Evaluation of Sealing Performance by Press-Fit and Hydraulic Pressure

- Overview -

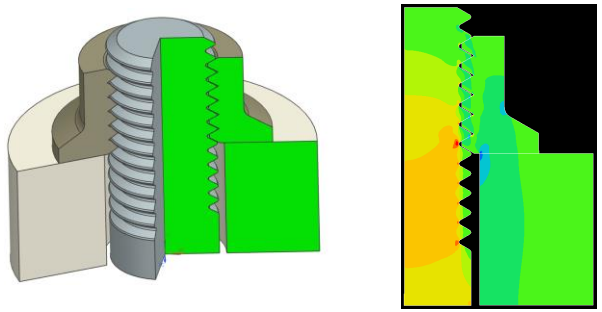
eSeal can simulate the assembly and working state of static seals for dust and waterproofing.
You can evaluate the necessary load for press-fitting, deformation and sealing contact pressure, and sealing performance under high pressure.
This technique can also be applied to other parts, allowing numerical analysis of bolt and cap tightening.

Wire connector seals

- Examples of use -

Wire connector seals
Bolts
Caps (evaluate tightening and sealing of caps)

Bolts



Caps

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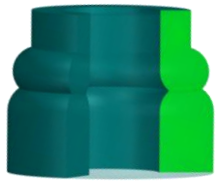
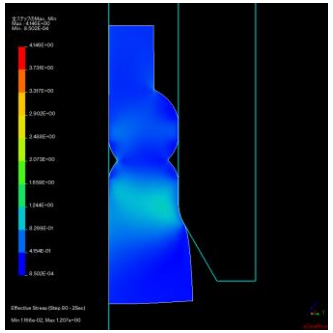
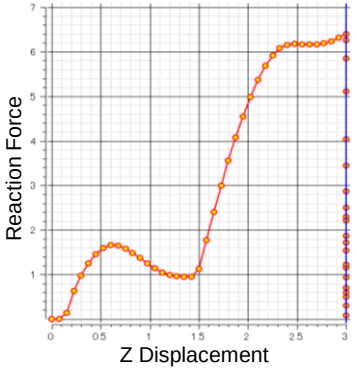
- Packing assembly -



- **Deformation and stress distribution**
  - Aanalyze the deformation and stress distribution during the process of press-fitting the packing.
  - Evaluate if the reasonableness of shape and risk of fracture after press-fitting.

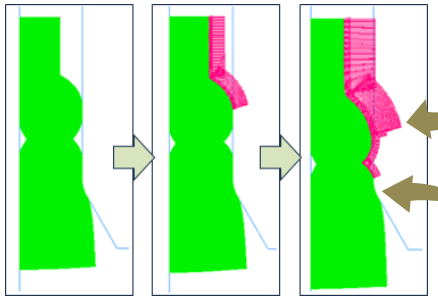


- **Insertion distance versus press-fit force**
  - Evaluate the force press-fit the packing.
  - The force can be used to design the optimal shape that balances two factors: ease of press-fitting and sealing performance, which often have trade-off relationship, combining with the contact pressure distribution.



Z Displacement vs. Reaction Force

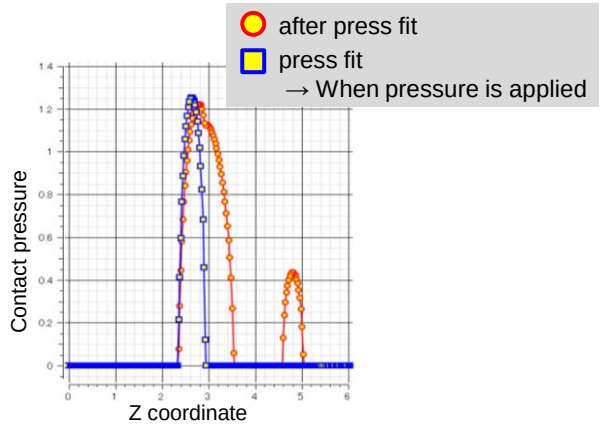
- **Maintaining sealing performance**
  - Observe the state change when pressure is applied to a space.
  - Evaluate the maintenance of sealing performance.



Space is created on the upper side, and sealing does not perform effectively.

The lower contact area remains contact with the packing and sealing performs effectively.

- **Contact pressure distribution**
  - Evaluate sealing performance from the magnitude and distribution of the contact pressure.
  - Output the contact pressure according to changes in status.



Z coordinate vs. Contact pressure