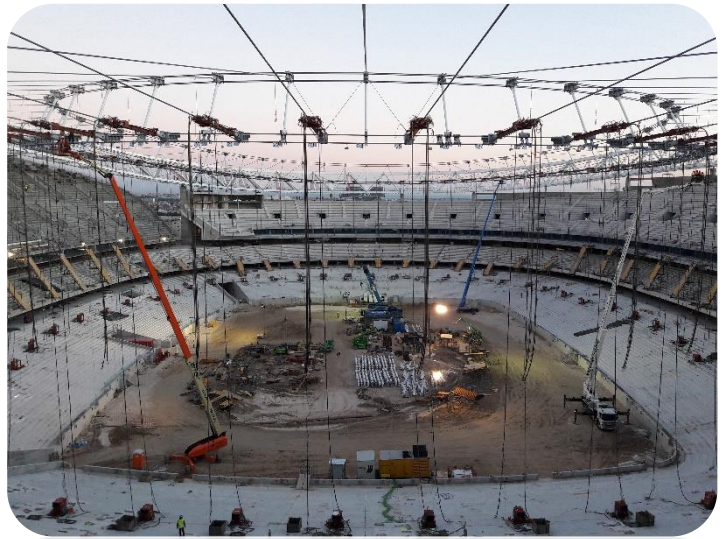


SPAIN – LIFTING OF THE ROOF OF THE NEW ATLETICO MADRID STADIUM

MARKET	EQUIPMENT	WEIGHT
CIVIL	STRAND JACKING SYSTEM	N.A.

Fagioli Ltd. UK was involved in the lifting of the cover cable system of the seating area of La Peineta Stadium, in Madrid (Spain). The seating area was to be covered with flexible membrane roofing supported by a tensioned cable net structure. The roof was formed by an external compression ring of steel, an inner tension ring and two groups of radial cables that connect the rings. There are n°96 strands fixed to the external ring: n°48 connected to the upper tension ring and n°48 connected to the lower tension ring.

The Fagioli equipment (strand jacks, strands, PPU's) was assembled, connected and commissioned once all the compression ring sections had been installed on the primary concrete structure. The cable net roof was to be lifted by pulling the radial cable up to the tension ring and attaching each one with a steel pin to the tension ring. N°2 strand jacks L100 were fixed on the jack support beam. The strand jacks applied the pulling force to the radial cables through temporary cables comprising a number of individual high tensile strands. The application of the load to the lower radial cable by the strand jack raised the cable and the upper tension ring as a single unit. The Big Lift was carried out in two different stages: -First, where the lifting equipment were connected to the lower cable and connected to the upper tension ring.



-Second, where the lifting equipment were connected to the upper cable and connected to the lower tension ring. The strands were anchored in the jack at one end, and in a fixed anchor at the remote end. This unit was connected to the radial cable and imparts the pulling force directly in the line of the pin connection between the radial cable socket and the fixing lug on the tension ring. The total weight of the raised structure was 360 tonnes. The force required to tension the radial cables and connect them to the tension ring (and thus cause lifting) was far beyond the very weight of the Tension Ring, because the force required for lifting, in this case, was not vertical but inclined like radial cables. The L100 strand jacks reached the expected load, working about 100% of their nominal capacity (in some cases up to 100 tons of shooting). Each pair of jacks was powered a one dedicated electric power pack unit (PPU) located on the ground. Each PPU was supplied with electrical power. The two jacks were hydraulically connected to each other to ensure equality of load in each. Overall the project ran from September 26, 2016 to February 28, 2017. Lifting began on January 10 and ended on February 21st. The inauguration of the stadium took place on 16 September 2017.

