

## Lifting and Placing Boiler Modules and Heavy Machinery



▲ View of the new machine hall with VSL lifting gantry and MHI Gas Turbine being lifted

The new Severnaya 400 MW Combined Cycle Power Plant is located at the Caspian Sea, north of Baku, the capital of Azerbaijan. With its modern technology, it will eventually replace 3 old units, which are technically obsolete.

Between October and December 2001, VSL was engaged on site and installed 12 HRSG boiler modules supplied by CMI, one MHI gas turbine and one ABB generator stator. The handling and placing of these heavy components and machinery was done in two phases.

The first phase consisted in the installation of the boiler modules through incremental lifting. Following CMI's standard procedures for installation of modules of this type, VSL installed a total number of 28 strand lifting units of up to 100 t capacity, which were arranged in 4 lines of 7 units on top of the permanent steel support of the boiler. Due to the stagewise assembly method, the total lifting load increased gradually and reached 1'700 t when the last modules had been fixed. The lifting work of all 12 modules was completed in 8 days. The 28 lifting units were operated simultaneously within a

tolerance of 10 mm and lifting height and forces were centrally monitored. In a second phase, VSL placed the MHI gas turbine and the ABB generator stator. Both items weighed around 350 t each.

Initially, a placing sequence using a different type of equipment for handling of heavy machinery had been envisaged. VSL succeeded however in convincing the client of the technical



▲ View of boiler with 9 modules (3 levels) installed

and economical advantages of an alternative solution which made use of components of one of its own steel lifting gantries. Modifications had to be done on this gantry, so as to match the different dimensions of the gas turbine and the generator stator. VSL's capabilities to provide within a short time a detail design based on this more economical alternative, together with the documents required for the approval by the main contractor, was essential for winning this contract.

VSL standard strand lifting equipment was used to lift and lower the turbine and the generator, and also to slide the gantry with the suspended machinery longitudinally, over a distance of up to 60 m. The actual installation work for the gas turbine and the generator stator was completed in 9 days. This time included alteration of the gantry configuration to match the different hook-up geometries of the two machines.

**OWNER :**

Joint Stock Company AZERENERJI (JSCA)

**MAIN CONTRACTOR :**

MHI Mitsubishi Heavy Industries, Japan, represented by  
MITSUI & Co. Ltd. Absheron, Baku / Azerbaijan

**PLANT ERECTION CONTRACTOR :**

EPRO, Power and Industrial Plants Inc. Istanbul / Turkey, represented by  
TML-BOROVA Construction Co. Baku / Azerbaijan

**LIFTING SPECIALIST :**

VSL (Switzerland) Ltd., CH-4553 Subingen  
as subcontractor for EPRO, Power and Industrial Plants Inc. Istanbul

▼ *ABB Generator Stator after lift-off*



▼ *Arrangement of VSL lifting units for boiler installation*



**HEADQUARTERS**

**VSL International Ltd.**  
Switzerland  
Phone: +41 32 613 30 30  
Fax: +41 32 613 30 55

**REGIONAL OFFICES**

**Australia & Pacific**

VSL Prestressing (Aust.) Pty.Ltd.,  
Australia  
Phone: +61 2 9484 59 44  
Fax: +61 2 9875 38 94

**Asia**

VSL-Intrafor Asia,  
Hong Kong  
Phone: +852 2590 22 88  
Fax: +852 2590 02 90

**Central East Europe  
& Middle East**

VSL (Switzerland) Ltd.  
Switzerland  
Phone: +41 32 613 30 30  
Fax: +41 32 613 30 15

**Iberian Peninsula, South Africa  
and Latin America**

CTT Stronghold  
Spain  
Phone: +34 93 289 23 30  
Fax: +34 93 289 23 31

**France, Africa  
& French speaking countries**

Intrafor-VSL France  
France  
Phone: +33 1 39 44 85 85  
Fax: +33 1 39 44 86 86

[www.vsl-intl.com](http://www.vsl-intl.com)

