

# Olympic Stadium, Athens Erection of the Arches

**Client:** Hellenic Olympic Committee

**Steelwork/Erection Contractor:** Cimolai Construzioni Metaliche



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In preparation for the 2004 Olympic Games to be held in Athens, Greece the Hellenic Olympic Committee decide to upgrade an existing stadium which included installing a new roof over the facility. The roof, designed by the renowned Spanish architect Santiago Caltrava, will be built in two halves behind the East and West stands of the stadium to allow the refurbishment work to continue on the stands simultaneously with the roof construction. Once the two halves are complete they will be skidded into position over the stands.

Each roof half comprises of two arches - an upper arch called the Arch Tube and a lower arch called the Torsion Tube - from which the roof structure is cable supported. The tubes, which span over 297m between supports and are 79m high at their peak, were each assembled from four major pieces using a sequence designed by the steelwork contractor Cimolai.

The erection method adopted by Cimolai required the use of five very heavy duty towers as temporary supports with lifting systems mounted on top. These lifting systems comprised of Fagioli PSC strand jacks mounted on cantilever beams with diesel engined power packs mounted alongside the jacks. Control of the power packs and jacks was from a remote computer control station situated at ground level. Additionally, strand recoilers were used to overcome the

need for the handling of the strand during the lifting. Cimolai used the following erection sequence for the arches:

- The torsion tube sections that pass through the towers were installed by crane during the erection of the towers.
- The arch tube sections that pass through the towers were installed using a lift and skid method using strand jacks.
- The arch tubes between the towers were assembled at ground level, lifted using the strand jacks and connected to the pieces inside the support towers.
- The torsion tubes between the towers were assembled at ground level, lifted using strand jacks and connected to the pieces inside the support towers.

The Fagioli PSC computer controlled lifting systems gave Cimolai the flexibility and control essential in allowing progressive adjustment of the structure geometry as the tube sections were welded.

Owing to the restricted programme available to Cimolai two sets of lifting equipment was provided to work on both the East and West sections simultaneously. The sections lifted using the strand jacks varied from 100 tonnes to over 500 tonnes and used multiples of Fagioli PSC 100 tonnes and 600 tonnes capacity jacks all linked to the central control system.