

# Femto *nieuwsbrief*

Product and Construction Analysis

Issue 1.1  
February/March

Dear Reader,

This is the first edition of the FEMTO newsletter. This newsletter is intended to be a periodic newsletter to keep parties interested and business relations of FEMTO up to date on developments. This first newsletter explains, among other things, how we started our business and what it has already achieved. Furthermore, one of the latest projects, the St. Jansbrug, is elaborated. Other product areas will be covered in subsequent issues.

## **Femto**

On the 1st of April 1997, FEMTO has been founded by three recently graduated mechanical engineers Delft Technical University. They started a company that deals with product and construction analyses using the finite element method. This method makes it possible to calculate numerically whether a product meets a set requirements. Carrying out an assignment saves the client a lot of time and money, because fewer tests have to be carried out.

During FEMTO's short existence, dozens of assignments have already been carried out for Unilever and Trelleborg, a.o.

FEMTO product and construction analysis

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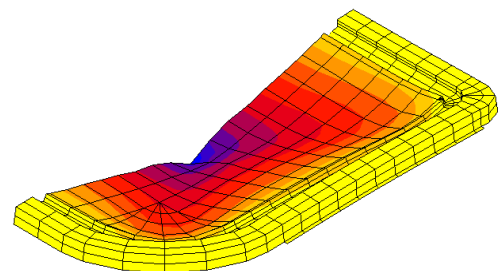
## **Technostarter**

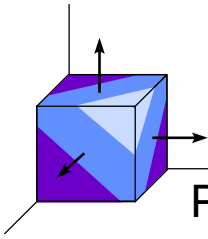
FEMTO can also call itself a technostarter. This means that we receive technical and financial support from the Delft Technical University and the municipality of Delft.

## **Soft- and Hardware**

FEMTO works with the finite element software MARC. MARC is very suitable for non-linear applications. This includes constructions in which non-linear materials are used or where large deformations occur. Also complex contact problems can be solved with MARC.

To perform the assessments Femto has several powerful PCs at its disposal, which have been specially purchased for this purpose.





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## St. Jansbrug

In honour of the 50th anniversary of St Jansbrug student association, a pedestrian bridge is being built. This bridge will be placed over the canal, the Oude Delft, in May.

The bridge is designed in such way that the railings take all the loads of the bridge and lead them to the foundation. It will be one of the few applications of a challenging supporting structure.

The biggest challenge for the design team was to use materials as efficiently as possible. FEMTO has contributed to this.

### Model

The model is constructed from beam elements. They are imposed on the sides.

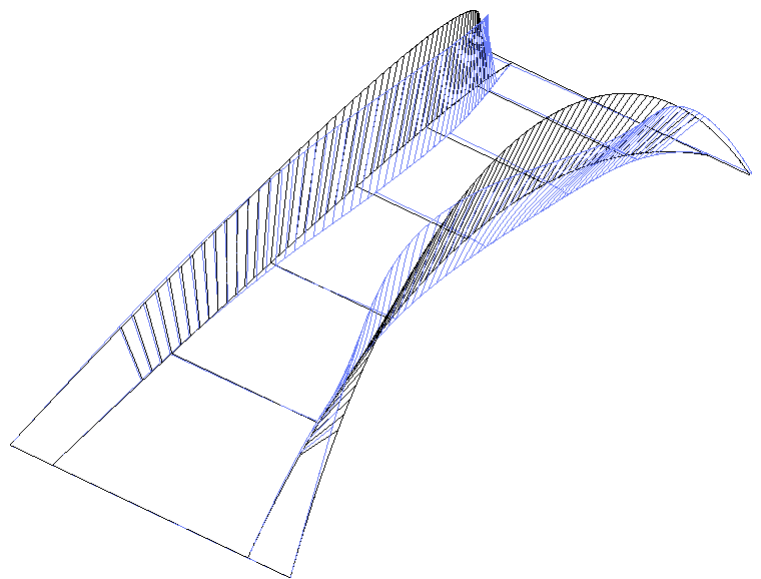
The calculations were not only to optimise the model but also to demonstrate that the bridge meets the strength requirements.

### Results

The figure below shows the failure behaviour of the final bridge if too many people would stand on one side. Due to the asymmetrical nature of the load, it was necessary to model the entire bridge instead of half of it.

The results derived by FEMTO met the requirements, which made it possible to get the bridge approved by the building inspection of Delft.

If everything goes according to plan, in May, the bridge can be admired on the Oude Delft in the city centre of Delft.



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