

USA: TRANSPORTATION OF TWO X 470 TON STEAM GENERATORS FROM FRANCE TO USA

PROJECT	EQUIPMENT	WEIGHT
POWER	HL SHIP / BARGE/ SPMTs / GANTRY LIFTING SYSTEM / OVERBRIDGES	470 TON



Fagioli performed the transportation of two RSGs from Chalon-St. Marcel (FR) to Three Mile Island, Pennsylvania (USA) between end of July – early October 2009

Number of pieces	Description	Length (mm)	Width (mm) (saddles included)	Height (mm)	Weight (kg)
2	Replacement Steam Generators	22657	5480	4995	473373

Equipment involved

2 x 14 axles / 2x12 axle SPMT's
Hopper Barge for river navigation from Chalon to the sea port of Fos sur Mer;
Heavy Lift Ship for lift-on and –off and ocean transportation to Claymont (DE);
Deck Barge for USA inland waterway navigation
Gantry lifting systems (capacity up to 600 ton each)
Two (2) special designed / built jump bridge transporters to perform the overbridges operation
Auxiliary equipment

Each generator was seated on a skid transport frame composed by two girders and two specially made rubber padded saddles. The RSGs were loaded with Fabrication Shop overhead cranes onto a specialized hopper barge in Chalon Saint Marcel (France). The generators were moved by barge to Fos-sur-Mer. The distance to the sea port of Fos was about 500 Km. Upon its arrival at the port the barge was safely moored alongside the starboard of the ocean going ship. The self-geared ship vessel performed the lifting of the RSGs. As soon as both components are stowed under deck they were fastened and secured for ocean voyage according to pre-arranged safety procedures. After two weeks the ship arrived to Claymont (Delaware, USA) : a total of 4000 miles. In Delaware Fagioli provided local barges for the transshipment of the generators by means of H/L vessel gears. The barge positioned alongside the ship were loaded with SPMT'S ready to directly load the items. From Delaware the barges offloaded the generators to a private facility in Maryland. Once the generators were unloaded with ro/ro operations, the Spmt's started the journey to final destination. Each single convoy configuration was 37m long, 7.3 mt high and 5.3 m wide with a total weight of 789 ton. The generators were allowed to move during hours of daylight during the working week, spreading the land journey to 14 days duration for a total of about 75 miles. Apart from all the permits required to travel through 23 municipalities, Fagioli was forced to use of multiple temporary bridges structures (50 and 80 feet over-bridges) to allow the passage of the heavy convoy on roads with restricted capacity. This operation was subcontracted to KMX under Fagioli responsibility. Sometimes Fagioli was performing this operations several times a day using either a specially built jump bridge transporters to load, unload, pick up and lower the over-bridges. The average of the transport was one to two miles an hour. Two days were required for the items to cross a bridge in Pennsylvania.



During the passage on a bridge, Fagioli performed the re-configuration of the trailers by means of gantry lifting system. The trailers configuration were enlarged and extended to provide an optimal distribution of the weight over the bridge. Once each vehicle crossed, the process had to be carried out again to return the vehicles to their original configuration. During the journey a bridge bypass was built specifically for this transport. Three large concrete pipes were installed to allow the water to continue its flow. The bypass was removed after the passage of the convoy. On early October the generators arrived at destination.

PECULIARITY OF THE TRANSPORT

Huge organization process for a transport of two Steam Generators from France to Pennsylvania. Detailed Engineering studies to plan and evaluate the different operations concerning this project: ballast evaluation, road transport method of statement, lifting method of statement, contact with local authorities both in France and in Maryland and Pennsylvania. The project required coordination with and approvals from over 150 agencies and governmental entities only in USA to obtain the required 18 permits to travel through 23 municipalities. Considering the local rules for the heavy transports permits applications the positioning of over-bridges (also considered as heavy transports) were considered as “emergency procedures” due to the elevated numbers of structures to be positioned during the journey (sometimes 10 times in one day). The Numbers: 4600 miles ; 75 miles route including narrow roadways, 90-degrees turns, 50 stream crossings and hundreds of utility lines to remove and re-position. A transport performed passing through populated areas with lots of obstacles: tunnels with clearance restrictions; narrow roads and bridges with capacity restrictions. Millions of dollars performance bonds to guarantee the insurance coverage Long-experiences team, organization and wide range of equipment to control , supervise and arrange a transport like this in two different continents. State-of the art equipment to perform a project like this one Fagioli monitored all the different stages of the project from the river transport, passing through the sea and road operations. Engineering expertise turned into a project successfully performed under HSE requirements and without any accident !!!

