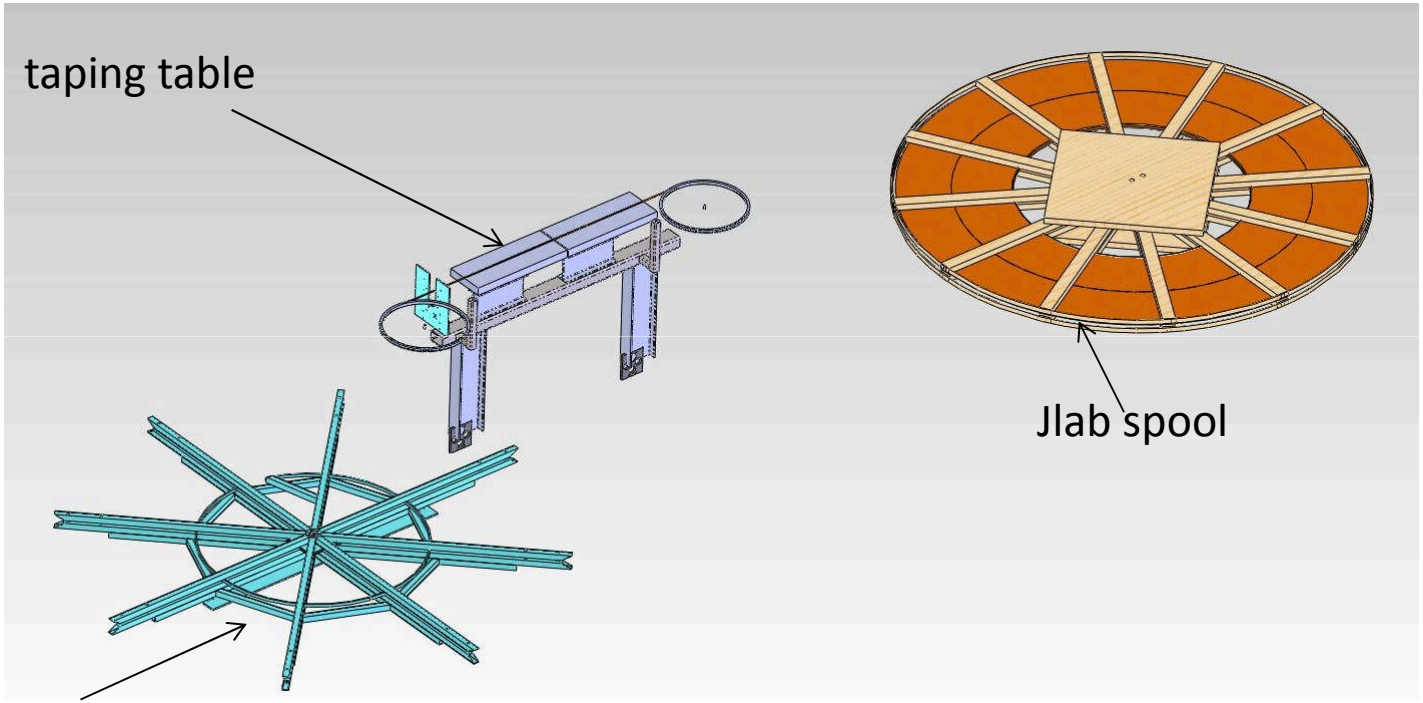
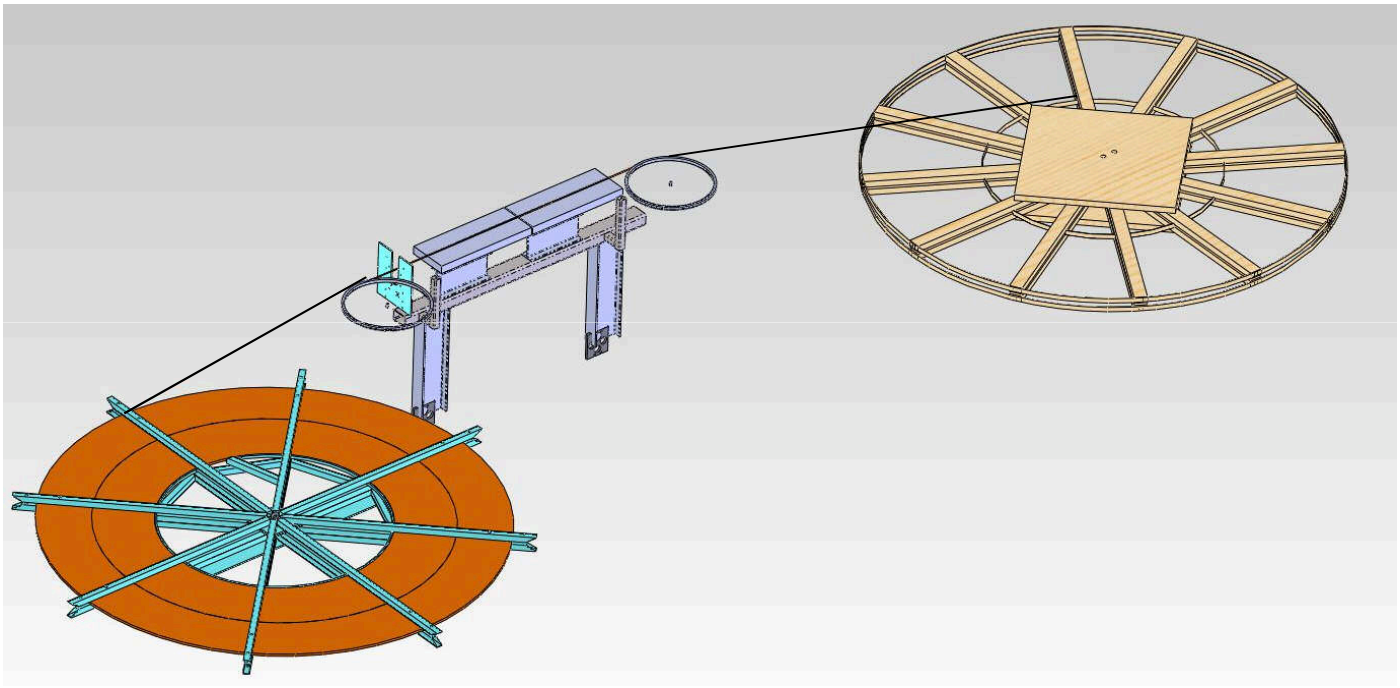
OP 1000 *(Positionning the 2 spools)*



Control:

Tools:

OP 1010 *(Conductor taping)*

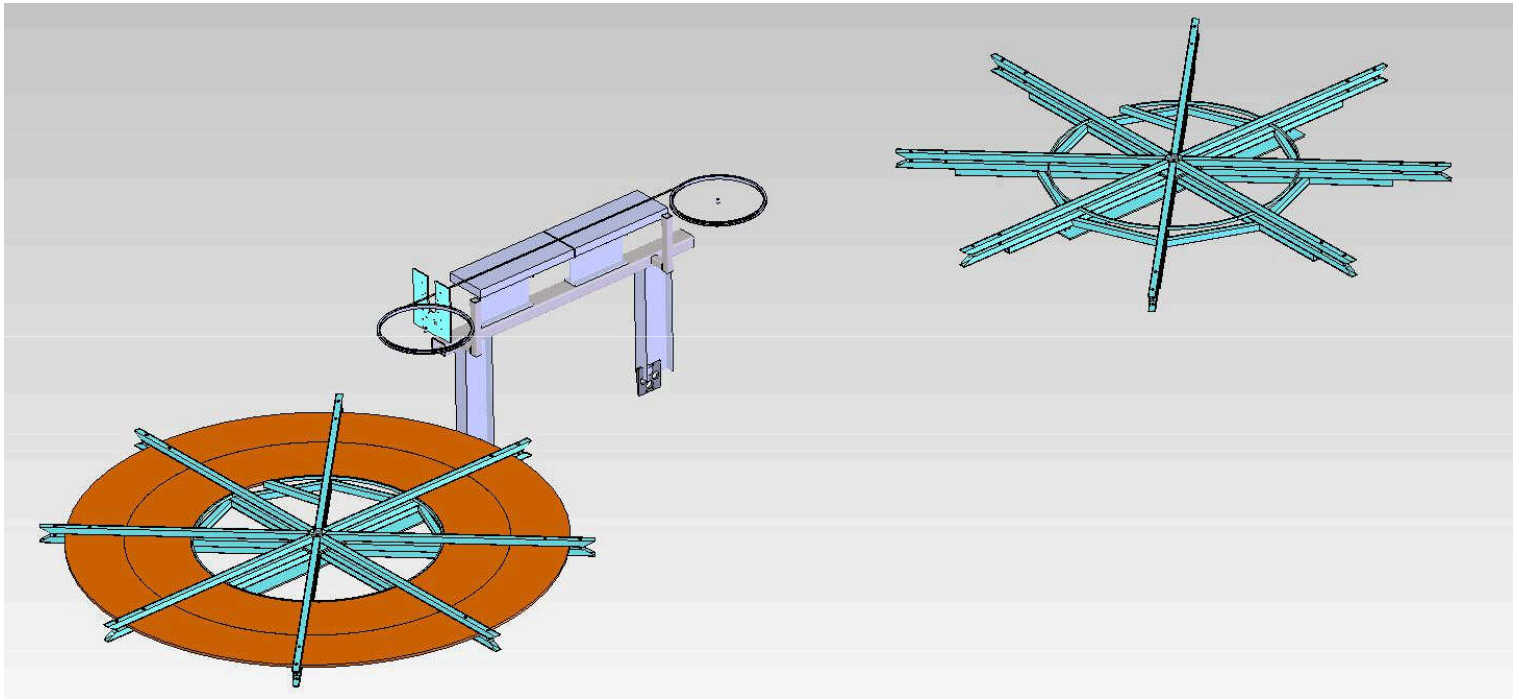


The entire length of conductor will be taped before winding (for a double pancake)

Control:

Tools:

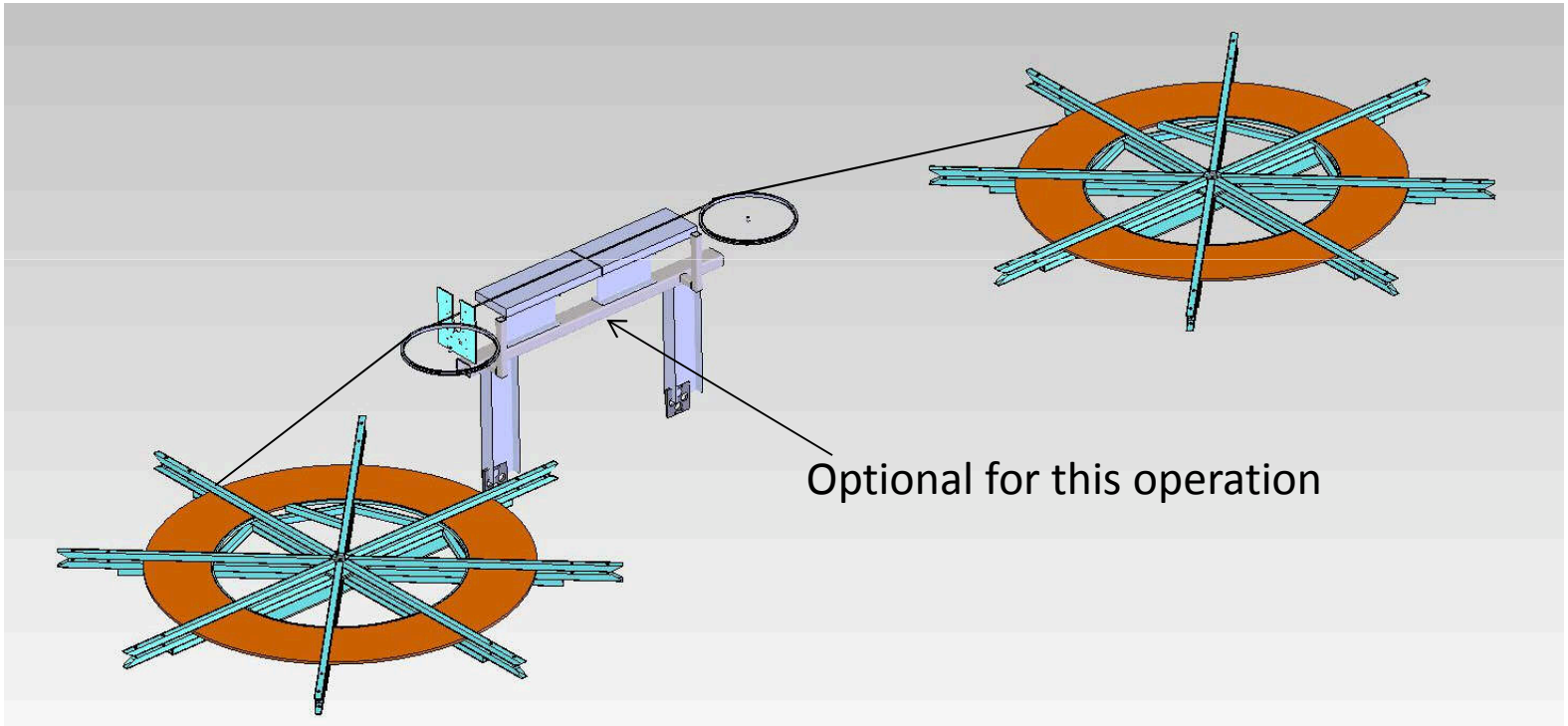
OP 1020 *(Positionning the second Sigmaphi spool)*



Control:

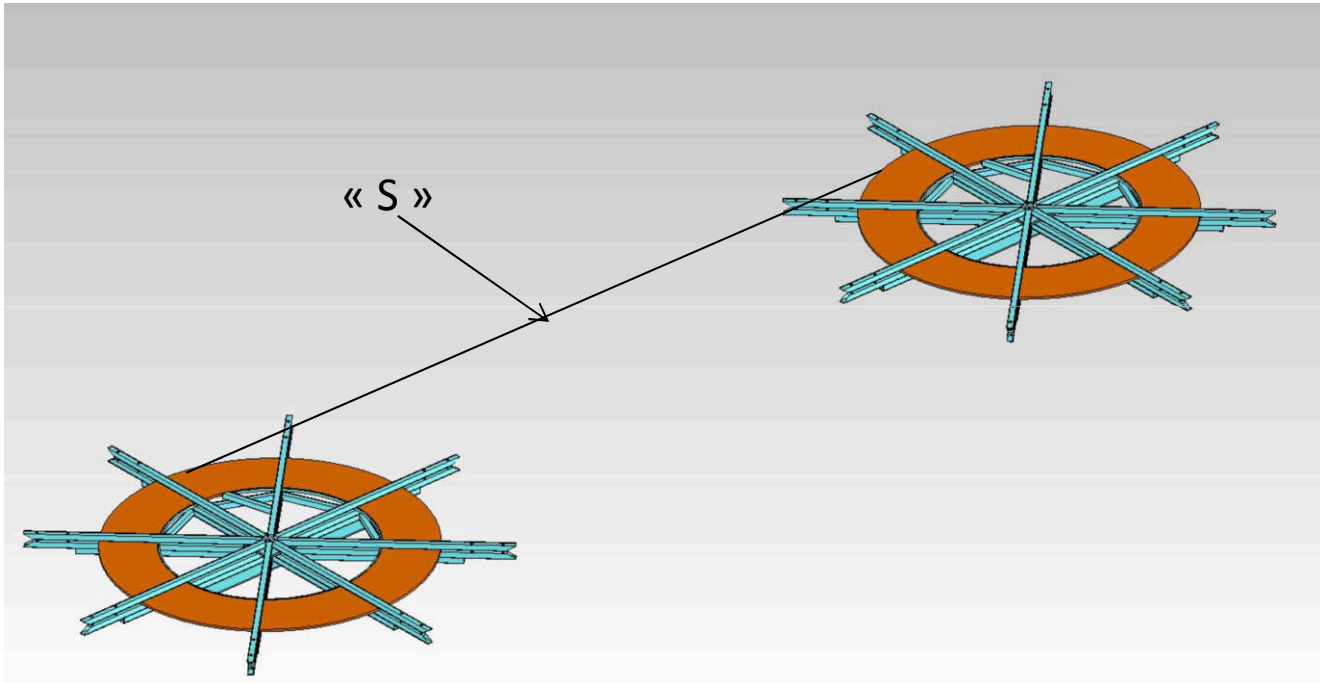
Tools:

OP 1030 *(winding reserve preparation)*



Tools:

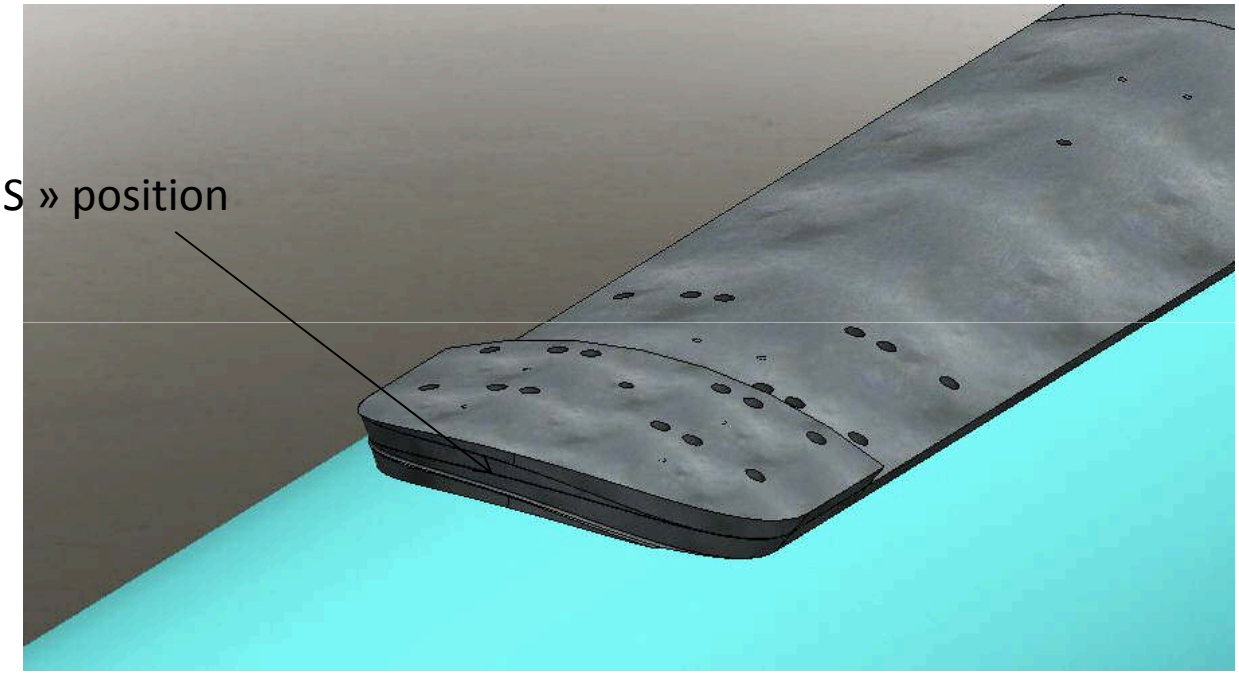
OP 1040 *(« S » preparation)*



Control:

Tools:

OP 1050 *(Positionning the « S » in the spacers)*



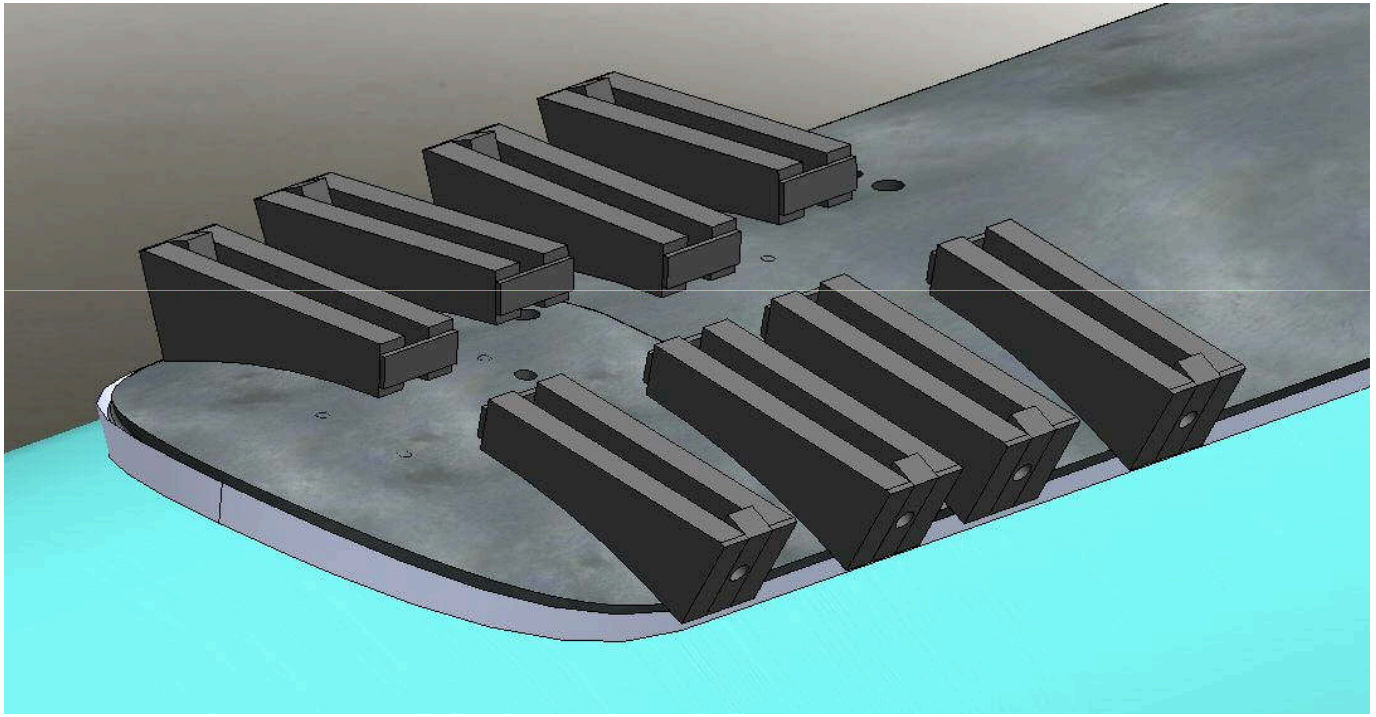
Control:

Tools:

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1060 (Remove the upper spacer (for the double pancake)and positionning the winding clamps)

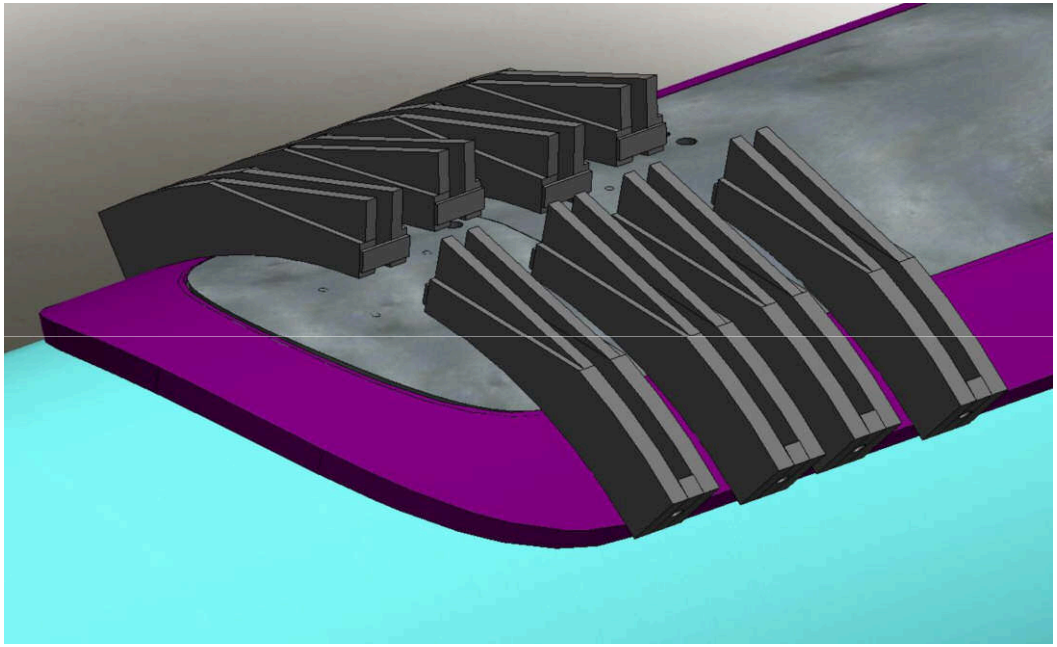


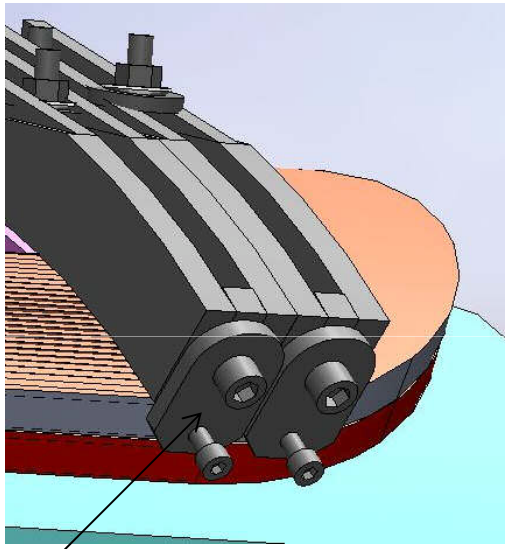
Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

OP 1070 *(first block winding)*



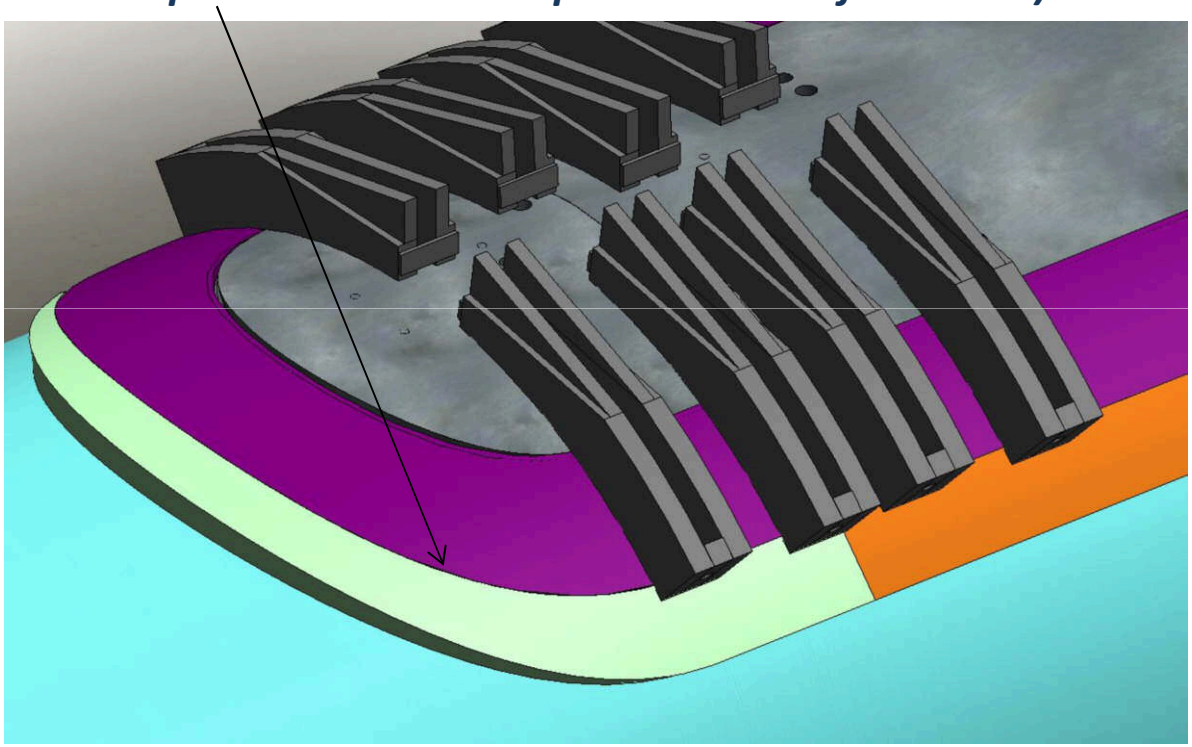


Tools for conductor winding compression

Control:

Tools:

OP 1080 *(Positionning the second block spacers and feeding (with resin)the space between the spacer and the first block)*



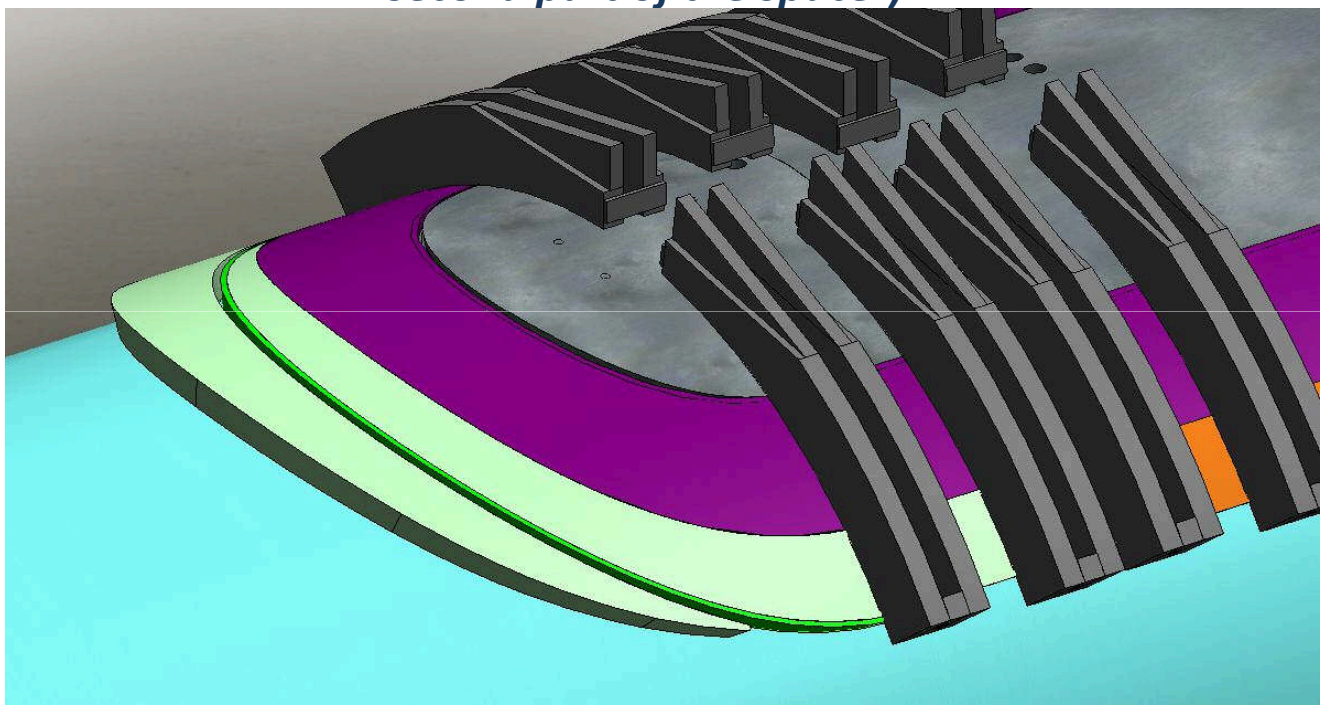
Control:

Tools:

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1090 *(winding the first turn of the second block and positionning the second part of the spacer)*

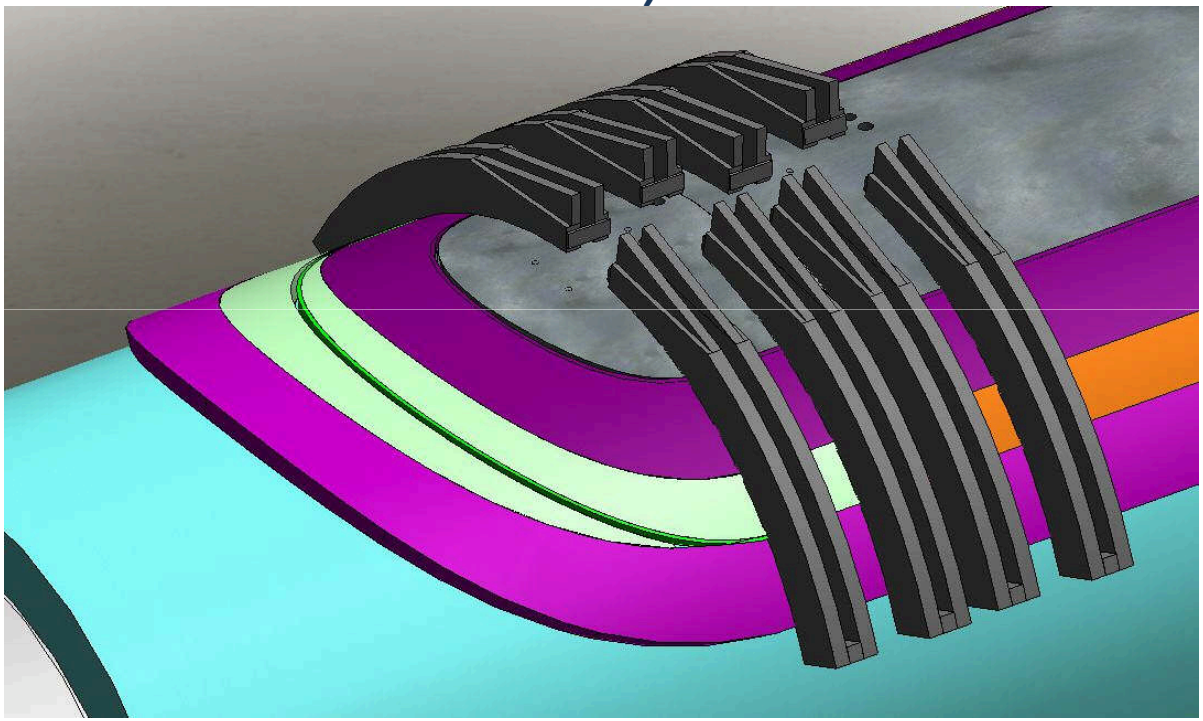


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

OP 1100 *(Positionning the second block clamps and winding the second block)*



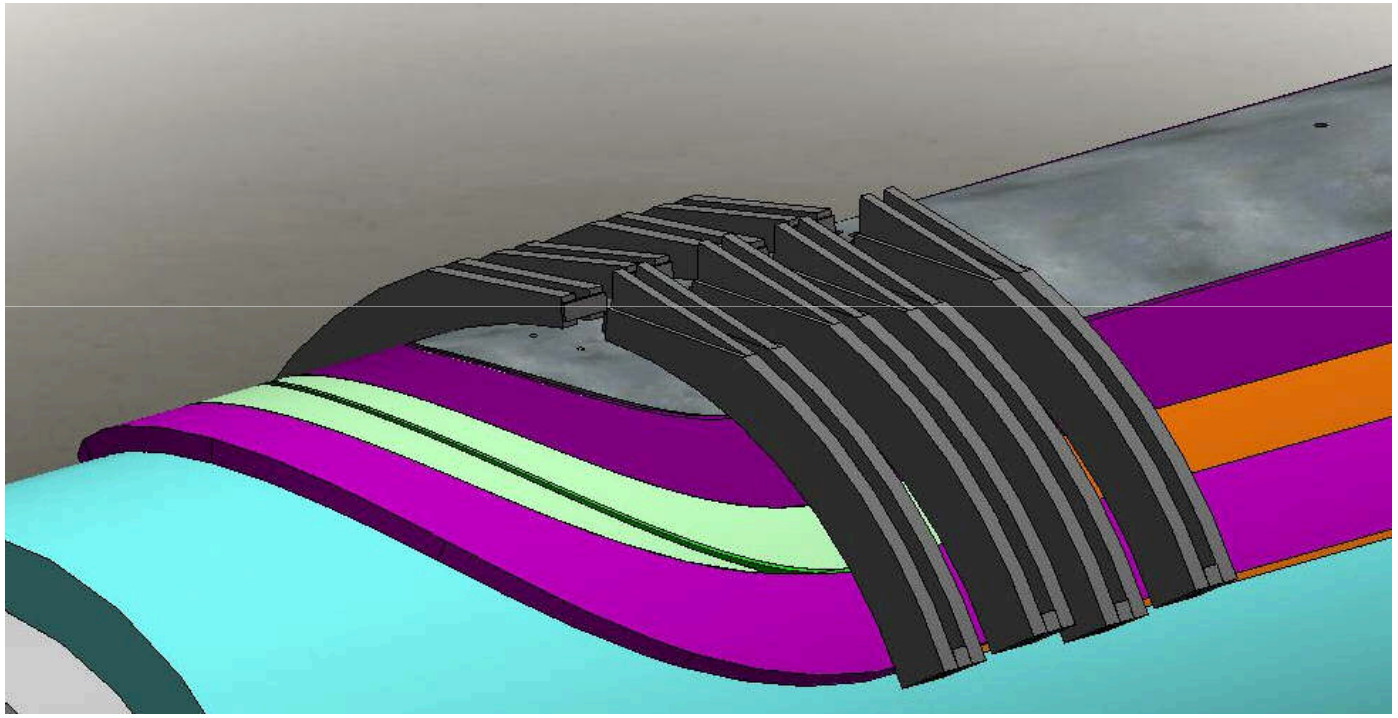
Control:

Tools:

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1110 (positionning the third block clamp, the straight spacer)

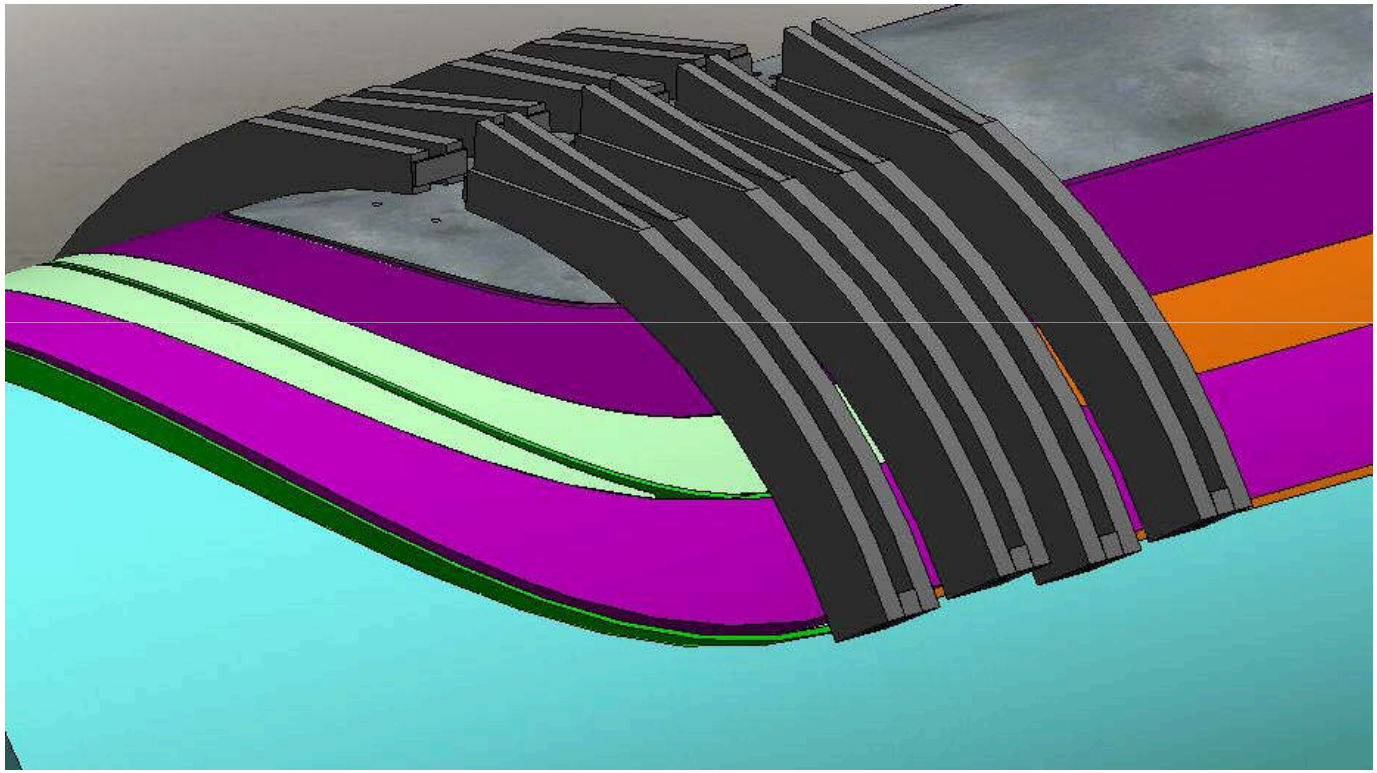


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

OP 1120 *(Winding the first turn of the third block)*

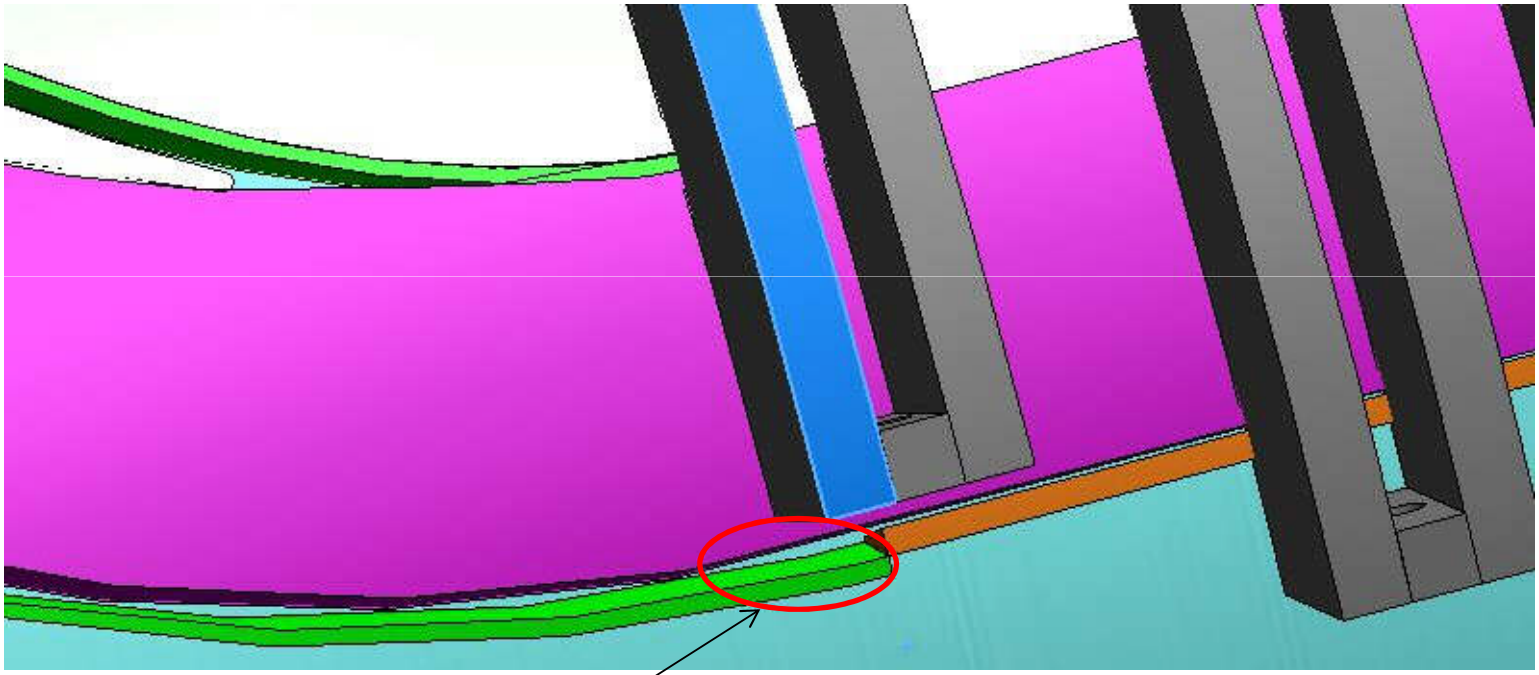


Control:

Tools:

SHMS PROCESS

OP 1130 *(feeding (with resin)the space between the last second block turn and the first third block turn (near the straight spacer)*



Space to feed

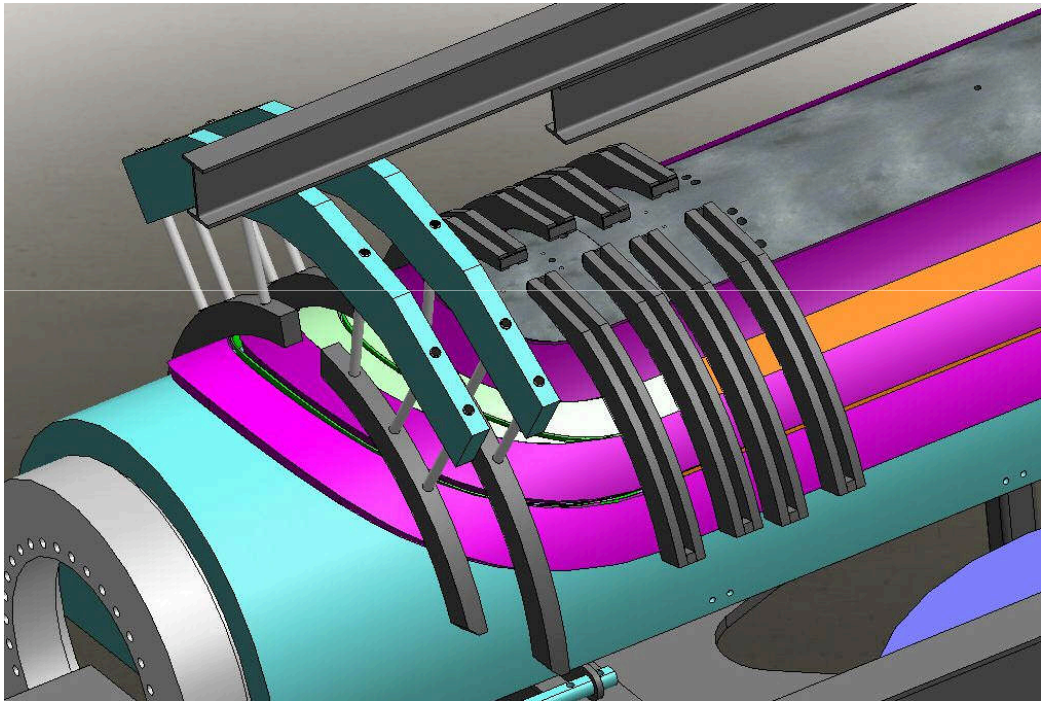
Control:

Tools:

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1140 (positionning the other clamps for the third block winding and winding the third block)

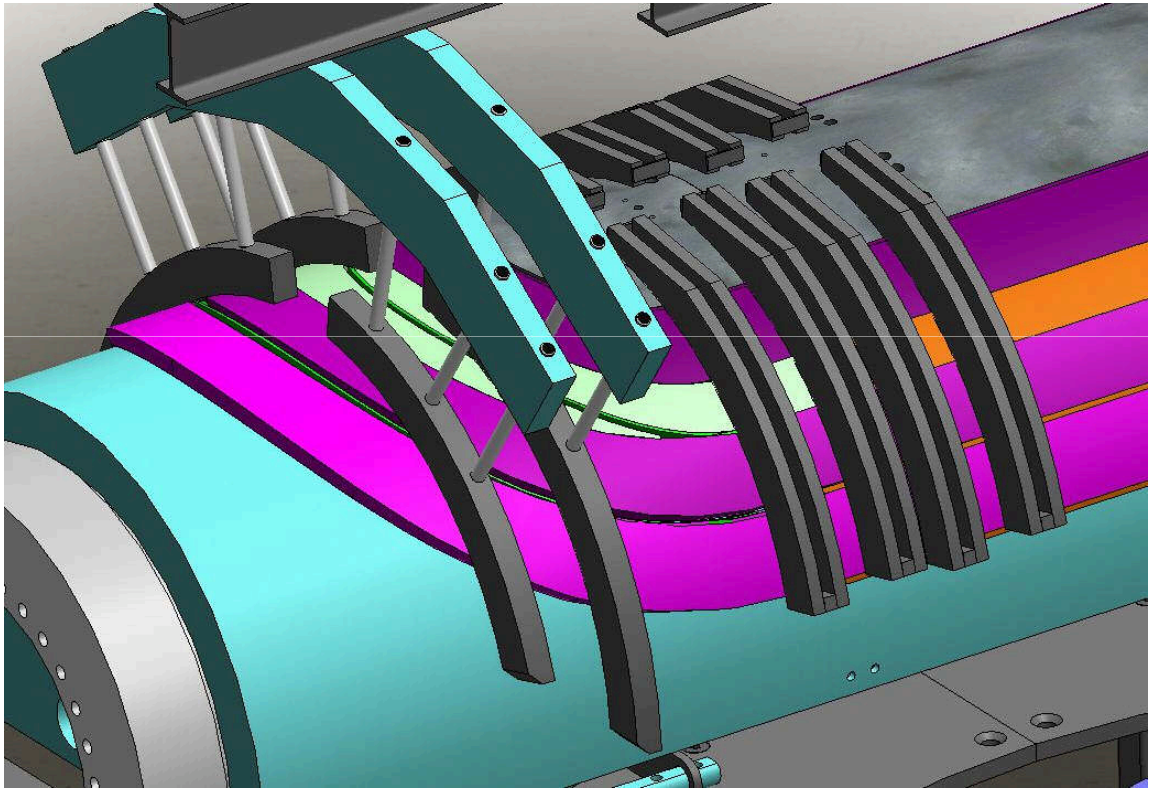


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

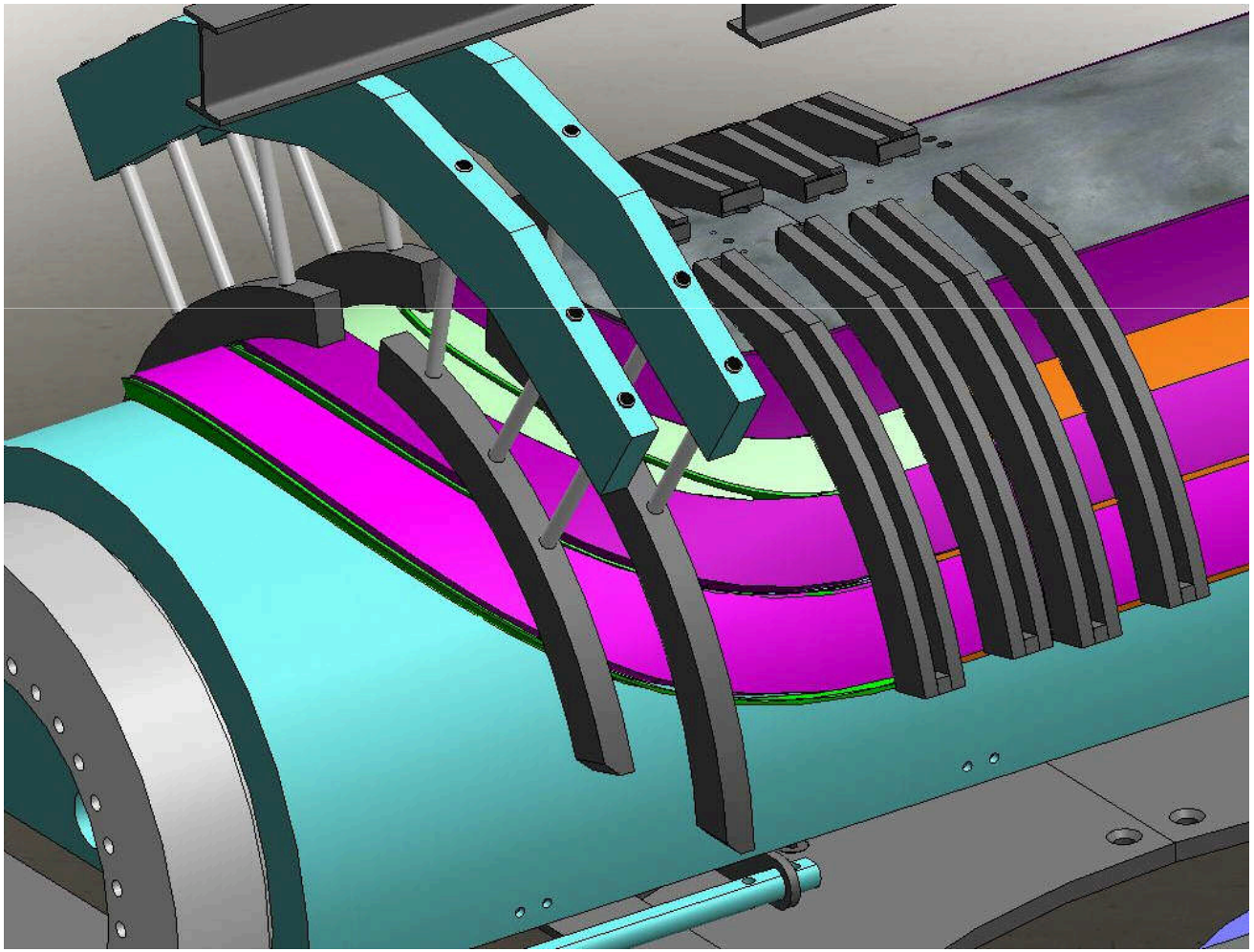
OP 1150 (positionning the straight spacer)



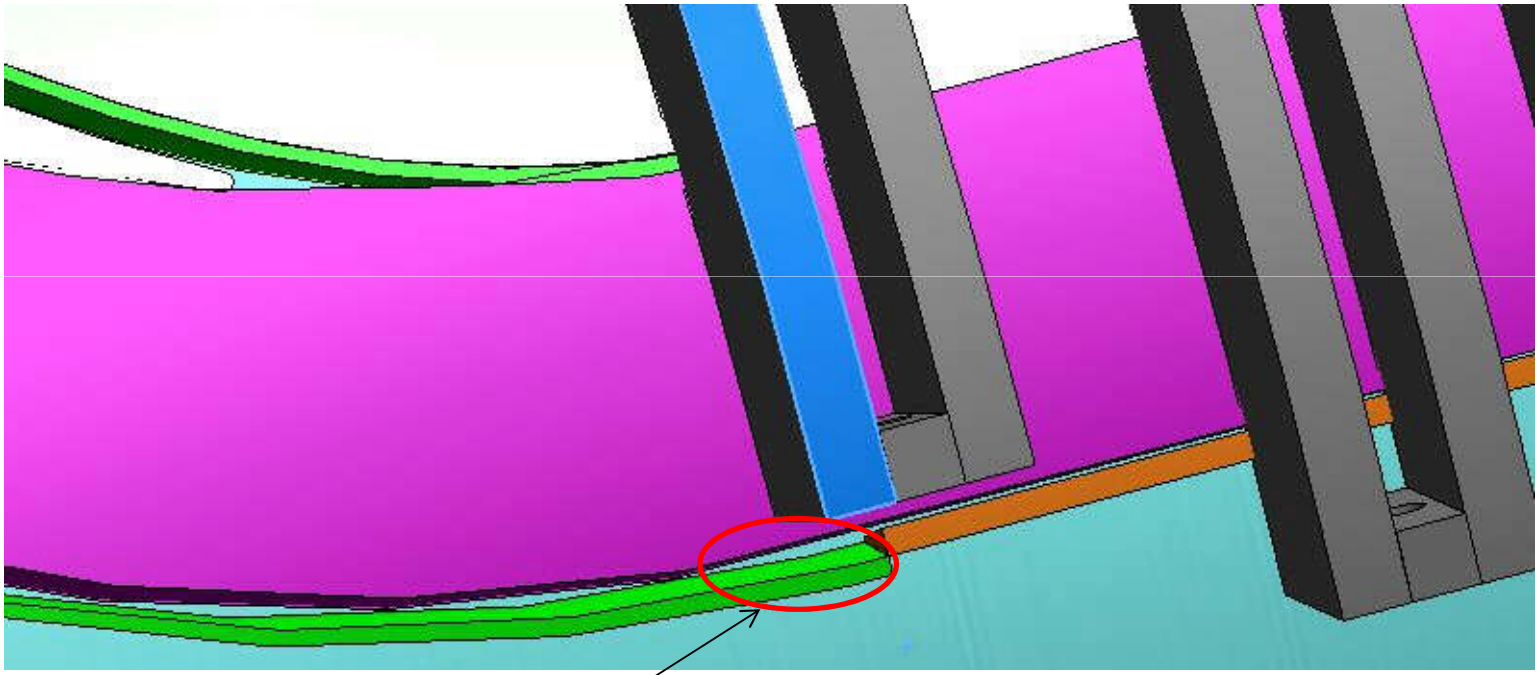
Control:

Tools:

OP 1160 *(Winding the first turn of the fourth block)*



OP 1170 *(feeding (with resin)the space between the last third block turn and the first fourth block turn (near the straight spacer)*

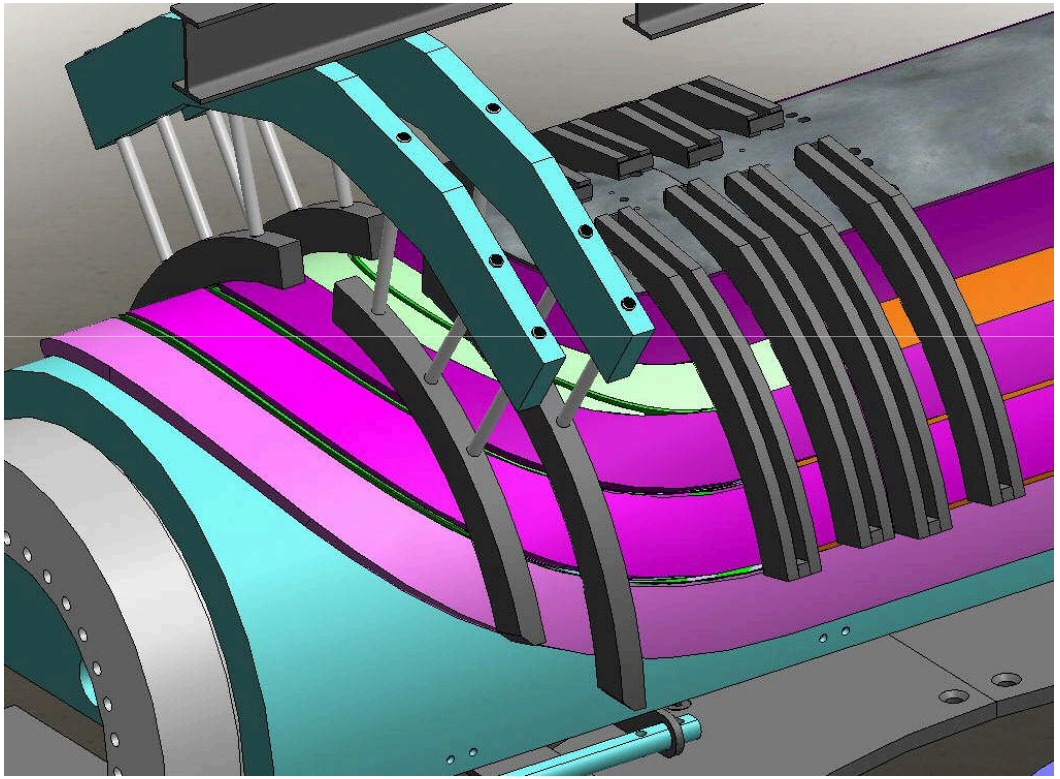


Space to feed

Control:

Tools:

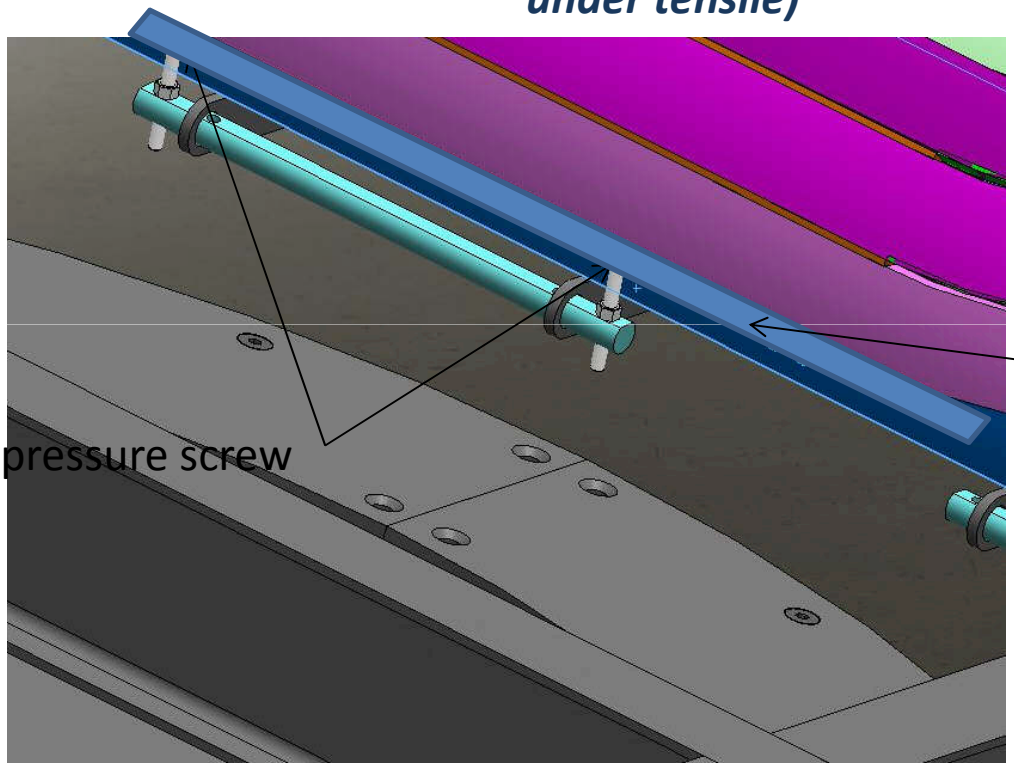
OP 1180 *(Winding the fourth block)*



Control:

Tools:

OP 1185 *(Positionning the rotulated pressure screw to keep the conductor under tensile)*



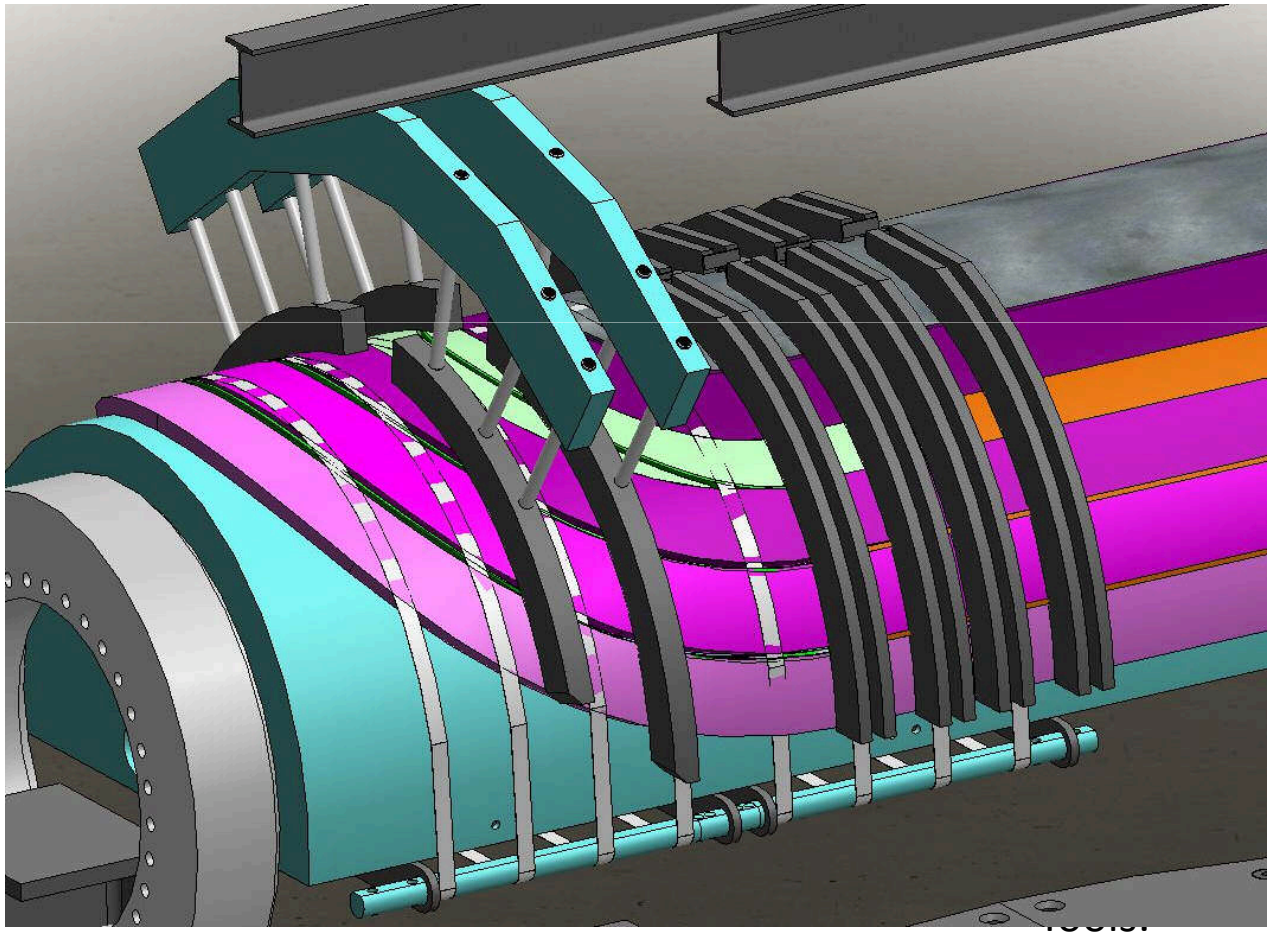
Rotulated pressure screw

System to guarantee the position of the shim and last turn compared to median plan

Control: compare the position of the last turn to the median plan (mandrei repere or reference tools)

Tools:

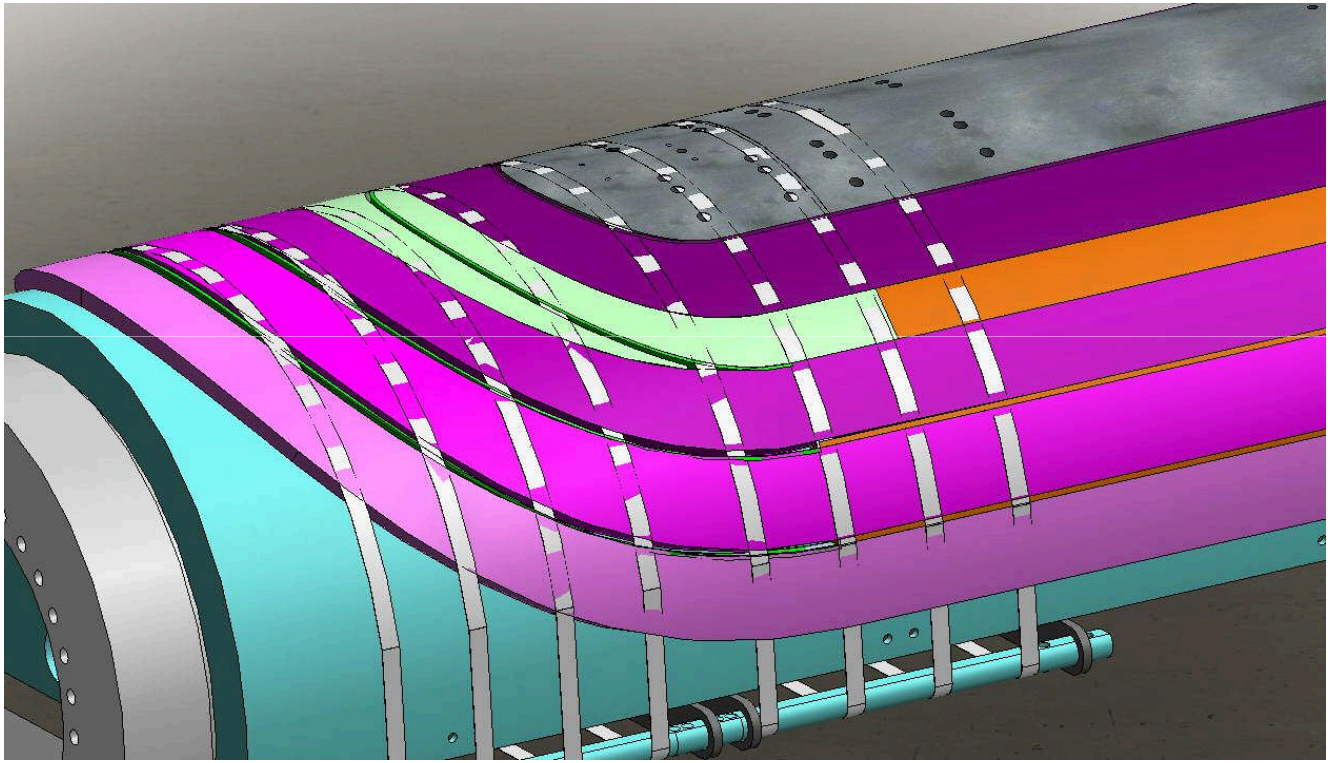
OP 1190 *(positionning the straps around the pancake)*



MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1200(Remove the clamps)

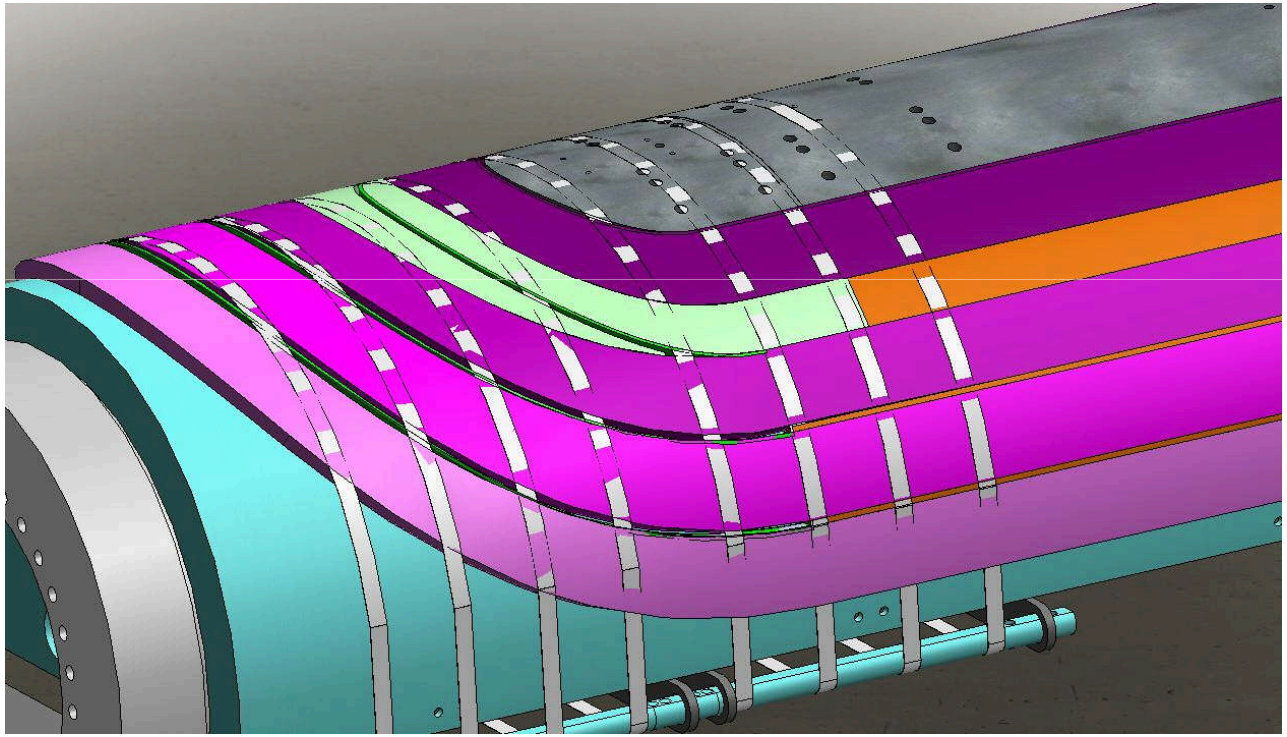


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

OP 1200 (positionning the perforated laminate sheet(thickness 0.5mm)between the straps and heating)



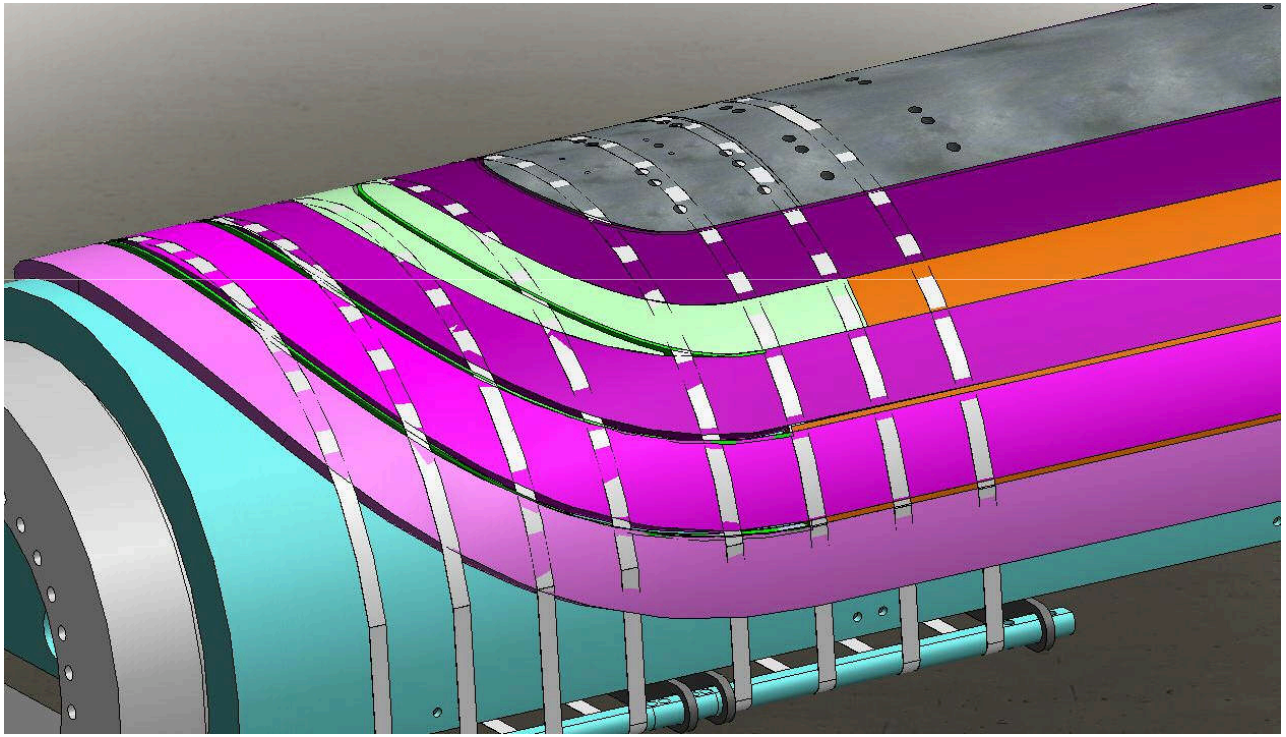
Control:

Tools: kind of mould to define

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1210 (Cleanless the resin overthickness)

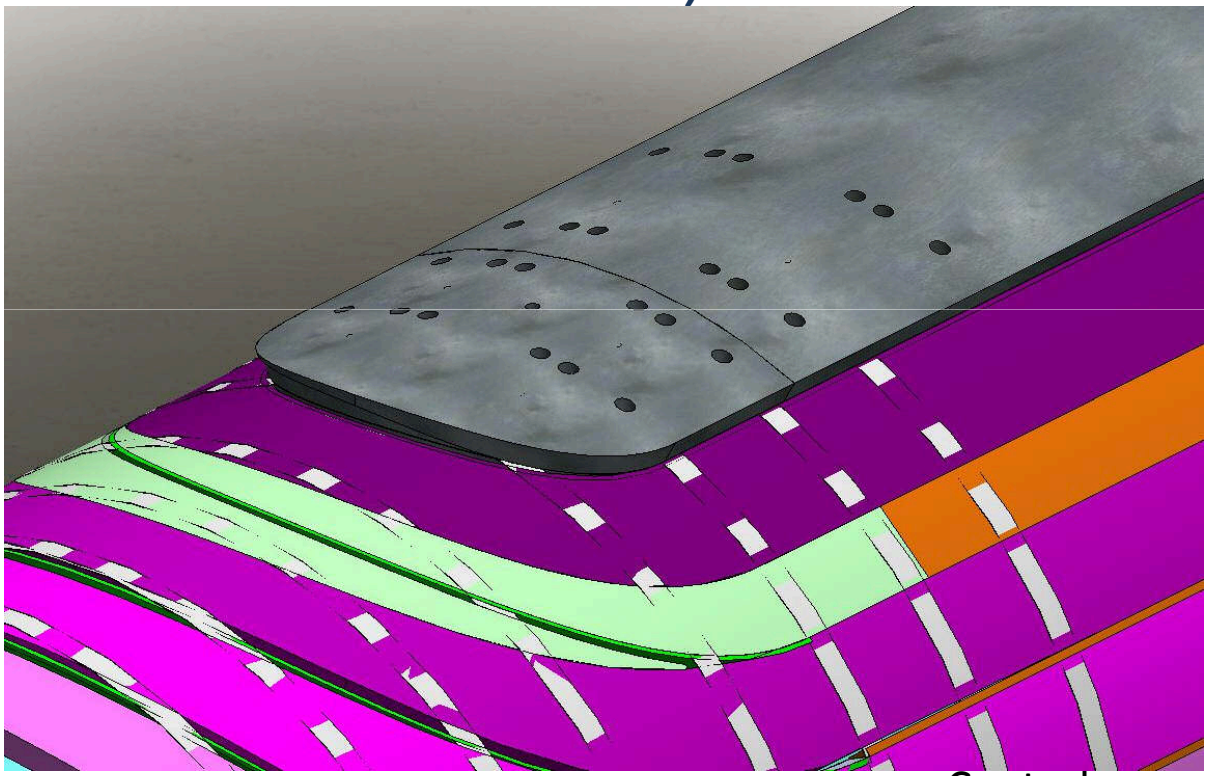


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

OP 1220 *(Positionning the spacers (for the upper pancake) to avoid « S »movement)*

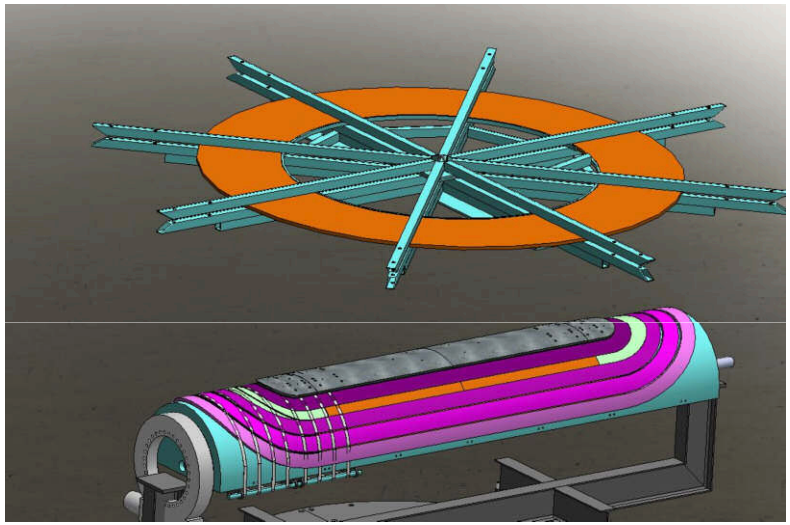


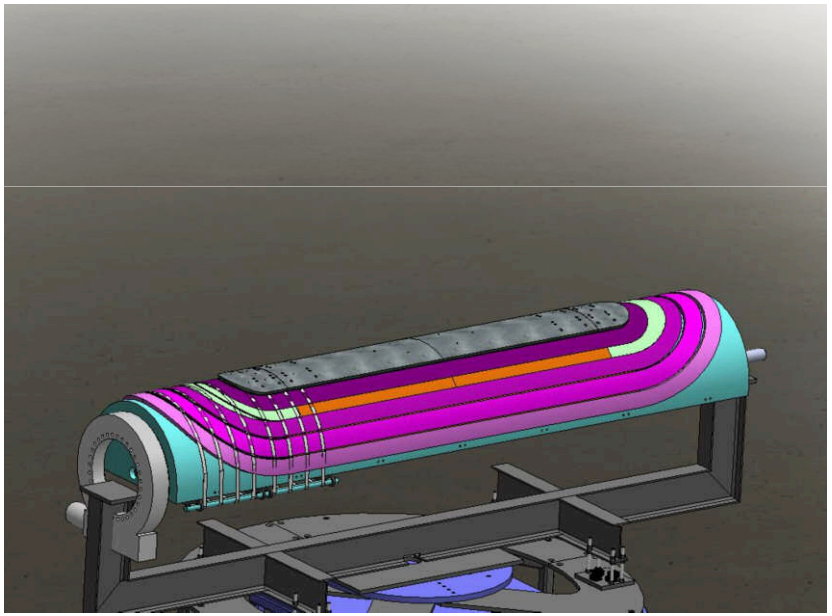
Control:

Tools:

SHMS PROCESS

OP 1230(take the reserve spool ant put it on it frame)

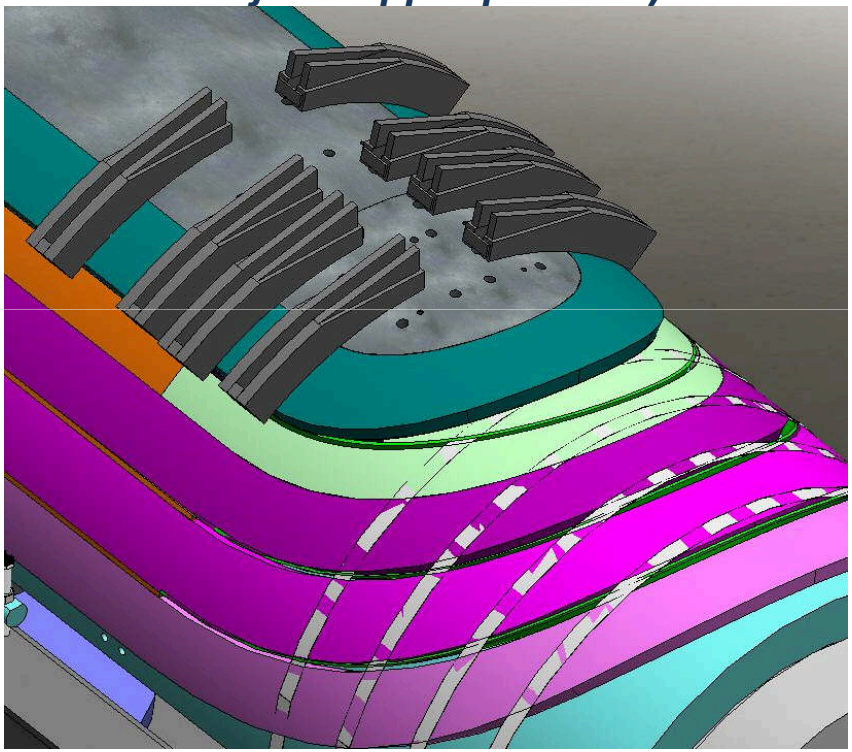




Control:

Tools:

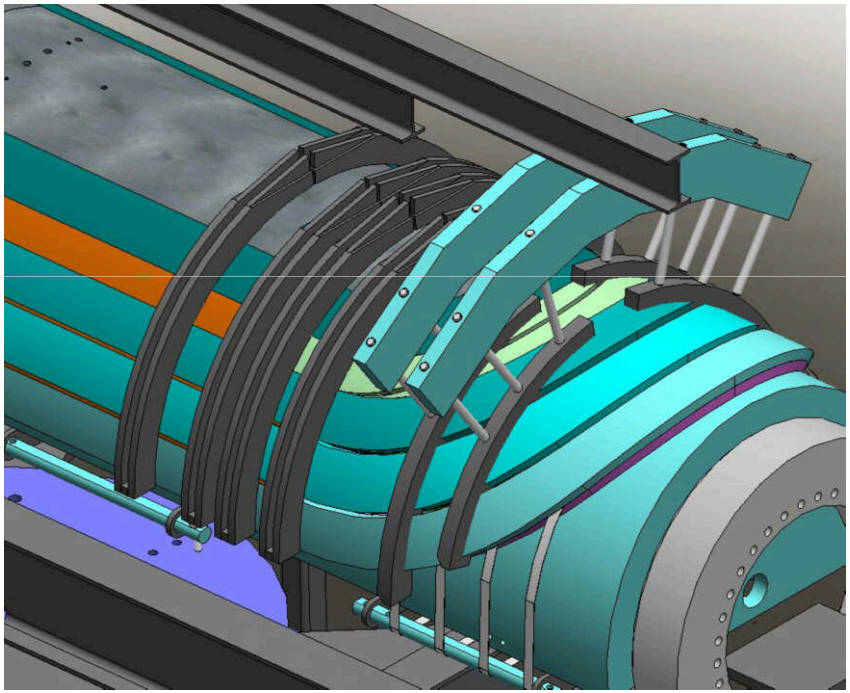
OP 1240 *(Positionning the clamps for the first block and winding the first block of the upper pancake)*



Control:

Tools:

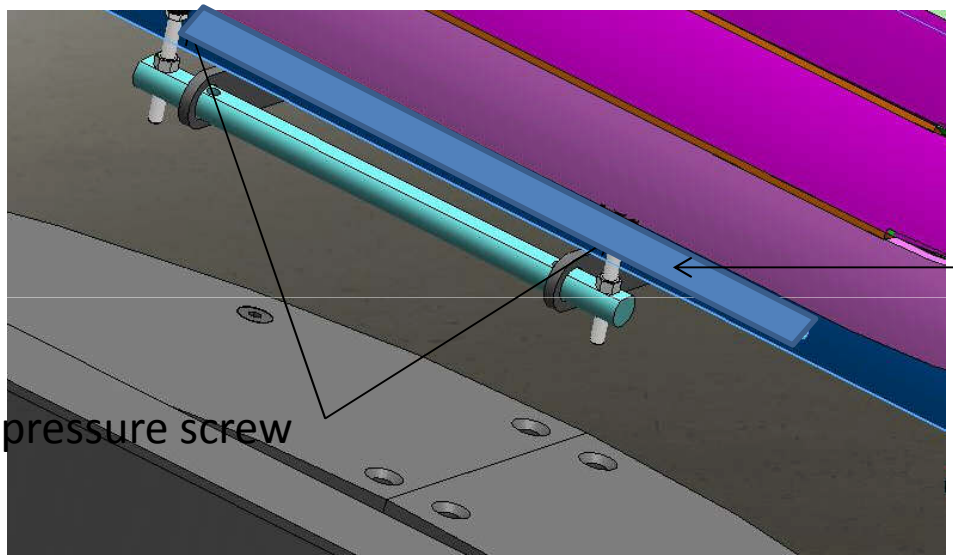
OP 1250 *(Redo the same winding operation of the lower pancake to finish this double pancake)*



Control:

Tools:

OP 1260 *(Positionning the rotulated pressure screw to keep the conductor under tensile)*



Rotulated pressure screw

System to garantee the position of the last turn and shim compared to the median plan

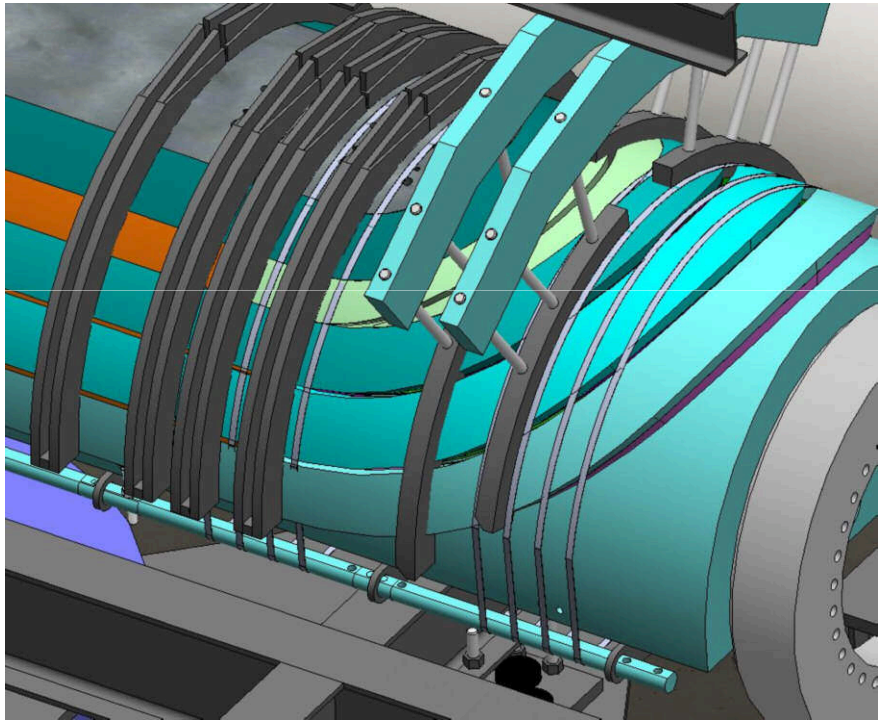
Control: compare the position of the last turn to the median plan (mandrei repere or reference tools)

Tools:

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1270 *(Cut the lower pancake straps and positionning the double pancake straps)*



Control:

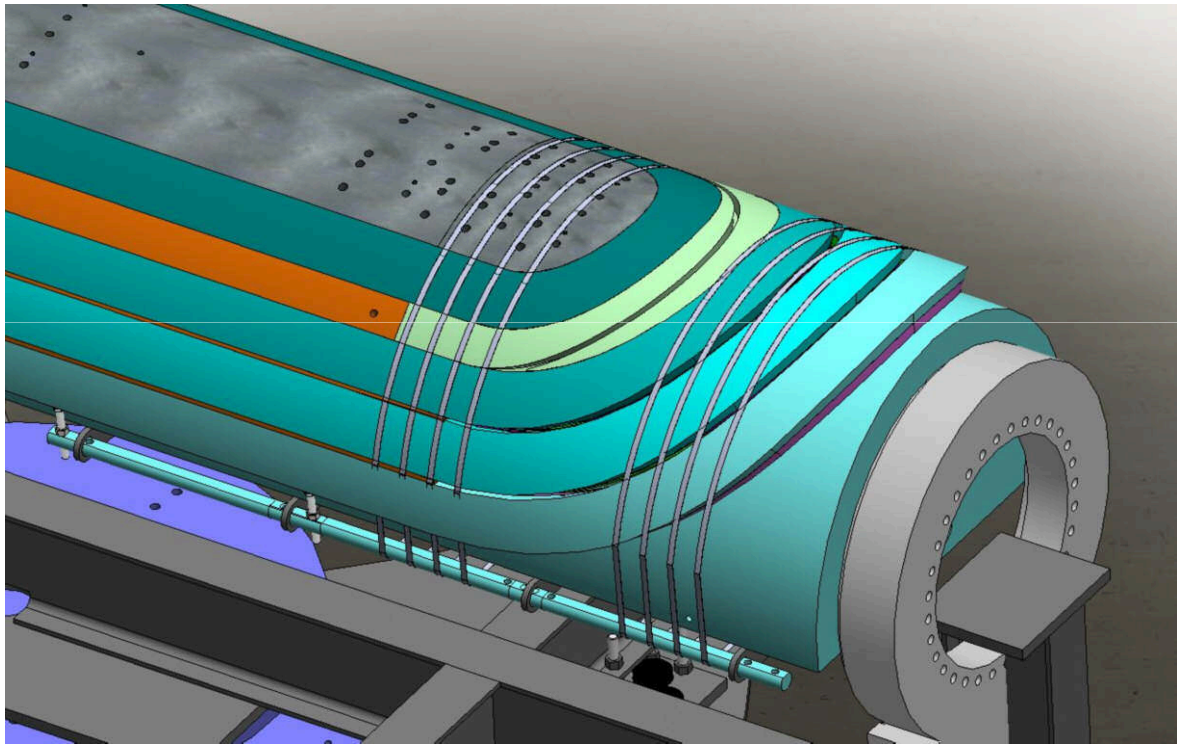
Tools:

Autor Morgan Delbecq/David Ramaugé

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1280(Remove the clamps)

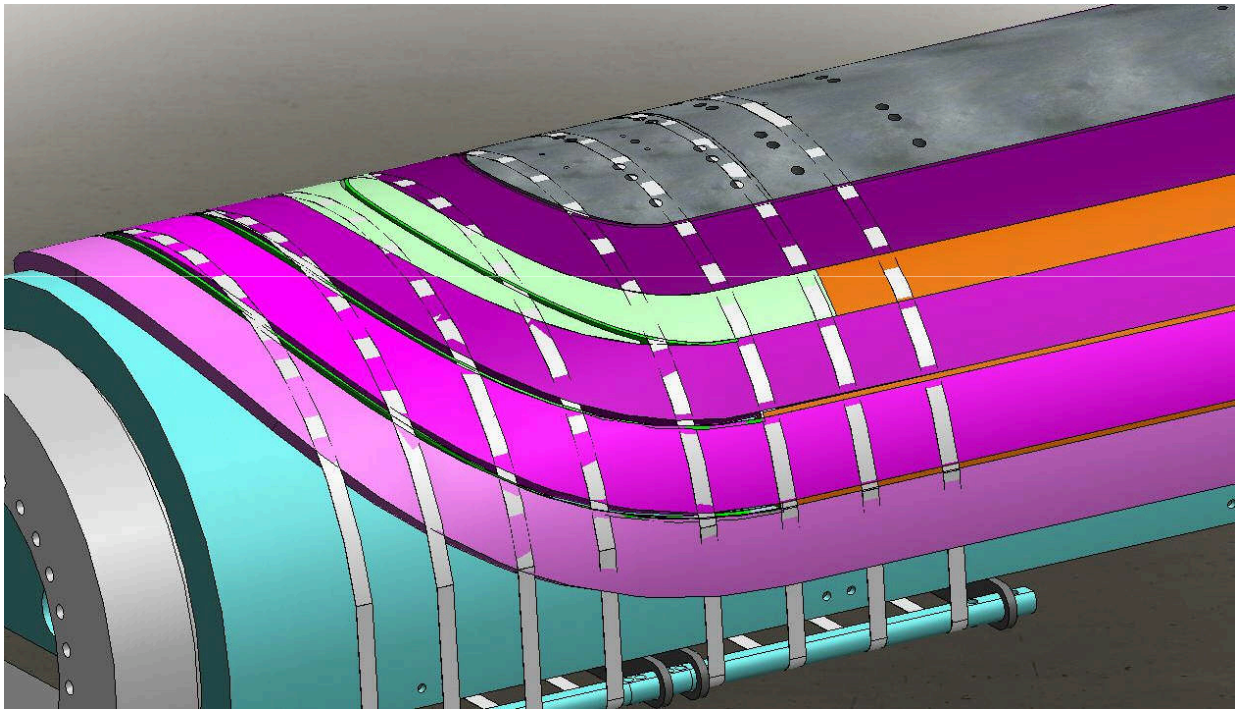


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

OP 1290 *(positionning the perforated laminate sheet(thickness 0.5mm)between the straps and heating)*



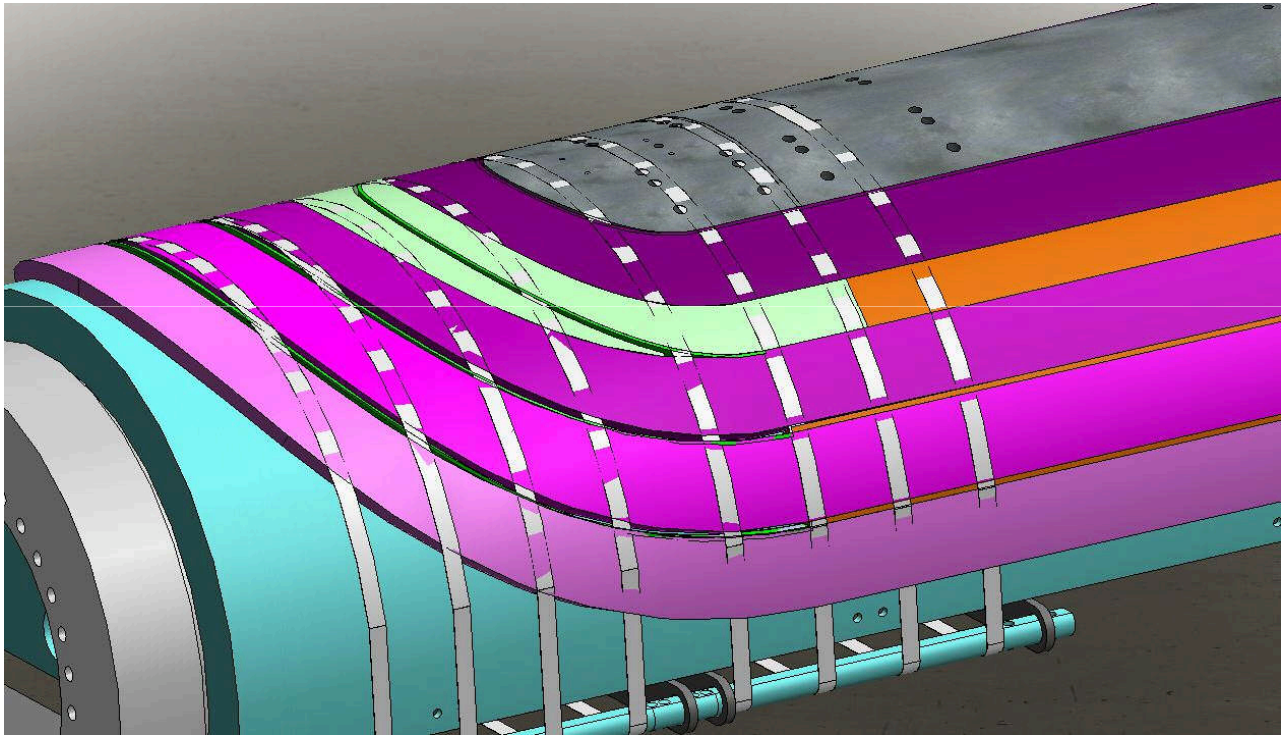
Control:

Tools: kind of mould to define

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1300 (Cleanless the resin overthickness)

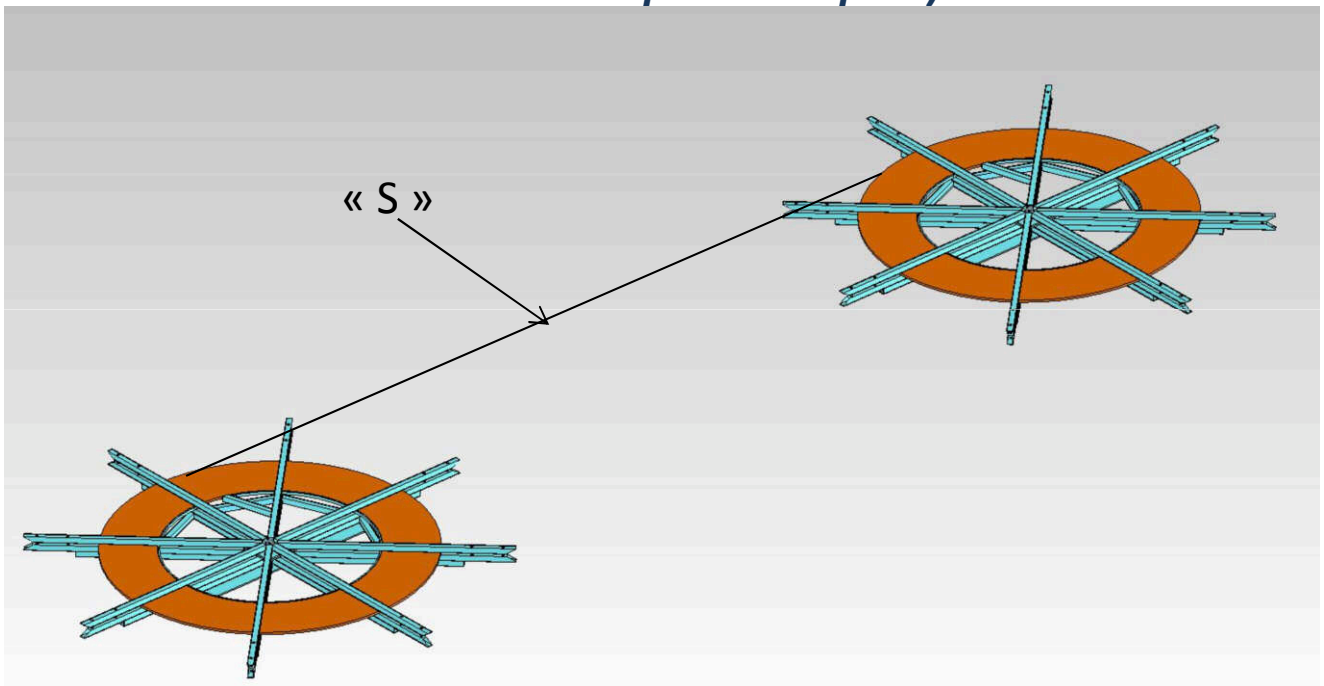


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

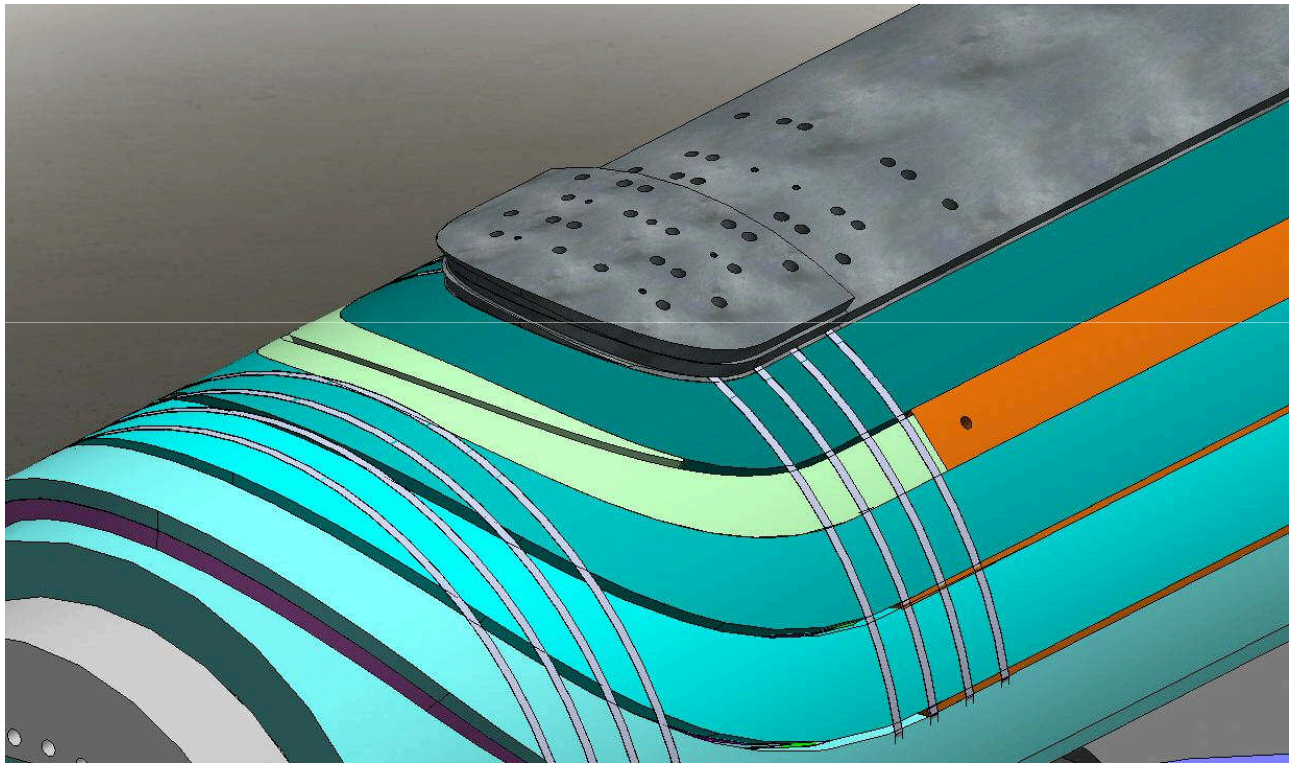
OP 1310 *(Redo the operation 1000-1040 until « S » preparation) with the second double pancake spool)*



Control:

Tools:

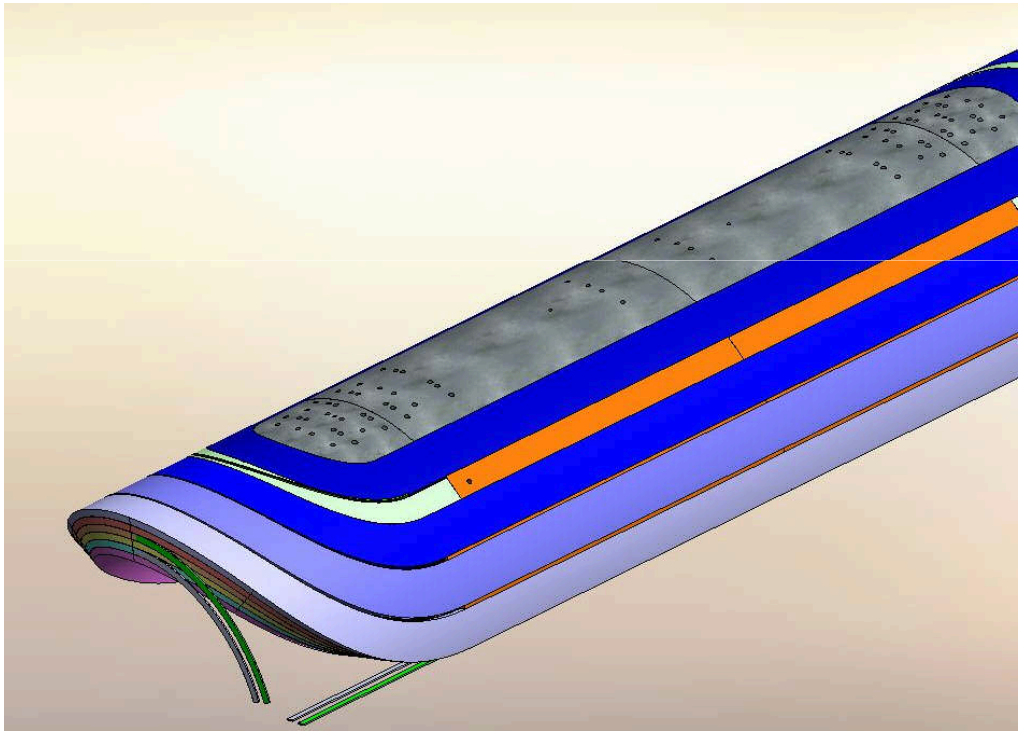
OP 1320 *(Positionning the spacers of the second double pancake)*



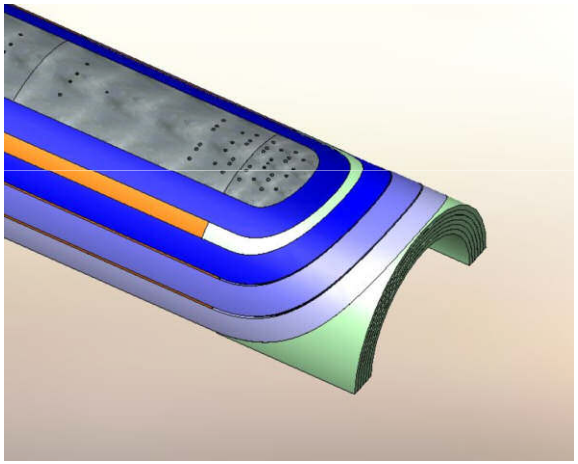
Control:

Tools:

OP 1330 *(Redo the different operations to have a coil with 3 double pancakes (without soldering))*



Opposite side of the connection



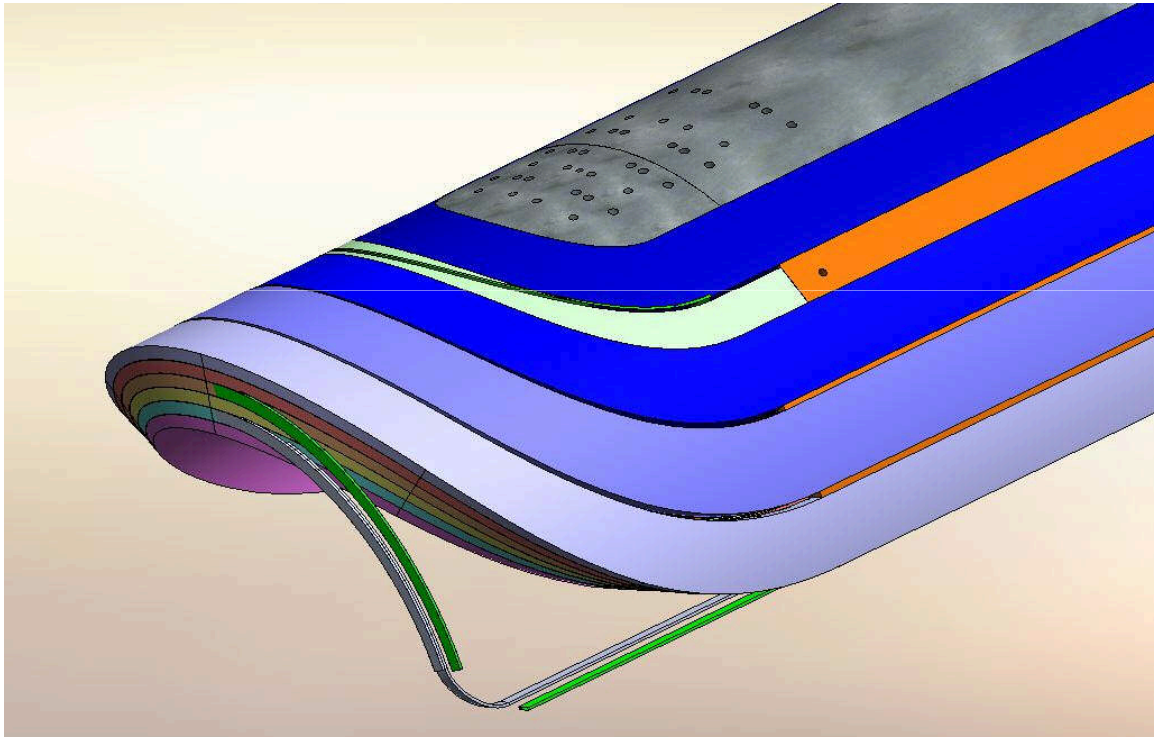
Control:

Tools:

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1340 *(Soldering the connexion between the first double pancake and the second double pancake)*

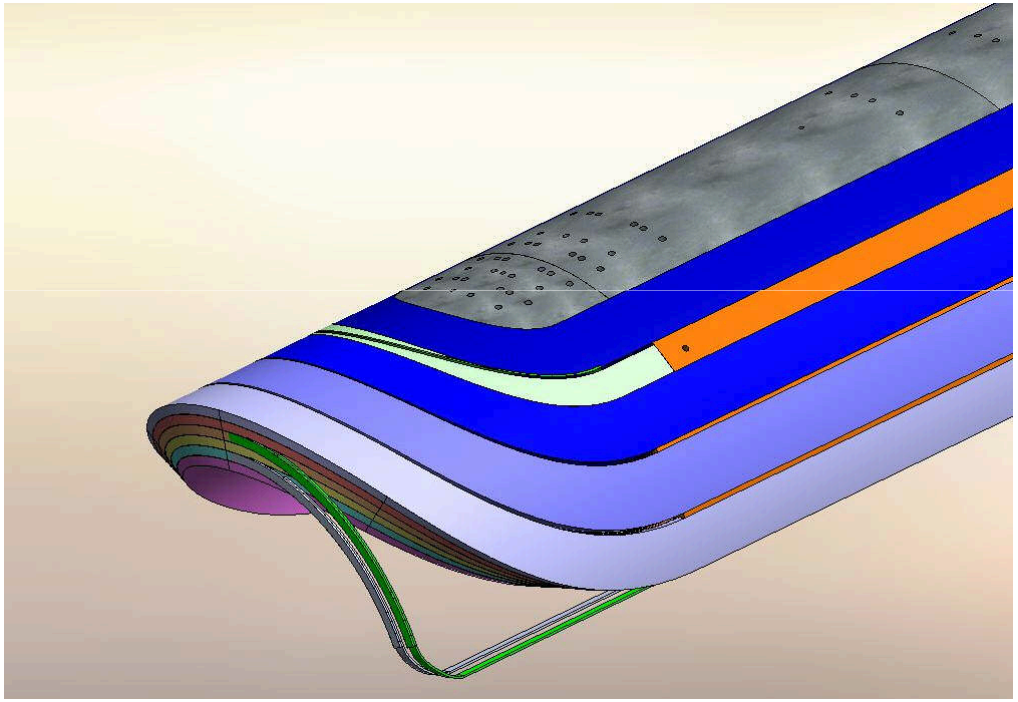


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

OP 1350 *(Soldering the connexion between the second double pancake and the third double pancake)*



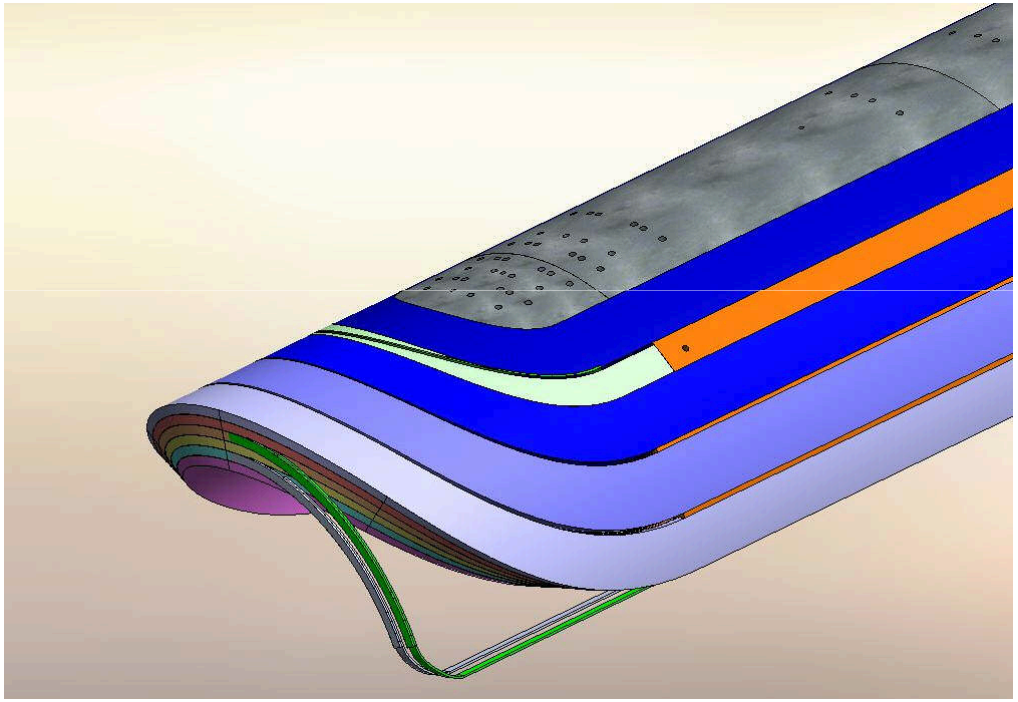
Control:

Tools:

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1360 *(Positionning the different sensors and wrapping the connections with Kapton, with resin sealing tape or fiber glass tape)*



Control:

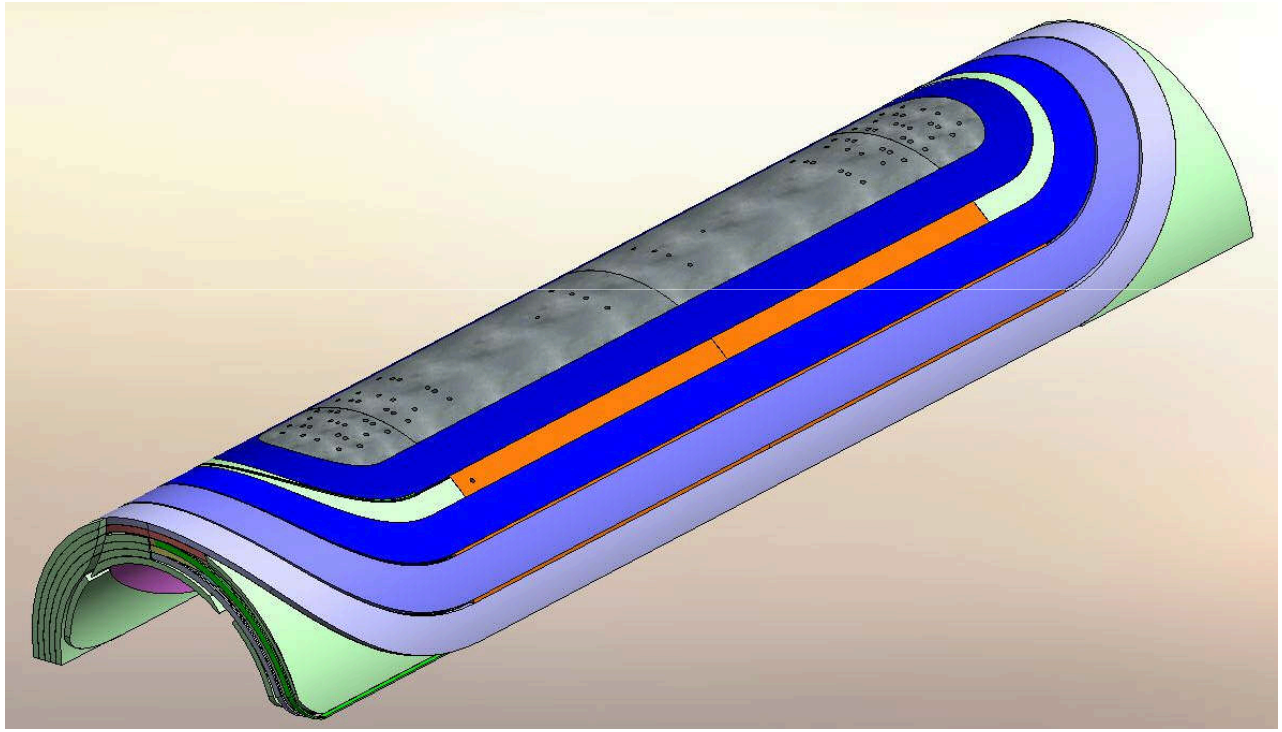
Tools:

Autor Morgan Delbecq/David Ramaugé

MAGNETS AND BEAM TRANSPORT

SHMS PROCESS

OP 1370(positionning the last spacers and filling the empty space with epoxy resin)

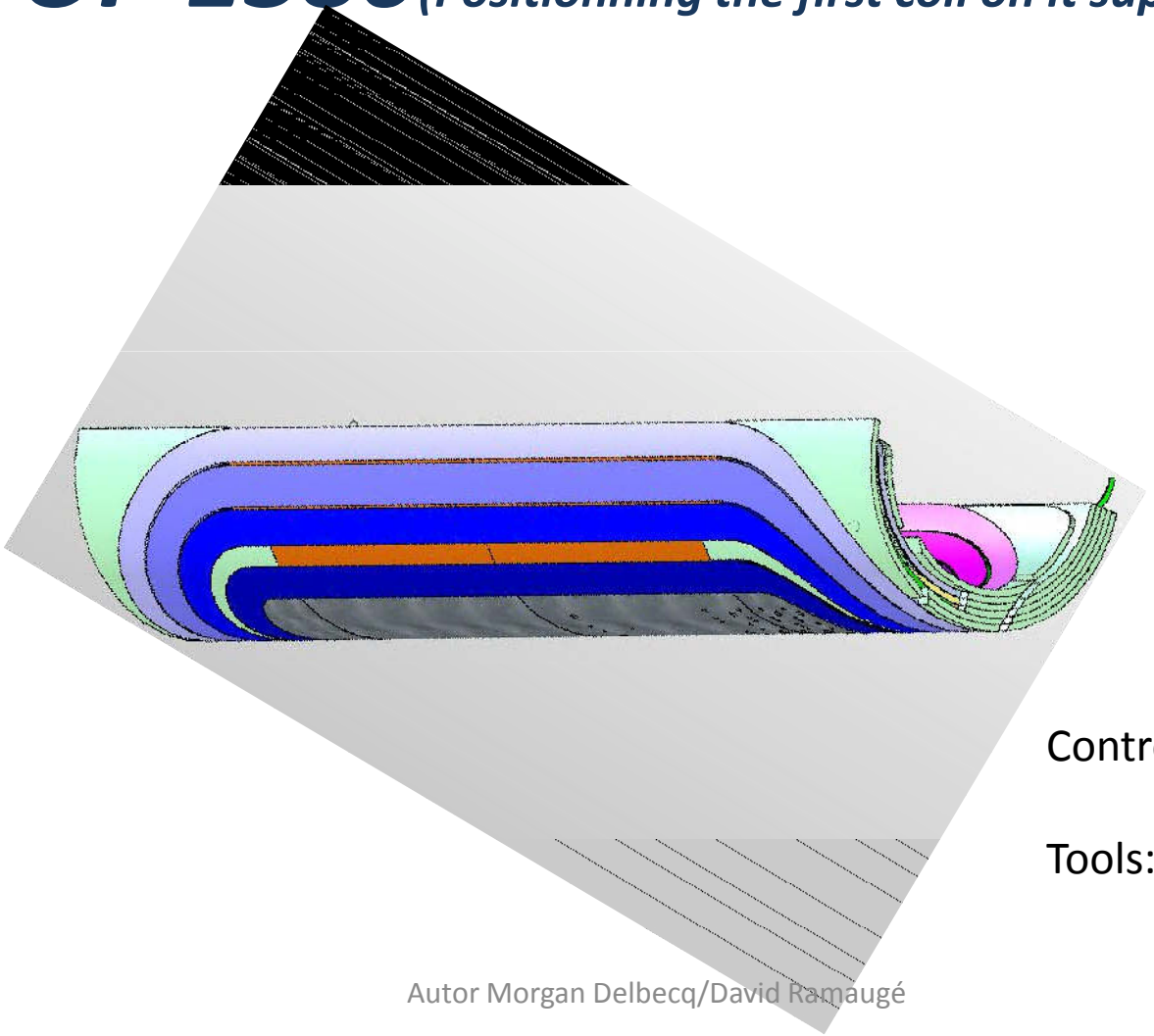


Control:

Tools:

Autor Morgan Delbecq/David Ramaugé

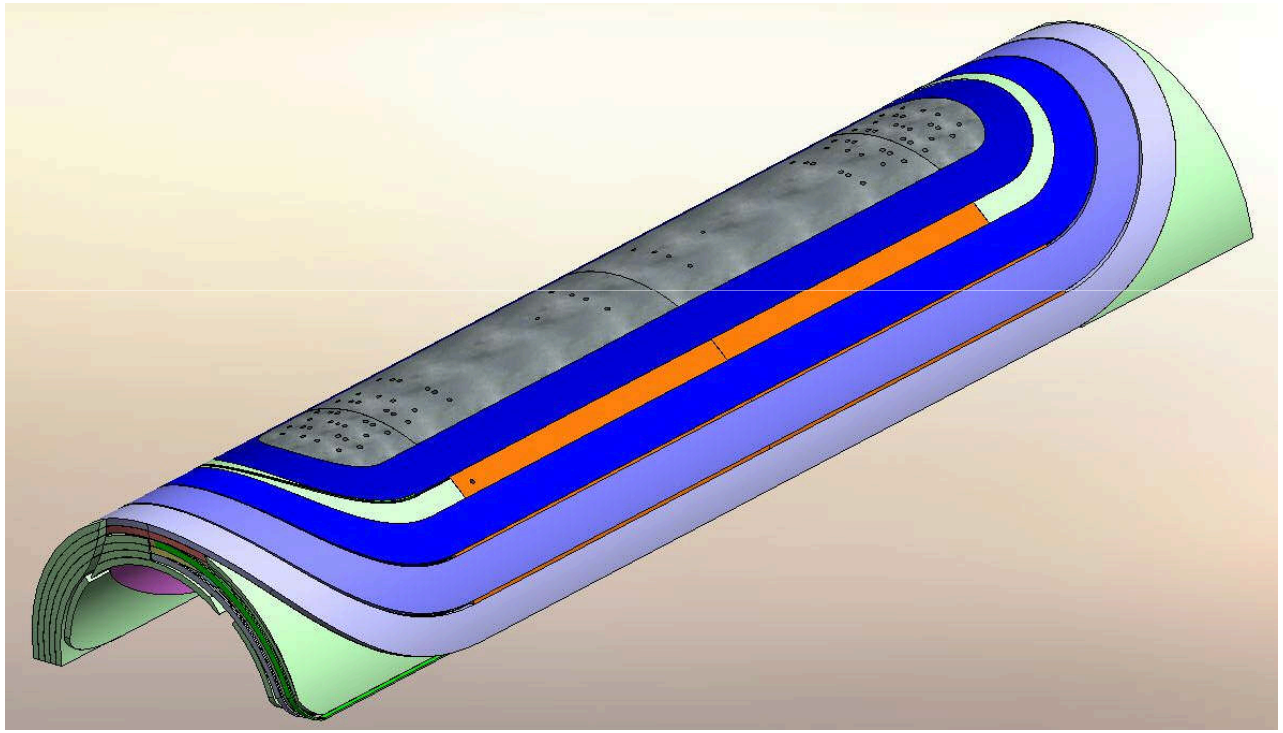
OP 1380 *(Positionning the first coil on it support)*



Control:

Tools: support #1

OP 1390 *(Redo a second coil (with soldering) to have two similar coil)*



Control:

Tools: