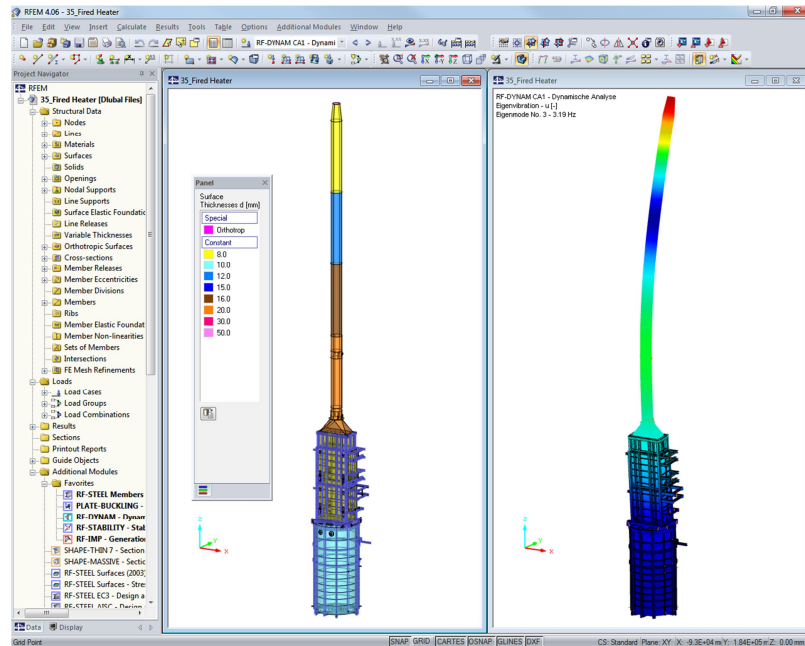


Designed with Dlubal Software...

Fired Heater

The designed object is a heat exchanger to which a chimney was set up, a construction with an overall height of 60.7 m. The exchanger has an outside diameter of approx. 5.5 m and a height of approx. 23 m. The chimney which is connected by means of a cone has a diameter of 1.35 m and is 37.7 m high.

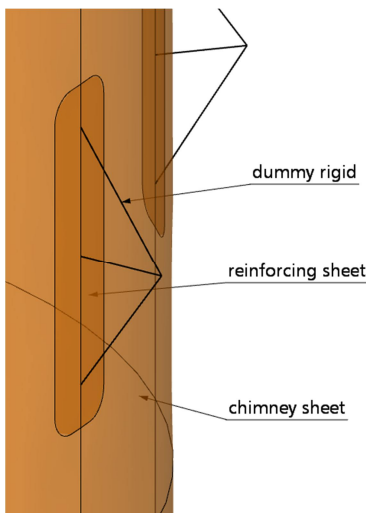
The structure mainly consists of sheets that were reinforced by exterior steel cross-sections in the bottom area. The construction was furnished inside with a fire-resistant lining, though it does not keep the steel entirely off the generated heat. Therefore, the structure was designed for a calculation temperature of + 65°C.



Analysis model and 3. Eigenmode in RFEM

Using Dummy Rigid for Modeling

Stage brackets were connected in two levels to the chimney. As only the reinforcing sheets at the chimney and not the brackets had to be designed, the bracket members were modeled as so-called "dummy rigids".



Stage brackets as dummy rigids

RFEM refers to stiff coupling members as dummy rigids for which you can define releases and other member properties. They won't be designed, but it is possible to display the internal forces.

Stress Design, Stability Analysis and Vibration Design

In addition to the general stress design of the sheet metals subjected to pressure and the structural sections, a stability analysis for the steel cross-sections and the entire construction was performed. For the complex stability analysis the engineers used the RFEM add-on module RF-STABILITY calculating data according to the eigenvalue calculation method. Because the object is built in seismic zone 1 and the basic vibration must be beyond a particular range, according to manufacturer's specifications, the add-on module RF-DYNAM was used for analyzing vibra-

tions. Moreover, the add-on module PLATE-BUCKLING was used to check if the sheet metal casing is sufficient-ly protected against local buckling.

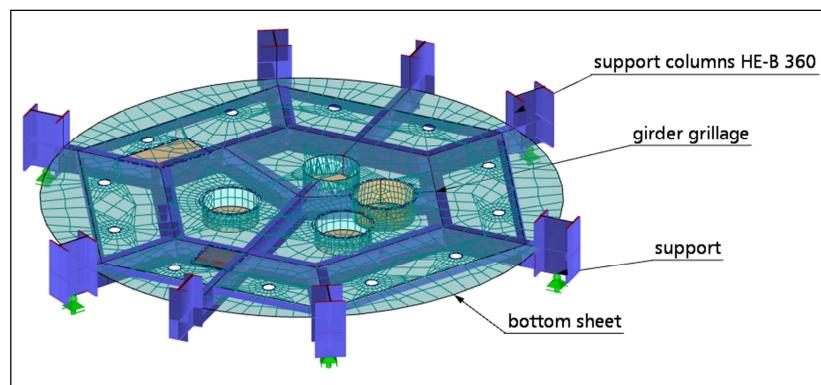
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Support conditions of heat exchanger