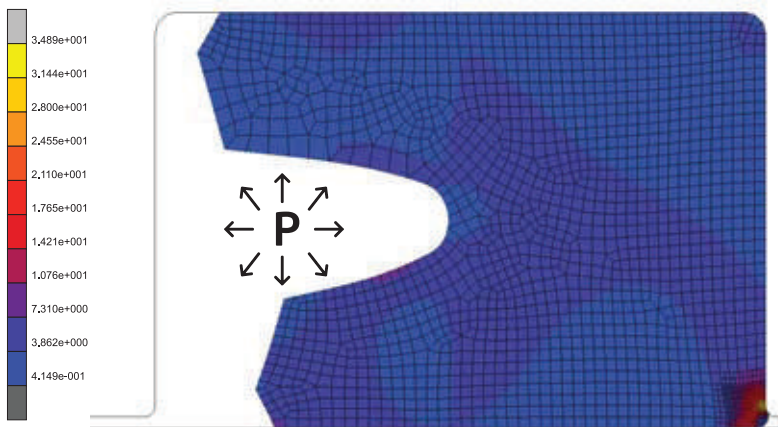
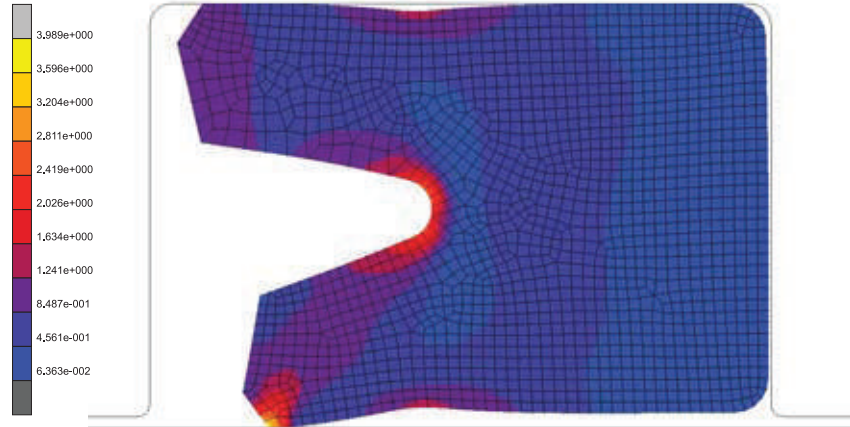


What is Finite Element Analysis?

The finite element analysis (FEA) is a computer-aided engineering technique for obtaining approximate numerical solutions to boundary value problems which predict the response of physical systems subjected to external loads. We can predict wear behavior, friction forces and service life by investigating the force and deformation reactions of elastomers in sealing and bearing applications. FEA lets us to produce better seals to perform better at same operating conditions.

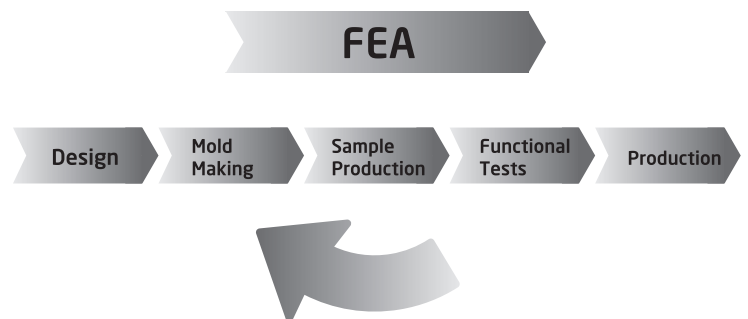


FEA in Design of Seals

Elastomers have nonlinearities like geometric nonlinearity, contact nonlinearity and material nonlinearity. That's why using Nonlinear FEA program is essential for analysing elastomers. Kastaş is using **MARC/MENTAT** nonlinear FEA with experimental data and suitable material models to simulate various forces on a particular design accurately. New design concepts with CAD model can be analyzed with FEA to understand the behavior of the seal in operating conditions. Design changes are made according to the data acquired through FEA therefore time and cost of developing new designs reduced dramatically.

Advantages of Using FEA

- ✓ FEA technology helps to decide if a seal can function in designated operating condition.
- ✓ It shortens design process and improves seal performance and product designs.
- ✓ Reduces the required number of prototypes and functional tests.
- ✓ Optimum material selection for a product.
- ✓ Reducing overall cost of seal development.
- ✓ Helps to predict lifetime of the seals without extensive testing.



FEA dramatically reduces the required number of prototypes and the time of design process. Only the designs approved by FEA simulation would go through the functional tests.