ROMANIA – TRANSFER OF A TOP RAM GUIDE FROM STORAGE POSITION TO DRILLING TOWER

PROJECT	EQUIPMENT	WEIGHT
H. INDU. / SHIPB.	STRAND AND TOWER LIFT SYSTEM– ELEVATOR SYSTEM -	182 TON

Fagioli was involved in a challenging operation in Romania for the Lifting, Skidding and Jacking down operations of a TOP RAM GUIDE at Costanza by means of elevator system.

Main procedures:

• Lifting of TOP RAM GUIDE by means of elevator system onto Fagioli Storage Towers

• Skidding of TOP RAM GUIDE onto Fagioli Elevator System

• Load Transfer from hydraulic jacks to the skidding rollers

• Jacking down of TOP RAM GUIDE by no. 8 Hydraulic jacks.

Dimensions of the TOP RAM GUIDE:

Length: 24.0 m

Max Width: 7.0 m

Max Height: 18.0 m

Weight: 182.4 t

MAIN FAGIOLI EQUIPMENT

The equipment used for the lifting, skidding and jacking down operations were the followings:

• No. 2 storage towers with base frames welded to the Raiser deck (Tower 1 and 2, h=27 m);

• No. 2 lifting towers with base frames welded to the Raiser deck (Tower 3 and 4, h=46m);

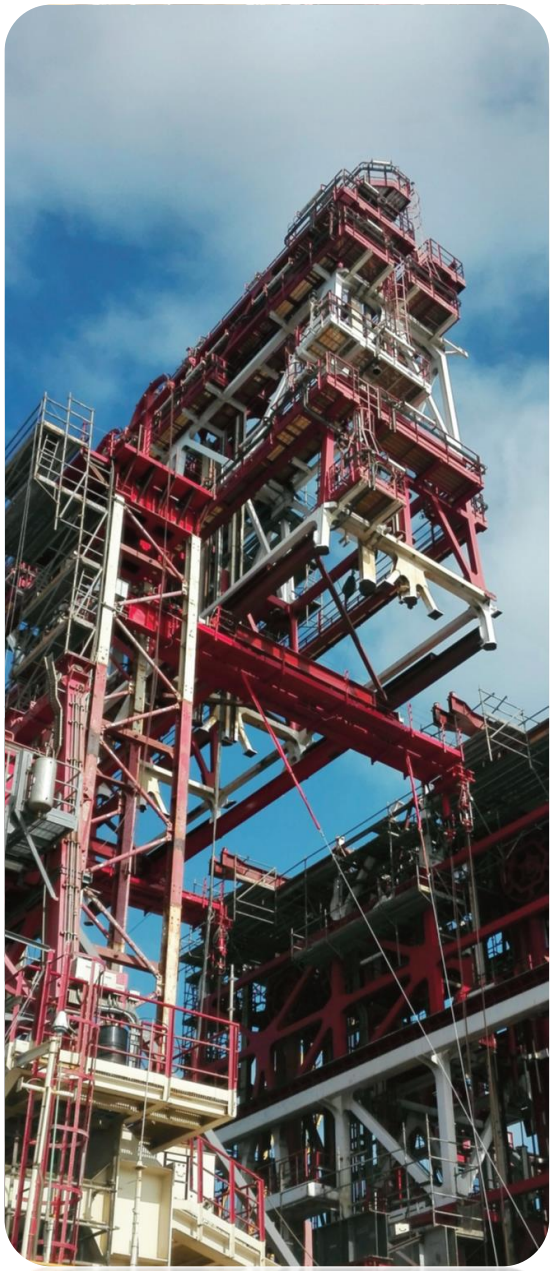
• No. 1 Elevator frame composed by N.2 longitudinal girders and N.2 transversal bracings;

• No. 8 strand jacks L-50 for the Elevator System;

• N. 4 strand jacks L-15 for skidding;

• No. 8 hydraulic jacks (50 t cap. each one, 150 mm max stroke) for jacking down operations;

• No. 4 rollers (200 t cap. each one) for skidding operations;



PHASE 1: LIFTING BY MEANS OF ELEVATOR SYSTEM

After the erection of the skidding system and the sea fastening of the TOP RAM GUIDE was removed, Fagioli started the operation.

Fagioli installed the Tirfort and started to take the load with strand jacks L50. Each stroke was about 400 mm, with a continuous check of eventual oscillations by the item and the elevator system. The load was gradually increased from the hydraulic jacks with steps of 20%. A remote computer system checked the tolerances and eventual vertical displacements. Fagioli proceeded with the lifting operation until the elevator reached the design skidding position (elevator skidding rails alignment with cantilever skidding rails). At each loading step Fagioli operators checked the tower verticality, the raiser deck deflection, the elevator girder planarity and deformations.

PHASE 2: SKIDDING OPERATION

After checking the alignment of skid tracks on the Cantilever Beams and on the Elevator Girders, Fagioli installed the Strand jacks L15 and connected to the Top RAM Guide: n. 2 L15 on (STERN side) to move the module onto Cantilever beams and no. 2 on Elevator girder (BOW side) for contingency plan. Operators connected and tightened no. 4 turnbuckles 5 t from elevator girder to cantilever beam and installed two bridge elements. No. 8 stoppers were removed from the skidding rails. The skidding operation was executed adjusting the stroke as needed to keep the skid tracks at the same elevation.

PHASE 3: JACKING DOWN

No.8 hydraulic jacks (Capacity 50 t /each) were positioned under Top Ram Guide frame beam with proper shimming underneath the jacks in order to have a free gap of approx. 10 mm between jacks and Ram Guide frame. No.8 hydraulic jacks were raised till they were in contact with the Top frame beam of the module.

Once the full load was reached on the hydraulic Jacks, the n°L15 FAH from RAM guide were disconnected and the No. 8 hydraulic jacks were raised. The Top Ram Guide was lifted and the rollers from RAM guide top frame, removed. The Ram guide was lowered until connection plates were in contact with the rest of the structure.