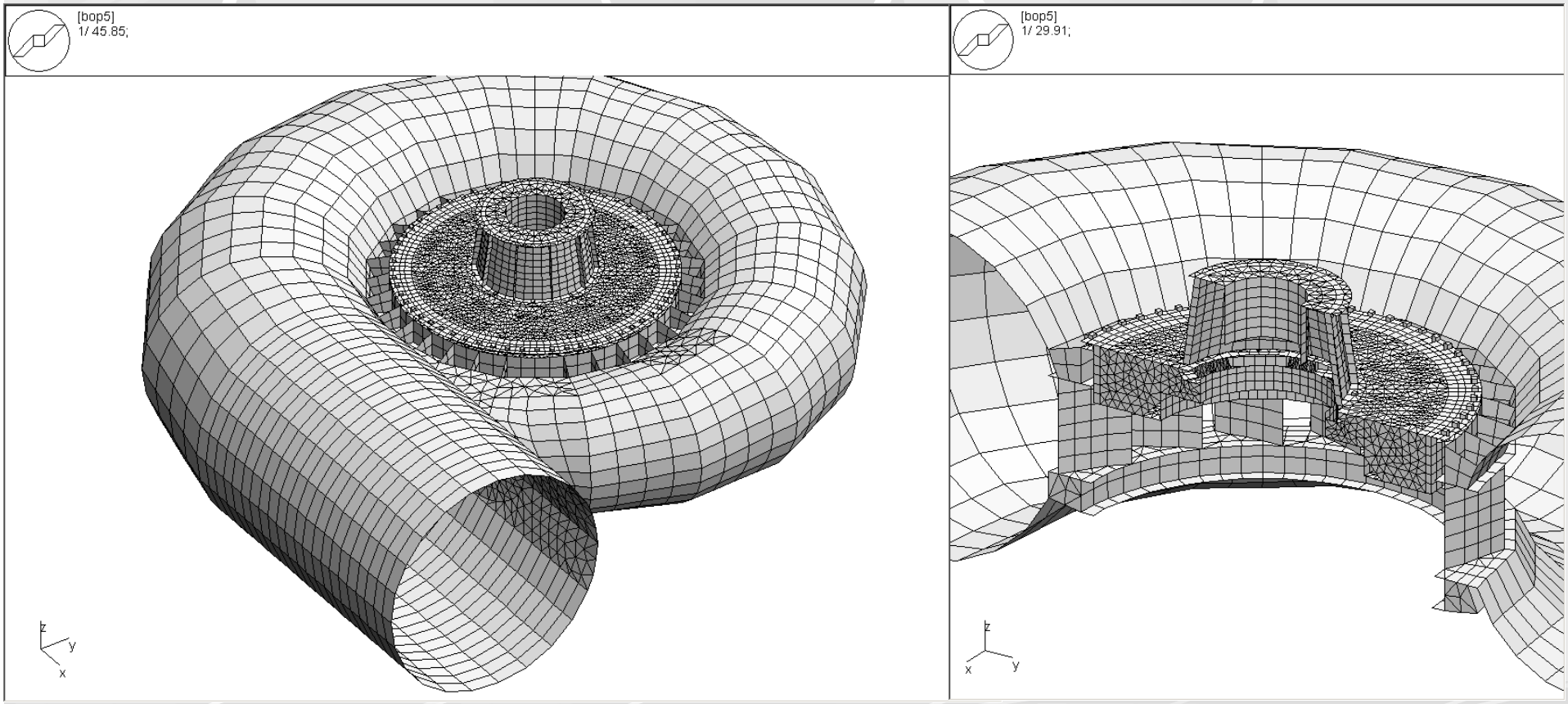
# ICAB
# FEA applied to hydraulic structures

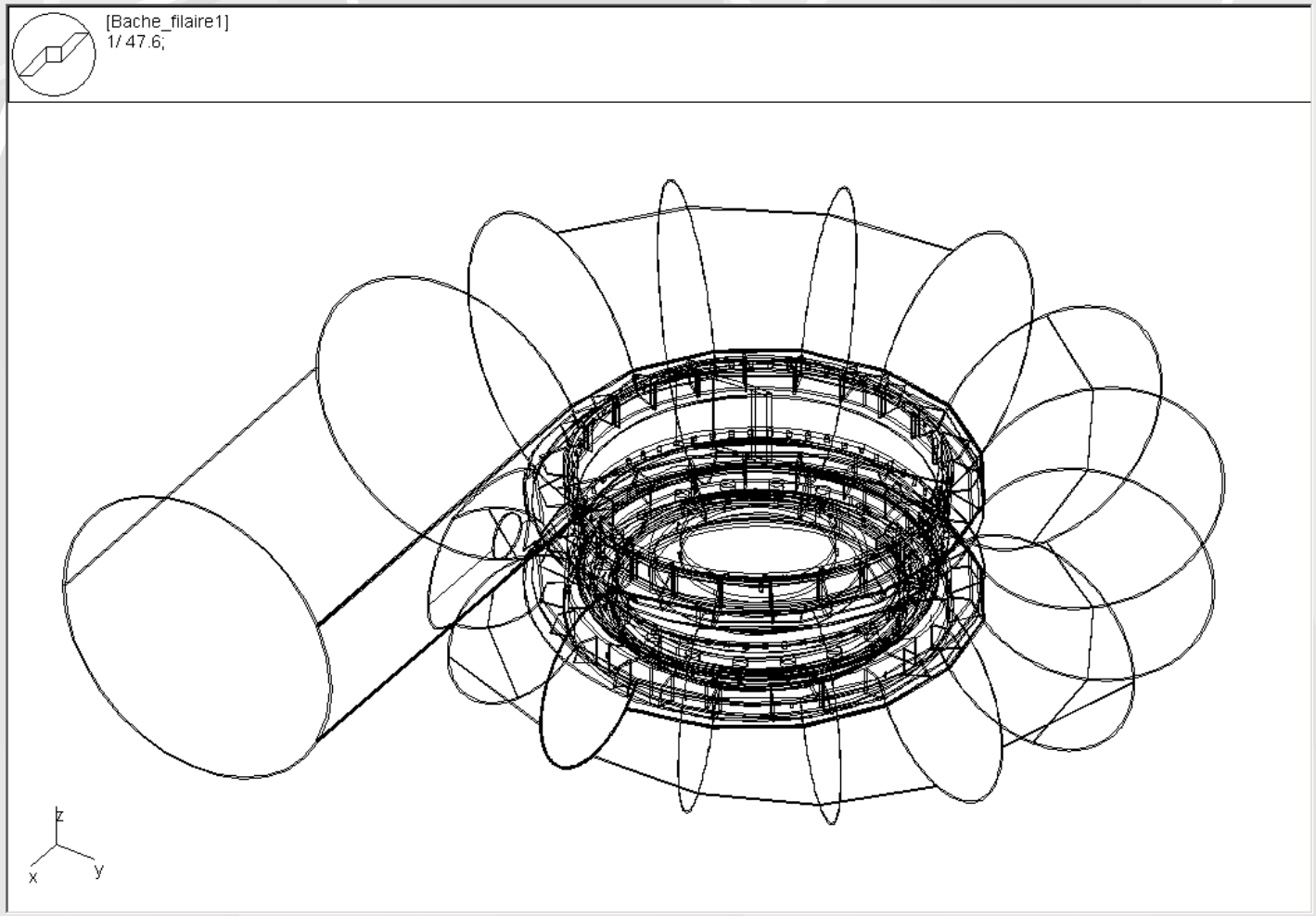
# Design and FE Analysis

- Graphical data capture interface :
  - General view:



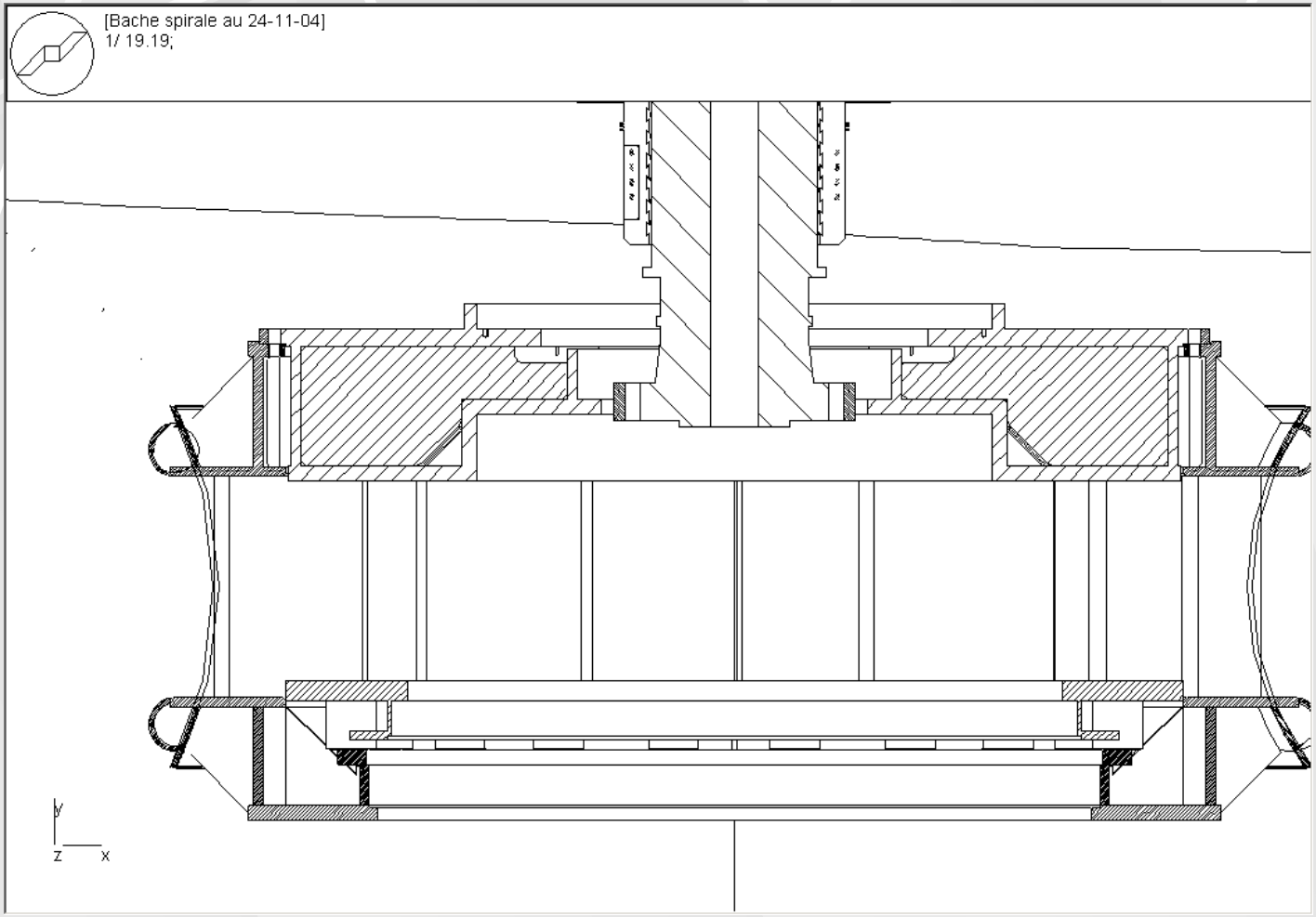
# CAD data input

- Import IGES (or DXF AutoCAD) file



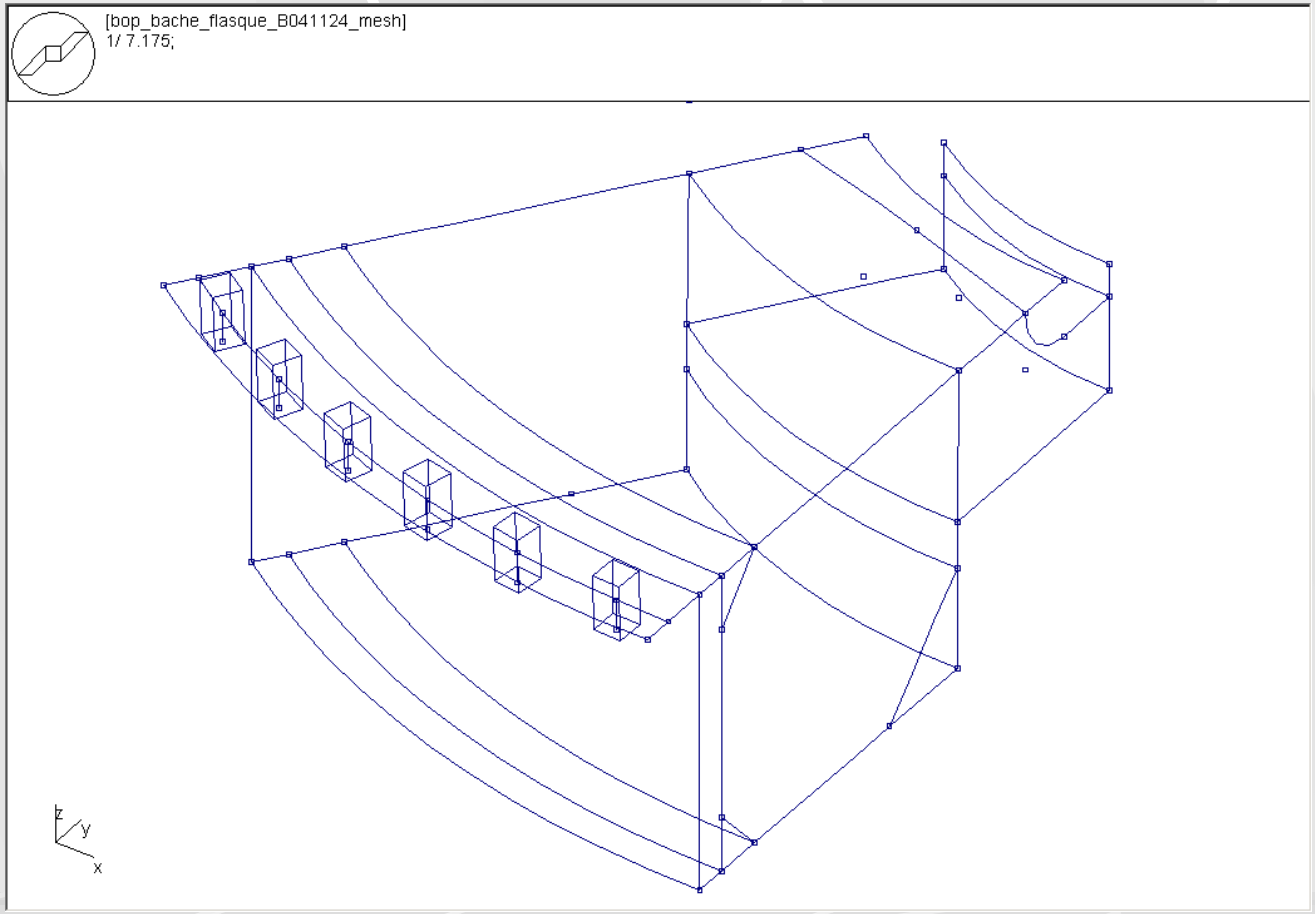
# CAD detail

- Detail of the import



# Meshing

- Meshing :
  - Preliminary mesh





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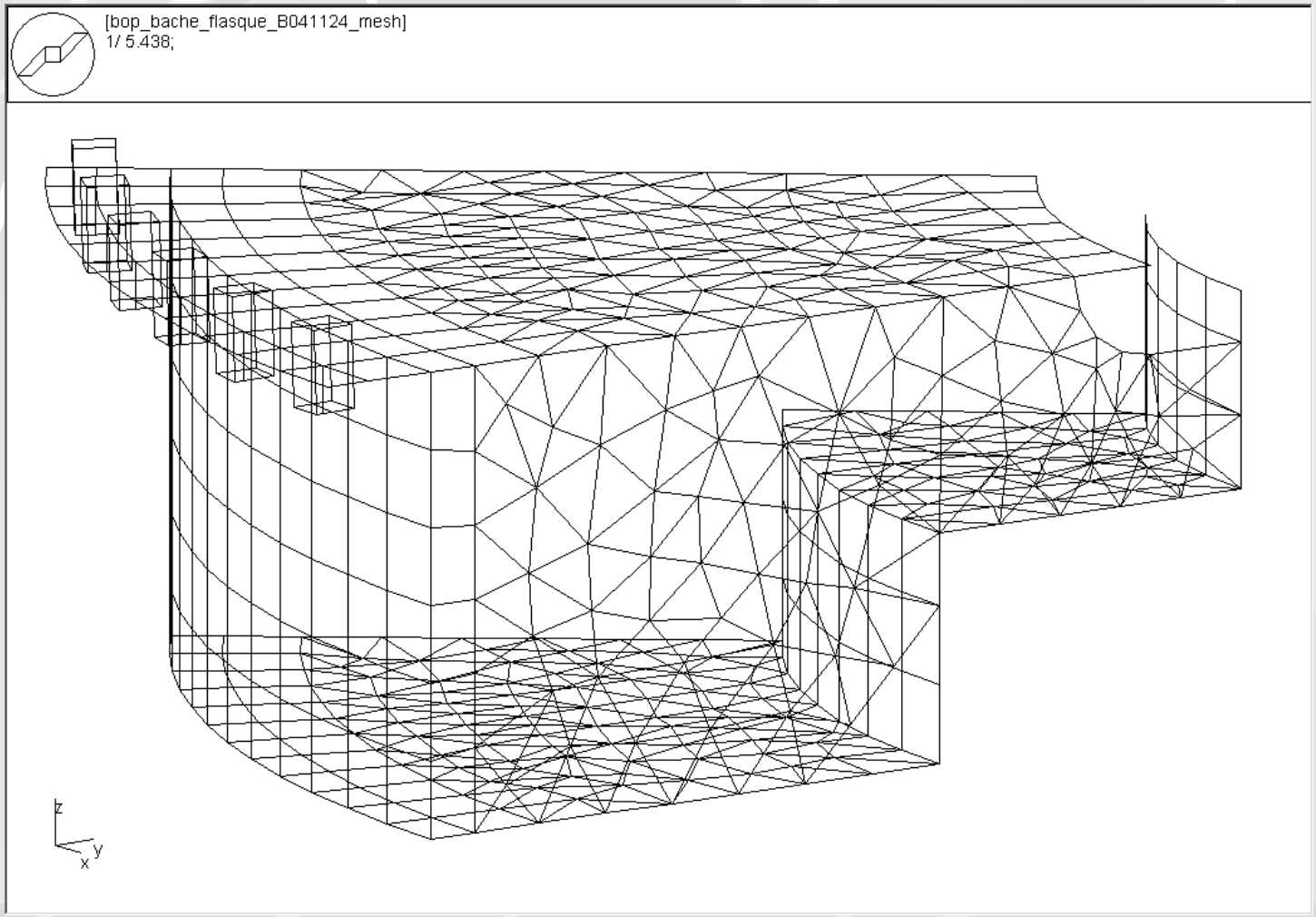
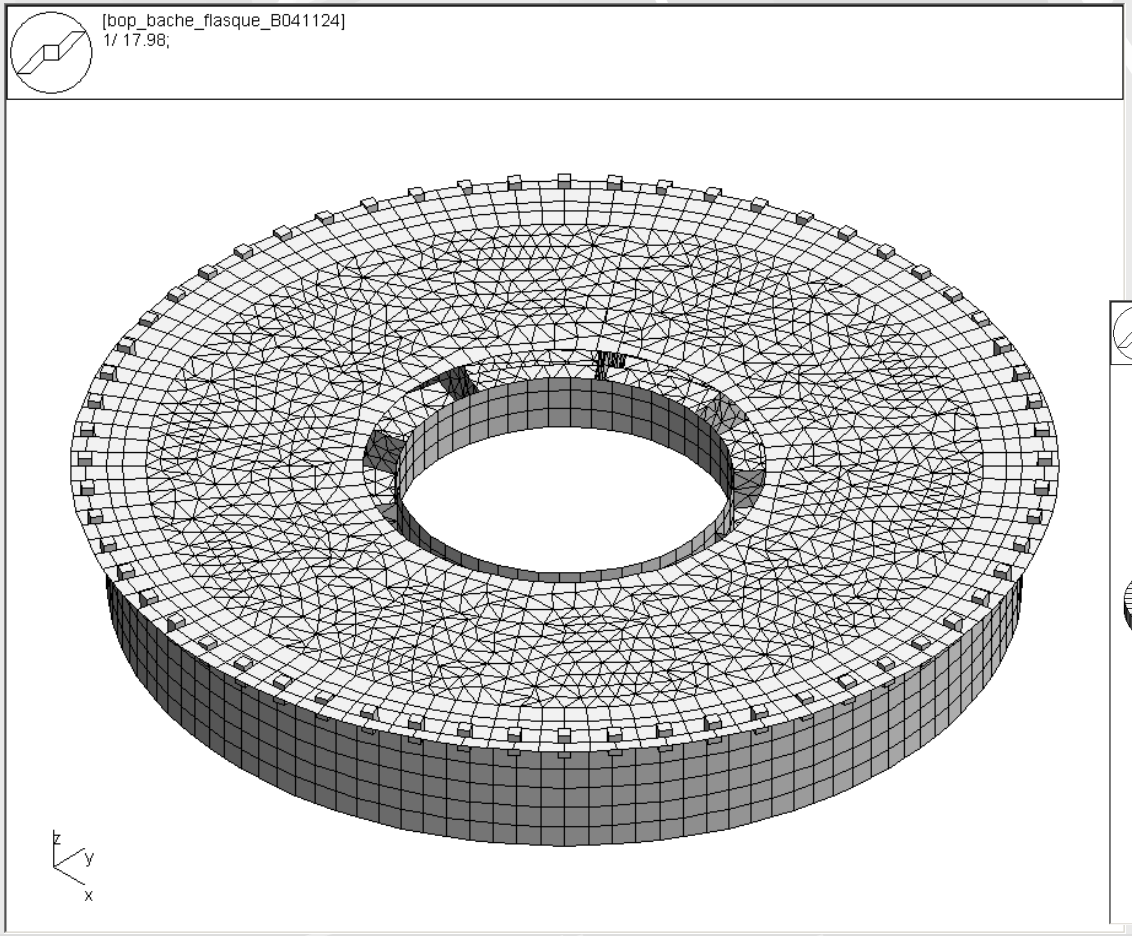
# Finite element Meshing

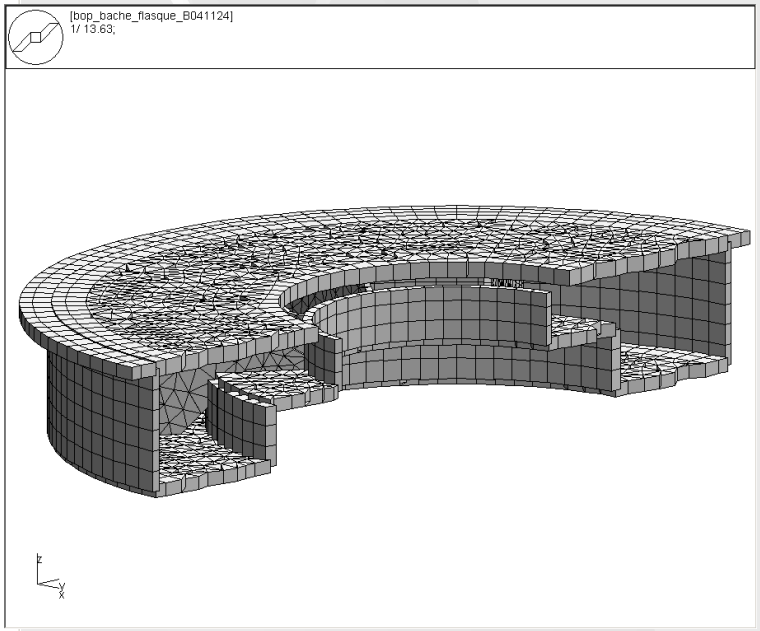
- Creation of the shell elements



# Model completion

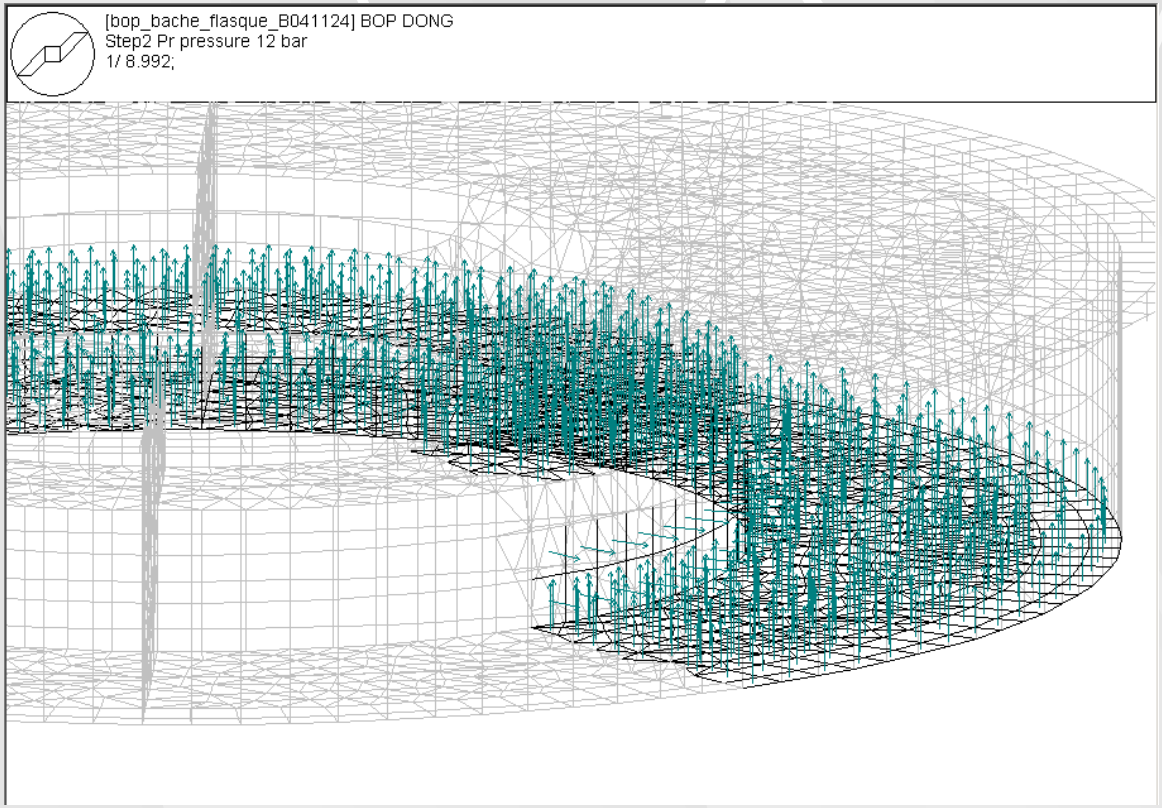
- Completion of the meshing by rotation



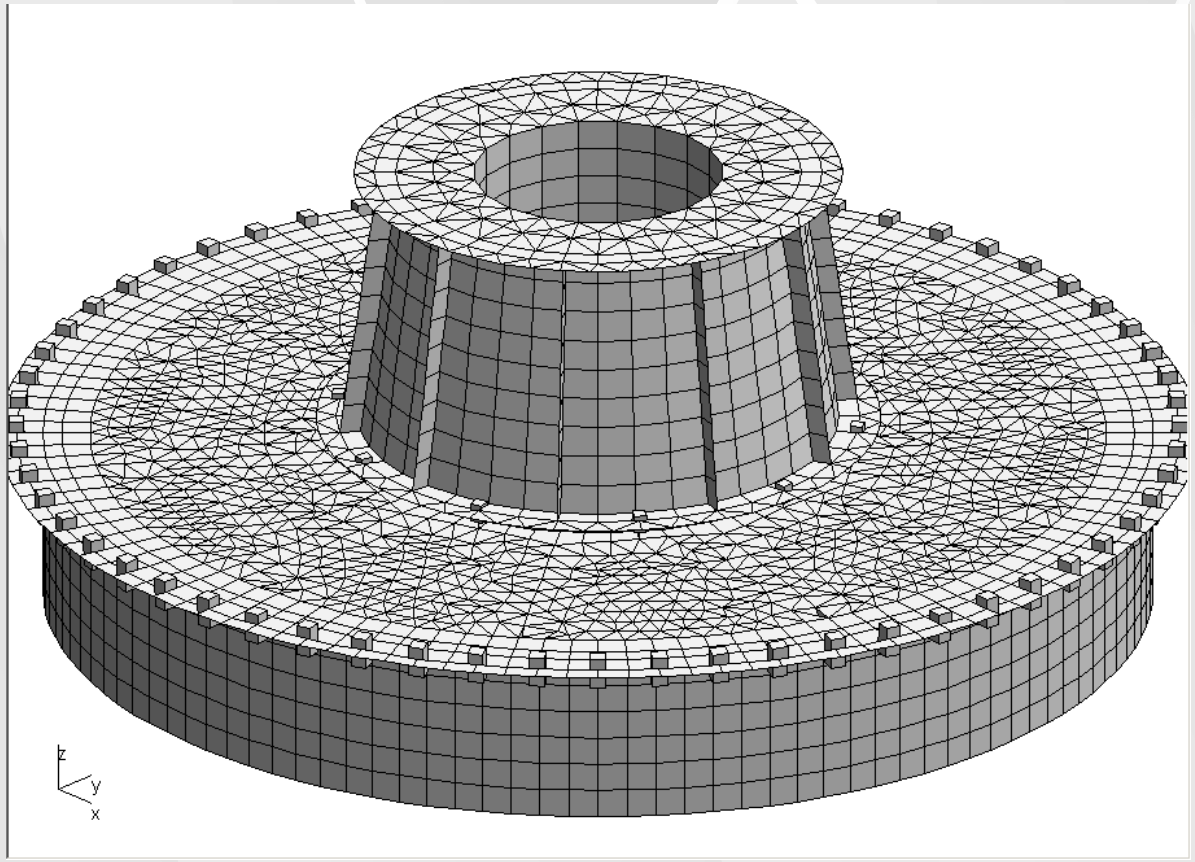
# Pressure load

- Applying of boundary conditions :
  - Pressure = 12 bars :



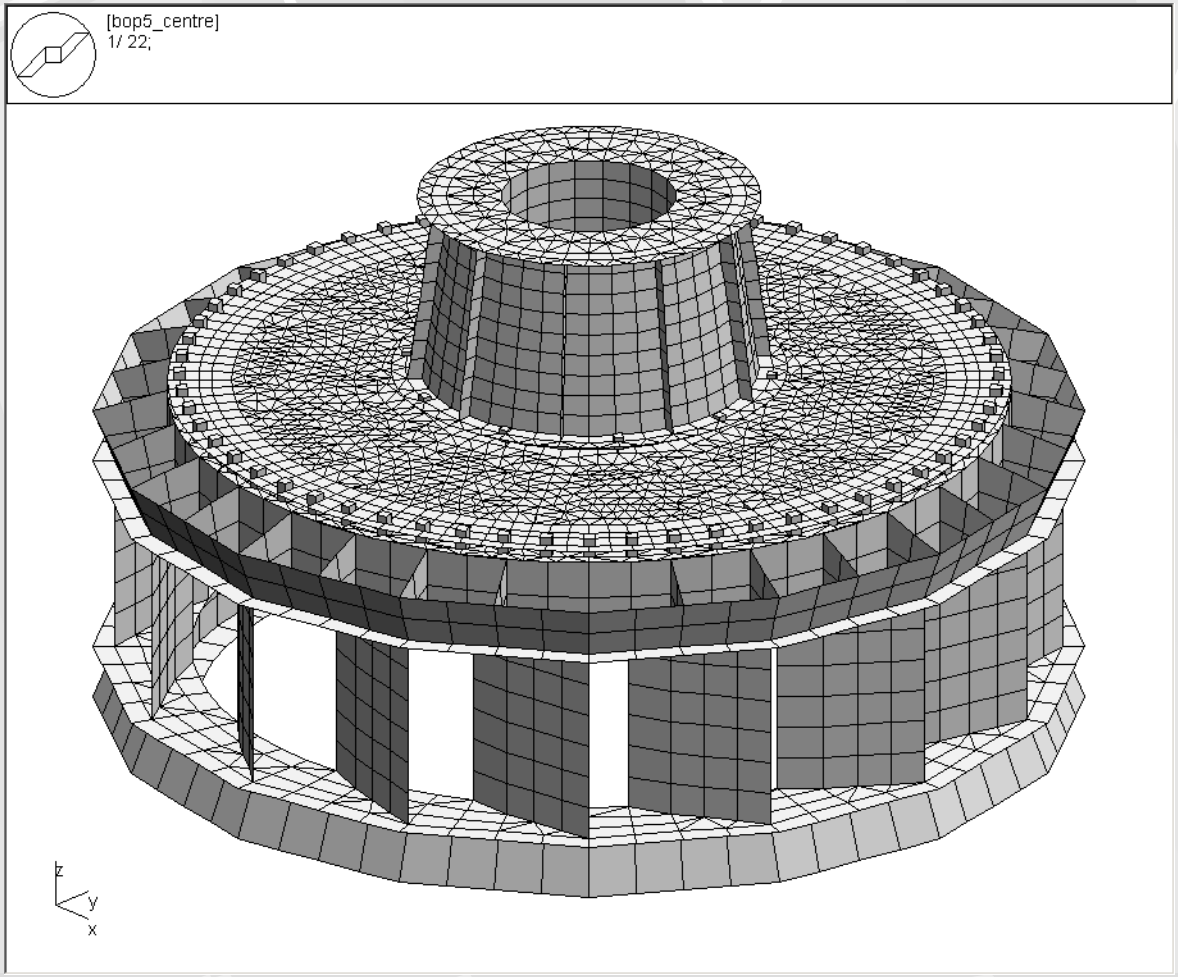
# Assemble parts

- Assembly of the other parts :
  - + cover with bearing



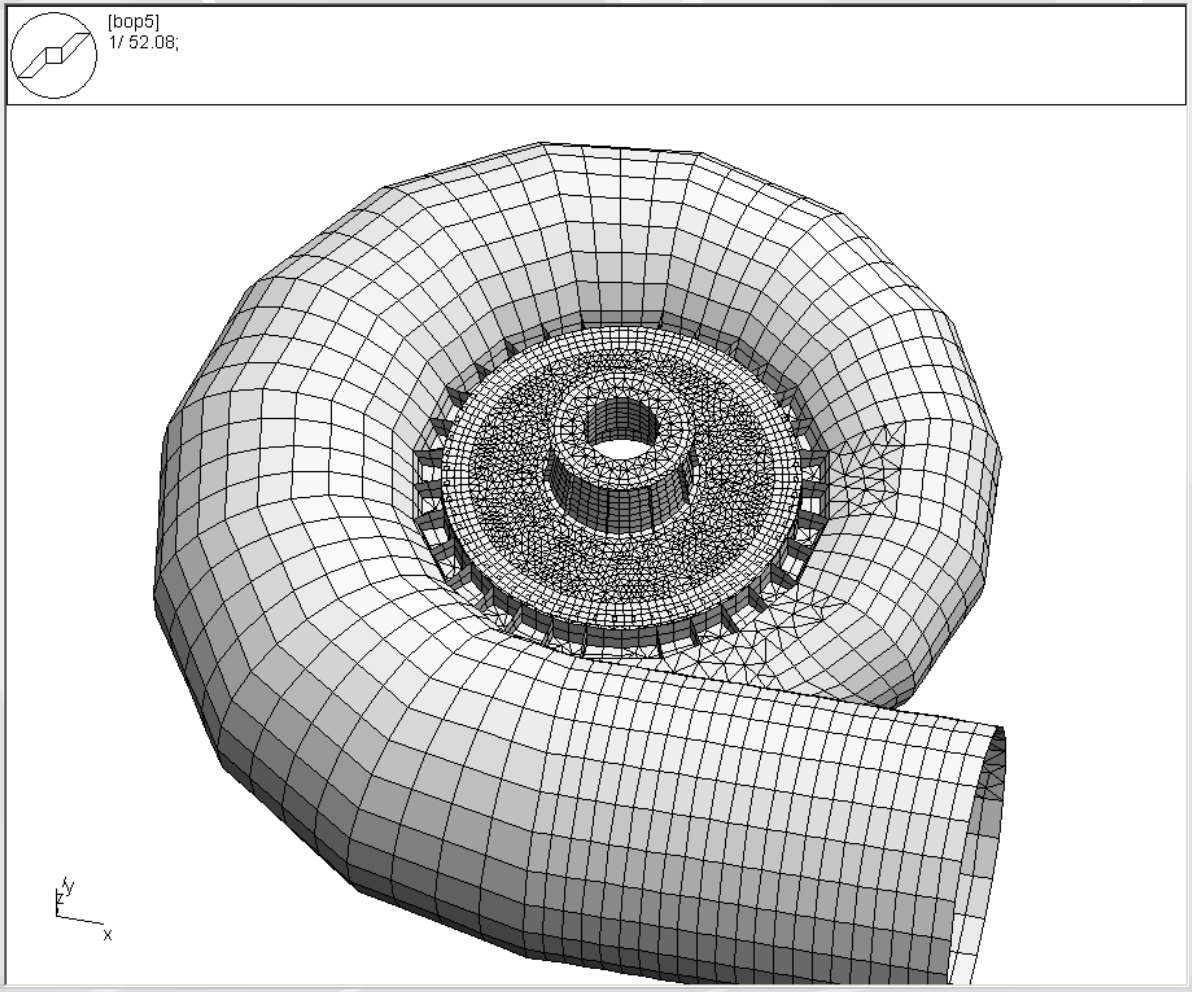
# Assemble parts (2)

- + support of the case



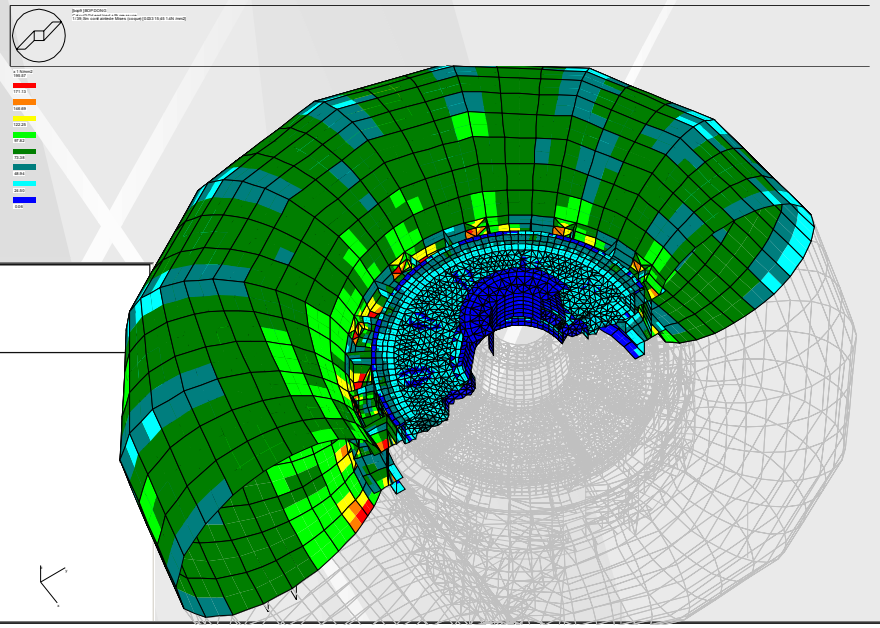
# Assemble parts (3)

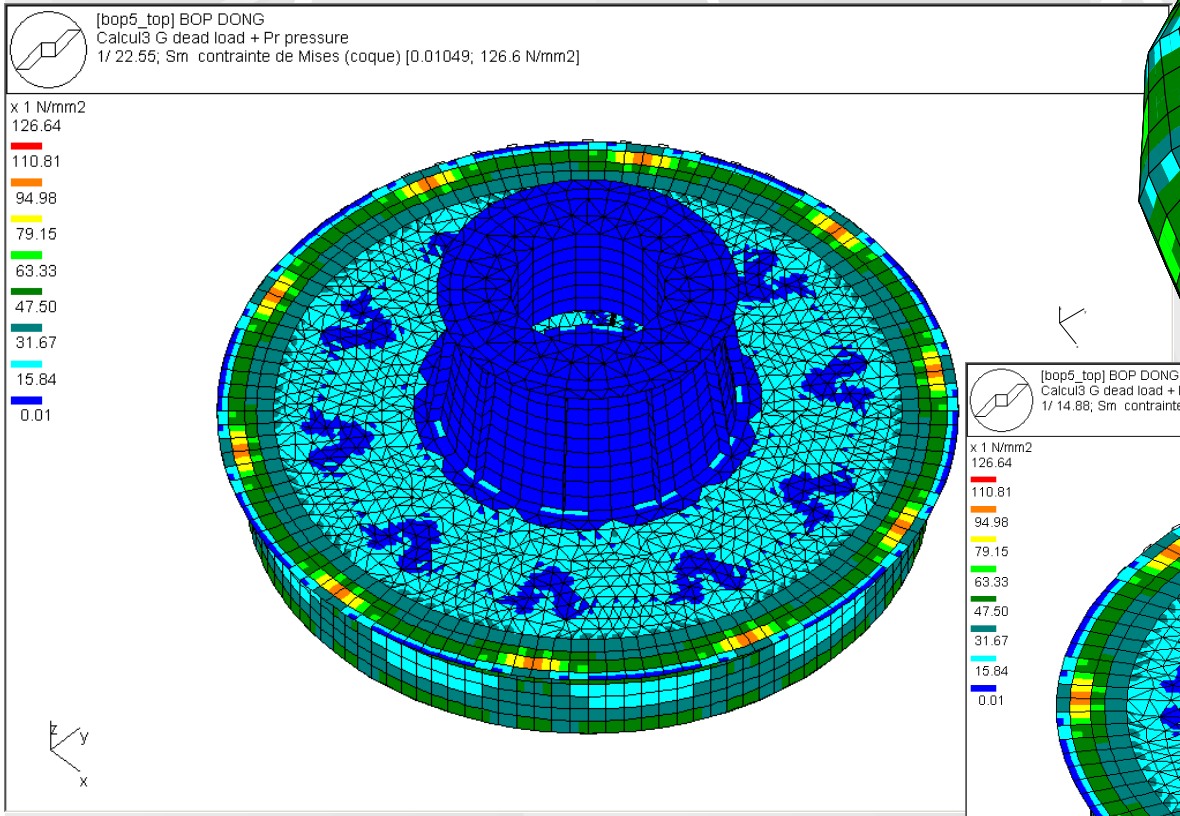
- The full structure

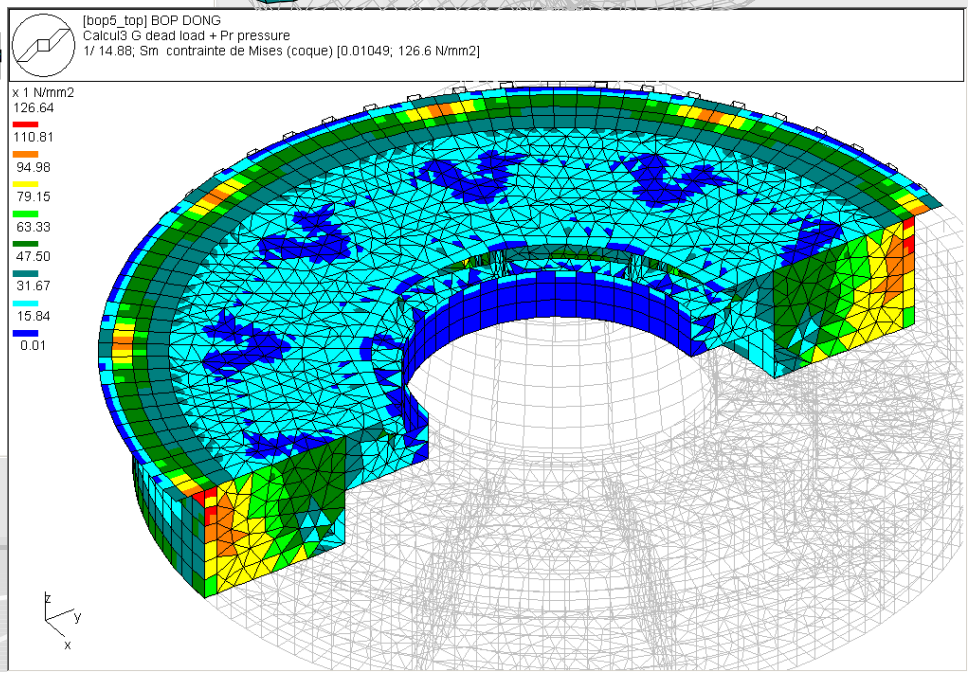


# Results - stresses

- Visual output :
  - Stresses







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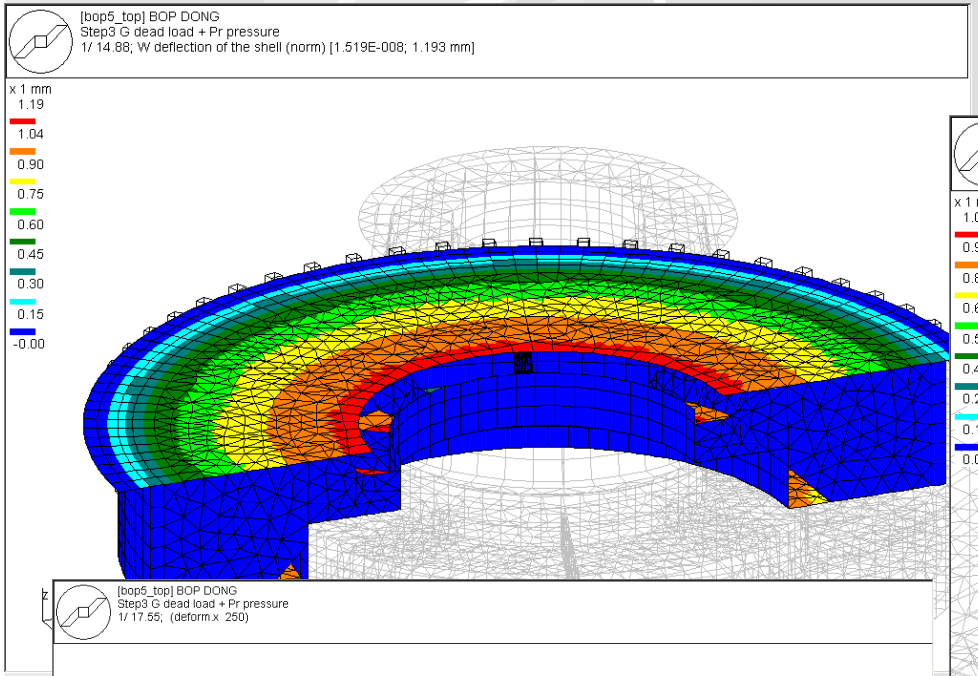
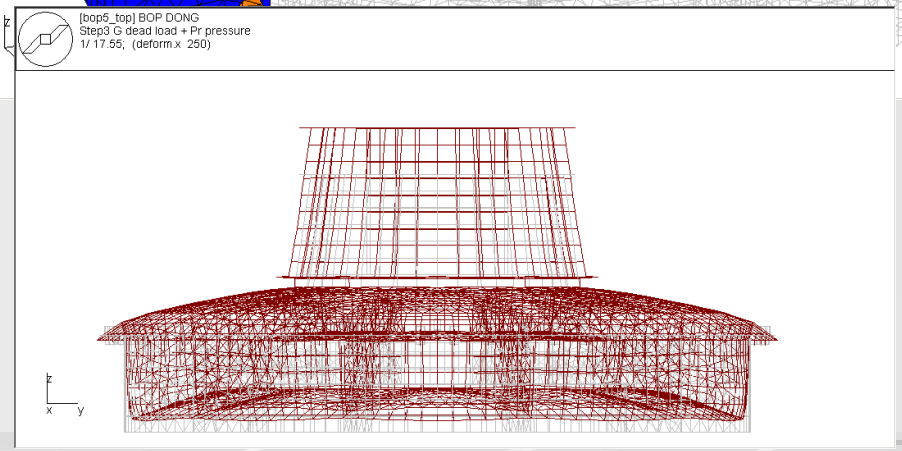
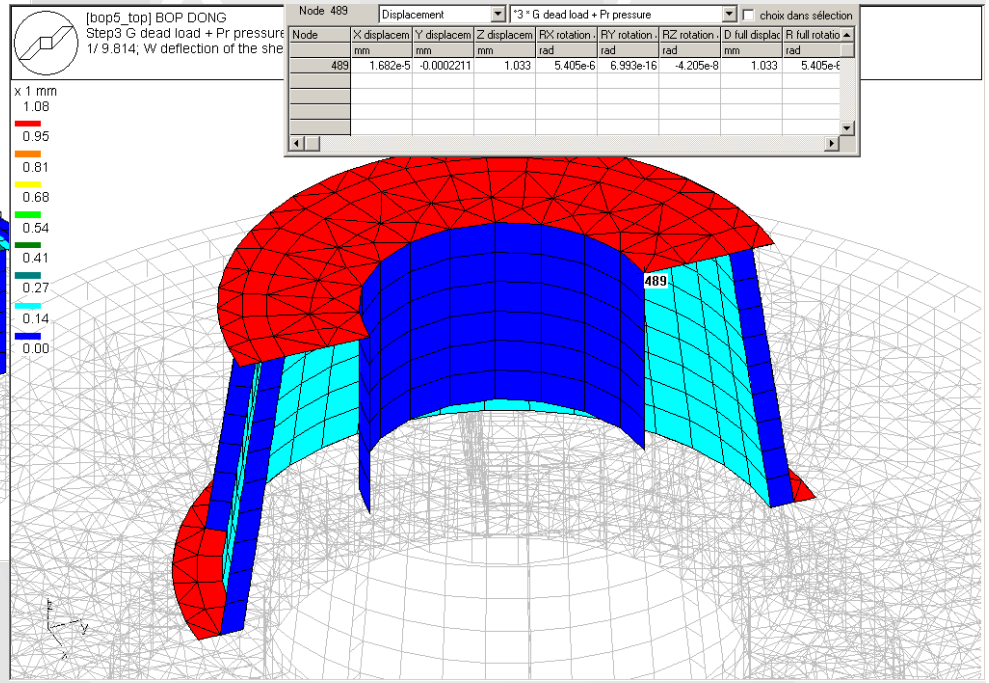
# Results -displacement

- Deflection





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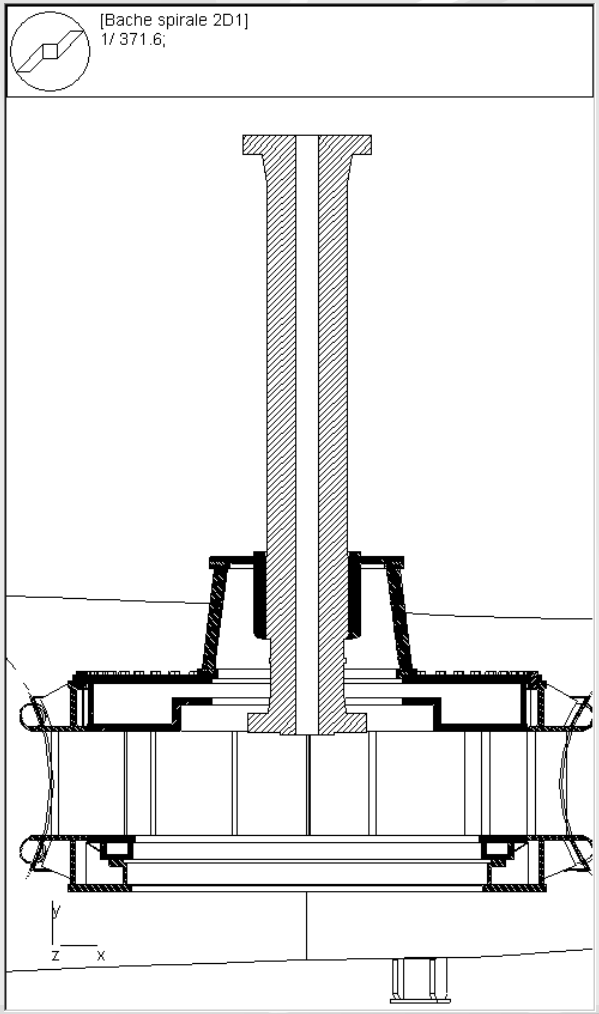
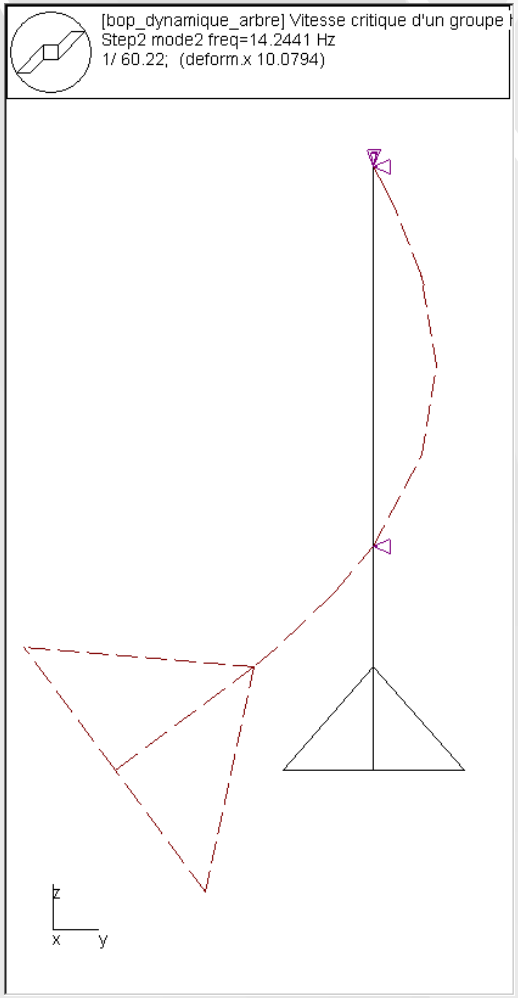
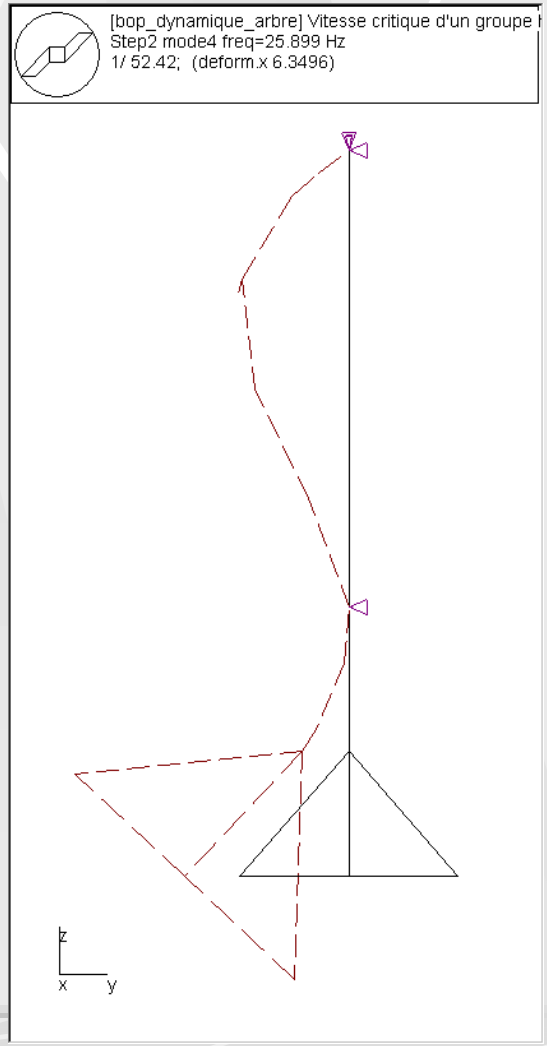
# Dynamic analysis

- Critical rotating speed of the shaft

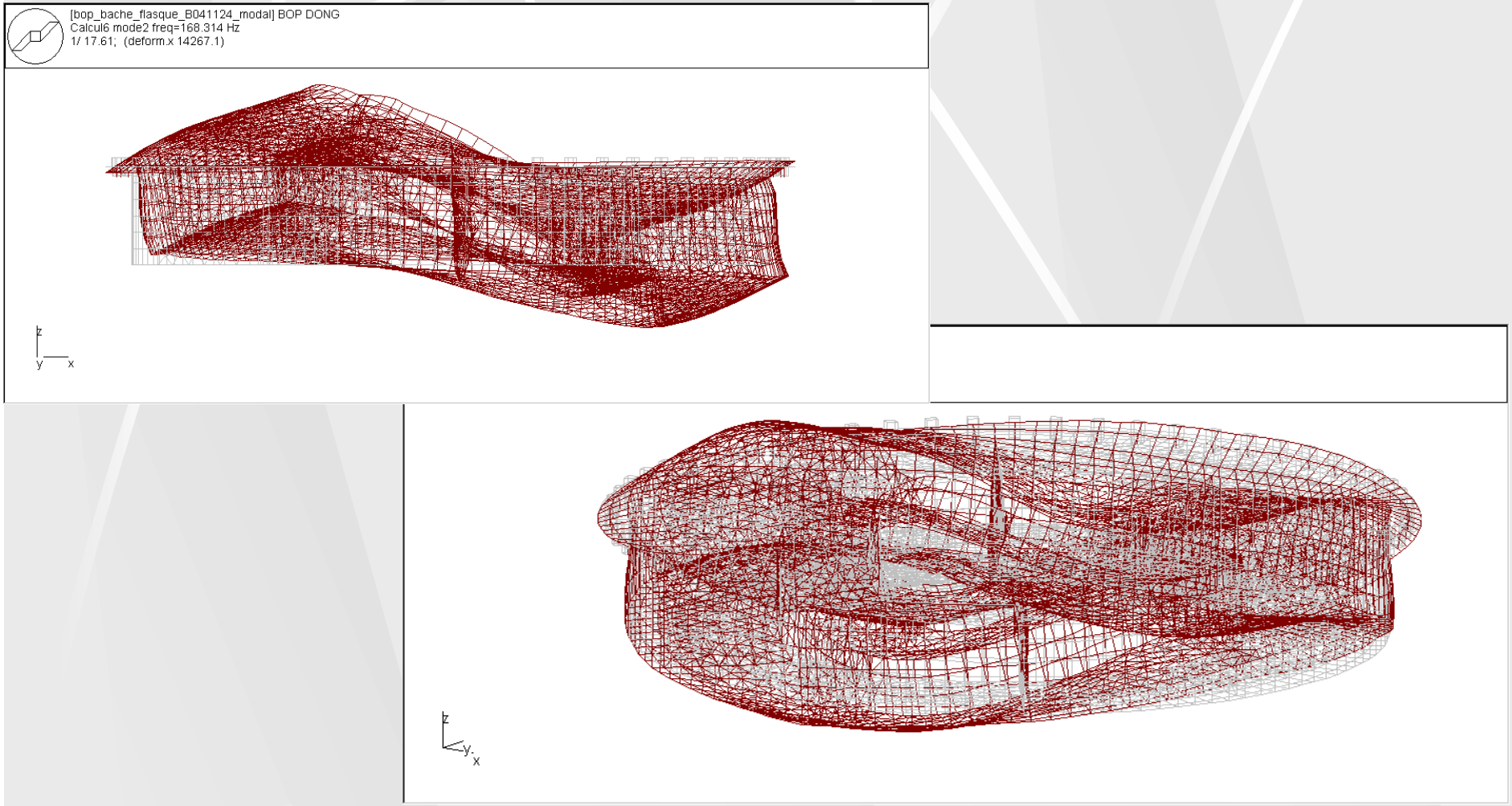


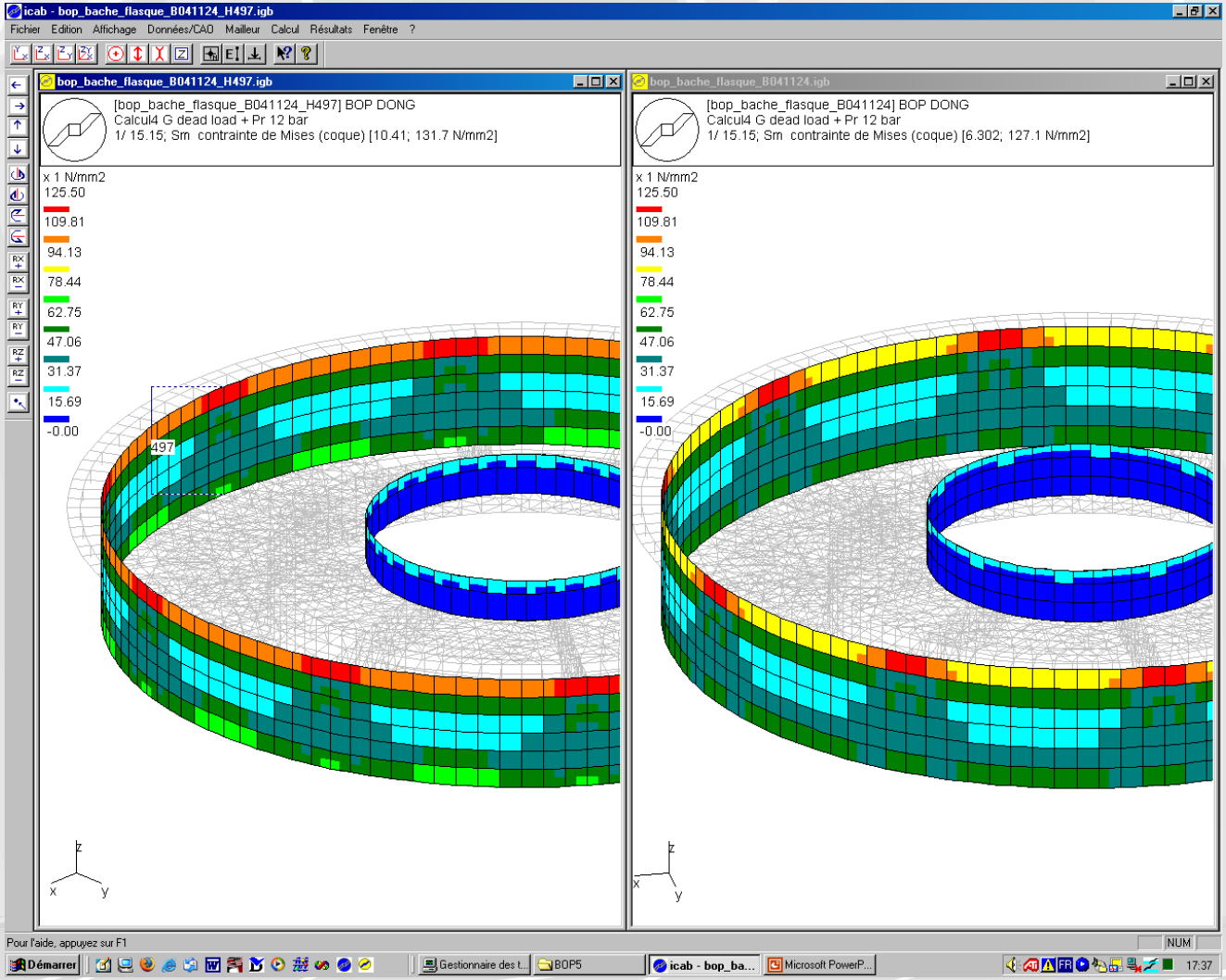
# Vibration analysis

- modal analysis to extract eigen modes:



# Parametric study

- +10% increase of stiffener height reduces stresses (-6% - 20%)





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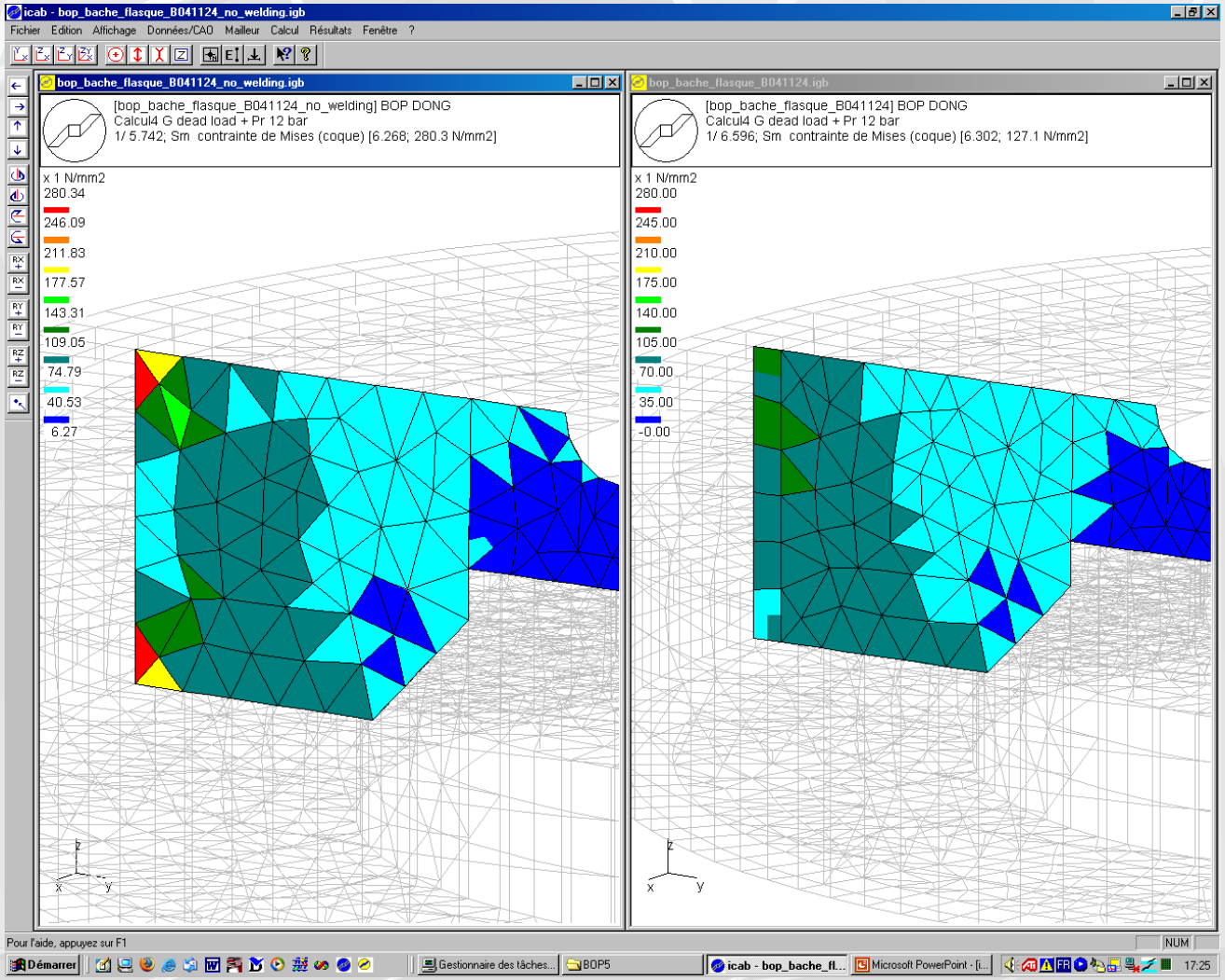
# Welding effect

- Stress concentration in missing welding area





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# ICAB
# FEA software used to predict

- deflection
- Stresses
- Dynamic response

**to improve design and reliability**