

INTERNATIONAL MEASUREMENT CONFEDERATION

IMEKO BULLETIN

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Dear Reader

We are going to let you know herewith about what happened in our area since the last issue of the Bulletin. Apart from the series of good scientific/technical conferences significant clairvoyant subjects were treated at the 47th IMEKO General Council Session and related meetings in Lisbon last November. The Advisory Board and the Technical Board evaluated past activities and came up with several recommendations to the General Council. The focus of attention is, of course, our forthcoming XVIIIth World Congress to be held in - perhaps - the most beautiful city of the world, Rio de Janeiro, from 17 to 22 September, 2006 under the headline METROLOGY FOR A SUSTAINABLE DEVELOPMENT (see next page). The office of Vice President for External Relations was created with the primary aim to assist in the organization. The first holder of the office is Professor Antonio da Cruz Serra, Portuguese delegate to the GC. After a careful investigation by the Credentials and Membership Committee we are proud to announce the admission of two new Member Organizations: the Standards Organisation of Nigeria and the National Institute of Metrology, Thailand. By courtesy of the latter we are bringing here an article on a bilateral comparison in HRC. Contacts have been taken up with the National Conference of Standards Laboratories International (NCSLI) about their joining IMEKO as the new Member Organization in the US.

This year the series of Technical Committee events started with the 8th Symposium on Laser Metrology (TC14 – Measurement of Geometrical Quantities) in Merida, Mexico, February 14-18 and continued with the 19th Conference on Force, Mass and Torque Measurement in Cairo, Egypt, February 19-23.

On the occasion of the 4th Youth Symposium on Experimental Solid Mechanics (TC15 – Experimental Mechanics) in Castrocaro Terme, Italy, May 4-7 it was decided to integrate the Danubia-Adria Symposia on Experimental Methods in Solid Mechanics into the regular activity of TC15. The next, 22nd one will be in Monticelli Terme near Parma, Italy, from September 28 to October 1, 2005.

As a tradition, IMEKO co-sponsored again SENSOR+TEST 2005 – the International Exhibition and Congress for Sensor Technology, Measurement and Control held in Nuremberg, Germany, May 10-12. It is intended to arrange for a deeper involvement of the Technical Committees in the future, in the form of conferences and symposia organized in parallel at the new Nuremberg Congress Center, thereby gaining mutual benefits.

Three invitations have been received to host the 19th IMEKO WORLD CONGRESS in 2009. After listening to and carefully considering detailed presentations, the General Council accepted the invitation of the French Member Organization - so the Congress will be in Paris.

Upon the initiative of the Italian Member Organization, TC21 – the Technical Committee on Advanced Mathematical and Computational Tools in Metrology was established under the chairmanship of Professor Franco Pavese from the Istituto di Metrologia “G. Colonnetti”, Torino.

Finally we would like to thank for all remarks, comments and proposals regarding contents and layout of the IMEKO Bulletin - they will, of course, be taken into account at further issues.

Karolina Havrilla

Editor of the Bulletin

imeko@t-online.hu

I M E K O XVIII

16th IMEKO World Congress

“METROLOGY FOR A SUSTAINABLE DEVELOPMENT”

Rio de Janeiro, Brazil • September 17-22, 2006

in connection with the IV Brazilian Congress of Metrology

Organized by the Brazilian Society of Metrology, the technical program structure of the Congress will be based upon the subject-themes of the various Technical Committees of the Confederation:

1. Education and training in measurement and instrumentation
2. Photonics
3. Measurement of force, mass and torque
4. Measurement of electrical quantities
5. Hardness measurement
6. Measurement science
7. Traceability in metrology
8. Flow measurement
9. Technical diagnostics
10. Metrological infrastructures
11. Temperature and thermal measurements
12. Measurements in biology and medicine
13. Measurement of geometrical quantities
14. Experimental mechanics
15. Pressure and vacuum measurement
16. Measurement and control in robotics
17. Measurement of human functions
18. Environmental measurements
19. Measurement techniques for the construction industry
20. Mathematical and computational methods in metrology

Deadline for the submission of extended abstracts: October 3, 2005

There will also be an Exhibition featuring latest developments in the field of science and technology of measurement and instrumentation.

Congress Websites: www.metrologia2006.org.br or
www.imeko.org

Contact address: Sociedade Brasileira de Metrologia (SBM)
Av. Nilo Peçanha 50, Grupos 2517 e 2512 – Centro
20020-906 - Rio de Janeiro, RJ – BRAZIL
Phone&Fax: +55 21 2532 7373
E-mail: sbm@metrologia.org.br
www.metrologia.org.br

WELCOME to one of the World's MOST BEAUTIFUL CITIES!

Event calendar

2005

TC1 – Education and Training in Measurement and Instrumentation

TC7 – Measurement Science

Symposium on Metrology and Measurement Applications in the Era of Internet Working

Ilmenau, Germany

September 22-25

Contact: Prof. G. Linss

Ilmenau Technical University

Mechanical Engineering Faculty – Quality Assurance

PO Box 100565

98684 Ilmenau, GERMANY

Phone: +49 3677 69 3822

Fax: +49 3677 69 3823

E-mail: gerhard.linss@tu-ilmenau.de

www.imeko2005.de

TC4 – Measurement of Electrical Quantities

14th Symposium on New Technologies in Measurement and Instrumentation
and 10th Workshop on ADC Modelling and Testing

Gdynia/Jurata, Poland

September 12-15

Contact: Mr. J. Mindykowski

Gdynia Maritime University

Department of Ship Electrical Power Engineering

Faculty of Marine Electrical Engineering

Morska 81-84

81-225 Gdynia, POLAND

Phone: +48 58 690 14 40

Fax: +48 58 620 67 01

E-mail: janmind@am.gdynia.pl

TC9 – Flow Measurement

FLOMEKO 2005 – 13th Conference on Flow Measurement
Peebles/ Scotland, UK

June 6-9

Contact: Dr. M.J. Reader-Harris
National Engineering Laboratory
East Kilbride/Glasgow G75 OQU, UK
Phone: +44 1355 272302
Fax: +44 1355 272536
E-mail: mreader@tuvnel.com

TC10 – Technical Diagnostics

10th Conference on Technical Diagnostics
Budapest, Hungary

June 9-10

Contact: Prof. L. Monostori
Computer and Automation Research Institute (SzTAKI)
Hungarian Academy of Sciences
PO Box 63
1518 Budapest, HUNGARY
Phone: +36 1 279 6159
Fax: +36 1 466 7503
E-mail: laszlo.monostori@sztaki.hu
<http://www.conferences.hu/IMEKO-TC10/>

TC15 – Experimental Mechanics

22nd Danubia-Adria Symposium on Experimental Methods in Solid Mechanics
Monticelli Terme (Parma)

September 28-October 1

Contact: Prof. G. Nicoletto
Dipartimento di Ingegneria Industriale
University of Parma
Parco Area delle Scienze, 181/A
43100 Parma, ITALY
Phone: +39 0521 905884
Fax: +39 0521 905705
E-mail: gianni.nicoletto@unipr.it
<http://cdm.unipr.it/das2005/>

Co-sponsorships:

12th International Conference on Composites (Nano) Engineering

Tenerife, Canary Islands, Spain

August 1-6

Contact: Prof. David Hui

University of New Orleans

Department of Mechanical Engineering

New Orleans, LA 70148-2220, USA

Phone: +1 504 280 6652

Fax: +1 504 280 6192

E-mail: dhui@uno.edu

www.uno.edu/~enr/composite

APMF 2005 – Asia-Pacific Symposium on Measurement of Mass and Force (TC3)

Jeju, Republic of Korea

August 30 – September 3

Contact: Dr. Dae-Im Kang

Director, Division of Physical Metrology

Korea Research Institute of Standards and Science

PO Box 102

Yusong, Dae-jeon 305-600, Republic of KOREA

Phone: +82 42 868 5010

Fax: +82 42 868 5012

E-mail: dikang@kriss.re.kr

7th Conference on Advanced Mathematical and Computational Tools in Metrology (TC21)

Lisbon, Portugal

June 27-29

Contact: Prof. F. Pavese

Istituto di Metrologia "G. Colonnetti"

Strada delle Cacce, 73

10135 Torino, ITALY

Phone: +39 011 3977 341

Fax: +39 011 3977 347

E-mail: f.pavese@imgc.cnr.it

www.amctm.org

19th Metrology Symposium

Opatija, Croatia

September 26-28

Contact: Mrs. Neda Stambuk-Borsic

Croatian Metrology Society

Berislaviceva 8

10000 Zagreb, CROATIA

Phone: +385 1 48 72 485

Fax: +385 1 48 72 487

E-mail: neda.stambuk-borsic@zg.htnet.hr

<http://www.ms2005.org>

2006

XVIIIth IMEKO WORLD CONGRESS

Metrology for a Sustainable Development

Rio de Janeiro, Brazil

September 17-22

Contact: Brazilian Society of Metrology

Av. Nilo Pecanha 50, Grupos 2517 e 2512 – Centro

20020-906 Rio de Janeiro, RJ, BRAZIL

Phone/Fax: +55 21 2532 7373

E-mail: sbm@metrologia.org.br

www.metrologia2006.org.br

2007

TC3 – Measurement of Force, Mass and Torque

TC16 – Pressure Measurement

20th Conference on Measurement of Force, Mass and Torque / 3rd Conference on Pressure Measurement

Merida, Mexico

October 22-26

Contact: Mr. J.C. Torres-Guzmán

Km 4,5 carretera a Los Cues

El Marques, Queretaro

Mexico, C.P. 76241, MEXICO

Phone: +52 442211 0572

Fax: +52 442211 0578

E-mail: jorge.torres@cenam.mx

ISA EXPO 2005

AUTOMATION + CONTROL

Conference, Training and Exhibition
McCormick Place Lakeside Center, Chicago
25-27 October

endorsed by IMEKO

AUTOMATION – CONTROL – INSPIRATION

North America's leading automation and control event is an outstanding opportunity for automation industry professionals to share knowledge of the latest industry trends and technologies from real world applications by presenting a paper on the hottest topics to fellow professionals:

- manufacturing and control systems security
- industrial networking and communications
- automation and control strategies
- safety and reliability
- productivity and asset management
- field devices; sensing and measurement
- managing in automation

Please contact:

Matricia Smith
Events Planner
E-mail: msmith@isa.org
www.isa.org

ISA SHOW South America 2005

with the 5th International Congress on AUTOMATION, SYSTEMS and INSTRUMENTATION

Expo Center Norte in São Paulo, SP, BRAZIL

November 22-24

Theme Scope:

Inline analyzers; biomedics; CAE/CAD/CAM - computer aided engineering, design and manufacture; calibration; CNC - computerized numeric command; data collectors; wireless communication in the industry; controllers; advanced control, manufacture control, movement control, quality control, statistical process control, PID control; manufacturing execution systems, industrial measurement and metrology; monitoring and automation of electric systems; ISA-S88 standard: batch control; ISA –S95 standard for enterprise control system integration; ISA Report 99: Safety in control and manufacturing systems; optimization; PIMS - plant information management system; PLCs - programmable logic controllers; industrial local area networks; radio frequency identification; robotics, scada; control/digital control systems; gas detection; failure diagnosis and predictive techniques; final elements; clinic instrumentation and engineering: electrical and mechanical; equipment; ERP; industrial Ethernet; management, supply chain management, advanced control management, project management; analytical instrumentation, digital instrumentation; intelligent instruments and transmitters, electric and pneumatic instruments, electronic instruments, virtual instruments; artificial intelligence and specialized process systems; hydrocarbon leakage detection, location and quantification systems; packaging systems, management systems, logistics information systems, performance measurement systems, weighing and dosing systems for solid products, safety systems, ERP systems, manufacture flexible systems; communication; safety instrumented systems, supervisory systems; TA & TI; transducers; control valves; frequency variators; human-machine interface; Brazilian laws and international standards.

Contact e-mail for further information: congresso@isashow.com.br

Phone: +55 11 5524 1030

Bilateral Comparison in HRC between NIMT and VMI

T Sanponpute¹, Vo Sanh², Do Duc Nguyen², R Wongpithayadisai¹

¹National Institute of Metrology (Thailand), (NIMT)

²Vietnam Metrology Institute (VMI)

Abstract

This bilateral comparison in HRC was conducted in order to confirm the accuracy claimed by National Institute of Metrology (Thailand) or (NIMT) and Vietnam Metrology Institute (VMI). Also, this bilateral comparison compares the difference of measurement results between lever-type machine and deadweight-type machine of two NMIs, which are NIMT and VMI, respectively.

1. Introduction

The Rockwell hardness national standard in Thailand was established in May 2003 and was manufactured by Akashi Cooperation. NIMT carried out the bilateral comparison with NMIJ in June 2003 in order to confirm the performance and uncertainty of NIMT's Rockwell hardness standard [1], which was claimed to be within ± 0.45 HRC. This bilateral comparison was done between lever-type hardness standard machines. Many NMIs use different types of Rockwell hardness standard machines, such as deadweight-type machines, lever-type machines and screw force feedback control machines for inter-comparisons. The research paper "Establishing a world-wide unified Rockwell hardness scale with metrological traceability" [2] refers to this case. A common indenter was tested using similar testing cycles. The variation range was -0.19 HRC to $+0.16$ HRC. The research paper "World-wide unified scales Rockwell hardness test with conical indenter" [3] cited a variation range of -0.75 to $+0.47$ HRC. Both researches could not distinguish the difference of measurement results from deadweight-type hardness machines and lever-type hardness machines significantly enough for the national standard level.

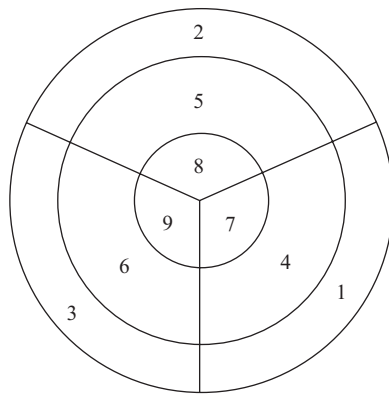
The direct verification of primary standard hardness machine is valid if the result is within the tolerance designated by EN ISO 6508-3 [4] without the effect of machine type. In order to emphasize this principle, this bilateral comparison between deadweight-type machine (VMI) and lever-type machine (NIMT) was conducted. This comparison also confirms the declared uncertainty of both parties.

2. Comparison method

2.1 Measurement method

Four sets of hardness blocks of 20 HRC, 40 HRC and 60 HRC were used in this comparison. Two sets of hardness blocks were measured with common indenter in order to determine the performance of primary hardness machines. Another two sets were measured with each laboratory's indenter in order to confirm their declared uncertainties of hardness scale. Standard testing cycle according to EN ISO 6508-3 was used in all measurements.

The measurement consisted of 9 points of indentation. Each block was divided into 9 areas, as shown in the figure below.



9-areas block

2.2 Standard Hardness Machine

The standard hardness machine of VMI is the deadweight-type machine, which uses a spiral microscope for depth measurement of indentation. This machine was manufactured by VEB Germany in 1978

The standard hardness machine of NIMT is the lever-type machine, which uses a laser hologauge for depth measurement of indentation. This machine was manufactured by Akashi Corporation Japan.

Both standard machines were directly verified according to EN ISO 6508-3 as in the measurement reports.

2.3 Standard Testing Cycle

A testing cycle according to EN ISO 6508-3 was used in this bilateral comparison. It is also the standard testing cycle of NIMT. The detail of the testing cycle is as follow:

- The velocity of the indenter when reaching the surface shall not exceed 1 mm/s
- The duration of the preliminary test force shall not exceed 3 s
- The indentation speed under test force application shall be 20 mm/s to 40 mm/s
- The duration of the total test force shall be 4 ± 2 s
- The time duration before reaching permanent indentation depth shall be 4 ± 1 s

2.4 Uncertainty of hardness measurement

The measurement uncertainty of each laboratory is shown in Table 1.

Table 1 Measurement uncertainty of Laboratory

Metrology Institute	Expanded uncertainty (\pm HRC)		
	20 to 25 HRC	40 to 45 HRC	60 to 65 HRC
NIMT	0.45	0.45	0.45
VMI	0.31	0.31	0.31

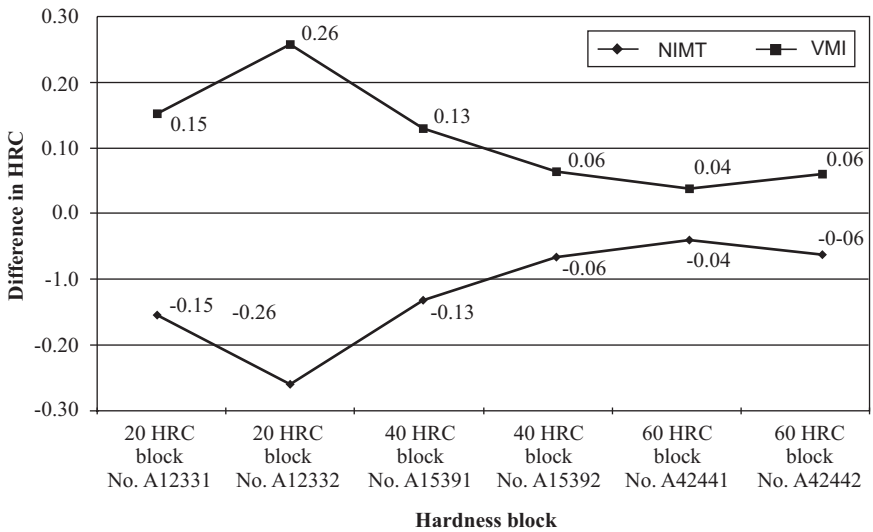
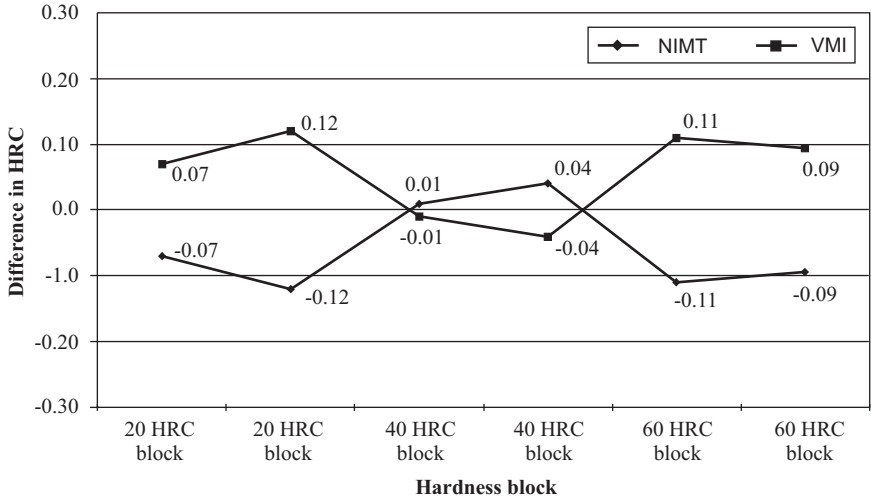
3. Measurement Results

3.1 Value measured with the common indenter

The measurements were carried out using the same indenter. The results are given in Table 2 and are plotted in Fig.1. The mean values of standardizing machines have a difference within ± 0.12 HRC.

3.2 Value measured with the different indenters

The measurements were carried out with each laboratory's indenter. The mean values were compared including the influence of the indenter used. The results are given in Table 3 and are plotted in Fig.3. The values are different within ± 0.26 HRC.



4. Reports

Table 2 Measurement Result using common indenter

Name of Laboratory	Result in HRC unit					
	20 HRC block No.A12329	20 HRC block No.A12330	40 HRC block No.A15389	40 HRC block No.A15390	60 HRC block No.42439	60 HRC block No.42440
NIMT	21.02	20.98	39.94	40.01	60.63	60.61
VMI	21.16	21.22	39.92	39.93	60.85	60.80

Table 3 Measurement Result using different indenters

Name of Laboratory	Result in HRC unit					
	20 HRC block No.A12331	20 HRC block No.A12332	40 HRC block No.A15391	40 HRC block No.A15392	60 HRC block No.42441	60 HRC block No.42442
NIMT	20.87	20.63	39.94	40.03	60.51	60.52
VMI	21.20	21.10	40.20	40.20	60.60	60.60

5. Conclusion

The results measured with the common indenter and similar testing cycles have a difference within ± 0.12 HRC, which caused by the standard machines. This corresponds to the research paper “Establishing a world-wide unified Rockwell hardness scale with Metrological traceability” [2] and the research paper “World-wide unified scales Rockwell hardness test with conical indenter” [3]. The differences of measurement results among standard hardness machines of each NMI cited in these research papers are between -0.19 HRC to $+0.16$ HRC and -0.75 HRC to $+0.47$ HRC, respectively. Theoretically, hardness machine types should affect measurement results, but from the aforementioned trails, the difference caused by hardness machine type is insignificant. This is because each NMI’s primary machine was at least directly verified according to ISO6508-3.

The results measured with each laboratory’s indenter gives the variation range of ± 0.26 HRC, which represents the combined variation range of different national indenters and national standard machines. This variation range is within the variation range of both aforementioned research papers, which are -0.29 to $+0.38$ [2] and -0.51 to $+0.43$ [3]. The uncertainties that both NMIs have claimed are confirmed to be within this variation range.

This bilateral comparison yielded a satisfactory comparison result between NIMT and VMI. There are future plans for bilateral comparisons in other parameters, such as HRA, HRB and Vickers.

References

- [1] H. Ishida, T. Sanponpute, R. Wongpithayadisai, S. Miyata, V. Tulasombut, T. Usuda, J. Matsuda, Y. Akimoto and B. Suktat; Bilateral comparison in HRC between NMIJ and NIMT [Report]
- [2] J-F. Song, S. Low, D. Pitchure, A. Germak, S. Desogus, Th. Polzin, H-Q. Yang, H. Ishida and G. Barbato; Establishing a world-wide unified Rockwell hardness scale with Metrological traceability. *Metrologia* 1997, 34: 331-334.
- [3] Th. Polzin, D. Schwenk; World-wide unified scales Rockwell hardness test with conical indenter. Joint International Conference IMEKO TC3/TC5/TC20, 493-498
- [4] EN ISO 6508-3: Metallic Materials- Rockwell hardness test (scales A, B, C, D, E, F, G, H, K, N, T)

Non-governmental cooperation in measurement and instrumentation

Leo Van Biesen¹, Tamás Kemény², and Dirk Röske³

Abstract – IMEKO is a non-governmental federation of 35 national Member Organisations, individually concerned with the advancement of measurement technology and instrument engineering. The Member Organisations are scientific/technical societies or committees. The membership consists of the representatives of metrological institutions, higher education, industry and the users of instruments. The paper deals with the objectives of the Confederation, informs on the structure and financial background, on IMEKO publications and on the activities of 20 Technical Committees. Finally the future World Congresses, different scientific services, membership development, events and co-sponsorships are discussed.

Keywords: measurement, metrology, instrumentation

1. DEFINITION

The year 2003 has marked the 45th anniversary of the birth of IMEKO. Founded in 1958, IMEKO is a non-governmental federation of 35 Member Organisations individually concerned with the advancement of measurement technology. Its fundamental objectives are the promotion of international interchange of scientific and technical information in the field of measurement and instrumentation and the enhancement of international co-operation among scientists and engineers from research and industry. The logo of IMEKO is depicted in Fig. 1.

With a different approach, IMEKO is a global network, a forum where instrument makers, users, research and development experts, legal metrology scientists and university professors meet and exchange ideas.

IMEKO's responsibility is to consider the challenges of measurement science and technology coming from important application areas and to form visions for the future development of human society.

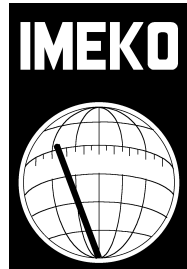


Fig.1. The official logo of IMEKO

1 Dept. ELEC, Vrije Universiteit Brussel, Brussels, Belgium

2 IMEKO Secretariat, Budapest, Hungary

3 Physikalisch-Technische Bundesanstalt, Braunschweig, Germany

2. STRUCTURE

2.1. MEMBER ORGANISATIONS (MO-S)

Though the participation in IMEKO activities is available to anybody without restriction, the work is based on using the human resources and knowledge base of the MO-s, in favour of the improvement of the MO-s.

MO representatives constitute the General Council, MO-s pay a modest contribution to the general expenses, MO-s undertake to organise IMEKO events and mainly MO-s delegate members to Technical Committees. The 36 MO-s are representing all the five Continents. IMEKO is continuously looking for new Member Organisations, to support the global understanding of our disciplines.

Albania	Greece	Portugal
Australia	Hungary	Romania
Austria	Israel	Russia
Belgium	Italy	Slovakia
Brazil	Japan	Slovenia
China	Kenya	South Africa
Croatia	Korea	Spain
Czech Republic	Nigeria	Sweden
Egypt	Mexico	Switzerland
Finland	Thailand	Turkey
France	The Netherlands	United Kingdom
Germany	Poland	

Table 1. The IMEKO Member Organisation nations

2.2 OFFICERS, BOARDS AND COMMITTEES

1. Officers

- **President** – Prof. dr .ir. Leo Van Biesen (Belgium)
- **Immediate Past President** – Prof. dr. Manfred. Peters (Germany)
- {**President Elect** – to be elected during the General Council meeting in November 2005 }
- **Vice President in charge of XVIII World Congress** – Prof. dr. Mauricio Frota (Brazil)
- **Vice-President for External Relations and Chairman of the Technical – Board** – Prof. dr. A. da Cruz Serra (Portugal)
- **Secretary General** – Prof. dr. Tamás Kemény (Hungary)
- **Treasurer** – Prof. dr. P. Herbert Osanna (Austria)

2. Permanent organs

- **General Council** – the supreme governing body. The GC consists of one or two delegates from each Member Organisation and holds yearly Sessions.
- **Secretariat** – the executive body headed by the Secretary General. It carries out the

decisions of the GC in accordance with the resolutions passed at Sessions.

- **Advisory Board** – to formulate proposals on the policy and strategy of IMEKO, chaired by the Immediate Past President.
- **Technical Board** – to analyse and to support the activity of the Technical Committees, chaired by the President Elect.
- **Drafting Committee** – responsible for the Resolutions and Minutes of GC Sessions.
- **Credentials and Membership Committee** – to confirm the validity of credential letters of GC delegates and to examine applications for membership.

3. *Technical Committees (TC-s)*

The activity of IMEKO is basically carried out through the Technical Committees, which organise symposia, conferences, workshops, seminars on specific topics at regular intervals; publish proceedings of events, textbooks, glossaries, studies, etc. to realise the objectives set out in the Constitution and By-Laws.

TC-s are traditionally numbered by the sequence they have been set up. We are striving to cover all important fields and follow the new trends, yet the picture is rather uneven. Some TC-s are really centres of world excellence, some others have limited activities. Being a non-governmental organisation, the success depends on finding active and widely recognised chairmen and members.

- **TC1** – Education and Training in Measurement and Instrumentation
- **TC2** – Photonics
- **TC3** – Measurement of Force, Mass and Torque
- **TC4** – Measurement of Electrical Quantities
- **TC5** – Hardness Measurement
- **TC6** -Vocabulary Committee (activity suspended)
- **TC7** – Measurement Science
- **TC8** – Trace ability in Metrology
- **TC9** – Flow Measurement
- **TC10** – Technical Diagnostics
- **TC11** – Metrological Infrastructures
- **TC12** – Thermal and Temperature Measurement
- **TC13** – Measurements in Biology and Medicine
- **TC14** – Measurement of Geometrical Quantities
- **TC15** – Experimental Mechanics
- **TC16** – Pressure and Vacuum Measurement
- **TC17** – Measurement in Robotics
- **TC18** – Measurement of Human Functions
- **TC19** – Environmental Measurement
- **TC20** – Measurement Techniques for the Construction Industry.
- **TC21** – Mathematical Tools in Measurements

Numerous TC-s have already organised over 20 international conferences, some having over 400 participants from over 40 countries and producing proceedings of about 500 pages each. A royalty of 5 % of the registration fees helps to reduce the financial burden of MO-s to cover the overall expenses of the Confederation.

3. WORLD CONGRESSES

As reflected by the titles of the last World Congresses, these global events select noble, humanitarian scopes, to demonstrate how our field can serve the improvement of the quality of life. Primarily the TC-s are determining the main chapters, yet the difference between a TC event and a World Congress is, that while TC events are concentrating on a narrow topic in full depth, the Congresses offer cross-fertilisation of different fields and a possibility to the participants to achieve an overall view on the progress as a whole and a vision of further development.

IMEKO XV Osaka, June 13-18, 1999

- Measurement to Improve the Quality of Life in the 21st Century
- Measurement Helps to Coordinate Nature with Human Activities

IMEKO XVI Vienna, Sept 25-28, 2000

- Measurement Supports Science, Improves Technology, Protects Environment
- Provides Employment Now and in Future

IMEKO XVII Dubrovnik, June 22-27, 2003

- Metrology in the 3rd Millennium

IMEKO XVIII Rio de Janeiro, September 17-22, 2006

- Metrology for a sustainable development

4. PUBLICATIONS

It is strength of IMEKO that almost 100 % of over 40 years activity is fully documented in the following publications:

- **ACTA IMEKO** – proceedings of the World Congresses
- **IMEKO TC Events Series** – proceedings of TC events
- **MEASUREMENT** – quarterly journal, published by Elsevier Science Ltd, Oxford
- **IMEKO BULLETIN** – semi-annual newsletter

5. INTERNET

5.1. STRUCTURE

Thanks to outstanding voluntary work almost total information is available from the web. The main entrance is www.imeko.org. This official IMEKO homepage (there are other local websites dedicated to IMEKO) is based on a MySQL relational database system and the PHP programming language. The main structure is depicted in Fig. 2. The HTML content sent to a browser requesting a special page is in most of the cases generated dynamically. Only a few pages are static ones. This allows the have the pages more up-to-date and to reduce the maintenance effort. The layout is checked with the following browsers: Microsoft Internet Explorer version 4 or higher, Netscape Navigator version 4 or higher, Mozilla (all versions). A screen resolution of 1024 x 768 is recommended, but not necessary. There are different databases in MySQL containing information related to IMEKO as shown in Fig. 2.

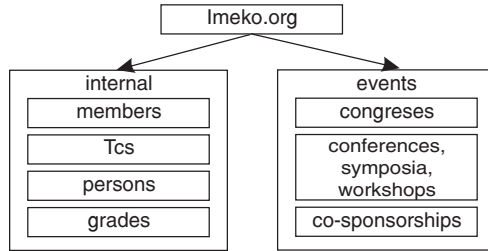


Fig. 2. Databases of the IMEKO website

The databases also include information about relations. If, for example, a person from the “persons database” is the contact person for an event from the “congreses database”, then the event data set in the latter contains the key number of the person. If the address of the person changes, the up-date will be done in the “persons database” and the congress contact person will be displayed with the new address. All data is stored only in one place. The PHP language in co-operation with MySQL allows extracting some information from the whole database according to given conditions. A good example for this is the “Event finder”. A web form asks for the conditions to be met (something like: all events in 2005, all events of TC1 in 2005 or all events in China in 2005) and shows the result after submitting the form. The main structure of the IMEKO website is shown in the Fig. 3.

Prof. Aumala was so kind and linked a Finnish web site with the multilingual Dictionary of Basic and General Terms in Metrology. Based on the original English, he organised

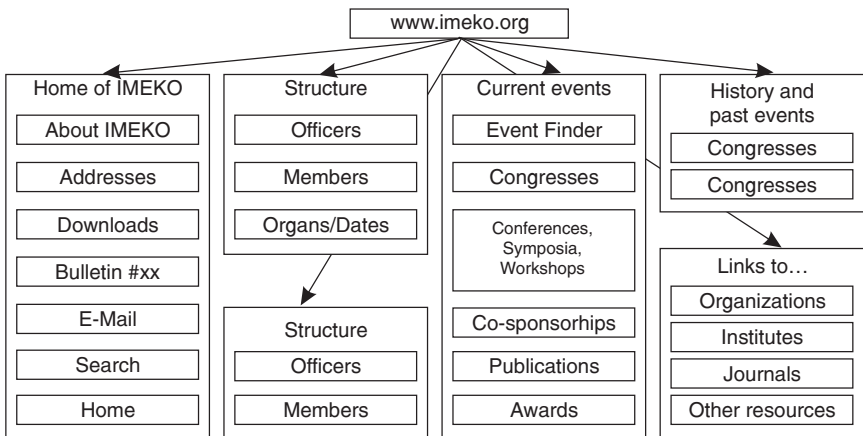


Fig. 3. Main structure of the IMEKO website

the translation to many other languages. At the moment Catalan, Czech, Finnish, French, German, Hungarian, Italian, Lithuanian, Portuguese, Spanish, Swedish and Russian versions are available from the web. Assistance with additional languages is welcome.

It is planned to establish an IMEKO Specialists Data Base as service to the measurement and instrumentation community. This service can include the individuals from the “persons database” who are listed by personal data, affiliation and keywords and should be closely linked with another new service which will be made available in the next future, the new IMEKO VIP service at www.imeko.org/vip/html.

The new imeko-vip site is a special offer for people who want to use and/or support IMEKO as a forum for the information interchange. This site is based on free content management software called „Postnuke”. It also uses the MySQL database and PHP.

The difference between www.imeko.org and imeko-vip is that users can be registered with imeko-vip and have access to additional functions. The site has a modular structure. The Webmaster can add new modules or configure the existing ones in order to meet the given requirements.

Some special modules that can be useful for IMEKO are:

- Downloads: mostly all downloads can be made available via imeko-vip
- **FAQ:** some common questions and answers about IMEKO (not everybody will read the Constitution and By-Laws) and its web site can be interesting for newcomers.
- News: especially news for the IMEKO community, not that for the public (compare with the news at www.imeko.org)
- Reviews: information about new publications, possibly with links to the download section.
- Sections: this module should be used by the TCs
- Topics: can be used for problems („I need to solve a measurement problem!” „I’m looking for project partners!” „Does anybody offer special services in measurement technology?”)
- Web Links: all links to other interesting web sites
- Registered user can change the layout of the site.

Some of the modules and functions are accessible for all visitors of imeko-vip, some functions require the user to be registered. The administrator can configure this.

5.2 ADDITIONAL FUNCTIONALITY: FORUM

A registered user can use the discussion board (forum) to discuss about problems related to special topics. E-mails will be sent automatically by the system or by initiative of the moderator of a forum (not necessarily by the webmaster) to registered users, for example, when new contributions are submitted. This function can be used as an email service for the users.

The information does not necessarily come from the Webmaster, most of the contributions are initiated by the registered users and the Webmaster activates the new downloads, reviews, topics and so on. The administrative overhead is minimized and the content is more rich and up-to-date.

All people who want to support IMEKO and its objectives are invited to register as users and to bookmark www.imeko.org/vip/html. Nobody is forced to register; the registration is optional and can be removed at any time. A user, who wants to register, must enter a valid e-mail address, because the password for the user is generated by the system and will be sent to this address.

One great feature is the web interface: the administration is carried out via Internet and browser software from any place in the world only by logging in as administrator.

6. AWARDS

Traditionally the following awards are festively handed over at the closing ceremony of World Congresses:

Distinguished Service Award – to be bestowed upon persons for outstanding services to IMEKO, active for many years as well-known specialists in the field of measurement.

György Striker Junior Paper Award – donation of the Founder and first Secretary General of IMEKO and his wife, to be given to one junior university staff member under 35 years of age, whose paper reflects a deep understanding knowledge of the theme of a World Congress.

7. QUALITY POLICY

IMEKO tries continuously to improve the quality of all activities concerning organisation and conduction of its events. For this end, IMEKO has implemented a quality system, based on ISO 9001, documented within the IMEKO Quality Manual (courtesy of the Austrian MO). Its execution is an ongoing process; the Manual will soon be available from the Secretariat.

8. IMEKO NATIONAL COMMITTEES

As a best practice, IMEKO encourages the MO-s to establish a National IMEKO Committee, involving the one or two GC delegates, the TC and other IMEKO Committee members and representatives of the member Society and other non-member Societies who may wish to get enriched by IMEKO information. This is the most efficient way of exhausting network efficiency.

9. INTERNATIONAL CONTACTS

IMEKO is one of the five Sister Federations within FIACC (Five International Associations Co-ordinating Committee, further consisting of IFAC (International Federation of Automatic Control), IFIP (International Federation for Information Processing), IFORS (International Federation of Operational Research Societies) and IMACS (International Association for Mathematics and Computers in Simulation).

IMEKO also maintains friendly working contacts with OIML, BIPM, the IEEE Instrumentation and Measurement Society and the IEEE Engineering in Medicine and Biology Society. The way of co-operation is organising joint events, co-sponsoring events and inviting keynote speakers to each other.

From foreign sources...

News have been spread about the creation of the AFRICAN COMMITTEE OF METROLOGY with the following objectives: to develop technical and managerial excellence in the areas of metrology, measurement standards, conformity assessment and instrument calibration; to promote and disseminate relevant information (tests and calibration), to express consensual rules in taking into account the standards of the international organizations and government bodies; to provide connections with African national metrology laboratories and to assess industrial bodies in Africa emphasizing the importance of keeping and maintaining both the national and international measuring standards.

More about this is available from

Abderafi Charki

Institut des Sciences & Techniques de l'Ingénieur d'Angers in France

E-mail address: abderafi.charki@istia.univ-angers.fr

The 13th General Assembly of the African Regional Organization for Standardization (ARSO) took place in Accra, Ghana, from 21 to 26 February 2005.

www.arso-oran.org

Date of the 2005 SEM (Society for Experimental Mechanics, Inc.) Annual Conference and Exposition on Experimental and Applied Mechanics: June 7-9 in Portland, Oregon, USA.

www.sem.org

The 49th Annual Congress of the European Organization for Quality (EOQ) was held in Antalya, Turkey, April 25-27, 2005 under the headline "Quality: The Way to Sustainability", organized by the Turkish Standards Institution (TSE).

www.tse.org.tr

SICE 2005 - the Annual Conference of The Society of Instrument and Control Engineers, Member Organization of IMEKO in Japan is scheduled for August 8-10 at Okayama University.

<http://www.sice.or.jp/>

INTERKAMA Asia
International Exhibition for Process Automation
Shanghai, New International Expo Centre, China
November 28 - December 1, 2005
www.interkama-asia.com

MEASUREMENT SCIENCE CONFERENCE
The Science, Technology and Control of Measurements
Past - Present - Future
Anaheim, California, USA
February 27 – March 3, 2006
www.msc-conf.com
Corporate address: Measurement Science Conference Incorporation
1280 Bison Ave, Suite B9-530
Newport Beach, CA 92660

IMAC-XXIV: A Conference and Exposition on Structural Dynamics
Adam's Mark St. Louis Hotel, St. Louis, Missouri, USA
January 30 – February 2, 2006
www.sem.org

VI SEMETRO - the 6th International Seminar on Electrical Metrology will be staged by INMETRO, the Brazilian National Institute of Metrology, Normalization and Industrial Quality in Rio de Janeiro, from 21 to 23 September, 2005.
www.inmetro.gov.Br/VISemetro

The 3rd International Conference on Metrology – Trends and Applications in Calibration and Testing Laboratories will be in Tel Aviv, Israel, November 14-16, 2006 in conjunction with the 16th International Conference of the Israel Society for Quality. The Israeli Metrological Society, Member Organization of IMEKO is one of the co-organizers, together with the National Conference of Standard Laboratories International (NCSLI) and the Co-operation on International Traceability in Analytical Chemistry (CITAC).
www.isas.co.il

News in brief

The President, Professor Leo Van Biesen will represent IMEKO at the 50th anniversary celebrations of OIML, the International Organization of Legal Metrology in Lyon, France, June 18-20, 2005

The 48th IMEKO General Council Session will be in Brussels, Belgium from November 7 to 9, 2005, as usual preceded by the meeting of the Advisory Board and the Technical Board on November 6

New Chairman of TC11 - Metrological Infrastructures: Professor Mladen Boršič from the University of Zagreb, Croatia. Professor Borsic succeeds Dr. Eberhard Seiler, (PTB Braunschweig, Germany), who has been Chairman since 1992.

The new Chairman of TC19 - Environmental Measurements, Professor Pedro M.B. Silva Girão, Instituto Superior Técnico, Lisbon, is in the process of soliciting members and re-structuring the Committee to start actual work. In case of interest he can be reached by e-mail: psgirao@ist.utl.pt

Dr. Dirk Röske (PTB Braunschweig, Germany), Webmaster in charge of the IMEKO Website was appointed IMEKO Information Officer with a broader scope of responsibility.

New GC delegates: Professor Humberto Siqueira Brandi on behalf of the Brazilian MO and Dr. Emilio Prieto Esteban representing the Spanish MO.

IMEKO was invited to a panel by NCSLI (National Conference of Standards Laboratories International) dealing with "A calibration paradigm for the year 2020". It will be held within the framework of a Workshop and Symposium planned for August 7 to 11 in Washington, D.C.

Member Organizations of IMEKO and their delegates to the General Council

Albania

General Directorate of Metrology
and Calibration
The General Director
RR. "Sami frasheri", No. 33
Tirana

Australia

Metrology Society of Australia
Ms. Marian Haire
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PO Box 282
North Ryde, NSW 1670

Austria

ÖVE Österreichische Gesellschaft für
Mess- und Automatisierungstechnik
Prof. P. H. Osanna
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Eschenbachgasse 9

Belgium

Belgian Measurement Confederation
BEMEKO c/o IBRA/BIRA
Prof. Ch. Eugene
Rue Ravenstein Straat, 3
1000 Brussels

Brazil

Brazilian Society of Metrology
Prof. H.S. Brandi
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20020-906 Rio de Janeiro, RJ

People's Republic of China

Chinese Society for Measurement
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Beijing 100013

Croatia

KoREMA – Croatian Society for
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Electronics, Measurement and Control
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El-Ameriya, Cairo

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Automation and Informatics
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Israel

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c/o Istituto di Metrologia
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Korea Association of Standards and
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- KASTO
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Royal Institution of Engineers
Division for Automatic Control
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Nigeria

Standards Organisation of Nigeria
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Poland

Polish Society for Measurement,
Automatic Control and Robotics
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ul. Czackiego 3–5

Portugal

RELACRE – Portuguese Association of
Accreditation Laboratories
Prof. A.M. da Cruz Serra
Rue Filipe Folque, 2
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Romania

Romanian Measurement Society
Prof. Dr. R. Munteanu
Technical University Cluj-Napoca
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3400 Cluj-Napoca

Russia

International Scientific–Technical Society
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Slovakia

Slovak Metrological Society
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Slovenia

Slovenian Society for Process Control
and Measurements
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c/o Faculty of Electrical
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Instrument Society of Sweden
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Schweizerische Gesellschaft für
Automatik
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National Metrology Institute
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Vice President for External Relations:

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