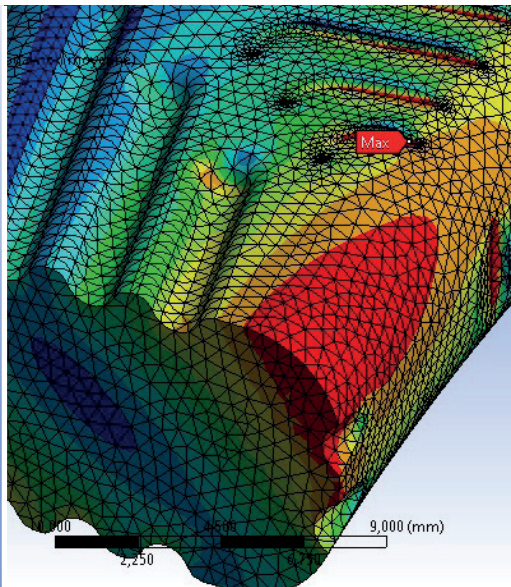
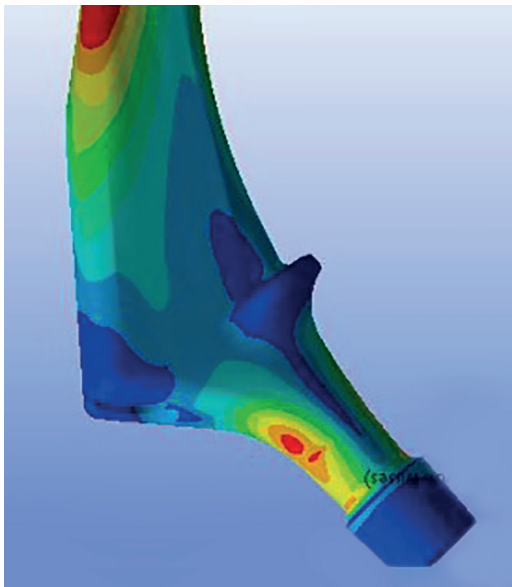


# Corin Group Validating new products using **numerical** testing

Corin Group commissioned experts to carry out several numerical simulations paired with load tests in order to validate the fatigue strength of its new hip implants from the design stage, and was therefore able to go directly from prototype to series production.



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## OUR CUSTOMER

**Corporate name**  
Corin Group

**Turnover**  
EUR 200 million

**Workforce**  
850 people

**Business activity**  
Corin Group develops and manufactures medical devices (implants an instrumentation) for hip and knee replacement surgery. The company operates in the United Kingdom, Germany, Austria, Australia, Japan and the United States.

**I**n general, creating a new product involves many tests and prototypes in order to verify the validity of the design, guarantee compliance with standards and determine product reliability. To save time and lower the development costs for its new hip implant models, senior managers of Corin Group asked Cetim's experts to digitally confirm the shape of the hip implant stems with regard to the requirements of standard ASTM F2996-13 and existing products.

### Stress mapping

Five femora stem designs were virtually analysed and categorised by order of resistance with a mapping of the speci-

fic stresses for each model. "In relation to the new products under development, we wanted to check, by calculation, that our new hip implant designs, featuring longer and wider stems and different femoral neck inclinations, fall within the criteria laid down in Standard ASTM F2996-13," explained Eric Renault, head of R&D at Corin Group. The fatigue

calculations also took into consideration the product surface irregularities, particularly the notching carried out to achieve good osseointegration of the implants in patients.

### Time and cost savings of over 50%

Therefore, Cetim tasked its teams specialised in fatigue calculations, biomechanics and simulation with integrating and handling the customer's CAD files and materials. "The numerical tests carried out using Solidworks and Ansys helped us to validate the reliability of our new designs in one and a half months and saved us valuable time compared with conventional prototype creation methods," stated Eric Renault. "We saved 50% of our development time and reduced our costs by 60%".

## Cetim's asset

As a standards specialist and numerical simulation expert, Cetim has the required expertise to virtually assess the compliance of new products with the standards and provide solutions to the fatigue of various part geometries.

