	-	-	-

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
Electrical Wireman 電氣佈線工	5	36	548	357	231	-	-	-	-	-
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工 (電力控制)	-	94	2 066	910	345	4	-	-	-	81
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary Control) 空調製冷設備技工 (獨立系統)	-	162	284	455	578	21	-	-	-	228
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Air System)/Sheet Metal Worker 空調製冷設備技工 (送風系統)/ 薄片金屬構造工	-	40	61	210	181	8	-	-	-	160
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/Thermal 空調製冷設備技工(保溫)/保溫技工	-	55	46	-	190	-	-	-	-	1
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工 (水系統)	-	-	20	-	200	4	-	-	-	27
Plumber and Pipe Fitter 喉管工	26	64	56	42	221	-	-	-	-	72
Mechanical Fitter/ Machinist 機械打磨裝配工／機床工	4	27	492	1 145	27	-	-	-	-	119
Lift Mechanic 升降機技工	-	-	168	528	200	-	-	-	-	754
Escalator Mechanic 自動梯技工	-	-	136	57	-	-	-	-	-	650
Fire Services Electrical Fitter 消防電氣裝配工	1	-	263	280	96	-	-	-	-	14
Fire Services Mechanical Fitter 消防機械裝配工	-	200	166	105	621	-	-	-	-	30
Cable Jointer (Power) 強電流電纜接駁技工	-	20	5	192	20	-	-	-	-	-
Overhead Linesman 架空電線技工	-	-	89	153	120	-	-	-	-	-
Electrical Appliances Service Mechanic 電器用具服務技工	8	236	142	160	127	-	-	-	-	96

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
Welder 焊接工	2	5	17	10	-	-	-	-	-	27
Carpenter 木工	-	4	11	2	5	-	-	-	-	-
Painter 髹漆工	-	16	156	4	-	-	-	-	-	-
AV and RF Mechanic 影音及射頻技工	20	21	52	-	-	-	-	-	-	95
Building Security System Mechanic 屋宇防盜系統技工	-	-	12	-	-	-	-	-	-	-
Communication System Mechanic 電訊系統裝配工	200	872	408	252	70	-	-	-	-	224
Aircraft Maintenance Mechanic 飛機維修技工	-	-	202	1 542	-	-	-	-	-	67
Rolling Stock Tradesman 鐵道車輛技工	-	-	604	-	-	-	-	-	-	-
Railway Signalling Tradesman 鐵路訊號技工	-	15	-	-	-	-	-	-	-	-
Gas Utilization Fitter (Domestic) 氣體燃料用戶裝置技工（住宅式）	-	-	3	9	-	-	-	-	-	-
Sub-total 小計	**446**	**2 484**	**8 829**	**11 820**	**8 556**	**333**	**4**	**-**	**-**	**3 890**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL　半技術工人／普通工人										
Labourer 雜工	116	479	227	10	-	-	-	-	-	161
Semi-skilled Worker 半技術工人	82	617	440	647	50	-	-	-	-	98
Sub-total 小計	**198**	**1 096**	**667**	**657**	**50**	**-**	**-**	**-**	**-**	**259**
GRAND TOTAL 總　計	**644**	**3 791**	**11 385**	**14 255**	**15 194**	**5 250**	**2 845**	**1 507**	**612**	**7 676**

THE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
機 電 工 程 行 業

BRANCH I : CONTRACTING E&M BRANCH
門 類 I : 承 造

MANPOWER STATISTICS
人 力 狀 況

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Building Services Engineer 屋宇設備工程師	161	7	1	7	162
Electrical Engineer 電機工程師	690	23	11	23	701
Refrigeration/Air-conditioning/ Ventilation Engineer 冷凝／空氣調節／通風設備工程師	658	27	22	31	681
Mechanical Engineer 機械工程師	70	19	-	19	70
Plumbing and Drainage Engineer 水喉及渠務工程師	15	-	-	-	15
Fire Services Engineer 消防設備工程師	357	5	7	26	365
Electronics Engineer 電子工程師	235	8	6	8	241
Control and Instrumentation Engineer 控制及儀器工程師	8	-	1	-	9
Engineering Manager 工程經理	554	-	1	-	555
Safety Officer 安全主任	33	-	-	-	33

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Sub-total 小計	**2 781**	**89**	**49**	**114**	**2 832**
TECHNICIAN LEVEL 技術員級					
Supervisor 監督	1 016	4	3	5	1 017
Building Services Technician 屋宇設備技術員	79	-	-	-	79
Draughtsman 繪圖員	273	3	25	3	298
Electrical Engineering Technician 電機工程技術員	604	-	-	40	604
Refrigeration/Air-conditioning/ Ventilation Technician 冷凝／空氣調節／通風設備技術員	964	35	34	34	992
Mechanical Engineering Technician 機械工程技術員	26	-	-	-	26
Fire Services Technician 消防設備技術員	728	23	20	23	748
Electronics Technician 電子技術員	208	-	-	-	208
Telecommunication Technician 電訊技術員	366	58	16	78	422
Assistant Safety Officer/Safety Supervisor 助理安全主任／安全督導員	20	-	-	-	20
Sub-total 小計	**4 284**	**123**	**98**	**183**	**4 414**
TRADESMAN/CRAFTSMAN LEVEL 技工級					
Foreman/Chargehand 管工／領工	1 593	-	5	-	1 598
Building Services Mechanic 屋宇設備技工	103	-	-	-	103

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Electrician/Electrical Fitter 電工／電氣打磨裝配工	4 149	235	385	454	4 519
Control Panel Assembler 控制板裝配工	232	4	-	4	232
Electrical Wireman 電氣佈線工	1 145	15	28	60	1 168
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	2 864	126	74	116	2 918
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	1 501	86	216	262	1 717
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Air System)/ Sheet Metal Worker 空調製冷設備技工(送風系統／簿片金屬構造工	512	20	10	20	522
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/ Thermal Insulation Craftsman 空調製冷設備技工(保溫) ／保溫技工	245	5	10	10	255
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	212	-	-	-	212
Plumber and Pipe Fitter 喉管工	1	-	-	-	1
Mechanical Fitter/Machinist 機械打磨裝配工／機床工	2	-	-	-	2
Fire Services Electrical Fitter 消防電氣裝配工	641	28	145	28	786
Fire Services Mechanical Fitter 消防機械裝配工	1 107	2	60	22	1 167

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計2014年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Cable Jointer (Power) 強電流電纜接駁技工	45	-	-	-	45
Overhead Linesman 架空電線技工	162	-	-	-	162
Electrical Appliances Service Mechanic 電器用具服務技工	21	-	-	-	21
Welder 焊接工	9	-	-	-	9
AV and RF Mechanic 影音及射頻技工	125	-	-	-	125
Communication System Mechanic 電訊系統裝配工	1 951	10	-	40	1 951
Sub-total 小計	**16 620**	**531**	**933**	**1 016**	**17 513**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL 半技術工人／普通工人					
Labourer 雜工	410	-	4	-	422
Semi-skilled Worker 半技術工人	1 258	-	165	-	1 304
Sub-total 小計	**1 668**	**-**	**169**	**-**	**1 726**
GRAND TOTAL 總 計	**25 353**	**743**	**1 249**	**1 313**	**26 485**

Appendix 6
附錄 6

THE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
機 電 工 程 行 業

BRANCH II: ELECTRICAL FITTING AND WATER PLUMBING
門 類 II: 水 電 工 程

MANPOWER STATISTICS
人 力 狀 況

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Building Services Engineer 屋宇設備工程師	30	-	5	-	35
Electrical Engineer 電機工程師	28	-	8	-	36
Plumbing and Drainage Engineer 水喉及渠務工程師	36	-	-	-	36
Engineering Manager 工程經理	6	-	-	-	6
Safety Officer 安全主任	2	-	-	-	2
Sub-total 小計	**102**	**-**	**13**	**-**	**115**
TECHNICIAN LEVEL 技術員級					
Supervisor 監督	30	-	-	-	30
Building Services Technician 屋宇設備技術員	4	-	-	-	4
Draughtsman 繪圖員	11	-	-	-	11

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Electrical Engineering Technician 電機工程技術員	11	-	1	-	12
Electrical Instrument and Meter Technician 電工儀器技術員	4	-	-	-	4
Sub-total 小計	**60**	**-**	**1**	**-**	**61**
TRADESMAN/ CRAFTSMAN LEVEL 技工級					
Foreman/Chargehand 管工／領工	253	-	-	-	253
Building Services Mechanic 屋宇設備技工	376	-	2	28	394
Electrician/Electrical Fitter 電工／電氣打磨裝配工	1 859	75	48	85	1 900
Electrical Wireman 電氣佈線工	32	8	-	8	32
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	63	-	-	-	63
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	8	-	-	-	8
Plumber and Pipe Fitter 喉管工	348	12	16	8	364
Electrical Appliances Service Mechanic 電器用具維修技工	24	-	-	-	24
Sub-total 小計	**2 963**	**95**	**66**	**129**	**3 038**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL 半技術工人／普通工人					
Labourer 雜工	59	-	-	-	59

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Semi-skilled Worker 半技術工人	125	-	8	-	133
Sub-total 小計	**184**	**-**	**8**	**-**	**192**
GRAND TOTAL 總　計	**3 309**	**95**	**88**	**129**	**3 406**

Appendix 7
附錄 7

THE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
機 電 工 程 行 業

BRANCH II: SERVICING E&M BRANCH
門 類 III : 服 務

MANPOWER STATISTICS
人 力 狀 況

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Building Services Engineer 屋宇設備工程師	424	19	14	19	438
Electrical Engineer 電機工程師	1 307	30	52	35	1 383
Refrigeration/Air-conditioning/ Ventilation Engineer 冷凝／空氣調節／通風設備工程師	193	-	20	-	213
Mechanical Engineer 機械工程師	427	31	15	22	448
Plumbing and Drainage Engineer 水喉及渠務工程師	64	-	12	-	76
Lift/Escalator Engineer 升降機／自動梯工程師	324	-	2	-	326
Fire Services Engineer 消防設備工程師	60	-	5	-	65
Electronics Engineer 電子工程師	139	31	5	-	175
Control and Instrumentation Engineer 控制及儀器工程師	65	2	4	6	69
Engineering Manager 工程經理	737	-	35	-	776

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Safety Officer 安全主任	86	-	-	-	86
Aircraft Maintenance Engineer 飛機維修工程師	504	-	41	-	551
Sub-total 小計	**4 330**	**113**	**205**	**82**	**4 606**
TECHNICIAN LEVEL 技術員級					
Supervisor 監督	2 033	1	30	-	2 066
Building Services Technician 屋宇設備技術員	715	19	19	19	735
Draughtsman 繪圖員	167	8	10	8	177
Electrical Engineering Technician 電機工程技術員	1 089	94	88	94	1 170
Refrigeration/Air-conditioning/ Ventilation Technician 冷凝／空氣調節／通風設備技術員	268	28	15	28	283
Mechanical Engineering Technician 機械工程技術員	357	50	21	48	379
Lift/Escalator Technician 升降機／自動梯技術	827	-	44	-	871
Fire Services Technician 消防設備技術員	56	3	3	3	59
Electrical Instrument and Meter Technician 電工儀器技術員	22	-	-	6	22
Electronics Technician 電子技術員	154	49	9	49	163
Telecommunication Technician 電訊技術員	20	2	1	-	21

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Office Equipment Service Technician 辦公室設備維修技術員	85	-	-	-	85
Assistant Safety Officer/ Safety Supervisor 助理安全主任／安全督導員	42	-	1	-	43
Aircraft Maintenance Technician 飛機維修技術員	370	-	12	-	384
Rolling Stock Technician 鐵道車輛技術員	675	-	12	-	687
Railway Signalling Technician 鐵路訊號技術員	251	-	11	-	262
Supervisor/Chargehand 監督／管工	3	-	-	-	3
Sub-total 小計	**7 134**	**254**	**276**	**255**	**7 410**
TRADESMAN/ CRAFTSMAN LEVEL 技工級					
Foreman/Chargehand 管工／領工	854	-	3	-	857
Building Services Mechanic 屋宇設備技工	630	29	36	69	667
Electrician/Electrical Fitter 電工／電氣打磨裝配工	2 467	114	16	109	2 491
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	297	5	5	4	302
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	207	-	26	-	233
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Air System)/ Sheet Metal Worker 空調製冷設備技工(送風系統)／簿片金屬構造工	147	-	2	-	149

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/ Thermal Insulation Craftsman 空調製冷設備技工(保溫)／保溫技工	30	-	2	-	32
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	36	-	2	-	38
Plumber and Pipe Fitter 喉管工	129	-	-	-	129
Mechanical Fitter/Machinist 機械打磨裝配工／機床工	1 050	53	19	52	1 072
Lift Mechanic 升降機技工	1 650	7	172	14	1 823
Escalator Mechanic 自動梯技工	839	-	81	12	921
Fire Services Electrical Fitter 消防電氣裝配工	12	-	-	3	12
Fire Services Mechanical Fitter 消防機械裝配工	15	-	-	-	15
Cable Jointer (Power) 強電流電纜接駁技工	192	11	2	16	194
Overhead Linesman 架空電線技工	200	4	2	7	202
Electrical Appliances Service Mechanic 電器用具服務技工	715	11	50	11	725
Welder 焊接工	48	-	1	-	49
Carpenter 木工	12	-	-	-	12
Painter 髹漆工	16	-	1	-	17
AV and RF Mechanic 影音及射頻技工	59	3	-	3	59

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Building Security System Mechanic 屋宇防盜系統技工	12	-	-	-	12
Communication System Mechanic 電訊系統裝配工	47	-	1	-	48
Aircraft Maintenance Mechanic 飛機維修技工	1 811	253	148	450	1 959
Rolling Stock Tradesman 鐵道車輛技工	604	-	17	-	621
Railway Signalling Tradesman 鐵路訊號技工	15	-	-	-	15
Gas Utilization Fitter (Domestic) 氣體燃料用戶裝置技工（住宅式）	12	-	-	-	12
Sub-total 小計	**12 106**	**490**	**586**	**750**	**12 666**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL　半技術工人／普通工人					
Labourer 雜工	393	-	24	-	417
Semi-skilled Worker 半技術工人	369	-	375	-	743
Sub-total 小計	**762**	**-**	**399**	**-**	**1 160**
GRAND TOTAL 總　計	**24 332**	**857**	**1 466**	**1 087**	**25 842**

THE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
機 電 工 程 行 業

BRANCH IV: SUPPLEMENTARY SAMPLES
其 他 相 關 機 構

MANPOWER STATISTICS
人 力 狀 況

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Building Services Engineer 屋宇設備工程師	317	32	16	7	335
Electrical Engineer 電機工程師	430	34	17	16	449
Refrigeration/Air-conditioning/ Ventilation Engineer 冷凝／空氣調節／通風設備工程師	339	31	28	31	364
Mechanical Engineer 機械工程師	167	7	6	1	173
Plumbing and Drainage Engineer 水喉及渠務工程師	38	1	3	1	41
Fire Services Engineer 消防設備工程師	60	5	2	5	62
Electronics Engineer 電子工程師	233	12	9	12	240
Control and Instrumentation Engineer 控制及儀器工程師	51	-	-	-	51
Engineering Manager 工程經理	172	-	1	-	178

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Safety Officer 安全主任	22	-	-	-	22
Sub-total 小計	**1 829**	**122**	**82**	**73**	**1 915**
TECHNICIAN LEVEL 技術員級					
Supervisor 監督	676	3	27	2	708
Building Services Technician 屋宇設備技術員	784	3	42	2	835
Draughtsman 繪圖員	44	2	-	1	45
Electrical Engineering Technician 電機工程技術員	523	54	20	58	550
Refrigeration/Air-conditioning/ Ventilation Technician 冷凝／空氣調節／通風設備技術員	174	26	6	28	194
Mechanical Engineering Technician 機械工程技術員	446	17	32	22	472
Lift/Escalator Technician 升降機／自動梯技術	11	-	-	-	11
Fire Services Technician 消防設備技術員	13	-	-	-	15
Electrical Instrument and Meter Technician 電工儀器技術員	24	-	-	-	24
Electronics Technician 電子技術員	516	30	19	32	532
Telecommunication Technician 電訊技術員	133	-	12	-	135
Assistant Safety Officer/Safety Supervisor 助理安全主任/安全督導員	6	-	-	-	6

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Sub-total 小計	**3 350**	**135**	**158**	**145**	**3 527**
TRADESMAN/ CRAFTSMAN LEVEL 技工級					
Foreman/Chargehand 管工／領工	1 759	-	157	-	1 853
Building Services Mechanic 屋宇設備技工	1 047	14	18	8	1 071
Electrician/Electrical Fitter 電工／電氣打磨裝配工	551	97	119	135	609
Control Panel Assembler 控制板裝配工	22	4	3	4	25
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	276	30	75	38	329
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	12	1	3	2	14
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Air System)/ Sheet Metal Worker 空調製冷設備技工(送風系統)／簿片金屬構造工	1	-	-	-	1
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/ Thermal Insulation Craftsman 空調製冷設備技工(保溫)／保溫技工	17	-	6	-	23
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	3	-	1	-	4
Plumber and Pipe Fitter 喉管工	3	-	-	-	3

Job Title 職 稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Mechanical Fitter/Machinist 機械打磨裝配工／機床工	762	81	161	102	876
Escalator Mechanic 自動梯技工	4	-	-	-	4
Fire Services Electrical Fitter 消防電氣裝配工	1	-	2	-	1
Electrical Appliances Service Mechanic 電器用具服務技工	9	-	1	1	9
Welder 焊接工	4	-	-	-	4
Carpenter 木工	10	-	2	-	12
Painter 髹漆工	160	-	1	-	161
AV and RF Mechanic 影音及射頻技工	4	-	3	-	4
Communication System Mechanic 電訊系統裝配工	28	-	10	-	35
Sub-total 小計	**4 673**	**227**	**562**	**290**	**5 038**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL　半技術工人／普通工人					
Labourer 雜工	131	-	100	-	206
Semi-skilled Worker 半技術工人	182	-	20	-	198
Sub-total 小計	**313**	**-**	**120**	**-**	**404**
GRAND TOTAL 總　計	**10 165**	**484**	**922**	**508**	**10 884**

Appendix 9
附錄 9

THE WHOLE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
整 個 機 電 工 程 行 業

PERCENTAGE OF MANPOWER ENGAGED IN CONTRACTING AND SERVICING WORK
從 事 承 造 及 服 務 門 類 工 作 的 人 力 分 布 情 況

Job Title 職 稱	No. of Employees 僱員人數	Estimated Manpower for Contracting 估計從事「承造」工作類別的人力		Estimated Manpower for Servicing 估計從事「維修服務」工作類別的人力	
		Percentage (百份比)	Head Count (人數)	Percentage (百份比)	Head Count (人數)
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Branch 1: Contracting (E&M) 門類 I : 承造	2 781	68%	1 891	32%	890
Branch 2 : Electrical Fitting with Water Plumbing Branch 門類 II : 水電工程	102	88%	90	12%	12
Branch 3 : Servicing (E & M) Branch 門類 III : 服務	4 330	49%	2 122	51%	2 208
Branch 4 : Supplementary Samples 門類 IV : 補充抽樣	1 829	75%	1 372	25%	457
Sub-total 小計	**9 042**	**61%**	**5 475**	**39%**	**3 567**
TECHNICIAN LEVEL 技術員級					
Branch 1: Contracting (E&M) 門類 I : 承造	4 284	60%	2 570	40%	1 714
Branch 2 : Electrical Fitting with Water Plumbing Branch 門類 II : 水電工程	60	63%	38	37%	22
Branch 3 : Servicing (E & M) Branch 門類 III : 服務	7 134	27%	1 926	73%	5 208
Branch 4 : Supplementary Samples 門類 IV : 補充抽樣	3 350	27%	905	73%	2 445
Sub-total 小計	**14 828**	**37%**	**5 439**	**63%**	**9 389**

Job Title 職 稱	No. of Employees 僱員人數	Estimated Manpower for Contracting 估計從事「承造」工作類別的人力		Estimated Manpower for Servicing 估計從事「維修服務」工作類別的人力	
		Percentage (百份比)	Head Count (人數)	Percentage (百份比)	Head Count (人數)
TRADESMAN/CRAFTSMAN LEVEL 技工級					
Branch 1: Contracting (E&M) 門類 I : 承造	16 620	58%	9 640	42%	6 980
Branch 2 : Electrical Fitting with Water Plumbing Branch 門類 II : 水電工程	2 963	53%	1 570	47%	1 393
Branch 3 : Servicing (E & M) Branch 門類 III : 服務	12 106	28%	3 390	72%	8 716
Branch 4 : Supplementary Samples 門類 IV : 補充抽樣	4 673	6%	280	94%	4 393
Sub-total 小計	**36 362**	**41%**	**14 880**	**59%**	**21 482**
SEMI-SKILLED WORKER/GENERAL WORKER 半技術工人／普通工人					
Branch 1: Contracting (E&M) 門類 I : 承造	1 668	67%	1 118	33%	550
Branch 2 : Electrical Fitting with Water Plumbing Branch 門類 II : 水電工程	184	63%	116	37%	68
Branch 3 : Servicing (E & M) Branch 門類 III : 服務	762	26%	198	74%	564
Branch 4 : Supplementary Samples 門類 IV : 補充抽樣	313	18%	56	82%	257
Sub-total 小計	**2 927**	**51%**	**1 488**	**49%**	**1 439**
GRAND TOTAL 總計	**63 159**	**43%**	**27 282**	**57%**	**35 877**

ELECTRICAL & MECHANICAL WORKERS WORKING IN CONSTRUCTION SITES
在建築地盤工作的機電工程從業員

MANPOWER STATISTICS
人力狀況

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數
PROFESSIONAL/TECHNOLOGIST LEVEL　專業人士／技師級		
Building Services Engineer 屋宇設備工程師	45	-
Electrical Engineer 電機工程師	169	-
Refrigeration/Air-conditioning/Ventilation Engineer 冷凝／空氣調節／通風設備工程師	5	-
Mechanical Engineer 機械工程師	76	-
Plumbing and Drainage Engineer 水喉及渠務工程師	2	-
Lift/Escalator Engineer 升降機／自動梯工程師	5	-
Fire Services Engineer 消防設備工程師	18	-
Electronics Engineer 電子工程師	20	-
Control and Instrumentation Engineer 控制及儀器工程師	-	-
Engineering Manager 工程經理	6	-
Safety Officer 安全主任	15	-
Sub-total 小計	**361**	-
TECHNICIAN LEVEL　技術員級		
Supervisor 監督	22	-

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數
Building Services Technician 屋宇設備技術員	52	1
Draughtsman 繪圖員	-	-
Electrical Engineering Technician 電機工程技術員	199	-
Refrigeration/Air-conditioning/Ventilation Technician 冷凝／空氣調節／通風設備技術員	20	-
Mechanical Engineering Technician 機械工程技術員	53	-
Lift/Escalator Technician 升降機／自動梯技術員	32	-
Fire Services Technician 消防設備技術員	31	-
Electrical Instrument and Meter Technician 電工儀器技術員	20	-
Electronics Technician 電子技術員	40	-
Telecommunication Technician 電訊技術員	42	-
Assistant Safety Officer/ Safety Supervisor 助理安全主任/安全督導員	18	-
Sub-total 小計	**529**	**1**
TRADESMAN/CRAFTSMAN LEVEL　技工級		
Foreman/Chargehand 管工/領工	64	-
Building Services Mechanic 屋宇設備技工	128	-
Electrician/Electrical Fitter 電工／電氣打磨裝配工	1 804	-
Control Panel Assembler 控制板裝配工	6	-
Electrical Wireman 電氣佈線工	792	1
Refrigeration/ Air-conditioning/ Ventilation Mechanic 空調製冷設備技工	581	-
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	48	-

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	453	-
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Air System)/ Sheet Metal Worker 空調製冷設備技工(送風系統) / 簿片金屬構造工	331	-
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/ Thermal Insulation Craftsman 空調製冷設備技工(保溫) / 保溫技工	26	-
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	92	-
Plumber and Pipe Fitter 喉管工	195	-
Mechanical Fitter/Machinist 機械打磨裝配工／機床工	35	-
Lift Mechanic 升降機技工	233	-
Escalator Mechanic 自動梯技工	81	-
Fire Services Mechanic 消防設備技工	535	-
Fire Services Electrical Fitter 消防電氣裝配工	150	-
Fire Services Mechanical Fitter 消防機械裝配工	114	-
Fire Service Portable Equipment Fitter 手提消防設備裝配工	-	-
Cable Jointer (Power) 強電流電纜接駁技工	4	-
Overhead Linesman 架空電線技工	6	-
Electrical Appliances Service Mechanic 電器用具維修技工	66	-
Welder 焊接工	63	-
AV and RF Mechanic 影音及射頻技工	3	-
Building Security System Mechanic 屋宇防盜系統技工	54	-
Communication System Mechanic 電訊系統裝配工	45	-
Gas Installer 氣體裝置技工	51	-

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數
Sub-total 小計	**5 960**	**1**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL 半技術工人／普通工人		
Labourer 雜工	47	-
Semi-skilled Worker 半技術工人	14	-
Sub-total 小計	**61**	**-**
GRAND TOTAL 總　計	**6 911**	**2**

THE SHIPBUILDING AND SHIP REPAIR SECTOR
船 舶 修 建 行 業

MANPOWER STATISTICS
人 力 狀 況

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Electrical Engineer 電機工程師	22	-	-	-	22
Marine Engineer 輪機工程師	77	-	-	-	77
Mechanical Engineer 機械工程師	54	-	1	2	55
Ship Designer/Naval Architect 船舶設計師／造船工程師	11	-	2	-	10
Ship Repairs Manager/ Superintendent 船舶修理主管／船舶修理監督	82	-	-	-	81
Safety Officer 安全主任	13	-	-	-	13
Sub-total 小計	**259**	**-**	**3**	**2**	**258**
TECHNICIAN LEVEL 技術員級					
Draughtsman 繪圖員	1	-	1	-	2
Electrical Engineering Technician 電機工程技術員	36	12	4	12	36
Electronics/ Telecommunication Technician 電子／通訊技術員	15	-	-	-	15

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Estimator 估計員	11	-	1	-	12
Mechanical Engineering Technician 機械工程技術員	202	8	2	8	203
Assistant Safety Officer/ Safety Supervisor 助理安全主任／安全督導員	10	-	-	-	10
Supervisor/Foreman 監督／管工	179	-	20	-	195
Sub-total 小計	**454**	**20**	**28**	**20**	**473**
TRADESMAN/CRAFTSMAN LEVEL 技工級					
Air-conditioning Mechanic/ Sheet Metal Worker 空氣調節技工／薄片金屬構造工	16	-	-	-	16
Carpenter 木工	79	-	6	-	79
Crane Driver 起重機操作工	27	-	-	-	27
Electrician 電工	112	10	9	10	119
Mechanical Fitter 機械打磨裝配工	391	20	37	30	422
GRP-Worker 玻璃纖維工	5	-	-	-	5
Machinist 機床工	46	1	2	3	48
Marine Pipeworker 船舶喉管工	77	-	5	2	72
Painter 髹漆工	93	-	-	-	93
Rigger 索具工（喊吔工）	97	-	3	-	97

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Ship Classification Qualified Welder 船級協會認可焊接工	20	-	-	-	20
Steel Worker (Boiler Maker/Steel Plater/ Blacksmith) 鋼鐵工（鍋爐工、造船鋼板工、捻縫工／鐵工）	60	-	5	3	65
Welder 焊接技工	53	7	8	7	61
Sub-total 小計	**1 076**	**38**	**75**	**55**	**1 124**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL 半技術工人／普通工人					
Labourer 雜工	53	-	-	-	53
Semi-skilled Worker 半技術工人	34	-	1	-	35
Sub-total 小計	**87**	**-**	**1**	**-**	**88**
GRAND TOTAL 總　計	**1 876**	**58**	**107**	**77**	**1 943**

THE SHIPBUILDING AND SHIP REPAIR SECTOR
船舶修建行業

DISTRIBUTION OF EMPLOYEES BY MONTHLY INCOME RANGE
按每月收入幅度劃分的僱員人數分布情況

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級										
Electrical Engineer 電機工程師	-	-	-	-	3	5	4	-	-	10
Marine Engineer 輪機工程師	-	-	-	-	2	15	22	13	-	25
Mechanical Engineer 機械工程師	-	-	-	-	1	16	4	-	-	33
Ship Designer/ Naval Architect 船舶設計師／造船工程師	-	-	-	-	4	1	-	1	3	2
Ship Repairs Manager/ Superintendent 船舶修理主管／船舶修理監督	-	-	-	2	19	14	2	2	13	30
Safety Officer 安全主任	-	-	-	-	3	7	2	-	-	1
Sub-total 小計	**-**	**-**	**-**	**2**	**32**	**58**	**34**	**16**	**16**	**101**
TECHNICIAN LEVEL 技術員級										
Draughtsman 繪圖員	-	-	-	1	-	-	-	-	-	-
Electrical Engineering Technician 電機工程技術員	-	-	-	1	6	3	4	-	-	22
Electronics/ Telecommunication Technician 電子／通訊技術員	-	5	-	8	-	1	1	-	-	-
Estimator 估計員	-	-	-	6	5	-	-	-	-	-
Mechanical Engineering Technician 機械工程技術員	-	-	1	14	12	-	22	-	-	153
Assistant Safety Officer/ Safety Supervisor 助理安全主任／安全監督	-	-	-	4	-	-	-	-	-	6

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
Supervisor/Foreman 監督／管工	-	1	10	83	35	23	-	-	-	27
Sub-total 小計	**-**	**6**	**11**	**117**	**58**	**27**	**27**	**-**	**-**	**208**
TRADESMAN/CRAFTSMAN LEVEL 技工級										
Air-conditioning Mechanic/Sheet Metal Worker 空氣調節技工／薄片金屬構造工	-	-	-	5	1	-	-	-	-	10
Carpenter 木工	-	1	24	39	6	-	-	-	-	9
Crane Driver 起重機操作工	-	-	17	8	2	-	-	-	-	-
Electrician 電工	-	12	53	11	2	-	-	-	-	34
Mechanical Fitter 機械打磨裝配工	5	52	163	19	63	9	-	-	-	80
GRP-Worker 玻璃纖維工	-	-	4	1	-	-	-	-	-	-
Machinist 機床工	-	-	40	5	-	-	-	-	-	1
Marine Pipeworker 船舶喉管工	15	-	37	13	7	-	-	-	-	5
Painter 髹漆工	-	3	39	18	18	-	-	-	-	15
Rigger 索具工（喊吔工）	5	1	86	4	1	-	-	-	-	-
Ship Classification Qualified Welder 船級協會認可焊接工	-	3	3	3	6	-	-	-	-	5
Steel Worker (Boiler Maker/Steel Plater/ Blacksmith) 鋼鐵工（鍋爐工、造船鋼板工、捻縫工／鐵工）	-	-	48	12	-	-	-	-	-	-
Welder 焊接工	-	1	24	22	-	-	-	-	-	6
Sub-total 小計	**25**	**73**	**538**	**160**	**106**	**9**	**-**	**-**	**-**	**165**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL 半技術工人／普通工人										
Labourer 雜工	19	23	-	2	-	-	-	-	-	9
Semi-skilled Worker 半技術工人	-	23	-	7	-	-	-	-	-	4
Sub-total 小計	**19**	**46**	**-**	**9**	**-**	**-**	**-**	**-**	**-**	**13**
GRAND TOTAL 總 計	**44**	**125**	**549**	**288**	**196**	**94**	**61**	**16**	**16**	**487**

THE GAS SECTOR
氣 體 燃 料 行 業

MANPOWER STATISTICS
人 力 狀 況

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級					
Electrical Engineer 電機工程師	7	-	-	-	7
Gas Engineer (Fuel Gas) 氣體工程師(氣體燃料)	252	2	3	-	258
Mechanical Engineer 機械工程師	99	-	1	-	100
Safety Officer 安全主任	20	-	-	-	20
Sub-total 小計	**378**	**2**	**4**	**-**	**385**
TECHNICIAN LEVEL 技術員級					
Electrical Engineering Technician 電機工程技術員	13	3	1	1	14
Gas Engineering Technician 氣體燃料工程技術員	314	2	4	2	318
Mechanical Engineering Technician 機械工程技術員	8	-	-	-	8
Assistant Safety Officer/Safety 助理安全主任／安全督導員	33	-	-	-	33
Supervisor/Chargehand 監督／管工	174	-	1	-	175
Sub-total 小計	**542**	**5**	**6**	**3**	**548**

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
TRADESMAN/CRAFTSMAN LEVEL 技工級					
Electrical Appliances Service Mechanic 電器用具維修技工	2	-	-	-	2
Electrician/Electrical Fitter 電工／電氣打磨裝配工	11	-	-	1	11
Gas Distribution Fitter (LPG) 氣體燃料輸送技工（石油氣）	73	1	5	1	78
Gas Distribution Fitter (Town Gas) 氣體燃料輸送技工（煤氣）	205	-	12	1	217
Gas Utilization Fitter (Domestic) 氣體燃料用戶裝置技工（住宅式）	383	6	11	13	394
Gas Utilization Fitter (Non-domestic) 氣體燃料用戶裝置技工（非住宅式）	114	9	5	11	116
Mechanical Fitter 機械打磨裝配工	54	2	-	2	54
Welder 焊接工	4	-	-	-	4
Sub-total 小計	**846**	**18**	**33**	**29**	**876**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL 半技術工人／普通工人					
Driver (LPG Cylinder) 司機（石油氣瓶車）	27	-	-	-	27
Labourer 雜工	46	-	-	-	46
Semi-skilled Worker 半技術工	42	-	3	-	45
Vehicle Attendant/ Deliveryman (LPG Cylinder) 跟車／送貨員（石油氣瓶）	48	-	3	-	51

Job Title 職稱	No. of Employees 僱員人數	No. of Trainees 受訓者人數	No. of Vacancies at Date of Survey 調查期間空缺數目	Forecasted No. of Trainees by Mid-2014 估計 2014 年中時的受訓者人數	Forecasted No. of Employees by Mid-2014 估計 2014 年中時的僱員人數
Sub-total 小計	**163**	**-**	**6**	**-**	**169**
GRAND TOTAL 總　計	**1 929**	**25**	**49**	**32**	**1 978**

THE GAS SECTOR
氣體燃料行業

DISTRIBUTION OF EMPLOYEES BY MONTHLY INCOME RANGE
按每月收入幅度劃分的僱員人數分布情況

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級										
Electrical Engineer 電機工程師	-	-	-	-	-	-	7	-	-	-
Gas Engineer (Fuel Gas) 氣體工程師(氣體燃料)	-	-	-	2	2	248	-	-	-	-
Mechanical Engineer 機械工程師	-	-	-	-	-	99	-	-	-	-
Safety Officer 安全主任	-	-	-	-	2	18	-	-	-	-
Sub-total 小計	**-**	**-**	**-**	**2**	**4**	**365**	**7**	**-**	**-**	**-**
TECHNICIAN LEVEL 技術員級										
Electrical Engineering Technician 電機工程技術員	-	11	-	-	2	-	-	-	-	-
Gas Engineering Technician 氣體燃料工程技術員	-	-	3	280	25	1	5	-	-	-
Mechanical Engineering Technician 機械工程技術員	-	-	8	-	-	-	-	-	-	-
Assistant Safety Officer Safety Supervisor 助理安全主任／安全監督	-	1	25	-	7	-	-	-	-	-
Supervisor/Chargehand 監督／管工	-	-	8	9	147	4	-	-	-	9
Sub-total 小計	**-**	**12**	**44**	**289**	**181**	**5**	**5**	**-**	**-**	**9**
TRADESMAN/CRAFTSMAN LEVEL 技工級										
Electrical Appliances Service Mechanic 電器用具維修技工	-	-	-	-	-	-	-	-	-	2
Electrician/ Electrical Fitter 電工／電氣打磨裝配工	-	-	11	-	-	-	-	-	-	-
Gas Distribution Fitter (LPG) 氣體燃料輸送技工（石油氣）	-	21	31	20	1	-	-	-	-	-

Job Title 職稱	Under $9,000 以下	$9,001 - $12,000	$12,001 - $15,000	$15,001 - $18,000	$18,001 - $25,000	$25,001 - $35,000	$35,001 - $45,000	$45,001 - $60,000	Over $60,000 以上	Un-specified 未有說明
Gas Distribution Fitter (Town Gas) 氣體燃料輸送技工(煤氣）	-	119	44	42	-	-	-	-	-	-
Gas Utilization Fitter (Domestic) 氣體燃料用戶裝置技工（住宅式）	-	88	78	53	103	5	-	-	-	56
Gas Utilization Fitter (Non-domestic) 氣體燃料用戶裝置技工（非住宅式）	-	13	26	25	41	-	-	-	-	9
Mechanical Fitter 機械打磨裝配工	-	-	54	-	-	-	-	-	-	-
Welder 焊接工	-	-	-	-	4	-	-	-	-	-
Sub-total 小計	**-**	**241**	**244**	**140**	**149**	**5**	**-**	**-**	**-**	**67**
SEMI-SKILLED WORKER/GENERAL WORKER LEVEL　半技術工人／普通工人										
Driver (LPG Cylinder) 司機（石油氣瓶車）	-	1	24	-	1	-	-	-	-	1
Labourer 雜工	-	9	37	-	-	-	-	-	-	-
Semi-skilled Worker 半技術工人	-	42	-	-	-	-	-	-	-	-
Vehicle Attendant/Deliveryman (LPG Cylinder) 跟車／送貨員（石油氣瓶）	-	40	5	-	-	-	-	-	-	3
Sub-total 小計	**-**	**92**	**66**	**-**	**1**	**-**	**-**	**-**	**-**	**4**
GRAND TOTAL 總　計	**-**	**345**	**354**	**431**	**332**	**375**	**12**	**-**	**-**	**80**

MANPOWER SUPPLY FOR THE INDUSTRY IN THE PAST 12 MONTHS
過 去 12 個 月 內，行 業 的 人 力 供 應 情 況

Job level 技能等級	Very Insufficient 非常缺乏	Insufficient 缺乏	Sufficient 充裕	Very Sufficient 非常充裕
A. Electrical and Mechanical Engineering Sector 機電工程行業				
Professional / Technologist 專業人士 / 技師	18% *(22%)*	37% *(44%)*	42% *(33%)*	3% *(1%)*
Trainees of Professional / Technologist 專業人士 / 技師的受訓者	17% *(8%)*	39% *(63%)*	41% *(29%)*	3% -
Technician 技術員	13% *(17%)*	48% *(56%)*	37% *(27%)*	2% -
Trainees of Technician 技術員的受訓者	17% *(5%)*	47% *(67%)*	35% *(28%)*	1% -
Tradesman / Craftsman 技工	12% *(19%)*	47% *(61%)*	36% *(19%)*	5% *(1%)*
Trainees of Tradesman / Craftsman 技工的受訓者	21% *(11%)*	46% *(69%)*	30% *(20%)*	3% -
Semi-skilled Worker / General Worker 半技術／普通工人	13% *(7%)*	51% *(62%)*	34% *(30%)*	2% *(1%)*
B. Shipbuilding and Ship Repair Sector 船舶修建行業				
Professional / Technologist 專業人士 / 技師	41% *(27%)*	38% *(55%)*	21% *(18%)*	- -
Trainees of Professional / Technologist 專業人士 / 技師的受訓者	39% *(14%)*	39% *(71%)*	21% *(14%)*	1% *(1%)*
Technician 技術員	39% *(27%)*	18% *(45%)*	29% *(27%)*	14% *(1%)*
Trainees of Technician 技術員的受訓者	35% *(33%)*	18% *(67%)*	32% -	15% -
Tradesman / Craftsman 技工	30% *(44%)*	52% *(33%)*	15% *(22%)*	3% *(1%)*

Job level 技能等級	Very Insufficient 非常缺乏	Insufficient 缺乏	Sufficient 充裕	Very Sufficient 非常充裕
Trainees of Tradesman / Craftsman 技工的受訓者	33% *(60%)*	58% *(40%)*	5% -	4% -
Semi-skilled Worker / General Worker 半技術／普通工人	53% *(29%)*	18% *(29%)*	28% *(43%)*	1%
C. Gas Sector 氣體燃料行業				
Professional / Technologist 專業人士 / 技師	12% -	38% *(40%)*	50% *(60%)*	- -
Trainees of Professional / Technologist 專業人士 / 技師的受訓者	13% -	42% *(25%)*	45% *(75%)*	- -
Technician 技術員	13% *(14%)*	44% *(43%)*	43% *(43%)*	- -
Trainees of Technician 技術員的受訓者	19% -	39% *(40%)*	39% *(60%)*	3% -
Tradesman / Craftsman 技工	15% *(25%)*	42% *(50%)*	40% *(25%)*	3% -
Trainees of Tradesman / Craftsman 技工的受訓者	21% *(25%)*	43% *(50%)*	33% *(25%)*	3% -
Semi-skilled Worker / General Worker 半技術／普通工人	11% *(40%)*	52% *(20%)*	33% *(40%)*	4% -

N.B. 註

a. The percentages refer to those respondents who answered Part II, Q5 of the survey questionnaire. "No comment" was not counted.
百分比是指回答了調查表第二部分第 5 條問題的受訪者。"無意見" 並不計算在內。

b. Responses from establishments employing less than 50 workers are shown in the upper half of the cells. Responses from establishments employing 50 or more workers are shown in the brackets.
單元格上半部分顯示的數字來自少於 50 名僱員的機構。僱用 50 名或以上員工的機構，其調查回應顯示在括號內。

Appendix 16
附錄 16

THE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
機 電 工 程 行 業

RECOMMENDED NUMBER OF TRAINEES
TO BE TAKEN ON ANNUALLY BETWEEN 2014 AND 2016
2014 年 至 2016 年 間
建 議 每 年 招 收 的 受 訓 者 人 數

Job Title 職 稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級		
Building Services Engineer 屋宇設備工程師	932	62 - 76
Electrical Engineer 電機工程師	2 455	164 - 201
Refrigeration/Air-conditioning/ Ventilation Engineer 冷凝／空氣調節／通風設備工程師	1 190	80 - 97
Mechanical Engineer 機械工程師	664	45 - 54
Plumbing and Drainage Engineer 水喉及渠務工程師	153	10 - 13
Lift/Escalator Engineer 升降機／自動梯工程師	324	22 - 27
Fire Services Engineer 消防設備工程師	477	32 - 39
Electronics Engineer 電子工程師	607	41 - 50
Control and Instrumentation Engineer 控制及儀器工程師	124	8 - 10
Engineering Manager 工程經理	1 469	98 - 120

Job Title 職 稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
Safety Officer 安全主任	143	10 - 12
Aircraft Maintenance Engineer 飛機維修工程師	504	34 - 41
Sub-total 小計	**9 042**	**606 - 740**
TECHNICIAN LEVEL 技術員級		
Supervisor 監督	3 755	194 - 237
Building Services Technician 屋宇設備技術員	1 582	81 - 99
Draughtsman 繪圖員	495	25 - 31
Electrical Engineering Technician 電機工程技術員	2 227	114 - 140
Refrigeration/Air-conditioning/ Ventilation Technician 冷凝／空氣調節／通風設備技術員	1 406	72 - 88
Mechanical Engineering Technician 機械工程技術員	829	43 - 52
Lift/Escalator Technician 升降機／自動梯技術員	838	43 - 53
Fire Services Technician 消防設備技術員	797	41 - 50
Electrical Instrument and Meter Technician 電工儀器技術員	50	3
Electronics Technician 電子技術員	878	45 - 55
Telecommunication Technician 電訊技術員	519	27 - 33

Job Title 職 稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
Office Equipment Service Technician 辦公室設備維修技術員	85	4 - 5
Assistant Safety Officer/Safety Supervisor 助理安全主任/安全督導員	68	3 - 4
Aircraft Maintenance Technician 飛機維修技術員	370	19 - 23
Rolling Stock Technician 鐵道車輛技術員	675	35 - 42
Railway Signalling Technician 鐵路訊號技術員	251	13 - 16
Sub-total 小計	**14 825**	**762 - 931**
TRADESMAN/CRAFTSMAN LEVEL 技工級		
Foreman/Chargehand 管工／領工	4 459	151 - 185
Building Services Mechanic 屋宇設備技工	2 156	73 - 89
Electrician/Electrical Fitter 電工／電氣打磨裝配工	9 026	307 - 376
Control Panel Assembler 控制板裝配工	254	9 - 11
Electrical Wireman 電氣佈線工	1 177	40 - 49
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	3 500	119 - 145
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	1 728	59 - 72

Job Title 職 稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Air System)/ Sheet Metal Worker 空調製冷設備技工(送風系統) ／簿片金屬構造工	660	22 - 27
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/ Thermal Insulation Craftsman 空調製冷設備技工(保溫) ／保溫技工	292	10 - 12
Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	251	9 - 10
Plumber and Pipe Fitter 喉管工	481	16 - 20
Mechanical Fitter/Machinist 機械打磨裝配工／機床工	1 814	62 - 75
Lift Mechanic 升降機技工	1 650	56 - 68
Escalator Mechanic 自動梯技工	843	29 - 35
Fire Services Electrical Fitter 消防電氣裝配工	654	22 - 27
Fire Services Mechanical Fitter 消防機械裝配工	1 122	38 - 47
Cable Jointer (Power) 強電流電纜接駁技工	237	8 - 10
Overhead Linesman 架空電線技工	362	12 - 15
Electrical Appliances Service Mechanic 電器用具維修技工	769	26 - 32
Welder 焊接工	61	2 - 3

Job Title 職 稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
Carpenter 木工	22	1
Painter 髹漆工	176	6 - 7
AV and RF Mechanic 影音及射頻技工	188	6 - 8
Building Security System Mechanic 屋宇防盜系統技工	12	-
Communication System Mechanic 電訊系統裝配工	2 026	69 - 84
Aircraft Maintenance Mechanic 飛機維修技工	1 811	61 - 75
Rolling Stock Tradesman 鐵道車輛技工	604	20 - 25
Railway Signalling Tradesman 鐵路訊號技工	15	1
Gas Utilization Fitter (Domestic) 氣體燃料用戶裝置技工（住宅式）	12	-
Sub-total 小計	**36 362**	**1234 - 1509**

THE SHIPBUILDING AND SHIP REPAIR SECTOR
船 舶 修 建 行 業

RECOMMENDED NUMBER OF TRAINEES TO BE TAKEN ON ANNUALLY BETWEEN 2014 AND 2016
2014 年 至 2016 年 間
建 議 每 年 招 收 的 受 訓 者 人 數

Job Title 職稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時 的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議 每年招收的受訓者人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級		
Electrical Engineer 電機工程師	22	1 - 2
Marine Engineer 輪機工程師	77	5
Mechanical Engineer 機械工程師	54	3 - 4
Ship Designer/Naval Architect 船舶設計師／造船工程師	11	1
Ship Repairs Manager/ Superintendent 船舶修理主管／ 船舶修理監督	82	5 - 6
Safety Officer 安全主任	13	1
Sub-total 小計	**259**	**16 - 19**
TECHNICIAN LEVEL 技術員級		
Draughtsman 繪圖員	1	-
Electrical Engineering Technician 電機工程技術員	36	2 - 3

Job Title 職稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
Electronics/ Telecommunication Technician 電子／通訊技術員	15	1
Estimator 估計員	11	1
Mechanical Engineering Technician 機械工程技術員	202	12 - 15
Assistant Safety Officer/ Safety Supervisor 助理安全主任／安全督導員	10	1
Supervisor/Foreman 監督／管工	179	11 - 13
Sub-total 小計	**454**	**28 - 34**
TRADESMAN/CRAFTSMAN LEVEL 技工級		
Air-conditioning Mechanic/ Sheet Metal Worker 空氣調節技工／薄片金屬構造工	16	1 - 2
Carpenter 木工	79	5 - 6
Crane Driver 起重機操作工	27	2
Electrician 電工	112	7 - 8
Mechanical Fitter 機械打磨裝配工	391	23 - 30
GRP-Worker 玻璃纖維工	5	-
Machinist 機床工	46	3
Marine Pipeworker 船舶喉管工	77	5 - 6
Painter 髹漆工	93	6 - 7

Job Title 職稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
Rigger 索具工（喊吔工）	97	6 - 7
Ship Classification Qualified Welder 船級協會認可焊接工	20	1
Steel Worker (Boiler Maker/Steel Plater/ Blacksmith) 鋼鐵工（鍋爐工、造船鋼板工、捻縫工／鐵工）	60	4
Welder 焊接技工	53	3 - 4
Sub-total 小計	**1 076**	**66 - 80**

THE GAS SECTOR
氣 體 燃 料 行 業

RECOMMENDED NUMBER OF TRAINEES TO BE TAKEN ON ANNUALLY BETWEEN 2014 AND 2016
2014 年 至 2016 年 間
建 議 每 年 招 收 的 受 訓 者 人 數

Job Title 職稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
PROFESSIONAL/TECHNOLOGIST LEVEL 專業人士／技師級		
Electrical Engineer 電機工程師	7	-
Gas Engineer (Fuel Gas) 氣體工程師(氣體燃料)	252	9 - 10
Mechanical Engineer 機械工程師	99	3 - 4
Safety Officer 安全主任	20	1
Sub-total 小計	**378**	**13 - 15**
TECHNICIAN LEVEL 技術員級		
Electrical Engineering Technician 電機工程技術員	13	1
Gas Engineering Technician 氣體燃料工程技術員	314	10 - 13
Mechanical Engineering Technician 機械工程技術員	8	-
Assistant Safety Officer/Safety 助理安全主任/安全督導員	33	1
Supervisor/Chargehand 監督／管工	174	6 - 7
Sub-total 小計	**542**	**18 - 22**

Job Title 職稱	No. of employees in the 2013 Manpower Survey 2013 年人力調查時的僱員人數	Recommended no. of trainees to be taken on annually from 2014 由 2014 年起建議每年招收的受訓者人數
TRADESMAN/CRAFTSMAN LEVEL　技工級		
Electrical Appliances Service Mechanic 電器用具維修技工	2	-
Electrician/Electrical Fitter 電工／電氣打磨裝配工	11	-
Gas Distribution Fitter (LPG) 氣體燃料輸送技工（石油氣）	73	2 - 3
Gas Distribution Fitter (Town Gas) 氣體燃料輸送技工（煤氣）	205	7 - 8
Gas Utilization Fitter (Domestic) 氣體燃料用戶裝置技工（住宅式）	383	13 - 16
Gas Utilization Fitter (Non-domestic) 氣體燃料用戶裝置技工（非住宅式）	114	4 - 5
Mechanical Fitter 機械打磨裝配工	54	2 - 3
Welder 焊接技工	4	-
Sub-total 小計	**846**	**28 - 35**

CONFIDENTIAL WHEN ENTERED WITH DATA	填 入 數 據 後 即 成 機 密 文 件

VOCATIONAL TRAINING COUNCIL
職 業 訓 練 局

THE 2013 MANPOWER SURVEY OF THE ELECTRICAL AND MECHANICAL SERVICES INDUSTRY
機 電 工 程 業 2013 年 人 力 調 查

QUESTIONNAIRE
調 查 表

PLEASE READ THE EXPLANATORY NOTES BEFORE COMPLETING THIS QUESTIONNAIRE
填 表 前 ， 請 參 閱 附 註

For Official Use Only: 此 欄 毋 須 填 寫	Rec. Type	Survey Code	Industry Code	Establishment No.	Enumerator's No.	Editor's No.	Check Digit	No. of Employees Covered by the Questionnaire
	1	04						
	1	2 3	4 5 6 7 8 9	10 11 12 13 14 15	16 17	18 19	20 21 22	23 24 25 26 27

NAME OF ESTABLISHMENT: _____
機 構 名 稱

TOTAL NO. OF PERSONS ENGAGED: _____
僱 員 總 人 數

ADDRESS: _____
地 址

TYPE OF SERVICE: _____
服 務 性 質

NAME OF PERSON TO CONTACT: _____ (28 – 47)
聯 絡 人 姓 名

POSITION: _____
職 位

TEL. NO.: _____ (48 – 55) - _____ (56 – 63)
電 話

FAX NO.: _____
圖 文 傳 真

E-MAIL: _____ (64 – 98)
電 郵

VTC-EM-01

Part I (第一部份)

E

Sheet 1
第 1 頁

	(A) Principal Jobs 主要職務			(B) Average Monthly Income 每月平均收入	(C) No. Employed at Date of Survey (excl. trainees) 現有僱員人數（受訓者除外）	(D) Forecast of No. Employed 12 Months from Now (excl. trainees) 預計12個月後僱員人數（受訓者除外）	(E) No. of Vacancies at Date of Survey (excl. trainees) 現有空缺額(受訓者除外)	(F) No. of Trainees at Date of Survey 現有受訓者人數	(G) Forecast of No. of Trainees 12 Months from Now 預計12個月後受訓者人數
	Job Title 職稱 (See Appendix D) (參閱附錄D)	Rec. Type	Job Code 職位編號	Code* 編號					
	For Official Use Only 此欄毋須填寫 →		8-10	11	12-15	16-19	20-22	23-25	26-28
1	Building Services Engineer 屋宇設備工程師	2	1 0 1						
2	Electrical Engineer 電機工程師	2	1 0 2						
3	Refrigeration/Air-conditioning/Ventilation Engineer 冷凝／空氣調節／通風設備工程師	2	1 0 3						
4	Mechanical Engineer 機械工程師	2	1 0 4						
5	Plumbing and Drainage Engineer 水喉及渠務工程師	2	1 0 5						
6	Lift/Escalator Engineer 升降機／自動梯工程師	2	1 0 6						
7	Fire Services Engineer 消防設備工程師	2	1 0 7						
8	Electronics Engineer 電子工程師	2	1 0 8						
9	Control and Instrumentation Engineer 控制及儀器工程師	2	1 0 9						
10	Engineering Manager 工程經理	2	1 1 0						
11	Safety Officer 安全主任	2	1 1 1						
12	Aircraft Maintenance Engineer 飛機維修工程師	2	1 1 2						
13	Supervisor 監督	2	2 0 1						
14	Building Services Technician 屋宇設備技術員	2	2 0 2						
15	Draughtsman 繪圖員	2	2 0 3						
16	Electrical Engineering Technician 電機工程技術員	2	2 0 4						
17	Refrigeration/Air-conditioning/Ventilation Technician 冷凝／空氣調節／通風設備技術員	2	2 0 5						

* Enter in column (B) the employee's average monthly income range according to the following codes:
請將僱員每月平均收入幅度按照下列編號填入（B）欄內：

Average Monthly Income Range 每月平均收入幅度	Code 編號
$9,000 or below 或以下	1
$9,001 - $12,000	2
$12,001 - $15,000	3
$15,001 - $18,000	4
$18,001 - $25,000	5
$25,001 - $35,000	6
$35,001 - $45,000	7
$45,001 - $60,000	8
Over $60,000 以上	9

Note: The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.

附註: 「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

18	Mechanical Engineering Technician 機械工程技術員	2	2 0 6							
19	Lift/Escalator Technician 升降機／自動梯技術員	2	2 0 7							
20	Fire Services Technician 消防設備技術員	2	2 0 8							
21	Electrical Instrument and Meter Technician 電工儀器技術員	2	2 0 9							
22	Electronics Technician 電子技術員	2	2 1 0							
23	Telecommunication Technician 電訊技術員	2	2 1 1							
24	Office Equipment Service Technician 辦公室設備維修技術員	2	2 1 2							
25	Assistant Safety Officer/Safety Supervisor 助理安全主任／安全督導員	2	2 1 3							
26	Aircraft Maintenance Technician 飛機維修技術員	2	2 1 4							
27	Rolling Stock Technician 鐵道車輛技術員	2	2 1 5							
28	Railway Signalling Technician 鐵路訊號技術員	2	2 1 6							
29	Foreman/Chargehand 管工／領工	2	3 0 1							
30	Building Services Mechanic 屋宇設備技工	2	3 0 2							
31	Electrician/Electrical Fitter 電工／電氣打磨裝配工	2	3 0 3							
32	Control Panel Assembler 控制板裝配工	2	3 0 4							
33	Electrical Wireman 電氣佈線工	2	3 0 5							
34	Refrigeration/Air-conditioning/Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	2	3 0 6							
35	Refrigeration/Air-conditioning/Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	2	3 0 7							
36	Refrigeration/Air-conditioning/Ventilation Mechanic (Air System)/Sheet Metal Worker 空調製冷設備技工(送風系統)／薄片金屬構造工	2	3 0 8							
37	Refrigeration/Air-conditioning/Ventilation Mechanic (Thermal Insulation)/Thermal Insulation Craftsman 空調製冷設備技工(保溫)／保溫技工	2	3 0 9							
38	Refrigeration/Air-conditioning/Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	2	3 1 0							
39	Plumber and Pipe Fitter 喉管工	2	3 1 1							
40	Mechanical Fitter/Machinist 機械打磨裝配工／ 機床工	2	3 1 2							
41	Lift Mechanic 升降機技工	2	3 1 3							
42	Escalator Mechanic 自動梯技工	2	3 1 4							
43	Fire Services Electrical Fitter 消防電氣裝配工	2	3 1 5							
44	Fire Services Mechanical Fitter 消防機械裝配工	2	3 1 6							

Part I (第一部份)

E

Sheet 2
第 2 頁

	(A) Principal Jobs 主要職務 — Job Title 職稱 (See Appendix D) (參閱附錄D)	Rec. Type	Job Code 職位編號	(B) Average Monthly Income 每月平均收入 — Code* 編號	(C) No. Employed at Date of Survey (excl. trainees) 現有僱員人數（受訓者除外）	(D) Forecast of No. Employed 12 Months from Now (excl. trainees) 預計12個月後僱員人數（受訓者除外）	(E) No. of Vacancies at Date of Survey (excl. trainees) 現有空缺額(受訓者除外)	(F) No. of Trainees at Date of Survey 現有受訓者人數	(G) Forecast of No. of Trainees 12 Months from Now 預計12個月後受訓者人數
	For Official Use Only 此欄毋須填寫 →		8-10	11	12-15	16-19	20-22	23-25	26-28
45	Cable Jointer (Power) 強電流電纜接駁工	2	3 1 7						
46	Overhead Linesman 架空電線技工	2	3 1 8						
47	Electrical Appliances Service Mechanic 電器用具服務技工	2	3 1 9						
48	Welder 銲接工	2	3 2 0						
49	Carpenter 木工	2	3 2 1						
50	Painter 髹漆工	2	3 2 2						
51	AV and RF Mechanic 影音及射頻技工	2	3 2 3						
52	Building Security System Mechanic 屋宇防盜系統技工	2	3 2 4						
53	Communication System Mechanic 電訊系統裝配工	2	3 2 5						
54	Aircraft Maintenance Mechanic 飛機維修技工	2	3 2 9						
55	Rolling Stock Tradesman 鐵道車輛技工	2	3 3 0						
56	Railway Signalling Tradesman 鐵路訊號技工	2	3 3 1						
57	Labourer 雜工	2	4 0 1						
58	Semi-skilled Worker 半技術工	2	4 0 2						

* Enter in column (B) the employee's average monthly income range according to the following codes:
請將僱員每月平均收入幅度按照下列編號填入（B）欄內：

Average Monthly Income Range 每月平均收入幅度	Code 編號
$9,000 or below 或以下	1
$9,001 - $12,000	2
$12,001 - $15,000	3
$15,001 - $18,000	4
$18,001 - $25,000	5
$25,001 - $35,000	6
$35,001 - $45,000	7
$45,001 - $60,000	8
Over $60,000 以上	9

Note: The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.

附註: 「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

	(A) Principal Jobs 主要職務 Job Title 職稱 (See Appendix D) (參閱附錄D)	Rec. Type	Job Code 職位編號	(B) Average Monthly Income 每月平均收入 Code* 編號	(C) No. Employed at Date of Survey (excl. trainees) 現有僱員人數（受訓者除外）	(D) Forecast of No. Employed 12 Months from Now (excl. trainees) 預計12個月後僱員人數（受訓者除外）	(E) No. of Vacancies at Date of Survey (excl. trainees) 現有空缺額(受訓者除外)	(F) No. of Trainees at Date of Survey 現有受訓者人數	(G) Forecast of No. of Trainees 12 Months from Now 預計12個月後受訓者人數
	For Official Use Only 此欄毋須填寫 →		8-10	11	12-15	16-19	20-22	23-25	26-28
1	Electrical Engineer 電機工程師	2	1 5 1						
2	Marine Engineer 輪機工程師	2	1 5 2						
3	Mechanical Engineer 機械工程師	2	1 5 3						
4	Ship Designer/Naval Architect 船舶設計師／造船工程師	2	1 5 4						
5	Ship Repairs Manager/Superintendent 船舶修理主管或船舶修理監督	2	1 5 5						
6	Safety Officer 安全主任	2	1 5 6						
7	Draughtsman 繪圖員	2	2 5 1						
8	Electrical Engineering Technician 電機工程技術員	2	2 5 2						
9	Electronics/Telecommunication Technician 電子／通訊技術員	2	2 5 3						
10	Estimator 估計員	2	2 5 4						
11	Mechanical Engineering Technician 機械工程技術員	2	2 5 5						
12	Assistant Safety Officer/Safety Supervisor 助理安全主任／安全督導員	2	2 5 6						
13	Supervisor/Chargehand 監督／管工	2	2 5 7						
14	Air-conditioning Mechanic/Sheet Metal Worker 空氣調節技工／薄片金屬構造工	2	3 5 1						
15	Carpenter 木工	2	3 5 2						
16	Crane Driver 起重機操作工	2	3 5 3						

* Enter in column (B) the employee's average monthly income range according to the following codes:
請將僱員每月平均收入幅度按照下列編號填入（B）欄內：

Average Monthly Income Range 每月平均收入幅度	Code 編號
$9,000 or below 或以下	1
$9,001 - $12,000	2
$12,001 - $15,000	3
$15,001 - $18,000	4
$18,001 - $25,000	5
$25,001 - $35,000	6
$35,001 - $45,000	7
$45,001 - $60,000	8
Over $60,000 以上	9

Note: The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.

附註：「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

17	Electrician 電工	2	3	5	4						
18	Mechanical Fitter 機械打磨裝配工	2	3	5	5						
19	GRP - Worker 玻璃纖維工	2	3	5	6						
20	Machinist 機床工	2	3	5	7						
21	Marine Pipeworker 船舶喉管工	2	3	5	8						
22	Painter 髹漆工	2	3	5	9						
23	Rigger 索具工／喊吔工	2	3	6	0						
24	Ship Classification Qualified Welder 船級協會認可焊接工	2	3	6	1						
25	Steel Worker (Boiler Maker/Steel Plater/Blacksmith) 鋼鐵工（鍋爐工、造船鋼板工、捻縫工或鐵工）	2	3	6	2						
26	Welder 銲接工	2	3	6	3						
27	Labourer 雜工	2	4	5	1						
28	Semi-skilled Worker 半技術工	2	4	5	2						
29		2									
30		2									
31		2									
32		2									
33		2									
34		2									
35		2									
36		2									
37		2									
38		2									
39		2									
40		2									

	(A) Principal Jobs 主要職務			(B) Average Monthly Income 每月平均收入	(C) No. Employed at Date of Survey (excl. trainees) 現有僱員人數（受訓者除外）	(D) Forecast of No. Employed 12 Months from Now (excl. trainees) 預計12個月後僱員人數（受訓者除外）	(E) No. of Vacancies at Date of Survey (excl. trainees) 現有空缺額(受訓者除外)	(F) No. of Trainees at Date of Survey 現有受訓者人數	(G) Forecast of No. of Trainees 12 Months from Now 預計12個月後受訓者人數
	Job Title 職稱 (See Appendix D) (參閱附錄D)	Rec. Type	Job Code 職位編號	Code* 編號					
	For Official Use Only 此欄毋須填寫 →		8-10	11	12-15	16-19	20-22	23-25	26-28
1	Electrical Engineer 電機工程師	2	1 7 1						
2	Gas Engineer (Fuel Gas) 氣體工程師（氣體燃料）	2	1 7 2						
3	Mechanical Engineer 機械工程師	2	1 7 3						
4	Safety Officer 安全主任	2	1 7 4						
5	Electrical Engineering Technician 電機工程技術員	2	2 7 1						
6	Gas Engineering Technician 氣體燃料工程技術員	2	2 7 2						
7	Mechanical Engineering Technician 機械工程技術員	2	2 7 3						
8	Assistant Safety Officer/Safety Supervisor 助理安全主任／安全督導員	2	2 7 4						
9	Supervisor/Chargehand 監督／管工	2	2 7 5						
10	Electrician/Electrical Fitter 電工／電氣打磨裝配工	2	3 7 1						
11	Gas Distribution Fitter (LPG) 氣體燃料輸送技工（石油氣）	2	3 7 2						
12	Gas Distribution Fitter (Town Gas) 氣體燃料輸送技工（煤氣）	2	3 7 3						
13	Gas Utilisation Fitter (Domestic) 氣體燃料應用技工（住宅式）	2	3 7 4						
14	Gas Utilisation Fitter (Non-domestic) 氣體燃料應用技工（非住宅式）	2	3 7 5						

* Enter in column (B) the employee's average monthly income range according to the following codes:
請將僱員每月平均收入幅度按照下列編號填入（B）欄內：

Average Monthly Income Range 每月平均收入幅度	Code 編號
$9,000 or below 或以下	1
$9,001 - $12,000	2
$12,001 - $15,000	3
$15,001 - $18,000	4
$18,001 - $25,000	5
$25,001 - $35,000	6
$35,001 - $45,000	7
$45,001 - $60,000	8
Over $60,000 以上	9

Note: The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.

附註: 「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

15	Mechanical Fitter 機械打磨裝配工	2	3	7	6						
16	Welder 銲接工	2	3	7	7						
17	Driver (LPG Cylinder Wagon) 司機（石油氣瓶車）	2	4	7	1						
18	Labourer 雜工	2	4	7	2						
19	Semi-skilled Worker 半技術工	2	4	7	3						
20	Vehicle Attendant/Deliveryman (LPG Cylinder) 跟車／送貨員（石油氣瓶）	2	4	7	4						
21		2									
22		2									
23		2									
24		2									
25		2									
26		2									
27		2									
28		2									
29		2									
30		2									
31		2									
32		2									
33		2									
34		2									
35		2									
36		2									
37		2									
38		2									
39		2									
40		2									

THE 2013 MANPOWER SURVEY
OF THE ELECTRICAL AND MECHANICAL SERVICES INDUSTRY
機 電 工 程 業 2013年 人 力 調 查

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Est. No. _____

Er. No. _____

Questionnaire Part II (調查表第二部份) : Manpower Flow (人力動向)

1. Number of employees, including those who had retired, left your organisation in the past 12 months (excluding trainees):
貴機構過去12個月內離職的僱員人數（包括年屆退休而離職的僱員，但不包括受訓者）：

Professional / Technologist 專業人士／技師	Technician 技術員	Tradesman / Craftsman 技工	Semi-skilled/ General Worker 半技術／普通工人
8	11	14	17

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20

2. Number of employees recruited from E&M services industry by your organisation in the past 12 months (excluding new graduates, employees from other industries or trainees):
貴機構過去12個月內在機電工程業內招聘的僱員人數（不包括新畢業生、從其他行業轉任者或受訓者）：

Professional / Technologist 專業人士／技師	Technician 技術員	Tradesman / Craftsman 技工	Semi-skilled/ General Worker 半技術／普通工人
21	24	27	30

33

3. Number of employees (under the payroll of your organisation in Hong Kong) who were deployed to work outside Hong Kong for more than 6 months in the past 12 months:
過去12個月內，由貴機構香港辦事處支薪而被調派往香港以外地方工作超過6個月的僱員人數：

Professional / Technologist 專業人士／技師	Technician 技術員	Tradesman / Craftsman 技工
34	37	40

43

For Organisations of Gas, Shipbuilding and Ship Repair sectors, please skip this question and go to Question 5.
從事氣體燃料行業及船舶修建工程行業的機構，請跳答問題(5)。

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4. For each job level, please indicate the relative percentage of manpower engaging in "Contracting" and "Servicing" work of the E&M Industry in your organisation:
(Please refer to item 11 of the Explanatory Note for definitions of "Contracting" and "Servicing".)
請填寫貴機構各職級的僱員，在從事機電工程業的「承造」及「維修服務」工作類別上相對的百分比：
(有關「承造」及「維修服務」工作類別的定義，請參閱附註內第十一項。)

	Contracting 承造	Servicing 維修服務	
(a) Professional / Technologist 專業人士／技師	___ % (44)	___ % (47)	___ (50)
(b) Technician 技術員	___ % (51)	___ % (54)	___ (57)
(c) Tradesman / Craftsman 技工	___ % (58)	___ % (61)	___ (64)
(d) Semi-skilled / General Worker 半技術／普通工人	___ % (65)	___ % (68)	___ (71)

5. What has been the situation of manpower supply for the industry in the past 12 months? (Please enter the appropriate code.)
過去12個月內，行業的人力供應情況如何？ (請填上適當編號。)

		Code 編號	Situation of Manpower Supply 人力供應情況	
(a) Professional / Technologist 專業人士／技師	___ (72)			___ (73)
Trainees of Professional / Technologist 專業人士／技師的受訓者	___ (74)	1	Very Insufficient 非常缺乏	___ (75)
		2	Insufficient 缺乏	
(b) Technician 技術員	___ (76)	3	Sufficient 充裕	___ (77)
Trainees of Technician 技術員的受訓者	___ (78)	4	Very Sufficient 非常充裕	___ (79)
(c) Tradesman / Craftsman 技工	___ (80)	5	No Comment 無意見	___ (81)
Trainees of Tradesman / Craftsman 技工的受訓者	___ (82)			___ (83)
(d) Semi-skilled / General Worker 半技術／普通工人	___ (84)			___ (85)

End of questionnaire. Thank you for your co-operation.
問卷完，多謝合作。

The 2013 Manpower Survey of the Electrical and Mechanical Services Industry
機電工程業 2013 年人力調查

Explanatory Notes
附　註

1. When filling the questionnaire, please ignore the numbers in the row immediately beneath the headings. They are purely column numbers for data processing.
每行標題下的分欄編號，只供資料處理之用，填表時毋須理會。

2. Please complete the columns ('A' to 'G') of the questionnaire and insert a zero (0) for any column not applicable to your establishment.
請填寫表內各欄（'A' 至 'G'），並在貴機構不適用的欄內填寫零（0）。

3. For general definition of job levels, please refer to Appendix C. For detailed job descriptions, please refer to Appendix D.
有關技能等級的一般定義請參閱附錄 C。有關詳細的工作說明，請參閱附錄 D。

4. Job Title - Column 'A'
職稱 —— 'A' 欄

   (a) Please go through column 'A' and mark those job titles applicable to your establishment. For detailed job descriptions, please refer to Appendix D.
   請瀏覽 'A' 欄，選取適用於貴機構的職稱。有關詳細的工作說明，請參閱附錄 D。

   (b) Please add in column 'A' titles of any technical jobs not mentioned in the job descriptions; briefly describe them and indicate their skill levels.
   如貴機構另有技術性職稱未載於工作說明，請一併填入 'A' 欄內，並扼要說明其工作性質及技能等級。

(c) Please classify an employee according to his/her main duty irrespective of any additional secondary duties he/she may be required to perform (e.g. a technician, who works mainly as an electrical engineering technician but is also required to perform the work of a draughtsman occasionally, should be classified as an electrical engineering technician but not as a draughtsman).
請根據僱員的主要職務分類，而不以其兼任的其他職務分類（例如：某技術員的主要職務為電機工程技術員，但間中亦須擔任繪圖員的工作，則應歸類為電機工程技術員而非繪圖員）。

(d) If an electrical and mechanical (E & M) engineering professional/technologist normally plays only managerial role for E & M engineering projects or services, and sometimes offers professional engineering advices and decisions on the projects or services, please classify such professional/technologist as engineering manager. (Please refer to the job description of job code 110)
如有機電工程專業人員日常在機電工程計劃或服務中只擔任管理角色，但會間中提供工程專業意見和決定，請將此等人員歸類為工程經理。（請參閱工作編號 110 的工作說明）。

5. Average Monthly Income Range of Employees - Column 'B'
僱員每月平均收入幅度 —— 'B' 欄

Please enter the code of the average monthly income range for each job of employees. This should include basic wages, regular overtime pay, cost of living allowance, meal allowance etc., if any. If you have more than one employee doing the same job, please enter the average range.
請在 'B' 欄填入每個職稱僱員每月平均收入幅度的編號，這包括底薪、定期超時工作工資、生活津貼、膳食津貼等。若從事同類工作的僱員多於一名，則請取其平均收入。

6. Number Employed at Date of Survey (excluding trainees) - Column 'C'
現有僱員人數（受訓者除外）—— 'C' 欄

For each job, please fill in the total number of employees. The number should exclude trainees.
請填寫貴機構現時僱用的每個職稱的員工總數。此總數不包括受訓者人數。

7. Forecast of Number Employed 12 Months from Now (excluding trainees) - Column 'D'
預計 12 個月後僱員總人數（受訓者除外） ——'D' 欄

The forecast of number employed means the number of employees (excluding trainees) you will be employing 12 months from now.
預計的僱員人數指貴機構於 12 個月後所僱用的員工總數（受訓者除外）。

8. Number of Vacancies at Date of Survey (excluding trainees) - Column 'E'
現有空缺額（受訓者除外）——'E'欄

Please fill in the number of existing vacancies (excluding those for trainees).
請填入貴機構現有的空缺數目（受訓者空缺額除外）。

'Existing Vacancies' refer to those unfilled, immediately available job openings for which the establishment is actively trying to recruit personnel at date of survey.
「現有空缺額」是指該職位仍懸空，須立刻填補，而現正積極招聘人員填補。

9. Number of Trainees at Date of Survey - Column 'F'
現有受訓者人數——'F'欄

Please fill in the total number of employees undergoing training.
請填寫正在接受訓練的僱員人數。

The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.
「受訓者」包括正在接受各種訓練的人士以及簽有學徒合約的登記學徒。

10. Forecast of Number of Trainees 12 Months from Now – Column "G"
預計 12 個月後受訓者人數——'G'欄

The forecast of number of trainees means the number of employees undergoing training 12 months from now.
預計的受訓者人數指貴機構於 12 個月後的受訓者總數。

11. Questionnaire Part II: Q.4 – "Contracting" and "Servicing" Work
(only applicable to establishments engaging in electrical and mechanical engineering)
調查表第二部份問題四 – 「承造」及「維修服務」工作類別
（只適用於從事機電工程的機構填寫）

"Contracting" involves works of design, planning, installation, testing and commissioning of various electrical and mechanical equipments and systems.
"Servicing" involves works of maintaining and repairing of electrical and mechanical equipments and systems, including the provision of energy supply and public utilities services in this manpower survey.
「承造」指設計、規劃、安裝、測試及投運試驗各種機電設備和系統的工作。
「維修服務」指保養和修理機電設備和系統的工作。在本人力調查中亦包括提供能源及公用事業服務等。

12. Example
例子

To facilitate proper completion, an example is given overleaf for your reference.
為協助閣下填表，現將例子附錄於後，以供參考。

Example 例子

	(A) Principal Jobs 主要職務			(B) Average Monthly Income 每月平均收入	(C) No. Employed at Date of Survey (excl. trainees) 現有僱員人數（受訓者除外）	(D) Forecast of No. Employed 12 Months from Now (excl. trainees) 預計12個月後僱員人數（受訓者除外）	(E) No. of Vacancies at Date of Survey (excl. trainees) 現有空缺額(受訓者除外)	(F) No. of Trainees at Date of Survey 現有受訓者人數	(G) Forecast of No. of Trainees 12 Months from Now 預計12個月後受訓者人數
	Job Title 職稱 (See Appendix D) (參閱附錄D)	Rec. Type	Job Code 職位編號	Code* 編號					
	For Official Use Only 此欄毋須填寫 →		8-10	11	12-15	16-19	20-22	23-25	26-28
1	Building Services Engineer 屋宇設備工程師	2	1 0 1	8	2	2	0	1	0
2	Electrical Engineer 電機工程師	2	1 0 2	7	3	5	1	1	1
13	Supervisor 監督	2	2 0 1	6	6	7	0	0	2
14	Building Services Technician 屋宇設備技術員	2	2 0 2	5	4	4	0	1	3
15	Draughtsman 繪圖員	2	2 0 3	4	2	2	0	1	3
16	Electrical Engineering Technician 電機工程技術員	2	2 0 4	5	6	8	1	2	1
30	Building Services Mechanic 屋宇設備技工	2	3 0 2	4	1 0	1 1	1	1	1
31	Electrician/Electrical Fitter 電工／電氣打磨裝配工	2	3 0 3	4	1 5	1 8	1	4	1
57	Labourer 雜工	2	4 0 1	2	2	1	0	0	0
58	Semi-skilled Worker 半技術工	2	4 0 2	2	6	6	0	0	0

* Enter in column (B) the employee's average monthly income range according to the following codes:
請將僱員每月平均收入幅度按照下列編號填入（B）欄內：

Average Monthly Income Range 每月平均收入幅度	Code 編號
$9,000 or below 或以下	1
$9,001 - $12,000	2
$12,001 - $15,000	3
$15,001 - $18,000	4
$18,001 - $25,000	5
$25,001 - $35,000	6
$35,001 - $45,000	7
$45,001 - $60,000	8
Over $60,000 以上	9

Note : The term 'trainees' includes all trainees receiving any form of training and apprentices under a contract of apprenticeship.

附註：「受訓者」包括正在接受各種訓練的人士，以及簽有學徒合約的登記學徒。

General Definition of Job Levels
in the Electrical & Mechanical Services Industry
機電工程業技能等級的一般定義

Professional/Technologist
專業人士／技師

A professional/technologist is a person who has the qualification and experience equivalent to that required for corporate membership of a professional institution. He/She should be competent in analysing and solving a wide range of technical problems. Furthermore, he/she should be able to assume personal responsibility for the development and application of engineering principles, to exercise original thought and judgment, to keep abreast of technology, to apply the latest techniques and to supervise/develop his/her sub-ordinates.

專業人士／技師須具備相當於有關專業學會正式會員所需的資歷及經驗，並能分析及解決各類技術上的問題。此外，亦須負責發展及應用工程原理，具創見和判斷力；與科技發展並進，應用最新技術，以及督導和培訓下屬。

Technician
技術員

A technician is a person who occupies a position between the professional/ technologist and the tradesman/craftsman. His/Her education, training and practical experience enable him/her to apply proven techniques and procedures to carry out technical tasks, normally under the guidance of a professional/technologist.

技術員的職級介乎專業人士／技師與技工之間，須具備相當學歷、工作經驗及曾接受訓練，一般可在專業人士／技師的督導下，運用已確立的技術和方法去完成工作。

Tradesman/Craftsman

技工

A tradesman/craftsman is a skilled worker who is able to apply his/her skills to a wide range of jobs within his/her trade, with minimum direction and supervision. A tradesman/craftsman possesses not only practical skills but also related theoretical knowledge which enables him/her to adapt himself/herself to new technologies.

技工是指熟練工人，能在有限度的指示及督導下，應用各種技能執行個別行業的職務。技工除須具備實際技能外，亦需有相關的理論知識，以便能適應日新月異的科技發展。

Semi-skilled/General Worker

半技術工人／普通工人

A semi-skilled/general worker is normally assigned to perform repetitive work requiring only a narrow range of skills and short period of training.

半技術工人／普通工人通常獲指派擔任性質重複的工作，要求的技能較少，訓練時間亦較短。

JOB DESCRIPTIONS FOR PRINCIPAL JOBS IN THE ELECTRICAL AND MECHANICAL ENGINEERING SECTOR
機電工程行業主要職務的工作說明

Code 編號	Job Title 職稱	Job Description 工作說明
PROFESSIONAL/TECHNOLOGIST 專業人士／技師		
101	Building Services Engineer 屋宇設備工程師	Designs and advises on building services facilities in buildings. Plans, supervises and coordinates their installation, testing, maintenance and repair. 設計屋宇內的屋宇設備、策劃、監督及協調其裝設、測試、保養和修理。
102	Electrical Engineer 電機工程師	Researches into electrical engineering problems; designs and advises on electrical systems and equipment; and plans and supervises their development, construction, manufacture, installation, operation, maintenance and repair. 研究電機工程問題；設計電機系統及設備，並就該方面提供意見；策劃及管理其發展、建造、製造、安裝、操作、保養及修理。
103	Refrigeration/ Air-conditioning/ Ventilation Engineer 冷凝／空氣調節／通風設備工程師	Researches into electrical and mechanical engineering problems related to refrigeration/air-conditioning/ ventilation systems; designs and advises on refrigerating, air-handling and electrical equipment for air-conditioning plant, cold stores and other refrigerating systems; plans and supervises their development, manufacture, construction, installation, operation, maintenance and repair. 研究有關冷藏／空調系統的電機及機械工程問題；設計空調廠房、冷藏庫及其他冷藏系統的各項冷凝、空氣處理及電機設備，並就該方面提供意見；策劃及管理其發展、製造、建造、安裝、操作、保養及修理。
104	Mechanical Engineer 機械工程師	Researches into mechanical engineering problems; designs and advises on mechanical plant and equipment; plans and supervises their development, manufacture, construction, installation, operation, maintenance and repair. 研究機械工程問題；設計機械裝置及設備，並就該方面提供意見；策劃及管理其發展、製造、建造、安裝、操作、保養及修理。

Code 編號	Job Title 職稱	Job Description 工作說明
PROFESSIONAL/TECHNOLOGIST (Continued)　專業人士／技師（續）		
105	Plumbing and Drainage Engineer 水喉及渠務工程師	Researches into plumbing and drainage engineering problems; designs and advises on plumbing and drainage plant and equipment; plans and supervises their development, manufacture, construction, installation, operation, maintenance and repair. 研究水喉及渠務工程問題；設計水喉及渠務裝置和設備，並就該方面提供意見；策劃及管理其發展、製造、建造、安裝、操作、保養及修理。
106	Lift/Escalator Engineer 升降機／自動梯工程師	Researches into electrical and mechanical engineering problems related to lift and escalator systems; designs and advises on mechanical and electrical equipment for lift and escalator systems; plans and supervises their development, manufacture, construction, installation, operation, maintenance and repair. 研究有關升降機和自動梯系統的電機及機械工程問題；設計升降機和自動梯系統的機械及電機設備，並就該方面提供意見；策劃及管理其發展、製造、建造、安裝、操作、保養及修理。
107	Fire Services Engineer 消防設備工程師	Researches into fire service problems; designs and advises on fire services systems and equipment; and plans and supervises their development, construction, manufacture, installation, operation, maintenance and repair. 研究消防設備問題；設計消防系統及設備，並就該方面提供意見；策劃及管理其發展、建造、製造、安裝、操作、保養及修理。
108	Electronics Engineer 電子工程師	Researches into the application of electronic techniques in electrical engineering problems; designs and advises on electronic systems and equipment; plans and supervises their development, construction, manufacture, installation, operation, maintenance and repair. 研究電子技術在電機工程問題上的應用；設計電子系統及設備，並就該方面提供意見；策劃及管理其發展、建造、製造、安裝、操作、保養及修理。
109	Control and Instrumentation Engineer 控制及儀器工程師	Designs and advises on electrical and mechanical measuring, control and test instruments; and plans and supervises their development, construction, installation, operation and maintenance. 設計電機及機械測量、控制及試驗儀器，並就該方面提供意見；策劃及管理其發展、建造、安裝、操作及保養。

Code 編號	Job Title 職稱	Job Description 工作說明
PROFESSIONAL/TECHNOLOGIST (Continued)　　專業人士／技師（續）		
110	Engineering Manager 工程經理	Directs and assumes accountabilities for all aspects of electrical and mechanical (E & M) engineering projects or services. The job holder is not normally directly involved in day-to-day work of the engineering projects or services but sometimes offers professional engineering advices and decisions. He/she should have professional qualification and experience in E & M engineering. 管理及負責機電工程或服務。其職務通常不會直接參與工程或服務的日常運作，但會間常提出專業工程建議及決定。此職位需由具備專業資歷的人士擔任。
111	Safety Officer 安全主任	Assists the employer of a workplace or a construction site in promoting the safety and health of persons employed therein, including the inspection of workplace, plants, equipment or works processes to identify any risks and to advise on preventive measures; investigates accidents and dangerous occurrences and makes recommendations to prevent similar accidents. 協助工作場所或建築地盤的東主從事促進僱員安全及健康的工作，包括視察廠房、設備或一般鑒別工作危險的程序，並就預防措施提供意見；調查意外及危險事故的成因，並就如何避免發生同類意外提供意見。
112	Aircraft Maintenance Engineer 飛機維修工程師	Plans, leads and supervises aircraft maintenance checks; Identifies and rectifies problems and defect; Analyses and interprets technical procedures, schematic engineering diagrams, manuals and publications; Establishes and maintains good business relationship with customers; Approves authorisation holder for issuing Certificate of Release to Service for different types of aircraft; He/She should be the holder of Category A or B Aircraft Maintenance Licence. 策劃、領導及監督飛機維修的檢驗工作；找出和矯正相關的問題和缺點；分析和詮釋技術程序、工程繪圖、手冊和刊物；與客戶建立和維繫良好商業關係；批准認可人士為各類飛機發出許可服務證明書；具備甲類或乙類航空器維修執照。

Code 編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN 技術員		
201	Supervisor 監督	Performs supervisory duties contributory to the planning and allocation of tasks to workers and trainees, and to the manufacture, inspection, quality control, installation, operation, maintenance and repair of equipment and system. 擔任管理職務，如策劃及分配工作予工人及受訓者；管理有關設備及系統的製造、查驗、品質控制、安裝、操作、保養及修理。
202	Building Services Technician 屋宇設備技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, installation, operation, maintenance and repair of building services systems and equipment. Assists to plan, coordinate and supervise their projects. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、安裝、操作、保養及修理屋宇裝置及設備。並協助工程師策劃、協調及管理有關計劃。
203	Draughtsman 繪圖員	Prepares detail and assembly drawings and circuit diagrams according to design specifications. 按照設計規格，繪製明細圖、裝配圖及線路圖。
204	Electrical Engineering Technician 電機工程技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, installation, operation, maintenance and repair of electrical systems and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、製造、安裝、操作、保養及修理電機裝置及設備。
205	Refrigeration/ Air-conditioning/ Ventilation Technician 冷凝／空氣調節／通風設備技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, construction, installation, efficient operation, maintenance and repair of air-conditioning plant and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、製造、建造、安裝、有效操作、保養及修理冷凝空氣調節廠房及設備。

Code 編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN (Continued) 技術員（續）		
206	Mechanical Engineering Technician 機械工程技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, construction, installation, efficient operation, maintenance and repair of mechanical plant and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、製造、建造、安裝、有效操作、保養及修理機械裝置及設備。
207	Lift/Escalator Technician 升降機／自動梯技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, installation, operation, maintenance and repair of both mechanical and electrical equipment for various types of lifts and escalators. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、製造、安裝、操作、保養及修理各類升降機及自動梯的機械及電氣設備。
208	Fire Services Technician 消防設備技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, installation, operation, maintenance and repair of fire services systems, equipment and fire extinguishers. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、製造、安裝、操作、保養及修理消防系統、設備及滅火筒。
209	Electrical Instrument and Meter Technician 電工儀器技術員	Fits, assembles, repairs, tests and calibrates electrical meters and instruments either independently or under the direction of a qualified engineer. 單獨或在有資歷工程師的指導下，裝配、組合、修理、測試及校準電錶及電工儀器。
210	Electronics Technician 電子技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, construction, installation, operation, maintenance and repair of electronic devices and equipment other than telecommunication systems. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、建造、安裝、操作、保養及修理電子裝置及設備（電訊系統除外）。

Code 編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN (Continued) 技術員（續）		
211	Telecommunication Technician 電訊技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, installation, operation, maintenance and repair of telecommunication systems and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、安裝、操作、保養及修理電訊系統及設備。
212	Office Equipment Service Technician 辦公室設備維修技術員	Checks, tests, installs, maintains and services, repairs and overhauls general office equipment including electronic business equipment and copying machines, in both workshops and customers' premises. 在工場或顧客事務所查驗、測試、安裝、保養及檢修、修理及大修各項常用辦公室裝置，包括電子商業設備及各類複印機器。
213	Assistant Safety Officer/Safety Supervisor 助理安全主任／安全督導員	Assists the employer and Safety Officer, where appropriate, in promoting safety and health of persons employed in a workplace or a construction site. Advises employee on safety standards, and supervises the observance of such standards for the promotion of safety at work. Implementing industrial safety training. 協助東主及安全主任，從事促進工作場所或建築地盤僱員的安全及健康工作；向員工提供有關安全標準的意見，並監督這些標準的切實執行，以促進工作安全。推行工業安全訓練。
214	Aircraft Maintenance Technician 飛機維修技術員	Carries out aircraft maintenance and servicing tasks in a professional manner and certifies his/her own work within the scope of the approval under minimum supervision. Performs diagnostic evaluations of equipment and maintenance works to ensure quality delivery of services. Performs supervisory duties and ensures work is accomplished in accordance with the procedures and is progressively signed off. He/She should be the holder of Category A or B Aircraft Maintenance Licence. 在最少的指導下能專業地完成和保證飛機保養和維修的工作；為器材及維修工作給予準確的診斷評估，以確保有質素的服務；擔任指導的工作，並確保所有工作都能按程序完成及逐步驗收。具備甲類或乙類航空器維修執照。

Code 編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN (Continued) 技術員（續）		
215	Rolling Stock Technician 鐵道車輛技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, construction, installation, efficient operation, maintenance and repair of electrical systems and mechanical equipment in rolling stock. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、製造、建造、安裝、有效操作、保養及修理鐵道車輛上的電機裝置和機械設備。
216	Railway Signalling Technician 鐵路訊號技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, construction, installation, operation maintenance and repair of electronic devices and mechanical equipment in railway signalling system. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、建造、安裝、操作保養及修理鐵路訊號系統之電子裝置和機械設備。
TRADESMAN/CRAFTSMAN 技工		
301	Foreman/Chargehand 管工／領工	Organises and directs groups or teams of craftsmen or other workers. 組織及督導若干組或若干隊技工或其他工人。
302	Building Services Mechanic 屋宇設備技工	Installs, operates, maintains and repairs various types of building services systems and equipment. 安裝、操作、保養和維修各類屋宇裝置及設備。
303	Electrician/ Electrical Fitter 電工／ 電氣打磨裝配工	Installs, tests, maintains and repairs electrical installations including electrical wiring in accordance with regulations and specifications; fits, assembles, erects, installs, maintains and repairs electrical plant and equipment other than refrigeration/air-conditioning/ventilation electrical control, low voltage switchboards and control panels. 依據規例及規格安裝、測試、保養和維修電力裝置，包括敷電線；裝配、組合、設置、安裝、保養及修理各類電氣裝置及設備（控制板及空調製冷設備電力控制除外）。
304	Control Panel Assembler 控制板裝配工	Fits, assembles, installs and repairs low voltage switchboards and control panels, for electrical plants and equipment. 裝配、組合、安裝及修理用於電氣裝置及設備的低電壓電線制箱及控制板。

Code 編號	Job Title 職稱	Job Description 工作說明
TRADESMAN/CRAFTSMAN (Continued)　技工（續）		
305	Electrical Wireman 電氣佈線工	Installs and lays wiring for electrical systems and equipment. 安裝和敷設用於電氣裝置及設備的電線。
306	Refrigeration/ Air-conditioning/ Ventilation Mechanic (Electrical Control) 空調製冷設備技工(電力控制)	Fits, assembles, installs, commissions, maintains and repairs electrical control for: (a) air-conditioning systems including refrigerating, air-handling and ventilation equipment; (b) cold stores, ice-making and other refrigerating equipment; (c) air-conditioning and ventilation equipment forming part of fire services systems. 裝配、組合、安裝、試動、保養和修理用於下列設備的電力控制： (甲) 空調系統，包括冷凝、空氣處理及通風設備； (乙) 冷藏庫、製冰及其他冷凝設備； (丙) 與消防系統有關連的空調系統及通風設備等。
307	Refrigeration/ Air-conditioning/ Ventilation Mechanic (Unitary System) 空調製冷設備技工(獨立系統)	Fits, assembles, installs, commissions, maintains and repairs: (a) unitary air-conditioning systems including refrigerating, air-handling and ventilation equipment; (b) unitary cold stores, ice-making and other refrigerating equipment. 裝配、組合、安裝、試動、保養和修理： (甲) 獨立安裝的空調系統和通風設備； (乙) 獨立安裝的冷藏庫、製冰及其他冷凝設備。
308	Refrigeration/ Air-conditioning/ Ventilation Mechanic(Air System)/ Sheet Metal Worker 空調製冷設備技工(送風系統)／薄片金屬構造工	Fabricates, installs and repairs sheet metal assemblies and products (including ventilation ducting, dampers, fire resistant board and fittings). 製造、裝置及修理薄片金屬組合及製品(包括通風槽、風閘、防火板及有關裝置)。

Code 編號	Job Title 職稱	Job Description 工作說明
TRADESMAN/CRAFTSMAN (Continued)　技工（續）		
309	Refrigeration/ Air-conditioning/ Ventilation Mechanic (Thermal Insulation)/ Thermal Insulation Craftsman 空調製冷設備技工(保溫)／保溫技工	Prepares, fits, fixes and repairs thermal insulations of air-conditioning and refrigeration plants. 準備、裝配、設置和修理空氣調節及冷凝裝置的保溫設備。
310	Refrigeration/ Air-conditioning/ Ventilation Mechanic (Water System) 空調製冷設備技工(水系統)	Fits, assembles, installs, commissions, maintains and repairs water systems for air-conditioning systems (including air-handling and water condensing equipment). 裝配、組合、安裝、試動、保養和修理用於空調系統(包括空氣處理及水冷凝設備)的水系統。
311	Plumber and Pipe Fitter 喉管工	Assembles, installs and maintains pipes, fittings and fixtures for conveying gases and liquids other than refrigeration, air-conditioning, ventilation and fire services piping. 組合、安裝及保養用以供應氣體和液體的喉管及裝置（消防及空調製冷設備喉管除外）。
312	Mechanical Fitter/ Machinist 機械打磨裝配工／機床工	Fits, assembles, erects, installs, repairs and services mechanical plant and equipment; sets up and operates machine tools to make products to specified tolerances and surface finishes. 打磨、裝配、裝置、安裝、修理及檢修機械設備；裝設及操作機械工具，製作產品以符合規定的公差及表面公度。
313	Lift Mechanic 升降機技工	Installs, adjusts, services, maintains and repairs various types of lifts. 安裝、校正、檢修、保養及修理各類升降機設備。
314	Escalator Mechanic 自動梯技工	Installs, adjusts, services, maintains and repairs various types of escalators. 安裝、校正、檢修、保養及修理各類自動梯設備。
315	Fire Services Electrical Fitter 消防電氣裝配工	Installs, tests, maintains, repairs and inspects automatic fire alarm (AFA) and manual fire alarm systems, and electrical/electronic parts of fire services systems. 安裝、測試、保養、修理及查驗自動及手動火警警報系統及消防系統電氣和電子設備。

Code 編號	Job Title 職稱	Job Description 工作說明
TRADESMAN/CRAFTSMAN (Continued)　技工（續）		
316	Fire Services Mechanical Fitter 消防機械裝配工	Installs, tests, maintains, repairs and inspects fire services piping systems and mechanical parts of fire services systems. 安裝、測試、保養、修理及查驗消防設備喉管及消防系統機械設備。
317	Cable Jointer (Power) 強電流電纜接駁工	Joints low voltage cables (i.e. not exceeding 1 000 Volts) either with the circuits dead or one or both cables energised and joints dead cables of all voltages. 接駁無通電、或其中一條或兩條已通電的低壓電纜（即不超過 1 000 伏特者），並負責接駁無通電的各級電壓電纜。
318	Overhead Linesman 架空電線技工	Constructs, maintains and repairs overhead line systems of all voltages on tubular steel, concrete, lattice girder or wood supports. 建造、保養及修理裝於管狀鋼鐵、混凝土、格子桁或木支座上的各級電壓架空電線系統。
319	Electrical Appliances Service Mechanic 電器用具服務技工	Fits and assembles, tests and installs, maintains, services and repairs all commonly used commercial and domestic electrical appliances excluding office, refrigeration and air-conditioning equipment. 裝配及組合、測試及安裝、保養、檢修及修理各類常用的商用及家庭電器用具（不包括文儀、冷凝及空氣調節設備）。
320	Welder 銲接工	Joins, cuts and deposits metals by means of an electric arc or a gas flame or by other welding or brazing processes. 使用電弧、氣體火焰、黃銅銲接或其他銲接法，以接合、割切及附合金屬。
321	Carpenter 木工	Cuts out, assembles, erects and repairs structural and other woodwork. 鋸切、裝配、架設及修理木架及其他木材結構。
322	Painter 髹漆工	Prepares surfaces, selects, mixes and applies paint. 擔任物品表面的打灰與磨滑、選油、混色及塗漆等工作。
323	AV and RF Mechanic 影音及射頻技工	Installs, maintains and repairs television receivers, consumer video equipment and community antenna systems. 安裝、保養及修理電視機、影音設備及公用天線系統。

Code 編號	Job Title 職稱	Job Description 工作說明
TRADESMAN/CRAFTSMAN (Continued)　技工（續）		
324	Building Security System Mechanic 屋宇防盜系統技工	Installs, maintains and repairs building security systems including building doorphone systems, CCTV systems, public address systems and security alarm systems and access control system. 安裝、保養及修理各類屋宇防盜系統包括訪客對講機系統、閉路電視系統、擴音系統及防盜警報系統及進出控制系統。
325	Communication System Mechanic 電訊系統裝配工	Fits, assembles, installs, maintains and repairs communication equipment and systems including block wiring systems, private automatic branch exchange system, intercom systems, in-building coaxial cable distribution systems, and other wired or wireless signal transmission and reception systems. 裝配、組合、安裝、保養及修理各類電訊裝置及系統包括電線及光纖的分支及終端接駁系統、專用電話自動接駁系統、內線電話系統、大廈內同軸電纜系統及其他有線或無線的訊號收發系統。
329	Aircraft Maintenance Mechanic 飛機維修技工	Carries out aircraft maintenance/overhaul tasks under supervision to ensure optimal and safe operations. Uses aircraft documentation and maintenance publications relative to corresponding level properly. Ensures works are completed in accordance with the relevant Aircraft Maintenance manual instruction and reaches the required standards. Completes documentation relative to his/her level according to the requirements of the Civil Aviation Department. 在指導下完成飛機保養及大修的工作，以確保飛機在最理想及安全情況下運作。適當地應用相關程度的飛機保養文件及刊物。依照航空器保養手冊來進行維修工作，並達致所需標準。按民航署要求完成相關工作的記錄。
330	Rolling Stock Tradesman 鐵道車輛技工	Installs, tests, maintains and repairs electrical installations and mechanical parts of the rolling stock. 安裝、測試、保養及修理鐵道車輛上的電機裝置和機械部分。
331	Railway Signalling Tradesman 鐵路訊號技工	Installs, tests, maintains and repairs electronic devices and mechanical parts of the railway signalling system. 安裝、測試、保養及修理鐵路訊號系統之電子裝置和機械部分。

Code 編號	Job Title 職稱	Job Description 工作說明
SEMI-SKILLED WORKER/GENERAL WORKER　　半技術工人／普通工人		
401	Labourer 雜工	Undertakes general labouring work related to electrical and mechanical engineering. 擔任與機電工程有關的一般雜務工作。
402	Semi-skilled Worker 半技術工	Assists skilled craftsmen in the industry. 協助業內的技工工作。

JOB DESCRIPTIONS FOR THE PRINCIPAL JOBS OF THE SHIPBUILDING AND SHIP REPAIR SECTOR
船舶修建行業主要職務工作說明

Code 編號	Job Title 職稱	Job Description 工作說明
PROFESSIONAL/TECHNOLOGIST 專業人士／技師		
151	Electrical Engineer 電機工程師	Carries out research on electrical engineering problems; designs electrical systems and plans and supervises their construction, installation, operation, maintenance and repair; and advises employers, associates or clients on electrical engineering matters. 研究電機工程問題；設計電氣系統，策劃與監督系統的建造、裝設、操作、保養及修理；向僱主、同僚或顧客提供關於電機工程的意見。
152	Marine Engineer 輪機工程師	Studies, designs and advises on propulsion systems, power plants, heating and ventilating systems, steering gear, pumps and other mechanical and electrical equipment, construction, installation, maintenance and repair. 研究、設計及就船舶推進系統、動力裝置、暖氣與通風系統、操舵裝置、泵、其他機械與電機設備的建造、裝設、保養及修理提供專業意見。
153	Mechanical Engineer 機械工程師	Carries out research on mechanical engineering problems; designs and advises on mechanically functioning, plant and equipment; and plans and supervises their development, manufacture, construction, installation, operation, maintenance and repair. 研究機械工程問題；設計機械設備，並提供專業意見。計劃及監督機械設備的發展、生產、建造、裝設、操作、保養及修理。
154	Ship Designer/Naval Architect 船舶設計師／ 造船工程師	Studies and prepares specifications for shipbuilding, conversion or repair. Studies, designs, and advises on the hulls and superstructures. Plans and supervises and be responsible for the overall design, their development, construction, maintenance and repair. 研究及編製建造新船、改裝船舶或修船的規格。研究、設計及就輪船的船身及上層結構提供專業意見。策劃、監督及負責輪船的全面設計、發展、構造、保養及修理。

Code 編號	Job Title 職稱	Job Description 工作說明
PROFESSIONAL/TECHNOLOGIST (Continued)　專業人士／技師（續）		
155	Ship Repairs Manager/ Superintendent 船舶修理主管或 船舶修理監督	(A) Shipping Company: Organises and directs the repair and maintenance of ships; acts as company consultant on design, technical, cost and related matters. (B) Dockyard/Shipyard: Organises and directs the building, repair and maintenance; discusses and negotiates with owner's representatives on design, technical, cost and related matters. (甲) 船務工程公司方面的工作： 策劃與指導船舶的維修及保養；在設計、技術、成本及有關事宜方面擔任公司顧問。 (乙) 船廠方面的工作： 策劃與指導建造、維修及保養工作；就設計、技術、成本及有關事宜與船東代表研討及洽商。
156	Safety Officer 安全主任	Assists the employer of a workplace in promoting the safety and health of persons employed therein, including the inspection of workplace, plants, equipment or works processes to identify any risks and to advise on preventive measures; investigates accidents and dangerous occurrences and makes recommendations to prevent similar accidents. 協助工作場所的東主從事促進僱員安全及健康的工作，包括視察廠房、設備或一般鑒別工作危險的程序，並就預防措施提供意見；調查意外及危險事故的成因，並就如何避免發生同類意外提供意見。
TECHNICIAN　技術員		
251	Draughtsman 繪圖員	Prepares structural, layout, detail and assembly drawings or circuit diagrams for the maintenance and repair of plants, equipment and ship structures. 繪製結構圖、配置圖、明細圖、裝配圖或線路圖，用以保養及維修船隻結構，船上裝置及設備。

Code 編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN (Continued) 技術員（續）		
252	Electrical Engineering Technician 電機工程技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, installation, operation, maintenance and repair of electrical systems and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、安裝、操作、保養及修理電機裝置及設備。
253	Electronics/ Telecommunication Technician 電子／通訊技術員	Carries out installation and repairing of marine electronic/telecommunication equipment. 安裝及修理船用電子／通訊設備。
254	Estimator 估計員	Obtains basic data and sets up detailed cost sheets for materials, overhead and labour in the preparation of tenders for shipbuilding and ship repair work; takes off quantities for work. 獲取基本資料，並詳細開列工料成本及雜項開支，以備競投船舶建造與修理工程之用。計算工程進度。
255	Mechanical Engineering Technician 機械工程技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, construction, installation, efficient operation, maintenance and repair of mechanical plant and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、建造、安裝、有效操作、保養及修理機械裝置及設備。
256	Assistant Safety Officer/Safety Supervisor 助理安全主任／ 安全督導員	Assists the employer and Safety Officer, where appropriate, in promoting safety and health of persons employed in a workplace. Advises employee on safety standards, and supervises the observance of such standards for the promotion of safety at work. Implementing industrial safety training. 協助東主及安全主任，從事促進工作場所僱員的安全及健康工作；向員工提供有關安全標準的意見，並監督這些標準的切實執行，以促進工作安全。推行工業安全訓練。
257	Supervisor/Foreman 監督／管工	Controls groups or teams of craftsmen or other workers. 管理若干組或若干隊技工或其他工人。

Code 編號	Job Title 職稱	Job Description 工作說明
TRADESMAN 技工		
351	Air-conditioning Mechanic/Sheet Metal Worker 空氣調節技工／薄片金屬構造工	Fits, assembles, erects, installs, commissions, services, operates, maintains and repairs air-conditioning plant and ducting fitted on-board ships. 安裝、組合、裝配、設置、測試、檢修、操作、保養及維修船上的空氣調節系統及風槽。
352	Carpenter 木工	Constructs and repairs wooden vessels, and carries out structural wood work. 建造及修理木船，並從事與船舶建造有關的木工。
353	Crane Driver 起重機操作工	Operates various types of cranes. 操作各類起重機。
354	Electrician 電工	Tests, overhauls and installs electrical plant and equipment, and wiring for power and lighting. 測試、檢查及安裝電氣設備和供電及照明的佈線。
355	Mechanical Fitter 機械打磨裝配工	Fits, assembles, erects, installs, services, repairs and tests plant and machinery on board or in workshop; and making tools for performing the above duties. 負責打磨、裝配、保養、修理及測試船上或工場內的機械，並製造工具以完成上述任務。
356	GRP - Worker 玻璃纖維工	Constructs, repairs and assembles vessels and articles from glass reinforced plastic material (GRP). 使用玻璃纖維建造、修理及組合船隻與用具。
357	Machinist 機床工	Sets up and operates machine tools, to machine parts according to drawings and specifications. 調校與操作機床，並依據圖則與規格機製零件。
358	Marine Pipeworker 船舶喉管工	Fabricates, assembles, installs, maintains and repairs piping systems on board ships. 負責船舶上各種喉管系統的構製、組合、安裝、保養和修理。
359	Painter 髹漆工	Undertakes surface preparations and painting works on ships. 負責船舶的表面處理及髹漆工作。
360	Rigger 索具工／喊吔工	Responsible for the rigging of ship's derricks, masts, lifeboat davits, staging and other rope work. 負責船上吊杆、船桅、救生艇吊架、架板及其他的索具裝配工作。

Code 編號	Job Title 職稱	Job Description 工作說明
TRADESMAN (Continued)　技工（續）		
361	Ship Classification Qualified Welder 船級協會認可焊接工	Being certified by the ship classification societies as qualified welder to perform welding jobs according to the standard set by the respective classification societies. 船級協會認可的焊接工，能進行符合協會標準的焊接工作。
362	Steel Worker (Boiler Maker/Steel Plater/Blacksmith) 鋼鐵工（鍋爐工、造船鋼板工、捻縫工或鐵工）	Carries out the fabrication and erection of steel structures on marine crafts. 建造、裝設與修理船舶鋼鐵結構。
363	Welder 焊接工	Performs cutting of ferrous metals, joining and depositing of ferrous and non-ferrous metal by means of welding with an electric arc, an oxy-acetylene or oxy-butane flame. 以電弧、氧乙炔焰或氧丁烷焰焊接法切割鐵金屬、連接及附焊鐵金屬與非鐵金屬。
SEMI-SKILLED WORKER/GENERAL WORKER　半技術工人／普通工人		
451	Labourer 雜工	Undertakes general cleaning work of shipbuilding and ship repair, removal of industrial waste and handling of materials. 擔任有關船舶修建工程的各種清潔工作，清理工業廢料及搬運物料。
452	Semi-skilled Worker 半技術工	Assists skilled craftsmen in the industry. 協助業內技工工作。

JOB DESCRIPTIONS FOR THE PRINCIPAL JOBS IN THE GAS SECTOR
氣體燃料行業主要職務的工作說明

Code 編號	Job Title 職稱	Job Description 工作說明
PROFESSIONAL/TECHNOLOGIST 專業人士／技師		
171	Electrical Engineer 電機工程師	Designs and advises on electrical systems and equipment of fuel gas production plant; and plans and supervises their development, construction, installation, operation, maintenance and repair. 設計氣體燃料製造廠房的電機系統及設備，並就該方面提供意見；策劃及管理其發展、建造、安裝、操作、保養及修理。
172	Gas Engineer (Fuel Gas) 氣體工程師（氣體燃料）	Designs and advises on supply or utilisation of gas. Plans, supervises and coordinates their development, construction, installation, operation, maintenance and repair. 設計氣體燃料的供應或應用，並就該方面提供意見。策劃、監督及協調其發展、建造、安裝、操作、保養及修理。
173	Mechanical Engineer 機械工程師	Designs and advises on mechanical equipment of fuel gas production plant; and plans and supervises their development, construction, installation, operation, maintenance and repair. 設計氣體燃料製造廠房的機械裝置及設備，並就該方面提供意見；策劃及管理其發展、建造、安裝、操作、保養及修理。
174	Safety Officer 安全主任	Assists the employer of a workplace in promoting the safety and health of persons employed therein, including the inspection of workplace, plants, equipment or works processes to identify any risks and to advise on preventive measures; investigates accidents and dangerous occurrences and makes recommendations to prevent similar accidents. 協助工作場所的東主從事促進僱員安全及健康的工作，包括視察廠房、設備或一般鑒別工作危險的程序，並就預防措施提供意見；調查意外及危險事故的成因，並就如何避免發生同類意外提供意見。

Code 編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN 技術員		
271	Electrical Engineering Technician 電機工程技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, manufacture, installation, operation, maintenance and repair of electrical systems and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、製造、安裝、操作、保養及修理電機裝置及設備。
272	Gas Engineering Technician 氣體燃料工程技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, installation, operation, maintenance and repair of equipment concerned with the supply or utilisation of gas. Assists to plan, coordinate and supervise their projects. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、安裝、操作、保養及修理氣體燃料的供應或應用的設備。並協助工程師策劃、協調及管理有關計劃。
273	Mechanical Engineering Technician 機械工程技術員	Performs technical tasks, either independently or under the direction of a qualified engineer, contributory to design, development, construction, installation, efficient operation, maintenance and repair of mechanical plant and equipment. 單獨或在有資歷工程師的指導下，擔任技術性工作，從事設計、發展、建造、安裝、有效操作、保養及修理機械裝置及設備。
274	Assistant Safety Officer/Safety Supervisor 助理安全主任／ 安全督導員	Assists the employer and Safety Officer, where appropriate, in promoting safety and health of persons employed in a workplace. Advises employee on safety standards, and supervises the observance of such standards for the promotion of safety at work. Implementing industrial safety training. 協助東主及安全主任，從事促進工作場所僱員的安全及健康工作；向員工提供有關安全標準的意見，並監督這些標準的切實執行，以促進工作安全。推行工業安全訓練。

Code 編號	Job Title 職稱	Job Description 工作說明
TECHNICIAN (Continued) 技術員（續）		
275	Supervisor/ Chargehand 監督／管工	Performs supervisory duties contributory to the planning and allocation of tasks to workers and trainees, and to the inspection, quality control, installation, operation, maintenance and repair of equipment and system. 擔任管理職務，如策劃及分配工作予工人及受訓者；管理有關設備及系統的查驗、品質控制、安裝、操作、保養及修理。
TRADESMAN/CRAFTSMAN 技工		
371	Electrician/Electrical Fitter 電工／電氣打磨裝配工	Installs, tests, maintenances and repairs electrical installations in fuel gas production plants. 安裝、測試、保養和維修在氣體燃料製造廠房的電力裝置及設備。
372	Gas Distribution Fitter (LPG) 氣體燃料輸送技工（石油氣）	Installs, commissions, tests and services LPG distribution systems including storage and piping before meter point. 安裝、試用、測試及維修石油氣輸送系統，包括在石油氣錶前之石油氣貯藏及喉管鋪設。
373	Gas Distribution Fitter (Town Gas) 氣體燃料輸送技工（煤氣）	Installs, commissions, tests and services town gas distribution systems starting at outside the gas production works and terminating generally at one metre above ground level outside the consumer's building. 在煤氣生產處至用戶大廈通常離地一米處之間進行安裝、試用、測試及維修煤氣輸送系統。
374	Gas Utilisation Fitter (Domestic) 氣體燃料應用技工（住宅式）	Installs, commissions, tests and services all types of gas appliances together with their associated equipment, piping and gas supplies in domestic premises, including diagnostic fault finding and repairing. 安裝、試用、測試及維修住宅樓宇內一切氣體燃料用具、其附屬設備、喉管及氣體燃料供應系統。包括判斷與尋找故障及修理工作。

Code 編號	Job Title 職稱	Job Description 工作說明
TRADESMAN/CRAFTSMAN (Continued)　技工（續）		
375	Gas Utilisation Fitter (Non-domestic) 氣體燃料應用技工（非住宅式）	Installs, commissions, tests and services all types of gas appliances together with their associated equipment, piping and gas supplies in commercial and industrial premises, including diagnostic fault finding and repairing. 安裝、試用、測試及維修工商業樓宇內一切氣體燃料用具、其附屬設備、喉管及氣體燃料供應系統。包括判斷與尋找故障及修理工作。
376	Mechanical Fitter 機械打磨裝配工	Fits, assembles, erects, installs, repairs and services mechanical equipment of fuel gas production plant. 打磨、裝配、裝置、安裝、修理及檢修氣體燃料製造廠房的機械設備。
377	Welder 銲接工	Joins, cuts and deposits metals by means of an electric arc or a gas flame or by other welding or brazing processes for gas production plant and delivery system. 使用電弧、氣體火焰、黃銅銲接或其他銲接法，以接合、割切及附合金屬，用於氣體燃料製造廠房及輸送系統。
SEMI-SKILLED WORKER/GENERAL WORKER　半技術工人／普通工人		
471	Driver (LPG Cylinder Wagon) 司機（石油氣瓶車）	Operates wagons to deliver LPG cylinders. 駕駛石油氣瓶車運送石油氣瓶。
472	Labourer 雜工	Undertakes general labouring work of gas sector. 擔任有關氣體燃料行業的一般雜務工作。
473	Semi-skilled Worker 半技術工	Assists skilled tradesmen in the industry. 協助業內的技工工作。
474	Vehicle Attendant/ Deliveryman (LPG Cylinder) 跟車／送貨員（石油氣瓶）	Assists the driver in the delivery of LPG cylinder. 協助司機運送石油氣瓶。