

## Designed with Dlubal Software...

### RegioTram Station in Kassel

When the German RegioTram was connected to the central station in Kassel, a tunnel was built under the main station, and thus it became a junction of regional transport for the entire region. The RegioTram is a light rail system in Kassel and surroundings. The German Dlubal customer osd Ingenieure from Frankfurt am Main was in charge of the structural planning for the tram station.

### Platform Roof Without Columns

The framework design reveals a light and filigree timber-steel construction able to span three train platforms without requiring columns, which makes the structure visually quite attractive. On the one hand, choosing the shape of a semi ellipsoidal head allows for preserving the overall system of power lines in the train station and for using common overhead lines in the station area. On the other hand, the whole construction is in line with the shape of the barrel roof structures of the existing station roofs.

### Barrel Shell Based on Building Method of Friedrich Zollinger

The roof's structural model consists of a barrel shell made of timber lamellas whose loads are concentrated and introduced into the reinforced concrete trough across a construction built up of steel box sections. The timber structure was built as a Zollinger roof represented by a single-curved lamella construction for which the members were arranged in a rhomb-shaped structure, each member length running over two fields.

The main difference in comparison to Zollinger's construction method is the bending-resistant design of nodal points. Due to the flat shell geometry the transfer of major bending moments into nodes was required. For this reason a new assembly system was developed: a plug-in connection



RegioTram station during construction phase (photo: osd)

with glued-in dowels. This system was specified in a detail template that could be applied to all nodes. The roof finishes won the award of the timber construction competition 2008 in Hessen, Germany.

Companies participating in construction:

#### Building owner

Kasseler Verkehrsgesellschaft AG  
Kassel, Germany  
[www.kgv.de](http://www.kgv.de)

#### Architect

Pahl + Weber-Pahl Architekten BDA  
Planungsgesellschaft mbH & Co. KG

Darmstadt, Germany

[www.pahl-architekten.de](http://www.pahl-architekten.de)

#### Structural planning

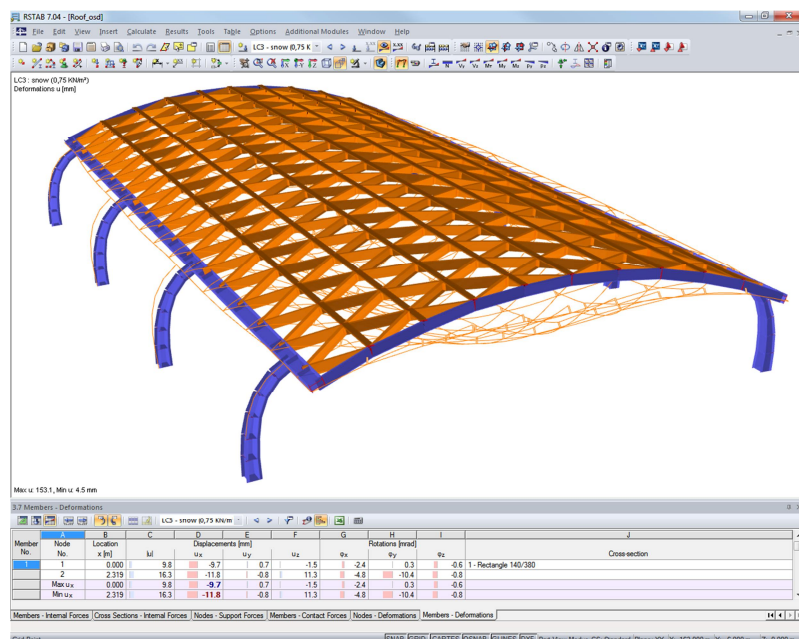
osd – office for structural design  
Frankfurt am Main, Germany  
[www.o-s-d.com](http://www.o-s-d.com)

#### Construction work

Grossmann Bau  
Rosenheim, Germany  
[www.grossmann-bau.de](http://www.grossmann-bau.de)

#### Software

Ing.-Software Dlubal  
Tiefenbach, Germany  
[www.dlubal.com](http://www.dlubal.com)



Structure and deformation in RSTAB