

ISO *Focus*+

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From fish to forests

- **BRANZ CEO:** “International Standards encourage economic growth.”
- **SME sails global waters with ISO**



ISO Focus+

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Harvesting benefits sustainably

The United Nations has designated 2010 as the International Year of Biodiversity, while the theme of this year's World Environment Day on 5 June is, "Many Species. One Planet. One Future.". Clearly, this is an appropriate moment to focus on two major components of biodiversity – timber and fisheries.

Both are undergoing heavy exploitation worldwide as economic resources, and are a principal source of livelihood for many developing countries.

In its 2009 report, *The State of the World's Forests*, the Food and Agriculture Organization (FAO) states that, "The production and consumption of wood products and wood energy are expected to increase.

"One shift will be the higher growth in the production and consumption of wood products in Asia and the Pacific, mainly stemming from the rapid growth in demand from emerging economies such as China and India. The most dramatic change will be the rapid increase in the use of wood as a source of energy, particularly in Europe as a result of policies promoting greater use of renewable energy."

On fisheries, FAO's *The State of World Fisheries and Aquaculture 2008* report points out that, directly or indirectly, this sector plays an essential role in the livelihoods of millions of people around the world.

The report says that while fish supply from wild capture fisheries has stagnated, the demand for fish and fishery products continues to rise, and consumption has more than doubled since 1973. This has resulted in a robust increase in aquaculture production.

"Similarly, the contribution of aquaculture to fish food supply has increased significantly, reaching a high record of 47% in 2006 (compared with a mere 6% in 1970). This trend is projected to continue, reaching 60% by 2020."

ISO's developing country members, which account for 123 out of the total

membership of 161, are major stakeholders in the evolution of the markets for timber and fisheries, since the latter comprise significant resources for a number of them. At the same time, we can expect that the increasing economic exploitation of timber and fisheries will have environmental and social effects.

This is why ISO International Standards, which address all three dimensions of sustainable development, are so important to ISO's developing country members. ISO standards for the more traditional activities of wood products and for the newer enterprise of aquaculture help to ensure business efficiency balanced by the intelligent and responsible use of resources.

In addition, ISO's work on environmental labelling helps protect customers, consumers and the economies of developing countries from the confusion that can be caused by a proliferation of labelling and certification schemes.

The benefits that ISO standards can bring developing countries is showcased in the Special Report by success stories of a fish processor in Namibia and a paperboard company in Brazil.

Clearly, developing countries can only benefit from international standardization. However, their financial resource constraints make it difficult to participate in developing the ISO standards that will affect them.

Developing countries comprise 42 out of the 73 participating members of ISO/TC 207, *Environmental management*, whose work includes environmental labelling. However, they account for roughly only a third of participating members

in the other technical committees highlighted in this Special Report.

This underlines the important contribution towards redressing the balance that the ISO Committee on developing country matters (ISO/DEVCO) makes through its training, capacity building and information programmes to help developing countries derive optimal benefits from International Standards and to participate to the maximum in international standardization.

To enable us to keep up the good work, I urge the ISO family to provide full support for the *ISO Action Plan for developing countries 2011-2015* due for approval during the ISO General Assembly week in September. At the same time, I encourage potential development aid donors to read the new brochure *ISO – A trusted partner for development donors* – which provides concrete examples of ISO's proven track record as an efficient and effective partner in creating and implementing technical assistance and training programmes for developing countries. ■



Bambang Setiadi
Chair, ISO Committee on developing country matters (ISO/DEVCO)

Global solutions for global issues

ISO Secretary-General Rob Steele and Deputy Secretary-General Kevin McKinley attended the World Business Council for Sustainable Development (WBCSD) meeting in Montreux, Switzerland, in March 2010.

Mr. Steele joined a panel on the importance of global governance and effective engagement. Looking beyond the UN Framework Convention on Climate Change meeting in Copenhagen, Denmark in 2009, it focused on the steps that could be taken and the impact of global economic growth and power – especially the growing influence of G20 countries. The panel was moderated by Mark Speman, Global Head of Strategy for Accenture.

Mr. Steele made the point that ISO standards, and the process used to develop these standards, offered a clear way for industry to move ahead in addressing these issues in an efficient and effective manner. They were a means to quickly achieve global consensus and acceptance of solutions that were pragmatic and able to be widely implemented. He said, “The issues discussed are global; therefore the solutions should also be global in their acceptance and implementation.”

WBCSD involved as is a liaison organization in a number of ISO committees including those dealing with environmental management, life cycle assessment and social responsibility.

Measuring new materials and technologies

The Versailles Agreement on Advanced Materials and Standardization (VAMAS) held the 35th meeting of its Steering Committee in India, in March 2010.

The meeting was preceded by a workshop on measurement needs for emerging materials and technologies. Examples were given by the National Solar Mission of India, which aims to deploy solar panels with a view to generating 20 000 MW of electric



ISO Secretary-General **Rob Steele** (left) at the WBCSD panel on global governance and effective management.

cal power by 2022, particularly regarding research needs to enhance the durability of fuel cells and the use of nanomaterials for sequestration of green house gases.

The Steering Committee itself reviewed status reports from its technical working areas as well as establishing a new one to deal with qualitative microstructural analysis. The latter work, in particular, is intended to facilitate further standardization work by ISO technical committee ISO/TC 202 *Microbeam analysis*. To date, the pre-standardization research carried out by VAMAS has resulted in the publication of some 70 standards relevant to advanced materials.

Mutual recognition schemes and the Arab region

ISO Vice-President (technical management) Jacob Holmblad represented ISO at the 35th meeting of the High Consultative Committee for Standardization of the Arabic Industrial Development and Mining Organization (AIDMO) held in Cairo, Egypt at the invitation of the Egyptian standards body EOS, on the occasion of Arab Standards Day, in March 2010.

Mr. Holmblad addressed the topics of conformity assessment and mutual recognition schemes (MRS), saying, “MRS help reduce costs of trade and the multiple conformity assessment that products, services, systems, processes and materials may need

to undergo, especially when they are traded across borders.

“They contribute to the efficiency of the international trading system by facilitating the acceptance of goods and services everywhere on the basis of a single assessment in one country. And are thus a benefit to suppliers and customers alike.”



ISO Vice-President **Jacob Holmblad** (second from right) at the AIDMO meeting.

Mr. Holmblad also spoke on climate change and social responsibility. On the former, he highlighted the multifaceted response from ISO which looks at renewable resources, environmental management, greenhouse gases and energy efficiency. On the latter, he provided the background to the ISO 26000 standard for social responsibility, whose publication is expected towards the end of 2010.

International Year of Biodiversity

To raise awareness about the rapid loss of biodiversity – the huge variety of animals and plants, their habitats and their surrounding environments – the United Nations (UN) has declared 2010 the International Year of Biodiversity.

Biodiversity provides humans with food, fuel, medicines and other essentials we cannot live without. Yet the UN warns that this rich diversity is being lost at a greatly accelerated rate because of human activities. Not only does this impoverish us, but it weakens the ability of living systems, on which we depend, to resist growing threats such as climate change.

Consensus-based International Standards are powerful tools for taking action. The Special Report of this issue of *ISO Focus+* highlights some of the areas where ISO standards can make a difference in forestry, as well as aquaculture and fisheries. However, many other ISO standards, such as those developed by ISO/TC 207, *Environmental management*, also make an important contribution. ■



Participants at the VAMAS 35th meeting, India, 2010.



Photo : BRANZ

Brick veneer shake table testing.



Photo : BRANZ

Brick veneer testing in the structures lab.

ISO Focus+: *Despite global financial woes, the building and construction industry is one of the most flourishing in the world as significant infrastructural projects continue. How effective are International Standards in encouraging economic growth in the building and construction sector and in addressing key issues, such as quality and safety?*

Pieter Burghout: International Standards generally are well recognized worldwide as providing proven industry best practice solutions to building and construction methodologies. In many countries, such as New Zealand, International Standards are helping put detail to otherwise non-prescriptive performance-based building codes. International Standards encourage economic growth by helping to standardize across country borders certain industry practice – particularly in the area of quality and safety. In New Zealand, the use of these standards is important not



Photo : BRANZ

Partition wall brace testing.



Photo: BRANZ

Two storied brick veneer post shake table testing.

ternationally Standards should provide the user:

- Guidance on modelling complex systems to best reflect real-world conditions, with many interdependencies
- Guidance on dealing with uncertainties, such as those afforded by end-of-life scenarios
- The flexibility to provide direction regarding the assessment of various

depths of analysis, for better meeting the needs of the wide diversity of users

- The ability of practically integrating LCA and LCC analysis.

ISO 14040 contributes in many ways. Firstly, it provides practical and sensible guidance on issues, such as the scope of the study and data collection procedures. Secondly, ISO 14040 provides enough flexibility in the approaches that can be



Photo: BRANZ

Accelerated weather testing.

taken. Without reducing the robustness and merit of the resulting outcome and finally, ISO 14040 provides references to other ISO standards where more detail is necessary

ISO Focus+: *Can you say how ISO 14000 – whose portfolio includes such topics as environmental auditing, environmental labelling and environmental communications – contributes to protecting and preserving the environment?*

Pieter Burghout: The ISO 14000 suite provides a common, inter-connected, and comprehensive language from which a wide variety of users can understand, and hopefully therefore better manage, control, and interpret complex environmental systems. As the international community embraces these standards, the potential to rapidly change the environment – for the better – is greatly increased.

Interoperability is a key role of ISO standards.

ISO Focus+: *What added value would you see in International Standards providing guidance on the interlinkage between environmental integrity of the planet, economic growth and societal equity and perhaps further extending the toolbox to include issues such as social responsibility?*

Pieter Burghout: One core role standards can perform is to provide agreed understandings in newly developing areas, so that everyone can operate from the same platform. The three Bruntland sustainability dimensions are, in reality, still evolving, and standards – locally and internationally – are very much required to give greater clarity and certainty. As the question notes, social responsibility is also coming to the front as a best practice indicator/benchmark, so its incorporation – voluntarily at first – will need to be allowed for.

Further to this, BRANZ welcomes the potential introduction of ISO 26000 (which gives guidance for social responsibility – currently a draft standard). The need for organizations in both public and private sectors to behave in a socially responsible way is becoming a requirement of society. It is shared by industry, government, labour, consumers, and others, to provide geographical and gender-based balance.



Photo : BRANZ

BRANZ research facility.

At BRANZ, we see so many positive aspects in this area for linking economic growth with responsibility to the people across multiple generations who will actually live in the buildings we create. The key interlinkage between these otherwise competing concepts is about balance –

while also allowing for locally determined solutions where appropriate.

In many cases, standards often set minimum criteria/benchmarks – whereas both consumers and industry practitioners are looking for good-better-best solutions. Standards will need to increasingly target this good-better-best space.



Photo : BRANZ

Room fire test.



Photo : BRANZ

Fastener corrosion exposure site.

ISO Focus+: Fire safety engineering, including construction details, detection and alarm systems, extinguishing systems, egress routes and others, is increasingly being used in the design of public buildings. In what way do International Standards for fire safety engineering support the work of BRANZ and what are BRANZ's expectations in this regard?

Pieter Burghout: BRANZ is actively involved in ISO technical committee ISO/TC 92, Fire safety, particularly subcommittee SC 4, Fire safety engineering. BRANZ's participation in ISO/TC 92/SC 4 and its associated working groups helps ensure that information developed for the New Zealand building sector will be relevant to our industry. It also provides an important opportunity for the New Zealand industry, via BRANZ, to benefit from international linkages by working closely with other international experts, as well as by providing an opportunity to learn from, and influence, international directions in fire safety engineering. ■

About BRANZ

BRANZ is the principal supplier of independent and impartial research and information services to building industries around the world.

BRANZ's core purpose is to create better buildings through research driven leadership and to inform, educate and motivate those who shape the built environment. This is achieved through the work of 100 highly trained, specialist staff with a broad range of experience and capabilities, and an end-to-end understanding of the industry. BRANZ is able to provide a one-stop shop for problem solving and information uniquely focused on building and construction.

As well as its own research programme work, BRANZ is involved in a number of broader industry initiatives, including Beacon Pathway Ltd, the Structural Timber Innovation Company (STIC) and the development of the Single Rating Tool. BRANZ also has an ownership interest in Masterspec.

As both government and corporate clients need authoritative and practical information, BRANZ has developed and then delivered a deep and broad research and information programme, including seminars, research projects, publications, product testing and evaluation, digital tools and much more.



From fish

by Sandrine Tranchard

As the use of fish and wood products (including as energy sources) continues to grow, they are fast becoming the world's most traded commodities in their respective fields. At the same time, both sectors, crucial to biodiversity, are facing the pressing threat of climate change.

Biodiversity – the huge variety of animals and plants, their habitats and their surrounding environments – provides humans with food, fuel, medicines and other essentials we cannot live without. The United Nations de-

clared 2010 the International Year of Biodiversity to raise awareness about its rapid loss. Consensus-based International Standards are powerful tools for taking action.

The Special Report of the May issue of *ISO Focus+* highlights how standards are supporting the three pillars of sustainable development – economic, social and environmental – in the forestry, fisheries and aquaculture sectors.

ISO's contribution to timber structures, for instance, has already led to a globally harmonized testing methodology. It has driven international coop-

eration for the development and implementation of strategies optimizing the sound utilization of forest resources.

In response to the emergence of new engineered wood-based products, and in anticipation of wood being increasingly used in multi-storey and non-residential buildings, ISO/TC 165 (timber structures) has published and continues to develop key standards in the area. The work of ISO/TC 218 (timber) also ensures the sustainability and reliance of timber products.

With the latest technological developments, ISO/TC 23/SC 15 (tractors and machinery for forestry) now



to forests

faces new and different challenges from those 35 years ago when the subcommittee was established. International standardization follows the evolution of the sector, which today includes electronics control and high-tech items.

Seafood is the number one traded food in the world, and most countries are, to some degree, active in the fisheries and aquaculture sectors. In a key area of concern for biodiversity, ISO technical committee ISO/TC 234, *Fisheries and aquaculture*, is currently developing much needed International Standards for the sector.

Today, businesses looking to improve the environmental impact of their products and services must take account of globally recognized standards. ISO has been a very active player, developing, among others, standards for environmental or “green” labelling. Its work in this area covers self-declared environmental claims, eco-labelling schemes and life cycle labelling. Because ISO standards take the views of all stakeholders on board, they are internationally recognized as representing objectively agreed benchmarks.

The following Special Report showcases ISO’s work in forestry and fish-

eries as well as stories from companies benefiting from these standards. Among them is a Namibian fish processor that gained greater customer confidence in global marketplaces by implementing management systems standards for the environment and food safety.

Similarly, a large Brazilian company in the paperboard market tells us the key role ISO quality and environmental standards played in its success story. ■

Sandrine Tranchard is Communication Officer at the ISO Central Secretariat.



Timber structures Building on solid standards

by Erol Karacabeyli

The most prolific committee developing standards related to timber structures is ISO technical committee ISO/TC 165, *Timber structures*. Its work supports the efficient use of human and natural resources around the world. The committee deals with standardization concerning structural applications of timber, wood-based panels, other wood-based products, and related ligno-cellulosic fibrous materials. It represents many timber producing and consuming regions, with a total of 55 countries either participating or observing its work. Its secretariat is currently held by Canada.

Home sweet home

In response to the emergence of new engineered wood-based products and in anticipation of wood being increasingly used in multi-storey and non-residential buildings, ISO/TC 165 has published a number of key testing International Standards for engineered wood products and connections.

Wood building systems have been traditionally used in housing in Australia, Japan, New Zealand, North America and Scandinavia. Sustainable wood production and use in building construction has brought significant economic and social benefits to many developed regions of the world.

A growing number of products manufactured from certified forests are taking this

trend to the global level. These developments, together with the growing influence of references to international standards in the World Trade Organization's Technical Barriers to Trade Agreement (WTO TBT), have elevated the urgency and importance of the portfolio of ISO/TC 165.

Gluey connections

Glued-laminated timber (glulam) is an engineered wood product used in many non-residential building applications. Within ISO/TC 165, working group WG 2, *Requirements for structural glued laminated elements*, develops standards in this area.

WG 2 is currently exploring a parallel standard development in collaboration with the European Committee for Standardization (CEN) under the Vienna Agreement, on cross-laminated timber, massive wood floor and wall plates that have been used in many non-residential applications in Europe, and have attracted

a great deal of international interest.

Another working group, WG 6, *Glued joints for timber structures*, has developed an ISO standard for finger jointing, glue-line shear and delamination tests. It currently is working on an International Standard for bond performance of structural wood adhesives. Because structural wood-composite products are made with structural adhesives, this standard is of paramount importance for engineered wood products.

*The value of global
trade in wood products
exceeds USD 50 billion*

Working group WG 7, *Joints made with mechanical fasteners*, on the other hand, deals with connections in wood structures. The group has produced a framework widely regarded as a good example of the “big picture” for standards development in this area. Five members of the group are project leaders, each responsible for the development of a different standard.

WG 7 has produced a test standard for cyclic load testing of connections (ISO 16670:2003), which includes an internationally agreed cyclic test protocol for the development of connection properties against earthquake loading.

Recently, the same protocol was adopted in ISO 21581, *Static and cyclic lateral load test methods for shear walls* (although currently a draft, publication is expected soon), for testing of wood shear wall assemblies. Several research projects are dedicated to cyclic testing of joints and shear walls globally, and the ISO cyclic test protocol is playing a major role in the comparability of results. The protocol supports standards harmonization and is included in an ASTM (American Society for Testing and Materials) standard.

Working groups WG 8 and WG 9 are close to completing respectively, ISO standards for structural insulated panels and for poles.

A key standard published in 2007 and developed by ISO/TC 165 subcommittee SC 1, *Wood materials – Durability and preservation*, is ISO 21887, *Durability of wood and wood-based products – Use classes*.

Another important project for ISO/TC 165 was the development of bamboo

The big picture

ISO/TC 165, *Timber structures*, develops International Standards for wood-based products and systems that facilitate global trade for the industry.

ISO/TC 165 activities also support trade and innovation by providing countries with access to leading experts in timber research, and by maintaining liaisons with key committees such as ISO/TC 98, *Basis for design of structures*, ISO/TC 89, *Wood-based panels*, ISO/TC 218, *Timber*, and ISO/TC 59, *Building construction*.

In addition, the committee monitors design standards for reinforced concrete, as many hybrid applications may involve both concrete and timber.

Participation in the committee is high and continues to increase. Its members are eagerly pushing for progress. The committee’s open consensus-building discussions tend to converge on solutions that are economical, while meeting acceptable performance levels.



Timber or lumber ?

Timber is produced from the trunks of growing trees, and used for manufacturing a variety of products. Standardization not only helps improve production and marketing of timber goods, but also takes into account environmental concerns of the resource.

ISO technical committee ISO/TC 218, *Timber*, is responsible for the development of International Standards on forest products. In the past few years the committee has been exceptionally active, elaborating a scientifically-based development plan to optimize the efficiency of its standards.

For instance, it is crucial that manufacturers, suppliers, researchers and scientists can understand each other across countries and regions. European timber or American lumber? Synonyms, homonyms, language and regional barriers are the first hurdles that standardization aims to overcome. In ISO/TC 218 these are tackled by working group WG 1, *Terminology*, which defines terms for :

- Specialists (e.g. silviculturist or joiner)
- Processes for the transformation of wood as it progresses from one condition to another
- Trees at all stages of their life cycle, from reproduction through to secondary use
- Conditions for the use of wood depending on its purpose, for example “firewood” (heating) and “balances” (chemical manufacture).

Another crucial issue is providing concrete information on who should use the various ISO/TC 218 standards, so that implementation is carried out by the right players. Consumers, traders, specialists or managers? This is particularly important for production management systems.

In addition, several ISO/TC 218 working groups follow the life cycle of wood :

- WG 2, *Round timber*
- WG 3, *Sawn and processed timber*
- WG 6, *Wooden products*
- WG 7, *Wood resources*.

A Chairman’s Advisory Group (CAG) acts as the scientific-methodological centre. Its functions include theoretical and methodological provisions for future development, and the organization of timber standardization related conferences.

What is needed for timber standardization to work effectively ?

Very little ! It is only necessary to be aware of the place and role of standardization in a management system. Once this is understood, it is not difficult to see that the cost of standardization is not huge, whereas the benefits of its correct implementation can be enormous.

Extracted from article by Mykola Vedmid, Chair, and Ivan Derevyanko, Secretary, ISO/TC 218, *Timber*, first published in *ISO Focus*, February 2009.





A six-storey glulam post-and-beam structure with reinforced concrete cores (CSN FondAction building) in Quebec City, Canada, illustrates how wood products can be used with other materials.

standards for building construction. The resulting standards combine knowledge from experts dealing with traditional ligno-cellulose materials from the tropics with experience in test methods and manufacturing of wood-based products, as well as the design and construction of wood systems.

Finally, working groups WG 10 and WG 11 are undertaking two very challenging tasks. The first is developing an ISO standard for determining the characteristic strength of all wood-based products, and the second is the creation of a structural classification system for sawn timber. These standards will be crucial for the development of design values, and for facilitating global trade of sawn timber.

Overcoming challenges

International Standards facilitate trade and level the playing field globally. The standardization process, however, can be challenging, particularly when it comes to creating consensus.

In the area of timber structures, Europe, Japan and the USA have each invested heavily in development of national standards. That means that there are other published national standards when an ISO standard is being developed.

ISO/TC 165 working groups carefully examine existing national standards. In some cases, and depending on the circumstances, more than one test methodology may be included in a particular ISO standard. This approach overcomes a potential

impasse within the committee, creating a forum where national member bodies can come together to discuss differences between their methodologies.

In the long run, these differences will likely be harmonized as ISO standards are adopted by its members.

For countries that are not able to dedicate substantial resources to standards development, International Standards represent a unique opportunity to accelerate adoption of wood-based building construction by being part of building the international consensus, and having access to state-of-the-art technological know-how.

Pursuing consensus

ISO/TC 165 has been successful in the development of relevant standards primarily due to wide and effective participation. The committee has been able to develop a suite of testing, manufacturing and evaluation standards for wood-based products, connections and shear walls. The greatest strength of the committee is its ability to bring together the leading experts in pursuit of consensus.

The committee recognizes the intricacies related to the use of wood-based products and systems to meet local demands in different regions of the world. Considering that the value of global trade in wood products exceeds USD 50 billion, ISO standards developed by ISO/TC 165 have an important role to play in supporting the efficient use of human and natural resources around the world. ■

About the author



Erol Karacabeyli is co-leader of the FPInnovations Forintek's Building Systems Research Program. He is well-known internationally in the field of timber

engineering. He has published research findings in more than 100 publications. Mr. Karacabeyli is Convenor of ISO/TC 165/WG 7, and Head of the Canadian delegation.

Hazard reduction

Protecting forest machine operators

by Pekka Olkinuora

Forestry work is dangerous. Loggers and other workers often drive heavy machinery on steep slopes and uneven terrain, in conditions involving snow, ice and falling trees. It's a recipe for disaster. Yet, until 1975, there were no recognized testing standards to improve machine safety to protect forest machine operators from accidents such as roll-over, falling objects or poorly guarded chain saws of harvester felling heads, for example.

The industry recognized that such standards were urgently needed, and in 1975, ISO technical committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, subcommittee SC 15, *Machinery for forestry*, started its work, with the Finnish Standards Association (SFS) as secretariat. From the beginning, the safety of forest machinery operators has been its primary objective.

Since then, SC 15 has been responsible for the development and publication of some 13 International Standards, with a further four in the final stages. They have established the requirements for laboratory test methods, performance criteria and safety, and standardized the terminology, definitions, and specifications used by the forestry industry today.

These standards are recognized worldwide and have significantly influenced the safety of forestry machinery. They cover many devices that have revolutionized forestry processes, including:

- Chain saw-type cutting elements of felling heads
- Skidders
- Feller-bunchers
- Processors
- Harvesters
- Knuckleboom log loaders
- Winches.

Thinking preventively

To protect operators from injuries caused by a machine roll-over, SC 15 developed ISO 8082-1, *Self-propelled machinery for forestry – Laboratory tests and performance requirements for roll-over protective structures – Part 1: General requirements*.

Now in its third edition, ISO 8082 for roll-over protective structures (ROPS) provides a repeatable static laboratory method for testing the strength of the operator enclosure. The ROPS-frame is tested to measure its ability to withstand a roll-over and maintain a survival zone for the operator in case the structure is deformed as a result of a roll-over. A second part is currently being developed for machines where the cab and boom are on the same rotating platform (ISO 8082-2).

Another key safety standard is ISO 8083:2006, *Falling-object protective structures (FOPS) – Laboratory tests and performance requirements*. ISO 8083 provides a method for testing the strength of the operator's workplace roof against impact from, and penetration of, logs, branches and similar falling objects.

It acknowledges different levels of risk between machines designed to handle large diameter saw-logs, and those used to thin residues for chipping, for example.

Furthermore, a forest machine must also have operator protective structures (OPS), such as windows, to prevent penetration by logs and other objects slipping from the loader grapple. Steel bars and steel wire mesh are commonly used on skidder windows, and polycarbonate is widely used for the windows of harvesters and forwarders.

ISO 8084: 2003, *Machinery for forestry – Operator protective structures*



ISO 11839 specifies testing criteria for glazing and panel materials used in an operator enclosure to protect against thrown sawteeth. Pictured here, collision of a four-pointed saw tooth on a polycarbonate window.



Photo: P. Oikarinen

An articulated grapple skidder pulling away branches from the cab windscreen.

– *Laboratory tests and performance requirements*, provides a test method for various types of OPS protection.

ISO 8084, however, does not cover protection from flying objects such as broken cutting saw chain components on harvesters, or circular saw teeth on feller-bunchers. This is a serious area of risk and fatalities have been recorded. However, SC 15 is working on two new standards that will address this need, and publication is expected during 2010.

The first standard will evaluate saw chain protection systems designed to guard against flying broken chain pieces, ISO 11837, *Machinery for forestry – Saw chain shot guarding systems – Test method and performance criteria*.

The second will provide methods to test the resistance of cab enclosure materials against broken circular saw teeth up to 50 mm × 50 mm in size, ISO 11839, *Machinery for forestry – Glazing and panel materials used in operator enclosures for*

protection against thrown sawteeth – Test method and performance criteria.

All the above standards cover type-tests where the manufacturer is responsible for ensuring that all structures fitted to commercially available machines are similar to the laboratory tested samples.

Safety and performance

In addition to specific safety risks, SC 15 has also published a general safety standard for forestry machines, ISO 11850: 2003, *Machinery for forestry – Self-propelled machinery – Safety requirements*.

First published in 1996, and with a third edition now at voting stage, ISO 11850 establishes dimensions for self-propelled machine access, including steps and doors, and requirements for seating, controls, lights, brakes, markings, and maintenance.

The ISO standard has also served as a basis for the harmonized European standard EN 14861:2004. ISO 11850 is an in-

ternationally recognized standard that has contributed greatly to the safety of forestry machinery.

Over 45% of the world's forest harvesting is carried out mechanically.

Three other SC 15 standards specify requirements for brakes for wheeled and tracked machines, and for safety of forestry winches:

- ISO 11169: 1993, *Machinery for forestry – Wheeled special machines – Vocabulary, performance test methods and criteria for brake systems*
- ISO 11512: 1995, *Machinery for forestry – Tracked special machines – Performance criteria for brake systems*
- ISO 19472: 2006, *Machinery for forestry – Winches – Dimensions, performance and safety*.



Photo: Ponsse Oyj



Photo: Ponsse Oyj

A harvester felling a tree in Finland. The harvester head pulls the trunk through itself, debranching it, cutting it to desired lengths and recording each log length, diameter and total volume of a single tree or a day's output. This high-tech system may also have an online contact with the saw or paper mill with data of wood and location of piles.

A forwarder makes its load and carries it to the roadside. The logs remain clean in this system. In-snow moving capacity is important as harvesting is done throughout the winter.

Using the right terms

Having a common terminology is key for the industry as well as for the users of standards. Several of the standards developed by SC 15 establish terms, definitions, classifications and commercial specifications used widely by the forestry machinery industry.

ISO standards have significantly influenced the safety of forestry machinery.

A naming system for forestry machinery, according to the functions they perform, is outlined in ISO 6814: 2009, *Machinery for forestry – Mobile and self-propelled machinery – Terms, definitions and classification*.

Special terminology is specified in the following standards:

- Forwarders (ISO 13860: 2000)
- Wheeled skidders (ISO 13861: 2000)
- Feller-bunchers (ISO 13862: 2000)
- Knuckleboom log loaders (ISO 17591: 2002).

SC 15 cooperated closely with subcommittee TC 23/SC 14, *Operator controls, operator symbols and other displays, op-*

erator manuals, when developing control symbols for forestry machinery.

High-tech in forest harvesting

Over 45% of the world's forest harvesting is carried out mechanically, of which 65% is by the so-called "tree length method", used extensively in North America, and 35% by the "cut-to-length" method, used mainly in Europe.

In the tree length method, standing trees are felled by a self-propelled feller-buncher, which arranges them in bunches ready for dragging by a self-propelled skidder to a landing area where they are cut into logs.

In the cut-to-length method, a self-propelled multi-function harvester fells the trees, debranches and cuts them into predetermined lengths. Payment to the forest owner and harvester contractor is based on the amount of wood measured and recorded by the felling head.

A self-propelled forwarder carries the log piles to trucks for onward transportation. The system may also include satellite tracing of wood piles by type, amount and location, to help factory identification and collection.

Modern forestry machines are highly developed, and very different from those

used when SC 15 started its standards development work 35 years ago. But while some of the new standardization challenges include high-tech issues such as the reliability of electronic controls, the machines and their operators still require roll-over protection, good access and seating.

Further development of such fundamentals will continue to be the focus of future standardization work. ■

About the author



Pekka Olkinuora, recently retired from the Finnish Standards Association's standards writing body MTT Vakola. He was Secretary of ISO technical committee

ISO/TC 23, *Tractors and machinery for agriculture and forestry*, subcommittee SC 15, *Machinery for forestry*, from its inception in 1975 until May 2009, and coordinated all 25 SC 15 meetings during that time. He was also responsible for Finnish participation in international and European standardization of agricultural machinery.



Forest certification

Looking for honesty and credibility

by Chris Goulding

Sustainable forest management has become a critical global issue, with consumers increasingly demanding wood products supplied from “well managed” forests. And since the early 1990s, the formal certification of forest management, together with Chain of Custody (CoC) certification which follows products from its origins to their end-use, have been driving forces in this endeavour.

Environmental concerns – particularly the effects of illegal and indiscriminate logging resulting in forest disappearance, degradation and carbon emissions – have been translated into market signals that motivate the industry. Wealthy markets are demanding more “green” and sustainable products, and certification is seen as opening the door to those markets.

With increasing international trade in wood products, forest management standards influenced by concerned consumers in one part of the world are affecting foresters in another.

Major initiatives

Major internationally recognized forest management certification initiatives include the Forest Stewardship Council (FSC)¹⁾, the Programme for the Endorsement of Forest Certification Schemes (PEFC)²⁾ and make use of the ISO 14000 series of environmental management system (EMS) standards³⁾. Significant quantities of wood production are also certified under schemes run by the North America-based Sustainable Forestry Initiative (SFI) and the Canadian Standards Associ-

ation (CSA) Sustainable Forest Management System (SFM).

Each scheme has a CoC certification that ascertains verification of product claims at each stage of the production chain, from forest to final retailer. This ensures that the validity of the certified label can be passed on to the customer. The number of CoC certificates issued has risen rapidly, especially in the last two years. They range from pulp and paper mills and large sawmills, to jobbing printers and timber brokers.

Sustainable forest management has become a critical global issue.

Often, wood from non-certified forests is incorporated with certified wood in the same product (e.g. FSC “mixed sources”). Stringent conditions are given to the source of such non-certified wood (e.g. FSC “controlled wood”). Hence certification is influencing the wood products trade beyond the immediate sphere of those forest owners prepared to undergo auditing for certification.

Beginnings

FSC was officially established in 1994, based in Oaxaca, Mexico, following discussions by a “group of timber users, traders and representatives of environmental and human-rights organizations who had identified the need for an honest and credible system for identifying well-managed forests as acceptable sources of forest products”.

FSC itself does not audit forest management, but awards certificates based on audits carried out by FSC accredited certifying bodies to a worldwide, defined set now comprising 10 principles and their criteria for forest stewardship. While FSC has an ideal of multi-objective, multi-stakeholder and natural forest management, it is applicable to forest plantations where the primary objective is timber production for profit.

1) www.fsc.org

2) www.pefc.org

3) http://www.iso.org/iso/iso_14000_essentials

In the early years of FSC, auditing practices were in their infancy. Since then, along with a move from Mexico to Bonn, Germany in 2002, FSC has strived to comply with ISO 14000 principles and practices, particularly with the more specific, procedural and increasingly tightly written CoC standards (the CoC were originally defined only by six principles). Auditors are now required to have attended an ISO 14000 training course.

On the other hand, PEFC, founded in Europe in 1999, provides a global umbrella organization for the mutual recognition of national forest certification schemes. Each national scheme defines its own methods of determining accreditation, subject to overall approval by the General Assembly of PEFC members.



All bodies certifying on behalf of PEFC meet requirements for certification bodies defined by ISO standards. Both FSC and PEFC require audits to be carried out by independent auditors.

Implementation of the necessary mechanisms within a company to ensure compliance with PEFC's CoC requires detailed management systems in line with firmly established and globally implemented standards such as ISO 9001 (quality management systems) or ISO 14001 (environmental management systems).

Reason to certify

In New Zealand, the forest industry is now almost entirely based on 1.8 million hectares of exotic plantations, with the 6.3 million hectares of natural forest largely preserved from logging. Ninety percent of the plantations are established with a single species, intensively managed Radiata Pine that is clearfelled at 26 to 32 years in relatively large coupes.

FSC certification of plantations is subject to continuing debate, and the implementation of its principles and criteria by plantation management is sometimes controversial. Even so, New Zealand has over one million hectares of plantations certified under FSC as at 2010.

Much of the remaining uncertified area is in woodlots not managed by professional forest managers and a few years away from their first harvest. The benefits of certification at present do not outweigh the costs for such small ownerships.

ISO 14000 was developed to support sustainable development.

Some earlier market research studies suggested that consumers were prepared to pay a price premium for environmentally certified wood products, but any such premium has largely disappeared. The principal reason why New Zealand companies originally required certification was to obtain access to markets in the United States, driven by the demands of major retailers such as Home Depot.

A number of Asian companies purchase certified wood, process it and then export the certified product. Europe also prefers imports to be certified, either by FSC or PEFC.

In New Zealand, it had been suggested that there was already a high degree of concern for the environment, inferring that a market for certified wood existed. However, most local wood product companies supplying only the domestic market do not see much market advantage in certification since consumers already view New Zealand plantations as sustainable.

This may change with the increasing profile of the Green Building Council or Environmental Choice New Zealand. The latter, for office paper and stationery, states that, "The proposed criterionrequiring a proportion of the virgin fibre to be from plantations or forests licensed under the Forest Stewardship Council (FSC), or equivalent, as being sustainably managed" (tinyurl.com/yevpuh3).

These factors among others have led many companies to view environmental marketing as an opportunity to promote their business. As the number of environmentally aware consumers increases, marketing strategy decisions concerning

certification are impacting forestry operations, for example, in the use of chemicals and in safeguarding rare species and ecosystems within the plantation forest.

ISO 14000 supports sustainability

The ISO 14000 series of EMS standards was developed to support sustainable development. In contrast to FSC or PEFC, ISO 14000 does not specify social and environmental performance criteria, but provides requirements for establishing and documenting an EMS (ISO 14001) and achieving continual improvement. ISO 14001 does not necessarily require an external audit.

FSC applies ISO 14000 principles, but requires an independent audit according to its economic, social and environmental principles and criteria, with majority agreement between concerned stakeholders (including neighbours, non governmental organizations and indigenous people).

A balance is required between detailed, prescribed standards and the underlying philosophy and principles, with some stakeholders who do not necessarily thrive on formal, documented control systems but who must still have a voice. ■

N.b. This article is summarized from *Forest Stewardship Council certification of industrial plantation forests* by Chris Goulding, published in English in *Allgemeine Forst- und Jagdzeitung* (2006) 177 (3/4): 42-47.

About the author



Chris Goulding, Principal Scientist, New Zealand Forest Research Institute Limited, has a degree in forestry from Aberdeen, Scotland and a PhD from

the University of British Columbia, Canada. He has over 35 years' experience of applied research into forest measurement and management systems with over 60 refereed publications. He is the lead NZ auditor on contract to Scientific Certification Systems, an FSC certifying body, and is a Fellow of the New Zealand Institute of Forestry.



Not just quality

Brazilian company uses standards to protect ecosystems and help local communities

Photo: Suzano

Suzano's eucalyptus plantations are managed in harmony with protected native forests.

by Ernesto Pousada Júnior

Leading Brazilian pulp and paper manufacturer Suzano owes much of its quality, sustainability and social responsibility (SR) achievements to ISO 9001 (quality management), ISO 14001 (environmental management), and to the development of the forthcoming ISO 26000 SR standard. Suzano Pulp and Paper, one of the largest eucalyptus pulp and paper manufacturers in the world, has a long history of quality, health, safety and sustainability awareness, coupled with social and environmental responsibility. Based in Sao Paulo, Brazil, the company has almost 4 000 employees, and in 2009 their revenues reached USD 2 billion.

Although achieving excellence in quality, sustainability and social responsibility was a big challenge, those objectives are now integrated parts of the company's overall strategy and business goals. This article describes how implementation of ISO 9001 and ISO 14001 quality and environmental management system standards – together with the company's involvement in ISO 26000 – played an important role in Suzano's success.

First with ISO 14001

Suzano was the first organization in Brazil to achieve ISO 14001 certification and, according to INMETRO (Brazilian

accreditation body), also holds the largest number of multiple forestry certifications, including Forest Stewardship Council (FSC) and the Brazilian forest certification programme, Cerflor. These schemes guarantee that forestry based products are manufactured using economically feasible, socially just and environmental friendly processes.

In addition to ISO 9001, ISO 14001, and OHSAS 18001 (operational health and safety) certification, the company has recently implemented the social accountability standard SA 8000. Suzano's conformity with all these systems has been independently audited and certified in a process of continual improvement in management, forest stewardship, planning, communication, documentation, and in training of employees and contractors.

Integrating quality and environment

Suzano's quality (QMS) and environmental (EMS) management systems are integrated elements of the overall business strategy under the umbrella of the Brazilian National Quality Criteria. We include two different programmes – "Operational Excellence" and "Six Sigma".

*ISO 9001 and ISO 14001
play an important role
in Suzano's success.*

In 2008, operational excellence contributed some USD 21.5 million to the bottom line in quality and efficiency im-

provements and in helping us achieve world-class manufacturing standards. The Six Sigma process approach contributed USD 26 million in 2009 through cost-cutting projects and improved quality and excellence in all departments.

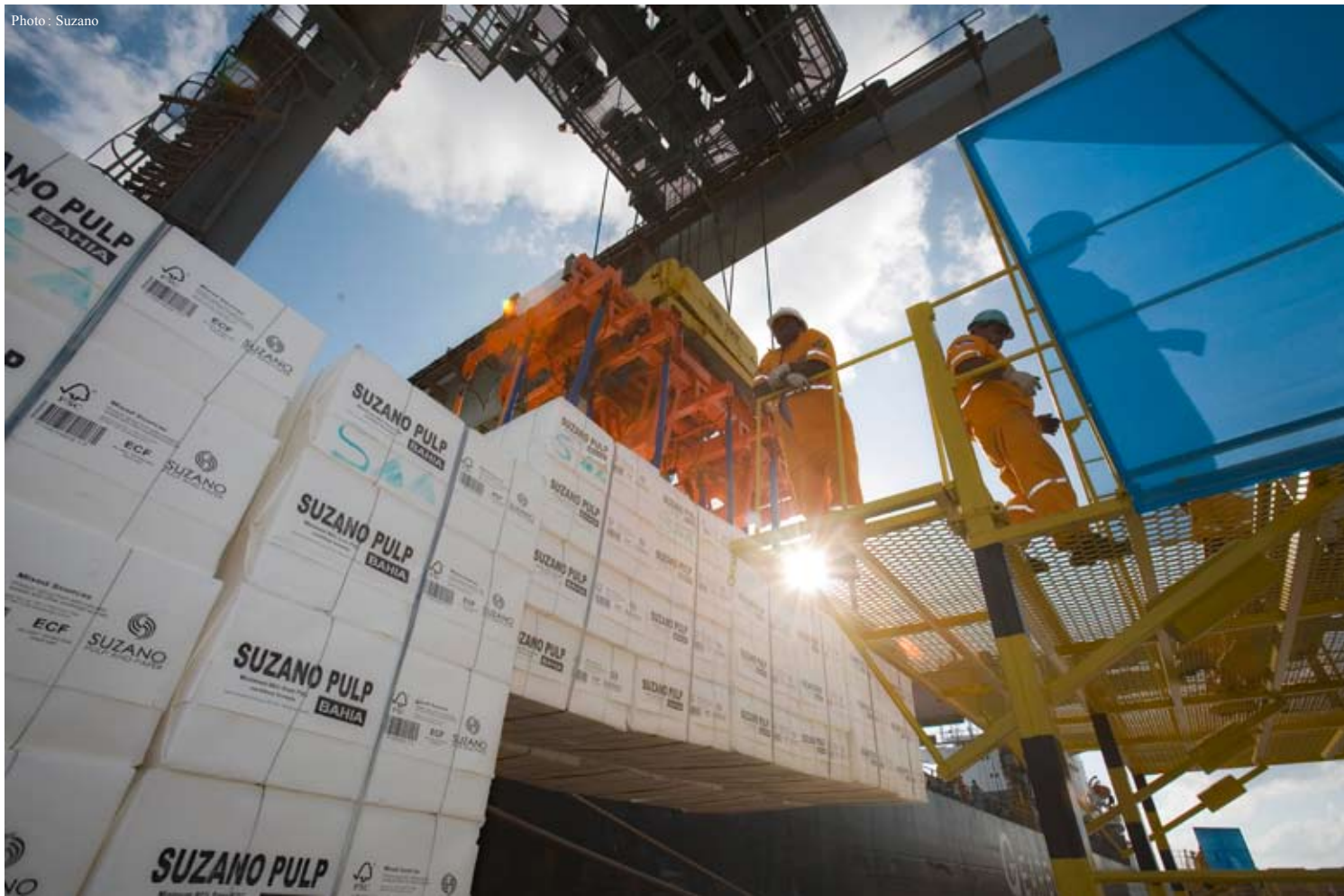
Suzano's business model is structured on eight excellence criteria – leadership, strategy and planning, clients, society, information and know-how, people, processes and results. The company also has many socio-environmental initiatives that focus on environmental conservation and on dialogue between our stakeholders, government and society.

When analyzing the impact of our products and services, we take the whole supply chain into consideration and use life cycle assessment methodologies in our EMS in line with the ISO 14000 series.

Photo: Suzano



Suzano uses management system standards to analyze products and processes, maintain quality, improve efficiency and cut costs.



Accuracy in manufacturing and processes is vital for Suzano and its global partners and customers.

Responsible involvement

Suzano has been closely involved through the Brazilian national standards body and ISO member, ABNT, in the development of ISO 26000 – ISO's forthcoming International Standard giving guidance for social responsibility – with a company executive acting as part-time Chair of the ISO Working Group on SR on behalf of ABNT.

Due for publication in 2010, the SR standard is the result of the participation of some 430 experts and 175 observers, representing over 40 organizations from 90 countries.

During the process, Suzano reviewed its SR activities in accordance with ISO 26000 principles of:

- Accountability
- Transparency
- Ethical behaviour
- Respect for stakeholder interests
- The rule of law
- International norms of behaviour
- Human rights.

The review also covered the core subjects addressed by the standard:

- Organizational governance
- Labour practices
- Environment
- Fair operating practices
- Consumer issues
- Community involvement
- Development.

Suzano also helped finance Brazilian think-tank Ethos in its work on ISO 26000 SR development.

ISO 26000 will serve as a guideline for organizations planning to implement a social responsibility management system as well as those, like Suzano, that are looking to improve an existing system.

Caring for native forests

Suzano measures its economic, environmental and social performance through the Global Reporting Initiative's G3 guidelines. The company works in accordance with the United Nation's Glo-

bal Compact and Millennium Development Goals as well as its own codes of conduct in the areas of human rights, labour relations, the environment and anti-corruption.

As an active stakeholder in society, Suzano takes its socio-environmental responsibilities very seriously. The company participates in the development of public policies to achieve economic, social and environmental sustainability.

Suzano's care for the native forests and ecosystems of Brazil is an example. Over 40% of company land is under permanent protection in line with Brazilian environmental law and with FSC, Cerflor and ISO 14000 requirements. Today, Suzano owns the largest FSC-certified eucalyptus forestry plantations in the world.

Vital tools

While implementing the leading management standards, we learnt that, although there are many links between them, each completes a different function.

Photo: Suzano



In 2008, over 17 000 students in Bahia benefited from an education programme sponsored by Suzano.

For instance, ISO 14001, SA 8000 and OHSAS 18001 are optimizing internal processes. FSC, Cerflor and the Global Reporting Initiative reassure our clients. ISO 9001, the British Retail Consortium standard and FSC help meet customer requirements, and ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*, fulfills legal purposes.

ISO management standards, in particular, are vital tools for certifying and aligning products, processes and services for business-to-business and the end-user.

Standardized processes are fundamental to Suzano's operations in more than 80 countries – selling eucalyptus pulp, printing and writing paper, and paperboard. ISO management standards have helped Suzano to meet international trade standards, develop and apply policies, ensure transparency and enable traceability of products to the end customer. ISO 9001 and ISO 14001-based quality and environmental management systems give Suzano a competitive advantage through:

- Cost cutting in the supply chain, e.g. we have reduced the cost of international transactions by up to 15%
- Fewer manufacturing faults, e.g. a one percent error in measuring moisture in cellulose equates to a USD 4 million loss in one year

- Social and environmental factors serving as intangible assets of products or processes
- Positive and differentiating factors in the competitive pulp and paper market.

Helping communities

Suzano's quality and socio-environmental activities have benefited local communities through employment and social investment. A study comparing the same communities in 1990 and 2000, i.e. before

Suzano's quality and socio-environmental activities have benefited local communities.

and after eucalyptus cultivation, showed a higher Human Development Index (HDI) since cultivation was introduced. Clearly, the greater opportunities for employment, and Suzano's investment in development and educational programmes, has resulted in improved HDI, and reductions in illiteracy and infant mortality.

The pay off

Suzano's hard work in implementing ISO 9001, ISO 14001, FSC, Cerflor and other management system standards has



Photo: Suzano

already paid off in awards and recognitions that enhance the company's image and competitive advantage.

In 2008, Suzano won the internationally recognized Brazilian National Quality Award presented by the National Quality Foundation, and for the third year in a row was voted best company in the pulp and paper industry by the Brazilian business magazine *Exame*.

Since 2003, the company has been part of the ISE–Bovespa Corporate Sustainability Index, a stock portfolio of firms noted for their commitment to social responsibility, corporate sustainability and the promotion of good practices in Brazil's corporate environment.

Reaping the fruits

There is no doubt that by implementing standardized quality and environmental management systems, Suzano has reaped the fruits both internally, through better planning, documentation, communication, structure and efficiency, and externally by demonstrating to its global partners and customers that the company is determined to achieve excellence and sustainability and is serious about its socio-environmental responsibilities. ■

About the author



Ernesto Pousada Júnior is Chief Operations Officer of Suzano Pulp and Paper. Mr. Pousada joined Suzano in 2004. Previously, he worked for 15 years at the Dow Chemical Company,

filling many executive positions in Brazil, the USA and Europe. Mr. Pousada graduated in Mechanical Engineering from the *Escola de Engenharia Mauá*, with a major in business administration from FIA/USP in Brazil.



Photo: Norwegian seafood export council/Kjell Ove Storvik

Fisheries and aquaculture

Diving into the sustainability challenge

by Svein Ludvigsen

Not only is seafood the most traded food product in the world, but all of the world's countries are, to some degree, active in fisheries and aquaculture. The industries, businesses and trades connected to these sectors are fundamentally international in nature. This, coupled with the pressing need to provide sustainable food for the planet's growing population, makes fisheries and aquaculture key areas for standardization.

The challenge is to find sustainable solutions that will make fisheries and aquaculture more efficient while also reducing environmental impacts. This requires International Standards that can be used for all kinds of aquaculture industries, regardless of business size, the level of local economic development or the climatic conditions. The standardization needs of the sector, however, had not been addressed until recently, when ISO established technical committee ISO/TC 234, *Fisheries and aquaculture*.

What to tackle

As a relatively recent ISO technical committee, the approval of the business plan for ISO/TC 234 is an important milestone that provides firm ground for the work ahead.

The plan looks at how the work of ISO/TC 234 could influence the fisheries and aquaculture sectors and other stakeholders. In particular, the committee will focus on areas where:

- Performance can be assessed against specified benchmarks (e.g. under glo-

bal sustainability market certification regimes)

- Actors in the sector can learn from one another's experience, develop best practice, efficiently exchange knowledge and utilize international expertise in the field
- Food business operators can reduce workloads by avoiding conflicting documentation requirements and re-using data
- Electronic data interchange and automatic translation of product and process parameters can be enabled
- There are global markets for equipment and technology, and sufficient similarity in operating conditions to warrant establishing minimum design, testing or performance standards
- There is a desire for international transparency in import requirements used by various countries, in order to support fair trade
- Comparability of data can be promoted.

Sustainable Forests

CO₂



Planting seedlings



Multiple uses and benefits



Sustainable forest management has become a critical global issue.

Major internationally recognized forest management initiatives make use of ISO 14000.

In addition, ISO has developed a number of standards for various areas of forest management including timber, timber structures and tractors and machinery.



Felling trees



End product



Manufacturing



Extraction and transport



Recycling



This suite of standards brings the world forestry industry a set of recognized tools that support the three dimensions of sustainable development.

ISO continues to work on finding new solutions to conquer tomorrow's challenges – and contributing to making the forestry sector truly sustainable.



Broad participation

ISO technical committee ISO/TC 234, *Fisheries and aquaculture*, was established in 2007. It currently comprises 19 fully participating national members and 17 observers.

Among its participants are ISO members for: Belgium (NBN), Canada (SCC), Denmark (DS), Fiji (FTSQCO), Finland (SFS), France (AFNOR), Iceland (IST), India (BIS), Republic of Korea (KATS), Malaysia (DSM), Mauritius (MSB), New Zealand (SNZ), South Africa (SABS), Spain (AENOR), Thailand (TISI), USA (ANSI), the United Kingdom (BSI) and Viet Nam (STAMEQ).

In addition, four international organizations are in liaison: the UN Food and Agriculture Organization (FAO), the Codex Alimentarius Commission (CAC), the International Union for the Conservation of Nature and Natural Resources (IUCN) and the Federation of European Aquaculture Producers (FEAP).

ISO/TC 234 held its third meeting in Nanaimo, Canada, in October 2009, and will meet again in Bangkok, Thailand, in November 2010.

Comprehensive solutions

So far, there are no recognized International Standards directed specifically at the fisheries and aquaculture sector. This means that ISO/TC 234 has to start more or less from scratch. Up till now, part of the work has therefore concentrated on identifying the main areas of standardization. An advisory group has been established to point out the most urgent needs.

Sustainable solutions increase efficiency.

As in all standardization projects, it is important that industry, and other stakeholders, truly require and want the standards, and of course, that they participate in their development. The work of ISO/TC 234 is organized as follows:

Advisory group

- Aquaculture advisory group.



Fish farming in different parts of the world does not look the same. Pictured here, a typical salmon farm in Norway.

Photo: Norwegian sea food export council/Kjell Ove Storvik

Working groups

- Traceability of fish products
- Environmental monitoring of seabed impacts from marine finfish farms
- Aquaculture technology
- Food safety for aquaculture farms
- Methodology for sea lice counts
- Calculation of FIFO (fish-in, fish-out) and FCR (feed conversion ratio).

Tracing fish products

The work on traceability of finfish products has now reached consensus in ISO/TC 234. Once this work is completed, ISO/TC 234 will have its first two published standards (ISO 12875 and ISO 12877).

These two standards look at both captured and farmed fish at the level of trade units. Not only will they enable the tracking of products throughout the distribu-



Norway's long and curved coast line has 6 790 fishing vessels (2008).



The fisheries and aquacultures share of Norwegian exports for 2008 was 4.12%.

tion chain, from origin to destination and vice versa, but they will also require that information be provided on what products are made of, and what has happened to them as they moved through the chain.

Traceability is important for ensuring food safety, quality and labelling. The draft standards are expected to become valuable tools for enabling the traceability of fish after packaging. ■

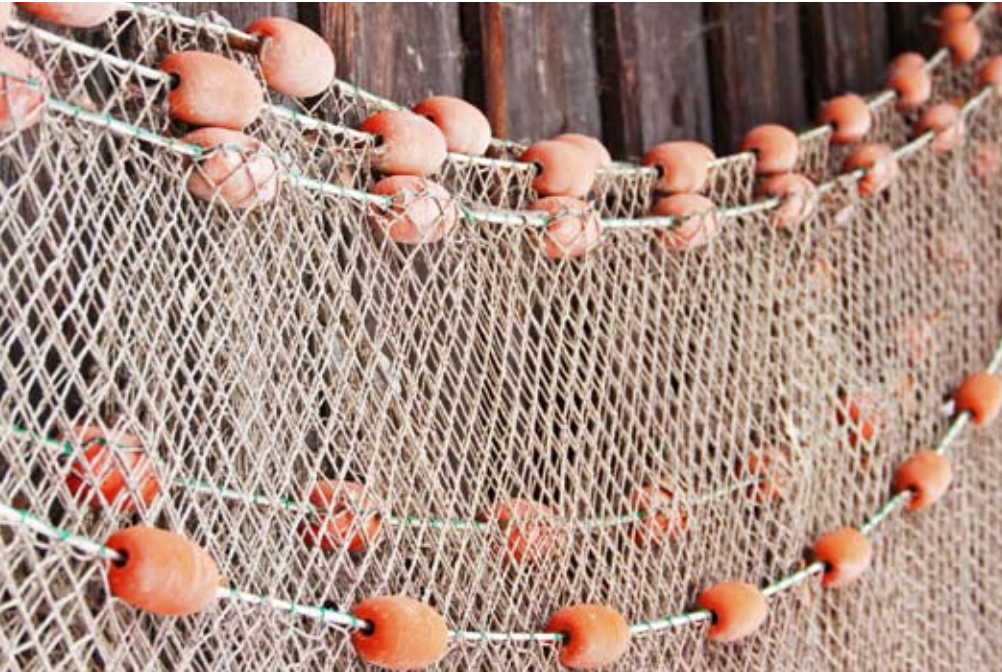
About the author



Svein Ludvigsen is former Minister for Fisheries and Coastal Affairs of Norway. He is currently the County Governor of Tromsø and Chair of ISO/TC

234, *Fisheries and aquaculture*.

Big catch for Merlus



Namibian fish processor enhances global image

by Kirsten Manasterny, Justine Tjimune, Riette van Zyl and Ismet Kara

By combining ISO 14001 (environmental management), ISO 22000 (food safety management), OHSAS 18001 (occupational health and safety) and the British Retail Consortium food safety standard, Merlus Seafood Processors of Namibia is now gaining greater customer confidence in global markets, and has developed a culture of continual improvement.

Merlus Seafood Processors (MSP) is a state-of-the-art fish processing factory situated in Walvis Bay, Namibia, which started production in 2003. The company converts bulk sea-frozen fish into retail products sold under the Mascato brand, mainly to supermarkets in Spain.

In 2007, MSP was chosen to conduct a pilot ISO 14001 environmental management system (EMS) implementation project, as a result of an initiative by the Namibian Ministry of Environment and Tourism Directorate of Environmental

Affairs, supported by the Danish International Development Agency (Danida), aimed at promoting cleaner production in the country.

With the help of a consultant from the Fishing Industry Research Institute (FIRI), MSP completed the process, including training the company's 120 employees and establishing documentation and procedures, and achieved certification to 14001:2004, *Environmental management systems – Requirements with guidance for use*, by December 2007.

Competing globally

ISO 14001 became the foundation and starting point of a programme which would combine the EMS standard with ISO 22000:2005, *Food safety management systems – Requirements for any organization in the food chain*, OHSAS 18001, the international occupational health and safety management system specification, and the British Retail Consortium (BRC) food safety standard (see **Box** on page 30).

ISO 22000 and BRC certifications were achieved in July 2008, with OHSAS 18001 certification following in April 2010.

For MSP, as a developing country-based company, certification to internationally recognized standards is key to achieve a competitive edge in global markets. MSP's ISO 14001 and ISO 22000 certifications, in addition to OHSAS 18001 and BRC, give customers confidence in its products and the company.

Getting started

From the beginning, MSP implemented ISO 14001 as a team effort with different departments being represented – it was never a “one man show”.

As the MSP ISO 14001 implementing team, the greatest challenge we experienced was simply to get started. The standard and its requirements seemed daunting at first. However the FIRI consultant made it easier for us by guiding the team in writing policies, procedures and work instructions for the EMS manual.

ISO 14001 does not impose itself on its users, instead, it gave MSP the tools and guidelines to write its own version. That enabled us to identify ourselves with the system and have a sense of ownership.

Another advantage was the full commitment of MSP top management to implementing the different systems, and to providing the necessary resources. MSP was also driven by the fact that its largest customer in Spain made ISO 14001 certification a requirement of doing business. However, the company decided to implement ISO 22000, BRC and OHSAS 18001 on its own initiative. The ISO 14001 team is still in operation, but now consists of three leaders, each responsible for a specific system.

Intensive training

The multi-system implementation effort could not have been achieved successfully without the support of the entire workforce. All employees received intensive training from 2007 through 2009 in a series of courses run by internal and external trainers, (see **Figure 1**).

The company also raised employee awareness of the systems and the importance of continual improvement through special activities and events. For example, an ISO 14001 poster competition proved effective in making the workforce think creatively about environmental management.

Management system	Year	Hours
ISO 14001	2007	748
ISO 14001	2008	1068
ISO 14001	2009	490
ISO 22000	2008	1120
ISO 22000	2009	1117
OHSAS 18001	2008	649
OHSAS 18001	2009	1170

Figure 1 — MSP management systems training 2007-2009

System compatibility

Since ISO 14001 and ISO 22000 are so compatible, the team decided to combine them, together with OHSAS and BRC, as far as possible. For example we established an integrated policy for all four systems and applied the following common procedures:

- Document control
- Communication
- Management review
- Corrective action
- Training and employee qualification
- Internal audit
- Compliance audit
- Security
- Procedure for visitors/contractors and service providers
- Procedure for supplier quality assurance.

Combining the different systems enabled us to reduce the number of documents required, and increase internal cooperation.



The ISO 14001, ISO 22000, OHSAS 18001 and BRC implementation team at MSP (from front left) **Ismet Kara**, ISO 14001 team leader; **Justine Tjimune**, ISO 22000/BRC team leader; **Kirsten Manasterny**, Systems Manager; **Syreeta Klazen**, Quality Administrator; (from back left) **Tomas Brix-Kjelgaard**, Managing Director MSP; **Riette van Zyl**, OHSAS 18001 team leader; **Lelani Roberts**, Office Manager; **Bario Kearns**, Production Manager; **Martinus Louw**, Workshop Foreman. Not pictured: **Ray Croza**, Production Superintendent.



Some of the winners of the ISO 14001 poster competition, aimed at raising environmental awareness, proudly show their prize diplomas.



Photo : Merlus

An MSP seafood worker assembles retail bags coming off the end of the processing line into mastercartons ready for distribution to supermarkets in Spain.

Issues arising in different departments can now be handled in a unified way.

In addition to integrating system documentation, we also decided to combine audits to minimize disruption to production. All surveillance and certification audits are carried out by the same certification body, and are concentrated into one week during the year.

Benefits

MSP derives several important benefits from the implemented ISO 14001, OHSAS 8001, ISO 22000 and BRC-based systems. Since certification, our customers have be-

come more confident in our operation and in the quality and safety of our products.

Because of the standards implementation and certification process, MSP is always prepared for any customer or local authority audits, and for any emergency situation that might arise.

We also experience greater teamwork throughout the company. MSP's working procedures are well structured and formulated, and no longer static. As the company's systems grow, so its procedures change in a process of continual improvement. ISO 14001, OHSAS 18001, ISO 22000 and BRC help us generate accurate statistical data and enable us to monitor set targets and implement corrective actions if necessary. ■

ISO 22000:2005, *Food safety management systems – Requirements for any organization in the food chain*, specifies requirements for a food safety management system, where an organization in the food chain needs to demonstrate its ability to control food related hazards in order to ensure that food is safe at the time of human consumption.

ISO 22000 is an International Standard developed to embody the Hazard Analysis and Critical Control Points (HACCP) principles of the Codex Alimentarius Commission, which takes several private standards into account, including BRC, to address the management of food safety.

BRC is a private food safety standard created by the British Retail Consortium to help retailers and brand owners produce food products of consistent safety and quality, and assist with their "due diligence" defence, should they be subject to a prosecution by enforcement authorities.

In addition, the Global Food Safety Initiative (GFSI), an over-arching food retailer and manufacturer initiative under the auspices of the Consumer Goods Forum (CGF), exists to promote convergence between food safety standards through a benchmarking process.

The BRC standard and its associated assessment scheme has been benchmarked and accepted by the GFSI, as has at least one scheme based on ISO 22000, i.e., food safety management certification FSSC 22000.

About the authors

Dr. Kirsten Manasterny is Systems Manager, **Justine Tjimune** is Quality Manager and ISO 22000/BRC leader, **Riette van Zyl** is Logistics Manager and OHSAS 18001 leader and **Ismet Kara** is Technical Manager and ISO 14000 leader at Namibia-based Merlus Seafood Processors – manufacturers of frozen fish products sold under the Mascato brand to supermarkets in Spain.



Photo : Merlus

Fish portions are put into Mascato brand retail bags, following ISO 22000 food safety requirements.



Environmental labelling

ISO's "how to" guide

by Bill Dee

Environmental or "green" labelling empowers us, as consumers or organizations, to make an impact through the products we buy or the suppliers we choose. It also allows companies to be recognized for their green efforts. As the number of environmental claims continues to grow exponentially, there is a need for globally harmonized labelling standards that take into account all relevant aspects of a product or service's life cycle and that provide sufficient and reliable information to consumers. Consumer and environmental groups, and government agencies have also been concerned about "greenwash" i.e. unsubstantiated environmental claims on products. ISO has been very active in writing standards for environmental labelling covering three types of claims. Their implementation helps avoid greenwash.

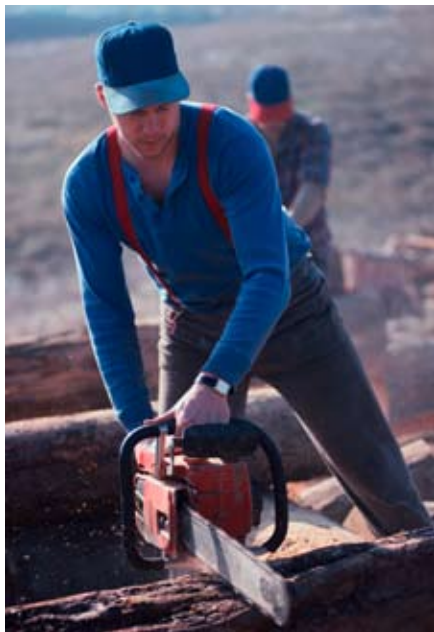
Self-declared environmental claims are made directly by manufacturers, importers, distributors, retailers, etc., and may take the form of statements, symbols or graphics on product or package labels, or in product literature, technical bulletins, advertising, publicity, telemarketing, as well as digital or electronic media, such as the Internet.

Eco-labelling schemes are programmes which award their environmental label to products which meet a set of predetermined requirements. The label thus identifies products which are determined to be environmentally preferable within a particular product category.

Life cycle labelling presents quantified environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function.

Self-declared claims

The ISO standard providing a global green guide for self-declared claims is ISO 14021:1999, *Environmental labels and declarations – Self-declared environmental claims* (Type II environmental labelling).



According to the standard, “The overall goal of environmental labels and declarations is, through communication of verifiable, accurate information that is not misleading on environmental aspects of products and services, to encourage the demand and supply of those products and services which cause less stress on the environment, thereby stimulating the potential for market-driven continual environmental improvement”.

Wide application

ISO 14021 is extremely broad in application. While self-declared claims are often made on products and/or their packaging, ISO 14021 can be used for all voluntary environmental claims, however they are made, for example in advertising, on the Internet or in trade reports. In addition to products, ISO 14021 can also be used to make environmental claims for services such as bank or tourist services.

The standard does not request that an environmental claim be made. Rather, it looks at how claims can be made meaningful and useful to consumers. Its stated objective is to harmonize the use of self-declared environmental claims, with the following anticipated benefits:

- Accurate and verifiable environmental claims that are not misleading
- Increased potential for market forces to stimulate environmental improvements
- Prevention or minimization of unwarranted claims
- Reduction in marketplace confusion



- Facilitation of international trade
- Increased opportunity for consumers to make more informed choices.

ISO 14021 was the result of extensive work over many years by representatives of developed and developing countries, many business sectors, consumer and environmental groups, regulatory agencies, and government departments. Given this diversity, the fact that consensus was achieved adds greatly to its credibility.

Four key elements

The standard comprises four key elements:

- Requirements for all claims outlines the basic rules
- *Use of symbols* focuses on pictures and symbols accompanying claims
- *Evaluation and claim verification requirements* states that claims must be verified before they are made, and the information must be available to any person
- *Specific requirements for selected claims* looks at commonly used claims (e.g. “recyclable”, “biodegradable”).

Requirements for environmental claims

The basic requirements for all claims are that they shall be:

- Accurate and not misleading
- Substantiated and verified
- Unlikely to result in misinterpretation.

ISO 14021 also contains 19 broadly similar requirements that establish the general rules for making self-declared environmental claims. The language used in drafting the standard is prescriptive and does not allow any latitude.

ISO 14021 can be used for all voluntary environmental claims.

The standard also states that vague or non-specific claims, broadly implying some environmental benefit, must not be used. Examples include “environmentally friendly”, “green” and “nature’s friend”.

Use of symbols

Pictures, symbols and logos are routinely used to convey messages about the environmental attributes of products. Potentially, such images can be even more ambiguous than text. ISO 14021 tackled the issue by applying to symbols used in environmental labelling the same requirements given to text. There are two specific aspects here:

- General requirements
- Möbius loop.

The Möbius loop symbol used on its own without any accompanying numbers or text means “recyclable”. However, when accompanied by a number and a % symbol, it should be interpreted to mean that the product is made of recycled material and has that percentage of recycled content.

Even better – ISO 14021 updated

Evaluating and verifying claims

ISO 14021 establishes four key requirements for evaluating and verifying claims:

- Responsibility on claimant
- Evaluation of comparative claims
- Methods used
- Access to information.

The standard makes clear that the primary responsibility for ensuring accuracy rests with the person making the claim. Effectively, the claimant must have the information necessary to verify the claim before it is made. Furthermore, any testing must use accepted methods and information must be retained for a reasonable period and disclosed to any person requesting it.

This information includes:

- Identification of test methods used
- Documentary evidence if the claim cannot be verified by end-product testing
- Test results
- Name and address of any independent party used to evaluate the claim.

ISO 14021 states that if a claim can only be verified using confidential business information, then the claim must not be made. The standard does not describe test methods. However, it states that where internationally agreed test methods exist, these must be used.

Specific requirements for selected claims

ISO 14021 establishes specific requirements for selected claims covering:

- Recycled content
- Recyclable
- Degradable
- Reduced energy/water consumption.

The standard also establishes 12 specific requirements for commonly used claims, and provides guidance. It should be emphasized that these were selected because of their common usage at the time the standard was drafted. By identifying these claims within the standard document it is not intended to imply that there are any particular environmental benefits associated with making such claims. Specific requirements relating to these claims are in addition to the application of the general rules referred to above.

ISO 14021 will soon be updated with additional definitions that cover:

- Biomass
- Greenhouse gases (GHGs)
- Life cycle GHG emissions
- Offsetting
- Sustainable development
- Traceability.

As well as the following specific symbols:

- Disposal and recycling:
 - Do not litter
 - Separation for recycling.

The standard will also be revised for usage of terms, qualifications and evaluation methodology for:

- Renewable
- Renewable energy
- Sustainable
- Claims relating to GHG emissions
- Product carbon footprint
- Carbon neutral.

Eco-labelling schemes

Type I environmental labelling refers to multi-criteria, life cycle seals of approval – commonly known as “eco-labelling”. ISO 14024:1999, *Environmental labels and declarations – Type I environmental labelling – Principles and procedures*, constitutes a global green guide for best practice.

Environmental claims shall be accurate and not misleading.

ISO 14024 specifies requirements for operating an eco-labelling scheme, like the Nordic Swan or the Japanese Eco-Mark. It sets out requirements aimed at overcoming some of the past criticisms of eco-labelling, and provides guidance for new schemes under development. The International Standard has been adopted as a benchmark by the Global Eco-labelling Network (GEN), an international federation of eco-labelling bodies.

Life-cycle labelling

ISO 14025:2006, *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*, provides guidance on issuing quantified environmental information about products, based on life cycle data.

Type III declarations provide data on key environmental aspects of products in a format that facilitates comparison of different products by purchasers. Interpreting such information involves a number of different factors, for example, product A may have lower air emissions, while product B may generate less solid waste. While Type III declarations may have limited application to the consumer market, a commercial enterprise will often have specific environmental targets embedded in its purchasing policy, allowing for objective evaluation of Type III information.

Type III environmental declarations are of growing importance in business-to-business commerce, and ISO 14025 plays a key guiding role.

Good for all

Any business involved in improving the environmental aspects of its products and services should consider using relevant ISO labelling standards – ISO 14021, ISO 14024 or ISO 14025 – for various reasons.

First, as ISO International Standards, they have global recognition. Second, each standard has been drafted by diverse and expert stakeholders from around the world. And third, each document represents objectively agreed benchmarks against which a business can measure its environmental labelling. ■

About the author



Bill Dee is the Director of Compliance and Complaints Advisory Services in Australia. He consults in the area of compliance management, dispute management

and consumer affairs. Mr. Dee is Chair of ISO/TC 207, *Environmental management*, subcommittee SC 3, *Environmental labelling*.

ISO President highlights education, accessibility and strategy

ISO President Alan Morrison visited SPRING SG, ISO member for Singapore, and BSI, ISO member for the United Kingdom, in March 2010.

While at SPRING SG, the ISO President highlighted that awareness and understanding of standards is essential for today's schools and universities. Graduates with an in-depth appreciation and knowledge of standards could benefit their organizations in facilitating market access and improving competitiveness.



From left: BSI Operations Director *Shirley Bailey-Wood*, ISO President *Alan Morrison*, BSI Director Standards *Mike Low*.

SPRING SG is already working with local universities to include standardization in their engineering courses. Dr. Morrison said that it would be useful to extend it to the law and business faculties as well.

Like many developed countries, Singapore also faces an aging population. It was

reported that one in five people in Singapore will be 65 years and above by the year 2030. A committee from the silver industry is currently being formed to look into accessibility issues faced by the elderly and how standards can support and promote active aging.

Dr. Morrison was briefed on SPRING SG's roles in the development of small and medium-sized enterprises and in standards and conformity.

The ISO President also visited BSI, where he met with leading executives and discussed the latest developments in ISO, including progress on ISO strategy. He also had the op-

portunity to learn about BSI's development of Web tools to support stakeholder engagement in standardization. According to BSI, with these new tools, users can submit comments on new work item proposals online, as well as comment on draft standards, which significantly facilitates the process.

Mike Low, Director Standards at BSI, updated the ISO President on current developments in Europe, including the European Commission's review of the European standards systems, and the new legislation being prepared in Brussels, Belgium. He said, "It is always a pleasure to receive a visit from an ISO President. On a personal level, I always appreciate Alan's advice and insight, particularly at this time as ISO reaches such an important point in the development of its new five-year strategy."

Code of good practice highlighted at Seychelles

The Seychelles Bureau of Standards, ISO member for the country, hosted a training course organized by the ISO Committee for developing countries (ISO/DEVCO) for members of Southern African Development Community (SADC).

During the two-day course, which took place in March 2010, in Beau Vallon, Mahé, participants were introduced to the World Trade Organization (WTO) Agreement on Technical Barriers to Trade and the Code of Good Practice for the preparation, adoption and application of standards.

The course was structured around the six principles of the Code (transparency, openness, impartiality and consensus, effectiveness and relevance, coherence and development), and highlighted examples of how ISO addresses those principles in its day-to-day work. These included presentations on ISO's global relevance policy, its standards development procedures, project management, and the relationship between standards and intellectual property rights.

SADC comprises 15 southern African countries. Of the standards bodies, six are full ISO members (ISO member bodies), eight are correspondent members and one is a subscriber member.



SPRING SG Headquarters



Seychelles hosts ISO/DEVCO training for South African countries.

Chair of “ISO 9001 phenomenon” retires



John Davis (photo left), Chair of the ISO subcommittee responsible for the world's best known quality management standard, ISO 9001 (ISO/TC 176, *Quality management and quality assurance*, SC 2, *Quality systems*), is retiring after more than 20 years in this position.

The achievements of SC 2 under the remarkable leadership of John Davies were officially recognized when the subcommittee received the 2004 Lawrence D. Eicher Award for excellence in creative and innovative standards development.

Mr. Davies was one of the first to recognize ISO 9001 as a phenomenon. Implemented in 175 countries, the standard is used by an estimated one million organizations as a framework for quality management, aiming to achieve customer satisfaction and continual improvement.

As well as chairing SC 2, Mr. Davis participated in numerous ISO groups, and contributed to ensuring coordination between ISO/TC 176 and ISO/TC 207, *Environmental management*. He has been an ambassador for the ISO 9000 family, visiting more than 100 countries, and taking a particular interest in developing countries.

Mr. Davies participation in ISO goes back more than 40 years. He was first involved in the standardization of protective clothing. His connection to quality came through his work in government inspectorates and the verification of defence specifications, which in turn led to leading roles in the United Kingdom's Chartered Quality Institute.

ISO thanks John Davies for his exceptional contribution.

Driving traffic safety

Great progress was made on the development of an ISO road-traffic safety standard, at the fourth meeting of the project committee ISO/PC 241, held in March 2010, in Beijing, China.

Subject of special focus were safety performance factors (SPFs) – a unique initiative of ISO 39001, the future management system standard (MSS) on road-traffic safety. Participants discussed comments received on the first draft, as well as the development of a high level MSS structure and the content of the standard.

The committee resolved to:

- Identify and communicate ISO 39001's unique contribution (e.g. its SPFs)
- Harmonize the standard with other ISO MSS.



Participants at the ISO/PC 241 (road-traffic safety) meeting in Beijing, China.

“ISO/PC 241 will truly offer a ‘two four one’,” said Peter Hartzell, Secretary of ISO/PC 241, “Since organizations applying ISO 39001 will get the dual benefits of improving road traffic safety, while effectively structuring and improving their management systems.”

Voting on the second draft will start June 2010. The next ISO/PC 241 meeting will take place in November 2010.

Mr. Hartzell, added, “We are of course very pleased with the UN's decision to organize the ‘2011-2020 Decade of Action’, and the timing could not be better. I am confident that ISO 39001 will constitute an important contribution to the UN's initiative towards road traffic safety.”

ISO standards progress in oil and gas sector

ISO International Standards for the oil and gas sector are not only being increasingly adopted by regional or national standards bodies in North and South America, China, Europe, the Gulf states, Kazakhstan and Russia, but also increasingly referenced in national regulations.

This progression is highlighted in the 2010 edition of the *OGP Standards Bulletin*, published by the Standards Committee of the International Association of Oil & Gas Producers (OGP) whose members in 80 countries produce more than half of the world's oil and about one third of its gas.

The OGP strongly supports international standards for the petroleum and natural gas industries and actively promotes the development and use of ISO International Standards, as well as those of its partner the International Electrotechnical Commission (IEC).

ISO standards for the sector are primarily developed by ISO technical committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in which hundreds of experts from 29 countries participate, with

another 30 countries as observers. In 2009, 21 new or revised standards were produced by ISO/TC 67 and 23 are planned for first publication or revision by the end of 2010. Currently, the TC's portfolio comprises 145 standards, plus updates.

For industry, International Standards reduce costs and delivery times, and facilitate trade across borders by replacing the multiplicity of existing industry, regional and national standards, as well as specifications developed by individual companies.

An example cited by the *OGP Standards Bulletin* is the three-part ISO 21809 on pipeline coatings which, by providing a consistent and unified approach for implementation worldwide, replaces multiple existing specifications and so cuts costs and complications for the oil and gas sector.

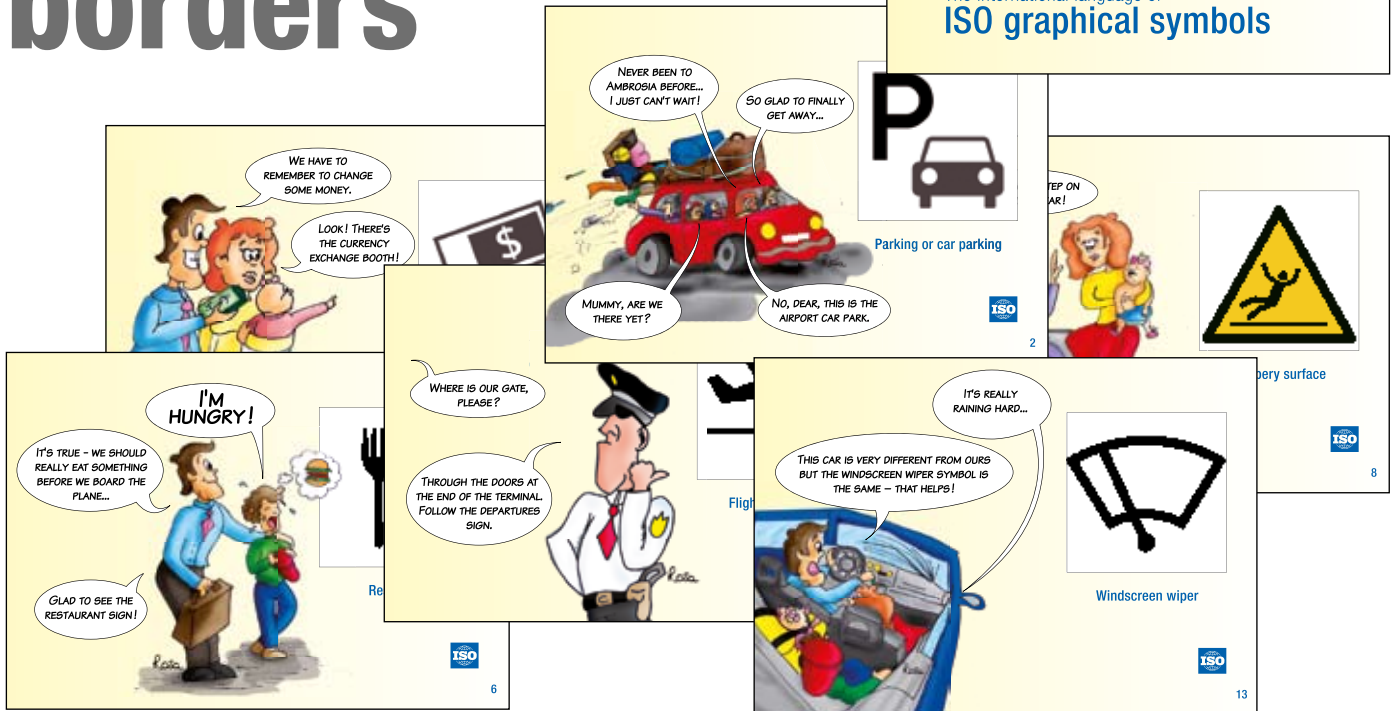
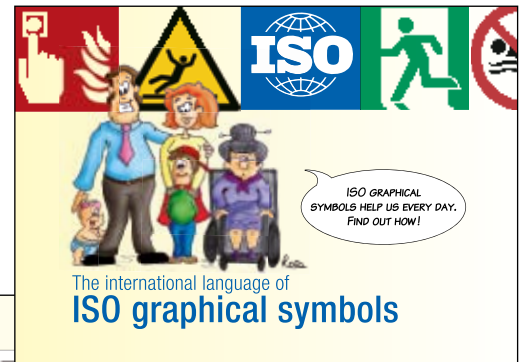
The bulletin also quotes the successful example provided by Russia which in 2008 based 11 national standards on ISO standards.

For regulators, International Standards provide the technical basis for regulations, while achieving high levels of safety because standards are continually reviewed to maintain them at the state of the art. Standards thus play an important role in the technical definition of safety levels set by regulators for oil and gas installations.

The latest *OGP Standards Bulletin* reports that compared with a European survey in 1996, a new survey reveals a “significant increase” from 16% to 38% in regulatory references to international standards and “a sharp decrease” from 39% to 14% in references to national standards.

The *OGP Standards Bulletin* can be downloaded as a PDF file from the Websites of ISO and the OGP itself. Paper copies of the bulletin, which includes a poster-style graphic of current and upcoming ISO standards for the oil and gas sector, may be obtained by contacting the OGP Standards Manager, Alf Reidar Johansen, at Alf.Reidar.Johansen@ogp.org.uk. ■

Graphical symbols cross borders



by Dana Kissinger-Matray

ISO/COPOLCO's vision to raise public awareness about ISO graphical symbols and their role in ensuring public safety and public information has become a reality with the publication of a colourful, easy-to-read new booklet, *The international language of ISO graphical symbols*.

The booklet tells the story of the Smith family – composed of Mr. and Mrs. Smith, Grandma and two children – on holiday in the fictitious country of “Ambrosia”. Beautifully illustrated by cartoons, the story unfolds over a set of A6-sized panels bound by a single rivet in the corner, each panel showing an adventure from the family's trip and one matching ISO graphical symbol.

From escaping from a fire in their hotel, to rushing Grandma to the hospital, to avoiding potential hazards, the series of unforgettable holiday events enables the family to quickly realize the usefulness of ISO graphical symbols – despite the language barrier.

The set of safety and public information symbols contained in the new booklet have been drawn primarily from ISO 7001, *Graphical symbols – Public information symbols*, and ISO 7010, *Graphical Symbols – Safety colours and safety signs – Registered safety signs*.

These and other relevant standards are under the responsibility of ISO/TC 145, *Graphical symbols*, and appear in a handy list of references after the story line. This end section also mentions the ISO Concept Database (<http://cdb.iso.org>), a repository of standardized terms, graphical symbols and codes. A separate section explains the meanings behind the different shapes, colours and symbols used to convey safety messages.

The project was endorsed by the ISO Committee on consumer policy (ISO/COPOLCO) following a proposal from two members of the British Standards Institution's Consumer and Public Interest Network (BSI CPIN), John Perry and Susan Woodhouse. Their goal is to educate the public about the relevance of standardized graphical symbols and about ISO's work in this area.

The international language of ISO graphical symbols is not only a valuable public information tool, but also helpful to professionals directly concerned with public safety and services. More generally, it vividly illustrates the broad scope of ISO's work on behalf of consumer protection and the public interest – both to a specialized audience and to the general public.

Special thanks are extended to Alexane Rosa, a graphic artist at the ISO Central Secretariat, for her creative talent in drawing the cartoons to illustrate the story line.

The international language of ISO graphical symbols (English only, 33 pages, ISBN 978-92-67-10521-5) is available free of charge (fee for postage and handling) from the ISO Central Secretariat through the ISO Store or by contacting the Marketing, Communication and Information department (sales@iso.org). It can also be obtained from ISO national member institutes. The booklet can also be downloaded as a PDF file free of charge from the ISO Website (www.iso.org).

Dana Kissinger-Matray
is Secretary of ISO/COPOLCO.

ISO – A trusted partner for development donors



by Roger Frost

ISO has published a new brochure demonstrating what makes it such an efficient and effective partner for aid donors when creating and implementing technical assistance and training programmes for developing countries.

ISO – A trusted partner for development donors notes that donor organizations with funds approved for assisting developing countries often have to wrestle with a dilemma: how to ensure that the aid is well spent, that it will make a positive and lasting difference?

With concrete examples, the brochure outlines ISO's successful track record in meeting typical criteria of donors such as the following:

- Will the programme for which funds are donated really contribute to capacity building, achieving economic growth and alleviating poverty?
- Does the programme provider have a good reputation and a proven track record?
- Are the programmes offered driven by continual improvement so that their relevance to current development challenges is maintained?
- Is it the aid beneficiary who defines his requirements and helps shape the programme?

- What metrics are in place to measure the positive impact of the programme?

Because three-quarters of the 161 national standards bodies (NSBs) that make up the ISO network are from developing countries, the organization has a deep understanding of the needs of this group of countries. There is increasing realization among policy makers in developing countries that international trade, which contributes to economic growth and alleviation of poverty, is underpinned by the adoption and application of International Standards in all spheres of economic activity.

ISO has been implementing technical assistance programmes targeted at its members from developing countries since the early 1980s. It carried out more than 250 activities during the period 2005-2009 and more than 12 000 participants from developing countries have benefited.

Around CHF 6 000 000 have been spent directly on the implementation of these activities, excluding the operational costs borne by the ISO Central Secretariat and its dedicated team within the Development and Training Services (DEVT) unit which plans and executes them. The volume of ISO's technical assistance programme nearly quadrupled between 2005 and 2009 to reach more than CHF 2.2 million in 2009.

ISO's technical assistance programme has been guided by the ISO Action Plan for developing countries 2005-2010. Consultations of all ISO's developing country members worldwide are now going on to shape the Action Plan 2011-2015.

ISO – A trusted partner for development donors is published in English (ISBN 978-92-67-10520-8) and French (ISBN 978-92-67-20520-5). It is available free of charge (fee for postage and handling) from the ISO Central Secretariat through the ISO Store or by contacting the Marketing, Communication & Information department (sales@iso.org). It can also be obtained from ISO national member bodies. The booklet can also be downloaded as a PDF file free of charge from the ISO Website (www.iso.org).

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

IT security best practice in Eastern Europe

by Juan Simón

A three-day regional seminar on ISO/IEC 27001:2005, *Information technology – Security techniques – Information security management systems – Requirements*, was held in Bucharest, Romania, in February 2010, following many requests for technical assistance from Central and Eastern Europe.

The seminar was hosted by the *Asociația de Standardizare din România* (ASRO), the ISO member for Romania, co-financed by the Swedish International Development Cooperation Agency (Sida), and attended by over 30 IT professionals from Armenia, Albania, Belarus, Bosnia and Herzegovina, Croatia, Latvia, Moldova, Montenegro, Romania, Serbia, the FYR of Macedonia and Ukraine.



Participants at the IT security seminar in Bucharest, Romania.

Its aim was to promote information security management system (ISMS) implementation in any type of organization, in order to protect information from a wide range of threats, ensure continuity and minimize damage, while maximizing business opportunities and return on investment.

Participants learnt about each stage in the design, implementation, monitoring, improvement and maintenance of an ISMS, and gained an overview of the other standards in the ISO/IEC 27000 family.

Among a growing number of related activities being carried out in the Central and Eastern European region is the establishment of national mirror commit-

tees and participation in the work of joint technical committee JTC1/ subcommittee SC 27, *Security techniques*, and the development of bodies for ISMS accreditation and certification.

Juan Simón is Project Manager, ISO Development and Training Services, ISO Central Secretariat.

Raising energy management system awareness

by Juan Simón

With energy and climate change at the forefront of global challenges, ISO is raising awareness with targeted seminars on the upcoming ISO 50001 for energy management systems. The most recent events were organized in Colombia and Thailand, and more are expected in 2010.

Over the last few years, global energy demand has outpaced new supply to market. In the longer term, the reliance on non-renewable energy sources is, by definition, unsustainable.

Governments, environmental organizations, and leaders in science and industry must respond to interrelated concerns about the environment, energy security and economic prosperity. Governments



Energy seminar in Oman.

are developing new policies to address energy efficiency and conservation, and industry is increasingly interested in system approaches and standards for energy management.

ISO has worked with many countries at the governmental, environmental, scientific and industrial level to produce more than 600 environment-related standards. They include those specifically developed to address climate change by opening markets for energy-efficient technologies and renewable sources, those establishing programmes for hydrogen, nuclear, solar and wind technologies, development of new standards on solid and liquid biofuels, and improving energy management in organizations.

International Standards make an important contribution to the energy sector by helping enhance the safety and efficiency

of energy production, distribution and use. ISO 50001 is expected to be key for addressing energy issues.

ISO collaborates closely in this work with other international organizations such as United Nations Industrial Development Organization (UNIDO), the International Electrotechnical Commission (IEC), the International Energy Agency (IAE) and the World Energy Congress.

In February 2008, ISO responded to a UNIDO international energy management standard initiative by establishing ISO project committee ISO/PC 242, *Energy management*, responsible for developing ISO 50001.

To raise awareness among policy-makers, standards authorities and prospective users, ISO and UNIDO organized the first joint regional event on ISO 50001 in Muscat, Oman, in October 2009.



Participants at the Bangkok seminar on energy.

Two similar ISO-organized events were held in Bogotá, Colombia, hosted by the *Instituto Colombiano de Normas Técnicas y Certificación* (ICONTEC), ISO member for Colombia, and in Bangkok, Thailand, hosted by the ISO member for the country, the Thai Industrial Standards Institute (TISI), in March 2010.

The Bangkok seminar, in particular, focused on climate change and energy topics, and discussed the role of industrial energy use and efficiency, the systems approach, the role of energy management systems (EnMS), and ISO 50001 requirements with 15 regional participants including ISO/PC 242 members from China, Malaysia, Singapore and Thailand.

ISO intends to organize further EnMS awareness events in 2010 and after ISO 50001 is published, following requests for technical assistance under the ISO Action Plan for developing countries.

Juan Simón is Project Manager, ISO Development and Training Services, ISO Central Secretariat.

Harmonized sanctions and finders fee at Rio meeting

by Sean MacCurtain

A meeting of the International Accreditation Forum (IAF) technical committee was held in Rio de Janeiro, Brazil, in March 2010. Among important actions was the circulation of a draft document on harmonized sanctions for members comment. The document is intended to ensure that accreditation bodies apply the same sanctions for the same nonconformities during certification audits.

The meeting also discussed the payment of “finder fees” to consultants – specifically where a consultant implements a management system, and then refers his client to a certification body. The aim is to ensure that this practice does not compromise the impartiality of the certification body. Several criteria were identified for compliance before this practice could be considered acceptable.

Methods for ensuring the competence of accreditation body assessors were also discussed, as part of an ongoing analysis of assessor tasks.

A draft IAF document is being developed identifying five metrics that a certification body will be required to report to an accreditation body on a regular basis. This will allow the accreditation body to determine if the certification body has sufficient resources to handle the volume of work.

The next IAF technical committee meeting will be held in China in October.

Sean MacCurtain is Secretary, ISO Committee on conformity assessment (ISO/CASCO).

Quality and sustainable development

“Quality in harmony with sustainable development” was the theme of the 7th International Symposium on Quality held in Havana, Cuba, in January 2010, attended by over 400 participants from national, regional and international bodies, academia, industry and business from Brazil, Chile, China, Colombia, Costa Rica, Cuba, Dominican Republic, Mauritius, Mexico, the Netherlands, Spain, Uruguay and Venezuela.

Key subjects included quality and sustainability, quality in the health, tourism and foods sectors, and integrated management systems. Among the presenters were international organizations such as the Pan American Standards Commission (CO-PANT), as well as national standards bodies and members of ISO.

Beer Budoo, Director, ISO Training and Development Serv-

ices, gave an overview of the training programmes offered by the ISO Central Secretariat, and outlined the ISO Action Plan for developing countries.

“Since about 77% of ISO members are developing countries, it is key to ensure that they can participate to the fullest in standardization, which not only brings technological know-how and best practice, but also allows participants to have a say when the ‘rules’ are being agreed upon,” he said.

“Among the activities organized by ISO for this purpose are training programmes, targeted publications, development of electronic communications and capacity building, and the promotion of regional cooperation.”

In discussing what makes the ISO system so special, Mr. Budoo cited consensus-building, broad national membership, extensive liaisons, a recognized brand name and a wide scope as some of the key values that have made ISO such an internationally recognized and valued organization.

Convened in Cuba since 1991, the quality symposium has drawn attention of both specialists from around the world and international and regional quality-related organizations. ■





ISO 9001 “test”

Top marks for French exam centre

by Flavie Bondois

The Maison des Examens, the French school examination centre for the Ile-de-France region, has achieved something of a cultural and organizational revolution by implementing ISO 9001 to modernize processes and change mindsets¹⁾.

Each year, over 400 000 students in the Ile-de-France region sit French state education system baccalaureate and entrance examinations organized by the *Maison des Examens*, or SIEC (*Service Intera-cadémique des Examens et Concours*).

In September 2005, SIEC management decided to pursue an ISO 9001:2000 quality approach and, by May 2007, was successfully certified to the international quality management system (QMS) standard. The establishment undergoes a re-certification this year.

As a tribute to its achievement, a joint modernization audit report by the French Ministries of Finance and Education cited the *Maison des Examens* as an example of how to implement modernization initiatives and make productivity gains.

Changing mindsets

Due to its size and the volume of candidates it handles, the *Maison des Examens* operates via industrialized processes and is required to produce measurable results. As a consequence, we decided that an ISO 9001:2000-based quality approach would suit our need for modernized work processes.

In addition, we wished to change user's perception of the SIEC, and also encourage employees to challenge their vision of the organization, and their own contributions. Indeed, beyond changing work processes, the purpose of QMS implementation was also to change mindsets.

Initially, our quality approach was to implement a QMS using the general principles

of ISO 9001:2000, without immediately seeking certification. First and foremost, we wished to carry out an in-depth modernization strategy with the full commitment of all staff. The principles of the International Standard helped to provide the framework and direction for the modernization project. Certification came later.

One of the most important objectives was to convince managers to revise their vision of the SIEC administration, so that it would be seen as no longer compelling its users but instead, as negotiating with its partners. And also that it would be sympathetic to the expectations of its clients, or the beneficiaries of its services. Change enablement was thus at the heart of our project.

Employee involvement

By November 2006, and because of their individual commitments to the task,

1) This article is a condensed and edited version of the one which appears in the “Online bonus articles” section of *ISO Focus+* on ISO's Website www.iso.org.

About the *Maison des Examens*

each employee had fully justified the management's intention to apply for ISO 9001:2000 certification. The achievement was the result of an 18-month investment strategy, and provided formal recognition of the quality of their work.

This was somewhat unusual for a public administration, where traditionally employees are little consulted, but it was an essential step in overcoming the challenges of certification.

One of the first measures the management and quality team used to win such support was to communicate extensively with staff members and encourage them to participate in quality improvement task forces. As a result, more than 50% took part in departmental and organization-wide projects during the first year.

Staff members continue to participate in task force duties after annual management reviews. They are at the heart of our activities, and provide the stimulus for problem solving and new ideas. They are also aware that the task force responsibilities apply uniformly to all departments and that it is preferable they should express their opinions rather than be subjected to decisions. It is a win-win situation for both managers and staff.

Enshrining quality

We find the implementation of continual improvement projects relatively easy because quality is now enshrined in SIEC work processes and employee's minds, creating horizontal core work processes that apply to all examinations. But creating such quality indicators required a true change enablement policy.

With regard to process implementation, we had to adapt a standard initially drafted for the industrial sector to the needs of a public service and popularize a somewhat unfamiliar vocabulary.

The implementation of activity monitoring indicators drastically changed the role of managers who had to learn to manage differently and monitor their activities in a more coordinated and rigorous manner.

Identifying nonconformities in order to implement corrective actions also involved persuading examiners to comply, since they tend to be wary of acknowledging problems.

Similarly, the creation of satisfaction survey mechanisms with candidates and with our partners (teachers and principals) triggered off something of a cultural

The *Maison des Examens* has an annual budget of EUR 40 million and employs 300 people at its headquarters in Arcueil in the Ile-de-France region around Paris, France, serving a population of about 11.7 million.

The organization has an on-site hosting capacity of 4 000 seats for candidates sitting the French state education system exams – including the baccalaureates – and those of the *grandes écoles* – higher education institutes – and other ministries.

Each year it handles some 400 000 candidates, sets approximately 3 200 examination questions and prints over 10 million A4 exam pages.

revolution. But even if the term client still meets psychological barriers among staff, the principles of service beneficiaries and partners have been formally accepted.

A transformation

ISO 9001:2000 certification has enabled the *Maison des Examens* to undertake a philosophical and organizational transformation.

It has been a philosophical transformation because we have changed the way we look at our clients, the role of the administration, and our work methods. And it has been an organizational and practical transformation as we have revised our entire structure.

*Change enablement
was at the heart
of our project.*

Consequently, managing and monitoring the quality of our activities has helped us anticipate schedules better, and spread activities evenly over the year. Any unforeseen circumstances likely to affect professional or competitive entrance exam sessions can now be taken into consideration much more easily.

In addition, we can now manage very large numbers of candidates while offering customized services to meet the individual needs of our beneficiaries and

partners. For example, we anticipated a sudden increase in the number of disabled candidates registering for exams, and we can now offer them highly customized services, for example exam questions in Braille, special rooms for major disabilities, and the provision of secretaries and speech therapists.

The transformation of our working relationships with partners has given us greater peace of mind when facing problems during exam sessions. It has also helped us in managing any potential social discontent, the effects of which can go beyond the exam room and have repercussions on our activities.

Significant benefits

ISO 9001:2000 certification has brought significant benefits, even if the processes of implementation and QMS maintenance require considerable input. Ensuring continuity of such a quality approach requires constant commitment from managers and daily monitoring by all staff.

However, this is facilitated by the requirements of the standard that all processes should be regularly audited both internally and externally. Following our most recent audit in May 2009, the principles of the latest ISO 9001:2008 are now embedded in our global strategy and guide our decision making processes. Certification renewal every three years is also a guarantee of QMS sustainability. The *Maison des Examens* will apply for renewal in 2010.

While the challenge of changing attitudes and work methods was met successfully in that the QMS approach is completely sustainable regardless of the people in place, the efficiency of such a system nevertheless requires strong commitment from both management and executives. ■

About the author



Flavie Bondois
is Head of Communication/
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Examens*.

Information security

How effective is your ISMS ?

by Edward Humphreys

The burning questions that management ask about the information security management systems (ISMS) implemented within their organizations are the following:

- What am I getting for the investment I am making in information security?
- How effective is my ISMS?

Investment in achieving effective information security involves time, money and human resources. It involves not only designing and implementing an ISMS, but also regularly monitoring and reviewing how well the ISMS is performing to counter the risks the organization faces.

If the performance is not good enough, then improvements need to be made. Information security is an on-going commitment if it is to be effective.

Metrics and performance

So how do we check the performance of our information security? We first define a set of information security metrics and performance criteria. We then take measurements using these metrics and assess them against the criteria.

This is where ISO/IEC 27004:2009, *Information technology – Security techniques – Information security management – Measurement*, is proving useful to organizations as it provides guidance on the “why, when and how” of metrics and measurements for information security. ISO/IEC 27004 is one of the ISO/IEC

27000 family of standards that supports the implementation of the ISMS requirements standard, ISO/IEC 27001.

Whereas ISO/IEC 27001 provides the specification of an ISMS which companies use to establish, implement, monitor and review, and continually improve an ISMS, ISO/IEC 27004 provides guidance on measurements to meet the requirements of ISO/IEC 27001 in the same way that ISO/IEC 27005 provides guidance on meeting the risk management requirements of ISO/IEC 27001.

So what help does ISO/IEC 27004 provide? This standard provides information and advice on:

- Principles of measuring information security
- Measurement model, methods, criteria, and indicators
- Developing a measurement programme and system
- Operational aspects of measurements
- Reviewing and improving the measurement process
- Measurement templates
- Examples of some typical measurement examples.

Having a measurement system for information security in place helps organizations to answer questions such as the following:

- Is my information security fit for purpose?
- Is my access control system effective enough to stop unauthorized attempts at gaining access to my information?

- Are my procedures and policies effective enough?
- Is my staff training and awareness programme effective enough for staff to carry out their duties in a way that adequately protects the information they are handling?

Is my incident handling process effective enough to identify, assess and resolve information security incidents in a timely way, whilst minimizing the risks to the organization during the time when the incident is happening?

Help and advice

For those organizations that go through an accredited certification audit in compliance with the requirements of ISO/IEC 27001, one of the things that the organization needs to demonstrate is that they are regularly taking performance measurements.

This is where ISO/IEC 27004 is a must since it provides organizations with help and advice to meet these requirements.

Information security is an on-going commitment.

For those organizations not going through an accredited certification audit, but still using ISO/IEC 27001, the questions at the beginning of this article are still valid and are being asked by management on a more frequent basis to justify their spending on information security investments.

So can your organization answer the question, “Is my information security effective and fit-for-purpose?” ■

About the author



Professor Edward Humphreys (FH University of Applied Science, Hagenberg, Upper Austria), is Convenor of ISO/IEC JTC 1, *Information technology*, sub-committee SC 27, *IT security techniques*, working group WG 1, *Information security management systems*.

SME sails global waters with ISO Standards maker and taker



Photo: Baltic Safety Products

by Kevin Billingham

Per Frode, CEO of the Swedish company Baltic Safety Products and a veteran developer of ISO standards for lifejackets, speaks from experience when he shares his firm belief that small and medium-sized enterprises (SMEs) like his own have a lot to gain by taking part in the ISO standardization system.

As a competitive sailor back in the 1970s, Per Frode won a Swedish junior champion title in the OK Dinghy class, climbed as high as seventh in the world rankings and represented his country in four world championship tournaments.

Looking to remain connected to the sport after retiring, he turned his competitive instincts to the business world in 1977, beginning a voyage that would see his company become Europe's leading manufacturer of personal flotation devices.

"Building up a brand is exciting," Per Frode says today. "I'm extremely proud of the respect our vests have earned in the marketplace and of the fact that we've turned a profit every year we've been in operation."

In the early days, Baltic Safety's manufacturing facilities were located at home in Älgårås, Sweden, but the Swedish textile industry is now long gone and the vests are sewn today in factories in Asia and Eastern Europe, leaving product development, quality control and logistics in the headquarters offices.

Network

About half of the company's 40 employees are in Sweden, with the other half split between subsidiaries in Hungary and England. Products are available in some 50 countries around the world through a network of distributors.

"We're the dominant European producer of lifejackets for leisure use, and we're gaining ground in the commercial-use market," Per says.

He is the longest-serving member of ISO technical committee ISO/TC 188, *Small craft*, working group WG 14, *Personal safety equipment*, having participated since 1989. His earlier standards involvement included work on ISO 12401, *Small craft – Deck safety harness and safety line – Safety requirements and test methods*, and ISO 15027, *Immersion suits*.

Per describes his engagement in standards as a central element of his company's market strategy. "Exports are crucial for us, because our domestic market just isn't that big," he explains. "And to be successful at exporting, we have to follow International Standards development very closely."

"The only way to affect the content of standards is to go to the meetings. Then



Per Frode gets a “lift” from being part of a standards development group working to save lives.

you know what will be included even before the standard is released and you have important technical information that you need to make sure your products conform. It’s a huge advantage to get that information early in the process.”

Payoff

The payoff for engaging in standards work is greater than many small business people realise, Per believes. “There’s no doubt that the larger companies – and countries – do their best to dominate by hosting the secretariats and holding chairmanships. But by joining forces in clusters, the smaller players can always make themselves heard.”

As an example, he cites co-operation between Sweden, Denmark, Finland and the United Kingdom, which balances what he sees as Germany’s influence on lifejacket standards. “When the Nordic countries and Britain take a common position, we’re suddenly very strong,” he says.

Per says personal contacts are crucial in standards work. “A lot gets done in the working groups, and that’s one place we

all have to stay active and develop good personal relationships,” he says. “The coffee breaks and dinners are more important than people might realise.”

He also underlines the importance of maintaining good working relationships between private manufacturers, regulators and testing institutes.

“That’s an area where I’ve seen good results first hand,” he explains. “We learn a lot from the organizations that test our products. And getting together in standards committees helps regulators understand the commercial pressures that businesses face.

“For several years, I worked closely with the Swedish Consumer Agency and they knew how important it was to allocate time and resources to engaging in standards development. There’s a healthy mix of different interests in the working groups and that ultimately works to protect end-user interests.”

Motivation

Even if commercial considerations are his primary motivation for working with standards, Per says he gets a personal lift from being part of a standards development group that, in the end, is working to save lives.

The payoff is greater than SMEs realize.

“First and foremost, I’m in business to make products that people want to buy and working with standards is part of



Per Frode has participated in developing ISO standards since 1989.

building a healthy company. It would be dishonest to describe it any other way.

“But the nature of the business means that improving people’s safety goes hand-in-hand with making a profit – and there’s nothing wrong with that.”

Per Frode concludes, “Standards are both important and interesting. For a company like Baltic Safety, it’s essential to get involved with the working groups so we can get started early with our planning for future designs and production methods.

“Globalization means that ISO standards are key for any company that hopes to succeed in export markets.” ■

Kevin Billingham is an American freelance journalist based in Sweden.



Swedish SME Baltic Safety products navigates on global markets thanks to its use of ISO standards.



Away from blade's edge

Conservation and harvesting equipment safety

by Keith J. Hawken

Mowed fields and trimmed hedgerows are key for planting, growing and harvesting crops and for keeping our roads clear of encroaching vegetation. However, they are the result of hard work. Not just from those who physically toil and trim the earth's gardens and fields, but also from the standards developers working to ensure the safety of machinery used for these purposes.

Within ISO, the technical committee concerned is ISO/TC 23, *Tractors and machinery for agriculture and forestry*. More specifically, mowers and other similar tools are under the responsibility of ISO/TC 23 subcommittee SC 7, *Equipment for harvesting and conservation*.

SC 7's dedicated working groups focus on combine/forage harvesters, mower skirt protection and blade material, thrown object testing, large rotary and flail mower safety and body vibration issues. The subcommittee also looks at power harrows, seed drills, fertiliser spreaders, tedders/rakes, balers, and rotary/flail mowers.

Better safe than sorry

General safety aspects of agricultural machinery are dealt by ISO/TC 23 subcommittee SC 3, *Safety and comfort*. However, SC 7 focuses on safety considerations specific to "implements" (tools towed behind a tractor) and trailers.

A key standard in this regard is ISO 4254, *Agricultural machinery – Safety*. The standard is divided into several parts, each focusing on a specific type of machinery. All of the machines mentioned above fall under its scope.

The following parts were published between 2008 and 2009:

- Part 5, *Power-driven soil-working machines*
- Part 7, *Combine harvesters, forage harvesters and cotton harvesters*
- Part 8, *Solid fertilizer distributors*
- Part 9, *Seed drills*
- Part 10, *Rotary tedders and rakes*.

Part 11 (pick – up balers) and Part 12 (rotary mowers and flail mowers) are at the final draft stage and publication is expected in the near future. Work is also progressing on Part 13 (large rotary mowers), which will include mowers with blade configurations enabling a cutting width of 14 metres.

A bale wrapper standard is also considered necessary to complement Part 11.

From food production to motorway medians

Since SC 7 focuses principally on agricultural machinery, strengthening the food supply chain is one of its key goals. The subcommittee's numerous standards for combine/forage harvesters enable the



Flail mower transverse preparation testing of thrown objects over stone and gravel composites.

safe and efficient harvesting of grain and forage (plant leaves and stems) thus optimizing food production and helping farmers increase and maximize their yields.

Once SC 7 completed its work on combine/forage harvesters, it became clear that there was a pressing need to address “implement” machinery (equipment towed or trailed behind a tractor). So far, SC 7 efforts have targeted balers (farm machinery used to compress cut and raked crops into compact bales for easy handling and storage) through the development of ISO 4254-11, and mowers (machines for cutting crops or plants on the ground) through the upcoming ISO 4254-12.

98 % of farm machinery injuries are caused by misuse and accidents.

One of the challenges faced by SC 7 in this area has been the widening range of applications for mowing equipment. In addition to food production, hedge cutting machines have become vital for river banks, verges, median strips on motorways and farm hedgerows. This often requires that machines operate in roads and areas exposed to the general public, making bystanders vulnerable to related risks.

As more and more farmers and contractors require versatile machines for multiple operations, it is important that they clearly understand the constraints and correct usage of these products.

Risky blades

Mowers, in particular, have been the subject of safety concerns in many countries. Mainly regarding the risk of objects being projected by the machine’s cutting units (referred to as “thrown objects”) and the blades themselves.

A stone or piece of wire ejected by a mower blade can achieve a velocity of more than 300 km/h, and travel as much as 200 metres. Around the world hundreds of thousands are injured annually by both field and lawn mowers. Serious accidents can result in lacerations, amputations and even death.

International Standards for safety testing are crucial to ensure that this risk is brought to a minimum, no matter where the machinery is manufactured, sold or operated. Testing institutes around the world have carried out hundreds of trials to improve safety, with an important focus of the work aiming to minimize thrown objects.

Such tests recreate surfaces encountered throughout the usage of the machine. Stones, steel parts (nail and wire) and wood are then placed on the mowers’ path. These tests help develop the most efficient defence to potential risks.

International teamwork

The success of ISO/TC 23/SC 7’s work on equipment for harvesting and conservation is the result of concerted international effort to bring together best practice and create consensus.

The expertise of the European Committee for Standardization (CEN), whose own technical committees have addressed agricultural machinery, performance and highway/winter maintenance equipment has proved very useful. Similarly, the ISO member for the USA, who developed national standards in this area, also made an important contribution to the work.

Regarding thrown objects, testers in Italy and the USA have studied various surfaces and materials for ejected object simulation, and working group WG 9 within SC 7 is seeking to define the most appropriate approach. Members of WG 8 are conducting tests in Germany and the USA on blade material, while canvas skirt guarding is being examined in Italy for longevity and durability.

The development of large rotary mowers in WG 10 has benefited from valuable input from Mexico as the group grapples with the size of the machines.

Strong and growing producers of agricultural machinery, such as China and India, are encouraged to further engage in this work, as well as other countries with an interest in the subject.

However, the very nature of the machinery does not easily warrant a fully enclosed guard.

To address the issue, institutes in France, Germany, Italy, the United Kingdom and the USA came together to pool expertise and recommend a series of thrown object safety criteria. These recommendations are included in ISO 17101:2004, *Agricultural machinery – Rotary and flail mowers – Thrown-object test and acceptance criteria*, and are enhanced by ISO



Test site preparation for stone ejection testing of highway maintenance and agricultural machines and implements.

17103:2009, *Agricultural machinery – Rotary disc mowers, rotary drum mowers and flail mowers – Test methods and acceptance criteria for protective skirts.*

More work remains

Although mower safety has been under development for over 35 years, as long as machines continue to change in sizes and requirements, work remains. After the ISO/TC 23/SC 7 plenary in Edinburgh, Scotland, in 2009, it was evident that the work schedule would increase because of machine innovation and complexity. SC 7 is currently developing testing criteria to revise ISO 5718:2002 (requirements of blades for agricultural rotary mowers) and to add a new part to ISO 17101.

Furthermore, accident statistics make it clear that, despite tremendous efforts to

design failsafe machinery, it is a continual and difficult task to shield users from all potential hazards.

One of the challenges is the widening range of applications.

Take the example of an individual fatally injured in Europe by a bale wrapper machine (complying only to generic standards and not those developed by SC 7) when he stood in an unauthorized position. Subsequent testing of this machine highlighted other variants that posed similar risks.

It was clear that SC 7 needed to address these hazards, which were not tackled by the scope of ISO 4254-11. Potential for

action includes a specific standard for the integral machinery or an amendment to Part 11, developed once independent testing is completed.

Positive outlook

SC 7 are meeting in Pittsburgh, Pennsylvania, USA in June 2010, armed with a series of testing results and recommendations. Although farm machinery can be very dangerous, statistics indicate that 98% of injuries recorded in Europe and the USA are caused by misuse and pure accidental occurrence, with only 2% attributed to machine design. Still, SC 7 and the agricultural industry will continue to aim for the complete eradication of safety gaps.

Until then, the public in the countryside and on roadways can be assured that they are protected by improved requirements for specialist machinery now in place, product of SC 7's dedication to the safety of machinery within its remit, and to the conservation project it enables. ■

* National Research Council (CNR) and The Institute for agricultural and earthmoving machines (IMAMOTER) Turin, with ISPEST (Italian National Institute for occupational safety and prevention).

About the author



Keith J. Hawken with 27 years of experience on mowing equipment at Qualcast and Robert Bosch in the United Kingdom (UK), joined the Agricultural

Engineers Association (AEA) in 2000 to work on agricultural standards and legislation. He is Technical and Standards Director at AEA responsible for tractors, all terrain vehicles, sprayers, implements, telescopic handlers, and monitoring of European legislation as well as standards development for the UK trade association membership. He is Chair of four BSI (ISO member for the UK) committees and has been Chair of ISO/TC 23/SC 7 since 2007. Mr. Hawken is a Chartered Engineer (CEng) and holds the designation Eur Ing.



Comparison testing for mowers utilising different material surface and new criteria suggested for ISO 17101 revision.

The truth about body sizes



Photo: Lionel Egger / ISO

ISO compiles “people measurements”

by Maria Lazarte

With changing standards of living, the body dimensions of people have been increasing in many countries over the last few decades. To ensure that clothing, workplaces, transportation, homes and recreational activities match today’s body sizes comfortably and safely, ISO has published a report compiling up-to-date anthropometric data (human body measurements across populations).

The report, ISO/TR 7250-2:2010, *Basic human body measurements for technological design – Part 2: Statistical summaries of body measurements from individual ISO populations*, is the second part of a series on body measurements.

ISO/TR 7250-2 seeks to identify physical variations in human body sizes and shapes around the world so that manufacturers can have a realistic view of today’s population diversity and optimize technological design accordingly.

For instance, the report tell us that while the average height and weight of an American man are respectively 1.76

metres (m) and 80 kilograms (kg), those of the average Thai man are 1.67 m and 64 kg. And that an average Dutch woman measures 1.67 m and weighs 72 kg, while an average Japanese woman measures 1.57 m and weighs 51 kg.

Dr. Makiko Kouchi, Project Leader of ISO/TR 7250, explains, “Inadequate measures in products and environments compromise our health by putting unnecessary strain on our bodies. Can you imagine what it would be like to have to sit in a chair that is too tight, or to find it difficult to reach the products in a supermarket? Harmonizing our surroundings

to our body size, shape and capability by applying ergonomic principles is key to ensuring our well-being.”

ISO/TR 7250-2 provides updated country-specific body size data. The report focuses on working age people within “ISO populations” (countries whose national standards institute is a member of ISO). It features key statistics for ergonomic design such as body mass, stature, eye height, chest depth, hip breadth, etc., in both standing and sitting positions. The measurements used as a basis are described in detail in the first part of the series, ISO/TR 7250-1:2008.

ISO/TR 7250-2 aims to become a reference for the various ISO product standards, so that their ergonomic accuracy can be further improved. The report is intended as a repository of the most current anthropometric data by country, which will be updated as new statistics become available. It currently includes: Austria, Germany, Italy, Japan, Kenya, Republic of Korea, the Netherlands, Thailand and the USA.

“We developed ISO/TR 7250-2 with the principle of ‘equity’ in mind” says Dr. Kouchi. “More often than not, products are designed in a mass production basis which ignores human variation. The report will help manufacturers to better gear their products to their target customers, taking into account the considerable differences in body shapes and sizes that can exist. This will ensure that products respect the ergonomic needs of their populations, and that no size is ‘discriminated’ no matter how big or small” she concludes.

Test yourself at
tinyurl.com/bodysizequiz !

The ISO/TR ISO 7250 series was prepared by technical committee ISO/TC 159, *Ergonomics*, subcommittee SC 3, *Anthropometry and biomechanics*.

ISO/TR ISO 7250-2:2010, *Basic human body measurements for technological design – Part 2: Statistical summaries of body measurements from individual ISO populations*, is available from ISO national member institutes. It may be obtained directly from the ISO Central Secretariat, through the ISO Store (www.iso.org) or by contacting the Marketing, Communication & Information department (sales@iso.org). ■

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



Economic and social benefits of standards

In the past few years, a number of studies on the economic and social benefits of standards have been carried out or supported by either national standards bodies, or external research teams. They have followed a great diversity of approaches, from macro-economic assessment, to studies related to the economic impact of individual standards, or suites of standards for various types of organizations

Most recently, ISO has developed a “*methodology to assess and communicate the economic benefits of consensus-based standards*”. It is designed to support analysis and studies addressing both companies and industry sectors, at national or international level, with a view to provide a consistent framework and a robust set of tools. Using this methodology, national standards bodies and all the other concerned parties can analyse and clarify the contribution that voluntary consensus-based standards add to the performance of individual companies and industry sectors.

The consolidation of knowledge deriving from these studies will make a significant contribution to enhancing the stature of standardization by providing stakeholders with more objective evaluations of the impact of standards.

The June issue of *ISO Focus+* provides insight on the ISO methodology and looks at the economic and social benefits of standards from various perspectives. It includes a portfolio of articles reflecting on the contribution that consensus-based standards make to improving the performances of companies and industries, as well as to providing societal benefits for countries and communities.

With contributions from leading experts, the June issue takes a look at the importance of standards to innovation, return on investment, market and business development, and the benefits of participating in their development. It also includes the economic impact of standardization, technological change and standards growth in France, and the benefits of standards for the oil and gas sector. ■

Guest interview

In an exclusive interview, Pasquale Pistorio, Honorary Chairman of STMicroelectronics Foundation, and Chairman of the Pistorio Foundation, explains the important role standards play: “Standards are a means for driving excellence. With management system standards like ISO 14001 (environment) or ISO 9001 (quality), you never really achieve your target – you have to keep on setting the bar higher. Once implemented, you are requested to continually update the system and, if applicable, renew your certification. Standards keep us on our toes. And that is a goal of our internal standards, too.”

Mr. Pistorio goes on to describe the importance of participating in their development: “Standards drive us, setting requirements, targets, specifications, which are key for competing in international markets. But as a company, we also want to get involved – cooperating, suggesting, working on new standards, actively participating in the search for excellence that they represent, both internally and internationally.”

To read more about the multiple economic and social benefits of International Standards, including Pasquale Pistorio’s interview, don’t miss the next issue of *ISO Focus+*! ■



Pasquale Pistorio, Honorary Chairman of STMicroelectronics Foundation.



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private sectors, to manage risk effectively. They can make all the difference between paper tigers and the real thing.

ISO 31000:2009, *Risk management – Principles and guidelines*

ISO Guide 73:2009, *Risk management – Vocabulary*

ISO/IEC 31010, *Risk management – Risk assessment techniques*

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