

Installation of a GE 7FA Gas Turbine on Vibro/Dynamics SVS Spring Isolators

Waller Marine provides world's largest floating power generation barges to help power Caracas, Venezuela.

Waller Marine set forth on an ambitious project to design and build two floating power generation barges to provide Caracas, Venezuela with needed power. Each barge was powered by a GE 7FA dual fuel industrial turbine, producing 171 MW generating capacity, weighing 650 tons and developing 230,000 horsepower.

Installing such a large turbine on a floating structure required indepth knowledge and understanding of how to install such a large mass on a highly damped foundation and supporting structure. Vibration (during start-up, operation and run-down), high structural loading, resonance, and mass damping all had to be taken into consideration. The foundation had to be designed to prevent the dynamic forces from damaging the hull, yet allow it to flex with changing weight distribution and thermal gradients. Audible frequencies greater than 50 Hz. had to be effectively isolated.

Waller Marine and subcontractor, Berger ABAM, determined that a pre-stressed, reinforced concrete plinth supported by low-frequency, spring isolators was the best solution. Berger ABAM contacted Vibro/Dynamics, known for their expertise in designing isolation systems, to assist them in the final design of the isolation system.

Several isolation models with varying stiffnesses and damping types were considered and analyzed. The analysis showed that a low-frequency, viscous damped, coil spring isolator was required.

Vibro/Dynamics quickly went to work, designing its Model SVSN3008-07-17266 to meet the required specifications and design requirements. Vibro/Dynamics delivered and met a very aggressive schedule set by Waller Marine.



The Margarita I and Josefa Rufina set sail



Installed isolator and arrangement on deck





Plinth form-work being lowered onto the Vibro/Dynamics Isolators



Concrete Plinth supported by the Isolators



Assembly of Turbine on the top of the Plinth



Vibro/Dynamics Isolator under Concrete Plinth



Two Power Barges in Tocoa, Venezuela