



## Siemens Industrial Turbomachinery Dominican Republic

# Estrella Del Mar III Power Barge

### Project Description

The Estrella Del Mar III power barge will be docked in the waters of Santo Domingo, Dominican Republic. It is expected to produce approximately 142 MW of clean, natural gas power for the Dominican population by 2021. The barge's configuration, branded as SeaFloat by Siemens, will consist of two Siemens SGT-800 gas turbines, two Once Through Steam Generators (OTSGs) supplied by IST – a division of Propak Systems Ltd. and a single SST-600 Siemens steam turbine.



A critical aspect of the technology selection process for a power barge of this nature is minimizing the weight and footprint of each individual component. Every additional pound or square foot can add significant cost to the project. This is one of the main reasons that IST's OTSGs were again an ideal fit for a project of this nature. While other technologies may require extra space for a bypass stack, or impose extra weight by needing steam drums or separators; IST's OTSGs are extremely simple, efficient, and reliable. As seen in the image above, IST's OTSGs are also elevated above the gas turbine for this project, which further reduces the footprint of the entire system. This makes it the most compact and lightest option available, and an excellent fit for offshore combined cycle applications.

This lightweight configuration is made possible through the use of advanced materials in IST's OTSGs. These materials give the OTSG the ability to withstand the full temperature of the gas turbine exhaust, and therefore the gas turbine can operate even when the OTSG is not generating steam without any need for a bypass stack. In the case of this project, the OTSG materials needed to be suitable for temperatures as high as 1112°F (600°C). Such high temperatures are becoming more and more common for today's new gas turbines, and therefore IST's product continues to evolve.

### OTSG Common Benefits

IST's unique Once Through Steam Generators are designed to run dry, eliminating the need for bypass stacks, diverter valve systems and stack silencers. OTSGs have once through flow paths; therefore, no steam drums or blowdown systems are required. The absence of a blowdown stream, as well as the fact that OTSGs do not



typically require any chemical cleaning, make the OTSG a more environmentally friendly technology than conventional boiler technologies.

The absence of drums and the modular design and manufacture of OTSGs facilitate easy and rapid shipment and erection of the units. Typical units consist of 5-7 modules: inlet duct, burner duct (if applicable), plenum, steam generator module, emissions control module (if applicable), hood, and the stack, which reduce erection time and crane usage/requirements.

The use of small diameter tubes and modular construction allow for a lightweight and compact design that is ideally suited for projects that have weight and size restrictions. OTSGs demonstrate a significant improvement over the natural circulation drum-type units. They offer high availability, proven experience, and cost saving benefits.

## CONTRACTUAL OPERATING PARAMETERS - SUMMARY

Gas Turbine	Turbine Output (MW)	Exhaust Flow (lbs/hr)	Fuel	Exhaust Temperature (°F)	Firing Temperature (°F)
SGT-800	50	1,014,240	Natural Gas	1112	N/A
HP Steam Flow (lbs/hr)	HP Steam Temperature (°F)	HP System Pressure (psia)	LP Steam Flow (lbs/hr)	LP Steam Temperature (°F)	LP System Pressure (psia)
144,790	1005	1258	21,909	433	402