



Floating Power Generation Solutions



Delivering unprecedented marine solutions

INNOVATION

Delivering Value through Vision and Innovative Thinking

Since 1974, Waller Marine, Inc. has set the standard for innovation and quality in naval architecture and marine services. As EPC Contractors and Marine Engineers, Waller Marine utilizes the latest technologies in developing Floating Power Plants (FPP) and FPSO designs to meet each client's specific requirements.

With state-of-the-art engineering software, we turn our conceptual designs into a 3D model and virtually walk through the floating power plant to analyze the structure, review regulatory compliance, and resolve design issues before resources are committed to construction.

We employ a diverse group of professionals to satisfy the multi-discipline practices associated with design, construction management, regulatory assistance, project development and contractual compliance. On any given project, a Waller design team is comprised of experts in the disciplines of naval architecture, marine engineering, power plant engineering and construction.

The depth of experience our personnel hold permits the forging of breakthrough ideas and conceptual designs for the application of traditional land-based generating technologies to a marine environment.

SUSTAINABILITY

Pushing Beyond the Limits

Only at Waller Marine—with our diversified team of engineers and naval architects—will you find unique, sustainable solutions for the design and construction of FPPs and Floating Energy Centers (FECs). The latter being the integration of electrical generating technologies with other commodities such as LNG, fresh water, hydrogen based generation, and the simultaneous production of synthesis gas and chemicals.

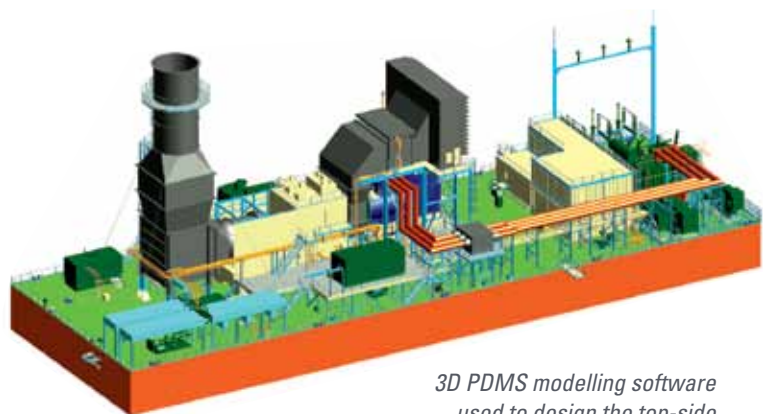
In the development of our most recent FPP, mounting large industrial gas turbines for operation on a floating structure required an in-depth understanding of the challenges in design and construction of highly damped foundations and supporting structures. Foremost, the associated system

dynamics that are at play with a 650-ton turbine-generator rotating at high speed, developing an enormous 230,000 horse power, has to be absorbed by the supporting structures. Subsequently, vibration (during run-up, operation and run-down speeds), high structural loading, resonance, and mass damping issues were also taken into consideration to build a successful platform for the turbine.

Additionally, the turbine foundations are supported by the barge structures that are designed to permit the flow of forces into the hull without overstressing components; while still permitting flexure of the hull girder due to differential weight distribution and thermal gradients. By isolating the turbine foundation from the influences of the barge structure is thus a priority.

Our turbine support design philosophy considered these variables with a resulting solution that included a large pre-stressed concrete plinth supported on springs and a system of hydraulic jacks. The plinth, a monolithic reinforced concrete structure, was designed internally with a complex array of rebar and a specially selected concrete mix. This combination produced a high damping capability to absorb the changing vibration induced amplitudes that occur during start up and stop operations, as well as, the structural strength to support high loading.

At Waller Marine, we have an extensive portfolio of FPPs using both 60 Hz and 50 Hz gas turbines, ranging from 5 MW to 250 MW in simple cycle mode and up to 500 MW in combined cycle mode. All of our simple cycle FPPs are designed to be easily converted to a combined cycle operation with the addition of a heat recovery and steam turbine generating barge. Let us design a solution, engineer and construct your next offshore support and transportation vessel.



3D PDMS modelling software used to design the top-side equipment arrangement.

BARGE MOUNTED GE 7FA GAS TURBINES



Specifications

NAMES:	<i>Margarita I and Josefa Rufina I</i>
EPC CONTRACTOR:	Waller Marine, Inc.
BUILDER:	Signal International, Inc.
CLASSIFICATION:	ABS
CONSTRUCTION:	All welded steel and reinforced concrete foundation
LENGTH OVERALL:	300 feet (91.4m)
BREADTH:	100 feet (30.5m)
DEPTH:	20 feet (6.1m)
LIGHTSHIP WEIGHT:	6,700 Short Tons
DESIGN DECK LOAD:	6,000 psf
DECK SQ. FOOTAGE:	30,000 sf
TURBINE GENERATOR TYPE:	GE 7FA
GENERATING CAPACITY:	171 Mega Watts (ISO)–simple cycle

Marine Equipment and Systems

Ballast system
Bilge system
Oily water separators
Fire pumps; diesel and motor driven
Marine sanitation device
Fuel, water, sludge and ballast storage tanks
Potable water pressure sets
Domestic hot water system

Below deck ventilation systems
Deck drain system
Barge service diesel generator
Barge mooring brackets

Power Plant Equipment and Systems

Gas turbine cooling fin-fan coolers
Liquid fuel system (for dual fuel machines)
Diesel fuel treatment skid (*for dual fuel machines*)
Gas fuel system
Water wash system
Water injection system (*if water injection is required*)
Reverse osmosis system & storage
Gas receiving station
CO₂ storage and distribution
Motor control center & switchgear
Central Control Room and offices with fiber optics
Central communications system
Warehouse
Main step up transformer 11Kv/230Kv
Auxiliary transformer
Station transformer
SF6 Breaker
Transmission take-off tower
Gas turbine starting system (*water cooled 12 pulse LCI system*)
Fire protection and fire fighting systems
30 meter stack



**EPC Contractors
Marine Engineers**