

Roof over PGE Arena in Gdansk. Review of structure and monitoring system

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Summary

This paper presents general structural assumptions of the steel construction designed for a new football stadium to be built for UEFA Championship 2012 in the city of Gdańsk. The superstructure is founded directly on the modified abutment. The facade and the roof are collected from 82 steel girders made of tube profiles. The girders are braced by circular beams and X tension rods. All this creates a quasi – dome covered by polycarbonate cladding. During the fabrication and erection several problem occurred. Major difficulties and repairing procedures are presented here.

Keywords: Stadium, UEFA EURO 2012, steel roof.

1. Introduction

The stadium which was built for UEFA EURO 2012 in Gdansk is the biggest sport arena in the city. Its architecture refers symbolically to a piece of amber over seashore. As a result of a building process a complex structure composed of steel and concrete was built. According to UEFA standards, the stadium was planned to hold ~41000 people. The whole infrastructure of the arena is placed on a specially prepared area of 43 650 m².

The most spectacular part of the stadium is a steel roof and facade structure. Its characteristic shape and transparent cladding in tones of yellow shows the architect's vision mentioned before – a lump of amber.



Fig.1 PGE Arena. Photo taken 22.8.2010 (www.bieg2012.pl) and after the opening (www.euro.gdansk.pl)

The design team is listed below:

- Architect - RKW Rhode Kellermann, Wawrowsky GmbH from Düsseldorf
- Structures – Bollinger&Grohmann – steel structure conception works in preliminary stages
- Structures – APK Wojdak Consulting Engineers – concrete structures final design
- Structures - KBP Żółtowski Consulting Engineers – steel structures conception works and final design
- Structures - Eilers & Vogel – secondary concrete structures and small architecture
- Structures - prof. Tadeusz Godyski-Ćwirko – consultation and verification
- Structures – Gdansk University of Technology - laboratory tests and expert works