

Roof of the Beşiktaş JK stadium

Istanbul, Turkey



External assistance mission for a review of the stability project on behalf of Freyssinet International & Cie

Owner
BEŞİKTAŞ JK

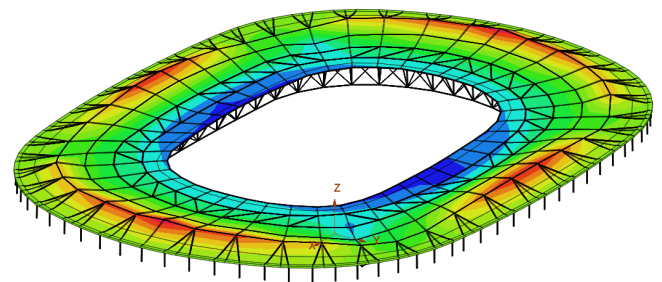
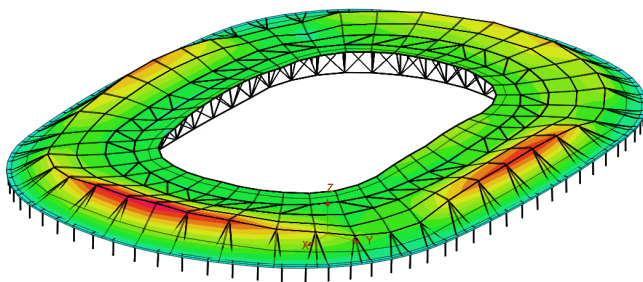
Architects
Bünyamin Derman, DB Architects

Cost of the works
€145 M excl. vat

Studies
2015 - 2016

Execution
2013 - 2016

CM



The new structure covering the BJK Vodafone Arena is a light steel structure placed on concrete grandstand structures. The oval shape of the roof is approximately 215 m long and 160 m wide.

The cover consists of a cable spoke structure comprising a compression ring on the periphery and two tension rings in the center. The compression ring is supported by 82 steel columns on the concrete structure. A network of metal beams is regularly supported on this cable structure. Coverage is provided by a light textile membrane (PTFE).

During the execution, bureau greisch was asked to carry out an audit and assistance mission relating to the stability of the metal structure forming the cover of the stadium.

For this, the structure of the roof was entirely modeled on the basis of the plans while integrating the imperfections actually noted on the site. The finite element model produced also made it possible to integrate the adjustment phases and the non-linear behavior of the structure.

Based on the results obtained, our analysis made it possible to validate and verify the overall behavior of the stadium. The various elements making up the roof as well as the main assemblies were then checked. The appraisal mission finally made it possible to highlight the critical elements and assemblies while proposing adapted intervention methods.