

Stadium roofing for the Turkish soccer club Fenerbahce Istanbul

In order to be able to offer space for an audience as large as possible, the supporting structures for stadium roofing is normally erected outside the stadium itself. Due to the tight traffic situation around the Fenerbahce stadium, this was not possible. Therefore the decision was taken to do without some of the previous 32,000 seats and make use of an internal supporting structure and build four massive concrete towers in the corners, which tower well above the seating area. These corner pillars, each with a surface of some 100 metres square are the supports for the primary supporting structure for the roofing: the dimensions of the steel framework are 156 metres on the longer sides by 123 metres on the shorter sides are, a four-belt carrier with a height of some twelve metres.



Pictures from the official website of Fenerbahçe Sport Clubs: www.fenerbahce.org

The membrane which is in a typically curved structure consists of coated polyester fabric type III. It stretches between round steel cantilever girders with a diameter of ca. 400 millimetres which can be unhitched upwards and downwards with steel cables using ascending forces. The membrane will firstly be welded together from individual perfectly fitting widths and later delivered as a complete field and assembled by crane.



Due to their material and construction, membranes are less susceptible to vibration and therefore ideal for earthquake areas. In order to achieve optimum earthquake protection, all bearings within the construction are made as elastomer bearings and are completely reversible after changes in strain, in other words they take-on their original form. On top of this, special earthquake bearings are installed at the important points, so-called lead deformation bearings which can take deformation due to the relatively soft material as opposed to rigid bearings.

Project data

Membran roof	CENO TEC GmbH, Greven (D)
General planner	Ing.-Büro Teschner GmbH, Kosel (D)
Planning time	as of the start of 1999
Assembly	start of 2002
Roofed area	20.400 m ²
Membran surface	22.300 m ²
Membrane type	coated polyester material type III with surface finishing
Construction of textile roof	62 sections (42 standard, 20 corner) on steel brackets and arches, standard sections ca. 19 x 10 m
Supporting structure	four-belt carrier (height 12 m), round steel cantilever girders, elastomer bearings, lead deformation bearings

