



Technip Group Overview & Hydrogen Product-line



Technip Today

Worldwide leader in engineering, project management and technologies, serving the oil & gas industry for more than 50 years

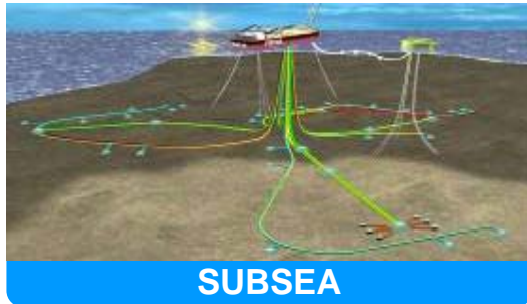
- ▶ A regular workforce of 23,000 in 48 countries
- ▶ Industrial assets on all continents, a fleet of 17 operational vessels (19 vessel by 2011)
- ▶ 2009 revenue: €6.4 billion



A long term solid partner

Technip

Business Segments



- ▶ Design, manufacture and supply of deepwater flexible and rigid pipelines, umbilicals, and riser systems
- ▶ Subsea construction and pipeline installation services
- ▶ Five state-of-the-art flexible pipe and umbilical manufacturing plants
- ▶ Five spoolbases for reeled pipeline assembly
- ▶ A constantly evolving fleet strategically deployed in the world's major offshore markets



- ▶ Engineering and fabrication of fixed platforms for shallow waters (TPG 500, Unideck®)
- ▶ Engineering and fabrication of floating platforms for deep waters (Spar, semi-submersible platforms, FPSO)
- ▶ Leadership in floatover technology
- ▶ Floating Liquefied Natural Gas (FLNG)
- ▶ Management of construction yards



- ▶ Gas treatment and liquefaction (LNG), Gas-To-Liquids (GTL)
- ▶ Oil refining (refining, hydrogen and sulphur units)
- ▶ Onshore pipelines
- ▶ Petrochemicals (ethylene, aromatics, olefins, polymers, fertilizers)
- ▶ Biofuel and renewable energies
- ▶ Non-oil activities (principally in life sciences, metals & mining, construction)

Solutions across the value chain



Worldwide Presence



Quality and HSE* at the heart of our activities

Technip is committed to providing its clients with the best value project management, products and services while protecting its employees and partners, and the environment in which they live

► **Quality Policy**

- Objectives:
 - A company culture based on the highest standards of quality and of continuous improvement
 - A “hands-on “Quality Management system focused on operational excellence
- 5 main principles:
 - Focus on operational tasks
 - Do it right first time
 - Assess risks and prioritise resources accordingly
 - Knowledge must be shared and made accessible
 - Make commitments that are in line with our expertise

► **Health, Safety and Environment (HSE) Policy**

- Our goal: create and sustain an incident-free environment delivering excellent HSE performance at every level
- 3 main focus areas:
 - The maintenance of effective HSE management systems
 - Establishing meaningful leading and lagging indicators to measure and manage performance
 - Creating a climate that is intolerant of inappropriate HSE behaviours and unsafe situations

Sustainable Development at the heart of our projects

▶ Technologies & know-how for environmental efficiency

- Energy efficiency, CO₂ management
- Expertise & innovation capabilities serving new solutions:
2nd generation of biofuels, offshore windmills...



▶ Promoting a multi-local sustainable development

- Integration of projects in their environment
- Transfer of technologies and local development:
75 % of the Brazilian P52 platform locally built,
70 % of Lagos staff is Nigerian,
90 % of Lobito's plant staff is Angolan.



▶ Recognized performance:

- Leader within the oil equipment and services industry in the Dow Jones Sustainability Indexes
- Selected for the Low Carbon 100 Europe Index



Photos credits: Statoil Hydro

Onshore

▶ Refining & heavy oil

- Clean fuels
- Grassroots
- Heavy oil upgraders
- Hydrogen



▶ Gas Processing

- Gas treatment
- GTL
- LNG



▶ Petrochemicals

- Ethylene
- Polyolefins
- Aromatics
- Fertilizers



- ▶ Project management know-how
- ▶ Strong process engineering capabilities
- ▶ Proprietary technologies (Hydrogen, Ethylene...)
- ▶ Solid reputation with NOCs & IOCs

Strategic Breakthroughs



DEEP WATER SUBSEA

- ▶ Pazflor (Angola)
- ▶ PDET (Brazil)
- ▶ Kikeh (Malaysia)
Subsea & Spar
- ▶ Agbami (Nigeria)



DEEP WATER OFFSHORE FACILITIES

- ▶ Perdido Spar
(USA)
- ▶ Akpo FPSO
(Nigeria)
- ▶ P56 semisub
(Brazil)



LIQUEFIED NATURAL GAS (LNG)

- ▶ Qatargas 2, 3 and
4, Rasgas III
(Qatar)
- ▶ Yemen LNG
- ▶ Shtokhman
(Russia)
- ▶ FLNG (Shell,
Petrobras)



REFINING & HEAVY OILS

- ▶ Dung Quat
(Vietnam):
refinery
- ▶ Horizon (Canada):
coking unit &
hydrogen units



ETHYLENE

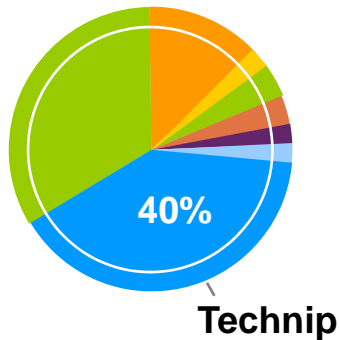
- ▶ Shuaiba (Kuwait):
Olefins II Project:
Ethylene Unit
- ▶ Ras Laffan (Qatar):
steamcracker
- ▶ Yanbu
(Saudi Arabia):
steamcracker

Onshore technologies development

▶ Hydrogen: enhanced heat transfer

- 25 to 30% increase in hydrogen production
- Improvement in the overall efficiency
- CO₂ reduction for a world scale hydrogen plant:
~20,000 tons/y i.e. 6,000 passenger cars

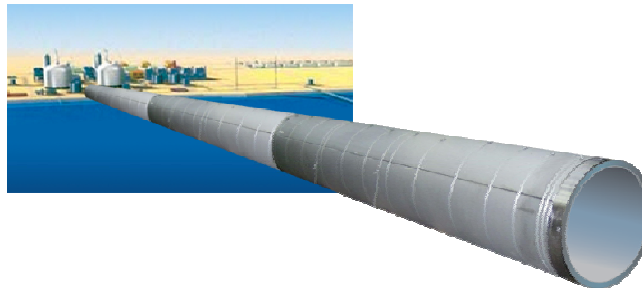
H₂ market leadership



▶ LNG: the cryogenic rigid Pipe-in-pipe for onshore and marine piping

- Robust & heavy duty pipeline
- No expansion loops
- High safety and fire resistant
- Integrity monitoring system
- Certified ABS/BV/DNV
- Long distance
- Onshore, on trestle or subsea

Connected straight to your terminal



▶ Ethylene: increased selectivity

- Increased efficiency → CO₂ reduction.
- At constant capacity furnace size is reduced → minimize investment of new furnaces.
- Increased Ethylene Production (>10%) of existing furnaces keeping identical size of furnace.

Proprietary technologies





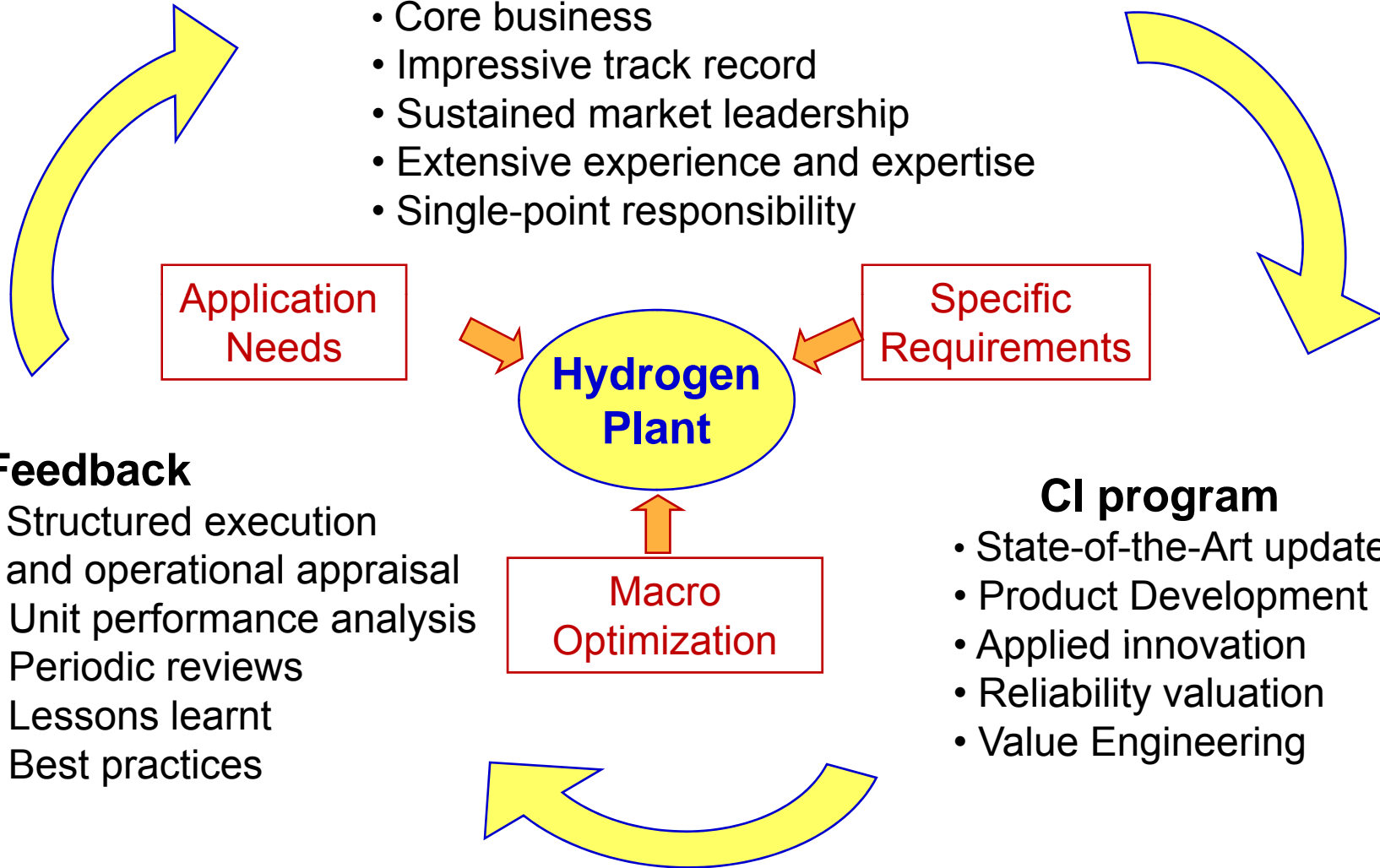
Technip's Hydrogen Technology Core Features

- ▶ **Highest focus on Safety and Environment**
- ▶ **Advanced inherent Reliability**
- ▶ **Enhanced process efficiency and plant cost-effectiveness**
- ▶ **Ease of operation (especially during transient conditions)**
- ▶ **Conforming CO2 management / capture integration**
- ▶ **Single-Point Responsibility**

Technip's Hydrogen Technology Convergence

Competence & Excellence

- Core business
- Impressive track record
- Sustained market leadership
- Extensive experience and expertise
- Single-point responsibility



Application Needs

Specific Requirements

Hydrogen Plant

Macro Optimization

Feedback

- Structured execution and operational appraisal
- Unit performance analysis
- Periodic reviews
- Lessons learnt
- Best practices

CI program

- State-of-the-Art update
- Product Development
- Applied innovation
- Reliability valuation
- Value Engineering

Technip-Air Products Hydrogen Alliance

- ▶ Longest and most successful hydrogen (Sale of Gas) alliance
- ▶ Incepted in 1992
- ▶ 30 plants to date
- ▶ More than 1800 mmscfd H₂ capacity added out of which ~ 900 mmscfd executed over past 5 years

Benefits

- ▶ Market penetration and catering of customer needs
- ▶ Synergy of best in class strengths of Design and Operation
- ▶ Value-added solutions and their implementation
- ▶ Strive for lowest Unit Cost of Hydrogen (UCH)
- ▶ Establish highest HSE and Reliability standards
- ▶ Continuous Product optimization based on regular feedback
- ▶ Consolidation of techno-commercial excellence