Accreditation of (Sports Surface) Testing Laboratories

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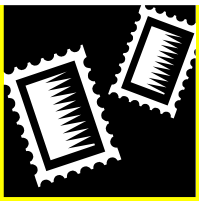
Note: This is a summary of the overhead transparencies without special comments.



Main Question:

Recognition of my Product (Testing Laboratory)

Why I need recognition, what is the effect?

- for better image
- the companies get test certificates, which can help better selling
- sometimes recognition is a "must" for getting orders for testing

Who can recognize my product ?

Generally said: any kind of organization,
e.g. the local authority of a community:
"we only buy from companies
which are recognized by a commission of our village"

Who recognizes my product ? (Testing Laboratory)

Nowadays we think of a greater scale,
with reference to the **area of applicability:**

according to a special line of business e.g. athletic tracks, artificial turf

>>> Recognition by (Sports) Associations
on national or international level
(IOC, IAAF, ITF, UEFA, FIFA etc.)

according to a particular region
e.g. country, europe, whole world

>>> Recognition by
local or international authorities

Most relevant standards for recognition by accreditation at a great scale:

ISO/IEC 17025:
Gerneral requirements for the competence
of testing and calibration laboratories
(substitutes **EN 45001:**
General criteria for the operation
of testing laboratories)

EN 45002:
General criteria for the assessment
of testing laboratories

EN 45003:
General criteria for laboratory accreditation bodies

It seems to be clear: As a first step the foundation has to be laid by implementing an efficient accreditation body which is undisputed.

Most relevant international standards for recognition by accreditation:

ISO/IEC 17025

(EN 45001)

EN 45002

EN 45003

There has been a long historic development before. The Bibliography of ISO/IEC 17025 consists of 28 ISO papers/documents. A lot of ISO Guides play an important role also now, referring especially to quality assurance.

If an accreditation has been performed according to a standard at all until now, it was EN 45001 (within the system EN 45002 and EN 45003). ISO/IEC 17025 will substitute EN 45001 very soon, but is not valid in all countries just now. Basically the content of the ISO-Standard corresponds with EN 45001, but it is by far more comprehensive (26 pages!). Discussing the requirements we will consider here especially testing laboratories (not calibration laboratories).

Even the questions of EN 45003 are very important for us, especially for the experts and officials of ISSS and IAAF, but this would be a topic for another conference.

ISO/IEC 17025

"This International Standard has been produced as the result of extensive experience in the implementation of ISO / IEC Guide 25 and EN 45001, both of which it now replaces. It contains all of the requirements that testing and calibration laboratories have to meet if they wish to demonstrate that they operate a quality system, are technically competent, and are able to generate technically valid results." (from introduction)

Some Definitions (also according EN 45001):

Laboratory accreditation:
Formal recognition that a testing laboratory is competent to carry out specific tests or specific types of tests

Laboratory accreditation system:
System that has its own rules of procedure and management for carrying out laboratory accreditation

Laboratory accreditation body:
Body that conducts and administers a laboratory accreditation system and grants accreditation

Laboratory assessment:
Examination of a testing laboratory to evaluate its compliance with specific laboratory criteria.

Laboratory assessor:
Person who carries out some or all functions related to laboratory assessment.

(**Auditing:** Procedure within Assessment and but especially internal control, not defined expressly in the standards).

Example:

General accreditation of our house (OFI, Austria):

Laboratory accreditation system:
DAP / DAR Deutsches Akkreditierungssystem Prüfwesen im Deutschen Akkreditierungsrat (DAR)
(DAP represents only one system in Germany, DAR an umbrella organisation for all german systems).

Laboratory accreditation body: DAP

Laboratory assessors:
Experts from LGA (Nürnberg, Bayern).
DAP could select any competent expert for this task.

(Special) **National laboratory accreditation systems**

System 1 (Austria)

System 2 (Belgium)

System 3 (Denmark)

System 4 (Germany)

System 5 (Finland)

System 6 (France)

System 7 (United Kingdom)

.....

System 15 (Spain)

European co-operation for Accreditation (EA)

The representatives of the 15 Systems have signed the EA. That means that they recognize mutually their accreditations.(referring to the unregulated sector of testing).
That does not mean that any local authority is bound by contract to recognize any test reports of these systems, but a company has better arguments for getting recognized those test reports.

Accreditation Document of our house – OFI
confirming the competence according DIN EN 45001 for specified testing

Some comments on this document can be useful:

- This accreditation has been performed within the German accreditation system of DAP / DAR.

- Our assumption had been, that the EA (European co-operation for accreditation) would grant us also the recognition by the other countries. But it turned out to be advantageous to repeat the whole procedure also according to the AUSTRIAN SYSTEM. (Unfortunately it is also a question of charges and much formal work).

- It must be added that our house had to prove it´s competence of testing already since 1946 (by "GOVERNMENT AUTORISATION"), but when the ACCREDITATION LAW became effective a few years ago, we had to submit to the new ACCREDITATION PROCESS in compliance with EN 45001 .

- It is extremely important that the limitation of the scope of accreditation is stressed also in this 1-page document: The accreditation applies only to the test methods declared in the annex. This fact has to be stressed without exception whenever we give a written information on our accreditation.

- We can make out 7 different labs which has been accredited within one QM-System of our house.

Examples of Accreditation Systems for Sports Surfaces

(most of them applied not strictly according EN 45001)

- **Very different national Systems**
  (also acc. to ISO 45001; universal,
  for all kinds of sports surfaces)
  (one main area: Sports hall surfaces).

- **IAAF system for Athletic Tracks**
  (global sports specific system)

- **FIH system for artificial turf for hockey**
  (global sports specific system)

Comment:

We all know, that these systems are not perfect and still in the phase of better implementation. Sooner or later they will join the system of ISO/IEC- and EN 45000-Series. We discuss here the status as it should be.

Contents of ISO/IEC 17025 (1)

Contents of ISO/IEC 17025 (2)

5. Technical requirements

ISO/IEC 17025

Note: The following sections (with the original main headlines) don´t contain the wording but try just sketch the most important principles of the standard.

1. Scope

i. general criteria for testing laboratories including sampling
ii. for standardized and not standardized and laboratory-developed methods
iii. applicable to all laboratories regardless of the number of personnel
iv. the aim is the improvement of quality and procedures
v. serves also for laboratory clients, regulatory authorities and accreditation bodies.

2. Normative References:

Especially referring to ISO 9001, 9002

3. Terms and Definitions:

According to ISO/IEC Guide 2
(expressively 13 terms)
(examples anticipated)

ISO/IEC 17025

4. Management requirements

4.1 Organization

- Legal identity and responsibility
- Technical manager with overall responsibility
- Document showing the organization and responsibilities of the testing laboratory

etc.

4.2 Quality System (QS)

- implementation and maintenance of a QS appropriate to the scope of the activities
- The laboratory´s systems policies and objectives shall be definded in a quality manual (QM).

4.3 Document Control

- procedures for control of all documents that form part of its QS, such as regulations, standards, calibration methods etc.
- document approval and issue: all documents issued to personnel shall be reviewed and approved prior to issue.
- special procedure for document changes

etc.

ISO/IEC 17025

4. Management requirements (2)

4.4 Review of requests, tenders and contracts

Special procedures and measures for the review to ensure that all (especially the clients) requirements will be met.

4.5 Subcontracting of tests and calibrations

This work shall be placed with a **competent subcontractor**, who, for example, complies with this International Standard.

4.6 Purchasing services and supplies

Special procedures for laboratory consumable materials relevant for the tests.

4.7 Service to the client

- Cooperation to clarify the client´s request and to monitor the laboratory´s performance (confidentiality to other clients provided)
- Good communication with the client throughout the work.

ISO/IEC 17025

4. Management requirements (3)

4.8 Complaints

Policy and procedure for the resolution of complaints

4.9 Control of nonconforming testing work

Policy and procedure for handling of noncon-forming work (responsibilities, remedial actions or even recalling of the work)

4.10 Corrective action

Policy and procedure for corrective action when nonconforming work have been identified (cause analysis, selection of corrective actions, additional internal audits etc.)

4.11 Preventive action

Needed improvements and potential sources of nonconformances shall be identified (action plans, control of effectiveness etc.)

ISO/IEC 17025

4. Management requirements (4)

4.12 Control of records

- General, main aspects: system for administration of quality and technical records including appropriate safety measures for records stored electronically
- Technical records: .....

4.13 Internal audits

- periodically audits according predetermined procedure to verify the continued performance of quality system
- all elements of the QM-System (including calibration activities) has to be checked
- follow-up audit activities shall verify the effectiveness of the corrective action taken

4.14 Management reviews

- periodical review of the laboratory´s quality system by the executive management
- aim: to ensure the continuing suitability and effectiveness and to introduce necessary changes and improvements.

ISO/IEC 17025

5. Technical requirements (1)

5.1 General

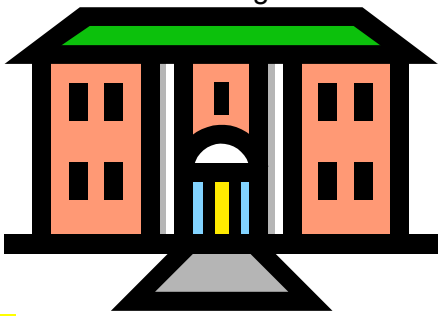
Many factors determine the reliability of the tests:

human factors, accommodation, test methods etc.

5.2 Personnel

- management responsible for competence of personnel for specified tasks (operating specific equipment, perform tests, evaluate results, sign reports etc.)
- documentation of qualification of personnel including education, technical knowledge and experience and up-to-date training
- maintenance of current job descriptions for managerial, technical and key support personnel
- personnel shall be employed by, or under contract to, the laboratory.
- authorizing of specific personnel to preform particular types of work (e.g. sampling, calibration, operating particular equipment etc.).

ISO/IEC 17025



5. Technical requirements (2)

5.3 Accomodation and environmental conditions

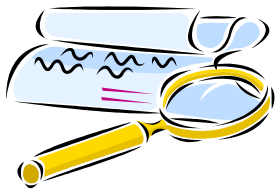
- Laboratory facilities including energy sources, lighting and environment shall be such as to facilitate correct performance of the tests

- The environment shall not invalidate the test results or adversely affect the accuracy. (protection of premises from excessive conditions such as heat, dust, moisture etc.)

- Particular care shall be taken when sampling and tests are undertaken at sites other than a permanent laboratory facility

- Access to and use of all test areas shall be controlled .....

ISO/IEC 17025



5. Technical requirements (3)

5.4 Test and calibration methods and method validation (1)

- **General**

- The Laboratory shall use appropriate methods and procedures for all relevant activities
- Instructions for all relevant activities
- Instructions shall be up-to-date and available to personell

- **Selection of methods**
  - Primarily selection by the clients
  - Information of client on appropriate methods which meet best the clients request
  - Use of widely recognized methods (e.g. international or national standards)
  - Eventually supplementation of standard with details or even use of internal methods
  - Eventually use of internal validated methods
- **Laboratory-developed methods**
- **Non-standard methods**
  - Shall be subject to agreement with the client …

ISO/IEC 17025

5. Technical requirements (4)

5.4 Test and calibration methods and method validation (2)

- Validation is the confirmation by examination and the provision of objective evidence that the particular requirements for a specific intended use are fulfilled
- Especially all non-standard methods shall be validated up-to-date or even standard methods used outside their intended scope.

♦ **Estimation of uncertainty**
- Testing lab. shall have and apply procedures for estimating the uncertainty of measurement.
- Information of client on appropriate methods which meet best the clients request
- Use of widely recognized methods (e.g. international or national standards)
- Eventually supplementation of standard with details or even use of internal methods
- Eventually use of internal validated methods.

♦ **Control of data**
Calculations and data transfers shall be subject to appropriate checks. Laboratory software shall be validated.

ISO/IEC 17025

5. Technical requirements (5)

5.5 Equipment

- Appropriate furnishing with all items of sampling, measurement and test equipment
- equipment from outside shall comply with this standard
- calibration procedures for any important item
- operation of equipment by authorized personnel
- records for all important items of equipment (identity, manufacturer, maintenance plan etc)
- special procedures for equipment which has been subjected to overloading …

5.6 Measurement traceability

- calibration programmes for all items of equipment if relevant for accuracy
- programmes shall grant the traceability of measurements to International System of units (SI)
- programmes for the calibration of its reference standards
- procedures for safe handling, transport, storage and use of reference standards …

ISO/IEC 17025

5. Technical requirements (6)

5.7 Sampling

- appropriate sampling plans (e.g. based on statistics)
- deviations from sampling plans (e.g. required by client) shall be recorded carefully …

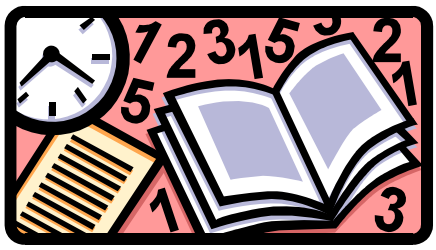
5.8 Handling of test and calibration items

- procedures for transportation, receipt, handling, protection, storage ….
- System for identifying test and calibration items ….

5.9 Assuring the quality of test and calibration results

- special quality control procedures for monitoring the validity of tests
- participation in interlaboratory comparison programmes
- replicate tests using also different methods ….

ISO/IEC 17025



5. Technical requirements (7)

5.10 Reporting the results

- **General**
  - The results shall be reported accurately and unambiguously in a test report (or "test certificate")
  - The test reports may be issued as hard copy or by electronic data transfer…

- **Information that must be included**
  - Title, addresses, identification and 20 further items

- **Opinions and interpretations**
  - The basis upon which the opinions have been made
  - Opinions may comprise fulfilment of requirements, guidance to be used for improvements, …

- **Amendments to test reports**
  - Material amendments to a test report after issue shall be made in the form of a further document
  - a complete new test report can be necessary to replace uniquely identified the original one.

Comment: For most of us it seems to be needless to be told how to write a report. But I want to stress that just the test report is a pivotal point and central issue for assessors, it can be seen as an image of the whole work of the testing laboratory and a basic approach to check the compliance with the other requirements.