



ISO TC67 WG10

International Standardization for LNG equipment and installations

CONGRÈS DU GAZ
GAS CONFERENCE
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TOTAL

International Standardization for LNG equipment and installations



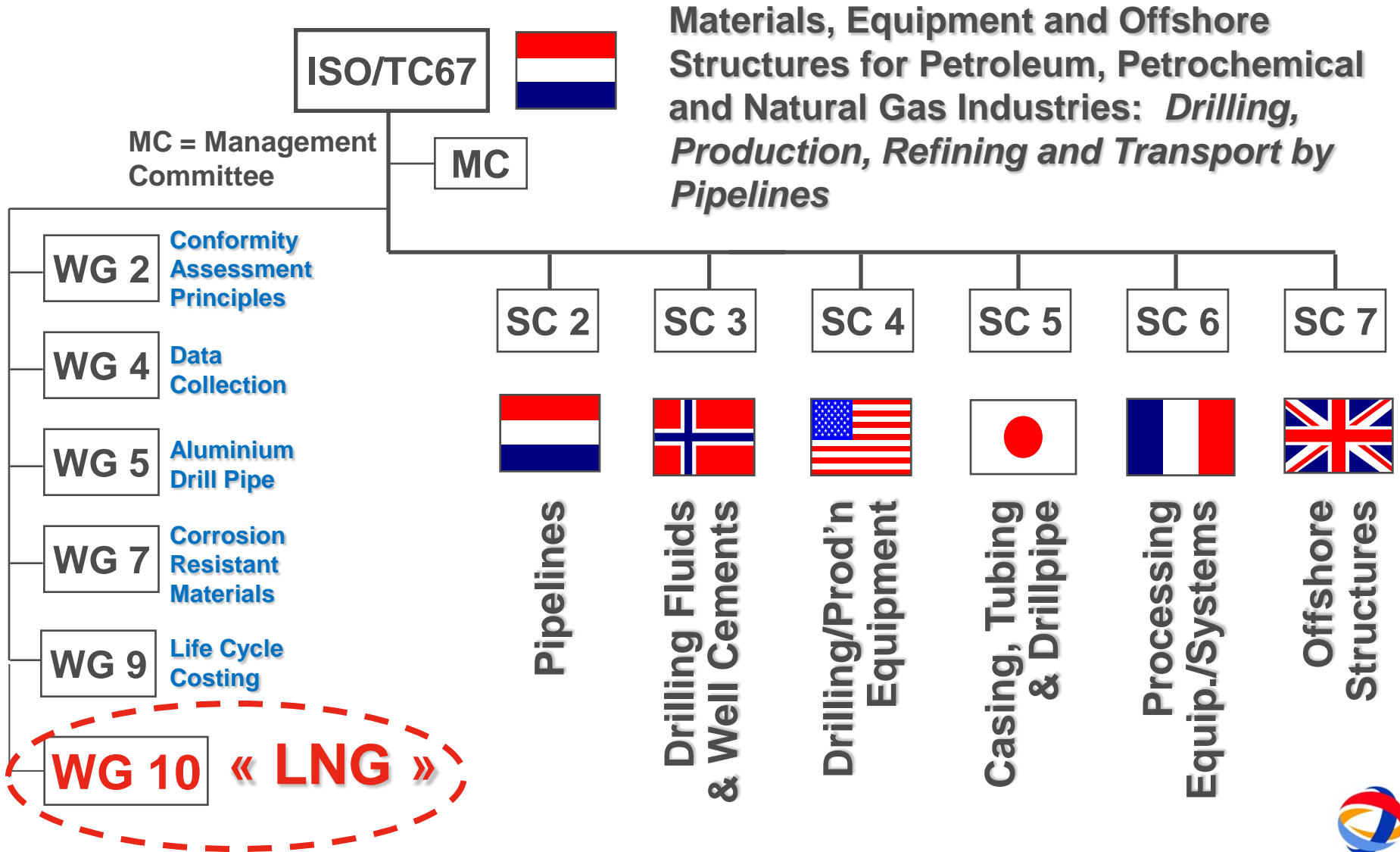
- Why the standardization is required ?
- What is ISO TC 67 WG10 ?
- The Project Teams of ISO TC67 WG10
- Conclusion

ADDRESSING LNG MAIN ISSUES :

- **SAFETY :**
 - ONSHORE
 - SHIP SHORE TRANSFER
- **CRYOGENIC MATERIAL**
- **LARGE INVENTORY OF HYDROCARBONS**
- **ENERGY INTENSIVE : ENERGY EFFICIENCY TO BE IMPROVED**
- **COMPLEX PROJECT and OPERATION**
- **NEW PLAYERS WITH LIMITED EXPERIENCE**
- **CONTINUOUS IMPROVEMENT REQUIRED**
- **ALIGNMENT OF GOOD PRACTISE AND TECHNOLOGIES**
 - SAFER & MORE EFFICIENT OPERATION
 - PREPARE THE FUTURE :
 - ✓ LNG OFFSHORE
 - ✓ OPEN SEA TRANSFER

***STANDARDISATION OF LNG PRACTISE
AND DESIGN to REDUCE RISKS***

ISO/TC 67 Organisation



ISO TC67 WG10 :

STANDARDIZATION FOR INSTALLATIONS AND EQUIPMENT FOR LIQUEFIED NATURAL GAS, EXCLUDING PRODUCT OR TESTING

- This Working Group 10 was launched in 2006 and directly reports to the Technical Committee TC67.
- **Convenor** : Christophe THOMAS (TOTAL E&P)
- **Secretary** : Christian BRISSARD (TOTAL E&P)
- **Project leaders** : Roger ROUE (SIGTTO), Erik SKRAMSTAD (DNV), Daniel ACHEROY (Tractebel), Joseph CHO (SKEC), Seïchi UCHINO (Tokyo Gas), José Paulo Cerqueira de SANTANA (PETROBRAS)
- **Active countries** : Australia, Belgium, Brazil, China, Denmark, France, Germany, Indonesia, Italy ,Japan, Korea, the Netherlands, Norway, Qatar ,Spain, U.K., U.S.A. have expert(s) attending the project teams meetings.

WG10's project teams (PTs)



PT1 : LNG as ship fuel Infrastructure

PT2 : Ship to shore interface – port operations

PT3 : Guidance on performing risk assessments in the design of onshore LNG installations.

PT4 : Characteristics of LNG and materials suitable for construction of equipment for cryogenic uses.

PT5 : Guidance for conception, design and testing of LNG storage tanks.

PT6 : Installation and equipment for LNG - Design and testing of marine transfer systems – articulated arms

PT7 : Unconventional LNG transfer systems

PT1 : LNG as ship fuel Infrastructure



Leader: Erick Skramstad from DNV (Norway)

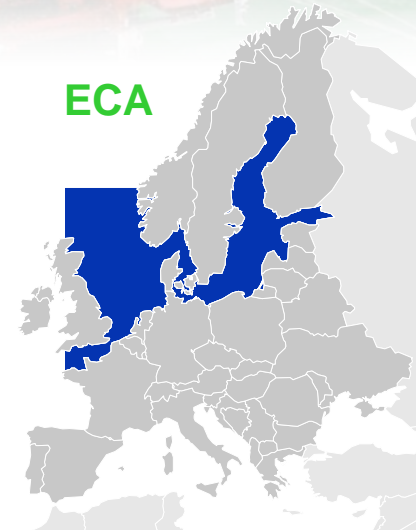
Starting in 2011

Develop a document to provide guidance on how to:

- Meet safety requirements specified by authorities (National and Port). Reference to Guidelines for Risk Assessment.
- Establish operational and control procedures to ensure safe, practical and aligned operations in different ports.
- Identify requirements to components (Storage tanks, piping, hoses, loading arms, connectors etc) to ensure equipment compliance



ECA

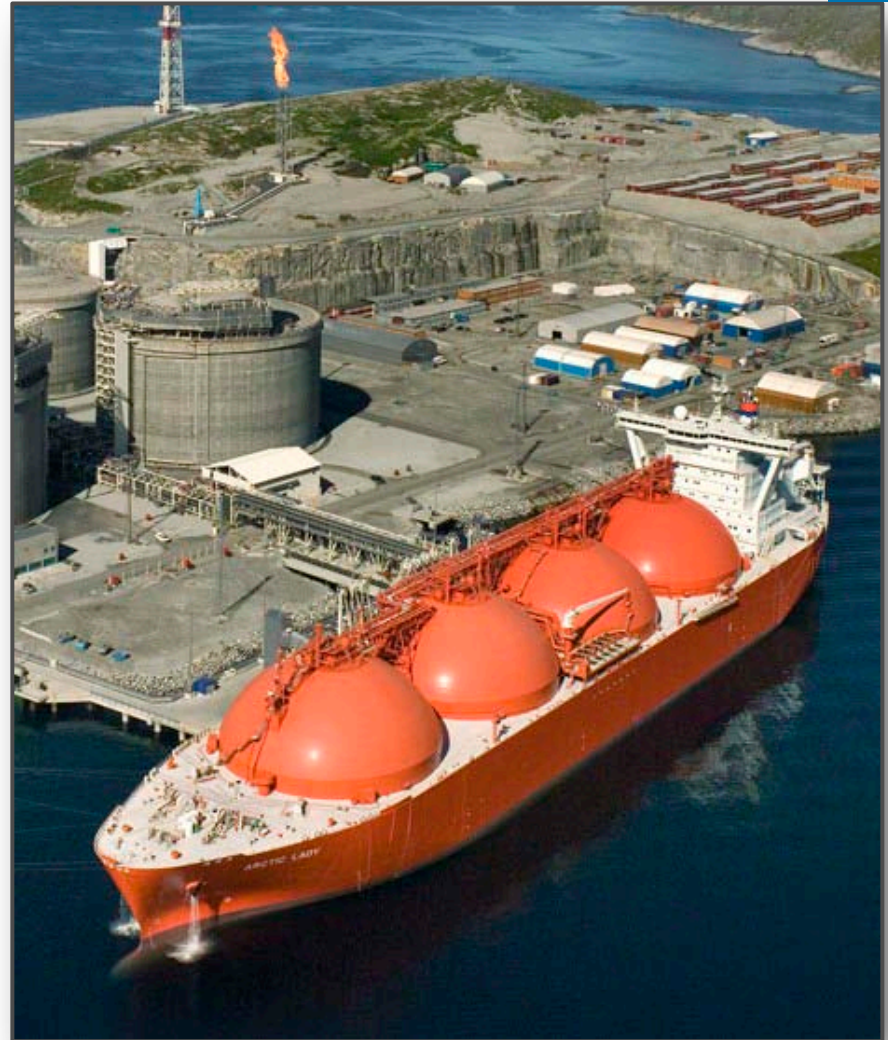


PT2 : Ship to shore interface – port operations



Leader:

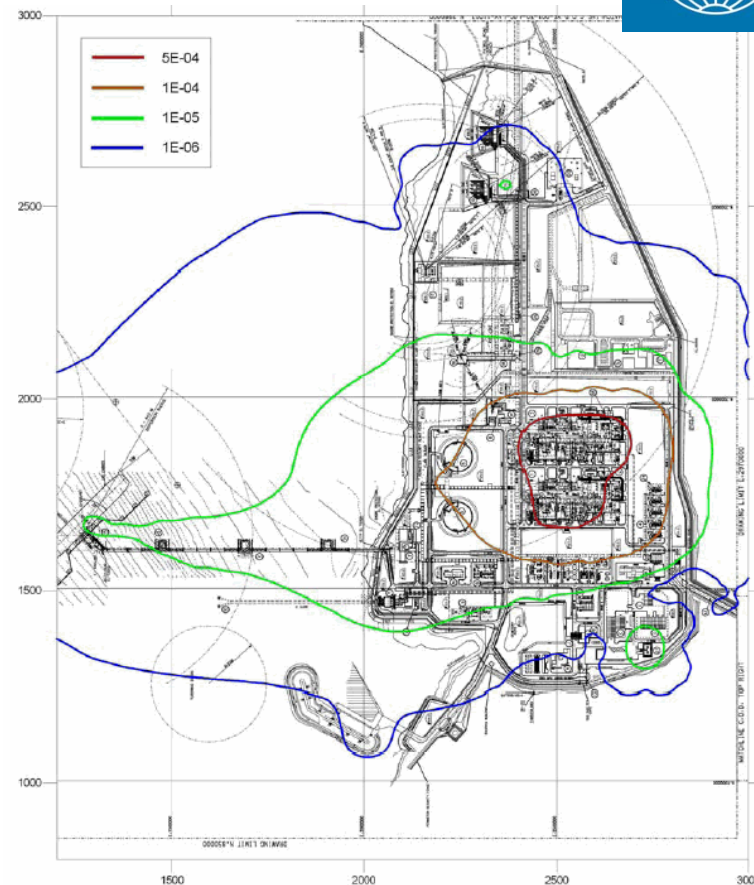
- Roger ROUE from SIGTTO (UK)
- The team prepared the ISO/DIS 28460 voted in 2010.
- This document is essentially an adaptation of the proposed European
- Norm “pr EN 1532: 2008” (*Ship-shore interface and port operations*)



PT3 : Safety and risk assessment for LNG facilities



- PT3 is led by Erik SKRAMSTAD from DNV and deals with **Safety and risk assessment for onshore LNG facilities** (upstream or downstream).
A New Work Item Proposal has been issued at the end of 2010 to issue a Technical Specification (TS).
- It makes reference to **ISO17776** (Petroleum and natural gas industries – Offshore production installations - Guidelines on tools and techniques for hazard identification and risk assessment)



PT4 : Characteristics of LNG and materials suitable for construction of equipment for cryogenic uses

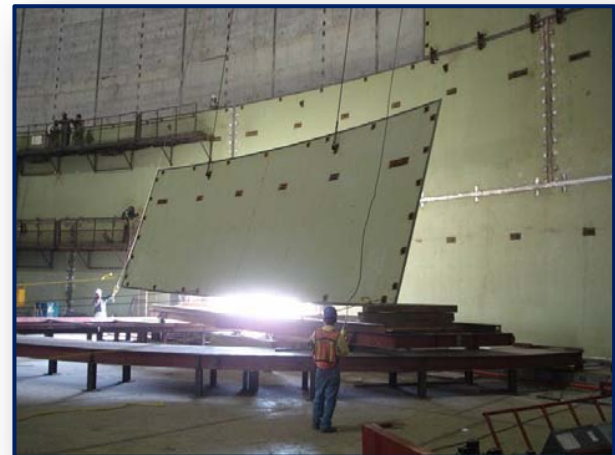
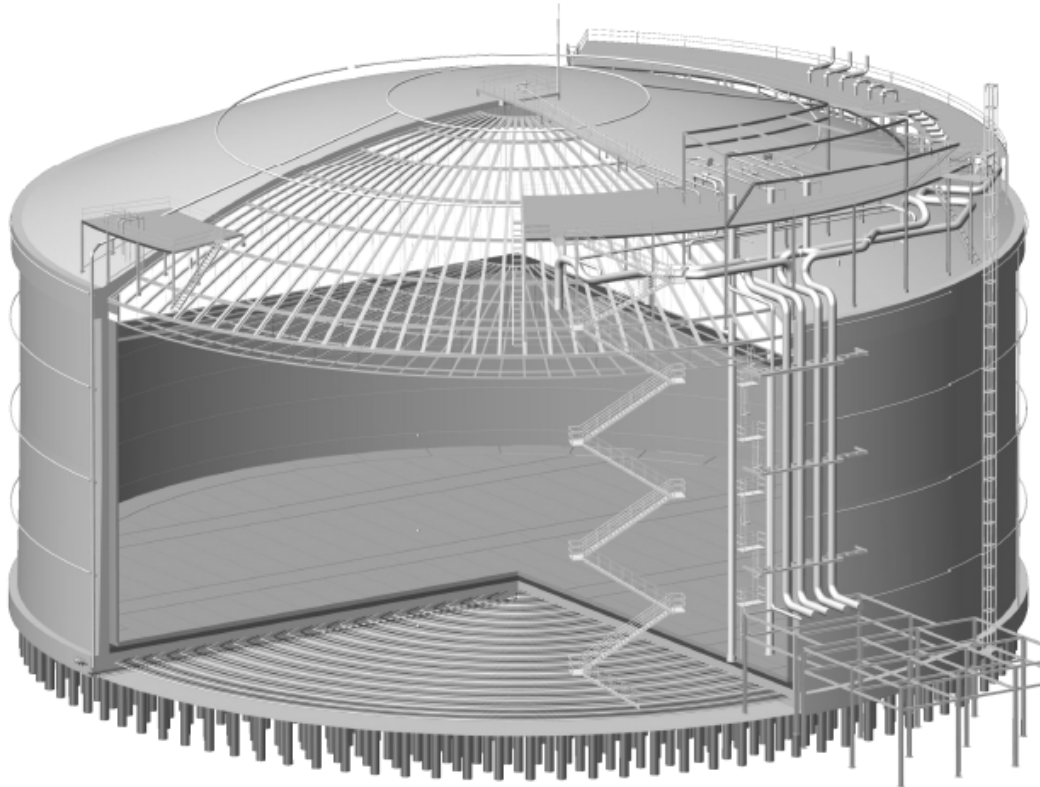
- PT4 leader is Daniel ACHEROY (Tractebel GDF Suez).
- PT4 is working on standardization for **equipment in contact with LNG.**
- A first draft has been started issued based on EN 1160 (*General Characteristics of Liquefied Natural Gas*)



PT5 : Guidance for conception, design and testing of LNG storage tanks



- PT5 is led by Joseph CHO from SKEC and deals with **Onshore LNG tanks**. A review of most of the existing codes and standards has been done except those related to all concrete tanks. Then PT will propose a technical report (TR) and later a technical specification (TS).



PT6 : Installation and equipment for LNG

Design and testing of marine transfer systems articulated arms

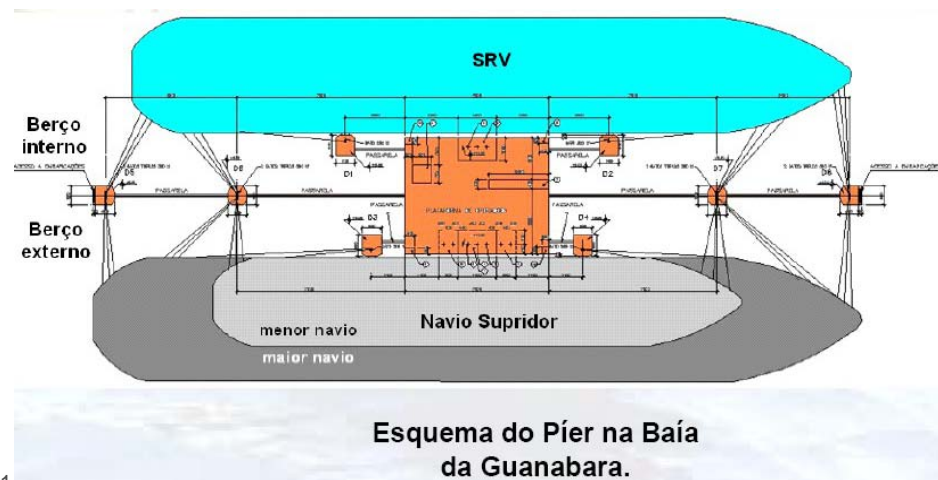
- PT6 is leaded by Seiichi UCHINO from Tokyo Gas and deals with **Transfer arms for conventional onshore terminals.** This team is preparing an international standard based on EN1474-1:2008. The group has issued a New WIP. The other parts (2&3) of this EN standard are not included in the scope of work for this PT.



PT7 : Unconventional LNG transfer systems



- PT7 is led by José Paulo Santana de Cerqueira (BRAZIL)
- The project team recently decided to prepare its first kick off meeting and registering experts.
- New work item proposal has been submitted for vote
- Objective of this project team is to prepare a document on non conventional LNG transfer systems.
- Kick off meeting due in November 11.
- New participants are welcome



Conclusions



- LNG industry is yet perceived as a safe industry although handling very large quantities of hazardous material.
- Keeping the highest standard of safety is mandatory.
- ISO TC 67 WG 10 actively pursuing Safety related topics.
- New items such as LNG Fuel and Unconventional LNG Transfer are addressing the unique growth of LNG market.
- High level of participation is the key for success
- Global TC 67 contact point (isotc67@nen.nl).