Standardization Needs in Oil and Gas Industry

ISO Norms vs. National Norms

- **PURPOSE OF THE PRESENTATION**
  - After a very short presentation of Institut de Soudure
  - To give the actual situation in the Oil and Gas Industry
  - To explain the advantage of using ISO norms vs. national norms by giving France as an example and showing link between ISO and European Norms.
  - To compare the American System and the ISO-European Norms
  - Show links between ISO and European Norms
  - Do some practical cases comparisons
  - What Choice for Qatar?

Presentation of the Institut de Soudure 1/2

- Created in 1905 - Staff : 800
- "Not for Profit" Organization - No dedicated owner
- Executive board includes:
  - Members from major French companies (Total, Renault,...) ; French Professional organizations representatives and the "German Institute of Welding" (DVS)
- Technical and Financial control organized by French Ministries of Industries and Finances
- New Branch at the QSTP (Qatar Science and Technology Park) in Qatar
- The "Institut de Soudure" is represented and plays a key role in major international organizations. Main memberships are:

: International Institute of Welding (Actual CEO and Secretary since 1948)

: The Institut de Soudure, via the CNS, is the "standardization body" for France for norms related to welding.

: ISO – The IS is a key player in normalization in welding.

Actual Situation

- **Oil and Gas Industries are more and more located close to production facilities, in countries that may not have the historical background for developping their own Standardization packages.**

- **Therefore decision of those Countries have been either:**
  1. **To use packages or principles let by countries that have managed them before gaining their independencies (France or UK) – mainly applied to reglementations.**

  2. **To Use standards and rules used in countries that have previously managed their Oil and Gas Industries (USA) – mainly applied to construction codes.**

- **Main Adavantage of both situations:**
  Issued based on a past industrial application (<u>Proven</u>)

- **Disadvantage of each situation:**
  <u>Case 1:</u> Difficulty to follow the evolution of the rules as link with originators has been cut for a long time

  <u>Case 2:</u> Main one is that standards are designed for a specific economical environment and development and based on a certain philosophy.
  (USA is not similar to QATAR in term of size of the market)

  Not necessarilly the cheapest or the safest solution

Why ISO Norms vs. National Norms? 1/2

- **French Norms (Qatar Norms)**
  - 60 Million consumers (600 000 for Qatar)
  - Captive market no concurence
  - No way to share other's experiences
- **European Norms**
  - 450 Million consumers (25 countries). Equivalent to US
  - No national interest = Norms is a compromise between 25 = Open market. No national preference. Different to US
  - Common understanding = pragmatism
  - Easy process for evolution to include technologies improvement
  - Complete package
- **ISO**
  - 6 Billion consumers
  - Includes leading markets and technologies owners
  - Includes Oil and Gas Producers
  - Easy process for evolution when leaders agree, more difficult otherwise
  - Package close to be completed – See further.

- **Vienna Agreement (1991)**
  - **Recognises the primacy of ISO**
  - **But also recognize if ISO norms are not available or are slow to be issued Euronorm may be issued.**
  - **As a result, the agreement sets out 2 essential modes of collaborative development of standards (under ISO lead and under CEN lead) in which documents developed within one body are notified for the simultaneous approval by other.**
  - **As concequences several ISO-EN Norms**
  - **Consensus of large range of countries in order to avoid barrier for trade.**

American System vs. European/ISO system 1/2

- **The American System**
  - Package of technical specification issued for the need of the American Market
  - Complete but integrated package
  - Low Speed for maintenance (in order to comply with evolution of state of the art)
  - No reference to ISO standard (only 1 CEN standard)
  - Barrier for trade (third parties countries have to comply with American System)
  - Very high cost to access to the American System
  - Verification of Compliance with code done by AIA
  - Difficulties for a manufacturer to change AIA
  - No/Few Third Party Philosophy

American System vs. European/ISO system 2/2

- **The European/ISO Systems**
  - Complete Package of documentation (1 000 standards relating to pressure equipments)
  - System of “Lego”
  - Review of Standards is very easy (adaptation to technical progress)
  - Are available in several langages
  - Third Party Inspections and qualifications philosophy
  - More than 150 Notified Bodies in Europe and mutual recognition of any NB certificates in Europe.
  - According to Vienna Agreement new European Standards are both EN and ISO

- **Welder qualification**
  - EN ISO 9606-2 Aluminium
  - EN ISO 9606-2 Copper
  - EN ISO 9606-4 Nickel
  - EN ISO 9606-5 Titanium/Zirconium
  - EN ISO for steel???? => misalignement between USA and EU

    => EN 287-1 for Steels untill an agreement is found

- **Philosophy of the EN ISO for qualification of welders**
  - EN/ISO standards allow performance of 2 tests pieces during the same qualification

    => Extension of the range of validity for thickness, position, etc…

Practical cases
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WPS Qualification
(Qualification of Welding Procedures – QWP)

Process	Fusion welding	Gas welding	Electron beam welding	Laser welding	Resistance welding	Stud welding	Friction welding
General rules	EN ISO 15607						
Material classification	CR ISO/TR 15608			N A		CR ISO/TR 15608	
WPS	EN ISO 15609-1	EN ISO 15609-2	EN ISO 15609-3	EN ISO 15609-4	EN ISO 15609-5	EN ISO 14555	EN ISO 15620
Consumables	EN ISO 15610		N A				
Experience in welding	EN ISO 15611					EN ISO 15611 EN ISO 14555	EN ISO 15611 EN ISO 15620
Standard welding processes	prEN ISO 15612				NA		
Pre production pieces	EN ISO 15613					EN ISO 15613 EN ISO 14555	EN ISO 15613 EN ISO 15620
Qualification of welding processes issued by test qualification	EN ISO 15614 Part 1 : Steel Nickel Part 2 : Aluminium Part 3 : cast iron Part 4 : Repair welding on aluminum casting Part 5 : Titanium/zirconium Part 6 : Copper Part 7 : Overlay Part 8 : Tube plates Part 9 : Hyperbaric welding (underwater) Part 10 : Hyperbaric chamber	EN ISO 15614 Part 1 : Steel/Nickel Part 3 : cast Iron Part 6 : Copper Part 7 : Overlay	prEN ISO 15614 Part 7 : Overlay Part 11 : Electron and Laser beam		prEN ISO 15614 Part 12	EN ISO 14555	EN ISO 15620

Reference to EN/ISO

Study of ISO about Comparison of Various US Welding Codes qualification requirements to ISO 15614-1

ISO/TC 44/SC 10
"Unification of requirements in the field of metal welding"

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N 733

Administrative issues:

Section IX specifically requires that WPSs be qualified under the supervision of the organization that will direct the welders. Other US standards imply the same. ISO 15614-1 requires qualification by the organization that will be doing production welding.

ISO 15614-1 requires that the qualifier develop a pWPS and follow it during testing. US standards do not have this requirement.

ISO 15614-1, paragraph 6.1, says that the welded joint to which the welding procedure will relate in production shall be represented by making a standardized test piece or pieces, as specified in 6.2. Where the production/joint geometry requirements do not represent the standardized test pieces as shown in this standard, the use of EN ISO 15613 shall be required. No US standard has this requirement.

Which choice for QATAR?

- **QATAR:**
  - Focus on Safety and Environmental protection
  - Is an open market
  - Wants the best in class from the market
  - Is open minded and has a spirit of independency
  - Need proven technologies
  - Is growing too quickly to be able to develop its own system
- **European Norms are:**
  - Available now
  - The package in welding, pressure vessels and non destructive testing is complete
  - ISO norms are EN norms and and vice versa
  - To help QATAR implementing its ISO/"EN" norms package, experts from 25 countries, France and EU are ready to help. (Programs exist for helping countries upraging their systems)

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