FEM simulation of sheet piles joints

- FSC120-Center + 3 x FSC-Leg3”
- FSC90-Center + 3 x FSC-Leg3”
- FSC60-Center + 3 x FSC-Leg3”

Consulting project for SteelWall ISH GmbH,

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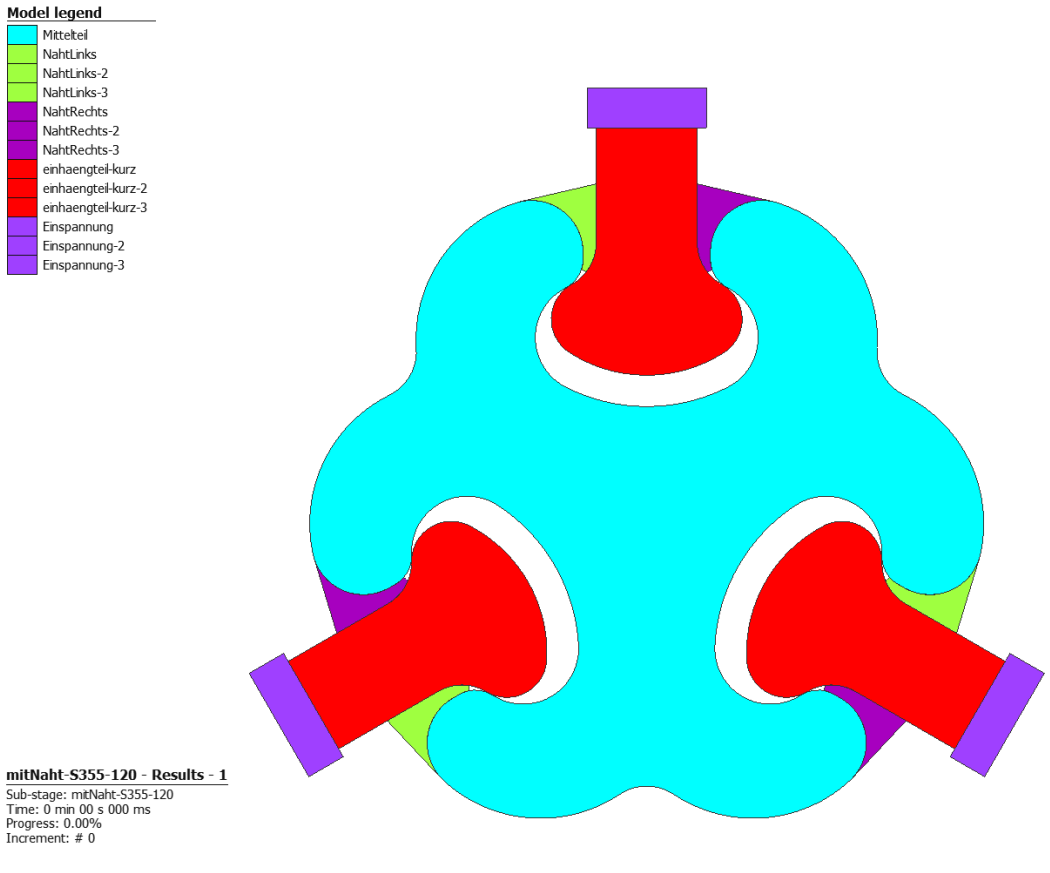
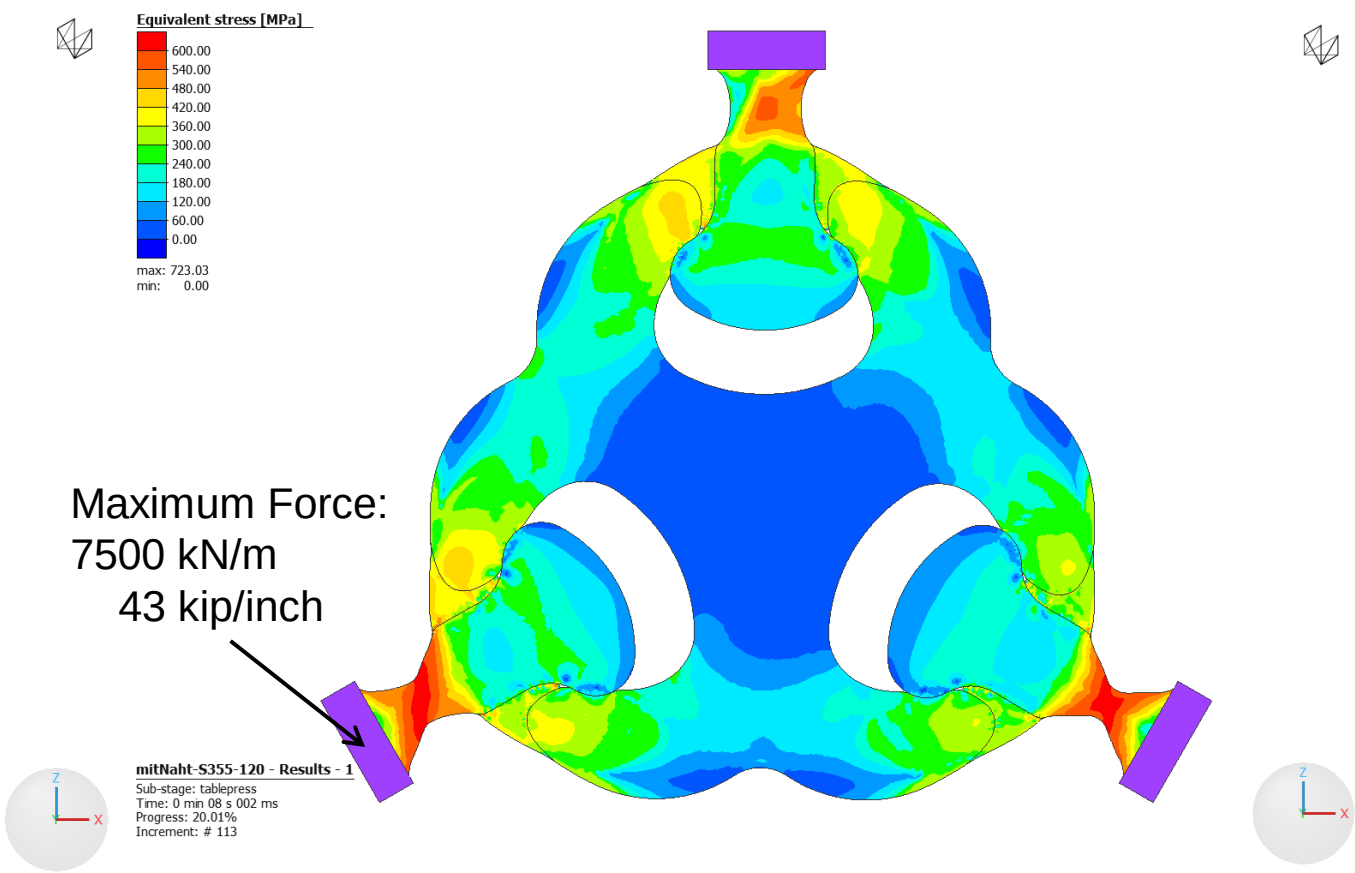
SteelWall®
Schlossprofile für Stahlspundwände

Problem Description

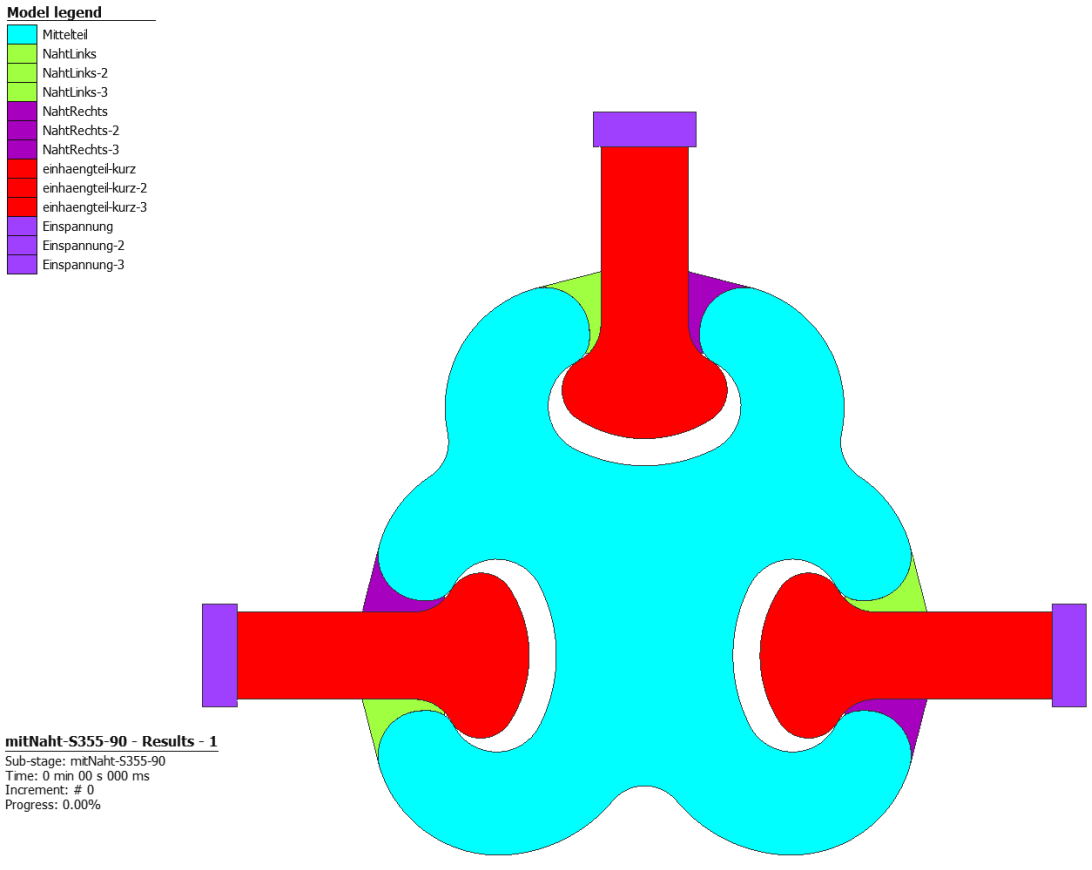
- A simulation study of ideal straight and symmetric tensile loading was conducted for Flat Sheet Centres (FSC) with 3 inch FSC legs. This analysis was done for
  - 120°, 90° and 60° configuration
  - with centre and legs fully welded
  - and all components and weld seams made of S355GP
- The simulations were set-up as 2d planar analysis assuming a plane strain state. The system was loaded using a uniform velocity of 1 mm/s of all 3 force application bodies (“dies”) and no movement between die and leg.
- High friction (Simufact automatic with scale factor 0.8) was assumed, however the system should not be sensitive to friction.
- The weld seams have been assumed to be “perfect” with the same material properties as the welded components and unlimited adhesion with them.
- The material data for S355MC, normalized, from the Simufact Forming material database was used and scaled according to the minimum yield stress specified for S355GP.

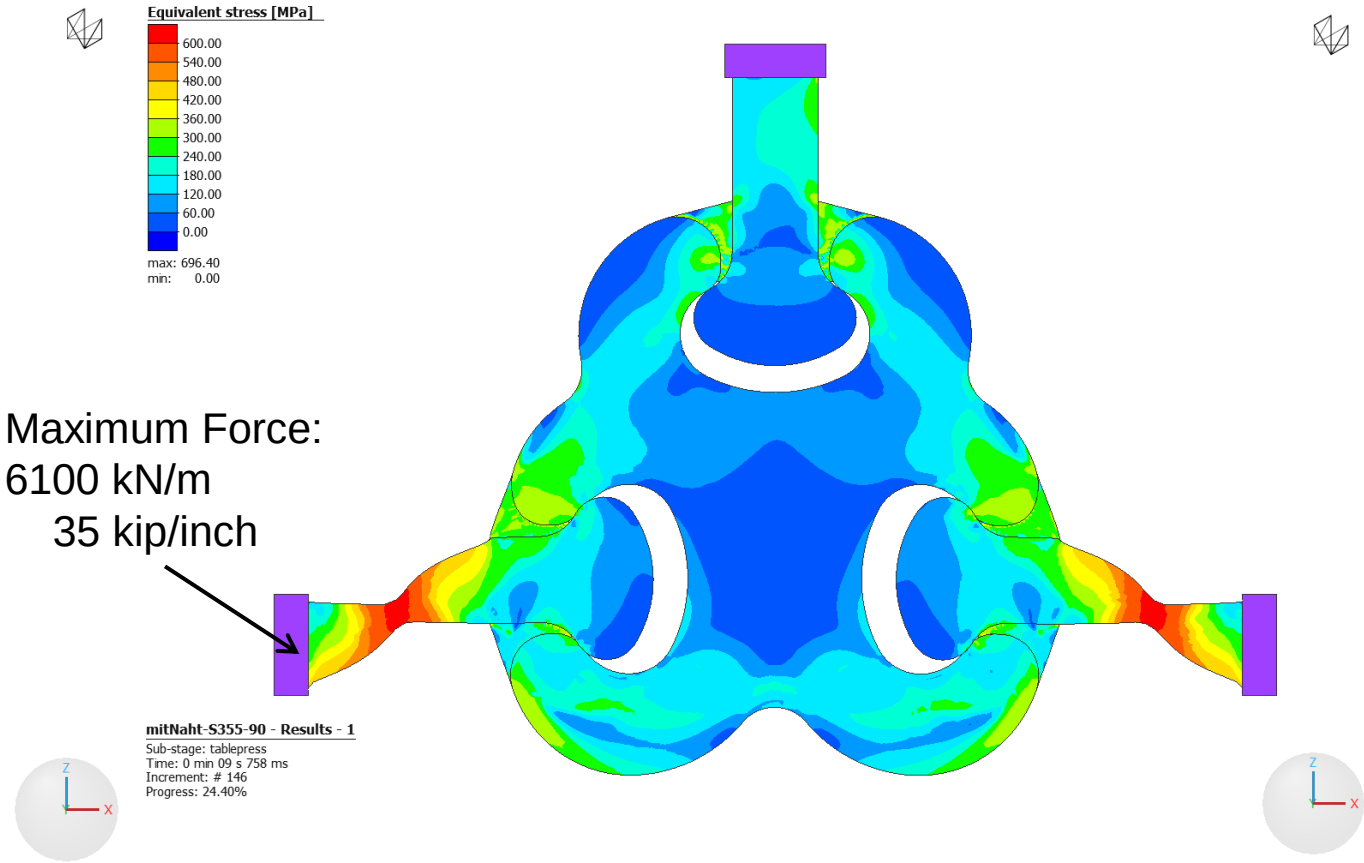
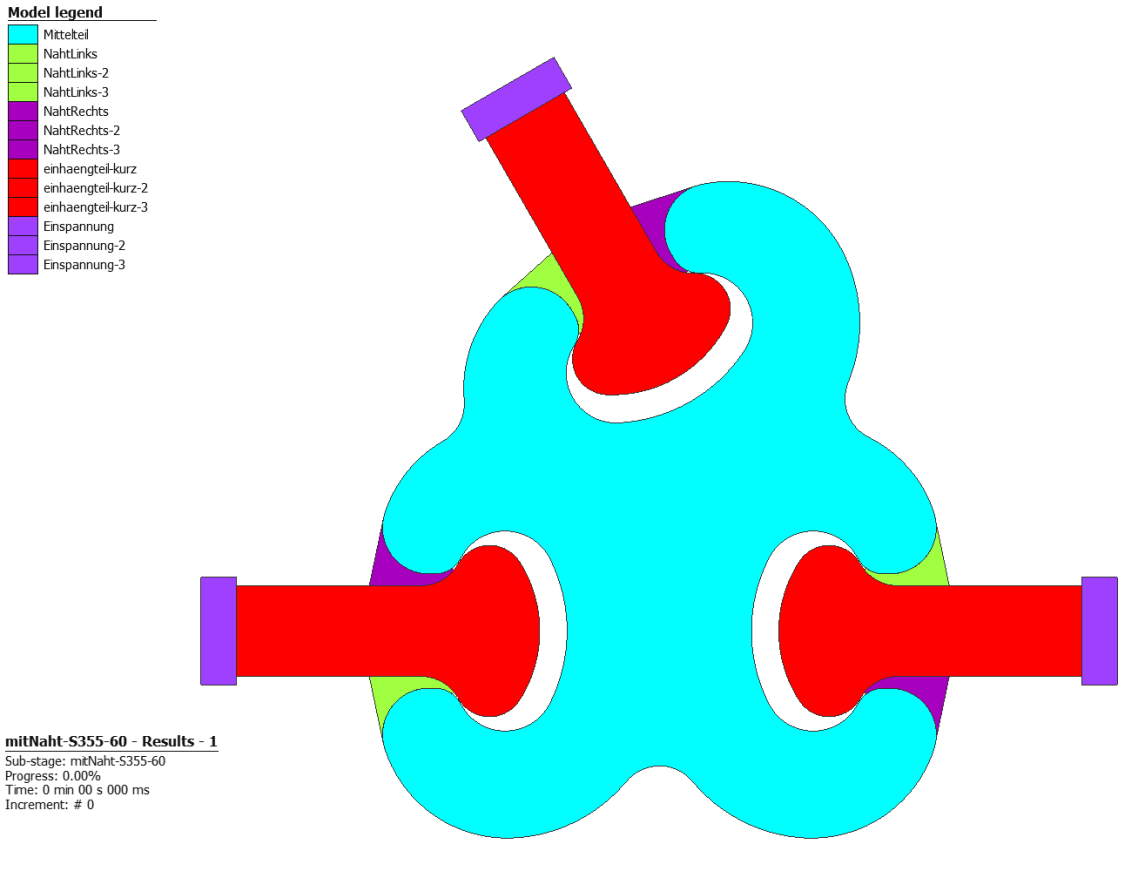
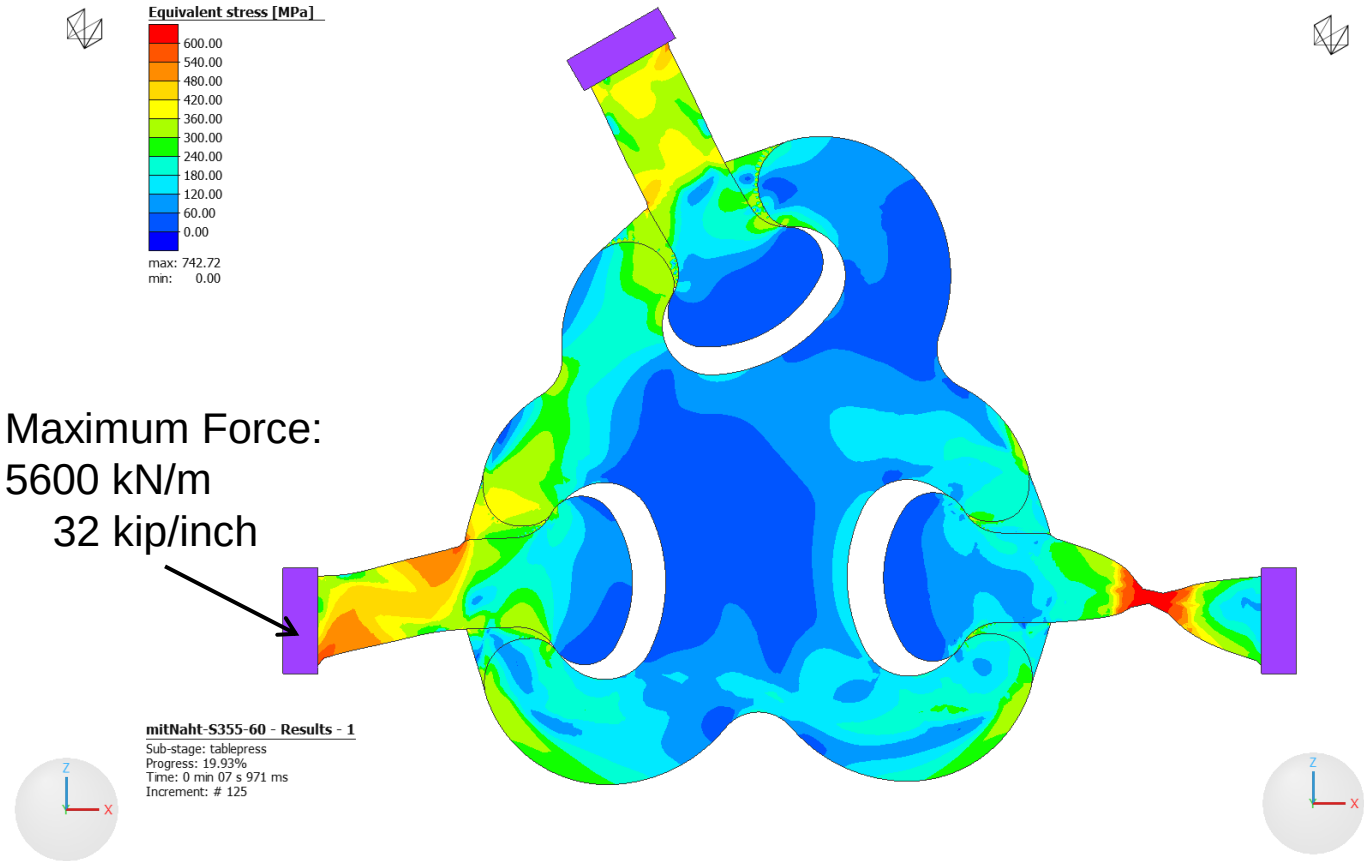
FSC120-Center + 3 x FSC-Leg3”





FSC90-Center + 3 x FSC-Leg3”





FSC60-Center + 3 x FSC-Leg3”