



## CASE STUDY | PROJECT OF THE YEAR WINNER

# Delivering Mega-Project Engineering Excellence across a Multi-National Team

### PROJECT TITLE

Gate (Gas Access to Europe) LNG Receiving Terminal

### LOCATION

Maasvlakte, Rotterdam, Netherlands

### PROJECT DURATION

44 Months

### VALUE

Approx. €800 million

### COMPANIES INVOLVED

ECI Member

Techint E&C - in joint venture with Sener

### Client

Gate Terminal B.V.

### Main contractors

- TSEV (Techint E&C-Sener-Entrepose-Vinci)
- Besix-Mourik (civil works)
- Ooms (buildings, warm water line & tunnel)
- KWS (sea water pumphouse)
- Geka (jetty works)
- Hollandia (steel structures)
- Fincimec (mechanical & piping erection)
- Techimp-Sitie (E & I erection)
- Sumitomo (ORV)
- Burckhardt (compressors)
- Ebara (LNG pumps)
- Yokogawa (automation)

### PROJECT OVERVIEW

The scope of the project was for the Engineering, Procurement, Construction and Commissioning (EPC) Contract for a new Liquefied Natural Gas (LNG) Receiving, Storage and Re-gasification Terminal situated in the Port of Rotterdam.

### The project:

- Two LNG jetties, able to receive LNG Carriers of up to 270,000 cbm (Q-max) in size.
- Unloading lines to enable the transfer of up to 15,000 cbm/hr of LNG.
- Three LNG storage tanks, each with a net (pumping) capacity of 180,000 cbm.
- LNG pressurisation with maximum NG grid pressures of 80 bar and vaporisation based on Open Rack Vaporisers, using a waste water cooling return system from a nearby power plant.
- A send-out capacity of 12 bcma (billion cubic metres per annum), 20% swing, and guaranteed levels of availability in excess of 99.5%.
- Metering before tie-in to the national gas grid.
- Options for an additional tank and output capacity of up to 16 bcma.

Techint E&C led the project consortium comprising a 50:50 joint venture between Techint E&C and Sener with a further sub-consortium of Entrepose Contracting and Vinci Construction Grands Projets.

The project was delivered on time and on budget, with an excellent health and safety record, despite the scale and complexities involved. From commencement in 2009 to completion, more than 4 million worker hours were recorded without a Lost Time Injury (LTI) and the small number of claims raised were settled amicably prior to issue of the 'Task-Over' certificate.



Gate Terminal can look back with great satisfaction on the construction of its LNG import terminal in Rotterdam. The EPC Contractor completed this challenging project within the agreed timeframe and budget, whilst also maintaining an excellent safety record during the construction and commissioning phases. The plant has been in operation since September 2011 without encountering any significant problems. The combination of all these factors has made it a very successful project.

### Guy Mariën

Project Manager - Gate Terminal B.V.



## Delivering Value-Enhancing Practice with ECI-ACTIVE

Project objectives were defined and outlined in the Project Execution Plan with input from an initial 'team-up' session attended by the client and members of the project team. This was combined with a comprehensive review and identification of 'stage gates' at critical stages of the project.

During engineering, **monitoring sessions were carried out at key stages**, including: HAZID, HAZOP, and 3D Model Reviews. Peer Reviews were attended by members of the project team and independent parties to encourage discussion and contribution of experience gained on similar projects.

**Constructability sessions** were vital in ensuring the safety and reliability of the terminal's design, while also facilitating:

- Minimisation of interferences across work phases.
- Reduction of on-site worker hours.
- Optimisation of pre-fabrication and modularisation.
- Reduction of on-site personnel.

**Innovation was actively encouraged throughout the project**, with a number of value-enhancing solutions developed, including:

- A change from in-situ to pre-cast structures (particularly challenging for buildings with blast-proof requirements).
- Pre-insulated cryogenic piping within designated 'non-fire' areas.
- Erection of the natural gas pipeline in one single lift using 11 simultaneous cranes.

*The ECI-ACTIVE Principles have been my benchmark to ensure that along with our (Techint E&C) in-house project management tools, I was in the best position to plan and drive a successful Gate LNG Project. ECI-ACTIVE has been an important guiding tool.*

### Guido Piazzoli

Project Director - Techint E&C

New design solutions were fully verified using a 'bottom-up' approach and fed through to the project team at weekly meetings. **Joint Risk Review Sessions** offered an opportunity to incorporate collaborative best practice, with each risk identified, a 'risk owner' assigned and monitoring sessions held to ensure that actions were closed-out.

Communication and the ability to make decisions quickly was critical to success. To achieve this, the team established a high level of transparency and held regular **'team-up' and coordination meetings**. Once the focus moved to construction, the Director and Project Manager relocated to the site, ensuring complete integration of their activities. An 'Interface Manager' was also appointed, supporting **efficient communication across the supply chain**.

ICT tools aided information and document management as well as

communication, which was supported by a web-based platform called 'Dymadoc'. Shared documents were managed using the 'Senet' web system, while the commissioning process used 'CoConsole' software.

Ensuring project success meant achieving **the right balance of processes, procedures and monitoring approaches** as well as incorporating incentives. Monthly project schedule and progress reports were issued to the client, including an overview of any concerns, critical activities and remedial actions. KPI's were reviewed and published on a weekly basis, while monthly quality review sessions focussed on the project's Certification Plan to ensure it adhered to the relevant Dutch and wider-European regulations.

The Techint E&C-Sener LNG team were organised into two distinct functions to ensure the **most appropriate application of resource during construction**; those working within the Process Area, which included the main Terminal; and those involved in Off-Site Areas such as the warm water line, jetties and sea water pump house. Each area had a designated 'Area Superintendent' to monitor progress and report back to the team's Construction Manager.

The success of the project was recognised with an opening ceremony attended by the Queen of The Netherlands, HM Beatrix, and 800 VIPs from the local and Dutch political community, together with numerous international organisations specialising in LNG.

For further information on this project and the individuals involved, please contact the ECI Head Office on **+44(0)1509 222 620** or email [eci@lboro.ac.uk](mailto:eci@lboro.ac.uk)



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