Did you know...

- **Petrobras CEO on the strategic importance of International Standards**

- **35th ISO General Assembly**

ISO
2012
SAN DIEGO

ISO

ISO *Focus+*

Contents

Did you know… ?

… that ISO has standards for pasta, lawn mowers and even toothbrushes ? Most people recognize the "ISO brand" due to the success of ISO 9001 or even ISO 14001, and would be surprised to discover that's not all we do. But since its founding 65 years ago, ISO's goal has been to put together international experience and wisdom to develop solutions based on state-of-the-art technology and good practice.

The standardized dimensions of freight containers, for example, make trade and transport cheaper and faster. Standardized format and security protocols of bank cards make financial transactions more convenient and secure. Road vehicles are continually made safer and more environmentally friendly by standards. Our health is protected by guidelines for food safety and the quality of medical devices. IT standards have facilitated the development of the Internet, the exchange of information and images via e-mail, as well as the arrival of e-business. And these examples are only scratching the surface.

> *We can still be surprised and amazed by the wealth of International Standards out there.*

Overall International Standards, be they for cars, dentistry or ergonomics, spread best practice and avoid reinventing the wheel, but this requires that people know that they exist in the first place ! With over 19 400 standards developed by some 200 technical committees, this is no easy feat – a challenge faced by ISO's network of members and also by us, the Communication Team at ISO.

Every idea is considered in our efforts to spread the word about standards : from brochures to cartoons, from newsletters to Facebook, from press releases to apps, from videos to the magazine you are reading, *ISO Focus+*. ISO's Website has been reinvented over time to cater to evolving technology and changing digital habits. The number of visits on the ISO Website has doubled in the last five years and our Website is, by far, the most visited for a standards development organization worldwide. Today we are seeing results of all these efforts ; references to ISO and its standards on Internet media sites increased by 38 % in 2011. ISO's Facebook page has over 10 500 fans, and Twitter is not far behind. Our Youtube channel has scored over 200 000 video views. Clearly, there is a growing realization of the benefits of standards, and a desire to talk and learn on social platforms.

The demand for information about ISO standards is therefore growing. But as we turn the page to 2013 and beyond, we must stop and ask : Are we doing enough ? How can we improve standards knowledge even further ? *ISO Focus+* highlights important issues, events and achievements, featuring contributions from high-level guests and key actors amongst our stakeholders. We delve into technical matters and try to present them in an accessible way. We spend hours looking for the right words, and for the best images, sometimes drawing our own, to ensure we get the message across right. And these are just a few examples of what we do in ISO's Communication Team.

It is incredibly rewarding because every time we learn something new. Even after years of working at ISO, we can still be surprised and amazed by the wealth of International Standards out there – like the ones featured in this issue. The more we know, the more we realize the value of what ISO does. And this is something we are excited to share with you, our readers.

We hope that whether you have been with us for many years, or that this is the first time you delve into our pages, whether you are looking at these words on paper or on a screen, you will enjoy reading us as much as we enjoyed working on *ISO Focus+*. But we are not stopping here, like our well-known management standards, the Communication Team is also aiming for continual improvement ! So as we go ahead, we welcome your ideas on how we can improve. We hope to take advantage of all the different platforms offered by technology to continue to inform our readers about the valuable work ISO is doing.

To conclude, we would like to highlight one of the most important elements that in our view, is key to successful communications (and everything else) : teamwork ! Behind the scenes of ISO there are people, and the ability to work together across any barrier (language, cultural, etc.) is what we treasure most. A special thanks goes to our graphic artists : Xela Damond, Pierre Granier and Alexane Rosa ; the copy editor/proof reader, Mary Ritchie ; the translation team of Denys Crapon de Caprona, Cécile Jeannet, Anita Rochedy, and Catherine Vincent, supported by Leila Esteban, plus our colleagues from sales, distribution and information.

And of course, to you, for reading us ! ∎

Elizabeth Gasiorowski-Denis, **Maria Lazarte**, **Sandrine Tranchard** and **Roger Frost**.

Singapore's energy management

From 2013, the Government of Singapore will be introducing mandatory energy management requirements for large energy users which consume more than 15 GWh in the industry sector under an Energy Conservation Act (ECA). These include the appointment of energy managers, reporting of energy use and submission of energy efficiency improvement plans.

The Energy Efficiency National Partnership (EENP) is a voluntary partnership programme for companies that wish to be more energy efficient. Its core elements include the adoption of ISO 50001:2011, *Energy management systems – Requirements with guidance for use*; a learning network on energy efficiency ideas, technologies, practices, standards and case studies, including ISO 50001; and a national recognition scheme with awards.

In addition to companies, the public sector in Singapore is also taking a lead in environmental sustainability and resource efficiency with the help of standards.

Public sector agencies have put in place environmental sustainability measures that encompass energy efficiency (including energy audits, indoor air temperature regulations, energy management trainings, procurement of energy efficient equipment), water efficiency and recycling.

City offers EUR 5 000 for energy

To reduce energy consumption and CO_2 emissions, the city of Ghent in Belgium is offering local companies professional support to the value of EUR 5 000 for the establishment of an energy management system.

The city hopes that this initiative will help it become climate neutral. It will also help save hundreds of thousands of Euros, as companies reduce costs linked to energy. The support involves an energy audit to help companies establish an energy management system that saves energy and reduces costs. This will make it easier for companies to obtain certification to ISO 50001:2011, *Energy management systems – Requirements with guidance for use*. The certificate is considered an added-value "good for business", as it shows customers and suppliers that the company is energy efficient.

The companies targeted involve those with an energy consumption between 1 000 MWh and 27 000 MWh based in Ghent. This is a pilot project in the framework of the European project Answers to the Carbon Economy (ACE).

IEC and ISO look ahead

The International Electrotechnical Commission (IEC) held its 2012 General Meeting in Oslo, Norway in October 2012. The event brought together participants from around the world to discuss the latest developments at the IEC. It was also an opportunity to honour the winners of the global IEC-IEEE (Institute for Electronics and Electrical Engineers) Challenge. The contest attracted high-level submissions from a number of universities around the world.

Ken Krechmer, of the University of Colorado, USA, received the first prize of USD 20 000 for his paper, "Cloud computing standardization", which looked at how cloud computing can dramatically simplify the development and deployment of new economic, social and environmental applications. Second and third prizes were also awarded.

At the IEC Council Meeting, ISO Vice-President (technical management), Elisabeth Stampfl-Blaha, spoke on behalf of ISO President Boris Aleshin, saying, "Today the world is going through rapid change. Assessment of global risks highlights areas that reflect a new reality and a need for new solutions.

"For IEC and ISO, I think this presents the challenge to even further increase the positive, open and constructive collaboration we have developed together during the last years at various levels – to the benefit of our stakeholders, especially business."

The ISO Vice-President highlighted four areas where both organizations should deliver tangible results:

- On the broad subject of electric mobility, IEC and ISO have a huge responsibility to ensure cooperation in their standardization programme

Elisabeth Stampfl-Blaha, ISO Vice-President (technical management), at the IEC Council Meeting, held in October 2012, Oslo, Norway.

- Make information on ISO and IEC standards more easily available through various means, to enable more people to get the answers they need
- Recognize and respond to the experts who contribute their time to developing standards with processes and procedures that reflect best practice
- Use our structures in more proactive ways and identify customer needs much faster

Green companies equal more productive employees

Find it hard to get motivated at the office? A new study by researchers in the University of California, Los Angeles (UCLA) suggests that companies which adopt green practices such as those based on ISO 14001 on environmental management enjoy a higher level of worker productivity.

The study looked at the environmental standards and employee productivity of over 5 000 French companies. Employees of green companies were found to be 16 % more productive than those of companies not aiming to implement sustainability-related objectives or produce eco-friendly products. The research team concluded that the results undermine the common complaint that sustainable standards stifle business.

The study was the first international effort to examine how a company's environmental commitment affects its productivity. Working together with Sanja Pekovic, from France's University Paris-Dauphine, Professor Magali Delmas, an environmental economist at UCLA's Institute of the Environment and Sustainability, randomly selected two employees from each company, from a total of around 10 000 participants. "Green" companies were those that voluntarily adopted International Standards such as ISO 14001, and eco-labels such as "fair trade" and "organic".

The study also found that employees at green companies got more training and had better interactions with co-workers. "It's a counterpoint to people thinking that environmental practices are detrimental to the firm," said Delmas. "Green practices make a company more attractive because so many employees want to work for a company that is green, but we also argue in this paper that it's more than just wanting to work there – it's working more." ∎

Maria das Graças Silva Foster
Petrobras CEO

Maria das Graças Silva Foster is the CEO of Petrobras. In a career that has spanned 31 years, Ms. Foster has served in numerous roles including Gas and Energy Director, CEO and Financial Director of Petrobras Distribuidora. In February 2012, she was elected member of the Petrobras Board of Directors and was chosen to take over the helm of the company.

She also sits on the boards of Petrobras Distribuidora, Petrobras Biocombustível, and is the President of the Board of Directors of Petrobras Transporte, Petrobras Gas and IBP (Brazilian Oil, Natural Gas and Biofuels Institute).

From 2003 to 2005, Ms. Graças Foster was Secretary for Oil, Natural Gas and Renewable Fuels at the Brazilian Ministry of Mines and Energy. During this period, by presidential decree, she became National Executive Secretary of the federal government programme for mobilizing Brazil's oil and gas industry and Interministerial Coordinator for the national programme for biodiesel production and use.

Ms. Graças Foster sits on numerous boards and has received many prestigious awards, notably the Medalha da Inconfidência, awarded to persons who have made an outstanding contribution to social, cultural and economic development. She has been made a Knight Commander of both the Admiralty Order of Merit and the Rio Branco Order of the Brazilian External Affairs Ministry. In April 2009, she received the Tiradentes Medal, the highest decoration of the Legislative Assembly of the State of Rio de Janeiro. In 2008, she was named Executive of the Year by the Institute of Brazilian Finance Executives.

Ms. Graças Foster graduated in chemical engineering from Fluminense Federal University, then completed her Master's at Rio de Janeiro Federal University. She also has an MBA in economics from Fundação Getúlio Vargas.

Petrobras CEO, **Maria das Graças Silva Foster** (right), visits a platform in the Campos Basin.

ISO Focus+: *Petrobras recently came top in a ranking of the 50 most valuable brands in Latin America and is the 4th largest energy company in the world. From the project stage to construction, commissioning and acquisition of equipment and oil refineries, how important are International Standards to a company of this scale? What part do they play in day-to-day operations?*

Maria das Graças Silva Foster: Applying International Standards is of strategic importance to ensure competitiveness in our business, since this means that projects, equipment manufacture and construction, assembly and commissioning of new onshore and offshore facilities are in line with international practices, aimed at ensuring quality, operational efficiency and compliance with health, safety and environmental requirements.

In day-to-day operations, Petrobras applies International Standards in the various development phases for projects relating to oil and gas production facilities, transport and refining, such as drilling and production platforms, terrestrial and undersea pipelines, storage ships and terminals, refineries, thermal power plants, petrochemical plants, fertilizer plants and biodiesel production plants. They are also applied in the operation, maintenance, inspection and assessment of facilities. These standards cover project requirements, equipment manufacture, construction and assembly, commissioning, quality management, operational security, health, the environment, social responsibility and risk analysis, as well as other aspects.

ISO Focus+: *How does Petrobras apply ISO 9001 in quality management? How does this standard contribute to making company operations more efficient?*

Maria das Graças Silva Foster: In an oil products market that is growing at an annual rate of 4%, the Petrobras 2012-2016 Business and Management Plan earmarks a significant part of its investments to satisfying product quality requirements, especially gasoline and diesel.

The ISO 9001 model is a benchmark in quality management and allowed us to identify the interfaces of the company's vertical processes, enhancing the integration of corporate areas and helping improve the quality of inputs that pass through the company's value chain up to delivery of the final product, with better and more sustainable results.

Applying International Standards is of strategic importance.

The adoption of ISO 9001 was a strategic decision aimed at improving our operations, cutting costs and boosting customer satisfaction. Applying ISO 9001 helped increase asset efficiency, improve processes, enhance flexibility and strengthen our commitment to safety and the environment. Furthermore, factors such as the predictability of the characteristics of products and services, workforce awareness of quality aspects and increased standardization are helping the company achieve results and satisfy market requirements.

ISO Focus+: *Petrobras emphasizes its commitment to environmental, economic and social sustainability and is listed on the Dow Jones Sustainability Index. Could you give us more information on the company's environmental commitments and, in particular, describe how International Standards such as ISO 14001 (environmental management) help in this?*

Maria das Graças Silva Foster: Petrobras' performance is closely linked to its deep commitment to the environment, the safety of its operations and facilities and the health of its workforce. This commitment is expressed in the company's mission statement: "To act in a safe and profitable manner, with social and environmental responsibility,

Petrobras' diesel hydrotreating unit.

Petrobras (with BW Pioneer) operates in the Cascade and Chinook fields in the US Gulf of Mexico.

on the domestic and international markets, providing products and services that satisfy the needs of our customers and contribute to the development of Brazil and the countries in which we operate."

To do this, the company links productive processes to health, safety and environment (HSE) corporate guidelines approved by the Executive Board and embodying modern HSE management practices focused on the company's activities. The guidelines form the basis of the entire HSE management system developed for Petrobras Units, which are certified to Brazilian Standards NBR ISO 14001 and OHSAS 18001.

The ISO 9001 model is a benchmark in quality management.

At present, in pursuit of continual improvement in HSE management, Petrobras is working on a new challenge aimed at obtaining a single certification to NBR ISO 14001 and OHSAS 18001 for the entire company. This will lead to greater dynamism and homogeneity in our productive processes, making them safer, healthier and more sustainable.

ISO Focus+ : Why did Petrobras participate in drafting social responsibility standard ISO 26000 ? How is the company applying this standard ?

Maria das Graças Silva Foster : Acting with social and environmental responsibility is one of the strategic corporate pillars at Petrobras, together with growth and profitability. This commitment is expressed in our mission statement and corporate vision, and determines how the company exercises its activities. We saw the opportunity to participate in drafting the International Standard on social responsibility as strategic.

We worked alongside the international working group for ISO 26000 from the initial meeting in 2005 and were invited by Associação Brasileira de Normas Técnicas (ABNT), ISO member for Brazil, to represent Brazilian industry in 2006. The company consolidated a successful partnership with the ABNT and the Brazilian delegation for disseminating the content of the standard by holding 15 seminars in all regions of the country. After ISO 26000

Petrobras gas station in Paraguay.

1	Water carriage
2	Comperj water treatment station (ETA)
3	Industrial facilities water supply
4	Industrial waste treatment station (ETDI)
5	Water carriage for reuse
6	Treated sewage disposal

Photo : Petrobras
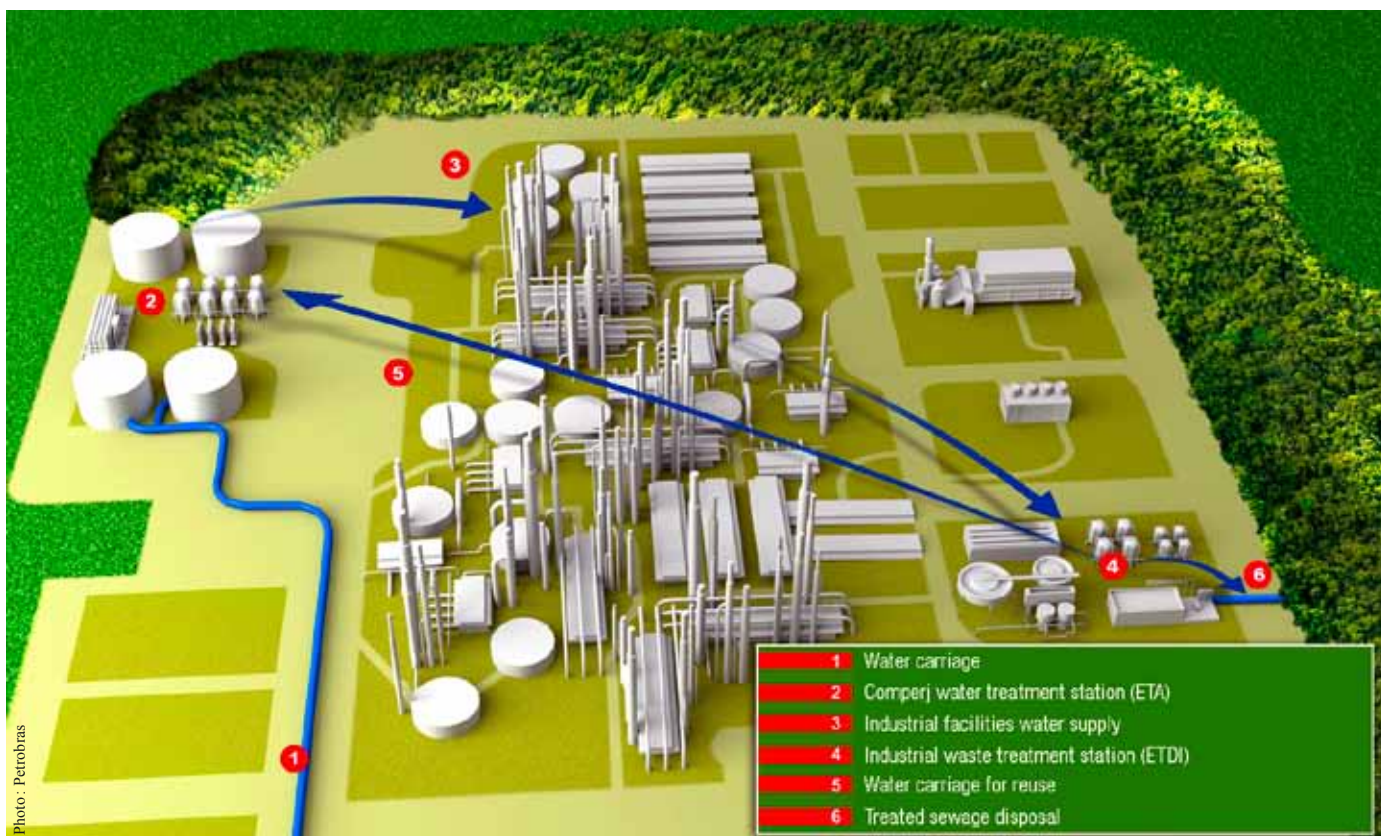
Petrobras' Comperj development : one of the biggest water reuse projects in the world.

was released, in December 2010, a further seven seminars were held to present the standard to industry federations in the main capital cities of Brazil. The principles and themes discussed internationally in relation to ISO 26000 contributed to the formulation of the company's policies and guidelines on social responsibility. In addition, Petrobras has been promoting a series of training courses, talks and workshops on the standard for its workforce.

ISO Focus+ : Petrobras specialists are members of a number of ISO technical

In a highly competitive global market there is no room for gender bias.

committees, such as ISO/TC 67, **Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries,** *and ISO/TC 28,* **Petroleum products and lubricants.** *Tell us a little more about Petrobras' participation in international standardization. How important is this participation to the company ?*

Maria das Graças Silva Foster : Petrobras participates in ISO, the leading organization for international technical standardization, with 249 representatives on technical committees, subcommittees and working groups. This is done through ABNT, in which Petrobras employees act as representatives of Brazil.

The company also participates in the International Electrotechnical Commission (IEC), another international organization for technical standardization, with 15 representatives, along similar lines to its participation in ISO. We also participate

Petrobras' tanks with ethanol in Antarctica.

Photo : Petrobras

in the International Maritime Organization (IMO), the international technical regulations body for maritime issues, with 23 representatives. And we have 14 representatives on the International Association of Oil & Gas Producers/Standards Committee (OGP/SC), responsible for assisting ISO/TC 67 by drafting basic texts for international technical standards in the petroleum industry.

Our participation in these organizations involves preparing International Standards and regulations jointly with representatives from other countries and companies. These standards and regulations are used extensively on the international market, where Petrobras works with technical requirements that satisfy quality, safety, health, environmental, deadline, cost and local content standards.

Petrobras receives the Top Energy Award 2011 for excellence in its plants and operations.

About Petrobras

Petrobras is a Brazilian integrated energy company with over a million shareholders, operating in the oil, natural gas, and biofuels sectors in 27 countries.

As the largest deep water operator in the world (22 % share of worldwide operations), Petrobras' pre-salt oil and gas discoveries opened up a new exploration frontier with the potential to put Brazil among the world's leaders in terms of oil and gas reserves. Petrobras currently has proven reserves of some 16 billion barrels of oil (SPE criteria), and this figure could double over the next few years as new discoveries are made.

Petrobras is one of the few companies with output of over 2.6 million barrels of oil equivalent per day (boed). Its strategic plan forecasts a rise in domestic and foreign output to 5.7 million boed by 2020, an increase of 115 %.

The global public offering launched in September 2010 raised the company's capital to BRL 205 billion, funding earmarked for projects covered by the 2012-2016 Business and Management Plan and amounting to USD 236.5 billion. In 2011, the company's net profit reached USD 20 billion.

Today, Petrobras' system has around 84 000 employees. According to projections, by 2014, around a million direct and indirect jobs will be created in Brazil in the domestic oil and gas sector.

ISO Focus+ : You are one of the few women who are at the helm of one of the largest companies in the world. At the Women Leaders' Forum held during Rio+20, you encouraged women in management positions to be aware of, and take action to combat, prejudice. You also pointed out that the oil sector is naturally dominated by men, stating that 84 % of the Petrobras Holding workforce are men and only 16 % women. We could say the same about standardization ! In your opinion, how would gender diversity benefit business ? How can we change our viewpoint and involve women more ?

Maria das Graças Silva Foster : With a great deal of determination, women have been making conquests in the world of work. In Brazil, 60 % of the workforce are women. In 1980, this figure was only 38 %. We managers, especially women, in companies where we play a leadership role, must be constantly aware of, and combat, all and any kind of prejudice. If companies accept prejudice, this constitutes a destructive administrative act, leading to the loss of competitiveness and resulting in other consequences damaging to the development of the business itself. In a highly competitive global market there is no room for gender bias.

One of Petrobras' 10 values, defined in the Strategic Plan for 2020, is respect for human and cultural diversity based on three principles : combatting discrimination, promoting equality of opportunity, and respecting differences. Petrobras participates in the gender equality programme launched by the federal government's special women's policy agency. In 2010, we adhered to the Women's Empowerment Principles, a UN document listing seven principles giving companies practical guidelines for promoting gender equality in the workplace, in the market and in the community. ◼

From spaghetti ...

by Elizabeth Gasiorowski-Denis

Did you know that ISO has more than 19 400 standards ? A few years ago, if you mentioned standards to just about anyone in the mainstream media, they would dismiss standards as a technical subject only for industry experts. That was then – this is now.

Standards are now more and more seen as practical tools for tackling urgent challenges facing the international community. For confirmation, you only need to look at the "Guest View" column of *ISO Focus+* magazine. CEOs from both private and public sectors regularly cite implementation of ISO International Standards as principal assets for improving their operations.

Take, for instance, the exclusive interview with Maria das Graças Silva Foster, CEO of Petrobras, the 4th largest energy company in the world, in this issue of *ISO Focus+*.

Maria das Graças Silva Foster appreciates ISO standards for supporting the worldwide business operations of Petrobas : "Applying International Standards is of strategic importance to ensure competitiveness in our business since this means that projects, equipment manufacture and construction, assembly and commissioning of new onshore and offshore facilities are in line with international practices, aimed at ensuring quality, operational efficiency and compliance with health, safety and environmental requirements."

ISO 9001 on quality management also brings a great many benefits to the company. Graças Silva emphasizes : "The decision on adopting ISO 9001 was a strategic option aimed at improving our operations, cutting costs and boosting customer satisfaction. Applying ISO 9001 helped increase asset efficiency, improve processes, enhance flexibility and strengthen our commitment to safety and the environment."

... to symphonies

ISO Focus+, the flagship magazine of ISO, strives to make improvements year on year, a lot like the continual improvement principle contained in ISO management standards. *ISO Focus+* provides a one-stop shop for articles on the complete range of ISO standards and their benefits to business, government and society.

We focus on key issues, events and achievements in and around ISO and international standardization and related matters. The purpose is not only to capture the range of ISO standards – beyond ISO's well-known ISO 9001 and ISO 140001 on environmental management – but also to do justice to the broad scope of work of all ISO committees and standards.

The November/December 2012 *ISO Focus+* issue looks at those "unknown" standards, famous only to the industry concerned, but which intrigue, captivate and pique the interest of others..

Did you know, for example, that ISO has standards for spaghetti and for symphony tuning? The Special Report in this issue focuses on "other" ISO standards and their benefits.

Here are the top 10 reasons why you shouldn't miss this issue of *ISO Focus+*.

1. You should *never* miss reading an issue of *ISO Focus+*
2. It's the last issue for the year 2012
3. Your work just might be featured
4. Learn about ISO standards you never suspected existed
5. Discover how a standard for toothbrushes can make you smile
6. Delightful anecdotes and tidbits you won't want to miss
7. Broaden your standards horizon
8. Regale all your friends and acquaintances with your encyclopædic knowledge of standards
9. *ISO Focus+* is fun and the graphics are gorgeous
10. You will never drink a glass of wine the same way again (see **page 16**)! ∎

Elizabeth Gasiorowski-Denis is Editor in Chief, *ISO Focus+*.

Pasta-stic !

How to cook the perfect pasta

by Maria Grazia D'Egidio

As any food lover can testify, pasta can be undercooked, overcooked or just right. Fortunately, by specifying a sensory method for assessing the quality of cooked pasta, an ISO standard brings pasta makers and eaters closer to consistently perfect pasta.

Known to Italian and other Mediterranean civilizations for many centuries, pasta products are now eaten and enjoyed everywhere. Pasta is popular because it is natural, versatile, wholesome, available in a variety of shapes and easily stored for long periods.

Pasta's sensory quality is determined mainly by its behaviour during cooking. This characteristic, known as texture, is important for personal/home uses but is especially so for general production and consumption.

The textural characteristics of a given sample of cooked pasta can be measured by objective methods (chemical or instrumental) or by sensory analysis.

Sensory analysis is nearest to consumers' estimation, and remains the most reliable test because it allows the overall textural characteristics of cooked pasta to be evaluated. Moreover, sensory evaluation is the main reference against which chemical or instrumental method
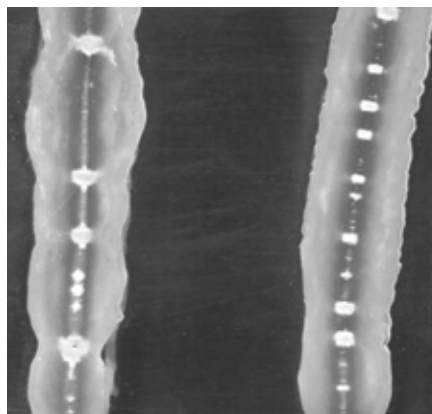
Optimum cooking time (OCT) – the time after which the continuous white line visible at the centre of a pasta strand during cooking disappears.

results should be compared with the aim of accepting, checking or improving any method.

Towards perfect pasta

ISO 7304-2:2008, *Alimentary pasta produced from durum wheat semolina – Estimation of cooking quality by sensory analysis* – Part 2 : *Routine method*, specifies a method for assessing, by sensory analysis, the quality of cooked pasta such as spaghetti and macaroni. This pasta can be produced from durum wheat semolina, common wheat or a common wheat-durum wheat mix, and expressed in terms of its starch release, liveliness and firmness characteristics – its texture.

Sensory evaluation is nearest to consumers' estimation and remains the most reliable test.

The method has been developed to provide a procedure for the evaluation of pasta samples based on the use of reference samples. It gives an estimate of the pasta's quality after it has been cooked for the optimum cooking time.

It is cooking time that influences all textural characteristics. Generally the minimum cooking time (defined also as optimal cooking time) is used, but different times could be used for experimental purposes, such as fixed time or an overcooking time.

In this method some terms are applied, and it is useful to define them :

- **Starch release** – the release of starch from cooked pasta, indicating the state of its surface breakdown

- **Firmness** – cooked pasta's resistance to crushing when it is positioned on the distal phalanx of the index finger and crushed with the tip of the thumb

- **Liveliness** – the ability of one strand of pasta to slide smoothly over another, which depends on the degree of strand-to-strand adhesion ; this applies only to long-cut shape pasta

- **Optimum cooking time (OCT)** – the time after which the continuous white line visible at the centre of a pasta strand during cooking disappears

The long and short of pasta assessment

A sample of pasta is cooked by a standard procedure specified in ISO 7304-2:2008, assessing the starch release, liveliness and firmness. The test sample is then rated in accordance with the results. To do this:

- Weigh 100 g of pasta
- With long, solid strands of pasta, break each strand into two halves (13 ± 2) cm long and eliminate any small bits before weighing
- Place a steel pot containing 1 300 ml of tap water on the hob
- Add pasta to the boiling water
- Cook the pasta for the time determined
- When the pasta is cooked, cool the water by adding 200 ml of cold tap water
- Immediately pour the pasta into the colander and drain gently

Pasta products are now eaten and enjoyed everywhere.

- Put the whole test sample of pasta onto a plate, noting the time
- Leave this pasta on the plate for five minutes

The OCT can be determined before testing by using the same cooking conditions described above, but two minutes before the estimated cooking time. This is usually written on the package by the manufacturer (or, if this is not the case, use a cooking time based on experience with pasta of similar thickness).

With long, solid strands of pasta, remove a strand of pasta and crush it using the crushing plate; with short, hollow strands of pasta, remove a strand of pasta and cut it at right angles to the length with the cutter; and repeat this every 30 seconds until the continuous white line, visible at the centre of the crushed strand or the cut section, disappears.

The pasta's characteristics can be determined by starting the assessment five minutes after putting the pasta on the plate.

> *So, the next time you eat a plate of pasta, think about the ISO standard.*

To assess the pasta's starch release, remove by bare hand the material that covers its surface; then, to evaluate the stickiness produced, put one hand in a cup of cold tap water, remove it, shake off the excess water and wipe the hand dry; and lastly, rub the pasta gently with the palm and finger.

The amount of starch coating the palm and fingers can be estimated using the descriptions in **Figure 1**.

To assess the pasta's firmness, put one hand in a cup of cold tap water, remove it and shake off the excess water, and then wipe the hand dry.

For long strands (spaghetti), place two strands of pasta over the distal phalanx of the index finger and press them with the thumb until both strands are fully crushed; and assess the effort required to fully crush the strands using the descriptions in **Figure 1**.

For short, hollow strands such as macaroni, press one strand of pasta at a point halfway along the strand, between the distal phalanx of the index finger and the thumb

(if this is possible for the type of pasta being analyzed); and again assess the effort required to fully crush the strand, using the descriptions in **Figure 1**.

Drop and enjoy

To assess liveliness (this characteristic is only for long, solid strands of pasta), pick up the pasta with a bare hand and drop it back onto the plate to evaluate the liveliness – the degree of strand-to-strand adhesion – of the strands.

This is done by:

- Putting one hand in a cup of cold tap water, removing it, shaking off the excess water and then wiping the hand dry
- Picking up a handful of pasta from the plate and dropping the pasta back onto the plate
- Assessing the way in which the strands of pasta separate from each other in the hand and how they drop and settle on the plate, using the descriptions in **Figure 1**.

Reference samples are useful in training quality-control assessors. Each assessor is required to be familiar with the evaluation scales given in **Figure 1** and are also used when there are any doubts about the rating which should be given for a particular test sample.

So, the next time you eat a plate of pasta, think about the ISO standard that offers the ingredient of objectivity to the delicate debate on the cooking of pasta which is so dependent on subjective taste: what is nice and firm for one is undercooked for the other, too this or too that… ∎

Liveliness	Starch release	Firmness
100 – very high	100 – very low	100 – very high
80 – high	80 – low	80 – high
60 – medium	60 – medium	60 – medium
40 – low	40 – high	40 – low
< 20 – very low	< 20 – very high	< 20 – very low

Figure 1: *Evaluation scales of sensory analysis parameters.*

About the author

Dr. Maria Grazia D'Egidio has worked in cereals biochemistry and technology since 1974, after graduating in chemistry. Having a particular interest in durum wheat and its derived products, she is involved in related ISO and European Committee for Standardization (CEN) activities. Dr. D'Egidio is author or co-author of more than 360 publications.

Drink up !

How to make the perfect cuppa, and other thirst-quenching drinks

by Maria Lazarte

It's a cold winter's morning, and you fancy a cup of tea. But not just any cup, you want it absolutely perfect. So as you approach the kitchen, you think hard about the big debate : do you pour the milk before or after ? Believe it or not, ISO has the answer.

It is no exaggeration to say that ISO standards are almost everywhere you look, even in the most unexpected places, offering solutions to problems, both big and small. From the quality of medical devices, to the fire safety of spacecraft to, yes, a standard for making a proper cup of tea !

Known as ISO 3103:1980, *Tea – Preparation of liquor for use in sensory tests*, the standard has attracted attention. In 1999, British Standard BS 6008 – which is identical to ISO 3103 – received the Ig Nobel Prize for Literature. These awards are a well-recognized American parody of the Nobel Prizes, which celebrate the unusual, honour the imaginative, and spur people's interest in science.

So why did ISO publish what appears to be such a surprising standard ? ISO 3103 is intended for use in sensory analysis, a way of investigating consumer products using sight, smell, taste, touch and hearing. If you are testing a particular tea in laboratories around the world, results may vary depending on how much water you add, how long you leave it to settle, and so on. So although it may not seem like a big problem on the grand scale of things, it is crucial for the tea industry. ISO 3103 makes sure that sensory tests of tea samples around the world are comparable.

And this is no small feat if you consider that the production of tea grew by over 800 million tonnes in the last decade to 3.8 billion tonnes in 2008. This is equivalent to over 1 000 billion cups of tea consumed per year ! Combined tea drinking markets are estimated at USD 70 billion annually, playing an important role in the economy, key for over 30 tea-producing countries [1].

> *According to ISO 3103, you must pour your tea into the cup after the milk.*

Which is why ISO technical committee ISO/TC 34, *Food products*, subcommittee SC 8, *Tea*, has developed nearly 30 standards, such as ISO 3720:2011, *Black tea – Definition and basic requirements*, recently updated to reflect criteria for minimum polyphenol content, important for a healthy diet.

1) "Time for tea – A cup full of science and health" *ISO Focus+*, October 2011.

Pouring milk

But the fact that ISO 3103 is an industry standard does not mean that we cannot get a few tips out of it. So here is the answer to the big "milk" debate.

According to ISO 3103, you must pour your tea into the cup *after* the milk to avoid scalding the milk, unless this procedure is contrary to the normal practice in the organization concerned. A recent study from the Royal Society of Chemistry confirms this order. At high temperatures, milk proteins begin to unfold and link together in clumps, so it is better for the chilled milk at the bottom to cool the tea, than for the hot tea to scald the milk.

ISO 3103 concludes that while adding milk is not essential, it can help to accentuate differences in flavour and colour.

ISO 3103's recipe for tea

Preparation without milk :

• Fill the pot containing the tea with freshly boiling water' to within 4 to 6 mm of the brim and put on the lid

• Allow the tea to brew for 6 minutes

• Holding the lid in place so that the infused leaf is held back, pour the liquid through the serrations into the bowl

• Remove and invert the lid, transfer the infused leaf to it

• Place the inverted lid on the empty pot to allow the infused leaf to be inspected

Preparation with milk :

• Pour milk free from any off-flavour into the bowl

• Prepare the liquor as described above but pour it into the bowl after the milk, in order to avoid scalding the milk

Coffee break

We cannot talk about tea, without also mentioning coffee. By now, you may not be surprised to discover that there is also a subcommittee developing standards for this popular beverage, ISO/TC 34/SC 15, *Coffee*. But how does this affect you ? Imagine that you are making a cup of instant coffee. The label claims that it is " 100 % pure soluble coffee ", so you expect to not find anything else inside. But as this popular product, like many others today, globetrots throughout the supply chain, how can we avoid incorrect and misleading declarations and counterfeits ?

That is the job of ISO 24114:2011, *Instant coffee – Criteria for authenticity*. The standard outlines specifications to assess the purity and quality of soluble coffee powder, providing a tool to detect possible adulterations. Not only do incorrect declarations deceive consumers, they result in unfair competition between manufacturers. ISO 24114 can be used to verify declarations, and strengthen mutual confidence throughout the coffee chain.

ISO 6668 specifies a method for roasting, grinding, and preparing coffee.

SC 15 has published some 25 coffee standards that cover issues such as size analysis, determination of defects, sampling, storage and caffeine content to name a few.

And if you were wondering whether there is a standard for making the perfect cup, ISO 6668:2008, *Green coffee – Preparation of samples for use in sensory analysis*, specifies a method for roasting, grinding, and preparing the beverage. According to the standard " The sensory analysis carried out following this preparation may be used to determine the acceptance or rejection of a shipment of coffee."

And here is a handy coffee making tip direct from ISO 6668, " Warming the cup whilst boiling the water can be desirable or necessary to minimize cooling of the boiled water."

Wine tasting

Tea and coffee are very nice, but many will agree that wine is even better. So you

will be interested to hear that a number of standards exist for vine cultivation and wine making developed by ISO/TC 23, *Tractors and machinery for agriculture and forestry*.

But the one that strikes people as more unusual is another ISO/TC 34 standard, which specifies the shape of a wine tasting glass, ISO 3591:1977, *Sensory analysis – Apparatus – Wine-tasting glass* (see article).

Why do we need this standard? Professional wine tasting is conducted systematically under strict conditions, including identical glasses. Wine experts agree that the shape of a wine glass is key to its evaluation and for determining its aroma. For example, ISO 3591 specifies that the opening of the cup be narrower than the convex part so as to concentrate the bouquet. So when you go wine tasting, do not forget to ask for the ISO glass!

No problem is considered too unusual or trivial to warrant a standard.

Talking about glasses, here is another interesting case, ISO 16657:2006, *Sensory analysis – Apparatus – Olive oil tasting glass*. The standard specifies the characteristics of a glass to be used when examining the odour, taste and flavour of virgin olive oils, for the classification of such oils.

According to the standard, this glass is:

- Steady, so as to avoid spilling the oil
- Fits perfectly with the heating unit for best results
- Has a narrow mouth to concentrate odours
- And because it is not intended to assess colour, is dark to eliminate taster prejudice or bias

So next time you drink up, take a second to consider the numerous ISO standards that behind the scenes play a part in getting you the perfect beverage. The list goes on, from standards for milk, to standards for bottle tolerances; the beverage world of ISO is larger than you think. No problem is considered too unusual or trivial to warrant a standard, if the market requires it. For after all, everyday problems and their solutions were at the very root of why ISO was created in the first place. ∎

Maria Lazarte is Assistant Editor, *ISO Focus+*.

Is your Irish coffee up to standard?

Legend tells that Irish coffee was invented one miserable winter evening of the 1940s, when tired American passengers disembarked at Foynes port, the precursor to Shannon International Airport in Ireland. Joe Sheridan, a head chef at Foynes, served coffee with whiskey to warm the passengers who, when they asked what it was, got the answer: Irish coffee.

Since then, the drink which includes whiskey, coffee, cream and sugar as basic ingredients, has travelled the world, and become hugely popular. To ensure the integrity of this Irish invention, the National Standards Authority of Ireland, ISO member for the country, published Irish Standard I.S. 417:1988, *Specification for Irish Coffee*, outlining:

- The ingredients to be used in Irish Coffee
- The minimum quantity of Irish Whiskey
- The recommended depth of cream to be used as topping
- The quality of the cream
- The minimum temperature of the coffee
- Requirements for Irish Coffee pre-mix products

The standard warns, "Shortcomings in either the quality or quantity of the ingredients or in the method of preparation can have undesirable effects on the resultant beverage."

Don't wait, grab your copy now!

Cheers !

Wine lovers could soon be toasting a new standard glass

by Gustavo Precedo

When a wine taster tries the same wine in different glasses, it quickly becomes apparent that the shape and dimensions of the glass affect the perception of wine quality. Therefore, how do we know that we are using the best type of wine glass?

Although no single wine glass can be used for all wines, ISO 3591:1977, *Sensory analysis – Apparatus – Wine-tasting glass*, comes very close (see **Figure 1**). This standardized glass, plus the tasting exercise, free us from any wine-glass pairing concerns and enable us to focus on the wine in question. Now, after serving wine tasters well for 35 years, this glass is ripe for improvement.

> *This glass, plus the tasting exercise, enables us to focus on the wine.*

Effects on taste

So, what exactly are the secrets of the ISO tasting glass?

- **Amplifies wine intensity** – the glass cannot generate more aromatic molecules, but it can concentrate them in the headspace (the air at the wine filling line)
- **Highlights wine quality by "magnifying" possible defects** – many defects are in the "subtle aromas" concentrated in the upper headspace, allowing their quick identification
- **Reveals the wine's flavour intensity** – and the resulting impact on our sensory systems (taste, tactile and trigeminal)

Aroma intensity and profile

Temperature directly affects the flavour of the wine. It does this by influencing perceived olfactory-gustatory and tactile sensations. In addition, oxygen in the air regulates the quality of the aromas in the glass, as well as the sensation of olfactory-gustatory pleasure.

Once in the glass, the wine releases aromatic molecules which diffuse into the headspace. The speed of this movement depends on:

- **Dimensions of the glass**
- **Filling level** – this determines the contact surface between the liquid and gas phase, the height of the headspace and the integration of different aromas. Although a larger free surface increases the number of molecules passing into the vapour state, the smaller headspace reduces aroma integration
- **Temperature** – warmer wine increases the number of molecules reaching the gas phase
- **Alcohol** – a higher alcohol content increases evaporation

Types of aromas and their distribution

The most popular aromas rating is one that is associated with their time of generation: primary, secondary and tertiary.

When the wine is poured into the glass, these kinds of aromas are spread in the headspace, grouped according to their volatility, and measured by the evaporation coefficient with a scale of 1 to 100.

Primary aromas or varietals

These lighter molecules on the top of the glass remind the taster of flowers, fruits and sometimes vegetables. They come from the grape and are closely related to the grapevine variety. Generally they are the most volatile molecules (evaporation coefficient from 1 to 14).

Secondary or fermentation aromas

Located in the middle of the cup and linked to alcoholic and malolactic fermentation, their evaporation coefficient ranges from 15 to 60.

Tertiary (bouquet) or ageing aromas

These come particularly from the heavier molecules in the lower part of the headspace, against the surface of the wine. The less volatile molecules have evaporation coefficients ranging from 61 to 100.

The three aromas can be integrated by gently shaking the glass.

The criterion used to increase the number of aromatic molecules into the headspace is the reduction in the aromas' output speed in the mouth of the glass. This is evident with the smell of the tasting glass.
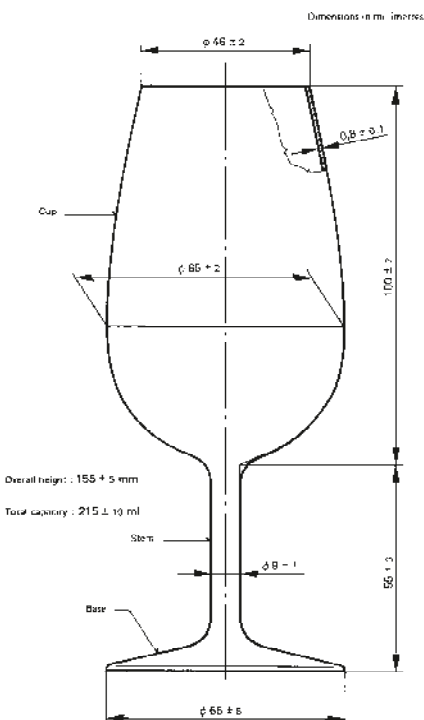
The universe of wine

" For me, each glass is a different type of telescope. Depending on the telescope characteristics, you can 'see' the Milky Way or a single star.

"The image, the set of characteristics and the harmony of thousands of stars, or one star with all its brightness and highlights, depends on the moment and the type of wine you like to enjoy and/or study.

"It is only by means of a well-designed 'telescope' that we are able to perceive the actual magnitude of the universe. That telescope is the tasting glass."

Author : Hubert Weber, Master in Œnology

The shape and volume of the headspace are designed to achieve full perception of aromas (profile) in all their intensity. This perception is enhanced by the curved walls of the body of the glass, which concentrate the smells in the gap and therefore towards the nose. In fact, the inwards curved shapes of the glass body delay the output of the aromas.

Ripe for improvement

ISO 3591:1977 has not needed improvement over time. The standard glass has performed well for wine tasting and can also be used to evaluate spirits such as whisky, cognac and vodka.

However, the use of the wine glass in the dairy industry has drawn my attention to likely improvements :

- **Volumetric marking** – the volume of wine to be assessed generally ranges from 30 ml to 50 ml. While these are standardized values, the sample shall be presented in a specific volume, the same for each assessor, in intensity-time tests. As a result, in a revised standard, the glass could be marked in sequence from 10 ml to 50 ml
- **Glass thickness uniformity** – in the standard, the cup has the same thickness all over its body (see **Figure 1**). In practice the junction between the

cup and the stem cannot be the same thickness, which needs to be recognized in a revised standard

Can an ISO glass enhance the taste of the wine ? I'm pretty sure that the ISO glass can't make a bad wine good, but it can make a good wine more enjoyable. ■

About the author

Gustavo Precedo is a wine sensory analysis expert based in Argentina. With over 20 years' experience in wine sensory evaluation, Mr. Precedo is an assessor in sensory analysis panels on food at the Agriculture School of Buenos Aires national university and teaches at several cooking schools and wine clubs. He has written three books on wine sensory evaluation *Argentine Wine & Vineyard* (2000), *Wine tasting guide 'Gato Dumas'* (2004), and *Tasting Argentine Wines* (2008) and was a judge in the Mercoláctea exposition for many years. Mr. Precedo is a member of the sensory analysis technical subcommittee of IRAM, ISO member for Argentina.

Figure 1 :
Form and dimensions of the ISO tasting glass.

The ISO toothbrush
Keeping the tooth fairy at bay

by Derek W. Jones

Did you know that the quality of your smile and your oral health is facilitated by International Standards? As billions worldwide brush their teeth each day, few are aware of, or have even give thought to, the four International Standards for toothbrushes.

Can you imagine cleaning your teeth by chewing sticks (tree twigs), the feathers of birds, porcupine quills or animal bones? Yet these items were all used before the invention of the modern toothbrush.

That was then, this is now

The earliest description of a primitive toothbrush comes from China, dating back to 1600 BC. It consisted of a twig with a frayed end. The first bristle toothbrush was also invented in China during the Tang Dynasty (619-907) and used hog hair bristle. It was in England that the first mass produced toothbrush was developed 232 years ago. It is very unlikely that these early devices would have complied with ISO standards.

Modern toothbrushes are usually made from synthetic fibers, although animal bristles are still sometimes used. As more consumers become concerned about the health of their teeth, toothbrush companies are focusing on satisfying their needs by offering a larger selection of products.

Testing toothbrushes

Toothbrushes come in all colours, and claim different properties, but how can we make sure that they will perform and not break or fall apart during normal use?

Four International Standards exist for toothbrushes.

Manual toothbrushes should not break or lose bristles while you brush your teeth. This will not happen to brushes that have passed the tests specified in ISO 20126:2012, *Dentistry – Manual toothbrushes – General requirements and test methods*.

ISO 20126 outlines pass-fail criteria, physical inspection guidelines, fatigue resistance, chemical challenge, and handle strength requirements and tests, as well as

marking, labelling, and packaging guidelines for manual toothbrushes.

For example, ISO 20126 states that packaging will neither contaminate nor permit contamination of the toothbrush. If a manufacturer recommends sterilization of their toothbrush, the product must still meet all of the requirements of the standard after sterilization.

This 2012 version of the standard introduces a new requirement and test to determine the impact resistance of toothbrush handles.

How important is the flexibility of a toothbrush tuft? ISO 22254:2005, *Dentistry – Manual toothbrushes – Resistance of tufted portion to deflection*, specifies a test method for determining the resistance to deflection of the tufted portion of manual toothbrushes. It is applicable to toothbrushes having a conventional flat trim design.

And what about electric toothbrushes? ISO 20127:2005, *Dentistry – Powered toothbrushes – General requirements and test methods*, looks at the physical properties in order to promote the safety of these products for their intended use.

Another standard focuses on small brushes for cleaning between teeth, and, in so doing, facilitating the cleansing of hard-to-reach areas of the mouth. ISO 16409:2006, *Dentistry – Oral hygiene products – Manual interdental brushes*, specifies the requirements and test methods for performance criteria. It also specifies the accompanying information, such as the manufacturer's instructions for use and package labelling.

Meeting consumer needs

Toothbrush companies have made numerous functional and aesthetic changes to the heads and bodies of their products. Some toothbrushes have an indicator displaying the date at which the toothbrush should be changed; others have thicker and longer handles for a more comfortable grip and extended reach.

Shaft materials have also evolved, incorporating translucent and more flexible plastics in the handle, and rubber components fashioned into thumb ridges to help prevent slippage. Changes in consumer preferences for products designed to care for the teeth and gums, as well as attitudes towards oral healthcare, have brought about greater personal responsibility and emphasis on preventive care.

Toothbrushes are as important as toothpaste for effective oral hygiene. The primary role of a toothbrush is not just to get rid of food particles, but to remove plaque and to stimulate gums. These functions can best be performed using a toothbrush that complies with the appropriate ISO standard.

Appropriate dental care starts with the use of a suitable toothbrush.

Assuming four billion individuals purchase only one manual toothbrush a year at USD 5, this would represent a market of some USD 20 billion. However, in many developed countries, the prevalence of use of a powered toothbrush is probably above 50 %. The price of electric toothbrushes can range from USD 20 to over USD 100. Replacing the brush head for electric toothbrushes costs some USD 5-10/year. Clearly, the world toothbrush market is very large and competitive. It is important that consumers ensure that their toothbrush conforms to an ISO standard.

The oral care standards were developed by ISO technical committee ISO/TC 106, *Dentistry*, subcommittee SC 7, *Oral care products*. In addition to toothbrushes, the committee has developed standards for toothpaste (ISO 11609:2010, *Dentistry – Dentifrices – Requirements, test methods and marking*), oral rinses (ISO 16408:2004, *Dentistry – Oral hygiene products – Oral rinses*), dental floss (ISO 28158:2010, *Dentistry – Integrated dental floss and handles*) and dental bleaching products (ISO 28399:2011, *Dentistry – Products for external tooth bleaching*). ∎

About the author

Derek W. Jones, BSc, PhD, DO,h.c Umeå, CChem, FRSC, FIM, FBSE, is Chair of ISO/TC 106, *Dentistry*, and has been involved with standards development since 1971. He is currently Professor Emeritus of Biomaterials, Dalhousie University, Canada.

Pump up the Volume

Assessing loudness and hearing sensitivity

by Kenji Kurakata and Einar Laukli

People have different hearing sensitivity. Some, who have extremely acute sensitivity, can hear subtle sounds whereas others cannot hear them at all. Ageing, illness and exposure to intensive noise affect human auditory functions. Even among young people with apparently "normal" hearing ability, there is a great variation in sensitivity.

This variation is as natural as people's differences in height and weight. Consequently, deviation from the average, as long as it is not too extreme, is not regarded as a problem.

Such individual differences in hearing sensitivity occasionally cause noise problems. For example, some users of consumer products or office equipment can be annoyed by a faint sound from a machine. People may also be troubled by any small sound intruding from the outside into their living environment.

Worryingly, people's complaints on this subject are often not properly understood and resolved.

Hearing threshold

The hearing threshold level specified in ISO 226:2003, *Acoustics – Normal equal-loudness-level contours*, has been used in noise evaluation as a criterion for judging sound audibility. The hearing threshold is the boundary at which a sound is perceived as audible or not. A sound component of a level that is lower than the threshold level is generally regarded as inaudible.

It is noteworthy, however, that the thresholds specified in ISO 226 are "average" values: medians obtained from groups of young people with normal hearing. The threshold does not designate an absolute limit of hearing. In fact, half of all people have a threshold that is lower than the normative value in the standard.

It is, therefore, no wonder that a frequency component in noise, the level of which is lower than the threshold by a few decibels, is detected by some people and that it causes a noise disturbance. Because this fact has not been widely known or correctly understood, product designers and practitioners engaging in noise evaluation have been at a loss when they encounter such cases.

Threshold distribution

ISO 28961:2012, *Acoustics – Statistical distribution of hearing thresholds of otologically normal persons in the age range from 18 years to 25 years under free-field listening conditions*, was developed to resolve this confusion and inconvenience. This International Standard describes the threshold distribution of otologically normal persons, as a function of frequency.

"Otologically normal" in this context means a state of health free from all signs or symptoms of ear disease, obstructing wax in the ear canal, a history of undue exposure to noise, exposure to potentially oxotoxic drugs, or familial hearing loss.

Fractions of threshold distribution around the median values of ISO 226 are calculable using simple equations and numerical tables. The calculation can be done for nearly the entire range of audible frequencies of 20 Hz to 16 000 Hz. Consulting this standard, the reader can estimate, for instance, the sound level of 1 000 Hz tone at which only one in 10 people with acute hearing can hear.

Irregular sound

Not all sound is created equal. This is why ISO published ISO 7779:2010, *Acoustics – Measurement of airborne noise emitted by information technology and telecommunications equipment*, which provides design criteria for the noise emission of machines. The standard uses the threshold distribution for evaluating prominent discrete tones in the sound.

For example, when the machine noise under testing emits sound lower than the first percentile of threshold distribution, the tone is regarded as inaudible. A statement such as "no audible discrete tones" or "no prominent discrete tones" may be included in the test report.

Attenuating the irregular sound to an inaudible level might be technically possible, but it can be costly. Product designers might want to know the degree to which the noise must be reduced to produce a quiet machine.

Role in audiology

Another application field of ISO 28961 is audiology. For example, one can use the standard to estimate the hearing thresholds at which 90 % of the population are expected to fall. This range can serve as a reference for diagnosing whether the hearing sensitivity of a person is normal or not.

Standards describe values, dimensions and other characteristics of products. These must be specified unambiguously, and as accurately as possible. A wide tolerance of dimensions and uncertainty of measurement are not desirable.

In contrast, human-oriented standards such as ISO 28961 examine the variation that exists inherently among people. Variation, in addition to central values such as an arithmetic mean, is necessary to show the profile of the target population accurately.

ISO 226 remains one of the best-known standards of all.

It is important to remember that non-standard aspects of human characteristics can be an important part of the standard.

The best-known acoustics standard

High-fidelity audio system components such as amplifiers and loudspeakers are required to have a flat frequency-response characteristic. They must be able to transmit and produce every sound signal equally irrespective of the frequency. In contrast, the frequency response of the human auditory system is not flat at all. It is dull to sounds with a low or very high frequency and is most sensitive to tones of around 3 000 Hz.

ISO 226 describes the equal-loudness-level contours, which are the sound pressure levels of pure tone that we perceive as equally loud, irrespective of the difference in the tone frequency. The lowest one of this contour family is the hearing threshold curve, at which the loudness of tone approaches zero.

Although ISO 226 was revised in 2003 with the latest measurement data, the standard has been around for a long time. The contours, which show basic characteristics of our hearing, are mentioned in almost every textbook on acoustics and hearing sciences. With its long history, ISO 226 remains one of the best-known standards of all. ■

About the authors

Prof. Einar Laukli holds an MSc in acoustics from the Norwegian Institute of Technology and has a PhD from the University of Tromsø. His main interest is auditory electrophysiology. For several years, Prof. Laukli served as Convenor of technical committee ISO/TC 43, *Acoustics*, working group WG 1, *Threshold of hearing*.

Dr. Kenji Kurakata is Leader of the Accessible Design Group at the Human Technology Research Institute of the National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan. He is an expert on ISO technical committee ISO/TC 43, *Acoustics*, working group WG 1, *Threshold of hearing*. He is also Secretary of ISO technical committee ISO/TC 159, *Ergonomics*, WG 2, *Ergonomics for people with special requirements*, and Convenor of accessibility-related working groups in ISO/TC 159.

Heard that ?

Improving acoustics from the concert hall to the office

by Jens Holger Rindel

Whether listening to a concert, or working in an open plan office, getting the acoustics right is important. The ISO 3382 series on *Acoustics – Measurement of room acoustic parameters*, is raising acoustic standards in performance spaces, open plan offices and other types of room.

The scientific approach to acoustics in rooms started in the 1890s, when Wallace C. Sabine, a young physics professor at Harvard University, established the concept of reverberation time.

Getting the acoustics right is important.

The first International Standard in this area, ISO 3382:1975, *Acoustics – Measurement of reverberation time in auditoria*, specified the measurement technique as applied to concert halls.

Acoustic science has continued to develop, and today, ISO 3382 consists of three parts covering performance spaces, ordinary rooms and open plan offices.

Sabine's acoustics

Sabine defined reverberation time, as the time for a decay of 60 decibels (dB) after a stationary sound source has been stopped.

However, around the year 1900 there were no microphones or other electronic devices that could be used for measurements. The telegraphone, the first device for electromagnetic recording of sound, had recently been invented by the Danish engineer Valdemar Poulsen (patented 1898), but this was not used for acoustic measurements until the 1930s by Vilhelm Lassen Jordan at the Technical University of Denmark.

To measure the reverberation time of a room, Sabine used a method with a stopwatch and four identical sets or organ pipes (see **Figure 1**). Relying on his own ears, he measured the time from when the organ pipes were turned off to the moment the sound became inaudible. Repeating this with four organ pipes instead of one, Sabine could derive the time difference that would represent a decay of 6 dB (i.e. exactly 1/10 of the reverberation time that represents a decay of 60 dB).

The first step

ISO 3382:1975 stated, "At present, several methods exist for the measurement of reverberation time and there are some new ideas in this field. Each of these methods may give a different result for the same auditorium. The first step is to standardize a widely used method so that it is possible to compare the data obtained by this one method."

Although a loudspeaker is the preferred sound source, other possible ones are mentioned: a pistol shot or, in churches and concert halls, an organ.

An orchestra may also be used: "Fortissimo passages of musical compositions followed by adequately long pauses are suitable." Beethoven's Coriolan Ouverture is often used for acoustical measurements as it has suitable interrupted chords at the start.

During the following decades, the technique for sound measurements developed, microphones and loudspeakers were used and the so-called level recorder became the preferred device for measuring reverberation
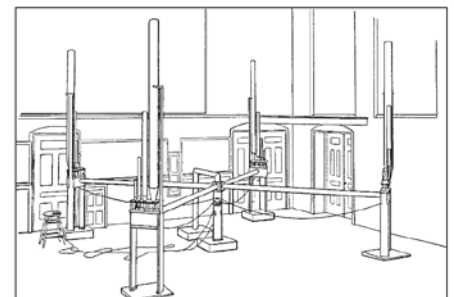

Figure 1 : *Sabine's setup for measuring reverberation time using four sets of organ pipes. (Ref. W. C. Sabine, 1922.* Collected Papers on Acoustics*, Harvard University Press, 1922 [reprint by Dover Publications, New York 1964]).*

time. The level recorder had a pen that could draw a graph of the sound pressure level in dB on a long strip of paper, moving with a well-defined speed. Thus, when the sound source in a room was stopped, the slope of the decaying curve was used to calculate the reverberation time (see **Figure 2**).

The shortcomings of the first standard soon became apparent. For example, an impulse source, such as a pistol shot, does not give the same results as an interrupted, stationary sound source such as a loudspeaker.

Making it better

In 1997, ISO 3382 was updated to resolve incomparable measurement methods. The direct analysis of a pistol shot or other

New concert hall in Copenhagen (2009). Architect : Jean Nouvel.

Room acoustic parameters

Listening to music in a hall is a multi-dimensional perception. To characterize the acoustical quality of an auditorium, reverberation time must be joined by other parameters and several are defined in ISO 3382-1:2009, *Acoustics – Measurement of room acoustic parameters – Part 1 : Performance spaces*.

For the listener in the audience, the five sound parameters are :

• Subjective level of sound (neither too high nor too low)

• Perceived reverberance (neither too dry nor too reverberant)

• Perceived clarity (the preferred value varies from high for speech to low for choir and organ music)

• Apparent source width (sound reflections from the side walls contribute to an audio perception that the sound comes from a wide source, not from a point)

• Listener envelopment (the feeling of being embedded in sound)

For the musicians on stage, two other parameters are :

• Ensemble conditions (how well the musicians can hear each other)

• Perceived reverberance (how well the musician can hear the room's response to his/her instrument)

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impulse sources was abandoned ; instead the integrated impulse response method was established as equivalent to the traditional method of interrupted noise.

As in the first edition of the standard, this second edition focused on auditoria and, in particular, concert halls for classical music.

New annexes define a number of room acoustic parameters to describe the listening conditions in an auditorium. The idea is that reverberation time, though important as an overall descriptor of the acoustics of a room, is not sufficient to describe acoustic quality. Listening to music in a hall is a multi-dimensional perception (see **Box**).

The room acoustic parameters in ISO 3382:1997 have created a common reference that allows comparison of data measured around the world.

The standard has also established a solid basis for discussion among researchers in the field. This has been demonstrated by international conferences in acoustics, in which special sessions have been devoted to the ISO 3382 parameters.

New measurement techniques

New measurement techniques have been recently developed to save time and improve the accuracy of reverberation time measurements. ISO 18233:2006, *Acoustics – Application of new measurement methods in building*

and room acoustics, describes two such methods using advanced digital signal processing to derive the room impulse response.

The maximum length sequence method (MLS) uses pseudo-random noise combined with autocorrelation technique.

Today, we have a three-part ISO standard covering ordinary rooms, performance spaces and open plan offices.

The second method uses a sine-sweep, that is, a sine tone slowly changing the frequency from very low to very high, combined with a so-called de-convolution to derive the room impulse response.

Other fields of application

Reverberation time is widely used in a variety of rooms, not just auditoria. These include classrooms, meeting rooms, restaurants, sports halls, industrial halls, railway stations and airport terminals.

In addition, reverberation time has to be measured in connection with several other acoustic measurements, such as sound insulation between two rooms. In this case, the

New open plan office in Oslo (2008).

reverberation time is used as a correction to ensure that the sound insulation is measured independently of the acoustic condition of the receiving room.

It was, therefore, unsatisfactory that the existing standard for measuring reverberation time was devoted to concert halls. Source positions and microphone positions, for example, were described in terms of the stage and seats in the audience area.

For this reason, it was decided to divide ISO 3382 into two parts :

- Part 1 on performance spaces (2009)
- Part 2 on reverberation time in ordinary rooms (2008)

Open plan offices

This could have been the end of the story, had it not been for open plan or open space offices becoming increasingly more common. There can be severe acoustic problems in open plan offices. Several research projects in this field have shown that reverberation time is not a sufficient descriptor of the acoustic properties in these rooms.

The most important parameters are the amount of sound absorption material, the possible use of screens between work stations, the level of background noise and speech and, more generally, the seating plan.

Listening to music in a hall is a multi-dimensional perception.

Following this, ISO 3382-3:2012, *Acoustics – Measurement of room acoustic parameters* – Part 3 : *Open plan offices*, introduces some completely different acoustic parameters, spatial decay rate of noise with a typical speech spectrum as a measure of the sound propagation in the room and speech intelligibility as a function of distance.

From the second of these, two simple measures can be derived : the privacy distance and the distraction distance. The former is the distance from a source in which speech is not intelligible due to attenuation and background noise ; and the latter is the distance as which speech is only partly intelligible, but mostly contributes to background noise.

This recently published standard with new acoustical parameters may form a common basis for the research and development of better designed open plan offices. As we have seen in previous decades in relation to concert halls, it can be an important step forward to have measuring methods and parameters that are well defined, and allow comparison of data from different researchers and different cases.

The Euronoise international conference in June 2012 featured a session on the design of open plan offices, where delegates discussed the results of using the new ISO 3382-3.

It is hoped ISO 3382-3 will contribute to an improved understanding of problems in open plan offices, leading to better designs in the future.

World-class acoustics

Many recently built concert halls now claim to have " world-class acoustics ". Although this may not be entirely true in all cases, it seems that new halls generally have much better acoustics than before. ISO 3382 has helped to achieve this, in combination with improved prediction tools. ∎

About the author

Dr. Jens Holger Rindel is a senior consultant in Multiconsult A/S Norway, senior researcher in Odeon A/S Denmark and former professor in acoustics at the Technical University of Denmark. Dr. Rindel has been Convenor of ISO technical committee ISO/TC 43, *Acoustics*, subcommittee SC 2, *Building acoustics*, working group WG 19, *Measurement of reverberation time in rooms*, ISO/TC 43/SC 2/WG 24, *Application of new measuring methods in building acoustics* ; and ISO/TC 43/SC 2/WG 25, *Measurement of the random-incidence scattering coefficient of surfaces*.
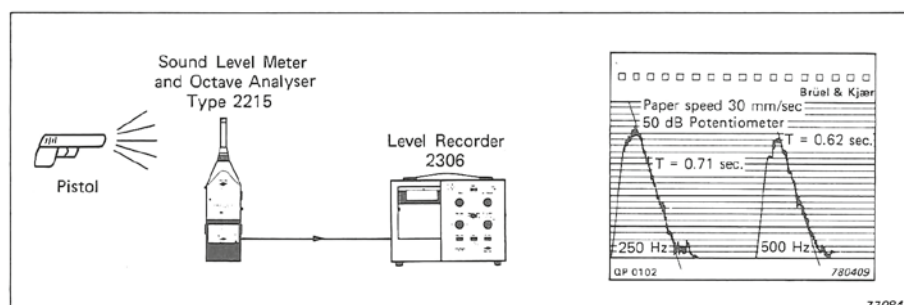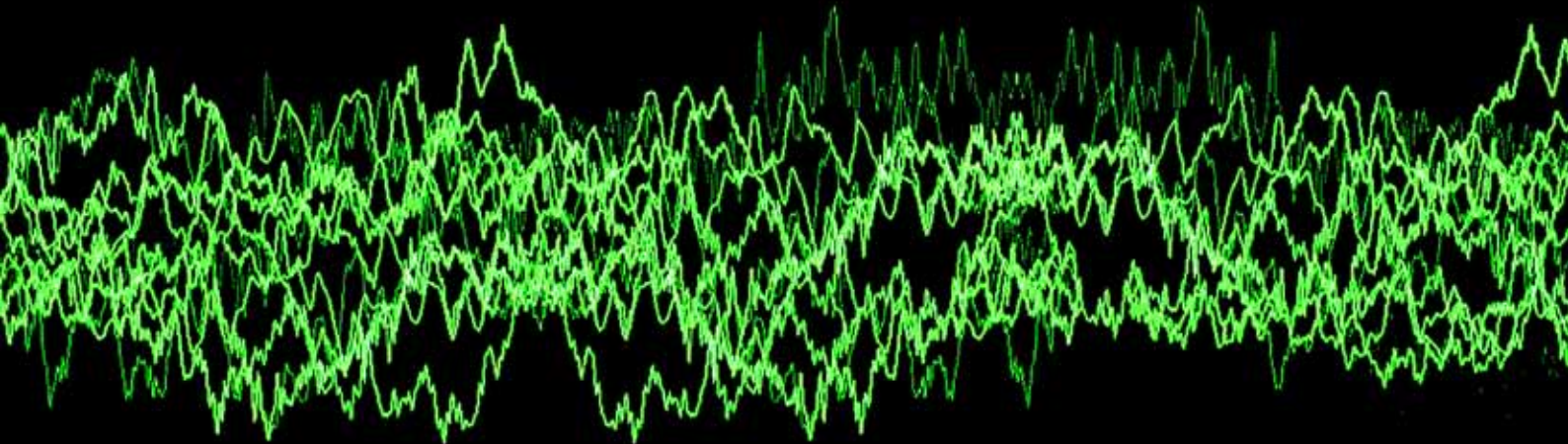

Figure 2 : *Portable setup for measuring reverberation time using a pistol shot and level recorder [Ref. K.B. Ginn (1978).* Architectural Acoustics*, Brüel & Kjær, Denmark].*

Tune in to ISO 16 !
The long and oscillating history of standard tuning frequency

by Tor Halmrast

The theories of tuning musical instruments have been discussed since Pythagoras. However, these early discussions included only the relative frequencies, called intervals.

Even after the western world simplified tuning into the strict system of semitones of equal size, as in Bach's *Das Wohltemperierte Klavier*, there was no decision regarding reference tuning frequency.

In the long and "oscillating" history of tuning frequency, the first question was : what tone ("chroma") should be used for such standardization ? Of course "A" had an advantage, from the alphabetic structure of the tonal names (somewhat disguised by the mid-European/German misspelling of H for B), and for its position in the middle of the common ♭-clef, and thus in the middle of the tonal range ("ambitus") of most melodic instruments.

The middle "C" has been a challenger, but the middle "A" (A4) has been the most common tone for tuning instruments.

In Europe, the reference pitch has fluctuated some five to six semitones over the past 400 years. Haynes spends 560 pages including 36 graphs on the many sidetracks in the history of "A".

Figure 1 shows a smaller selection of found tuning frequencies from 1350 to today. This is adapted from Ellis, and some

of the data have been questioned. It looks like someone has fired a shotgun, although some trends in the "inflation" of frequencies might be seen towards 1900.

String instruments are rather easily tuned to +/- a whole tone, somewhat depending on the material used for the strings and the neck. String instruments tended to be tuned rather high, to give a louder and broader sound.

Wind instruments also have tuning flexibility, but to a lesser degree than string instruments. Between 1300 and 1400, the tuning frequency often changed from occasion to occasion, and from city to city. The lack of standardization of tuning frequency became clear when keyboard instruments such as the clavichord, harpsichord, forte-piano and, most of all, the organ were played together with woodwind instruments.
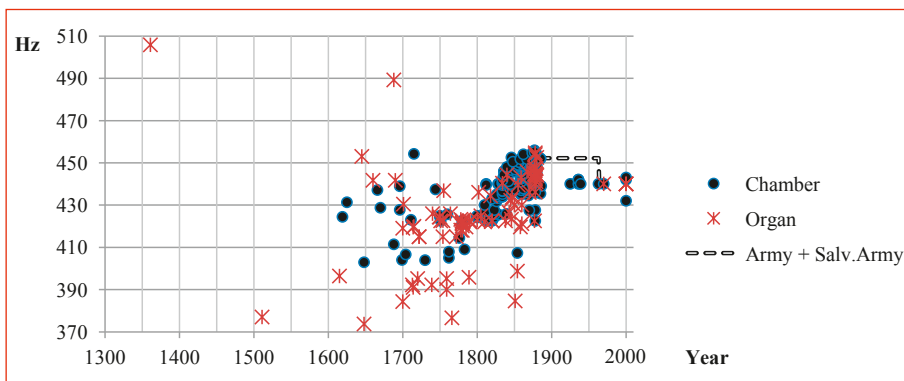

Figure 1 : *Tuning frequencies from 1350 to 2000.*

Almost all the findings from before 1700 in **Figure 1** are taken from church organs/pipes. We see that the spread is so huge that they could be called transposing instruments. The difference between organs in the same city could be up to five semitones.

One argument for tuning church organs rather low is that it is relatively easy to cut the length or hammer the pipes inwards to raise the frequency, while it is not as easy to lower the frequency. An argument for tuning organs high is, of course, that the pipes will be shorter/cheaper and need less space.

One of the first pitches mentioned as some kind of standard was the *mezzo punto* in Venice, Italy, around 1550, and *tutto punto*, which actually was 440 Hz, like our ISO standard today. In the 18th century, we might, with the danger of simplifying, put the tuning frequencies into the following groups:

- Cornet-thon 465 (A_{+1} 435-479)
- Chor-thon 440 (A_{+0} 428-452)
- Cammer-thon 415 (A_{-1} 409-427)
- Opera-thon 390 (A_{-2} 384-397)

The brackets indicate the regions for approximate pitch levels used by Haynes. The ratios between the main numbers for the different tunings indicate that the tunings are close to semitones apart, and skilled organists transposed "on site".

The tuning fork and the oboe

The first standard tuning fork was made by John Shore in 1711 and had a frequency of A4 = 423.5 Hz. Of course Heinrich Hertz himself knew nothing about this, as he was born in 1857, but some tuning forks from those days have been found.

Why use a fork? It is not even harmonic! Luckily, the frequency of the first overtone is way above the fundamental, about 6.25 times, and it is rather weak, so most of the energy goes to the fundamental.

The main reason for using a fork is that it is stable and solid. In its principal mode, the prongs move of phase so the audience will not hear it. The handle of the fork moves up and down, so it can be held without dampening the vibrations severely. This up/down movement also makes it possible to place the end of the handle on a resonating table or a box, to amplify the sound. Alternatively, the end of the handle can be placed on the mastoid bone behind the ear, enabling structure-born vibrations to be transmitted directly into the inner ear. (In this way, an audiologist can diagnose any mechanical or neural hearing loss.)

The choice of the oboe as the source when tuning an orchestra is not obvious. It is not an almost "pure sine" source like the fork, but it is actually easier to judge the pitch of such a tone richer in overtones. The fact that the oboe itself is quite hard to intonate is a disadvantage. The choice may be more down to tradition, as the "hautboy" was the first wind instrument to join the string orchestra, and has a penetrating, strong sound.

Fluctuations toward a standard

The troublesome evolution of tuning frequency up until the publication of the International Standard, ISO 16:1975, *Acoustics – Standard tuning frequency (Standard musical pitch)*, (at 440 Hz) is described in many books and papers. Almost none of them agree. A simplified overview might look like **Figure 2**.

Around 1800, the most common tuning was the "Classical Pitch" of A = 422 Hz, which is said to be the one in which Mozart wrote. However, this was not a standard by our definition, and there was a rise in the following years: two tuning forks from the Dresden opera house are found to give A = 423.2 (1815) and 435 (1826).

In 1859, the French government established by law the "Diapason Normal" of A = 435 Hz at a temperature of 15°. The alteration of a fork due to heat is scarcely perceptible, but wind instruments, and particularly organs, rise because sound travels faster as the temperature rises.

From the time of the French Diapason, there have been discussions on whether the temperature was given in Réaumur or Celsius, and some suggested corrections have led to new mistakes. (Possibly the measurements should be performed at 15°R≈19°C, and not 15°C, so that the French tuning of 435 in fact should correspond to some 439.)

The first standard tuning fork was made by John Shore in 1711.

Other countries gradually followed the French, with the United Kingdom the last in line. The tuning history of the United Kingdom was a bit troublesome, as the Philharmonic Society had already decided on A = 433.2 Hz. Forks for this vibration number, stamped "Philharmonic", were sold as late as 1846, but in or about that year the performing pitch of the Society and many organs had actually reached the "High Pitch" of 452.5 Hz.

In 1885, Queen Victoria sanctioned the French standard for her private band and state concerts. The Philharmonic Society adopted the "Diapason Normal" in 1896, but military bands and brass bands did not go along. In fact, they went gradually higher.

In 1896, the Society decided upon A = 439 Hz ("New Philharmonic") at 68° Fahrenheit (20° C). The "High Pitch" of 452.5 Hz remained for military and brass bands, preserved as the standard for the Military Training School Hall in 1890. This high pitch also remained in some churches with large concert organs not yet lowered.

Bands in France, the United Kingdom and the USA also used this "High Pitch". Most remaining horns from the US Civil

War (1861-1865) are high pitched (A=454). In fact, the USA "military high pitch" often turned out even higher, to A=457 Hz.

In Germany, bands and orchestras in the mid- to late-1800s tuned to A=440 Hz. Around the turn of the century, the use of this low pitch became more common in the USA, too. Brass horns were often offered with slides to allow the musician to play in either pitch.

In 1917, the American Federation of Musicians followed A=440 as the "official" pitch for the USA, and it became known as "American Standard Pitch". Following World War I, a little known provision of the Treaty of Versailles (1919) adopted A=440 as the standard pitch, and the production of horns with accessory slides for high pitch declined.

The A440 standard was endorsed by the British Standards Institution (at a meeting organized by the International Federation of National Standardizing Associations/ISA) in 1939, and by ISO in 1955 and 1975.

In 1964, the Salvation Army asked its manufacturers to produce brass instruments only in the "low" pitch. Some older instruments were of such good quality that a number are still in use today.

Scientific alternatives and solutions

The French standard of A4=435 Hz gives C4≈258.65 Hz. This gave the idea of a "mathematical" tuning frequency of $C = 2^8 = 256$ Hz, so that all the Cs would be a power of two, but A4=435 Hz won.

The previously mentioned question of correcting for temperature in the 435 standard could result in 439 Hz, so this number was also suggested, but superseded by 440 Hz after complaints that 439 was a prime number and thus difficult to reproduce in a laboratory. In the "analogue age", 440 Hz could already be generated from a high-precision 1 MHz piezo-electric crystal, using some multiplication with 11/55.

Most instruments today are tuned to 440 Hz, following ISO 16. But not the major orchestras!

Absolute/relative pitch and psychoacoustics

Reference pitch is common for many singers and musicians. They are familiar with the different types of intervals and can judge "any" tone once they hear a reference.

Absolute pitch means that the person needs no such reference tone. Since Mozart was said to have absolute pitch, and the standard tuning frequency has changed since then, absolute pitch might be impressive but is somewhat meaningless.

For a future revision of ISO 16, there might be more detailed discussions about subjects such as temperature. For ensembles of contemporary music and rock bands, tuning to a sine-wave-like synthesizer or tuning machine, it might also be considered that the perceived pitch for pure tones actually depends not only on frequency, but also on sound pressure level.

Do we follow the standard today?

The majority of today's "ordinary" instruments are by default tuned to 440 Hz. However, most symphony orchestras on the European continent today use 442 Hz, while 440 Hz still is most common in the United Kingdom, the USA and Japan. When an orchestra from mid- or northern Europe visits "the Proms" in London, a grand piano tuned to 442 Hz needs to be leased.

Some concert halls have two grand pianos in different tunings. Herbert von Karajan wanted 445 Hz for the Berlin Philharmonic.

Luckily, modern digital instruments are easily retuned to other tuning frequencies, but the non-standard tunings of symphony orchestras give problems for guest musicians with instruments not easily tuned to a different frequency, such as the accordion and Hammond organ.

Ensembles with wood instruments in tropical countries have problems keeping any standard pitch due to huge changes in humidity and temperature.

Some ensembles specializing in early performance praxis might use 415 Hz for baroque music (about a semitone lower than 440 Hz, see **Figure 2**), 430 Hz for classical music, and 438 Hz for romantic music. ■

About the author

Tor Halmrast is Head of Acoustics at Statsbygg (Norwegian Directorate of Public Construction and Property), Associate Professor at the University of Oslo's Department of Musicology and an award-winning composer of works for symphony orchestras, opera, and electroacoustic music. He has been a member of several ISO and Standards Norway committees on acoustics.

Figure 2 : *Tuning frequencies.*

ISO standard for ice hockey head and face protection

ISO standards for ski boots and bindings

ISO wine tasting glass

ISO standard for the safety of cosmetics

ISO standard for safe cold workplaces

ISO system of measurements (SI)

Having **ISO** sta

ISO series of standards for PIN management and security

ISO standard for the International Musical Work Code

International Organization for Standardization

ISO

ISO standard on sensory analysis

fun with andards

ISO series of standards on car side impact testing

ISO series of standards on mental stress
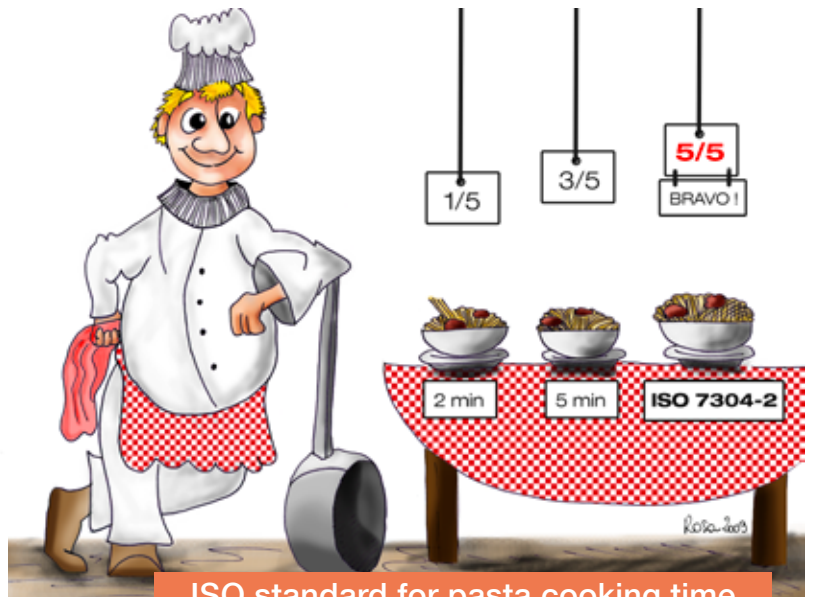
ISO standard for pasta cooking time

Durable cards

Giving the ID industry a new lease on card service life

by Brian Beech and Gene Meier

Revolutionizing the way in which ID card vendors and card issuers discuss and define durability is ISO/IEC 24789, published in two parts under the general title, *Identification cards – Card service life*. The new standard is becoming a key reference in the secure ID document industry.

ISO/IEC 7810:2003 provides a useful frame of reference for ID card performance, but not a useful means for establishing card service life. For example, the standard refers to the ISO/IEC 10373 series to test the flexure strength of a card, but how

For 15 years, ISO/IEC 7810, *Identification Cards – Physical characteristics*, was the key reference for ID card performance. Although it addressed the issue of minimizing card interchange issues, it did not, however, ensure a specified card life.

Bank versus ID cards

Bank cards and ID cards are very different. They are typically the same size and contain sensitive personal data, but there the similarity ends. It is useful to consider the many differences between these card types, as it helps us better understand the need for ISO/IEC 24789. **Figure 1** highlights some of them.

ISO/IEC 7810 states : " Durability of the card is not established in this International Standard. It is based on a mutual agreement between the card purchaser and the supplier."

	Bank card	ID card
Validity period	Typically two to three years	Typically five years or more
Storage	Carefully, often in wallet	Many different types of use and storage : worn, in pocket, in wallet, not carried
Security features	Predominantly machine-readable	Both covert and overt features
Brand	Important branding opportunity. Competing with other bank cards	Conventional branding negligible ; opportunity for " national brand "
Personalization	Typically thermal	Variety of personalization technologies including thermal, laser engraving, inkjet and toner
Use	Typically chip or magnetic stripe read, in exchange for cash, goods or services	Human readable, barcode, chip, magnetic stripe for a variety of entitlement benefits

Figure 1 : *Highlighting the differences between ID cards and bank cards.*

Durability test methods – tensile, lightfastness and flexure.

many flexes does a five-year driving licence need to survive ? And what about a 10-year national ID card or a two-year ID badge ?

The answers depend on specific agreements between vendor and issuer, and the detail of these agreements often takes considerable time to establish and is imperfect.

The issuer may become baffled by the range and complexity of descriptions used by vendors to promote their products. Consequently, it can be difficult to make valid comparisons between options.

Industry practitioners will need to provide critical feedback.

Perhaps most important of all, ISO/IEC 7810 takes no account of how the card will be used, for example how it is stored and read, and how long it needs to last.

Efforts to create and issue a new standard have been rumbling on for more than 10 years. All stakeholders, however, agreed that it was important to develop a more relevant standard, so that vendors and issuers could begin to use it and provide feedback and improvements to the technical committee.

Because there were philosophical differences between many of the stakeholders involved, the resulting standard is, therefore, a compromise.

Card application profile

ISO/IEC 24789-1 establishes a card application profile. This attempts to define how a particular card type will be used, so that appropriate durability tests can then be carried out. In this way, the service life of a national ID card is specified differently from, for example, an employee ID card worn as a badge, and tested accordingly.

Part 1 of the standard establishes application profiles and how the card will be used and stored, and Part 2 defines durability test methods for each profile.

The card application profile is broken down into three areas :

- Card-use environment – likely exposure to temperature, humidity, daylight and chemicals
- Card storage – bending, friction and compression
- Card reading – stresses put on the card by the reader

Points are assigned to the various conditions of use, storage and reading, with more points given for more severe conditions. These points are taken from look-up tables within the standard and are summed to produce the raw application profile for that card.

The required card life and expected frequency of card use are then applied as correction factors, which modifies the raw data. Further look-up tables are then used to find the age/use class for that particular card. This represents the application profile class for the card, which determines the test methods and regime to be used.

Card evaluation

The remainder of Part 1 of the new standard identifies the test methods to be used in the durability assessment of the cards. There are two different types of evaluation regime : stand-alone tests (used when age

class is 0 or 1, and not used on chipped or embossed cards), and test sequences (used for all other circumstances).

Stand-alone tests

The test, and its duration, is defined by the application profile class. For example, the standard states that 50 surface abrasion cycles are carried out on a card with a profile of 0B, but a 1 000-cycles test is needed for a card with a profile of 1D.

Test sequences

The concept of the test sequence is to try to better simulate the real-life environment for a card, something a stand-alone test is not designed to do.

The cards are therefore aged, stressed and then checked that they still function. The ageing and stressing cycles are repeated to reflect the intended lifetime of the card (see **Figure 2**).

Several ageing, stress/use and conformity assessment tests are listed in the new standard. The vendor or issuer can decide which ones to use, or can mutually agree on this.

Determining the application profiles for identity cards

1. Determine raw application profiles for environment, storage and reader

2. Create a corrected application profile using correction factors for age and usage

3. Look up the corrected application profile to determine the application profile class

4. Express the application profile class as a number (age) followed by a letter (usage), such as 2A

Introducing test methods

Once Part 1 of the standard has been used to define the application profile class and the selection of durability tests, Part 2 deals with the test methods themselves.

Essentially, Part 2 acts as a repository of relevant durability test methods. It is intended that test laboratories around the world use the same procedures, and Part 2 will help standardize these methods. They are currently a mix of the old (from ISO/IEC 10373) and the new, created for ISO/IEC 24789-2.

Delivering maximum benefits

The new standard includes several examples (healthcare, national ID, transport, access, campus, driving licence and bank cards) to show how to generate the application profiles.

There is a recognized danger that the card issuer will automatically use the application profile given as the example in the standard. It is important that this does not happen and that, instead, the issuer uses the relevant data from the tables in Annex A to calculate the predicted application profile for their particular card programme.

ISO/IEC 24789 could eventually become a key reference in the secure ID document industry.

Following the procedure in ISO/IEC 24789-1 and accurately applying the correct use information to the profile calculations will help ensure that the most appropriate test regime is designed and applied. This may be done in isolation by the issuer, by using a third-party consultant, or by dialogue and agreement with the vendor(s).

Whichever test methods are selected, it should then facilitate a useful and effective durability dialogue between parties, and allow the various potential card constructions and personalization systems to be more meaningfully compared with each other.

In addition to enabling issuers to make the right decisions, the standard should also help vendors ensure their cards meet market requirements for durability. Indeed, some vendors might choose to use the new standard to better educate their marketing and product development departments to ensure they have a competitive product portfolio.
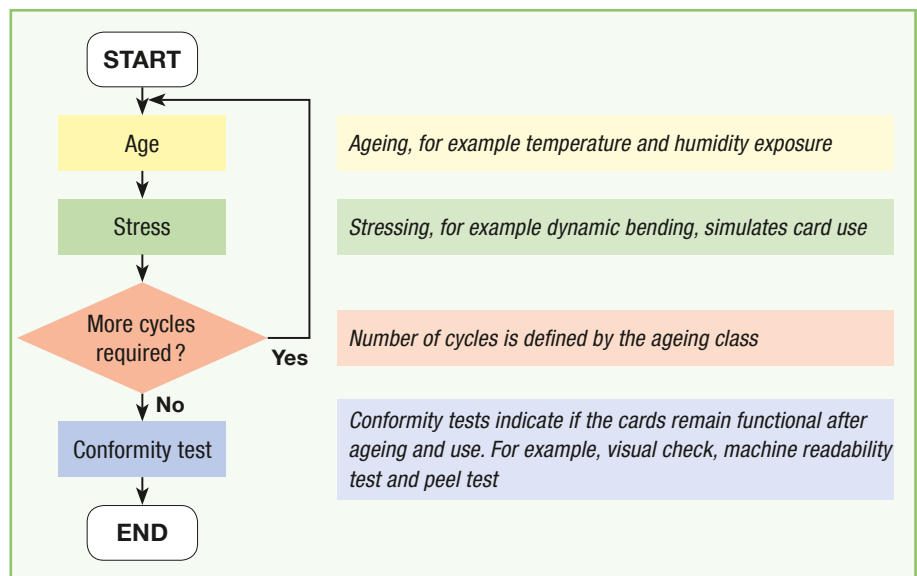
Figure 2 : *The principle of a test sequence in ISO/IEC 24789-1.*

For the new standard to deliver the maximum benefits for all parties, ISO/IEC 24789 will need to evolve ; industry needs to provide feedback to standards development bodies so subsequent revisions can be improved.

ISO/IEC 24789 will, therefore, be opened for revision immediately after publication. The next edition of the standard is likely to be issued in around three to five years.

Feedback and evolution

A global durability standard for the ID industry has been a long time coming. With the arrival of ISO/IEC 24789, it is likely that card issuers and vendors alike will take hold of it and use it as the basis of meaningful dialogue around the complex subject of document durability.

In fact, anyone involved in specifying, evaluating or delivering ID cards needs to be familiar with ISO/IEC 24789.

However, the new standard is not perfect and will need to evolve if it is to become a practical, valuable tool for defining and measuring durability. Industry practitioners will need to provide critical feedback on their experiences in using the standard, to ensure it does.

If constructive feedback is forthcoming, and card issuers, consultants and vendors alike elect to use, and not misuse, the standard, ISO/IEC 24789 could become one of the most important references in the secure ID document industry. ∎

About the authors

Brian Beech is R&D Director for Datacard. After graduating in mechanical engineering from the University of Minnesota, Mr. Beech started with Datacard in 1981 and has since been involved in all areas of product development – from design to programme management. He has been involved in developing ISO cards standards for over 20 years, and has acted in the US as Chairman of INCITS/BIO (Identification cards and related devices) for the past 10 years.

Gene Meier is a principal chemical engineer in Datacard's material R&D group. He graduated in chemical engineering from the University of Minnesota and has over 30 years' experience in chemical and coated films processing. Mr. Meier has contributed to the American National Standards Institute (ANSI) InterNational Committee for Information Technology Standards (INICTS) development since 1995, and has been involved in ISO card durability standards efforts since 2005.

Screenshot of the new video introducing ISO's Website.

New video introduces ISO's Website

ISO has just launched a video on YouTube giving a quick introduction to the new ISO Website that aims to give "simpler, faster and better" access to information on ISO International Standards.

The new Website, which went live in June 2012, has been fully revised with customer focus and readability in mind. The concise introductory video helps busy people quickly learn how to get the best out of the site and discover how ISO standards provide benefits for business, government and society.

The new Website puts users first. The layout and content have been specifically designed to help visitors find information quickly and easily, on any device.

Today, most of us access the Internet through a variety of platforms. The new ISO Website adopts a "one-Web" approach. Its fluid and responsive layout flexibly adapts to different resolutions, browsers and screen sizes, so that no matter how users access the site (desktop, laptop, tablet, smartphone, etc.), they can read it comfortably and easily. The new site is also much easier to navigate than its predecessor.

To access, the video, go to : **http://youtu.be/Clq2vK_MCWI**. To access the new Website, go to : **www.iso.org**

Human resource management

The second plenary of the relatively new ISO technical committee for human resource management, ISO/TC 260, took place in September 2012, in Melbourne, Australia, in conjunction with the 14th World Human Resources Congress.
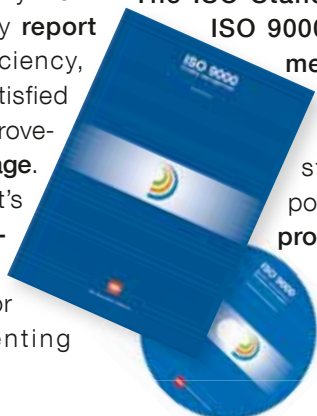
Experts from nine countries discussed the committee's work programme, which was expanded substantially, and future standards.

Participants at the HR management plenary in Australia.

It was agreed that the work group developing a common HR lexicon will shift from producing an internal document to potentially creating a published standard. Additional discovery work will be undertaken in the areas of HR standards content structure and literature census, and human governance. Efforts to develop technical documents on HR metrics and sustainable employability of staff will start soon.

Members of the committee also took the opportunity to organize a seminar on standards at the World Congress. Their aim was to encourage participants to get involved in the technical work, in order to increase worldwide representation from HR experts.

ISO/TC 260 is actively recruiting additional countries to be part of this effort. Interested ISO members are encouraged to contact ISO/TC 260 Chair, Lee Webster, at **lee.webster@shrm.org**, +1-703-535-6047.

The next plenary meeting will be held in the Netherlands in September 2013.

Participants at the ISO/TC 264 plenary in China.

Fireworks begin

The first plenary meeting of ISO/TC 264 on fireworks took place in September 2012, in Liuyang city, Hunan province, China.

After two days of intense discussion, participants unanimously adopted a business plan for ISO/TC 264. Its future standards will mark a new start for the entire fireworks industry. Four working groups and five liaisons were established at the meeting.

The conference was hosted by the Standardization Administration of the People's Republic of China (SAC), ISO member for the country. Expert delegations representing seven countries and one region attended.

The next plenary conference of ISO/TC 264 will be held in France.

Behind standards – people

Alexane Rosa, a young graphic artist in the Geneva-based Communication team of ISO, was featured in a Swiss television programme in October 2012.

Her interview is one of 40 portraits of people comprising the mosaic of skills that contribute to international cooperation in Geneva, Switzerland, home to many international governmental and nongovernmental organizations.

Alexane Rosa (left) *with her ISO graphic artist colleagues,* ***Xela Damond*** *and* ***Pierre Granier***.

As an example of Alexane's contribution to communicating the benefits of ISO standards in vital, everyday terms, she talks about the book of cartoons she developed with her colleagues to show how ISO international graphical symbols assist a typical family during their foreign holiday in a country whose language they do not understand.

"My work is to contribute to promoting and popularizing ISO standards and, seriously, it's fun !" Alexane comments. "With a little imagination and humour, the human dimension of technical standards can usually be communicated through cartoons and colourful graphics."

Identifying security gaps

The ISO special advisory group on security (SAG-S) is reviewing ISO's security-related standardization activities, including disaster planning, recovery and rehabilitation, and will be developing recommendations to be presented to the ISO technical management board (TMB) in early 2013.

Members of the group met in Washington DC, USA, in September 2012, hosted by the American National Standards Institute, ISO member for the country. The group's final report is to be submitted to the TMB in time for consideration at its February 2013 meeting. ∎

Members of the ISO special advisory group on security, in Washington DC, USA.

Good standardization practices

Putting best practice to work

by Kevin McKinley

ISO relies on the effective contribution of its members and their stakeholders for the development of relevant International Standards. Given the diversity of ISO's 164 national members, the effective application of good standardization practices can pose numerous challenges.

It is difficult for some members and their stakeholders to actively participate in standards development, and others may lack tools or capacity to communicate, promote and engage on standards issues of importance to their economies.

But to help ensure the credibility of ISO standards, it is important that all ISO members deploy best available techniques and maximize their contribution to ISO's work.

These good practice expectations for standardization are also one of the fundamental building blocks of an effective global trading system. The World Trade Organization (WTO) Agreement on Technical Barriers to Trade (TBT) requires the use of relevant International Standards as the basis for technical regulations whenever appropriate. The Agreement even contains expected disciplines in its Annex 3 "Code of Good Practice for the preparation, adoption and application of standards" and most ISO members already apply these practices.

In addition, the TBT Committee, in its second review of the Agreement, defined certain principles for the development of International Standards namely transparency, openness, impartiality and consensus, effectiveness and relevance, coherence and the development dimension – all of which depend on the application of these good standardization principles by ISO members. Finally, ISO members must meet objectives in the ISO Strategic Plan, Code of Ethics, and ISO's numerous policies and directives.

A comprehensive review and understanding of the most important standardization practices is essential for ISO members. For this reason, a first ISO pilot course on "Good standardization practices" was held in Bangkok, Thailand in July 2012 with senior level participants from ISO members in Thailand, Vietnam, Lao Peoples' Democratic Republic, Myanmar, Mongolia, Fiji, Papua New Guinea, Malaysia and Indonesia.

Geoff Visser, consultant and previously at SABS, ISO member for South Africa, and I, delivered the course. Over three days, the course covered practices and techniques that will help members contribute more effectively to ISO's technical work, and will also help ensure that ISO continues to meet the expectations of organizations such as the WTO.

An important component of the course was to provide attendees with a self-assessment tool to enable them to measure their own standards development practices.

More information on the course can be obtained at: **devt@iso.org** ■

Kevin McKinley is ISO Deputy Secretary-General.

ISO/COPOLCO launches its Facebook page

by Dana Kissinger-Matray

The ISO Committee on consumer policy (ISO/COPOLCO) has now launched its own Facebook page – join us at **www.facebook.com/isoCOPOLCO**.

This Facebook page complements ISO/COPOLCO's current networks for maintaining contact with its members and conducting its business. The difference is that it is an open, interactive forum and accessible to the public.

Besides ISO/COPOLCO members and their stakeholders, the Facebook page also welcomes contributions and questions from consumer and civil society organizations that are interested in standards and consumer protection issues.

Its aim is to provide a discussion forum and source of ongoing news and information about standards and their role in consumer protection. It also aims to raise awareness of the benefits of standards for consumer protection, both within and outside of the

Good standardization *practice*

International Organization for Standardization

New ISO/COPOLCO Facebook page at www.facebook.com/isoCOPOLCO.

ISO community. Finally, the page is another way to generate ideas, and for its friends to network and interact more easily with standards and with the ISO system.

In this space, ISO/COPOLCO members and their stakeholders can freely share news and debate issues related to standards, legislation and consumer protection. However, we also welcome postings and queries from other consumer groups, non-profit organizations and concerned members of the public who would like to learn more about standards.

Access **www.facebook.com/ isoCOPOLCO** to see background information and to tell us what your priorities are. All are welcome to contribute with any ideas on standards and consumer protection, or consumer participation in standards development.

We have already posted the first questions. Friend us on Facebook and join the discussion! ■

Dana Kissinger-Matray, Secretary of the ISO Committee on consumer policy (ISO/COPOLCO).

ISO/CASCO holds open day in Colombia

by Anna Koroleva

More than 80 participants from all around the world gathered in Bogotá, Colombia, for the open day on conformity assessment, hosted by the Colombian Institute of Technical Standards and Certification (ICONTEC). The event focused on the work of ISO Committee on conformity assessment (ISO/CASCO) and its ongoing working groups (WG) and recently published key standards.

In his opening address, the ISO/CASCO Chair, Lane Hallenbeck, reiterated his

commitment to foster developing country participation in the committee's activities and praised the large number of new participants in attendance, particularly from Latin American and Caribbean regions.

This year's open day session focused on the work of the ISO/CASCO WGs:

- The new version of ISO/IEC 17020, *Conformity assessment – Requirements for the operation of various types of bodies performing inspection*

- The recently published ISO/IEC 17065, *Conformity assessment – Requirements for bodies certifying products, processes and services*, (which replaces ISO/IEC Guide 65) and its relation to the future ISO/IEC 17067 for product certification schemes

- The revision of ISO/IEC 17021, *Conformity assessment – Requirements for bodies providing audit and certification of management systems*, and the development of its additional parts, defining competence requirements for environmental management and quality management systems

- The recently revised ISO/IEC 17024, *Conformity assessment – General requirements for bodies operating certification of persons*, and the development of a related terminology document

*ISO/CASCO Chair, **Lane Hallenbeck**, speaking at the ISO/CASCO open day in Bogotá, Colombia.*

- ISO/IEC TS 17022:2012, *Conformity assessment – Requirements and recommendations for content of a third-party audit report on management systems*
- The development of ISO/IEC TS 17023 on audit duration for management system certification
- The revision of ISO/TS 22003, *Food safety management systems – Requirement for bodies providing audit and certification of food safety management systems*

The open day in Bogotá provided a unique forum for discussion, learning and the valuable exchange of information and experiences among various conformity assessment stakeholders, essential to ISO/CASCO's successful work.

" Holding the open day and the ISO/CASCO plenary in Colombia facilitated the participation from the region and allowed its representatives to share their experience with their peers from other countries and gather useful information on newly published ISO/CASCO standards, " said Sean MacCurtain, Secretary of ISO/CASCO.

The next open day on conformity assessment will be hosted by the Standardization Administration of China (SAC) in Beijing, in October 2013. ■

Anna Koroleva is Project Manager, ISO Committee on conformity assessment.

Participants at the regional seminar on "Energy management and ISO 50001" held in Tunis, Tunisia.

ISO 50001 training in Tunisia

by Sandrine Tranchard

A regional seminar on "energy management and ISO 50001" was held in September 2012 in Tunis, Tunisia.

The seminar brought together different players from the energy sector to share their experience and expertise on efficient energy management and ISO 50001:2011, *Energy management systems – Requirements with guidance for use*.

These three days gave the various stakeholders (representatives from industry, government and academia, etc.) a chance to find out more about the standard and the issues involved. The process leading to certification was also explained to the participants, who came from 24 Arab countries.

" We cannot talk about renewable energy and the like, while continuing to waste energy ", said Liam McLaughlin, Director Energy Efficiency, Energy Services, Ireland, in his introductory presentation on energy management. He added, " Today, we simply do not have an intelligent approach to energy management ".

Nargès Boudali Rezgui, External Relations Manager at INNORPI, hopes that this seminar will help to make ISO 50001 more widely implemented in Tunisia and the Arab countries in order to further consolidate sustainable development. " Everyone is affected by the standard and we must all consider ways to reduce energy consumption ", she says.

This seminar was followed by a two-day course entitled, " Training the trainers ", the aim of which was to prepare trainers to provide training courses adapted to their country, to be made aware of the training methods and tools available to them, and to experience real training based on practical exercises.

The events were organized by INNORPI (ISO member for Tunisia) in partnership with ISO, and with the support of the Swiss State Secretariat for Economic Affairs (SECO) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of Germany's Federal Ministry for Economic Cooperation and Development (BMZ). ■

Sandrine Tranchard is Communication Officer, ISO Central Secretariat.

Getting the best out of people

ISO 10018 aids ISO 9001 implementation

by Peter Merrill

Iso 10018:2012, *Quality management – Guidelines on people involvement and competence*, a new ISO standard for organizations of all sizes, types and activities, provides a framework for getting the best out of people in the implementation of a quality management system based on ISO 9001:2008, *Quality management systems – Requirements*. It is designed to be a useful tool for leaders, managers, supervisors, quality practitioners, quality management representatives and human resource managers, and can also be used with other management system standards.

The new International Standard was developed by ISO technical committee ISO/TC 176, *Quality management and quality assurance*, subcommittee SC 3, *Supporting technologies*, through its working group WG 15, *Guidelines for participation and competence of people*.

Importance of people

WG15 concluded that based on the eight quality management principles from which the ISO 9000 family is developed, the people aspects of quality management systems needed to be addressed more strongly.

The ISO 9001 principle *Involvement of people* states : "People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit". This links with the *Leadership* principle, which states : "Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives".

Figure 1 : *The people involvement and competence process.*

In response, the working group has developed a process for encouraging people involvement and competence. It also reviewed each element of ISO 9001, identified typical management system problems that can occur through lack of people involvement, and specified actions to overcome those problems.

Content and key definitions

Two of the key definitions in ISO 10018, central to its title, are:

3.1 *Competence*, defined as the "ability to apply knowledge and skills to achieve intended results"

3.5 *Involvement*, defined as "engaging in and contributing to shared objectives"

The contents of ISO 10018 follow the structure of ISO 9001 with the exception of Clause 4: *Management of people involvement and competence*, and include:

5. Management responsibility
6. Resource management
7. Product realization
8. Measurement, analysis and improvement

People involvement is a prevention-based activity investing in training, teamwork and communications.

In addition, it contains Annex A: *Human factors that impact the quality management system*, and Annex B: *Self-assessment*.

Clause 4: Management of people involvement and competence

Clause 4 describes the processes an organization can use to implement and maintain people involvement and competence in quality management systems (see **Figure 1**). It also describes how leaders should encourage people to assume responsibilities, and create the conditions that enable them to achieve desired results.

The process is based on four steps:

4.4 *Analysis:* data are collected and analyzed to establish an organization's short- and long-term objectives for people involvement and competence

4.5 *Planning:* procedures are created to plan the people involvement and competence acquisition process at an organizational, group and individual level

4.6 *Implementation:* the plans and actions are implemented to achieve the objectives

4.7 *Evaluation:* plans, actions and outcomes are evaluated to identify opportunities for improvement.

Subclause 4.6 describes general leadership actions to enhance people involvement, and how that is best achieved in an environment in which people participate in planning and influencing decisions and actions that affect their jobs.

The people involvement process includes a number of human factors:

- *Communication:* integrates people and promotes shared understanding
- *Recruitment:* the process of sourcing, screening, and selecting people for a position in an organization
- *Awareness:* once communication is established, people should be made aware that ISO 9001 requires an organization to maintain a quality management system
- *Engagement:* employer engagement is the organization's commitment to improving the partnership and developing shared understanding between people and their managers
- *Teamwork and collaboration:* occurs when people work together for a common goal
- *Responsibility and authority:* managers should be responsible for providing people with the authority to make decisions about their work
- *Creativity and innovation:* success results from a high degree of creativity. Enabling creativity creates a higher sense of personal fulfilment and consequently enhances involvement
- *Recognition and rewards:* the organization should recognize actions that improve people involvement

The guidelines in Clauses 5 to 8 provide the specific actions to meet individual quality management system requirements, such as those specified in ISO 9001. Some of these actions are shown below

Clause 5: Management responsibility

Clause 5 recommends that top management explain to the people in the organization the value created by the quality management system, the importance of customer satisfaction, and the relationship between quality policy, business plans and individual roles. Managers should involve people in setting objectives and, in preparing the management review, should establish involvement and competence objectives and communicate these to the organization.

Clause 6: Resource management

Clause 6 addresses human resources, and advises that human resource planning

Attitude and motivation A.2	Leadership A.9
Awareness A.3	Networking A.10
Communication A.4	Recognition and rewards A.11
Creativity and innovation A.5	Recruitment A.12
Education and learning A.6	Responsibility and authority A.13
Empowerment A.7	Teamwork and collaboration A.14
Engagement A.8	

Table 1: *Human factors in people involvement and competence.*

should be strategic (long term) and tactical (short term), and include a recruitment and selection process. That process should be transparent to candidates, and emphasize the importance of their competence. The clause also refers back to the competence acquisition process described in Clause 4.

Clause 7: Product realization

Clause 7 guidelines require that those responsible for product realization and service delivery understand customer needs and expectations, as well as product requirements. Meetings addressing complaints should involve people in departments affected by the complaint.

Clause 8: Measurement, analysis and improvement

Clause 8 states that when people from all business functions are engaged on the audit team, that team is seen as representative of the entire organization. It advises that those being interviewed during an audit should be made aware that the audit involves assessing the process and not the person.

Annex A

Annex A describes in more detail the factors that impact on people involvement and competence, as previously listed in 4.6. and explains why each is important, and outlines the benefits gained from their implementation. **Table 1** shows the full list of these human factors.

Following are extracts from several key factors:

- *Awareness:* leaders should ensure that people in the organization understand the purpose of the quality management system, and their role in the system. They should be involved at all stages of identifying the process and controls they work with, and be aware of their process responsibilities

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ISO 10018:2012 provides a framework for getting the best out of people.

- *Communication:* effective communication is necessary for people inside and outside the organization, to ensure they work with common objectives. As organizations grow and become more complex, communication becomes more difficult

- *Creativity and innovation:* creativity and innovation inside the organization enables the improvement of existing processes and products, and the creation of new products and services for the market

- *Education and learning:* the learning organization focuses on increasing knowledge to continually increase its performance. Organizations must be competent to be competitive

- *Empowerment:* Empowerment enables people to take responsibility for their work and its results

- *Engagement:* When people are fully engaged in the organization's activities they experience more personal fulfilment, and the organization consequently conducts its activities more effectively. Engagement is the outcome of effective recruitment followed by introduction to the workforce through an awareness process.

Annex B

The guidance in Clauses 5 to 8 can be used as a checklist to assess people involvement and competence in an organization. Annex B provides a rapid high-level guideline for self-assessment.

A better framework

Although there is a body of knowledge available that seeks to address the people need, it is not in a form readily accessible to users of ISO standards and is often hard to find and difficult to link. However, ISO 10018 can help by providing global guidance on what knowledge to use when implementing ISO 9001, and the link between the quality management standard and people involvement. It enables multinational organizations to develop a more consistent business culture with a common quality management language, and a better framework for global communication.

People involvement is a prevention-based activity investing in training, teamwork and communications. Although it may be perceived as a cost, people involvement is actually a shift in time allocation from correction to prevention.

Following ISO 9001 certification – and with an excellence mindset among a broader group of people as a result of ISO 10018 implementation – organizations can then progress more rapidly to continual improvement. An easier transition from ISO 9001 to excellence models and awards can also be expected. ∎

About the author

Peter Merrill is Convenor of ISO technical committee ISO/TC 176, *Quality management and quality assurance*, subcommittee SC 3, *Supporting technologies*, working group WG 15, *Guidelines for participation and competence of people* – the developers of ISO 10018:2012, and is also a member of the Strategic Advisory Group of ISO/TC 176 and Liaison with TC 260, *Human resources*. Mr. Merrill is a conference keynote speaker and author of *Innovation Generation and Do it Right the Second Time*. He may be reached at: **pm@petermerrill.com**

Innovation is name of the game

ISO 35th General Assembly

The " top table " at the 35th ISO General Assembly.

by Roger Frost

The focus was firmly on innovation at ISO's 35th General Assembly (GA), 17-22 September 2012, in San Diego, USA. In response to feedback from ISO members after the two previous GAs, ISO shook up the 2012 format to encourage more participation, discussion and networking. An open session also highlighted innovation.

ISO's 35th GA was hosted by the ISO member for the USA, the American National Standards Institute (ANSI), a founder member of the organization. It attracted the participation of 434 delegates from 123 ISO member countries and 13 partner international or regional organizations. The GA took place on 19 and 21 September with a break on 20 September for the open session addressing two of the challenges facing the international community – innovation and the economics of sustainable development – areas where International Standards are making clear contributions. But can they do more ? (See following article on **page 51**).

US Government standards chief praises ISO's sustainability standards

Dr. Patrick Gallagher, the US Under Secretary of Commerce for Standards and Technology and Director of the National Institute of Standards and Technology (NIST), delivered an opening speech. He said that ISO is making enormous progress in developing standards for sustainability and is taking the lead in this area through standards like ISO 14001 (environmental

management) and ISO 50001 (energy management).

"I applaud and celebrate ISO for taking the lead in sustainability standardization. In particular, ISO 14001 and ISO 50001 are models for how to approach sustainability in practice and in management," Dr. Gallagher declared.

"Sustainability is the right priority. Wisely managing a world of finite resources is one of the key societal challenges we face. As all of you know, standards play an essential role in how we assess the challenge.

"Sustainability is not about looking at one part of the process, but the entire life cycle of a product : design, production, use and disposal. It's about engaging producers distributors, regulators, buyers and users.

"In a global market, I can't think of a challenge more important for us to undertake. As we develop the standards framework, it will also unleash innovation and creativity. It's a worthy challenge."

Dr. Gallagher also emphasized the importance of global standards to companies and consumers "because technology is not within national boundaries but on a global scale".

ISO President, Dr. Boris Aleshin, pointed out that when ISO began operations in

1947, it had 26 members. "Today," he said, "the ISO family is made up of the national standards bodies of 164 countries, including industrialized, developing and transitional economies, from all regions of the world."

Dr. Aleshin told delegates that ISO had a huge opportunity to achieve greater strategic recognition of the value of standardization to business, government and consumers. But he warned, "We, at ISO, need to ensure that customers know about ISO, that we are not just talking from the 'inside to the inside' – that is, amongst ourselves.

"The 'inside must talk to the outside' and we must find the most compelling and vivid ways of doing so, so that we show clearly how standards benefit those 'on the outside'. To do this, we should find new forms to communicate, new ideas to debate and decide on actions – and to be simpler, faster and better in everything we do."

He was followed as a speaker by Jim Pauley, Chair of ANSI's Board of Directors, who told delegates : "As standards professionals, you know that standards and conformance play a critical role in the economy. We often like to cite a US Department of Commerce figure that standardization impacts more than 80 % of global commodity trade. The jury's still out on what that will mean for 2012, but in 2011, that 80 % impact came to more than USD 13 trillion dollars.

"It's clear that effective utilization of standards and conformance promotes technological interoperability and the global competitiveness of all businesses. And greater cooperation and information-sharing will improve cost savings and increase efficiencies – clearly a top priority in today's economic landscape. When individual businesses do well, there is a corresponding improvement in our national economies.

2012 GA photos on FlickR

Photos of ISO's 35ᵗʰ General Assembly can be accessed on the social media site, FlickR, at : www.flickr.com/isostandards

Speakers and participants in the opening ceremony, from left : **S. Joe Bhatia**, *President and CEO, ANSI;* **Rob Steele**, *ISO Secretary-General;* **Dr. Patrick Gallagher**, *US Under Secretary of Commerce for Standards and Technology and Director of the National Institute of Standards and Technology (NIST);* **Lori Jenaire**, *singer;* **Jim Pauley**, *Chair of ANSI's Board of Directors;* **Dr. Boris Aleshin**, *ISO President;* **Dr. Mary McKiel**, *Chair of ISO/ANSI Council.*

"But standards and conformance also play another important role in the global marketplace. They demonstrate quality and inspire consumer confidence."

President urges ISO to define new business model

Innovation was also an underlying theme of a panel discussion facilitated by ISO President, Dr. Aleshin, on the resources ISO and its national members need to meet future customer needs.

ISO needs to embrace a new business model in order to ensure its future and avoid "brewing in its own stew", he told delegates. Dr. Aleshin called for clarity on what sort of business ISO actually is – the central operations of ISO in Geneva, or a multi-billion dollar network comprising the ISO Central Secretariat and its national members in 164 countries. This was an "exceedingly important issue", he said.

"We have to address our target audiences together," he said. "We have to define our customers – whether business, consumers or government – and address their needs with a common understanding. Otherwise we are brewing in our own stew.

"We do not work well enough together, or with industry and consumers. A lot has been done to meet their requirements, but many do not really know about us well enough apart from professionals.

"I would like us to concentrate on our target audiences and address them with communication and training. We need to propagate our values and promote our

*ISO President, **Dr. Boris Aleshin**.*

*ISO Secretary-General, **Rob Steele**.*

products. And we need to discuss the business model of the entire organization and identify common objectives with our international standardization partners, the International Electrotechnical Commission (IEC) and the International Telecommunication Union (ITU)."

ISO Secretary-General challenges delegates

ISO Secretary-General, Rob Steele, challenged delegates with his favourite question – "So what?"

"It is clear that solid progress is being made against the key strategic objectives of the *ISO Strategic Plan 2011-2015*. Key priorities are identified and action is being taken to address these," he said.

"However, it is also clear that there needs to be a much stronger link between ISO and our key customers. The issues of economic growth and rapidly changing expectations create a significant opportunity for ISO as International Standards can play a significant part in meeting those expectations.

"But we must now look at each other and be bolder. To achieve the potential of the opportunity requires us to look at what standards are needed in the world in ways that allow us to respond to and meet that need in ways that are simpler, faster and better than we ever have before, using all of the skills, experience and credence of the ISO name to meet our customers' needs. We need to use whatever resources are available to do this – and the time to do that is now."

ISO's strategy

ISO Vice-President (policy), Sadao Takeda, provided an update on the implementation of the *ISO Strategic Plan 2011-2015*. While ISO was on track to achieve its strategic objectives for 2015, the business environment had significantly changed due to the global financial crisis.

However, he underlined that ISO had made rapid progress in particular in the information and communication technology (ICT) sector which would have an impact on its core business of information creation and dissemination.

In addition, ISO Council had conducted a risk and scenario analysis to determine action that might be required by ISO to meet the challenges of the economic climate.

*ISO Vice-President (policy), **Sadao Takeda**.*

ISO's technical work

ISO Vice-President (technical management), Dr. Elisabeth Stampfl-Blaha, outlined three issues being tackled by the Technical Management Board (TMB), which oversees ISO's standards development work:

• Fostering partnerships – She emphasized that thinking in terms of structures was obsolete. Rather than focusing on conflict resolution mechanisms, ISO and its partner the IEC were looking into possible synergies and solving issues upfront, before they became problems

*ISO Vice-President (technical management), **Dr. Elisabeth Stampfl-Blaha.***

- **Improving communication** –
  Dr. Stampfl-Blaha underlined that improving the sharing of information was key. Distribution of the *TMB Communiqué* had been widened to the whole ISO membership so all could provide feedback and indicate their priorities

- **Enhancing efficiency** – She underlined the efforts made to shorten standards development times, leaving more freedom to technical committees to select the best path to achieve consensus quickly

GA with a difference

Among issues discussed during the General Assembly were:

- Key issues in standardization from the perspectives of partner standardization organizations, the IEC, the ITU and the World Trade Organization (WTO)

- ISO intellectual property rights (IPR) and the copyright of ISO standards (facilitated by Nicolas Fleury, ISO Director of Marketing, Communication and Information)

- The resources ISO and its members need to meet future customer needs – ideas on future business models (facilitated by the ISO Secretary-General)

- Simpler, faster, better IT tools to develop and publish an ISO standard to an iPad, to the Online Browsing Platform and as a PDF (facilitated by David Ratcliffe, ISO Director of

People to people…
Meeting, networking, debating, sharing…

People to people…
Meeting, networking, debating, sharing…

*ISO Secretary-General, **Rob Steele**, presents **Erniningsih Haryadi**, of BSN, Indonesia, with her prize for winning a quiz about ISO's development programme.*

Information Technology and Electronic Services)

- Working with partners to meet the *ISO Strategic Plan 2011-2015* – what works and what more can be done (facilitated by ISO Deputy Secretary-General, Kevin McKinley)

- Standards and education (facilitated by Strategic Advisor to the ISO Secretary-General, Daniele Gerundino)

- Review of ISO's governance to make it more efficient and more effective (delivered by the ISO Secretary-General)

In place of long presentations, delegates tackled these issues through panel discussions and break-out sessions to encourage questions and debate. Participants also used electronic keypads to provide rapid feedback.

PowerPoint presentations used to introduce the discussions and break-out sessions, along with resulting reports and recommendations made are available to ISO members on the ISODOC server. ISO's senior officers are sifting through the recommendations and will be reporting on resulting actions to be taken.

In addition to the changes in format, the 2012 GA featured increased opportunities for networking by introducing " genius bars ". During breaks in the agenda, delegates were able to meet members of the ISO Central Secretariat teams in an informal atmosphere and learn more about issues such as IPR and how they can benefit more from services to members, IT tools, and marketing, communication and information.

Developers of ISO 50001 energy management standard honoured

The achievement of a team of experts who developed the ISO 50001 International Standard for energy management were recognized through an award for superior performance. For 2012, the Lawrence D. Eicher (LDE) Leadership Award for excellence in creative and innovative standards development went to ISO technical committee, ISO/TC 242, *Energy management*.

Announcing the award winner, ISO President, Dr. Aleshin, pointed out that energy is

From left: **Amanda Richardson (BSI)**; **Leonardo Martins (ABNT)**; ISO President,
Dr. Boris Aleshin; **Ed Pinero**, ISO/TC 242 Chair; **Jason Knopes**, Secretary
of ISO/TC 242, and **Guo Hui (SAC)**.

critical to organizational operations and can be a major cost to organizations, whatever their activities. In addition to the economic costs of energy to an organization, energy can impose environmental and societal costs by depleting resources and contributing to problems such as climate change.

"Individual organizations cannot control energy prices, but they can improve the way they manage their energy consumption," he said. "Improved energy performance can provide rapid benefits for an organization by maximizing the use of its energy sources and energy-related assets.

"ISO 50001 provides a framework for industrial plants; commercial, institutional, or governmental facilities; or entire organizations to manage energy. Targeting broad applicability across national economic sectors, it is estimated that the standard could influence up to 60 % of the world's energy use."

ISO identified energy management as one of the top five fields for the development of International Standards and in 2008 created a project committee, ISO/PC 242, *Energy management*, to carry out the work. ISO/PC 242 was led by ISO members for the United States (ANSI) and Brazil (ABNT). In addition, its leadership included the ISO members for China (SAC) and the United Kingdom (BSI) to ensure that developed and developing economies participate together in the strategic direction and administration of the project committee. It was transformed into a technical committee in June 2011, signifying that it will be developing additional standards.

Today, experts from the national standards bodies of 48 ISO member countries participate within ISO/TC 242, with another 17 countries as observers.

Dr. Aleshin presented the LDE Award to: ISO/TC 242 Chair, Ed Pinero; Secretaries – Jason Knopes (ANSI) and Leonardo Martins (ABNT); with Guo Hui, representing SAC, and Amanda Richardson, representing BSI.

DIN Director, **Dr. Torsten Bahke,**
announced the winner
of the ISO/DIN contest.

Kenyan wins ISO/DIN essay contest for young standardizers in developing countries

An essay on the role of standards in the Kenyan economy was announced as the winning entry in the ISO/DIN contest for young standardizers in developing countries. The author is Amwayi Omukhweso William, Assistant quality assurance officer, at the Kenya Bureau of Standards (KEBS).

The contest, which is organized by ISO and sponsored by DIN, the German Institute for Standardization, aims to challenge and give an opportunity to young standards professionals in developing countries and economies in transition.

Participants in the 2012 edition had to write an essay in English answering the question, "How do ISO International Standards help industry in your country to respond to local and global market demands". Young standardizers were encouraged to present their personal views based on their country's experience.

Announcing the winner, DIN Director, Dr. Torsten Bahke, declared: "The winner has very nicely linked the development objectives of his country, as contained in the national economic blueprint dubbed 'Vision 2030', to the need to apply International Standards in the sectors that are expected to lead growth, with an emphasis on export markets.

"The need to apply ISO standards for conformity assessment and management

Amwayi Omukhweso William,
winner of the 2012 ISO/DIN essay
contest for young standardizers
in developing countries.

*IEC's Vice President, **James Matthews**.*

*ITU's Deputy to the Director of the Telecommunication Standardization Bureau (ITU-T), **Reinhard Scholl**.*

*Counsellor of the WTO Trade and Environment Division (and Secretary of the WTO/TBT Committee), **Erik Wijkström**.*

systems has also been clearly described. Overall, there has been a very good understanding of the theme by the contestant/winner and he has covered the topic from many angles, showing that he has a clear idea of how ISO standards should be used."

In an audio message of thanks to the ISO General Assembly, William affirmed : "Standards have and will play a critical role in enhancing global trade by improving market access and enhancing the competitive advantage of products. It is important therefore for countries, especially the developing nations, to leverage on this linkage between standards and trade as this is a crucial driving force for any country's economic growth."

Working with partners

The ISO President, Dr. Aleshin, facilitated a panel discussion by IEC's Vice President, James Matthews ; ITU's Deputy to the Director of the Telecommunication Standardization Bureau (ITU-T), Reinhard Scholl, and the Counsellor of the WTO Trade and Environment Division (and Secretary of the WTO/TBT Committee), Erik Wijkström. They provided insights on how standardization impacted the world and highlighted key challenges facing their organizations, including the following extracts :

James Matthews (IEC) : ISO and IEC have a rich history, but always moving forward for efficient and productive outcomes. Work flourishes, technology advances, and the two organizations are more collaborative than ever. At the same time, it is vital to understand that standards user need to

be able to identify the projects that our of interest to them. National bodies need to be proactive in reaching out to communities of stakeholders. New participants need to see the benefits of global solutions.

Reinhard Scholl (ITU) : The information and communication technology (ICT) industry is very competitive, which is reflected in the standards-setting process. There is a proliferation of organizations developing standards and a growing number of fora on standardization. Companies cannot afford to attend all such fora, but at the same time, if their interests are not addressed, they will continue to create new consortia.

There has been a reduction in the number of standards-setting organizations because of the means and money required. Companies want their interests well reflected. The challenge is how to stay market relevant. ITU has adapted to be relevant by working very fast and today, it has transparent and good procedures. A second challenge is the intersection between ICT and the vertical markets (such as transport and utilities).

Erik Wijkström (WTO) : Standards are "the air we breathe" and the use of international standards is strongly encouraged by the WTO. Since 1995, there have been 45 formal disputes brought to the WTO where

ISO presented a special gift to host organization, ANSI : (from left) ***Rob Steele**, ISO Secretary-General, **Dr. Mary McKiel**, Chair of ISO/ANSI Council, **Dr. Boris Aleshin**, ISO President and **S. Joe Bhatia**, President and CEO of ANSI.*

*The ISO President **Dr. Boris Aleshin** presented the outgoing Treasurer, **Julien Pitton**, with a gift for his achievements and valuable service.*

standards are issues, but only four are fully fledged disputes – one dispute was around "what is an international standard?". Being widely used is not a prerequisite for an international standard, but that it has been created by a body in which participation and openness are key. The more countries that participate, the more it will be relevant.

New Council members

The General Assembly elected the following six members to the ISO Council for the 2013-2014 term:

- DSM (Malaysia)
- ESMA (United Arab Emirates)
- IRAM (Argentina)
- IPQ (Portugal)
- INNORPI (Tunisia)
- MCCAA (Malta)

Presentations

The ISO President and Secretary-General presented the President and CEO of host organization, ANSI, S. Joe Bhatia, with a special gift and read out the text of a special resolution: "The General Assembly expresses its deepest thanks to the American National Standards Institute (ANSI) for its warm welcome and the outstanding arrangements it made for ISO San Diego 2012. The General Assembly expresses its heartfelt gratitude to the staff of ANSI for

their cooperation before and during the event, which greatly facilitated the proceedings and contributed to its success."

The ISO President presented the outgoing Treasurer, Julien Pitton, with cufflinks as a token of ISO's appreciation for his achievements and valuable service during his term of service from 2008 to 2012.

ISO Vice-President (technical management), Dr. Stampfl-Blaha, presented the outgoing President, Dr. Aleshin, with cufflinks as a token of ISO's appreciation for his achievements as President and delivered a speech thanking him for having led the organization in new directions with enthusiasm.

*The 2013 ISO General Assembly will be held in Saint Petersburg, Russian Federation, at the invitation of **Dr. Grigory Elkin**, President of ISO's member for the country, GOST R.*

As a cornerstone of his Presidency, he had notably encouraged ISO to work on ways to innovate and improve the standards development process, to shorten development timetables while providing higher quality documents and improving the relevance of the work to users. More importantly still, he had helped promote the fact that there was strong and direct linkage between the development and use of standards, and innovation.

Next General Assemblies

The 2013 ISO General Assembly will be held in Saint Petersburg, Russian Federation, at the invitation of ISO's member for the country, GOST R. The 2014 GA will be held in Rio de Janeiro, Brazil, at the invitation of ISO's national member, ABNT. ■

*ISO Vice-President (technical management), **Dr. Stampfl-Blaha**, presented the outgoing President, **Dr. Boris Aleshin**, with a special gift for his achievements as President.*

ISO's developing country members urged to become "standards makers", not standards takers

From left : *ISO Secretary-General,* **Rob Steele***; ISO/DEVCO Chair,* **Dr. Bambang Setiadi** *and ISO/DEVCO Secretary,* **Beer Budoo**.

ISO Secretary-General, Rob Steele, urged developing countries to increase their participation in standards development and become "standards makers" instead of "standards takers". He was speaking at the 46th meeting of the ISO Committee for developing country matters (ISO/DEVCO), held at the beginning of the GA week. The meeting drew more than 340 delegates from 106 developing country members of ISO.

He emphasized the important contributions that standards make to national economies, international trade and to tackling challenges facing the world community such as the environment and adequate supplies of water. Rob Steele said no country had the resources to participate in all of ISO's more than 200 standards development committees. However, developing countries could identify the half-dozen most important sectors to their economies and become involved in the corresponding ISO technical groups developing standards for these.

Mr. Steele reviewed ISO's efforts to assist its developing country members to build up and improve their standardization infrastructures. The roadmap for these efforts is set out in the *ISO Action Plan for developing countries 2011-2015*.

One of the innovations already launched under the plan is bringing together members of academia and national standards bodies (NSBs) to reflect on how to introduce standardization topics to educational curricula at all levels. This coincides with the launching of the ISO database of educational materials on standardization.

Another highlight is the development of workshops on good standardization practice. The programme covered by the workshop includes provision of a self-assessment tool to enable ISO members to benchmark their practices and embark on the path of improvement. One of the main objectives is to help them when developing standards to apply the six World Trade Organization principles for avoiding Technical Barriers to Trade.

To meet the objectives of the Action Plan, ISO has also been running training programmes for the secretaries of ISO technical committees (TC) and their support teams. In addition, a course for ISO/TC chairs and convenors has been developed.

A related innovation is a new course for implementing the guidance on engaging stakeholders in standardization work developed by the Process Evaluation Group (PEG) of the Technical Management Board (TMB).

Such initiatives are made possible not only by ISO member contributions, but also through funding by external donor organizations, particularly the Swedish Agency for International Development (Sida).

ISO/DEVCO Chair for 2010-2012, Dr. Bambang Setiadi (Indonesia), has been thanked by ISO Council for his numerous contributions, including his input to the development and implementation of the *ISO Action Plan for developing countries 2010-2015*. Evah Oduor (Kenya) has been appointed as the ISO/DEVCO Chair for 2013-2014. ∎
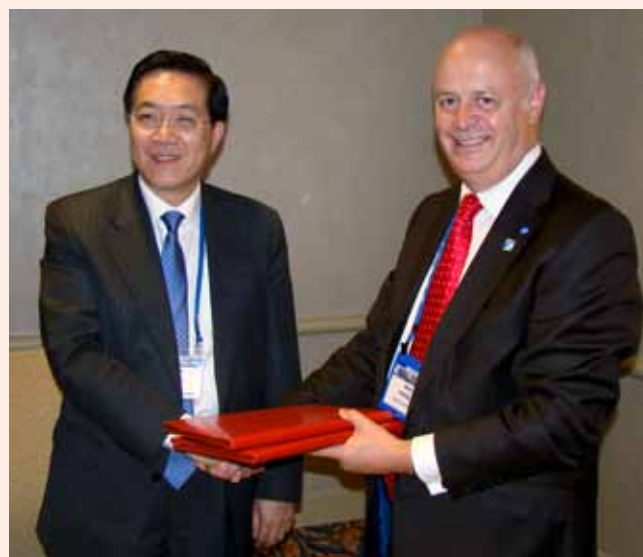
During the General Assembly week, ISO and the Standardization Administration of China (SAC) signed a Memorandum of Understanding aiming to increase SAC's participation in international standardization. The agreement was signed by ISO Secretary-General, **Rob Steele***, and* **Chen Gang***, Administrator, representing SAC.*

Sustainability and innovation

Leveraging International Standards

The " top table " at the ISO Open Session.

by Elizabeth Gasiorowski-Denis

Today, ISO's portfolio of more than 19 400 standards provide business, government and society with solutions in all three dimensions of sustainable development – economic, environmental and societal.

ISO standards are crucial to sustainable development, as they are a key source of technological know-how, including for developing countries and economies in transition. They are invaluable in helping countries develop their economies and build capacities to compete on global markets. Consumers, governments and businesses everywhere benefit from ISO's efforts.

In today's interconnected world, International Standards provide internationally harmonized solutions to global challenges that are too large for any one country to solve on its own. They allow the industry to move forward without each individual company having to do the ground-up implementation on its own. Because of standards, everyone can innovate and everything can interoperate.

It was precisely the mix of these two subjects that was at the heart of the lively open session held in September at the ISO General Assembly in San Diego, USA.

The open session provided an opportunity for stakeholders from around the world – including business leaders – to discuss the current issues around innovation and the economics of sustainable development, what is being done and what needs to be done better, and how standards could assist.

The event's interactive format prompted extensive discussion among participants, and generated a wealth of ideas to address gaps and opportunities as well as new avenues for the development of ISO standards. Some 100 ideas were captured from the two break-out sessions addressing the expectations on international standardization and highlighting a number of exemplary achievements around the world.

Dr. Boris Aleshin (far left) *captivated by a discussion on innovation and standards.*

The opening address was given by Dr. Torsten Bahke, Director of DIN, ISO member for Germany, who accentuated the importance of International Standards: "Global challenges need global solutions and ISO, through its national members and organizations in liaison, has a unique framework for bringing together the international expertise that can develop these solutions, and for disseminating them in an orderly and effective manner. ISO standards also ensure that innovative solutions can be transferred to developing countries so that the benefits are also available on a global basis."

Denise Naguib, Vice President, Sustainability and Supplier Diversity, Marriott International, Inc. (USA), made the keynote address to the first panel. She described the Marriott sustainability strategy and its journey, as well as the development with industry partners of an aligned carbon footprint methodology.

Ms. Naguib pointed out that a systematic approach to sustainability has helped the company succeed and drive innovation throughout its 3 700+ hotels/properties around the globe.

"As an industry, we have worked together to align on the methodology which we can all use to move forward and give consistent communication to our customers on our carbon footprint."

She went on to explain how sustainable hotels are not easily defined and the importance of standards. "The value of a standards approach is very important so we can better communicate to our customers,

Leading firms have adopted ISO standards to improve quality assurance, waste reduction, environmental impact, and safety.

including on the use of ISO 14001 for environmental management.

"The standards approach is incredibly helpful in the hospitality industry to ensure that we are aligned and drive sustainable development."

Business buy-in

Across many industries, leading firms have adopted ISO standards to improve quality assurance, waste reduction, environmental impact, and safety. Like other ISO standards, ISO 50001:2011, *Energy management systems − Requirements with guidance for use*, offers an organizational framework to achieve a greater goal, in this case, energy management. Its strategies include establishing management structures to increase accountability and results, applying energy efficiency to operations and maintenance, and integrating energy into areas such as training and procurement.

Industry use of ISO 50001 was well explained by Chad Gilless, Practice Lead – Strategy Energy Management, EnerNOC (USA), a leading provider of energy management applications and services.

ISO 50001 is being used as a strategic tool and framework in the multi-billion USD

*The panelists at the morning session, which addressed International Standards in support of sustainable development. From left: **Declan Meally**, Head of Department, Sustainable Energy Authority of Ireland; **Chad Gilless**, Practice Lead, Strategy Energy Management, EnerNOC (USA); **Denise Naguib**, Vice President, Sustainability and Supplier Diversity, Marriott International, Inc. (USA); **Haroldo Mattos de Lemos**, Vice Chair of ISO/TC 207, Chair Technical Council of ABNT (Brazil), and President of the Instituto Brasil PNUMA, and **Dr. Torsten Bahke**, Director of DIN, ISO member for Germany.*
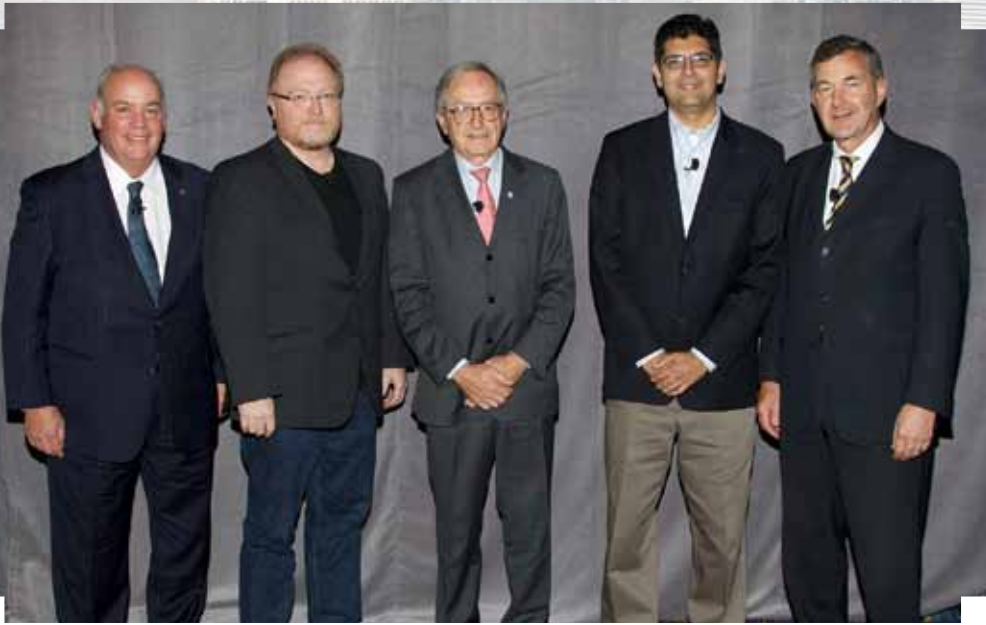
The panelists at the afternoon session, which addressed International Standards in support of innovation. From left : **Patrick MacLeamy**, *Chief Executive Officer, HOK Architects (Norway);* **Phil McKinney**, *an Innovation Consultant, and former Vice President and Chief Technology Officer for Hewlett-Packard's Personal Systems Group;* **Jacques Lair**, *Chair of ISO/TC 268;* **Rajan Rajeev**, *Senior Director, Product Management, Qualcomm Life Inc. (USA), and* **Dr. Torsten Bahke**, *Director of DIN.*

energy efficiency industry. Mr. Gilless, who has been involved with ISO 50001 since its inception in 2008, showed how businesses, energy utilities, and governments can leverage the standard to achieve their energy goals.

"Energy efficiency is a smart business," he said, "Studies show that implementing ISO 50001 is a smart payback at the facility level with a return on investment in a year or less."

He concluded : "ISO 50001 makes smart energy efficiency 'smarter', from equipment to energy data to organization."

The benefits of ISO 14001:2004, *Environmental management systems − Requirements with guidance for use*, particularly for SMEs, was also well explained by the next speaker, Haroldo Mattos de Lemos, President of the Instituto Brasil PNUMA (Brazilian Committee for the United Nations Environment Programme – UNEP).

Mr. Mattos de Lemos noted that ISO's work promotes sustainability and has always been an underlying concept of standards development. Take, for instance, the ISO 14000 family of standards for environmental management. Industry's use of the ISO 14000 series results in savings of natural resources, reductions in the generation of residues and pollution, supports

innovation in the use of natural resources and helps to ensure that goods and services are globally acceptable."

He highlighted the market situation for SMEs and the increasing demands being placed on them to prove the environmental management efficiency of their production processes. Additional support, he suggested, can improve the outlook, citing ISO 14005:2010, *Environmental*

management systems – Guidelines for a phased implementation of an environmental management system, including the use of environmental performance evaluation, which facilitates the inclusion of SMEs in their quest for sustainability.

"Society is seeing business as a solutions provider more and more," he said. "Business has the chance to contribute along with society to the formulation of the public policy agenda for sustainability."

The benefits of a public and private partnership was taken a step further and explored by Declan Meally, Head of Department, with responsibility for non-domestic energy efficiency, in the Sustainable Energy Authority of Ireland (SEAI), Ireland's national body for sustainable energy policy and programmes.

The SEAI/industry partnership is a model of how government and business can work together. It has been pivotal in turning Ireland into an international leader in energy-management best practice, solutions and systems. The publication of ISO 50001 has been crucial in creating a framework that is proven to deliver results.

In the early years, said Declan Meally, we were dealing with energy managers. ISO 50001 took it a step further by moving the discussion from "the boiler room to the boardroom", necessitating the involvement of the whole team and bringing together interested groups. "We saw major changes in productivity thanks to ISO 50001".

He gave an example : the Dundalk 2020 Project is creating the first sustainable

Some 100 ideas were captured from the two break-out sessions thanks to the active participation and engagement of all attendees.

Substantial feedback was gathered through interactive discussions at the break-out groups.

energy community in Ireland. The aim of the project is to examine, in a structured way, the interaction of all aspects of sustainable development and the potential of the region to act as an exemplar and national model for sustainable energy. Work to date on the Dundalk 2020 project has led to savings of several million Euros in energy and even more is envisaged. The innovation is the integration.

In support of innovation

International Standards bring innovation to the marketplace, facilitating the development of new markets and increased consumer knowledge and confidence. They make a positive contribution to the world we live in, providing solutions and achieving benefits for all sectors of activity, from sciences to technology, from management to finance or trade.

The keynote address to the second panel (on innovation) of the open session was delivered by Phil McKinney, an innovation consultant and former Vice President and Chief Technology Officer for Hewlett-Packard's Personal Systems Group, who spoke on the theme of "Standardizing sustainable co-innovation."

He underlined the one competitive advantage that is driving every organization – speed, and how to shorten the overall development cycle, including the industry standards process, so that "the work we do today can have an impact now, and not five to 10 years from now."

"Innovation is the engine that drives our economy," he said, "I'm a believer in co-innovation."

Mr. McKinney underlined the fact that success in standards is driven by bringing together more people at the table and putting the best ideas forward. "Scale has a huge benefit", he said, "it can accelerate new standards and address the innovation gap and the innovation delay."

The importance of innovation – as it relates to wireless healthcare – was the subject of the talk given by Rajeeve Rajan, Senior Director, Product Management, Qualcomm Life Inc. (USA).

Advances in wireless healthcare are providing improved sources of understanding for disease and treatment modalities, and are revolutionizing the provision of health services in both developing and developed countries.

"We have become untethered…our world is ruled by wireless. There are more people with access to cell phones, than to drinking water, electricity or a toothbrush."

However – and herein lies the challenge – the medical technologies sector is highly fragmented, highly competitive and highly regulated. There are, at the same time, opportunities for standards, the most immediate solution being interoperability.

"Fragmentation and connectivity cannot coexist", he said. In healthcare, devices and systems need to bridge these gaps through interoperability. And International Standards can provide interoperability solutions without which it would be impossible for these technologies to make the links necessary to work together.

Where do we go in the long term? "Standards can act as enablers to drive differentiation," said Mr. Rajan. "Standards should drive the lower layers of the system. This will enable vendors and providers to drive differentiation of their products at the upper and application layers."

The enabling role of International Standards was highlighted in a talk by Jacques Lair, Chair of the recently created ISO technical committee ISO/TC 268, *Sustainable development in communities*.

Discussion and dialogue head up this year's open session on innovation and sustainability.

The proposed programme of work for the newly created technical committee includes the development and implementation of holistic, cross-sector and area-based approaches to sustainable development in communities.

"The aim is in line with the overall objectives of sustainable development," said Mr. Lair. "These recommendations will improve use of local resources, give access to best available technology, and reduce environmental impact. And to succeed, innovative solutions will have to be adaptable and incremental."

Mr. Lair ended his talk by encouraging participation in the ISO technical committee whose success depends on the involvement of a large number of experts from a wide range of countries. The more the better.

An example of innovative thinking in the building sector was provided by Patrick MacLeamy, Chief Executive Officer of HOK Architects, a global design and services firm.

Some 100 ideas were captured from the two break-out sessions.

Energy consumption in buildings, he explained, represents nearly 40 % of the world's total energy use and 40 % of global solid waste. There are many ways to reduce these energy requirements, and the potential savings from energy efficiency in the building sector would contribute substantially to a worldwide reduction in energy consumption.

This is why buildingSMART is an innovation approach not only to building design, but also to construction through its entire life cycle.

The building industry can gain a high return on investment by looking across all phases of design, construction and occupancy. Mr. MacLeamy explained that for every Dollar/Euro/Pound spent to design a building, about 20 USD is spent to build that building. Most owners of buildings think of that as the end, he said, but it's only the beginning: the actual operating costs of the building are three times higher than the costs of design.

BuildingSMART consists of three models:

- Building information model (BIM): design (USD 1),
- Building manufacturing assembly (BAM): (USD 20)
- Building operation optimization model (BOOM): (USD 60)

BOOM has the biggest pay off! We can save at least 10 %, if not 30 %, on energy consumption throughout the lifetime of the building. Our job is to develop interoperable solutions that allow any ingenious provider to operate with any others, thus improving the built environment. This is the promise of buildingSMART.

"We think the end result of our work has to be embedded as ISO standards," he said. The building industry is not local, but global. The big constructors are everywhere. Building operations are a profession, not an afterthought.

Where are we going? Vision for the future

Addressing participants at the end of the conference, ISO Secretary-General, Rob Steele, reiterated the importance of the open session in today's economic climate. Innovation, sustainable development and standards make good business sense. "The need for standards won't go away; that much is clear," he said. "What needs to be clarified is the best road to follow to get there."

The open session's more casual format favoured interaction between speakers and audience. This led to lively and relevant discussions, allowing inquisitive minds to thrash out ideas on issues of relevance to sustainability, innovation and standards. The setting encouraged give-and-take, facilitating vigorous exchanges and addressing thought-provoking topics.

More than 100 ideas were synthesized into a few key themes.

- Success is made through collaboration [business, regulators, standards development organizations (SDOs), academia]
- Communication is key – are we (ISO) being understood?
- Accelerated rate of innovation
- Standards provide leveraged R&D and innovation
- Need speed to address markets…or miss out

In many, or most, presentations and discussions, speakers agreed that International Standards generate multiple benefits to all types of industries, from hospitality, to smart cities to buildings. There is room, and a pressing need, to develop more standards for all industries to help them innovate and reap further benefits… even more.

"All of the suggestions will be reviewed," said Rob Steele. "We will bring them together, and evaluate them, and, if possible, incorporate them into the implementation plan. Whereas broader, more strategic ideas will need to be transmitted to Council for further action."

The complete set of presentations made by workshop participants are now available.

All ideas and feedback submitted during the event are available at **www.iso.org/ga2012pres**. Information regarding follow-up on this input will also be posted there. ∎

Elizabeth Gasiorowski-Denis is Editor in Chief, *ISO Focus+*.

ISO road safety standard
Helping save thousands of lives worldwide

by Roger Frost

ISO has just published ISO 39001, a management system standard for road traffic safety. The standard is a practical tool for governments, vehicle fleet operators and all organizations worldwide who want to reduce death and serious injury due to road accidents. ISO 39001 provides them with state-of-the-art requirements for safety aspects including speed, vehicle condition and driver awareness.

ISO 39001:2012, *Road traffic safety (RTS) management systems – Requirements with guidance for use*, is widely regarded as a major contribution to the United Nations' Decade of Action for Road Safety 2011-2020.

Claes Tingvall, Chair of the ISO technical committee – ISO/TC 241, *Road traffic safety management systems* – that developed the standard, points out : "Road accidents account for some 1.3 million fatalities each year. The number of people killed is on the increase, particularly in low- and middle-income countries. It is crucial that governments commit to implementing a series of specific and attainable actions, including the setting of ambitious road casualty reduction targets. The sharing of know-how and experience is also needed.

"ISO 39001 will assist governmental and private sector organizations alike by providing a structured, holistic approach to road-traffic safety as a complement to existing programmes and regulations. It is based on the process approach, proven by successful ISO standards such as ISO 9001 for quality management, including the plan-do-check-act cycle, and a requirement for continual improvement."

The new standard lays down harmonized requirements, based on international expertise and applicable to all countries, to support all public or private sector organizations involved in regulating, designing or operating road transport. It will also help by providing a framework for contacts and communication between regulators, vehicle manufacturers and their suppliers.

ISO 39001 will be useful for organizations involved in road-safety related activities as varied as auditing the effectiveness of road safety programmes, such as for analyzing "black spots", or providing funding or awarding prizes for road safety.

"The standard has been developed with the support of experts from 40 countries and 16 liaison organizations, including the World Health Organization, the World Bank, and the International Road Federation," according to Peter Hartzell, Secretary of ISO/TC 241.

"The committee will continue its work by following the global implementation of ISO 39001 and by providing awareness of lessons learnt from case studies. The committee will be developing other related standards so we would be happy to hear from other ISO member countries wishing to join us in the work."

ISO 39001:2012, *Road traffic safety (RTS) management systems – Requirements with guidance for use*, is available from ISO national member institutes and from ISO Central Secretariat (**www.iso.org**) through the ISO Store or by contacting the Marketing, Communication and Information department (**sales@iso.org**). ■

Roger Frost is Head of Communication Services, ISO Central Secretariat.

Cities

Guest interview

In an exclusive interview, John F. Malloy, Chairman, President and Chief Executive Officer of Victaulic, a global leader in the design and manufacture of mechanical pipe-joining system solutions, highlights the importance of International Standards to the company:

"The nature of our business and the breadth of markets in which we operate necessitate a global perspective. International Standards are part of the Victaulic difference.

Find out more in the next issue of *ISO Focus+*. ∎

Out of the earth's seven billion inhabitants, half of us now live in cities and urban areas. It is estimated that in little more than a generation, two-thirds of the world's population will be city dwellers.

As the population living in urban areas grows, it is becoming increasingly important to focus efforts more closely on cities in order to improve urban planning and operation and to promote the sustainable development of cities.

The United Nations Conference on Sustainable Development (Rio+20), which took place earlier this year, and in which ISO took part, emphasized the important role played by cities in building sustainable societies at an economic, social and environmental level.

The ISO standards have a key role to play in the construction and development of cities. The January 2013 issue of *ISO Focus+* includes an overview of the major concerns of cities today and of the standards enabling such issues to be addressed.

ISO standards are improving the energy efficiency of buildings, increasing safety in cities, planning sustainable urban development, developing reliable road networks and effective means of transportation, reducing pollution and dealing with water and wastewater management.

Providing city dwellers with quality of life, whilst at the same time meeting the pressures exerted by demographic growth, urbanization and climate change, is a major challenge.

To find out more about how ISO standards provide essential support to governments, authorities, industry and services in building the cities of the future, don't miss the next issue of *ISO Focus+*! ∎

ONLINE

ISO Focus+

The electronic edition (PDF file) of *ISO Focus+* is accessible free of charge on the ISO Website **www.iso.org/isofocus+**. In addition, the entire collection of previous issues of *ISO Focus+* editions, plus *ISO Focus* (2004-2009), plus *ISO Management Systems* magazine (2001-2009) is also available free of charge as electronic files.

ISO Update

The *ISO Update*, a monthly supplement to *ISO Focus+* is available electronically (PDF) in both English **www.iso.org/isoupdate** and French **www.iso.org/fr/isoupdate**.

The ISO Update informs readers about the latest developments in the ISO world, including ISO member bodies' CEO and address changes, draft standards under circulation, as well as newly published, confirmed or withdrawn standards. It also includes a list of upcoming technical committee plenary meetings.

You have to be organized.

The integrated use of management system standards.

Organizations face multiple challenges. Quality and environmental management, information security, food safety, supply chain security and occupational health and safety among others. More and more are turning to management system standards (MSS) to help them meet such challenges efficiently and effectively. The combined book and CD,
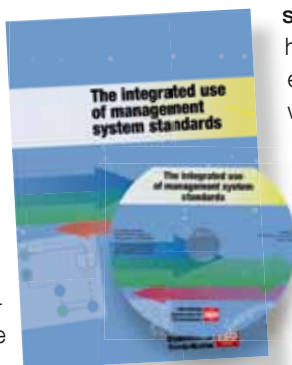
The integrated use of management system standards, explains how to integrate the required elements of different standards within the organization's overall management system. Based on the practical experience of organizations large and small, the book identifies methodologies, tools and good practice.

Available from ISO national member institutes (listed with contact details on the ISO Website at **www.iso.org**) and from the ISO Central Secretariat Webstore at **www.iso.org/isostore** or e-mail to **sales@iso.org**.

ISBN 978-92-67-10473-7

International Organization for Standardization – **www.iso.org**

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