



Hong Kong Institution of Certified Auditors  
香港專業審核師學會

# The Business Challenge of Product Scheme, Testing, Inspection and Certification — Building and Construction Products

## Product Scheme, Testing & Certification – Business Challenge for Engineers

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# Background

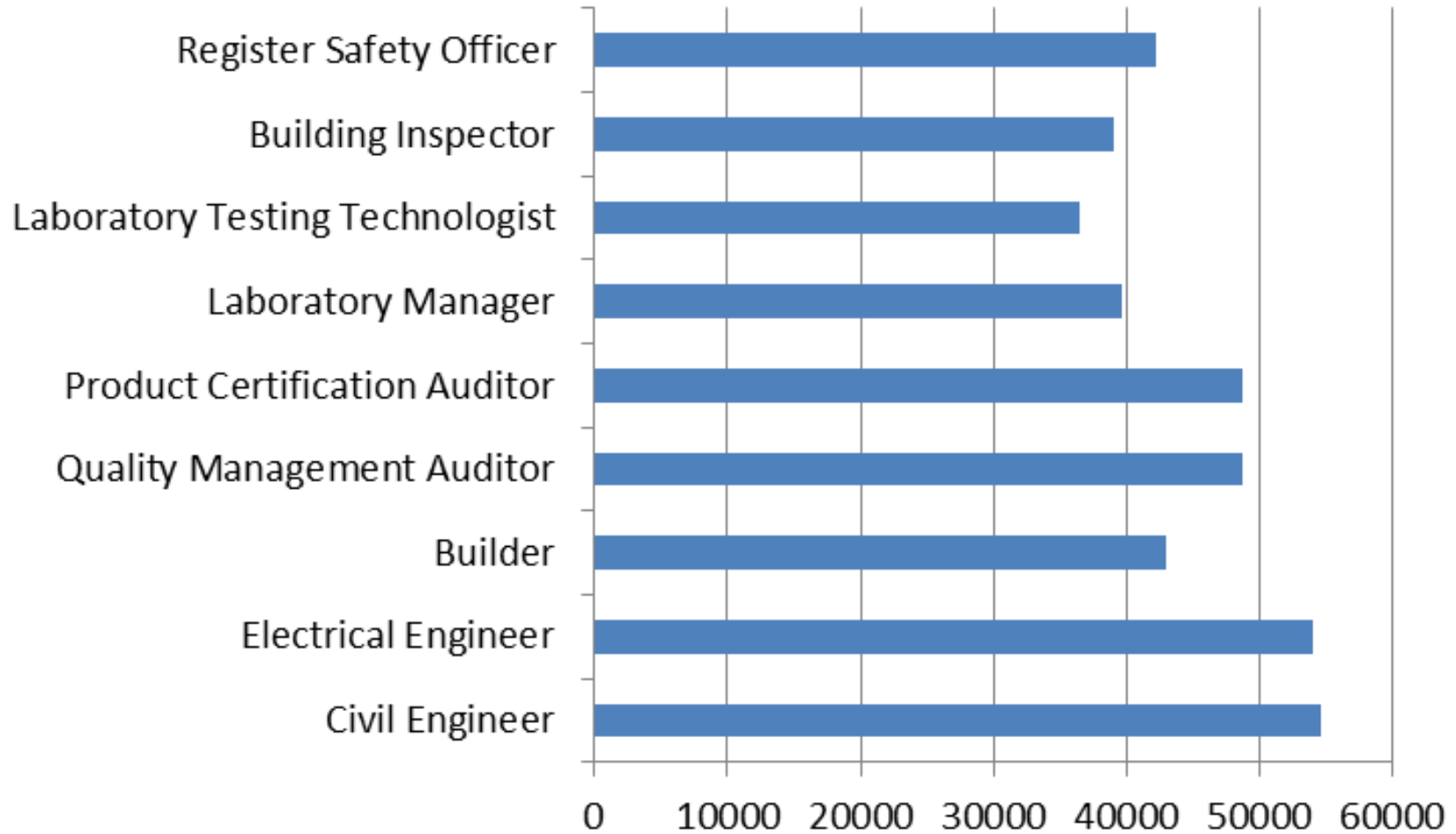
- The Chief Executive of HKSAR set up the Task Force on Economic Challenges to control and manage the effect of the financial crisis of local and foreign markets in October 2008.
- The Hong Kong Council for Testing and Certification set up in September 2009.
- Brand “Tested in Hong Kong, Certificated in Hong Kong” to promote the reputation of Hong Kong to a very good standard throughout the world. It can be helpful to act as an independent party to provide services and attract more foreign enterprises invest to the Testing and Certification industry in Hong Kong.

**What is the Business Challenge for Engineers ?**

**Can we involved ?**

**Our input ...**

## Average Salary (2012) of Jobs in USA (in HK\$)



ref: <http://www.indeed.com>

# Market survey

- Survey findings indicated a total of 145 establishments engaged in testing and certification; cargo inspection, sampling and weighting; and medical and X-ray laboratories in 2009.
- Over 60% of them were engaged in technical testing and analysis, and about 30% were medical and X-ray laboratories.

**Ref: report on 2009 survey of testing and certification activities**

## Business Receipts of Establishments by Type of Services

服務類別 Type of Services	二零零八年的業務收益 (百萬港元) Business Receipts in 2008 (HK\$ million)	二零零九年的估計業務收益 (百萬港元) Estimated Business Receipts in 2009 (HK\$ million)
測試 Testing	5,210 (66%)	約 5,400 Around
檢驗 Inspection	1,588 (20%)	約 1,400 Around
認證 Certification	322 (4%)	約 400 Around
其他服務收益 Other services receipts	378 (5%)	約 400 Around
其他業務收益 Other business receipts	339 (4%)	約 500 Around
總數 Total	7,836 (100%)	約 8,000 Around

# Construction Materials Testing - room for development

產品/服務種類 Type of Products / Services	業務收益 (百萬港元) Business Receipts (HK\$ million)
紡紗、布料、其製成品及相關產品、服裝成衣、衣飾及鞋履 Textile yarn, fabrics, made-up articles and related products, articles of apparel, clothing accessories and footwear	1,462 (28%)
玩具和遊戲 Toys and games	1,307 (25%)
醫學/醫療化驗 Medical testing	1,058 (20%)
電動機器、器材和器具及其電動部件、電訊設備、電線及電纜 Electrical machinery, apparatus and appliances, electrical parts thereof, telecommunications equipment, wire and cable	712 (14%)
食品 Foodstuff	155 (3%)
中藥 Chinese medicine	19 (*)
珍珠、寶石及半寶石、珠寶首飾、金銀器，以及其他貴重或半貴重材料的製成品 Pearls, precious, semi-precious stones, jewellery, goldsmiths' and silversmiths' wares, and other articles of precious or semi-precious materials	12 (*)
其他(如建築材料、室內空氣質素) Others (e.g. construction material, indoor air quality)	483 (9%)
總數 Total	5,210 (100%)

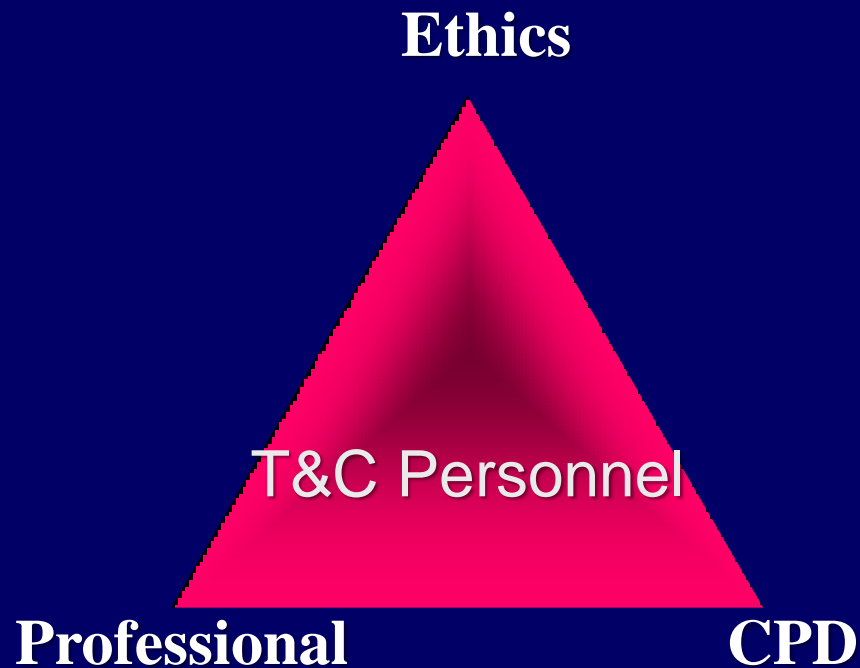
Brand “Tested in Hong Kong, Certificated in Hong Kong” to promote the reputation of Hong Kong to a very good standard throughout the world. It can be helpful to act as an independent party to provide services and attract more foreign enterprises invest to the Testing and Certification industry in Hong Kong.



# Promote “Tested in Hong Kong, Certificated in Hong Kong”

Testing and Certification Personnel shall have:

- a very good standard
- act as an independent party to provide services



## Number of T&CI persons engaged by occupation

職業 Occupation	就業人數 Number of Persons Engaged	
	2008	2009
提供測試、檢驗及認證服務的專業人員 Professional staff providing testing, inspection and certification services	3 060 (24%)	3 030 (25%)
提供測試、檢驗及認證服務的輔助專業人員 Associate professional staff providing testing, inspection and certification services	3 190 (25%)	2 930 (24%)
其他人員* Other staff*	6 470 (51%)	6 170 (51%)
總數 Total	12 710 (100%)	12 120 (100%)

**For professional staff :  
68% of them attained university degree education level or above.**

教育水平 Educational Attainment	2008	2009
研究學位 Postgraduate	410 (13%)	370 (12%)
學位 Degree	1 680 (55%)	1 690 (56%)
高級文憑 Higher Diploma	490 (16%)	510 (17%)
文憑/證書 Diploma/Certificate	390 (13%)	360 (12%)
工藝課程及其他 Craft Courses and Others	90 (3%)	110 (4%)
總數 Total	3 060 (100%)	3 030 (100%)

## For associate professional staff :

- 44% of them are higher diploma/diploma/certificate holder
- 37% are holder of craft courses

教育水平 Educational Attainment	2008	2009
研究學位 Postgraduate	70 (2%)	60 (2%)
學位 Degree	510 (16%)	520 (18%)
高級文憑 Higher Diploma	540 (17%)	500 (17%)
文憑/證書 Diploma/Certificate	840 (26%)	780 (27%)
工藝課程及其他 Craft Courses and Others	1 240 (39%)	1 070 (37%)
總數 Total	3 190 (100%)	2 930 (100%)

## Study Survey

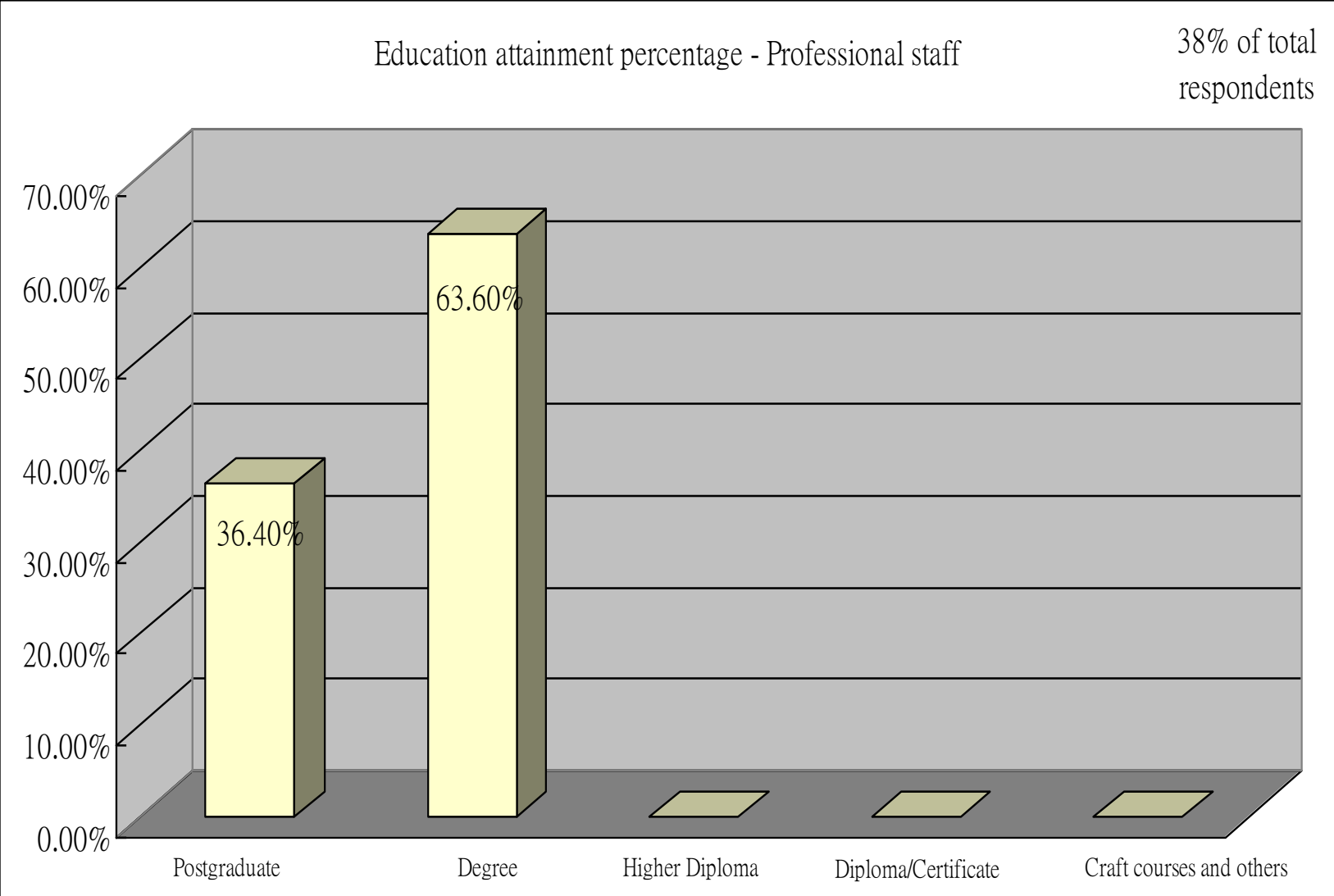
Questionnaire on the Implementation and Management of Testing and Certification of Construction Products in Hong Kong - for development need of T&CI personnel

- To member list of the Hong Kong Association for Testing, Inspection and Certification Limited (HKTIC).
- There were total of 200 numbers of questionnaires distributed with response rate of 29%.
- The distribution of the education background of professional staff and associate professional staff are similar to that of the government survey.

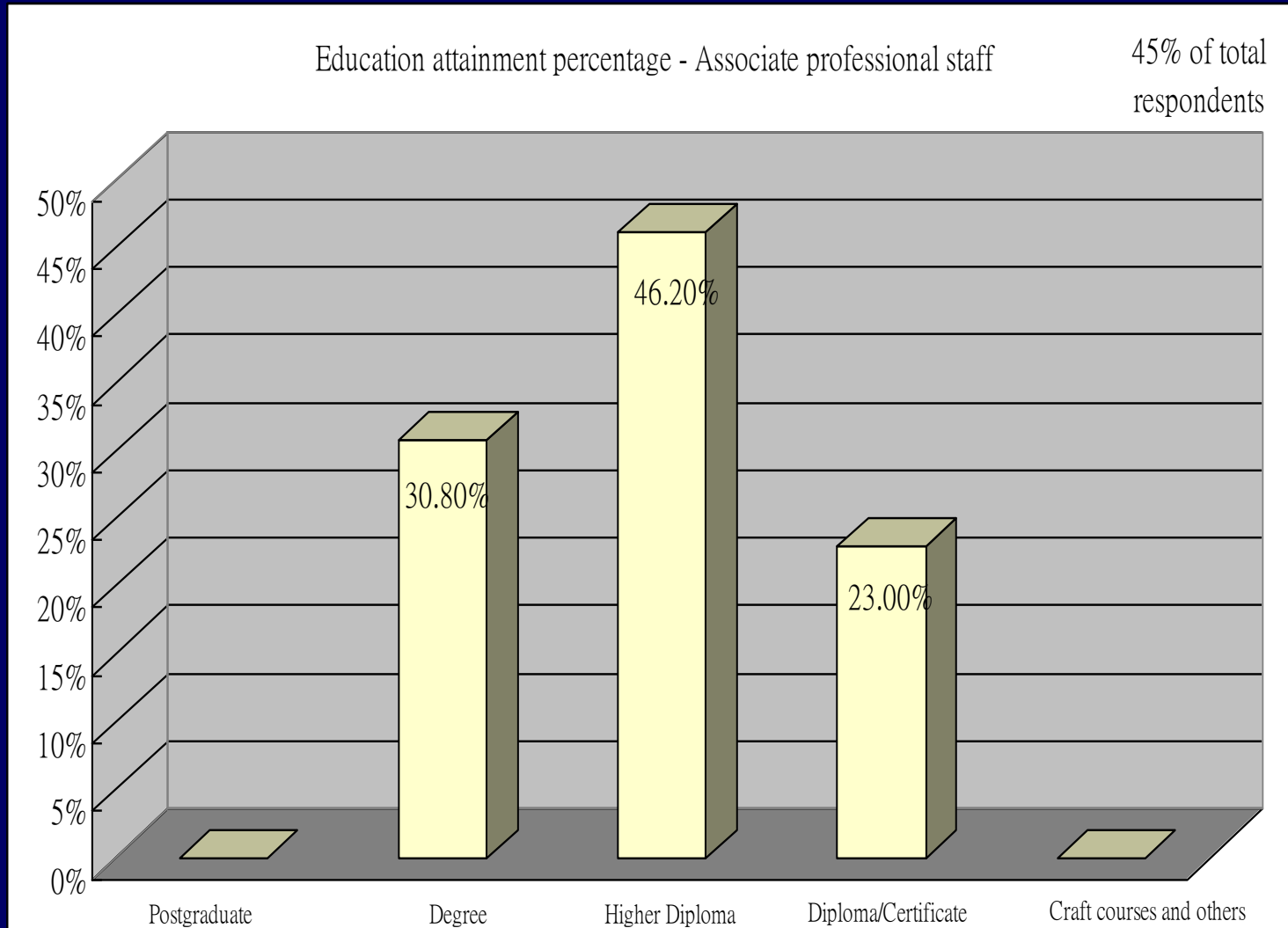
## Survey aims to find out:

- The HR distribution – to predict the supply of T&C personnel and encourage more teenagers to enter this market
- The education background of respondents in the field to see whether it support the healthy development of T&CI
- The Continuing Professional Development potential for the T&CI
- The respondents' intention and prefaces to attend CPD
- Suggested measures to improve the competitiveness of the T&CI

# Education attainment of professional staff (38% of total)



# Education attainment of associate professional staff (45% of total)





## Measures to improve the competitiveness of T&CI

Effective measures	Potential (%)	Nature
Ensure adequate supply of the quality assessors to prepare for an increasing demand of new types of testing	36.8	Personnel
Promote more internship opportunities by learned institutes	26.3	CPD
Provide ethic training for practitioners to have a reliable, consistent and impartial manner	21.1	Personnel
Seminars, workshops and career talks	10.5	CPD
Develop short courses to equip practitioners with necessary technical skills for changes in testing requirements	5.3	CPD

Ensuring adequate supply of the quality assessors to prepare for an increasing demand of new types of testing is of the most effective measures (36.8%) to improve the competitiveness of the testing and certification industry in Hong Kong. 17

## Personnel - Adequate supply of the quality assessors

- There are 65.5% respondent (T&C staff) would like to be the quality assessors.
- 75.9% of the respondents would like to attend the short courses to develop new technical skills of the industry – a characteristic of the T&C industry that people can develop into new area/techniques.
- 69% of the respondents would like to attend more seminar, workshops or career talks of this industry to share their experience, an interrelation activity of this field and it can attract more newly comers who interest to join the industry.

## CPD - What sort of professional development programme and support they are looking for?

- 54.6% of the professional staff with degree level are prepared/willing to pursue Continuing Education in T&C field.
- For associate professional staff group, 69.2% of them would like to have the Continuing Education.
- Depends on the availability of Continuing Professional Development Fund to assist the staffs to develop in T&C field
- 32% of respondents stated that they would like to take the Product Specific Testing courses for their continuing education.
- Hot CPD preferred : Environmental related

## Courses that respondents prefer to take of the continuing education

Course	Potential (%)
Environmental Resources/Production Management	35.6
Product Testing	32
Food and health food related (Science, Safety, Supply Chain Management)	14.4
Pharmaceutical Technology related (Western & Chinese)	7.2
Chemical Technology related (Applied and Analytical, Management)	7.2
Others (Business Related)	3.6

## Potential systems of product certification can be:

- Construction material products - aggregate, bituminous materials, cement, ready mix concrete, admixture, PFA, grout, repair mortar, steel reinforcement, structural steel, welding material, glass and aluminum, etc.
- Building products - brick, block, cladding, door, false ceiling, gate, window, glazing, facing stone, tile, partition and dry wall, paint, fire shutter, passive fire protection product, drainage and plumbing pipe and duct, precast concrete and steel piles, etc.
- Highway products - bridge bearing, fencing, railing, manhole cover, drainage and sewerage pipes, fabricated movement joint, vehicular parapet, street lighting, any street furniture, etc.
- Waterworks and firefighting products - tap, hydrant, water meter, hose reel, water pipe and fitting, stopcock, storage cistern, valve, sprinkler, drencher etc.

# Product Certification Vs Building Safety

Aluminium Windows

Concrete

Cement

Tile Adhesives

Fire Door

Aluminium Windows

uPVC Drainage Pipe & Fittings

More to come

Steel Re-bar

- .
- .
- .



Engineers input.....

# Interpretation of Standards Control of Test Environments

## 8 Test for resistance to wind

**8.1** The specimen shall be tested in accordance with BS EN 12211 and classified in accordance with BS EN 12210. Classification levels applicable in the UK shall be in accordance with Table 1. Wind loading shall be calculated in accordance with Annex A.

*NOTE 1 For the purpose of the tests, three sets of test pressure are defined:*

- *P1 applied to measure the deflection of parts of the test specimen;*
- *P2 pulsating pressure applied for 50 cycles to assess performance under repeated wind loads;*
- *P3 applied to assess the safety of the specimen under extreme conditions.*

*The values of P1, P2 and P3 are related as follows:  $P2 = 0.5 P1$ , and  $P3 = 1.5 P1$ .*

*NOTE 2 BS EN 1026, which is cited within BS EN 12211, gives the negative pressure test as an option. However, BS 6375 follows the convention of BS EN 14351-1, which requires both positive and negative pressure testing to be undertaken and the results averaged.*

*NOTE 3 The resistance to wind load test, BS EN 12211, specifies a repeat air permeability test. This repeat air test is conducted with both positive and negative pressures. The assessment of the increase in air permeability is based on the numerical average of the positive and negative air permeability values ( $m^3/h$ ) at each pressure step.*

## 7. PERSONNEL

- 7.1 Personnel of the certification body responsible for the following work shall collectively have comprehensive knowledge of the design, supply, production and quality assurance of products for all certification schemes.:-
- a. Develop product specific criteria,
  - b. Review applications for certification,
  - c. Audit production processes including sample selection,
  - d. Audit applicant supplier's testing laboratory,
  - e. Review test, inspection and audit results,
  - f. Make decisions on certification.

Personnel only with knowledge on testing or inspecting the product are normally inadequate for auditing production processes.



7.5 Unless other specified in the certification scheme, personnel of the certification body involved in evaluation and decision making activities should be a holder of a higher diploma in an engineering, technology or science discipline issued by a recognized educational institution in Hong Kong, or equivalent, and at least five years of post qualification experience in a relevant industry. For persons holding a higher academic qualification, the required post qualification experience in a relevant industry may be shortened. HKAS Executive may accept alternative qualifications

7.7 A lead auditor shall have acquired additional audit experience to develop the knowledge and skills required for a team leader as described in Section 7 of ISO 19011. This additional experience should have been gained while acting in the role of a lead auditor under the direction and guidance of another competent lead auditor.

- 7.9 A technical expert provides technical support to an audit team. A technical expert need not be trained on auditing techniques but must have the required qualification, experience and technical knowledge for the evaluation activities to be carried out. For example he/she should :-
- (a) have an appropriate knowledge and understanding of the specific industry relating to the product to be evaluated;
  - (b) have adequate knowledge in the design and production of the product to be evaluated;
  - (c) be familiar with the product standard, including statutory and regulatory requirements on the product to be evaluated;
  - (d) have sufficient understanding of, and expertise in, the technical aspects of the product certification scheme; and be able to evaluate effectively the conformity of the product to specification and the supplier's conformity with the product certification scheme.



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# Thank You

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