

**THE ENGINEERING GRADUATE TRAINING SCHEME
AND NEW TECHNOLOGY TRAINING SCHEME IN HONG KONG**

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Abstract: If Hong Kong is to improve its competitiveness, a sustainable adequate supply of well-educated and trained manpower, particularly at the technologist level, is essential. Given the fact that human capital is the single most important factor supporting Hong Kong's development, the Hong Kong Government has been and will continue to be firmly committed to investing heavily in education and training. This paper describes the operation of two government funded schemes for training technologists in Hong Kong, namely the Engineering Graduate Training Scheme (EGTS) and the New Technology Training Scheme which are administered by the Committee on Technologist Training of the Vocational Training Council(VTC).

INTRODUCTION

The story of Hong Kong is well-known. Its change from being a small barren island, totally devoid of natural resources, to being first an entrepot and then a robust manufacturing, trading and financial centre, despite numerous political, social and economic upheavals, is well documented. What is not so well-known, however, is the efforts made by Hong Kong in developing a system of technical education and industrial training that has helped to make some of these changes possible, a system that is designed to meet the specific needs of the economy and seeks to match output of trained personnel with the economy's requirements. People were, and are still, Hong Kong's only natural resources. For this very reason, the quality of our people has a direct bearing on Hong Kong's competitiveness in the world. If Hong Kong is to improve its competitiveness, a sustainable adequate supply of well-educated and trained manpower, particularly at the technologist level, is essential. Given the fact that human capital is the single most important factor supporting Hong Kong's development, the Hong Kong Government has been and will continue to be firmly committed to investing heavily in education and training. The important development of the manpower training services in Hong Kong has included the set up of the Vocational Training Council (VTC) in 1982 which is responsible for, amongst many other things, instituting, developing and operating schemes for training operatives, craftsmen, technicians and technologists.

In the context of training at technologist level in Hong Kong, the main role of the universities is to provide education to first degree level and beyond. Post-graduate practical training is necessary for engineering graduates to integrate 'theory' with 'practice' so that they can develop and take up competently the responsibilities and role as a professional engineer in industry. However, employers are often reluctant to provide comprehensive practical training for engineering graduates knowing that the cost of initial training of engineers is high and there is no certainty that the engineer will remain with the employer after the training. In recognition of the increasing difficulty of Hong Kong engineering graduates in getting practical training in industry and of the

need for assisting employers, particularly in the manufacturing sector, to make good the high initial cost of training engineers, the VTC launched the Engineering Graduate Training Scheme (EGTS) in 1983.

The Engineering Graduate Training Scheme (EGTS)

The objective of the EGTS is to assist engineering graduates to find positions with firms which could provide them with the range of training activities and experience necessary to achieve professional status. The EGTS achieves its goal in bringing about more practical training opportunities for engineering graduates by providing a financial incentive to employers to start and if possible to train more engineering graduates. The Hong Kong Government provides the funding for the EGTS through annual grants allocated to the VTC.

The EGTS is operated by the Committee on Technologist Training (CTT) of the VTC in conjunction with the Hong Kong Institution of Engineers (HKIE) with the former responsible for the administration of the Scheme and the latter standards setting and assessment. The HKIE was incorporated by a Government Ordinance in 1975. Since then, corporate membership of HKIE has been the primary qualification for employment as a qualified professional engineer in Hong Kong. The HKIE has a Graduate Training Scheme 'A' for training professional engineers. It is a comprehensive and well-structured training system aiming at fostering the development of engineering graduates in those technical and professional matters perceived to be required by a professional engineer. The normal training period of Scheme 'A'; is 3 years for Civil, Structural, Geotechnical and Environmental Engineering disciplines while 2 years for all the other engineering disciplines. The Scheme 'A' also provides the fastest route for engineering graduates to attain Corporate Membership of the HKIE. The HKIE has set out Model Training Guides for all the 16 engineering disciplines to assist companies in setting up training programmes for registration under its Scheme 'A' training.

To assist it in administering the EGTS, the CTT set up the Sub-Committee on EGTS. The membership of the CTT and the Sub-Committee on EGTS includes representatives from employers, employers' associations, tertiary institutions, industry-support organisations, HKIE and relevant Government departments; with the majority of members from industry.

Eligibility for the EGTS

Any employer in Hong Kong wishing to provide his graduate trainees with practical training of a standard acceptable for corporate membership of the HKIE is eligible for EGTS training subsidy. To meet the high cost of initial training, each graduate trainee undertaking the EGTS training is granted a subsidy from the Government for a period up to a maximum of 18 months. The subsidy is paid through the trainee's employer as part of his salary and is subject to annual review by the CTT against the salary trend. The present rate of subsidy is HK\$5,885 per month per graduate trainee. There are about 300 training places provided annually under the EGTS.

Under the EGTS, practical training is provided by employers of the graduate trainees. Training programmes of participating firms must first be approved by the HKIE before they could be registered with the VTC for EGTS training. Employers' applications will be approved by the Sub-Committee on EGTS. The Technologist Training Unit of the VTC is the executive arm of the CTT. Apart from the day-to-day administration of the EGTS, the Unit operates a free service to assist employers in dealing with the training of engineering trainees and the EGTS. The Industrial Training Officers of the Unit may, upon request, assist employers in drawing up detailed training programmes and training supervision arrangements for submission to the HKIE for approval. The Unit also operates a free graduate placement service to help participating firms to recruit graduates

trainees for EGTS training.

Engineering graduates of local or overseas universities who are Hong Kong permanent residents and possessing an engineering qualification acceptable for the Corporate Membership of the HKIE are eligible to join the EGTS.

Recruitment of Trainees for EGTS Training

At the beginning of each year, EGTS participating firms are invited to indicate the number of engineering graduates they wish to recruit within the forthcoming financial year. The Sub-Committee on EGTS has devised criteria for the equitable allocation of subsidized training places to EGTS participating firms. Employers will be advised of the number of allocated training places in May so that they could proceed the recruitment of engineering graduates for EGTS training. Employers having difficulties in recruiting fresh graduates may approach the VTC's Technologist Training Unit for help in recruitment. The following conditions have also to be met before an application for EGTS subsidy submitted by an employer could be approved:

- i) The allocated training places should normally be filled by fresh graduates (i.e. graduating within the financial year)
- ii) In disciplines other than Civil, Structural, Environmental & Geotechnical Engineering, trainees should normally have completed an approved basic training course.
- iii) Recruitment should be completed within 6 months of receipt of the approval of recruitment.

Employers may recruit overseas graduates without approved basic training provided that they agree to release these graduate trainees for basic training in VTC training centres. Provision of basic training to these graduate trainees by the VTC is free on the condition that employers are required to pay the normal salaries to these trainees for the whole basic training period.

Monitoring of EGTS Trainees' Training Progress

The training of each trainee under the EGTS is closely monitored by the CTT through the trainee's Engineering Supervisor. Engineering Supervisors must be Corporate Members of the HKIE in the same discipline as the trainee's and hold a responsible position in the organisation providing the training. As Engineering Supervisor is the defacto representative of the HKIE in the organisation, the appointment has to be approval by the HKIE. In organisations where suitable Engineering Supervisors are not available, the CTT will assist such employers in finding External Engineering Supervisors whose service is voluntary.

An Engineering Supervisor is required to

- i) ensure that the trainee receives training in accordance with the approved training programme,
- ii) be available to the trainee to discuss training, technical and professional matters.
- iii) verify and endorse the trainee's HKIE training log book for submission to the CTT; and
- iv) conduct formal meetings with the trainee to assess his progress.

Throughout the entire training period, trainees are required to maintain HKIE training log books. For the purpose of subsidy payment, employers are required to submit to the CTT copies of their trainees' HKIE log books on a quarterly basis for inspection by the Industrial Training Officers (ITOs) of the VTC.

Apart from the firm's internal arrangement for monitoring the training progress of EGTS trainees, the ITOs of the VTC will also interview EGTS trainees during their subsidized period to check their progress and HKIE training log books.

On satisfactory completion of the EGTS training, employers are required to submit to the CTT a final training report of each trainee covering the entire EGTS training for the issue of Certificate of Completion of Post-graduate Training to the trainee.

When the EGTS was first introduced in 1983, it accepted only those training programmes approved by the HKIE under Scheme 'A' training. In order to provide more training places under the EGTS, with effect from 1.1.1985, it had been expanded to cover also training programmes approved by some of the professional engineering institutions in the UK. The CTT accepted these institutions as they did approve overseas training programmes and their corporate membership was fully recognised by the Hong Kong Government. However, in view of the substantial increase in the number of firms having HKIE approved training programmes, the CTT decided that commencing 1995, priority be accorded to training programmes administered by the HKIE when allocating training places to EGTS participating firms.

Following the decision of the HKIE to accept firms' training programmes with training wholly or partly conducted in Mainland China under Scheme 'A', the scope of the EGTS was expanded in August 1992 to accept these training programmes.

The CTT has regularly reviewed the scope of the EGTS to include new engineering disciplines to meet the industry needs. At present, all the 16 engineering disciplines under HKIE Scheme 'A' have been included in the EGTS.

As at 31.5.2000, a total number of 385 training programmes from about 230 companies have been approved under the EGTS. Some 3945 graduate and 310 sandwich trainees have been subsidised since the launch of the EGTS in 1983. Among them, 3084 graduate trainees have completed their EGTS training. At present, there are 384 graduate and 5 sandwich trainees still undertaking the EGTS training. The distribution of these past EGTS graduate trainees by their engineering disciplines is shown in Appendix 1. Appendix 2 shows the distribution of the EGTS graduate training places by engineering disciplines allocated to participating firms for the past five years. Appendix 3 shows the trend of the EGTS subsidy as percentage of the graduate trainees' weighted average monthly salary as proposed by their employers for the last 5 years.

New Technology Training Scheme (NTTS)

The restructuring of Hong Kong's economy over the past decade witnesses its development into a knowledge-driven and technology intensive economy. In this fast-changing, knowledge-based economy where new skill requirements emerge rapidly, it is important for those already in work to improve their knowledge and skills. For this reason, the Hong Kong Government has been taking an active role in helping employers in acquiring new technologies as well as in promoting a culture of life-long learning among the workforce in collaboration with tertiary education institutions, industry-support organizations and industry. This life-long learning is particularly important for our engineers who are expected to be able to master technological advances and to put them to good profitable use by their employers. It is against this background, the VTC launched the New Technology Training Scheme (NTTS) in June 1992.

The NTTS is administered by the Committee on Technologist Training (CTT) of the VTC. To assist it in administering the NTTS, the CTT set up the Sub-Committee on Training in New Technologies. The purpose of the NTTS is to provide financial assistance to employers wishing to have their staff trained in new technologies which would be beneficial to Hong Kong. In the context of the NTTS, new technologies include those which are either new or not widely applied in

Hong Kong and the absorption and application of which would significantly benefit Hong Kong. The NTTS is financed by the income earned from the investment of the New Technology Training Fund set up under trust on behalf of the Hong Kong Government.

In view of the rather lukewarm response from employers in the first few years, the Government, on the recommendation of the VTC, approved the implementation of the following improvement measures to enhance the attractiveness of the NTTS in February 1997:

- i) to raise the level of grant from 50% to 75% of the total cost of training incurred by an applicant;
- ii) to remove the grant ceilings of \$37,500 per trainee for overseas training and \$15,000 per trainee for local training; and
- iii) to extend assistance to other forms of training including tailor-made local training courses for individual companies if they meet the NTTS's objectives; and
- iv) to further promote the NTTS and make it clear that the NTTS covers not only the manufacturing industries but also the service industries.

Types and Amount of Training Grant

Under the NTTS, there are three kinds of training grant:

Type A - Overseas training courses or work attachments.

The training cost may cover:

- i) A return air passage to the overseas facility by the most economical and convenient means;
- ii) A reasonable subsistence allowance for the duration of training at the overseas facility;
- iii) Training expenses including course fee and course materials etc.;
- iv) Any other fees charged by agencies responsible for identifying the placement concerned.

The training grant can be up to 75% of the total training cost.

Type B - Local training courses or work attachments. The training grant can be up to 75% of the training cost which will only cover the course fee.

Type C - Tailor-made training courses for individual company.

Employer may apply for grants to bring in overseas trainers to conduct training courses locally or engage training organisations or higher education institutions to organise tailor-made training courses to suit their needs. If overseas trainers are brought into Hong Kong, the grant will also cover a return air passage, a reasonable subsistence allowance and the professional fee charged by the overseas trainers if they are not brought in from the applying company's parent or subsidiary company.

Eligibility for the Scheme

A company in Hong Kong wishing to have its staff trained in a new technology for commercial application may apply for a training grant. The company must be a non-government or a non-government subvented organisation. Furthermore, the trainee must

- (i) be a permanent resident of Hong Kong,
- (ii) have the necessary education/experience to benefit from the training, and
- (iii) be company-sponsored.

Approval of Applications

Each application will be considered based mainly on whether the absorption and application of the new technology concerned will benefit Hong Kong. To this end, the Sub-Committee on Training in New Technologies has laid down stringent criteria for assessing the suitability of training courses to ensure that the application of the new technologies concerned will benefit employers in improving efficiency, productivity and quality. The general approval criteria are:

- (i) the technology should be new or has not been widely used and would benefit the local economic sector;
- (ii) the employer and the trainee can benefit from the proposed training;
- (iii) the quality of the training programme;
- (iv) the course content should include application of the technology concerned, case studies and other practical elements to effect technology transfer.

For tailor-made training courses for individual company, an applying company is further required to provide the following information:

- (i) the reasons why the proposed training could not be obtained through attending existing courses provided by local course providers;
- (ii) the objective and the relevance of the proposed training to the company's needs;
- (iii) the company's plan of using the knowledge and skills acquired by the trainees;
- (iv) the company's plan for diffusion of the proposed technology by the trainees to other workers of the company; and
- (v) the detailed implementation schedule of the acquired technology by the company.

These criteria are regularly reviewed by the Sub-Committee to ensure that they are adequate and appropriate in meeting the objective of the NTTS.

The Sub-Committee has maintained an Indicative List of New Technologies which serves as an internal reference for vetting and approving applications submitted under the NTTS. In most cases, the Sub-Committee also seeks outside expert advice from local tertiary institutions and the interested parties on the relevancy and appropriateness of the applications submitted. The Indicative List is regularly updated through VTC's training boards and general committees and the Industry and Technology Development Council to take into account the latest technological developments. Furthermore, to help Hong Kong's small-and-medium enterprises (SMEs) make better use of the NTTS, these training boards/committees are requested in the course of updating the List to give thought to those current technologies which are not yet widely applied in SMEs. The List will also be sent to the Small and Medium Enterprises Committee of the Industry Department for comments so that technologies which have not yet been widely applied amongst SMEs will be included.

Since its inception in June 1992 and up to 15 June 2000, there have been a total of 8,773 applications approved under the NTTS involving training grants of a value of some HK41 million. A breakdown of the approved applications for NTTS training grant by types of training is as follows:

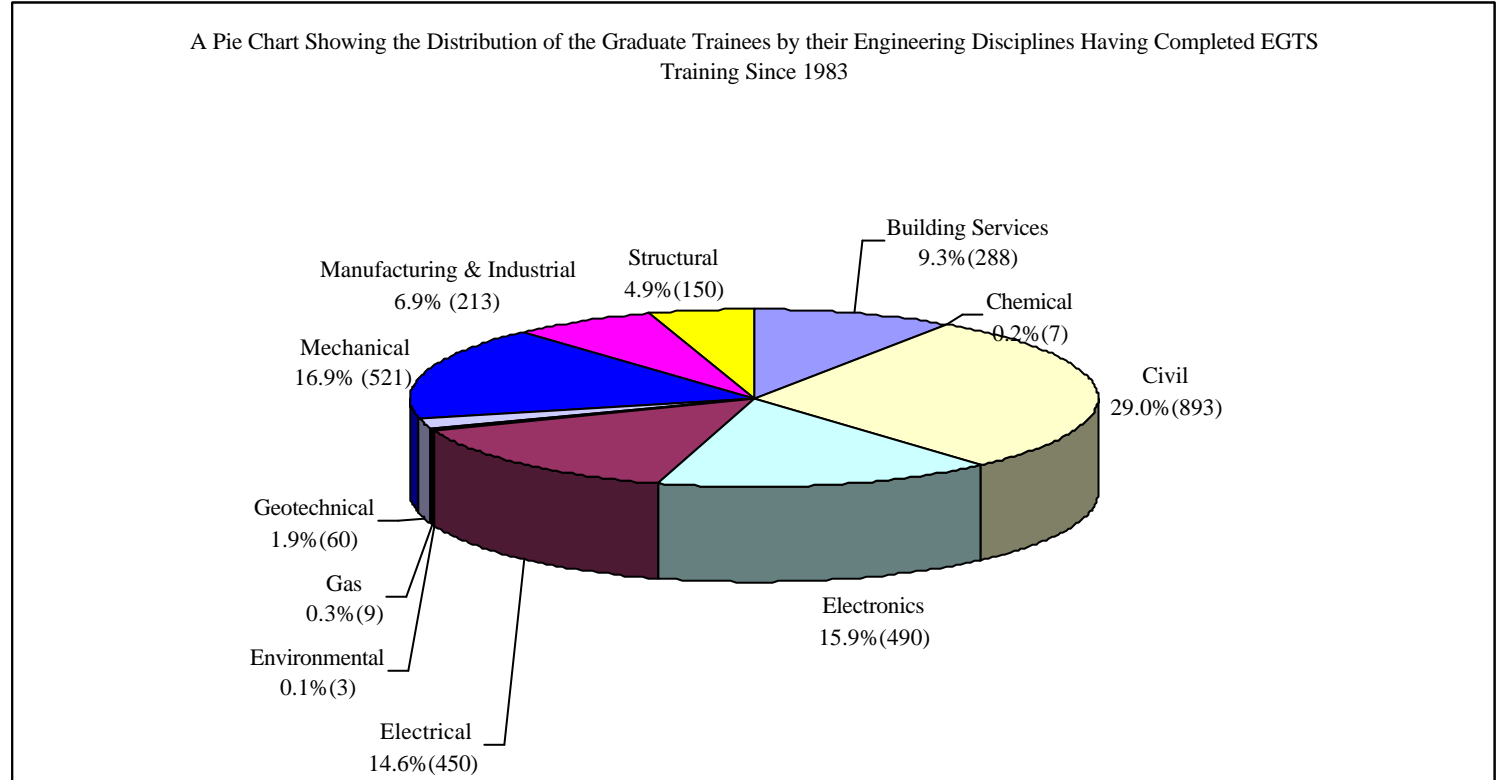
<u>Type of Training Courses</u>	<u>Total No. of Trainees Approved for Training</u>
Local	7228 (82.4%)
Overseas	471 (5.4%)
Tailor-made	1074 (12.2%)
Total	8773 (100%)

CONCLUSION

Technology and innovation will be the driving forces for sustained economic growth as well as the basis for Hong Kong to compete successfully in the global marketplace. The Hong Kong Government is determined to turn Hong Kong into a knowledge-based economy and dedicated to enhancing the innovation and technology capacity of the private sector. Given the fact that human capital is the single most important factor supporting Hong Kong's development, the Hong Kong Government will endeavor to ensure the availability of a continuing and adequate supply of well-educated and well-trained manpower, particularly at the technologist level, that has the ability to cope with the changing needs of the technological advances. In this connection, the EGTS and the NTTS have been playing a vital role in assisting the Hong Kong Government to accomplish its commitment to making Hong Kong a centre of innovation and technology. This is because through the funding support under the EGTS, employers are willing to provide their graduate trainees with an all-round training hereby ensuring the availability of a pool of well-trained professional engineers in Hong Kong. Likewise, the NTTS has achieved its objective as not only training courses approved under the Scheme will benefit the local industry by bringing in new technologies, but also the Scheme has provided employers, particularly the SMEs, the impetus needed to send their staff for training in new technologies.

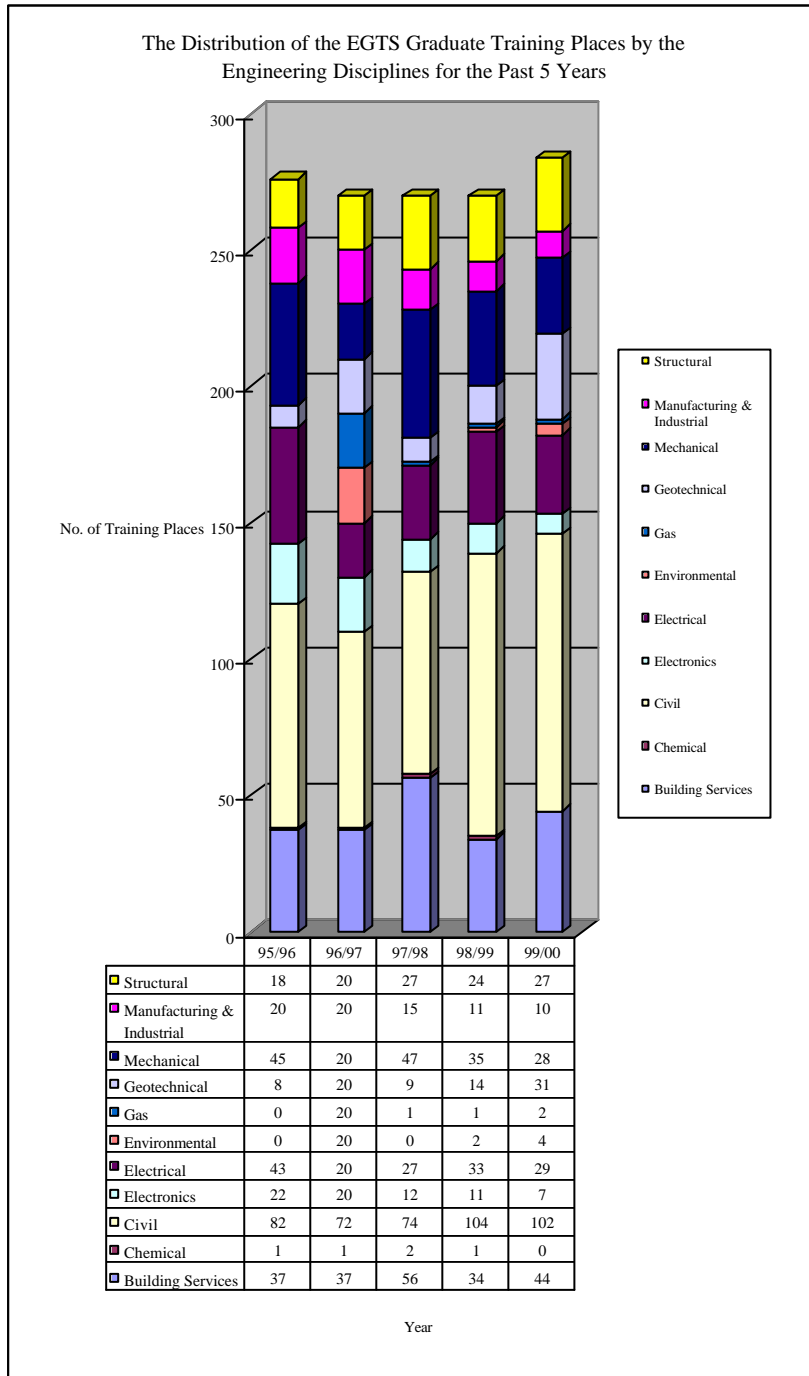
APPENDIX I

Building Services	288
Chemical	7
Civil	893
Electronics	490
Electrical	450
Environmental	3
Gas	9
Geotechnical	60
Mechanical	521
Manufacturing & Industrial	213
Structural	150
Total	3084



APPENDIX II

Year	95/96	96/97	97/98	98/99	99/00
Building Services	37	37	56	34	44
Chemical	1	1	2	1	0
Civil	82	72	74	104	102
Electronics	22	20	12	11	7
Electrical	43	20	27	33	29
Environmental	0	20	0	2	4
Gas	0	20	1	1	2
Geotechnical	8	20	9	14	31
Mechanical	45	20	47	35	28
Manufacturing & Industrial	20	20	15	11	10
Structural	18	20	27	24	27
Total	276	270	270	270	284



APPENDIX III

Year	EGTS Monthly Subsidy	EGTS Graduate Trainees' Weighted Average Monthly Salary	Total Salary	%
95/96 (42.6%)	4750	6401	11151	42.6
96/97 (43.8%)	5150	6621	11771	43.8
97/98 (44.4%)	5550	6949	12499	44.4
98/99 (44.0%)	5885	7489	13374	44.0
99/00 (42.5%)	5885	7952	13837	42.5

