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## **Education and Training Requirements for a Practicing Civil Engineer to Qualify in Australasia and the United Kingdom**

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# **Education and Training Requirements for a Practicing Engineer to Qualify for Registration in Australasia Jurisdictions and the United Kingdom**

## **Abstract**

The making a qualified and competent engineer requires education, practical training, and a professional assessment. Obtaining a professional registration is an indication of competence and willingness to shoulder the legal and social responsibilities required to be an engineer. It also gives the general public the sense of confidence for engineering works designed and constructed by engineers. The requirements and procedure of registration can be stipulated in law, and/or controlled by professional institutions. Different jurisdictions have thus imposed different requirements to suit their conditions. While engineering education programs in most jurisdictions do not differ too much from each other, the requirements for post-graduation training among jurisdictions may vary significantly. The professional assessment systems after the required training may exhibit even more differences.

Hong Kong, Singapore, India, Malaysia, Australia, New Zealand, etc. are or used to be a part of the British Commonwealth. As a result, their registration requirements and procedures for Professional Engineers are basically modeled on the British system, such as those of the Institution of Civil Engineers, the Institution of Mechanical Engineers, the Engineering Council, etc. of the United Kingdom. However, they may be slightly modified to suit the needs of these jurisdictions.

In this paper, these requirements and procedures will be depicted. The system of Hong Kong will be described in detail as an illustration, as many other British-based systems are very similar. The reciprocal agreements among professional institutions for these requirements will also be discussed to understand the inter-recognition of professional qualifications among these jurisdictions so that engineers can be more mobile and an effective global workforce for the betterment of mankind.

## **Introduction**

The definition of a Professional Engineer used by the Conference of Engineering Societies of Western Europe and the United States of America (EUSEC) is as follows:

*"A professional engineer is competent by virtue of his fundamental education and training to apply the scientific method and outlook to the analysis and solution of engineering problems. He is able to assume personal responsibility for the development and application of engineering science and knowledge, notably in research, designing, construction, manufacturing, superintending, managing and in the education of other engineers. His work is predominantly intellectual and varied, and not of a routine mental or physical character. It requires the exercise of original thought and judgment and the ability to supervise the technical and administrative work of others.*

*His education will have been such as to make him capable of closely and continuously following progress in his branch of engineering science by consulting newly published works on a world-wide basis, assimilating such information and applying it independently. He is thus placed in a position to make contributions to the development of engineering science or its applications. His education and training will have been such that he will have acquired a broad and general appreciation of the engineering sciences as well as a thorough insight into the special features of his own branch of engineering. In due time he will be able to give authoritative technical advice and to assume responsibility for the direction of important tasks in his branch."*

Many professional institutions acting as qualifying bodies for engineers stipulated by the law in many Australasia jurisdictions, such as the Hong Kong Institution of Engineers, have adopted the same or similar definitions for the Class of Member for their institutions. Memberships of these professional institutions are an important milestone to qualify for professional registration to practice engineering in these jurisdictions. Membership is granted by assessment or recognition of a relevant professional qualification only, and a candidate must satisfy the education, training, and responsible experience requirements set forth by these institutions.

### **Routes to Membership of the Hong Kong Institution of Engineers (HKIE)**

The Hong Kong Institution of Engineers (HKIE) was established by the Hong Kong Institution of Engineers Ordinance, Chapter 1105 of the Law of Hong Kong<sup>1</sup>. The HKIE is the qualifying body for 20 disciplines of engineering in Hong Kong including aircraft; biomedical; building; building services; chemical; civil; control, automation & instrumentation; electrical; electronics; environmental; fire; gas; geotechnical; information; logistics & transportation; manufacturing & industrial; marine & naval architecture; materials; mechanical; and structural. Moreover, the HKIE is also the signatory representing Hong Kong in the Washington Accord<sup>2</sup>, the International Professional Engineers Agreement (IPEA)<sup>3</sup> (formally the Engineers Mobility Forum Agreement), and the APEC Engineer Agreement<sup>4</sup>.

Regardless of the discipline, there are three different routes to Membership: (1) Formal Training Route (also known as Engineering Graduate Training Scheme A); (2) General Experience Route; and (3) Mature Route. Details of these three routes are depicted in Figures 1 and 2.

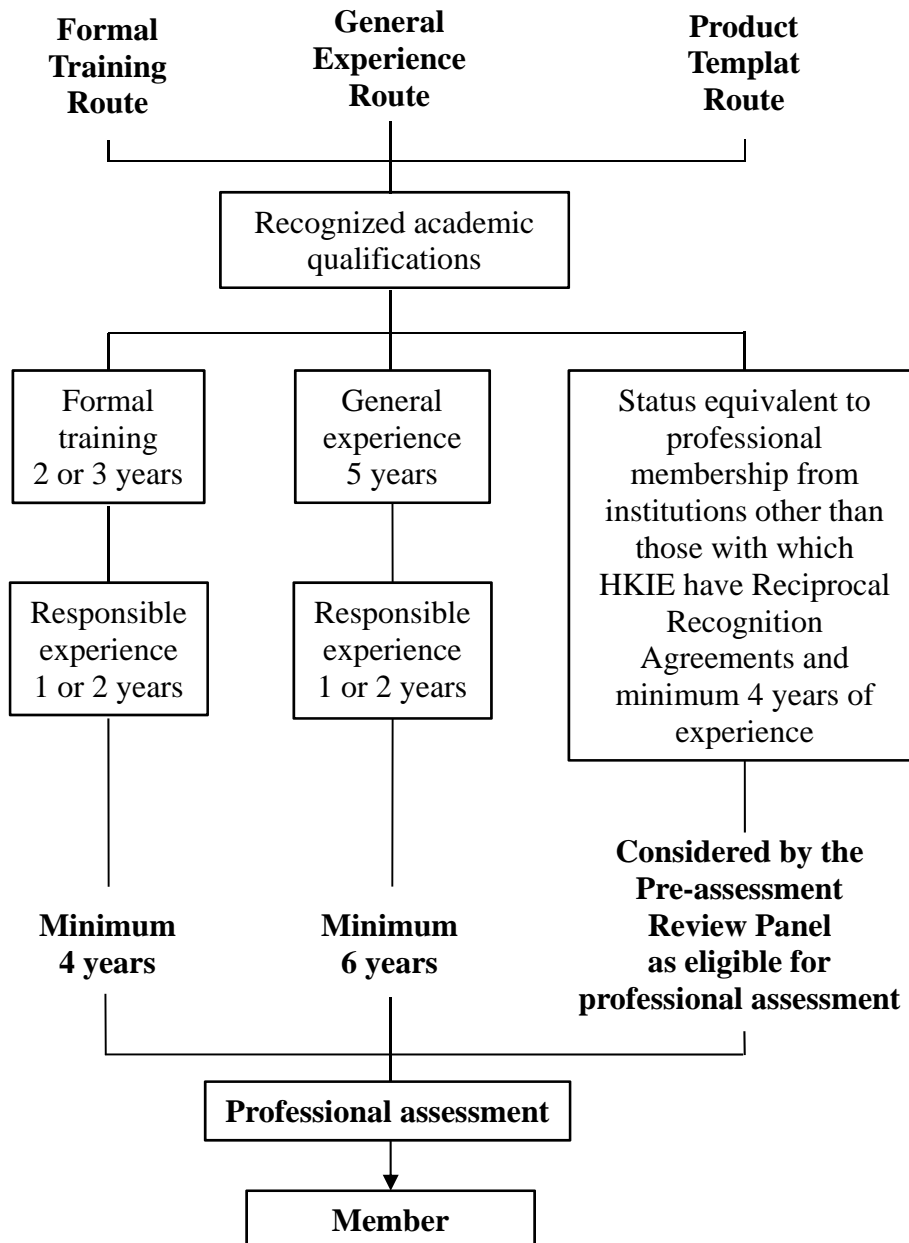
#### **Formal Training and General Experience Routes**

For candidates taking these two routes to Membership, they must: (a) have obtained an accredited honors degree or an acceptable equivalent in a recognized engineering or technological discipline; (b) have received adequate training; (c) have received sufficient responsible experience; and (d) have attained the age of 25. However, most professional institutions in the United Kingdom have waived the age requirement.

Under the Formal Training Route, candidates are required to have two years of pre-approved formal training followed by two years of responsible experience for all disciplines except civil, environmental, geotechnical, and structural disciplines. These four disciplines require three years of pre-approved formal training followed by one year of responsible experience. As a result, a

minimum total of four years of relevant working experience after graduation with an accredited honors degree is required prior to professional assessment.

Under the General Experience Route, candidates who have not undertaken pre-approved training are required to have a minimum of five years of general experience followed by one year of responsible experience, i.e., a total of six years of relevant working experience after graduation is thus required. A Product Template Route as shown in Figure 1 is also provided for candidates, regardless of how they gain his experience, to be eligible for professional assessment as long as they meet the criteria and requirements of the HKIE's definition of a professional engineer.



**Figure 1. Formal Training and General Experience Routes**

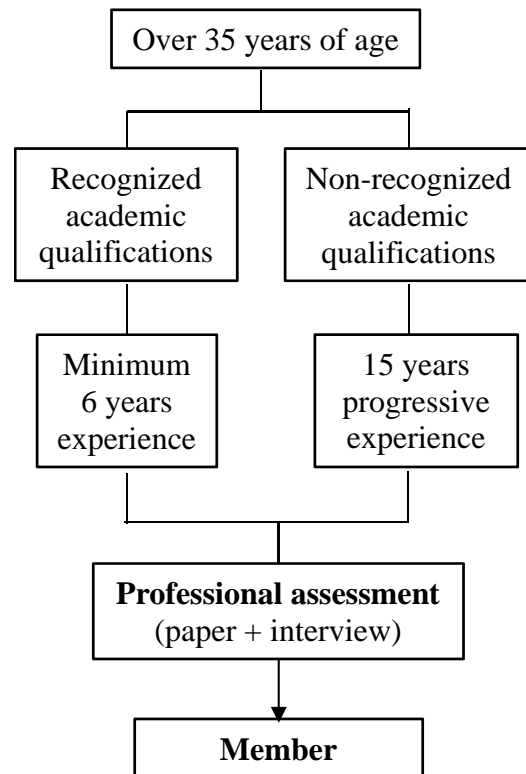
## Mature route

Candidates over 35 years of age can be assessed via the Mature Route as shown in Figure 2. There are generally two categories of candidates under this route: (1) those with recognized academic qualifications; or (2) those without recognized academic qualifications. Details will be given in a specific section later in this paper.

### **Academic Requirements**

Academic qualifications that meet the requirements of the HKIE for Membership are:

- (i) a first degree (honors) accredited by the HKIE;
- (ii) an accredited first degree listed in the Washington Accord<sup>2</sup>;
- (iii) other acceptable qualifications, such as passes in Engineering Council (UK) Part II Examinations including the "Engineer in Society", i.e., Part II (A), (B), and (C) up to and including year 2001 and passes in the Engineering Council Postgraduate Diploma in and after year 2002<sup>5</sup>; or
- (iv) other honors degree level qualifications in engineering, technology or combinations of academic qualifications based on an individual assessment by the HKIE.



**Figure 2. Mature Route**

### **Training and Experience Requirements**

#### Training principles

The HKIE considers that the qualities required by a professional engineer include<sup>6</sup>: (i) technical competence; (ii) managerial & leadership abilities; (iii) business communication skills; (iv) ethical & professional matters; and (v) social awareness.

Training is a crucial component and process in the development of these qualities of a professional engineer. It is a period for a candidate to acquire practical knowledge, skills, and attitudes which can be learnt only in an industrial or commercial environment, and are complementary to those he has already acquired in college through formal education. The training is aimed at developing the technical and managerial abilities of the candidate so as to better prepare him to undertake engineering projects as a professional engineer in his later career with due consideration of technical, economic, financial, environmental, social, and other important relevant factors.

After a period of induction training, the candidate is required to obtain a broad and sound knowledge of engineering practice in his chosen engineering discipline. The overall objective of the candidate is to develop a flexible attitude so that he can meet the future challenges of rapidly changing technology in his particular engineering discipline. By the end of his training, the candidate should have acquired a clear understanding of<sup>6</sup>:

- the importance of adhering to the HKIE's Rules of Conduct and their meaning in relation to his everyday work;
- the need to make appropriate provision in every engineering project to ensure safety, reliability, and environmental acceptability;
- his responsibilities to his employer, his colleagues, other engineers, and the community at large;
- the importance and relevance of his theoretical knowledge to the design, manufacturing, construction, operation and maintenance of the particular products, or services with which the employing organization is concerned;
- the general problems affecting an industrial organization, such as:
  - financial, economic, commercial, and statutory limitations;
  - limitations imposed by men, machines, and materials available;
  - operation and maintenance requirements that may affect engineering decisions;
- the vital importance of good industrial and commercial relations;
- the need to understand the point of view of others and to promote good personal relationships at all levels within an organization;
- the importance of communication, and of being able to discuss interrelated problems with members in other disciplines of engineering and to familiarize himself with the scope of their activities;
- the need to exercise sound judgment and to accept responsibility; and
- the need to develop his abilities to the best advantage of the profession.

The candidate will obtain, whenever possible, practical knowledge skills and experience by participating real-life work rather than by simply observing others' work. Training obtained in realistic situations can be enhanced by experience gained from case studies, role playing, intensive discussion, and simulation.

Although his academic knowledge, industrial training, and experience may enable him to work as a professional engineer, it should be emphasized in his training that his future career development will demand further studies and experience to keep abreast of technological innovations. The continuing professional development (CPD) will help ensure that he will be able to apply new developments and techniques in other branches of technology, science, economics, and sociology to his particular engineering specialty or in management. He will also need to take advantage of the learned society activities of a CPD nature organized by the HKIE and other professional institutions.

At the end of his training period, the candidate must be capable of accepting, under guidance, professional responsibility in his chosen discipline of engineering.

### **Training contents**

It is essential that the candidate receives relevant training in engineering practice as well as in engineering administration and management, generally in accordance with the specific HKIE Engineering Graduate Training Scheme A Model Training Guide. These guidelines have been prepared specifically for all the 20 HKIE engineering disciplines and are available at <http://www.hkie.org.hk/eng/html/gradschemea/modeltrainingguide.asp>. They are guidelines and training organizations are encouraged to design training opportunities to meet the specific needs of the organization as well as the future full professional career expectations of the candidate.

The HKIE has adopted its Scheme A as a training objective system whereby candidates are assessed according to the set objectives. The Objective Record is a useful indication of what candidates are expected to demonstrate. They are in three parts: (i) common core – the objectives that candidates of all disciplines must meet; (ii) core – the objectives that all candidates of a discipline must meet; and (iii) specific – the objectives set by the company/organization that their trainees must meet.

Under the Formal Training Route, a graduate is formally registered with a HKIE Scheme A approved company/organization<sup>7</sup>. These companies/organizations are assessed for their adequacy of training personnel and facilities by the HKIE on a regular basis. Approval includes a formal training program specific for a discipline pre-approved by the HKIE, and the training is structured to meet the objectives of the discipline. The training is carried out under the guidance of an Engineering Supervisor<sup>8</sup> who has undergone specific training by the HKIE, and the day-to-day supervision of a training tutor<sup>8</sup>.

Under the General Experience Route, the early experience acquired by a candidate after he has satisfied the academic requirements of the HKIE may be accepted in lieu of formal training. However, the general experience he has received must be of sufficient depth, breadth, and quality to serve as an acceptable alternative to formalized training. A candidate's early post-academic qualification experience must be verified by one or more of the candidate's supporters for Membership application. These supporters will be required to state in what capacity they can uphold their judgment of the equivalence between the candidate's training that has been acquired through general experience in the practice of an engineering discipline and formal training.

Relevant experience gained prior to obtaining an acceptable academic qualification may be counted towards the period of general experience. The maximum period that can be taken into account is three years. This may consist of:

- (1) up to six months for training undertaken in an approved industrial training center;
- (2) up to 12 months for sandwich course training; or
- (3) any other relevant training/work experience.

Claims for remission will be considered on a case-by-case basis and judged on their individual merits.



A relevant higher degree may also be accepted as a part of the general experience period. In general, the maximum period allowed is 6 months for a relevant master's degree by course work and project which normally takes 12 months full-time or 24 months part time of study; 12 months for a master's degree by research which normally takes 24 months of study; or 18 months for a relevant doctorate course which normally takes 36 months of study, subject to a review of the practical contents of the project or research undertaken. Evidence of the practical aspects should be submitted with the application form. For experience gained in academic appointments, emphasis should be given to hands-on applications of practical engineering, such as research projects, design of laboratories, industrial consultation, etc.

Under the Product Template Route, candidates not fitting into the HKIE normal Membership routes will be considered for the Class of Member if their experiences demonstrate that they have satisfied the requirements of a professional engineer. For example, candidates with professional status from professional institutions other than those the HKIE has Reciprocal Recognition Agreements with, and have not less than 4 years of experience. These candidates are required to submit a 2,000 word report of their experience together with a reference letter from his employer. The Pre-assessment Review Panel will consider if the candidate meets the requirement of a professional engineer and his acceptance for a professional assessment.

### **Responsible Experience Requirements**

Under the Formal Training Route, the candidate for the Class of Member is required to have held a position of responsibility, requiring knowledge and practice of an engineering discipline, for the minimum period of one or two years as shown in Figure 1 after the completion of training requirements. Upon completion of his training program, the candidate is expected to exercise judgment and undertake responsibility in a professional capacity, with little more than the normal managerial reference to his superiors.

Under the General Experience Route, each candidate for the Class of Member is required to have held a minimum of one year of responsible experience in addition to the general experience duration. This requirement applies to all disciplines. As experience is gained, the degree of responsibility will normally increase progressively up to and beyond the stage at which the individual is accepted for Member. It is important that work, regarded as constituting responsible experience, is professional in character and involves responsibility for the management of men and resources.

### **Continuing Professional Development (CPD) Requirement**

The HKIE defines CPD as "*the systematic maintenance, improvement and broadening of relevant knowledge and skills, and the development of these qualities necessary for the successful carrying out of professional duties throughout an engineer's career. In this it is aimed at enhancing individual worth and thus corporate performance.*" The requirements of CPD apply to both candidates in the pre-Corporate Member stage and to Corporate Members.

Continuing professional development is an ongoing necessity in the ever changing technological world. The practicing professional engineers should aim to remain competent throughout their

working careers so that they can properly carry out their various duties. To this end, engineers need to take opportunities to update their depth and breadth of knowledge and expertise, and to develop those personal qualities required to fulfill their professional roles in the industry and in the society. It covers matters of direct technical relevance as well as broader studies of importance to engineers in the further development of their careers such as communication, environmental issues, financial management, leadership skills, legal aspects, marketing, occupational safety and health, professional ethics, etc. The format of CPD activities may include but not limited to participation and organization of courses, lectures, seminars, symposia, conferences, presentations, workshops, industrial attachment and visits, e-learning, and professional activities. These activities may be organized by the divisions of HKIE, the industry, and many other professional organizations.

The HKIE specifies a minimum formal CPD requirement for those at the pre-Corporate Member stage as tabulated in Table 1. However, its policy is to strongly encourage CPD thereafter. The CPD record will be taken into account when considering any application for HKIE Fellowship. The benefits of CPD are not easily quantifiable but nonetheless real. It is of value to its members, the profession, the industry, and the society.

**Table 1. CPD requirements of the HKIE for candidates for Professional Assessment**

<b>Route</b>	<b>CPD requirement</b>	<b>CPD scope</b>
Formal Training Route	A minimum average of 45 hours per year from the commencing date of Scheme A, up to the time of Professional Assessment.	A minimum average of 54 hours during the Scheme A training period must include these areas: (i) occupational safety & health (18 CPD hours); (ii) other technical matters not directly related to the candidate's own discipline (18 CPD hours); and (iii) general professional matters (18 CPD hours).
General Experience Route	A minimum average of 45 hours per year for the 6 years immediately prior to their application for Professional Assessment.	It is desirable to have as much variety as possible and a balance between technical and contractual/professional subjects should be sought.
Mature Route	A minimum average of 45 hours per year for the 3 years immediately prior to their application for Professional Assessment.	CPD covers matters of direct technical relevance as well as those of a broader professional nature. For the latter, emphasis could be placed on one or more of the following areas, such as management, leadership, financial, as well as safety, health, and environmental issues.

## **Professional Assessment**

Professional assessment is the process of assessing the extent to which a candidate for the Class of Member meets the admission requirements and to ascertain the quality of his technical and responsible experience in his discipline of engineering. In contrary to the written examination format adopted in the United States, interview and essay writing are the two major components in the professional assessment process in many Australasia jurisdictions and the United Kingdom.

### **Procedure**

The procedure for the HKIE professional assessment is as follows:

- (1) The candidate should submit the HKIE application form for Election or Transfer to the Class of Member<sup>9</sup> with supporting signatures. Requisite periods of training and experience should be completed by the date of submission of the form unless specifically stated otherwise.
- (2) The candidates should also submit (i) his report on training and experience; (ii) drawings and documents; (iii) HKIE logbook for candidates under the Formal Training Route; (iv) Continuing Professional Development (CPD) Record; and/or (v) supporting documentation for candidates working in academic institutions together with the application form. All documents should be the candidate's own work and these documents must be "verified" by a Corporate Member of the HKIE or the candidate's employer. All documents submitted will be treated as confidential and will be returned to the candidates after the professional assessment.
- (3) The HKIE may at any time refer the submission back to the candidate for additional information.
- (4) An interview with two Assessors will be arranged for the candidate as soon as his application and submissions have been received and checking procedures have been completed. The writing of the essay normally follows the interview.
- (5) The candidate will be notified of the result of his professional assessments as soon as a decision has been made and ratified by the HKIE Council. Indications of the areas of weakness or failure to satisfy the Assessors will be given to the unsuccessful candidate.

### **Interview**

During the interview, the two Assessors will aim to satisfy themselves that the candidate has spent sufficient time on suitable work to absorb adequacy knowledge to be learned therefrom. The candidate is normally given 10 minutes to present his project submitted for professional assessment. The objective is to provide an opportunity for the Assessors to evaluate the candidate's presentation skill as a professional engineer. Following the presentation, the Assessors may ask the candidate questions to: (a) ascertain how far he has taken advantage of the opportunities provided during his training and experience; and (b) ensure that the standard of proficiency and competence is attained to satisfy a recommendation for election to Membership. Questions will also be asked on his knowledge of professionalism; and his appreciation of ethics, responsibility to others, personal relationships, and the importance of communication. Other

questions may include organizational abilities, safety issues, environmental protection, and management in general.

The candidate's suitability as a professional is to be considered by way of examining the quality of his work, his attitudes, and his personal responsibility. He will be assessed whether he has exercised original thought, technical judgment, and insights; whether he has been involved in training others and his experience in a supervisory role. His broad appreciation of engineering in general and the extent to which he strives to keep abreast in his own field are also relevant. In conclusion, the candidate will be tested on his knowledge of engineering processes and management, his appreciation of investigation, planning, design, construction, manufacturing, operation, maintenance, and research of engineering works.

### **Essay**

The essay writing is intended primarily to be a test for the candidate's knowledge and experience in engineering practice and management, as well as the broader issues of the engineer in community. It would also demonstrate the candidate's ability to organize his thoughts and to express his ideas in a clear and concise manner in written English.

In general, the essay test will follow the interview immediately. The candidate will be given two topics relating to his experience for him to choose one to write an essay of approximate 1,600 words in two hours. During the test, the candidate will not be permitted to refer to other books or notes but an ordinary dictionary, or to use any electronic or other devices.

The Assessors will judge and mark the essay against the criteria: (i) knowledge of the subject and relevance of the answer; and (ii) clarity of argument, presentation, and grammar.

### **Final assessment**

A candidate will be recommended for admission to Member if his report and results of interview and essay combined are judged to be acceptable. However, some flexibility is possible. For example, if the Assessors are not satisfied with the drawings or any other part of a candidate's submission but it becomes apparent during the interview that he should be able to make good this deficiency, he may be given the opportunity to submit an additional document within a definite period of time (normally a month).

### **Mature Route**

Candidates over 35 years old may seek admission to the Class of Member via the Mature Route. There are two routes for mature candidates, depending whether they have a recognized academic qualification or not.

#### **Mature candidates with recognized academic qualifications**

For mature candidates with recognized academic qualifications, they should normally have 6 years post-qualification experience in a relevant discipline of engineering. A candidate applying

via the Mature Route has to indicate on the application form a discipline that he considers he is primarily qualified for professional practice. In the exceptional circumstances that his academic qualifications and experience cannot be matched with any of the 20 disciplines of the HKIE, he may be assigned to the category of Membership without a discipline, at the reserved discretion of the Professional Assessment Committee. These candidates should submit a curriculum vitae of approximately 5 pages listing his experience in detail in lieu of a paper based on a design study or a report of original work of his own authorship.

### **Mature candidates without recognized academic qualifications**

Candidates in this category are persons with considerable responsible experience as engineers but who may not have or may not wish to claim to have the required academic qualifications prescribed for Member. They should have experience in posts of increasing responsibility in a relevant discipline of engineering over a period of at least 15 years. They should have attained a position demonstrating a level of competence that would have met the requirements for the Class of Member had they possessed the required academic qualifications.

### **Assessment procedure**

The assessment procedure for mature candidates is as follows:

- (1) The candidate should apply on the application form for Election or Transfer to the Class of Member with supporting signatures and CPD record. CPD requirements for mature candidates are also tabulated in Table 1. The candidate should indicate on the application form that he is applying via the Mature Route and ensure that his supporters are aware of his intention.
- (2) If his candidature is approved, he shall submit his curriculum vitae listing his experience in detail, or a paper in English of approximately 5,000 – 10,000 words based on a design study or a report of original work of his own authorship that he has already written or be allowed a period of two years to prepare and submit. In the case of collaborative work, the candidate's own contribution must be made clear. In his original paper, the candidate is expected to offer an orderly and critical exposition of the subject, to define the problems with detailed engineering solutions, and to relate the application of fundamental engineering principles to some aspects of engineering practice. The paper must be signed by his employer or principal, who should preferably be a Corporate Member of the HKIE, to certify that the paper is the candidate's own unaided work. The paper will be treated as confidential.
- (3) If the candidate chooses to prepare a paper, he shall submit a synopsis of his paper setting out the main sections and method of treatment for the Discipline Representative's comment prior to his preparation and submission of the full paper.
- (4) The candidate's paper will be assessed by a Panel of Assessors of the HKIE. If it is considered satisfactory by the Panel, the candidate will be required to attend an interview with two Assessors. An interview will not be conducted until the paper is considered to be satisfactory. However, the candidate may be given an opportunity to re-submit the paper after modification. He may bring to the interview other materials such as design study notes and/or drawings of original works that he considers will be helpful in demonstrating his

attainment of a standard of knowledge in his particular discipline of engineering which, in the case of candidate without recognized academic qualifications, can also help to justify exemption from the formal academic requirements for Member. The Assessors will judge whether the candidate has demonstrated sufficient understanding of the principles of engineering. They will ask the candidate questions to ensure that standard of proficiency and competence is attained to satisfy a recommendation for election to Membership. Mature candidates are normally not required to write an essay. However, if a candidate's performance in the interview is marginally below standard, he will be given a choice to write an essay and hence an opportunity to secure an overall pass in case he could achieve sufficiently high grade in the essay test.

- (5) The HKIE may at any stage refer the submission back to the candidate for additional information.
- (6) The candidate will be notified of the result of his professional assessment as soon as a decision has been made and ratified by the HKIE Council. Indications of his areas of weakness or failure to satisfy the Assessors will be given to the unsuccessful candidate.

### **Reciprocal Recognition Agreements**

The HKIE has signed agreements for reciprocal recognition of professional qualifications for Corporate Memberships with many engineering institutions/authorities, including: the British Computer Society; the Chartered Institution of Building Services Engineers; the Chartered Institution of Water and Environmental Management; China Association for Science and Technology; Energy Institute; Engineers Australia; Engineers Canada; Engineers Ireland; Hong Kong Computer Society; the Institute of Marine Engineering, Science & Technology; the Institute of Materials, Minerals & Mining; the Institute of Measurement and Control; the Institution of Chemical Engineers; the Institution of Civil Engineers; the Institution of Engineering and Technology; the Institution of Gas Engineers and Managers; the Institution of Mechanical Engineers; the Institution of Professional Engineers, New Zealand; the National Administration Board of Engineering Registration (Structural); the Royal Institution of Naval Architects; and the Society of Operations Engineers.

On 25 June 2001, the HKIE signed as a signatory to the Engineers Mobility Forum (EMF) Agreement [now the International Professional Engineers Agreement (IPEA)] in South Africa. The Agreement is a multi-national agreement between engineering organizations in the member jurisdictions and was also signed by the representative bodies in other signatories, including Australia, Canada, Chinese Taipei, India, Ireland, Japan, Korea, Malaysia, New Zealand, Singapore, South Africa, Sri Lanka, the United Kingdom, and the United States.

The purpose of the IPEA is to create the framework for the establishment of an international standard of competence for professional engineers, and then empowers each member organization to establish a section of the International Professional Engineers Register.

The APEC Engineer, developed under the Asia-Pacific Economic Cooperation (APEC) Human Resources Development Working Group, is an initiative to facilitate mobility of professional engineers among the APEC jurisdictions. The purpose of the APEC Engineer project is to set up a framework to facilitate future bilateral or multilateral recognition of professional qualifications

in accordance with free wishes of each individual economy. Besides Hong Kong, other APEC jurisdictions including Australia, Canada, Chinese Taipei, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and the United States have been authorized by the APEC Engineer Coordinating Committee to implement the APEC Engineer Register in their own jurisdictions.

### **Registration as Professional Engineers**

For most Australasia jurisdictions and the United Kingdom, attainment of Corporate Membership of a professional engineering institution will automatically lead to professional registration simultaneously. For example, Members of the Institution of Civil Engineers (MICE) of the United Kingdom will automatically obtain the Chartered Engineer (CEng) status granted by the Engineering Council of the United Kingdom, as the Institution of Civil Engineers is licensed by the Engineering Council. The title CEng is protected by civil law and is one of the most recognizable international engineering qualifications.

However, the registration of professional engineers, the recognition of disciplines within the profession, and disciplinary control of the professional activities of Registered Professional Engineers in Hong Kong are under the jurisdiction of the Engineers Registration Ordinance<sup>1</sup>, Chapter 409 of the law of Hong Kong. The law stipulates that an engineer can only register as a Professor Engineer after he has had 1 year of relevant post-qualification professional experience, i.e., attainment of Corporate Membership of the HKIE, in Hong Kong before the date of his application for registration, and he is ordinarily resident in Hong Kong, among other requirements.

### **Conclusions**

The education and training requirements for a practicing engineer to qualify in Australasia jurisdictions and the United Kingdom are presented in this paper, using those of Hong Kong as an illustration. The reciprocal agreements among these requirements are also discussed to understand the inter-recognition of professional qualifications among these jurisdictions so that engineers can be more mobile and an effective global workforce for the betterment of mankind.

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