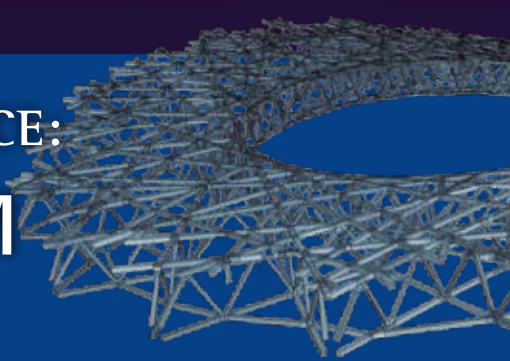
TEKLA® Structures

The Beijing National Stadium, Olympic Green – also known as the 'Bird's Nest' – will host the opening and closing ceremonies of the 29th Olympiad in China in August 2008. The stadium will have a total capacity of 91,000 seats. Tekla Structures software was used in the detailing and workshop design of the most complex and challenging parts of the steel structure.

TEKLA STRUCTURES IN PRACTICE:

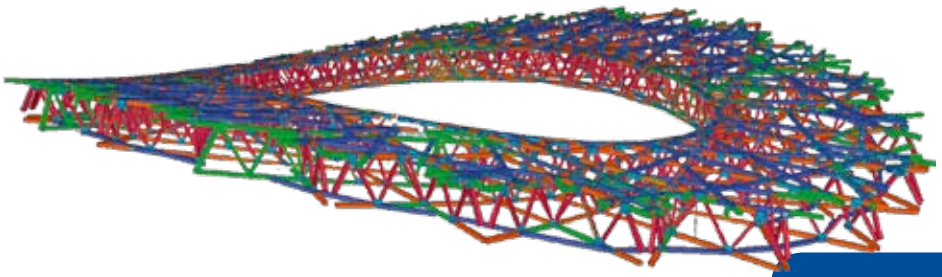
OLYMPIC STADIUM

BEIJING



TEKLA® Structures

ACCURATE MODELING ENSURES ARCHITECTS' DREAMS COME TRUE



> The structural form of the **Beijing Olympic Stadium** is best described as being reminiscent of a bird's nest. The very irregular nature of the structure demanded new and advanced methods of designing and detailing structural steel sections in order to minimize the weight. To reduce the construction costs, the designers removed the top roof and enlarged the area of the roof opening, which reduced the total steel weight from 45,000 to 42,000 tons.

> The interwoven structural elements of the façade produce a single surface, upon which further elements are arranged in a close to chaotic manner to blur the distinction between the primary and the secondary structure. The roof is saddle-shaped, and its geometry has been created from a base ellipse. The outer surface of the façade is inclined at approximately 13 degrees to the vertical. The largest span of the steel structure is more than 343 meters.

> Modeling and detailing the most complex and challenging parts of the steel roof took one year. Two Chinese steel companies, Huning and Jinggong, worked on the roof to produce symmetrical 3D views of its members and connections. They were able to do this by using the mirroring function in Tekla Structures software. A huge number of sections and views were needed for this irregular assembly in order to represent all the relations of each steel part.

Size: 332.3 meters in length, 297.3 in width, 69.2 in height
Total site area: 204,278 m2
Gross floor area: 258,000 m2
Structure: 36 km of unwrapped steel length
Largest steel truss span: 343 m/375 yds.
Architectural Design: Herzog & de Meuron (Switzerland)
Engineering and Sports Architecture:
China Architectural Design & Research Group, (China)
Ove Arup & Partners Hong Kong Ltd., (China)
Arup Sports, London, (United Kingdom)
Steel detailing: Shanghai Haorong Technology Co. Ltd and Zhejiang Jinggong Steel Co. Ltd
Steel fabrication: Jiangsu HNGJ Steel Co. Ltd

Imaging the location of these complicated members and connections accurately and quickly is difficult, but it is possible with Tekla Structures software

TEKLA®

> Tekla's model-based software products make customers' core processes more effective in building and construction and infrastructure management. Tekla Corporation has area offices and partner organizations worldwide. International operations account for 85% of net sales. Founded in 1966, Tekla is one of the most established companies in its field. By enabling the creation of the most accurately detailed and data-rich structural models, Tekla Structures software provides the building and construction industry with the highest level of constructability on the market.

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