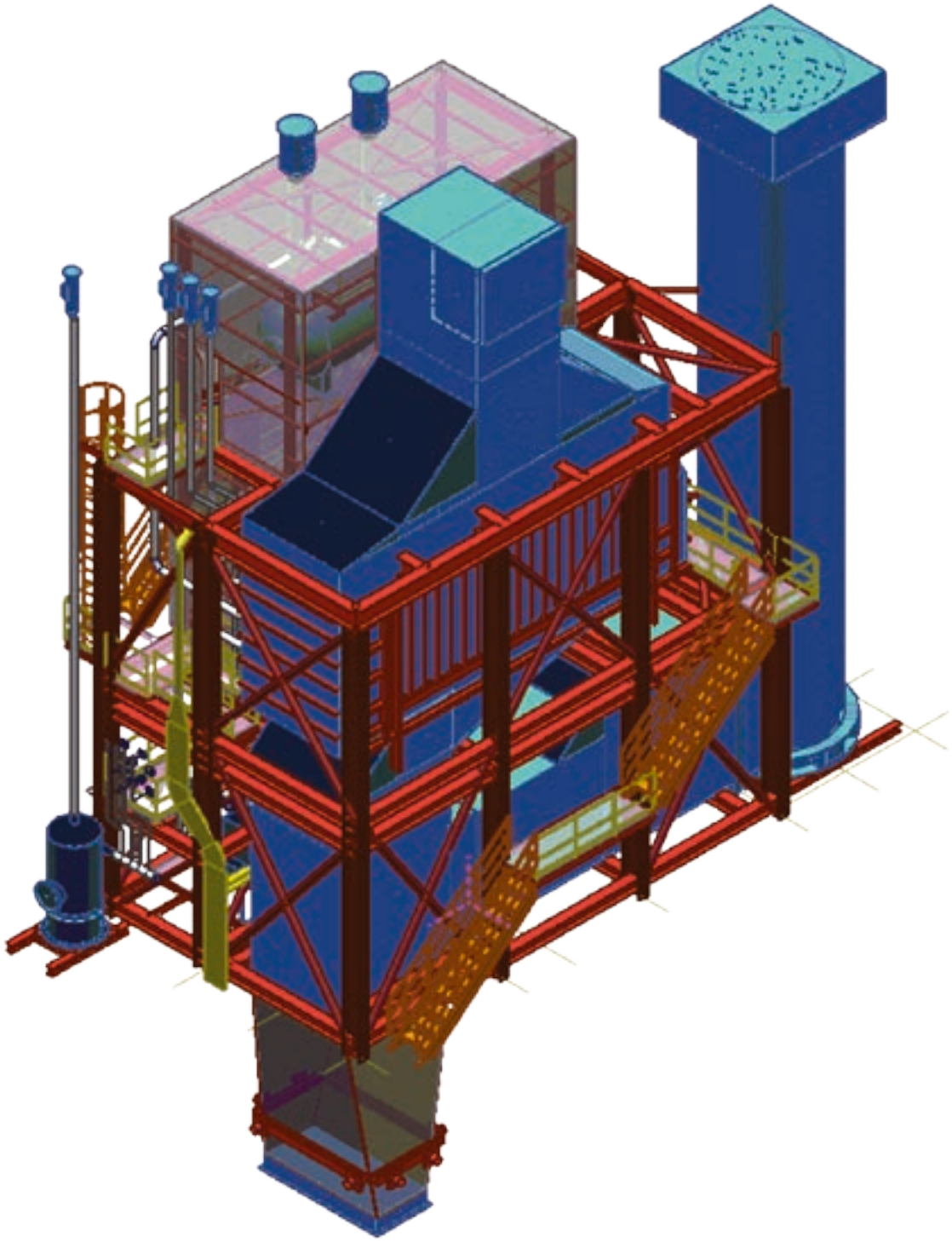
CMI ENERGY

Hilli
FLNG
196 MW



Hilli FLNG
First maritime application for CMI HRSGs for a mobile gas compression station

Context of the Project

Golar LNG, a Norwegian owner of vessels dedicated to the transport of natural gas, placed an order with Black & Veatch (B&V) for the conversion of a ship, the Hilli, into a mobile gas compression station. This concept is called FLNG (Floating Liquidified Natural Gas). Traditionally, natural gas is liquefied onshore before being transported. FLNG enables to be independent of specific onshore gas compression facilities as vessels can directly liquefy gas on board. Gas can therefore be delivered faster to its final destination.

The Contract

In November 2014, B&V placed an order with CMI Energy for the design and supply of four boilers dedicated to the FLNG application. The contract also includes an option for the conversion of two other ships.

Four gas turbines are located under the main deck of the Hilli whereas the HRSGs are installed on the upper deck. In order to make an optimal use of the limited space available on board, the boilers are designed with a vertical configuration. The CMI HRSGs will produce the necessary steam for two steam turbines (30 MW each), along with the steam required for the liquefaction process.

The Hilli project also requires a modularization of the boilers. CMI Energy will deliver entirely prefabricated boiler modules, that will be assembled on board. The boilers are therefore designed in two main parts, of which the larger weights approximately 240 tons. It should also be noted that for reasons of pitching and rolling, these boilers are designed with assisted circulation rather than with natural circulation, which is more usually the case for larger boilers installed in electric power plants.

The communication and commercial negotiations with Black & Veatch were handled by the American teams of CMI Energy whereas the technical proposal was drawn and followed up by CMI Energy in Belgium, specializing in the vertical technology of boilers. This teaming approach continues during the project execution phase as CMI's Belgian teams are in charge of the engineering and purchasing and the American teams provide the project management and transportation. CMI Energy also associates with maritime experts and is DNV (Det Norske Veritas) certified.

This order illustrates the know-how of CMI Energy and its capacity to design projects for new applications. It also demonstrates the great potential of CMI Energy's teams in Europe and the United States.

Gas Turbines

- 1 GE LM2500
- Fuel : natural gas

Heat Recovery Steam Generators

- 4 CMI vertical HRSGs
- Installed on a ship
- DNV certified with by-pass diverter
- Assisted circulation

Performances

Gas	C°		t/h
Inlet	524.4		305.6
Outlet	192.3		305.6
Steam	**°C**	**BarA**	**t/h**
HP	398.9	45.3	39.1

Schedule

Contract Award	November 2014
Start (first) boiler erection	January 2016
1st HRSG ready for PAC	May 2017
Full Commercial Operation	May 2017

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