



## How to use FEKO with Altair Hypermesh

This How-to applies to: FEKO suite 5.4

Users who would like to make use of the benefits of the advanced meshing features of Altair Hypermesh while solving the electromagnetic aspect of the problem in FEKO have 3 options how to import the HyperMesh mesh file into FEKO. These options are described below as well as a few brief pointers how to complete the model setup in FEKO.

### Exporting meshes from HyperMesh / Importing into FEKO

In addition to geometry (coordinates, element types) a proper mapping of label, material and element type, as well as string labels/materials is desired. There are 3 options for importing the Hypermesh mesh file into FEKO

#### 1. Use the existing NASTRAN template from HyperMesh

NASTRAN supports only integer values (not arbitrary strings) for the NASTRAN property. Hypermesh uses the NASTRAN property for media whereas FEKO uses this for the label. Therefore the NASTRAN option is useful if only the geometry is to be imported into FEKO. The media properties can then be setup in CADFEKO.

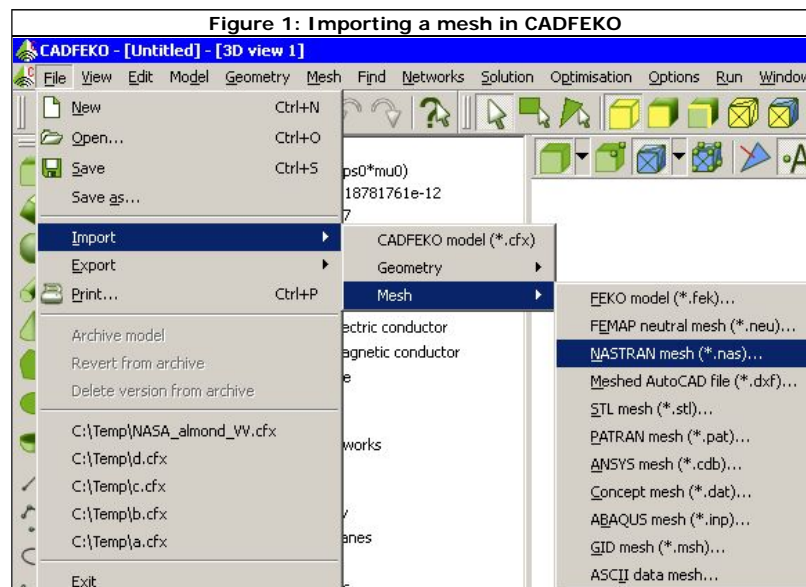
#### 2. Use the existing ANSYS template from HyperMesh

In order to get labels imported the "Set" construct must be used in HyperMesh.

#### 3. Use the existing ABAQUS template from HyperMesh

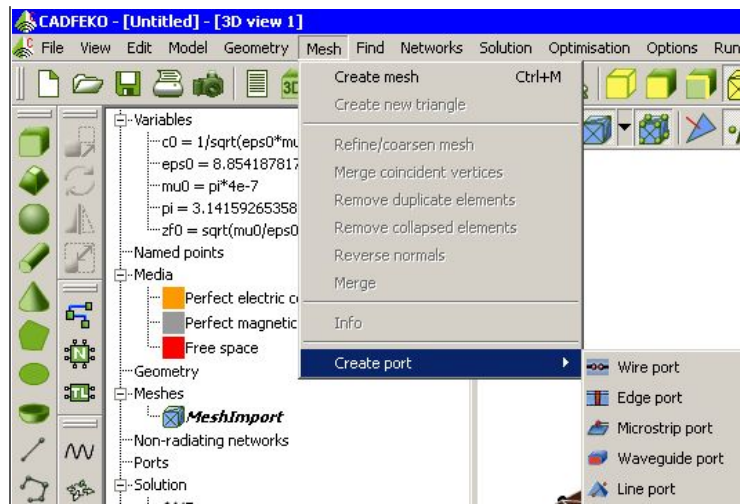
This is the recommended way of exporting models in HyperMesh and importing them into FEKO. The ABAQUS mesh format supports natively strings for labels and also materials

To import a mesh into CADFEKO, go to File -> Import -> Mesh -> then choose a suitable option



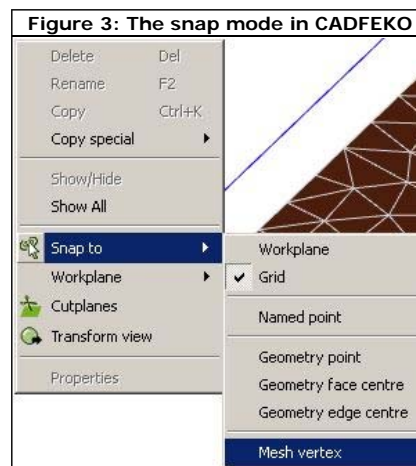
### Working further with the mesh in FEKO:

Once the mesh has been imported into FEKO, users can add ports using the Mesh menu in CADFEKO



Adding voltage sources, far field requests, etc. is done in exactly the same manner as when working with geometry.

To attach additional geometry or maybe a 2nd mesh to the existing mesh, use the snap to mesh vertex function. Snap mode is used by holding CTRL-SHIFT and left clicking on the entity in the 3D view. Changing the snap mode is done by right-clicking in the 3D view. More info is available by searching for "snap" in Help.



If the mesh size is not desirable for the frequency, users can either remesh the model in Hypermesh or use the Refine/Coarsen mesh tool also found under the Mesh menu in CADFEKO (see Figure 2).