Application: Electrical Feedthrough
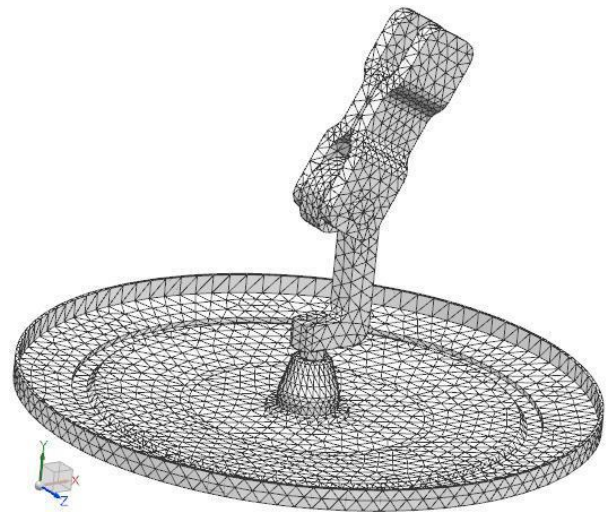
Initial Situation

High Voltage Conductor

High voltage differences between conductor and isolator may lead to the risk of electric arc appearance. Therefore the goal of this analysis is to locate the position of a possible fault. This risk also depends on the shape of the parts and therefore a FEM simulation shall help finding an appropriate geometry for the conducting parts.

The picture shows the CAD model of the high voltage conductor.

*Picture: CAD Model of Electric Feedthrough*   *Mesh for High Voltage Conductor*

Appropriate Method

3D Electrostatic Solution

For this problem the existing CAD model was taken into NX advanced simulation. Again the air volume had to be extracted from the geometry. In the Magnetics solver we chose the 3D Electrostatic solution. The meshes of all parts were created and material properties were assigned.

The picture obove shows the mesh that has been created for the analysis.
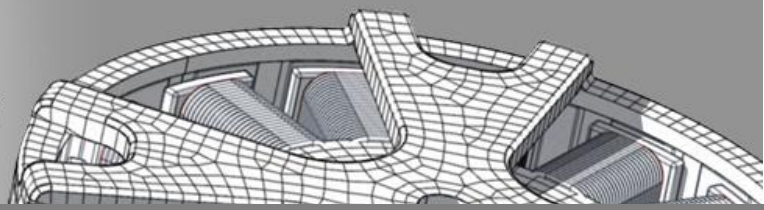
Result

Equipotential Lines

Equipotential lines provide a quantitative way of viewing the electric potential in two dimensions. Every point on a given line is at the same potential. If these lines become dense there is an increasing risk for electric arc appearance. By these results it is possible for the customer to decide about geometry changes to avoid the danger of electric arc appearance.