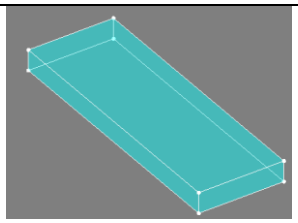
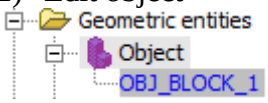
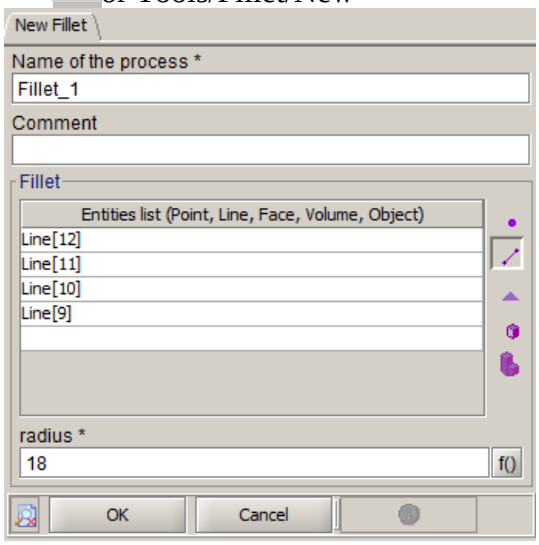
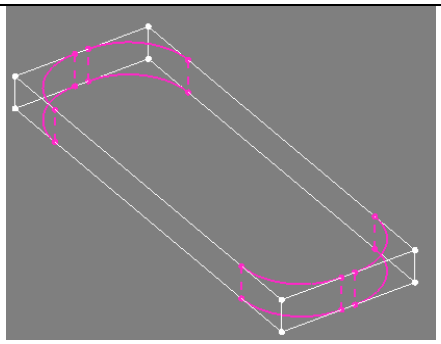
# Create the geometry of a linear actuator in the modeler

**Presentation**

This example shows how to use the modeler capabilities to create a whole geometry of a linear actuator.
We use here :

- Primitives
- Chamfers, fillets
- Sketch + extrusion
- Parameterizing
- Symetries, translation etc.
- Union, assembly etc.

| Step | Action | Illustration |
|---|---|---|
| 0 | Create new project<br>Open the modeler<br> or geometry/context modeler | |
| 1 | Create the block of the actuator basis :<br> or Construction/Block/New<br>-center (-60,-20,0)<br>-dimensions (80,40,10) |  |
| 2 | Replace x dimension : 80 by 120<br>For that :<br>1) Edit object<br>  <br>2) Edit « BLOCK_1 » | |
| 3 | Create a fillet on the 4 edges with a radius of 18 :<br> or Tools/Fillet/New<br>  |  |

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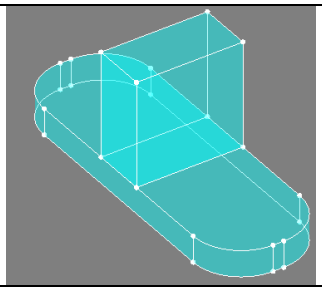
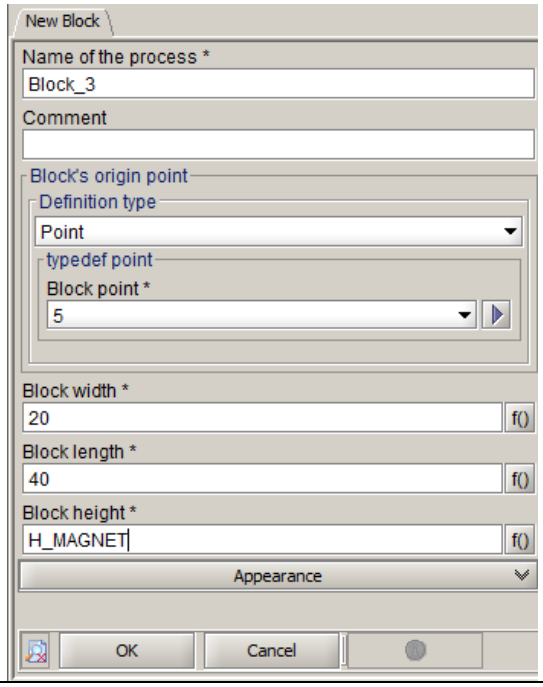
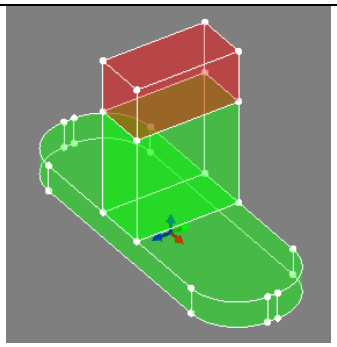
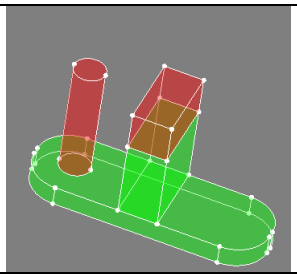
| 4 | Create a block for the central part :<br> or Construction/Block/New<br>- origine point (-10,-20,10)<br>- dimensions (20,40,40) |  |
| 5 | Create the geometrical parameter<br>H_MAGNET=20 | |
| 6 | Create a block for the magnet :<br> or Construction/Block/New<br>  |  |
| 7 | Create the following geometrical parameters :<br>CYLINDER_RADIUS = 8<br>CYLINDER_POSITION = -30<br>R1=12 | |
| 8 | Create a cylinder :<br> or Construction/Cylinder/New<br>- center : (CYLINDER_POSITION,0,10)<br>- radius : CYLINDER_RADIUS<br>- height : 60 |  |

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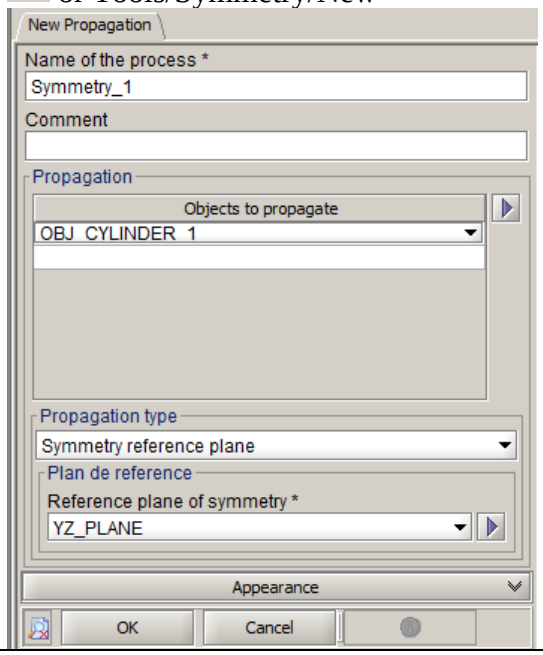
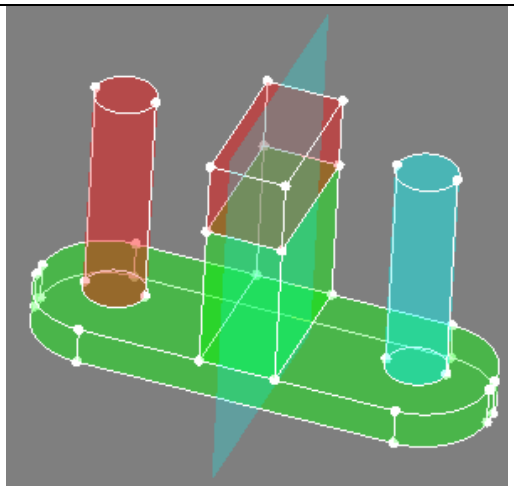
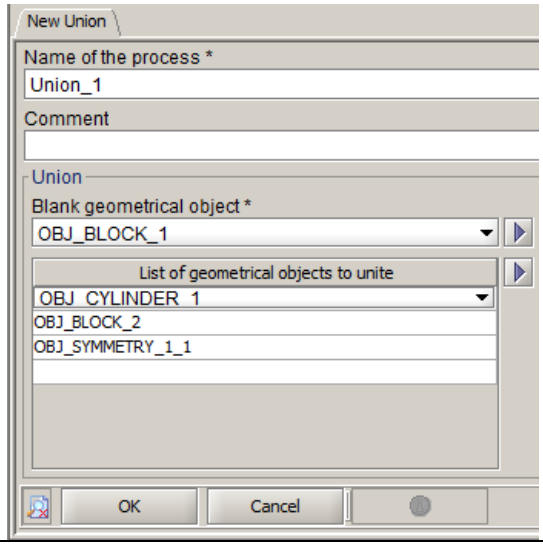
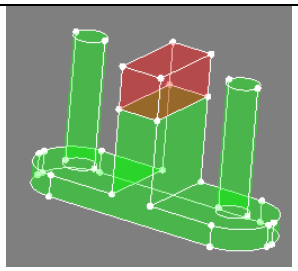
| 9 | Make a symetry of the cylinder :<br> or Tools/Symmetry/New<br>  |  |
| 10 | Make the union between the objects of the magnetic circuit to obtain one object.<br> or Tools/Union/New<br>  |  |

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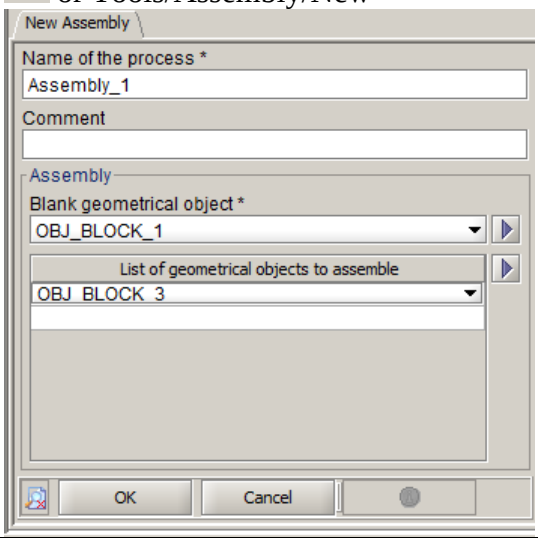
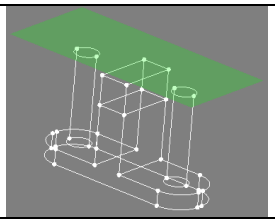
| 11 | Make an assembly between the magnet and the magnetic circuit (to avoid interference problems because of common faces)<br> or Tools/Assembly/New<br>  | |
| 12 | Create a reference plane :<br> or Construction/Reference/Reference Plane/New<br>• Choose the plane XY<br>• offset = 100 |  |
| 13 | Create a geometrical parameter ALPHA=10 | |
| 14 | Create two reference points (0,0,100) and (0,10,100).<br><br>Create one reference line with the two previous points. | |

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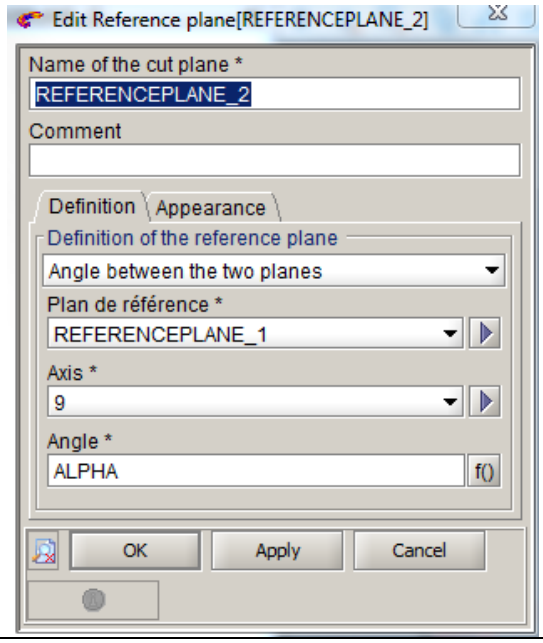
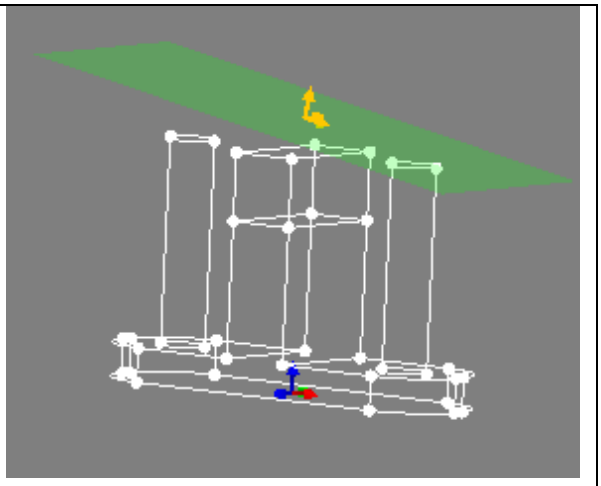
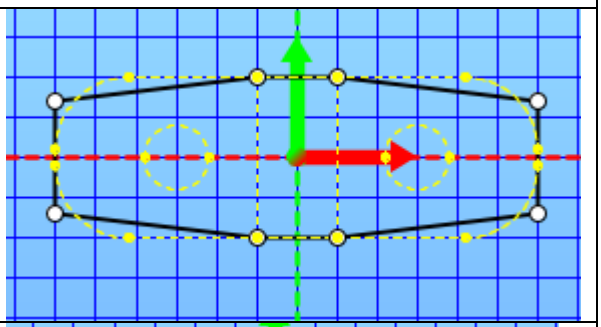
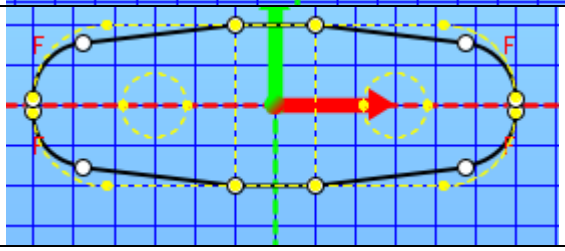
| | Create a new reference plane defined from the previous reference plane, with an angle around the previous reference line :<br>  |  |
| 15 | Create a sketch with the previous reference plane REFERENCEPLANE_2<br> or Tools/Sketch/New | |
| 16 | In the sketcher create a rectangle with the following vertex coordinates :<br>• (-60, -20)<br>• (-60,20)<br>• (60, 20)<br>• (60,-20) | |
| 17 | In the Sketcher, for each edge create chamfers with two distances : (6, 50) (select the small line first) |  |
| 18 | In the Sketcher, for each edge create fillets with with a radius = 14 |  |
| 19 | Leave the sketcher to go back to the modeler | |

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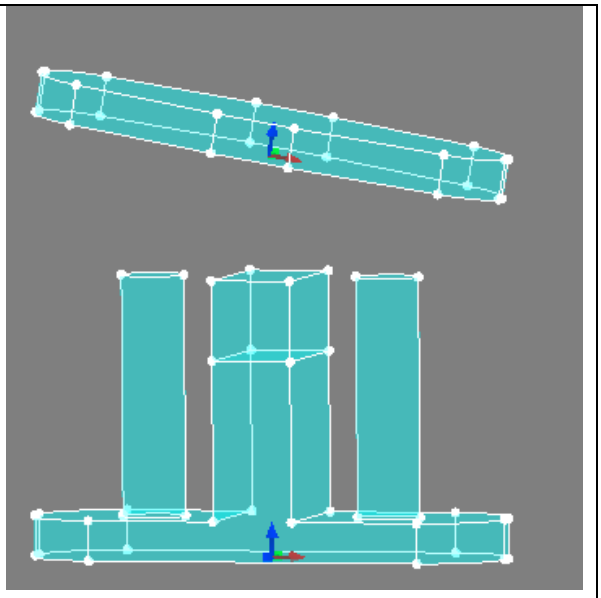
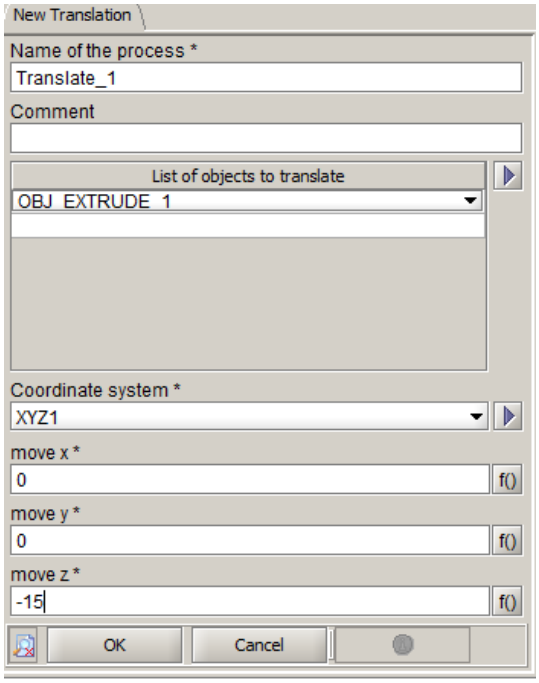
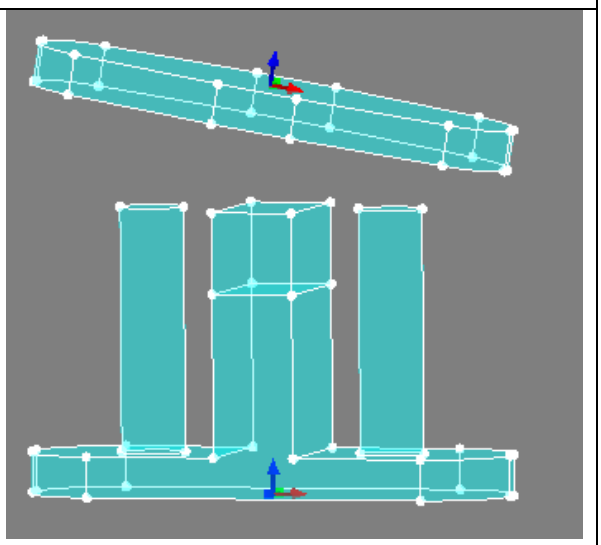
| 20 | Make an extrusion :<br> or Tools/Extrusion/New<br><br>• Choose the sketch_1, face 11 (face created in the sketcher)<br>• Extrusion along vector<br>• Distance = 10 |  |
| 21 | Make a translation of the blade to bring it closer to the magnetic circuit<br> or Tools/Translation/new<br><br>Choose a translation of -15 in Z axis<br>  |  |
| 22 | Close the modeler context<br> <br>or Project/return to standard geometry context | |

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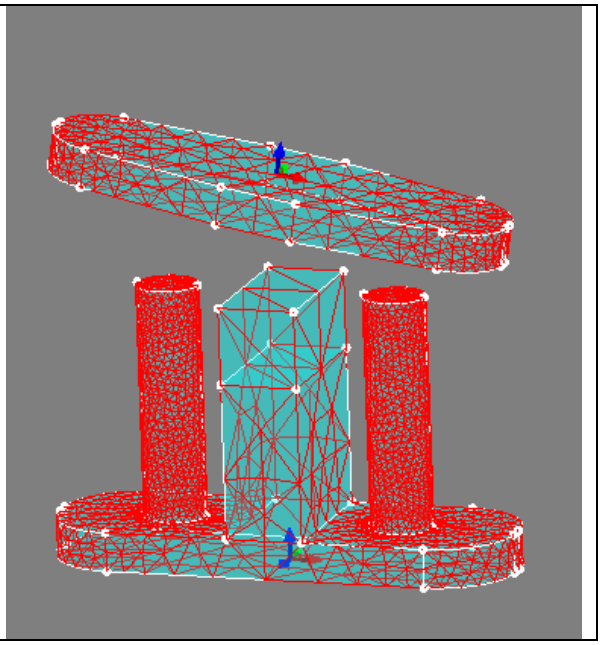
| 23 | Mesh Domain |  |