Accreditation of Product Certification Scheme
for Construction Materials

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1. Overview of HKAS

Originated as an accreditation scheme called HOKLAS in 1985 under the then Industry Department, Hong Kong Accreditation Service has been developing into an organization providing various accreditation programmes within the Innovation and Technology Commission of the Hong Kong SAR government. Currently, HKAS offers the following programmes:

- Hong Kong Laboratory Accreditation Scheme (HOKLAS)
- Hong Kong Inspection Body Accreditation Scheme (HKIAS)
- Hong Kong Certification Body Accreditation Scheme (HKCAS)

HOKLAS provides accreditation of laboratories on various categories which include construction materials, chemical, toys, electrical products, food, environmental and recently medical laboratories. The accreditation standard is ISO IEC 17025. HKIAS provides accreditation of inspection bodies for construction products, welding and indoor air quality inspection. The accreditation standard is ISO/IEC 17020. HKCAS provides accreditation of certification bodies for quality management scheme to ISO 9001 and environmental management system to ISO 14001. In the coming months, HKCAS will offer a new accreditation programme on construction products certification. The accreditation standard is ISO/IEC Guide 65:1996.

2. Current Quality Assurance Model

At the production side, the ISO 9000 series quality management system (QMS) assured the manufactured product consistently meeting prescribed requirements. However, it focuses mainly on the QMS but not on the product itself. Prior to its acceptance, the product is very often tested to confirm its compliance with the standard or specification. Currently, these two activities are not coordinated. In an effort to combine them into one quality assurance (QA) system, products certification emerged. It promulgates the ISO 9000 QMS, the ISO 17020 inspection and ISO 17025 testing schemes into one effort. The product is controlled at source starting from initial prototype testing, technical inspection of the manufacturing process,
approval of the product and subsequent surveillance audit testing of products sampled from the factory and market, etc. The Scheme is featured with a certification mark put on the product to identify standard conformity.

3. The Product Certification Scheme

Established in some decades ago, product certifications have already been the earliest quality assurance activities operated by many certification bodies all over the world. It has evolved throughout the years to its present form. The International Standard for the product certification follows the ISO/IEC Guide 65:1996. Any manufacturer or company may apply to a certification body to have a product certified to the requirements of a recognized standard under the product certification scheme. The product standard may be a British Standard, an International Standard or an overseas national standard. Although participation in the scheme is in most cases voluntary, some government regulatory agencies require mandatory certification.

Examples of products that have been made mandatory include motorcyclists’ protective helmets, fire doors, seat belts, electrical appliance and wiring accessories, etc. Examples of countries require mandatory of some selected high risk products include the China Compulsory Certification scheme (China’s CCC mark) and Japan Industrial Standard (Japan’s JIS mark). The CE mark is perhaps used even at the regional level. In contract to the mandatory requirement, the UL mark is a common voluntary commercial certification mark used in the United States.

There are different types of product certification schemes according to the international practice. In the ISO publication "Certification and Related Activities - Assessment and Verification of Conformity to Standards and Technical Specifications", eight systems of the product certification are stipulated and they are as follows:

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<th>No</th>
<th>System</th>
<th>Detail</th>
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<tr>
<td>1</td>
<td>Type testing</td>
<td>Type testing is a method under which a sample of the product is tested according to a prescribed test method in order to verify the compliance of a model with a specification. It is the simplest and most limited form of independent certification of a product both from the point of view of the manufacturer and</td>
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<td></td>
<td><strong>Type testing followed by subsequent surveillance through audit testing of samples purchased from the open market</strong></td>
<td>A system based on type testing (see System No. 1) but with some follow-up action to check that subsequent production is in conformity. Open market audit testing means a random audit testing of the type tested model from distributors' or retailers' stock.</td>
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<td>2</td>
<td><strong>Type testing followed by subsequent surveillance through audit testing of factory samples</strong></td>
<td>A system based on type testing (see System No. 1) but with some follow-up action to check that subsequent production is in conformity. Audit testing of factory samples involves a regular check of samples of the type tested models selected from the manufacturer's production before dispatch.</td>
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<td>3</td>
<td><strong>Type testing followed by subsequent surveillance through audit testing of samples from both open market and the factory</strong></td>
<td>A system based on type testing (see System No. 1) but with some follow-up action to check that subsequent production is in conformity. Audit testing both of factory samples and open market samples.</td>
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<td>4</td>
<td><strong>Type testing and assessment of factory quality control and its acceptance followed by surveillance that takes into account the audit of factory quality control and the testing of samples from the factory and the open market</strong></td>
<td>A system based on type testing (System No. 1), with assessment and approval of the manufacturer's quality control arrangements followed by regular surveillance through inspection of factory quality control and audit testing of samples from both the open market and the factory.</td>
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<td>5</td>
<td><strong>Factory quality control assessment and its acceptance only</strong></td>
<td>Sometimes known as the approved firm or approved manufacturing method of certification. A system under which the manufacturer's capability to produce a product in accordance with the required specification, including the manufacturing methods, quality control organizations and type and routine</td>
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testing facilities are assessed and approved, in respect of a discrete technology.

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<th>7</th>
<th>Batch testing</th>
<th>Batch testing is a system under which a batch of a product is sample tested and from which a verdict on the conformity with the specification is issued.</th>
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<tbody>
<tr>
<td>8</td>
<td>100% testing</td>
<td>100% testing is a system under which each and every item certified is tested to the requirements of the technical specification.</td>
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The commonest product certification scheme for construction products is based on the ISO certification System No. 5. An applicant awarded a licence if the product complies with the standard and the factory has a proper quality control system to ensure consistent and continuous compliance with the standard coupled with a series of scheduled audit testing on products selected from the factory and the market. A licensee under this scheme is entitled to use the certification mark on the product to denote compliance with the standard. (Note: a quality system certification mark to ISO 9001 is not permitted to appear on the product.)

3.1 A Typical Certification Process

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<th>Process</th>
<th>Action</th>
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<tr>
<td>1. Enquiry</td>
<td>● Information supplied to client</td>
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<td>● Feasibility for certification examined with respect to standards, testing and evaluation</td>
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<td>2. Application</td>
<td>● Submission of application together with accompanying product information, fees and test report if available</td>
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<td>3. Product Evaluation</td>
<td>● Design evaluation, testing and report preparation</td>
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<td>4. Factory Audit</td>
<td>● Inspection of the manufacturing process of the product to ISO/IEC 17020 in accordance with quality control plan adequacy, test equipment adequacy and calibration and record keeping system</td>
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<td>● Auditing of the factory quality management system to a ISO 9000 type model</td>
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<td>● Initial type testing of the product in the factory</td>
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to ISO/IEC 17025 or in an accredited laboratory

5. Report Preparation  ● Report preparation for formal approval
6. Approval Process  ● Approval by certification body
7. Surveillance  ● Planned inspection and retesting conducted to monitor continuing compliance
● Retesting of product samples selected from production or open market
● Process changes to product or requirements
8. Renewal  ● Approval for renewal on satisfactory inspection report and payment of fees
9. Suspension  ● Recommendation for suspension made at request of appliance or for temporary non-compliance of licence conditions
10. Termination  ● Recommendation for termination made at request of applicant or for non-compliance of licence conditions – for approval by certification body

3.2 Product Certification Marks

A licensee under the Scheme is entitled to use the appropriate certification mark on the product to indicate that it is certified and in compliance with the standard and all the certification requirements. These marks may be registered under Trade Mark Ordinance and are the property of the certification body. Unauthorised use or misuse of the marks will be subject to legal action in accordance with applicable laws.

The licensee is subject to the following conditions:

1. The licensee shall apply the certification mark only to products that are specifically listed on the licence and only on those products that comply in all respects to the applicable standard.
2. The mark shall as far as possible be used in association with:
   a) Name and/or trade mark of the licensee
   b) The number of the applicable standards
   c) Classification or grade of the product, if applicable.
3. In case of misuse of the mark, certification body shall take appropriate corrective action which could include legal action.

4. Advantages of Product Certification
Product certification provides the following advantages to licensees:

- It is an independent assurance that the product is manufactured under an effective system of testing, supervision and control
- Purchasers of consumers may not require to carry out further tests, as the products are already certified to be in compliance with the standards.
- Certified products provide the user an assurance for safety and reliability
- Certified products enjoy the benefits of protection against competition from substandard products and misrepresentation
- The product certification mark enhance the reputation of manufacturer and thus, extend its marketing capability
- Improved efficiency in production and reduced wastage and rejects.

5. Accreditation of the Product Certification Scheme

Many certification bodies are commercial organizations and the quality of their certification activities have to be assessed to comply with the ISO/IEC Guide 65 and local accreditation requirements to provide confidence to the users of the certified products. It is with this task that an accreditation body is emerged. Many countries and economies have accreditation bodies at national level to perform conformity assessment to the certification body. Accreditation is a formal recognition of the competency of an organization to perform assessment activities. Under the International Accreditation Forum (IAF), a multilateral recognition agreement (MLA) among various economies was established. Signatories of the MLA are obliged to promote the acceptance of the conformity assessment results among all MLA members. The objective of which is to facilitate cross border trading and reduce technical barriers to trade (TBT), a mission of the World Trade Organization (WTO).
A chart showing the Multilateral Recognition Agreement (MLA) among Accreditation Bodies of different economies under the IAF.

- UKAS – United Kingdom Accreditation Service
- CNAB – China National Accreditation Board for Certifiers
- ANSI – American National Standards Institute
- JAB – Japan Accreditation Board

6. Conclusion

The world has entered into an era of rapid transformation of information and technology. With the globalization of trade and knowledge and given China’s accession to the WTO, a multilaterally recognized accreditation scheme on product certification would no doubt help enhance Hong Kong’s ability to keep abreast with its trading partners and facilitate cross border trading. This will also improve the quality of our products used domestically and to strengthen our competitiveness in the global market.

7. References

2. ISO/IEC 17020 “General criteria for the operation of various types of bodies performing inspection” 1998
3. ISO/IEC 17025 “General requirements for the competence of testing and calibration laboratories”, 1999
4. ISO 9001 Quality management system 2000