

Major boost on aging pumps' performance and energy efficiency

CUSTOMER

Southeast Asia LNG Plant

LOCATION

Southeast Asia

INDUSTRY

Midstream O&G

KEY SERVICES

1. Energy Efficiency

2. Retrofit

3. OEM-X line

4. Troubleshooting



THE CHALLENGE

Extensive signs of wear & efficiency decline for aged pumps



The customer needed immediate assistance with two pumps, which required repair and upgrade work to bring them close to their original performance figures. Due to the age of the pumps and the extended lead times for replacement parts from the pump's Japanese original equipment manufacturer (OEM), Sulzer needed to find an effective solution.

- Six of the nine pumps had leakage figures of around 25 m³/hour, which equated to 10% losses.
- Plant needed to remain operational throughout repairs.
- Sulzer was required to deliver a fast response as well as a more cost-effective solution than that offered by the original OEM
- Nine original boiler feed pumps designed to run as seven in service and two on standby.



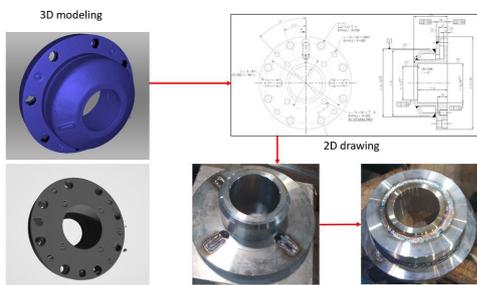
THE SOLUTION

Retrofit excellence with a focus on performance

“By adapting design concepts from Sulzer pumps, our engineers have managed to improve the performance of the existing pump and complete all calculations to verify the existing barrel design would be safe in operation with the new upgrades incorporated. A final hydro test and site acceptance test was conducted to test the barrel, pipework and pump performance to confirm its integrity and performance after upgrades.”

Manish Talwar, Global Head of Retrofit, Pump Services

- New parts were designed and manufactured using state-of-the-art equipment, including 3-dimensional laser scanning technology.
- The engineering models were used to provide a route for manufacture with the latest techniques to produce the new parts in the shortest lead time.
- We updated the design of the drive coupling, replacing the gear coupling with a membrane coupling.
- Concurrently, we discussed the replacement of the remaining seven pumps with new, custom-made models from Sulzer's GSG range of boiler feed pumps



Regained operational reliability with multiple economical benefits

- The innovative manufacturing method greatly reduced the lead time compared to traditional casting techniques.
- As well as creating new parts, Sulzer installed a membrane coupling, which offers stable performance by absorbing damping vibration and easy maintenance.
- The payback period for the pump upgrades were calculated to be less than three years.
- The new Sulzer GSG pumps will be designed so that they can be installed on exactly the same footprint as the originals and easily connected to the pipework.
- The new pumps will deliver a 5% increase in efficiency over the 'as-new' figures of the original pumps.
- The increased efficiency of the new Sulzer GSG pumps mean that the power input required will be 6% less than the originals, which will provide on-going long-term savings for the customer.
- The repair and replacement program will help in extending the LNG plant's license to gas to the national grid for another 50 years.

PROJECT KEY FACTS

EFFICIENCY INCREASED BY

5%

ENERGY COSTS SAVINGS OF

US\$559,340/year

CARBON REDUCTION OF

171.96 tons/year

PROJECT PAYBACK PERIOD

Less than 3 years

Pump specification	As found	After overhaul	Future parameters
Manufacturer	Japanese 3rd party	Japanese 3rd party	Sulzer
Pump model	BB5 8 stage	BB5 8 stage	GSG 100-300/8
Rated flow (m³/h)	251	251	251
Discharge head (m)	976.6	976.6	976.6
Efficiency (%)	64	74.2	78.9
Power (kW)	995.69	858.81	807.65
Temp (°C)	110	110	110
S.G	0.954	0.954	0.954

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