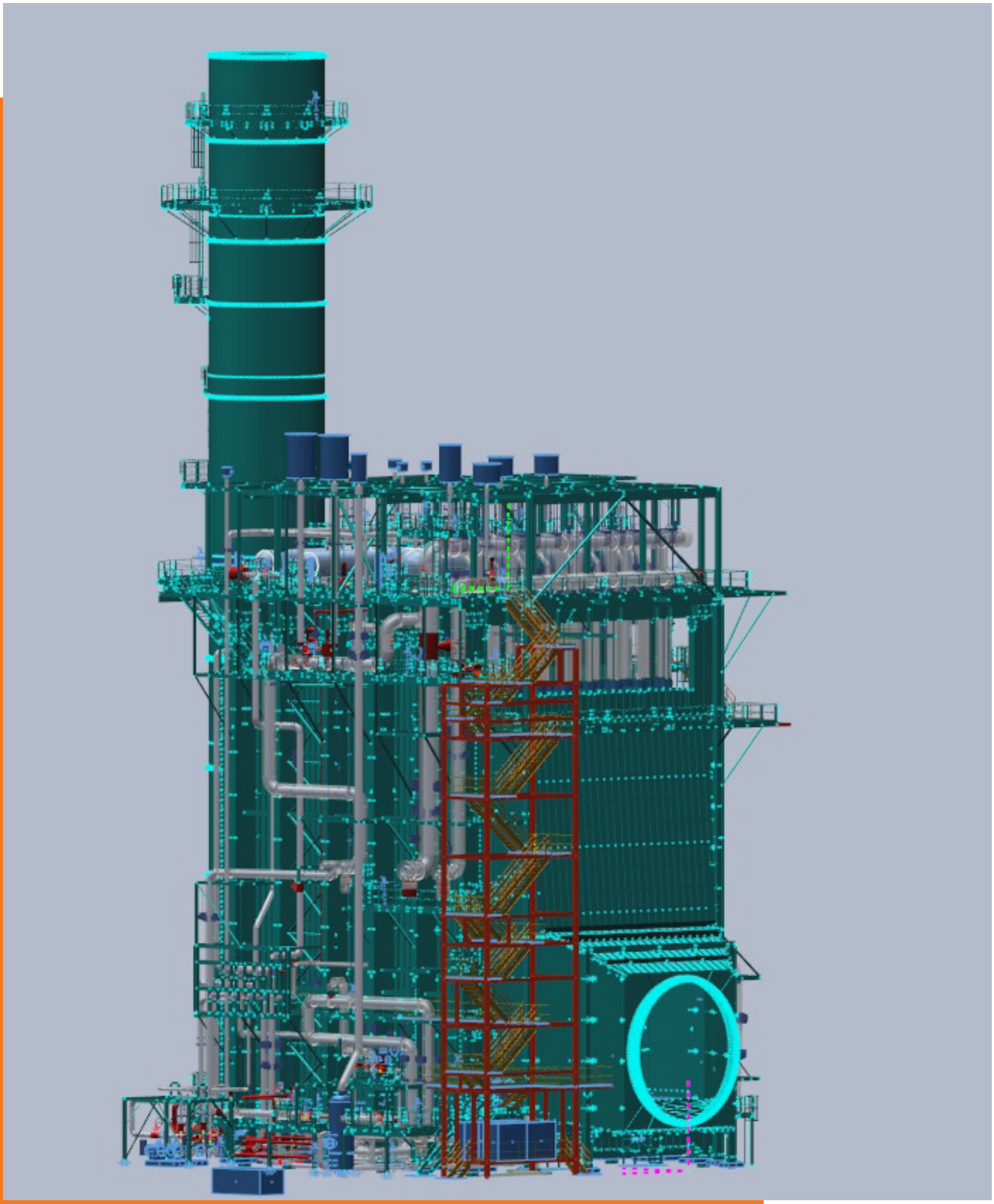
Banyan, Singapore

600 MW



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John Cockerill

Banyan, Singapore | 600 MW

A 3-pressure level + reheat HRSG with a CO catalyst for a hydrogen-ready power plant.

Context of the Project

Sembcorp Industries is developing a new multi-utilities centre on the Jurong Island (Singapore), which will supply power, steam, firewater and demineralised water to their customers. The construction of this new multi-utilities centre begins in the second half of 2023. It will be fully operational by 2026.

This facility will include a new 600MW hydrogen-ready power plant. Sembcorp Cogen Pte Ltd, a wholly owned subsidiary of Sembcorp Industries. Sembcorp has awarded to a consortium between Mitsubishi Power Asia Pacific Pte Ltd (Mitsubishi Power) and Jurong Engineering Limited a turnkey contract for the construction of the power plant. The future power station of Banyan will contribute to generate electricity for the grid and steam for industrial companies on the Jurong Island.

The Contract

In September 2023, John Cockerill Energy was awarded by Mitsubishi Power a new order for the design and supply of a heat recovery steam generator (HRSG) for the new combined cycle power plant of Banyan.

The new John Cockerill boiler will be a huge boiler of horizontal, drum type, 3 pressure level with reheat and will be installed behind a 701JAC gas turbine. Our engineers have included a CO catalyst, which will control the carbon monoxyde emissions during plant operation. The heating surface of this HRSG will be impressive with more than 750.000 m².

The good performances of the Aftersales experts of John Cockerill in 2021 and 2022 at the Keppel site (Singapore), the excellent performance of our project team for John Cockerill's new order awarded in 2022 for the design of a new HRSG in Keppel for Keppel Sakra Cogen Pte Ltd, our high quality equipment as well as our good commercial relationship with Mitsubishi Japan are John Cockerill Energy's strongest assets.

Plant Operation

The new 600MW hydrogen-ready power plant of Banyan will be built for Sembcorp Industries, a fully owned subsidiary of Sembcorp Cogen Pte Ltd and is expected to be operational by 2026.Located at Sembcorp's upcoming multi-utilities center on the Jurong Island, this high efficiency combined cycle power station will replace an old plant.

It has been designed to operate with either natural gas or with a blending of natural gas with hydrogen. It will also have a provision to operate completely on hydrogen in future. The use of hydrogen instead of natural gas will enable to significantly reduce direct greenhouse gas emissions (CO_2).

Gas Turbine

- One 701JAC gas turbine
- Fuel: natural gas and provision for hydrogen (light distillate liquid fuel as back-up)

Heat Recovery Steam Generator

- 1 horizontal John Cockerill HRSG + CO catalyst
- 4-Wide
- 3 pressure level + re-heat
- Over 750,000m² of heating surface

Performances

GT Outlet Data	°C		kg/s
Outlet	719		666.5
Steam	**°C**	**barA**	**t/h**
HP	601	162	422
IP	359	35	21
LP	298	6	18
Reheat	615	34	382

Schedule

Contract Award	September 2023
First Firing	April 2026
Full Commercial Operation	October 2026

John Cockerill Energy

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