

COURSE - DAY I

Composite Wet Lay-up Fabrication

Make 1 ea. 4 ply monolithic laminate by Carbon prepreg 200 g. and 1 ea. layer of copper wire mesh.

Caution: USE SANDING ROOM AND PROTECTIVE BREATHING MASK WHEN SANDING.

Caution: FOLLOW **MSDS** FOR CORRECTIVE PROTECTION.(Hand protection, etc.....)

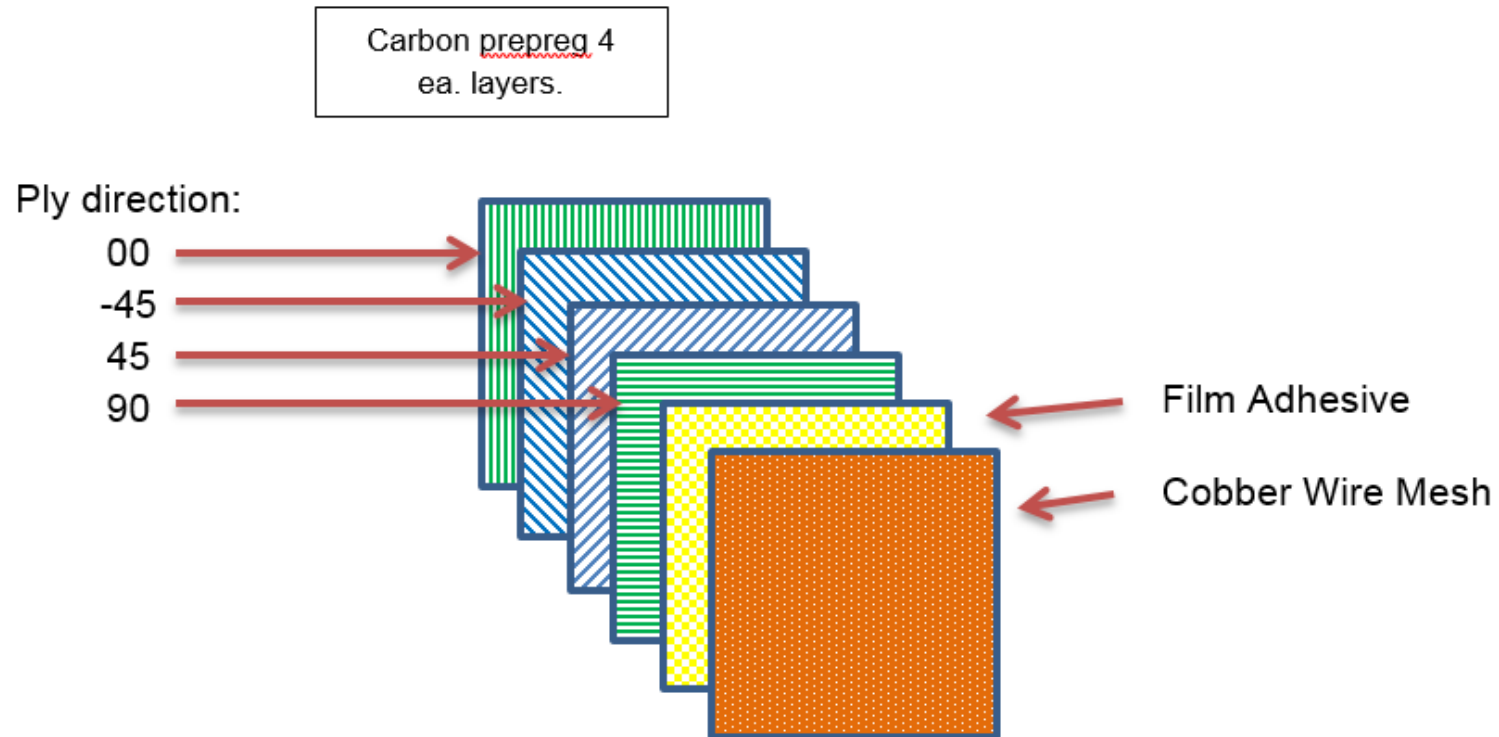
Caution: OBSERVE BEFORE WORKING WHERE PROTECTION IS STORED.

Material	Tool
EWT 300g, Twill weave Fabric	Peel Ply
PRO SET LAM 125/226 Resin 100/35	Breather
Carbon Prepreg 200 g	Flash breaker tape
	Black backing tape
	Backing Film
	Hot bonder

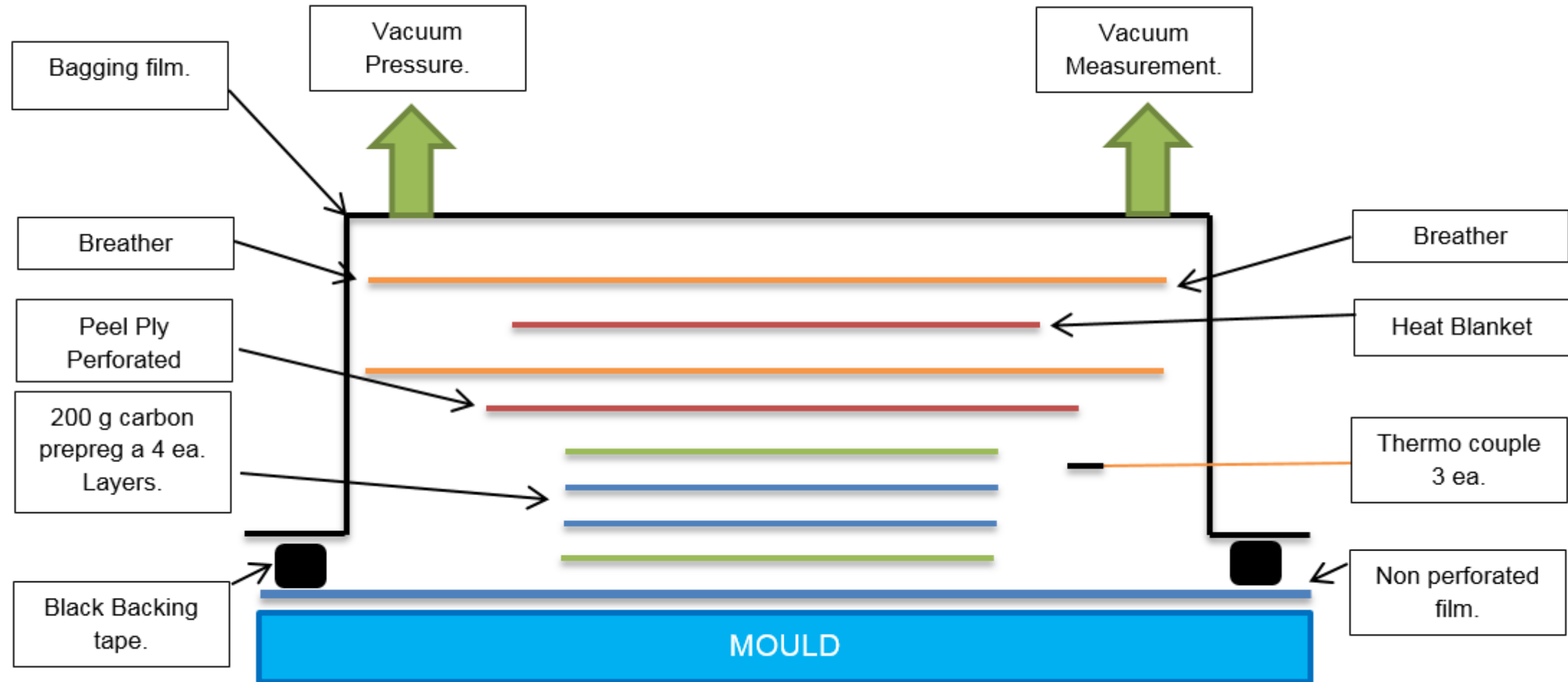
Main Processes of Composite Wet Lay-up Fabrication

1. Prepare the carbon prepreg fiber layers with copper wire mesh, for fabrication of 1 ea. Monolithic laminate 250 *250 mm.
2. Use a mould plate covered non perforated film as a resin barrier.
3. Layup the prepreg fabric as same as direction as pr. Drawing
4. Perform the Vacuum bagging with heat blanket and thermo couplers 3 ea.
5. Cure the laminate for 8 hours/80 C, with ramp up and down +3 C.
6. Consult the teacher to set the Hot Bonder.

Composite Wet Lay-up Fabrication



Composite Wet Lay-up Fabrication



Main required materials for task:

Prepare all required materials and tools.



Carbon prepreg

Adhesive

Tools table

Prepare work table



Select and measure the required dimensions and orientation of carbon prepreg layers, according to task diagram



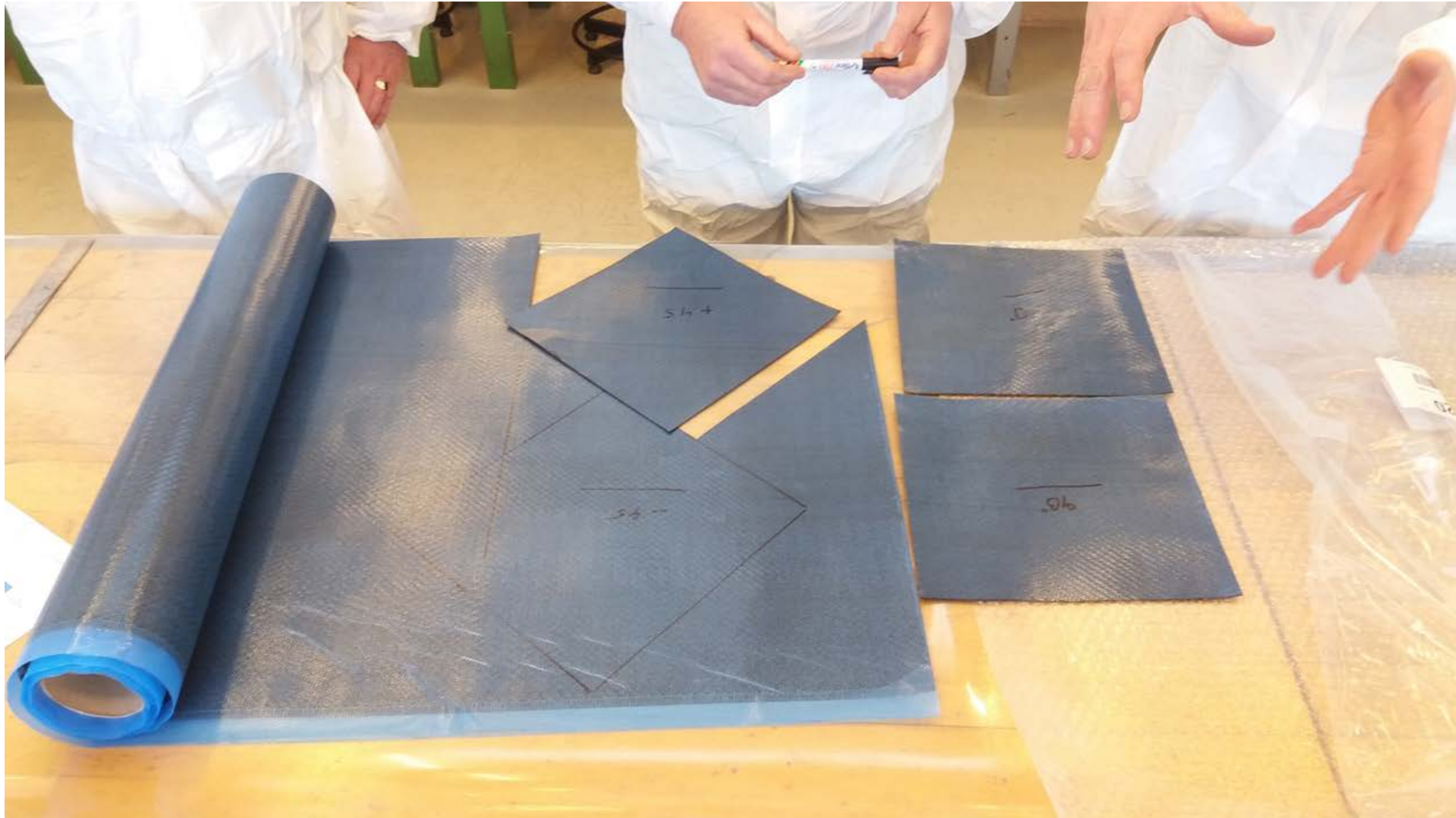
Determine required size and orientation of layers according to task diagram



After determination the required size of prepreg layers, cut them by special scissor



Different layers cutting process



Different layers cutting process



Select and cut the required size of adhesive layer according to task drawing



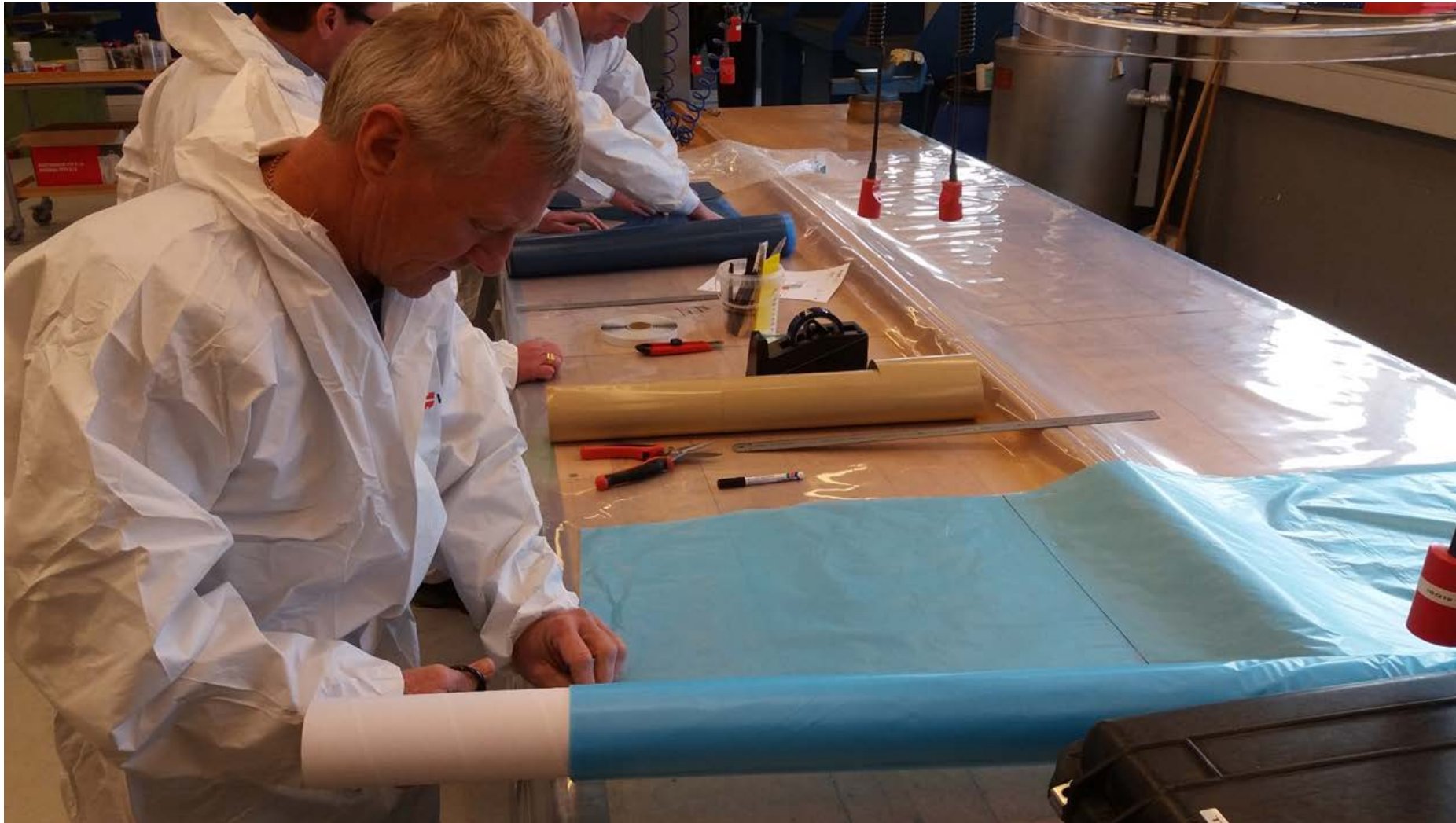
One layer of carbon prepreg



Cut the required size layer of copper mesh



determine the required size of peels layers for bagging process for task



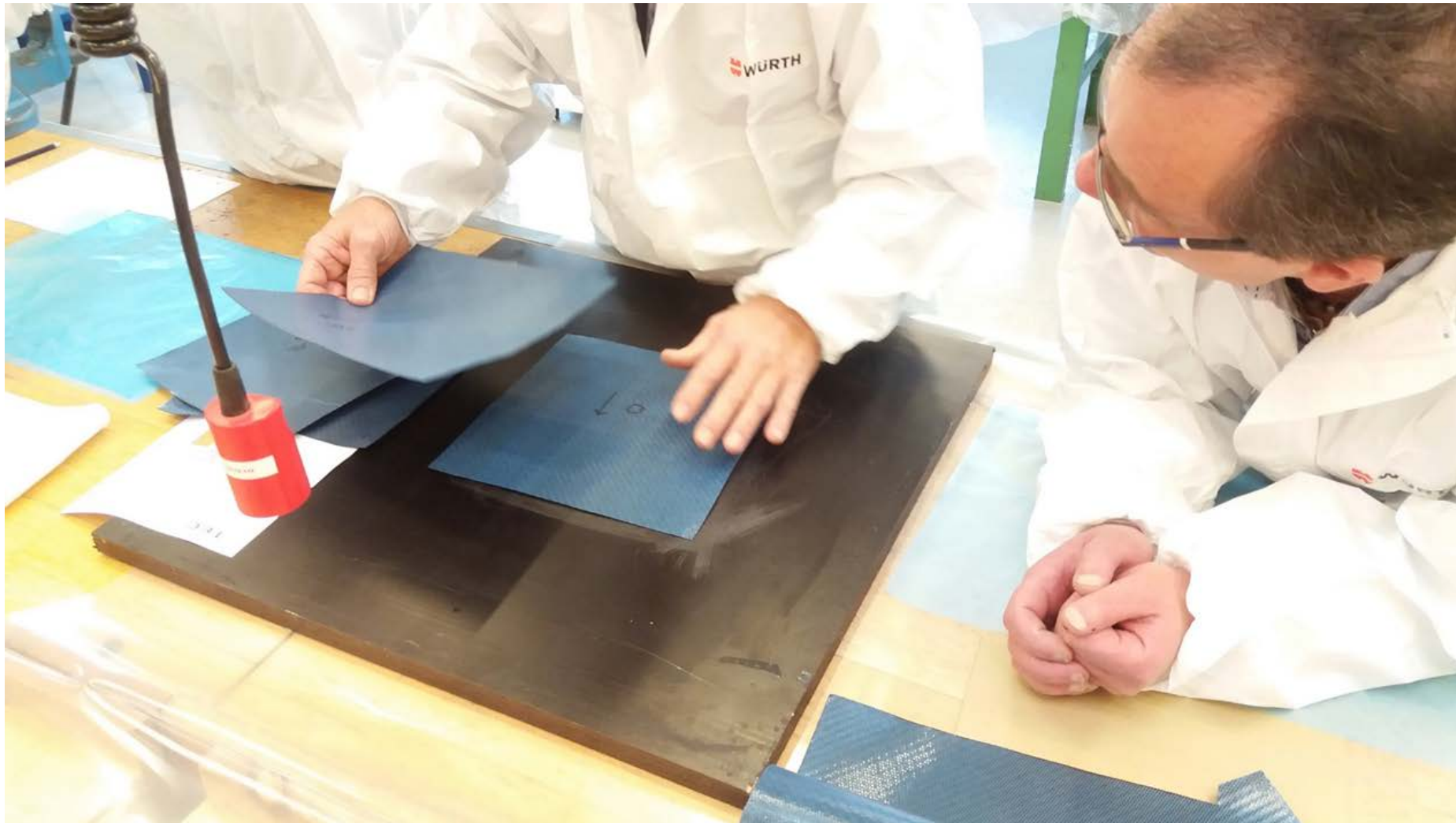
Cut the required size of peel layers for bagging process



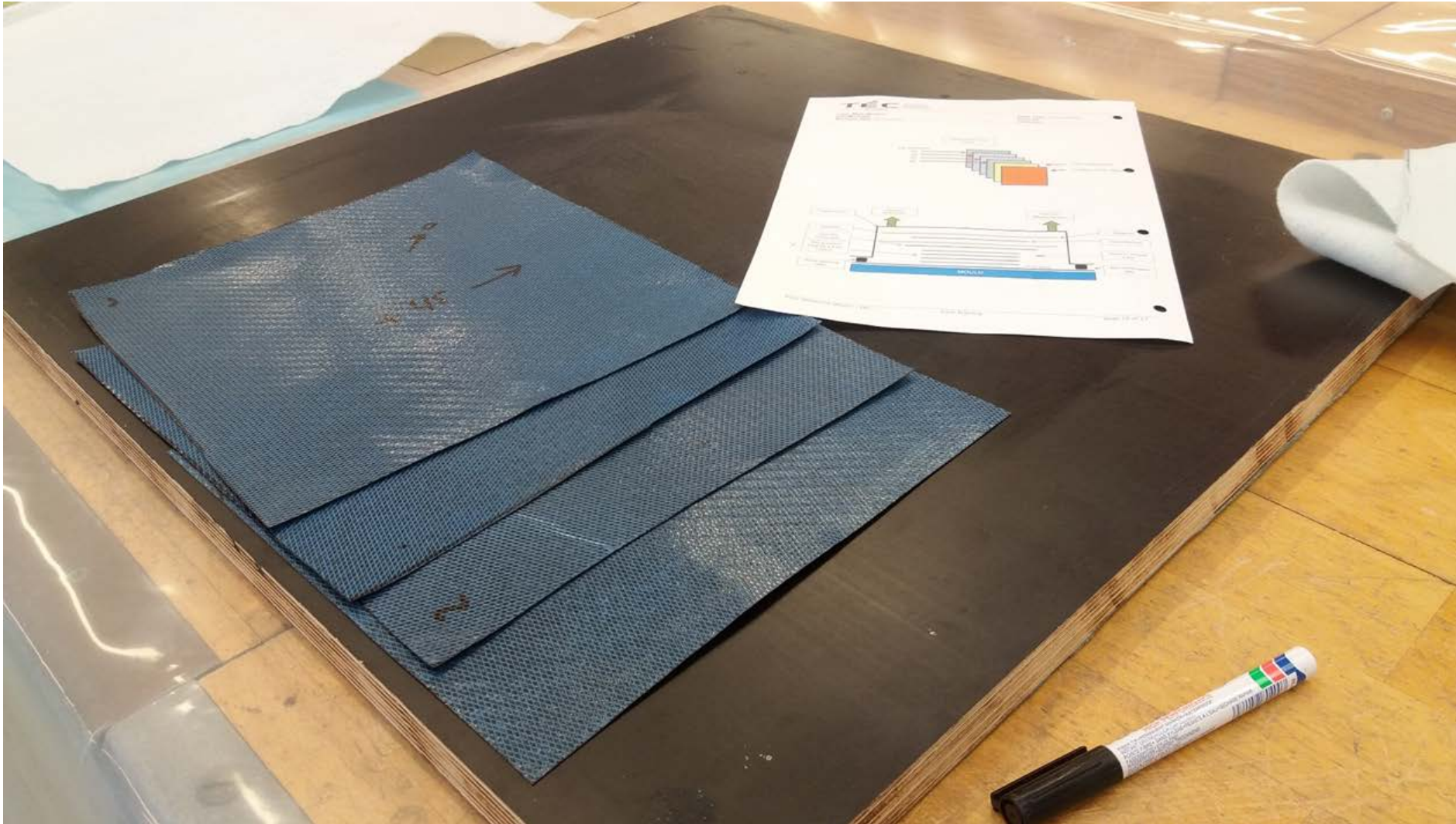
determine the required size of breather layers for bagging process



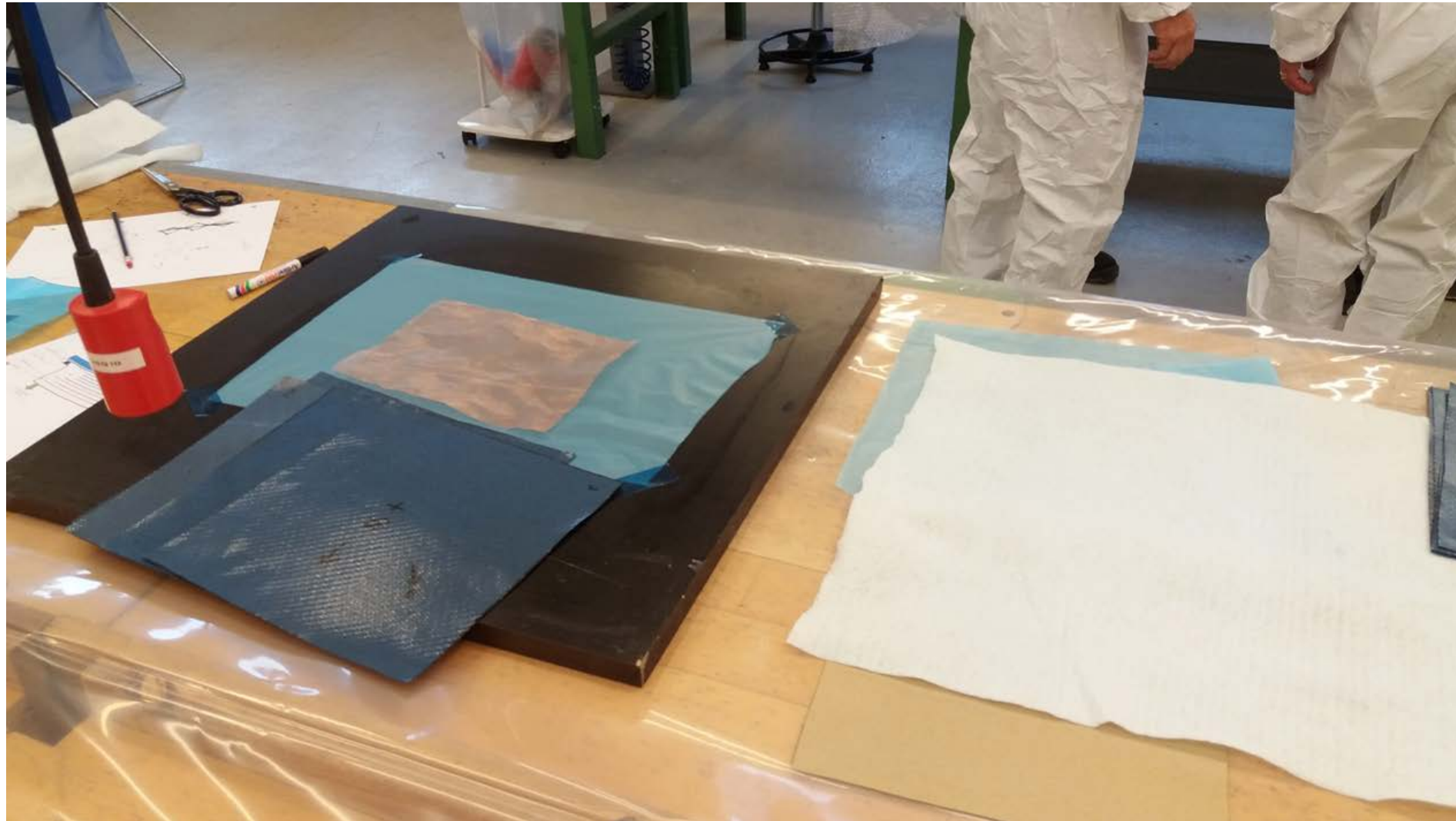
Preparing all layers in different orientation for next step



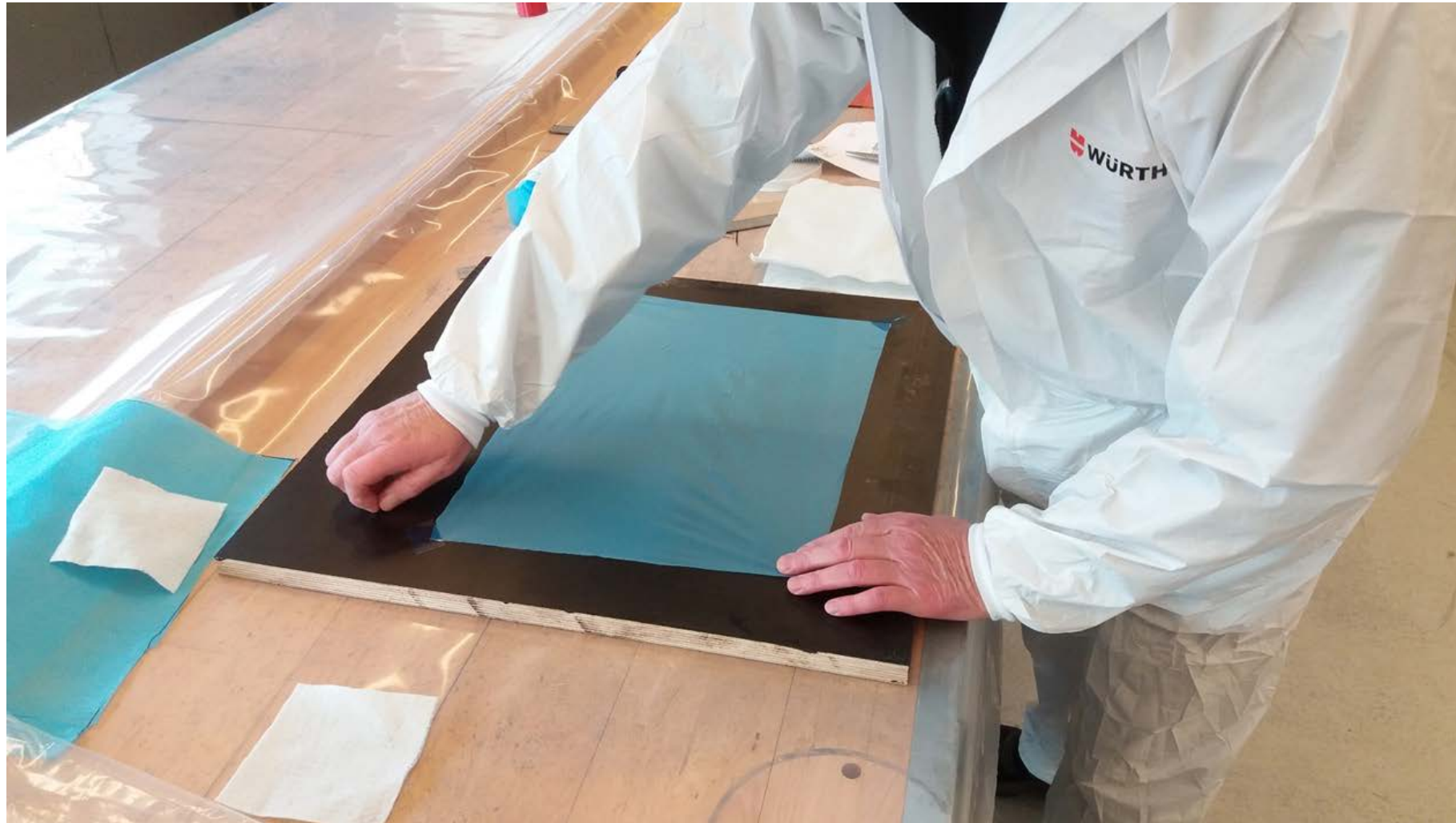
Mark all of your nylon templates with the type of material, ply number and orientation.



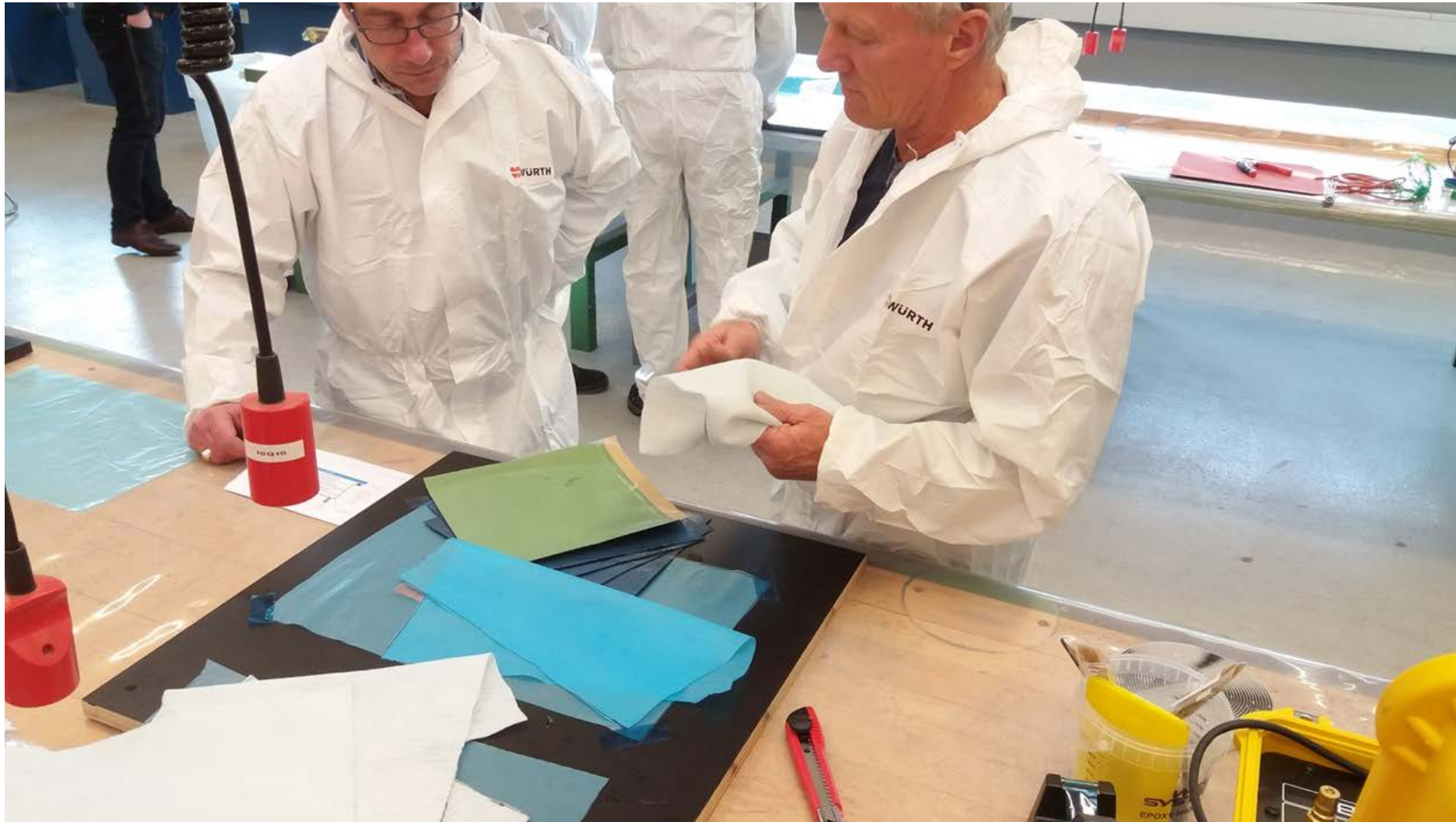
Ready Prepreg layers and copper mesh layer



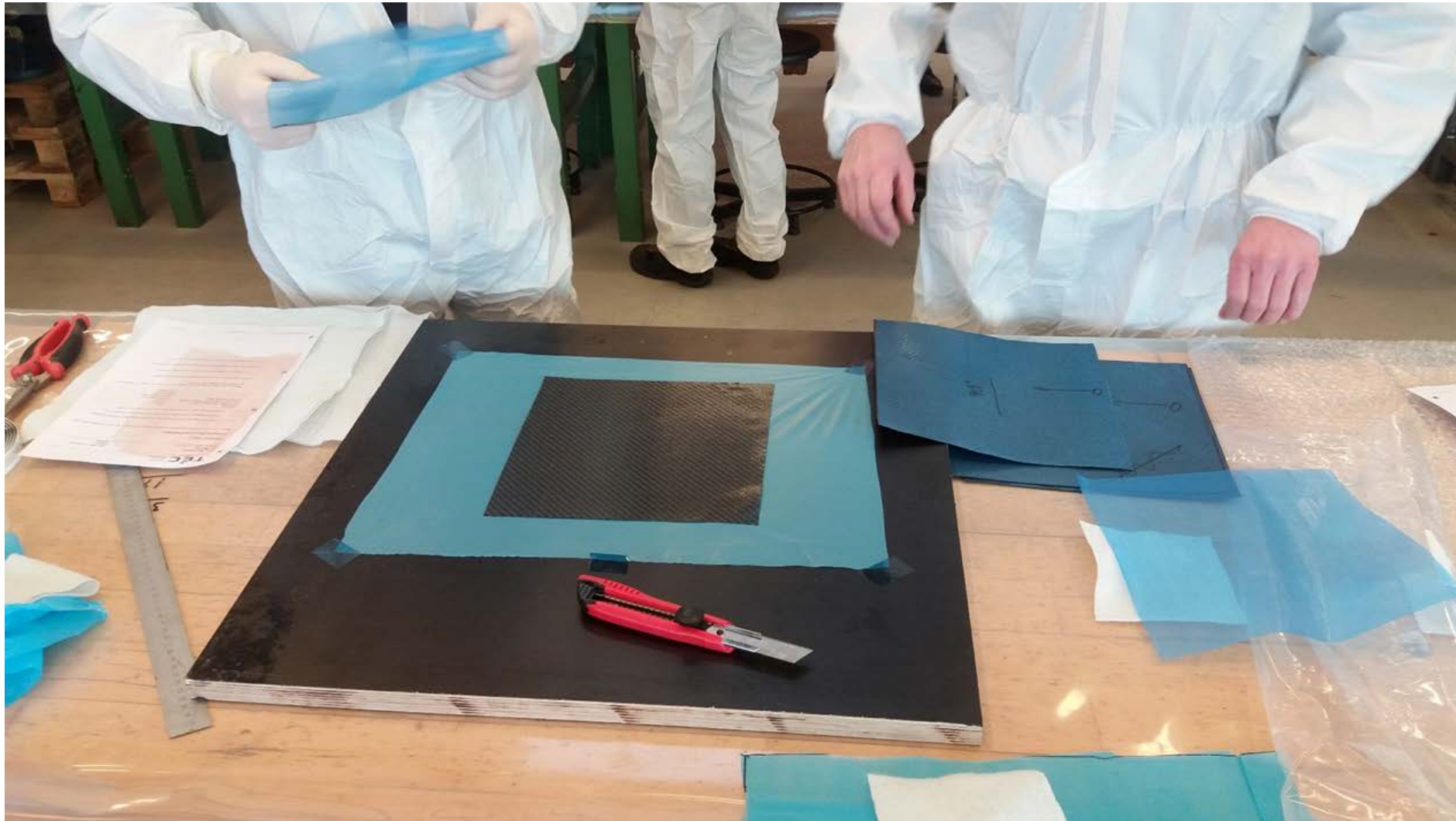
Mould preparing process: put peel layer



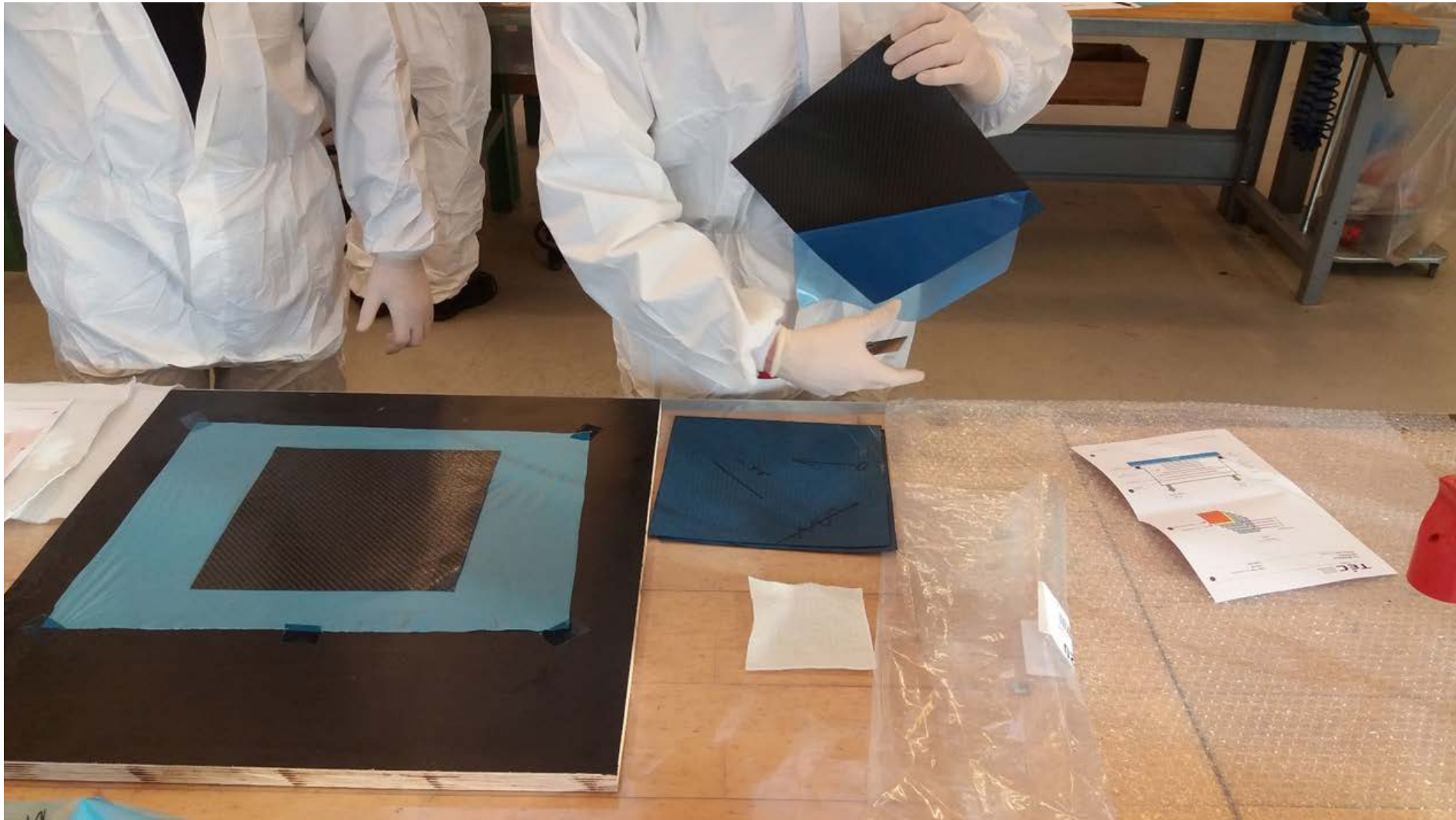
Mould preparing process for bagging: breather layers



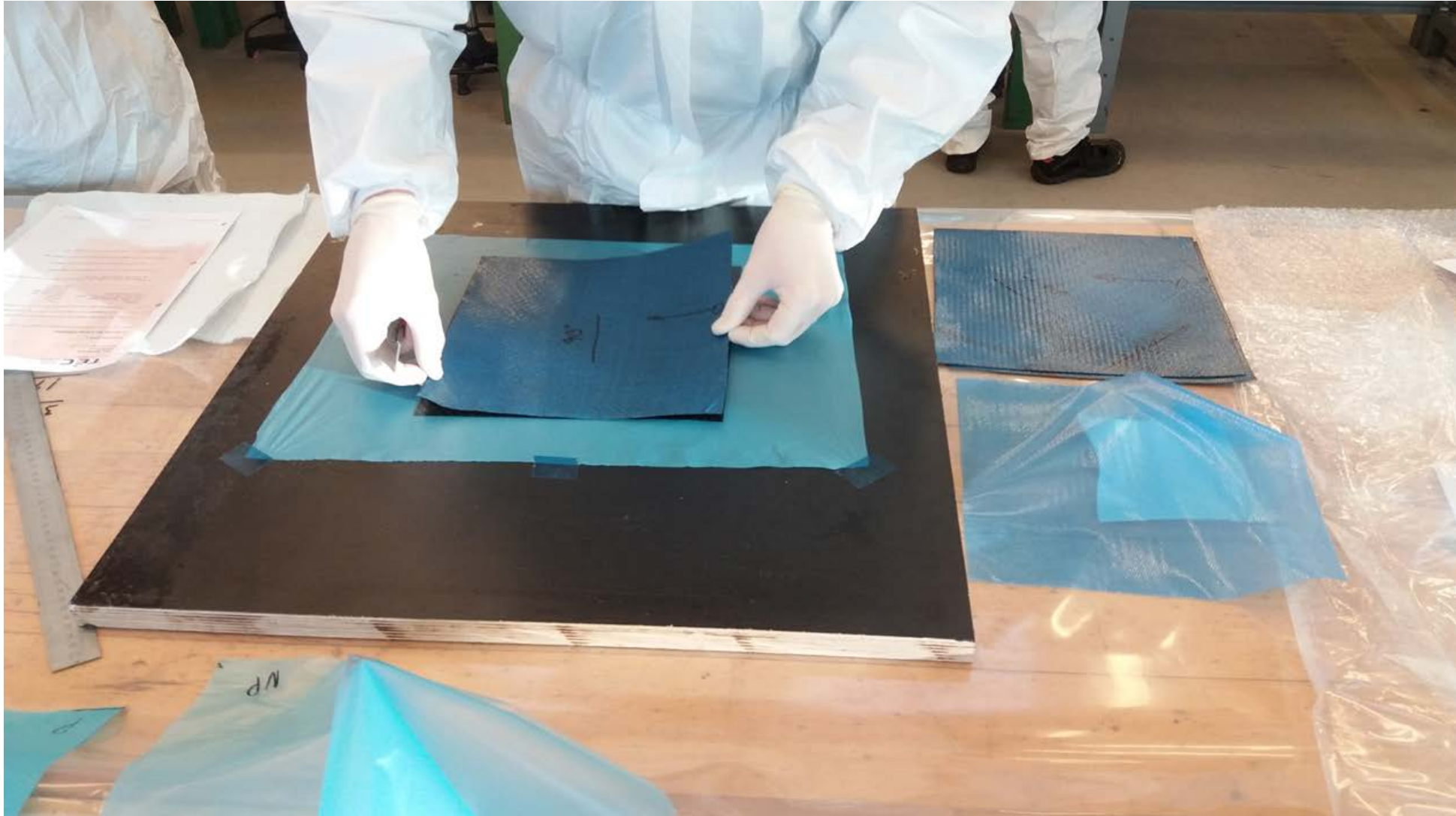
Each template will be placed and orientated to meet your ply-table orientation as previously designed to meet your structural design.



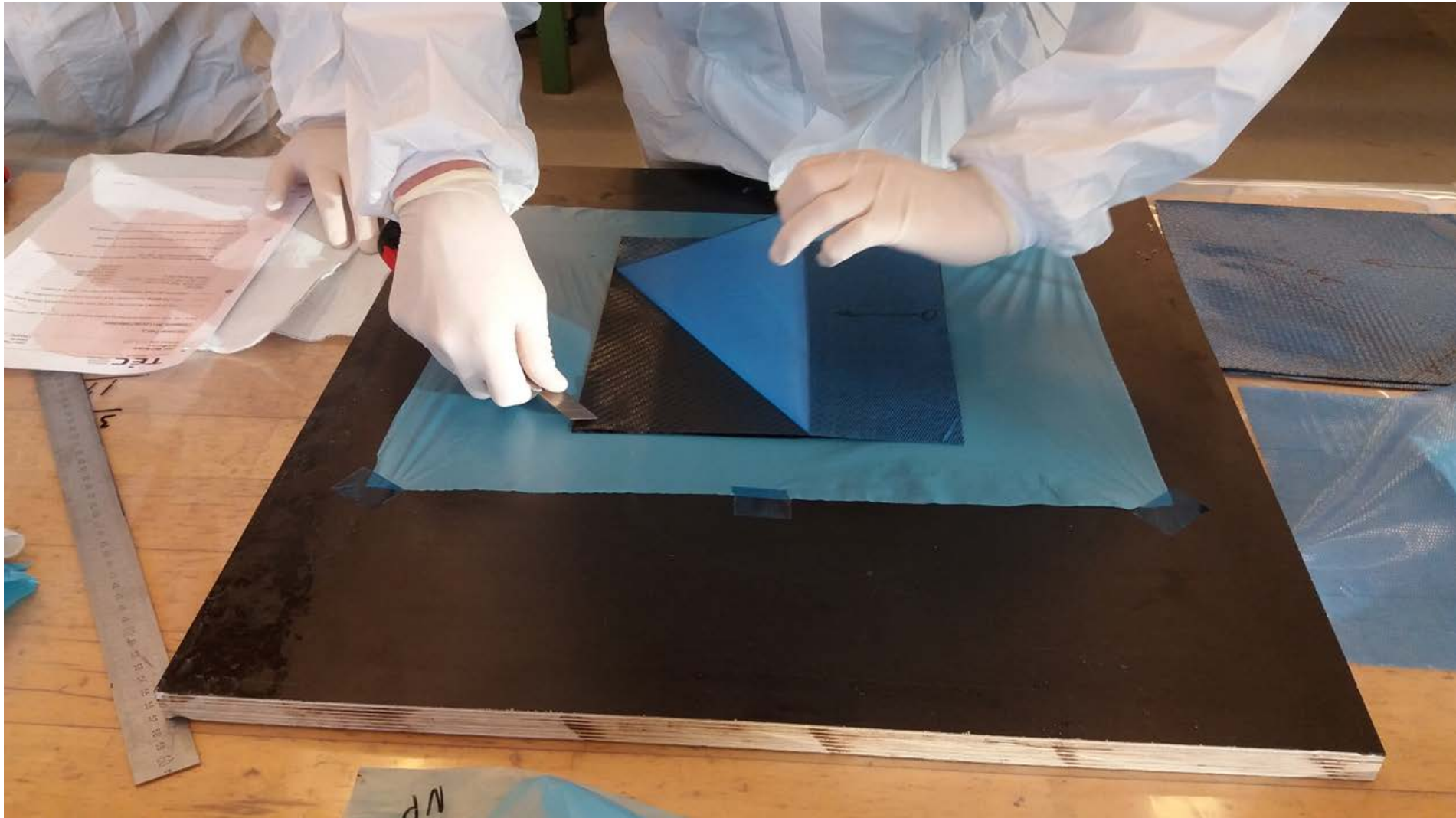
Mould preparing process: remove the layer of parting film from prepreg layer before putting on mould



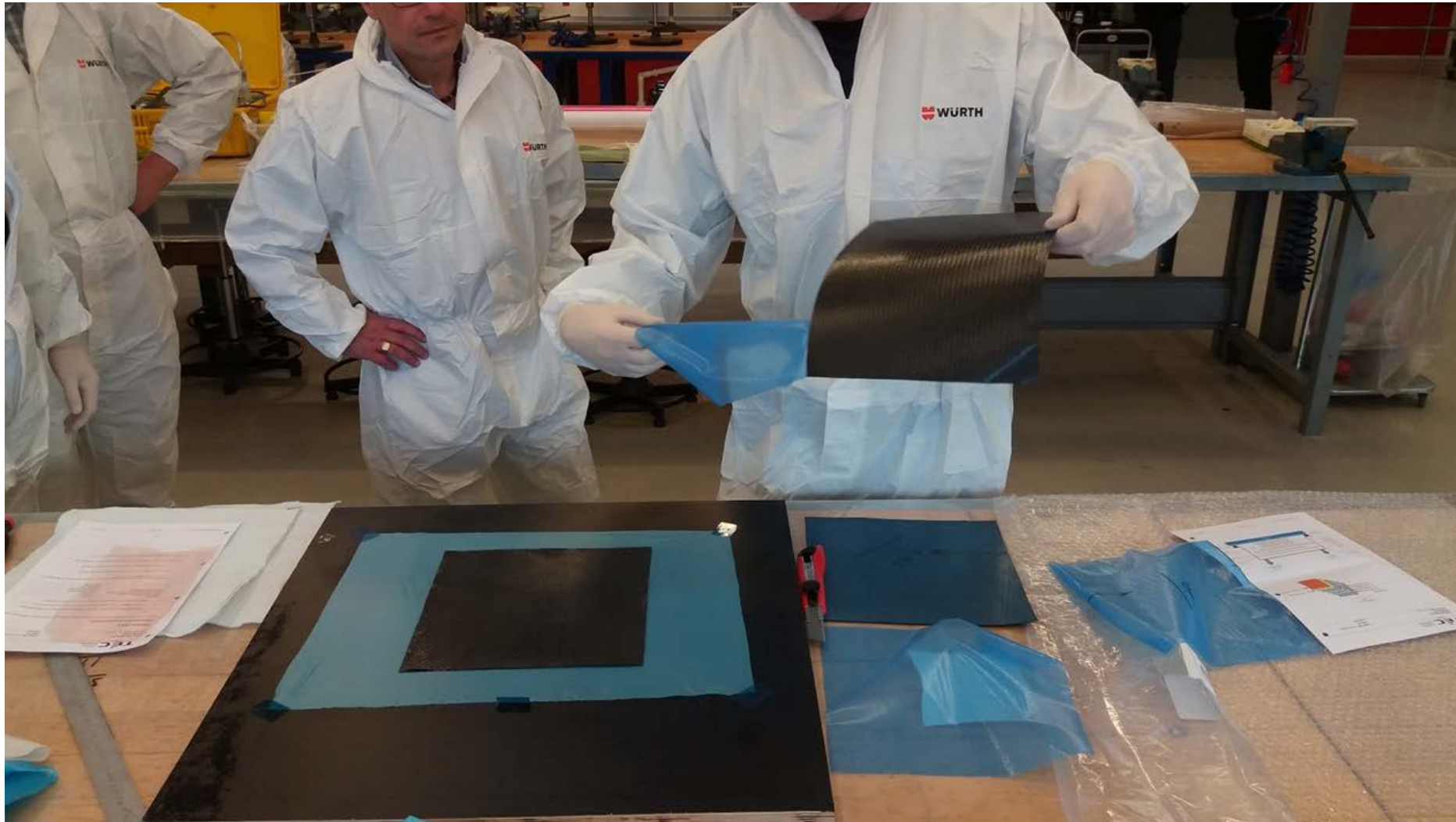
Mould preparing process: put prepreg layer on mould Turn ply over with the ply number and the ply orientation side up



Mould preparing process: Once the ply is in place remove the top second layer of nylon film

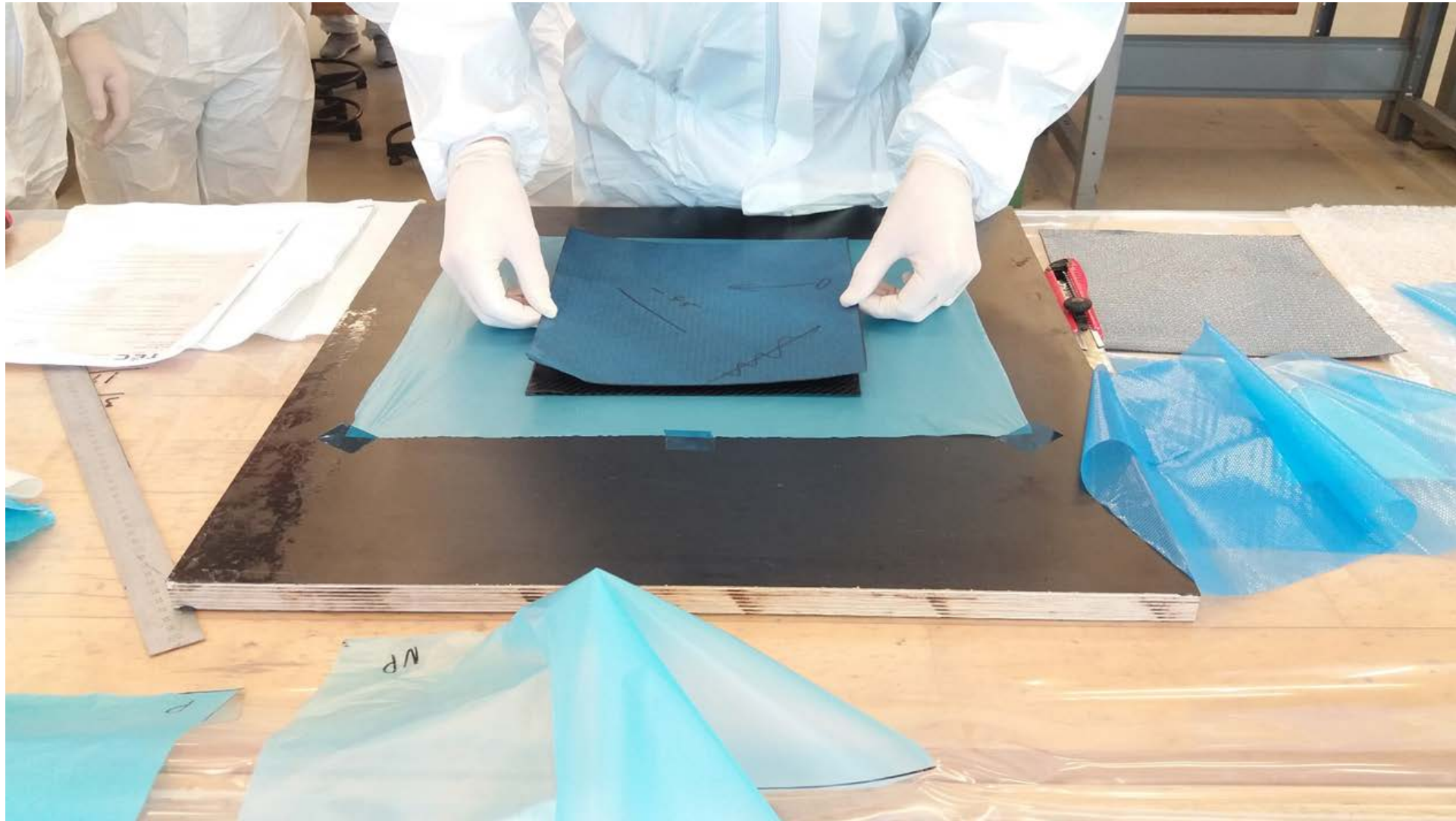


Mould preparing process: repeat the same procedures for others layers according to required orientation

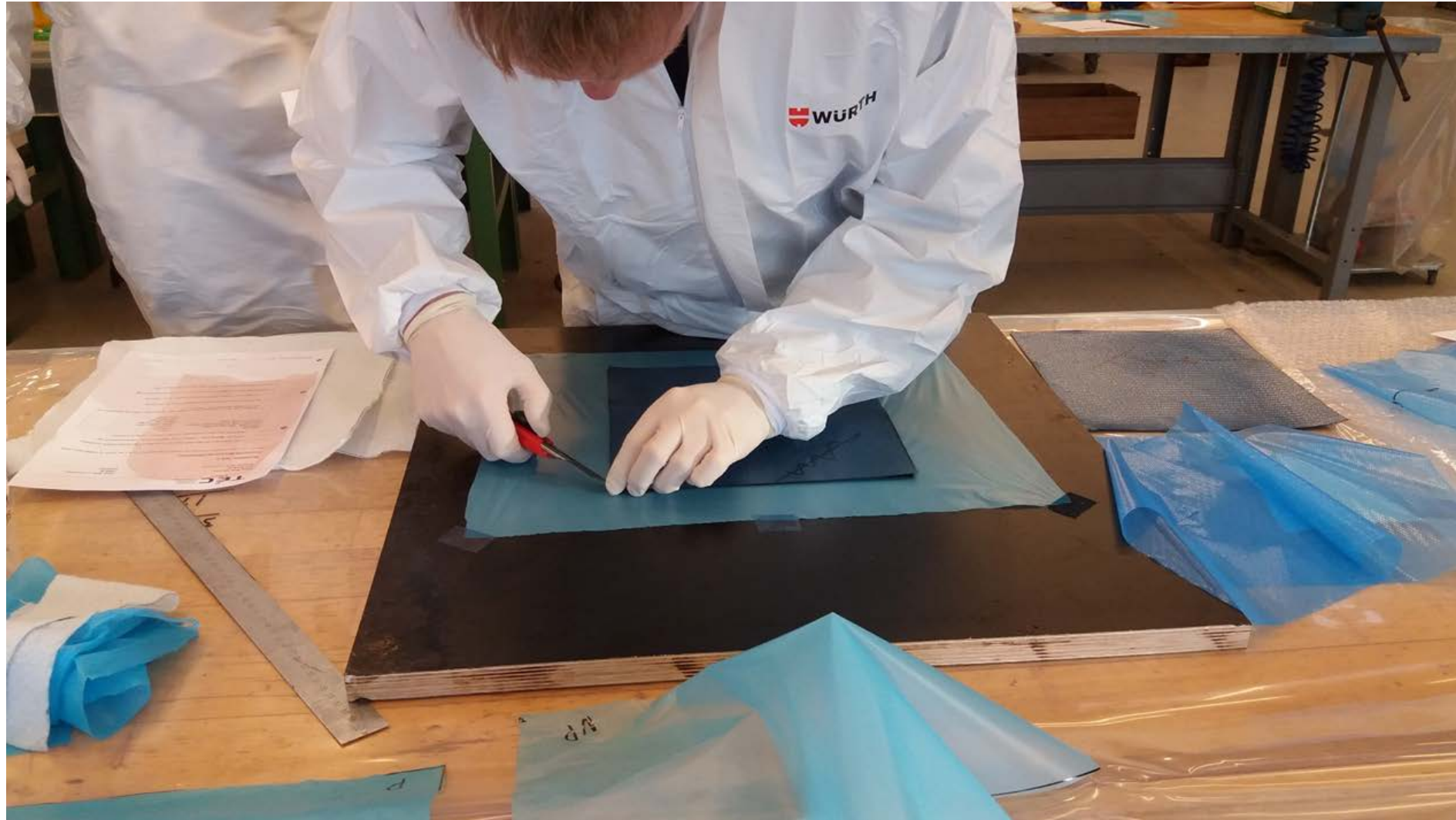


Prepreg layers process on mould:

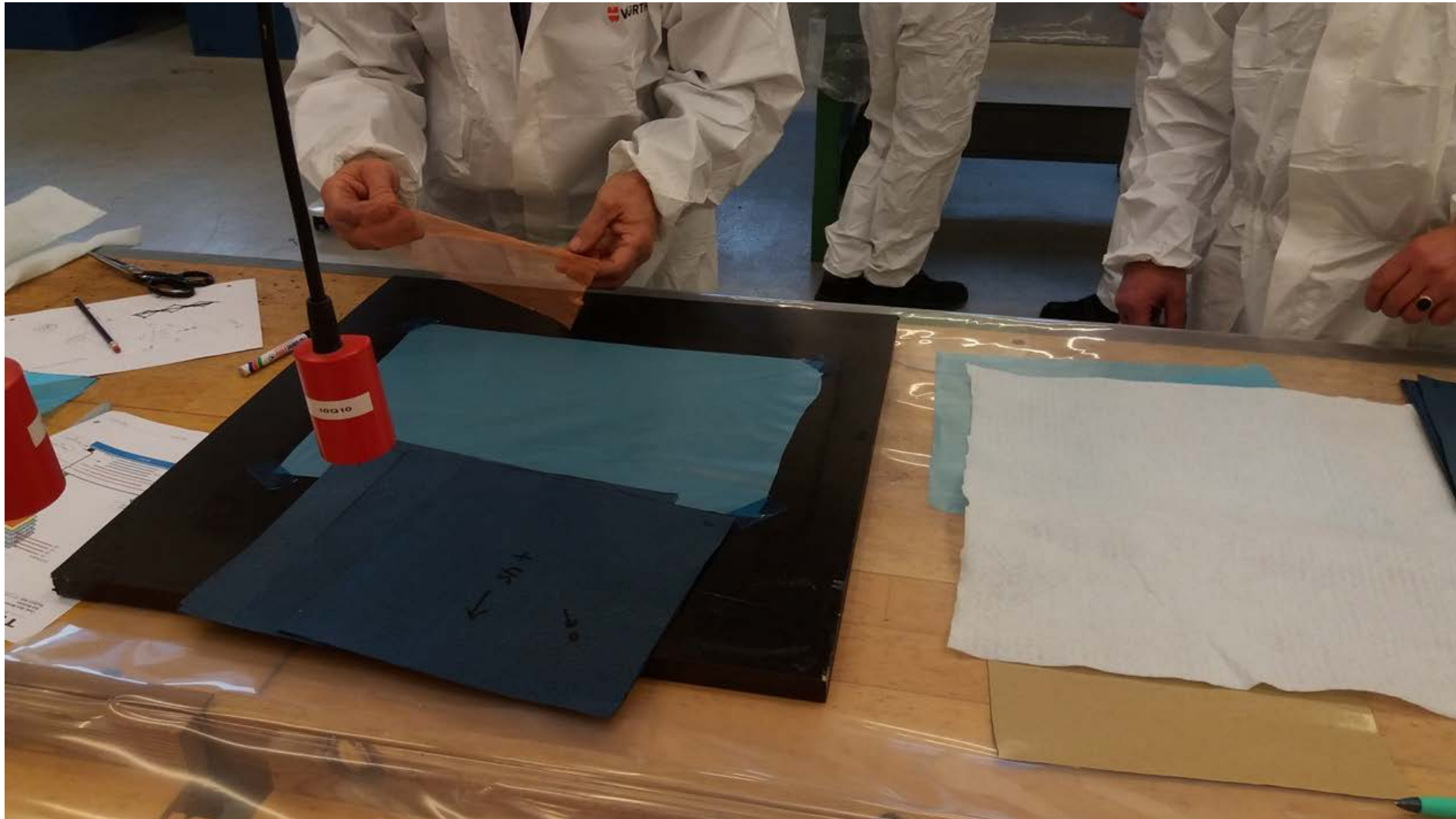
Repeat the above process until all plies have been laid up in the proper sequence and orientation.



Prepreg layers process on mould



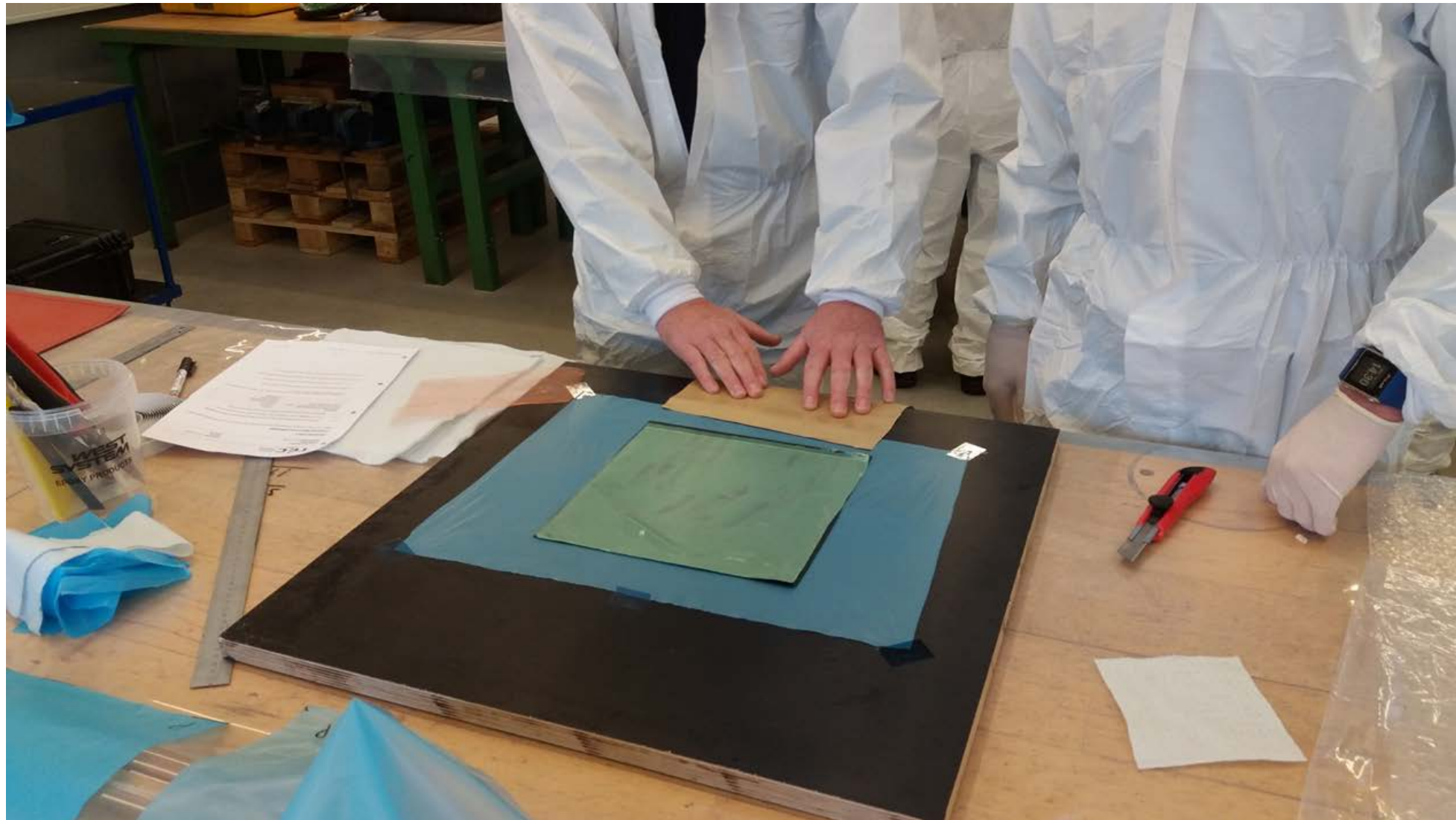
Put copper mesh layer on mould



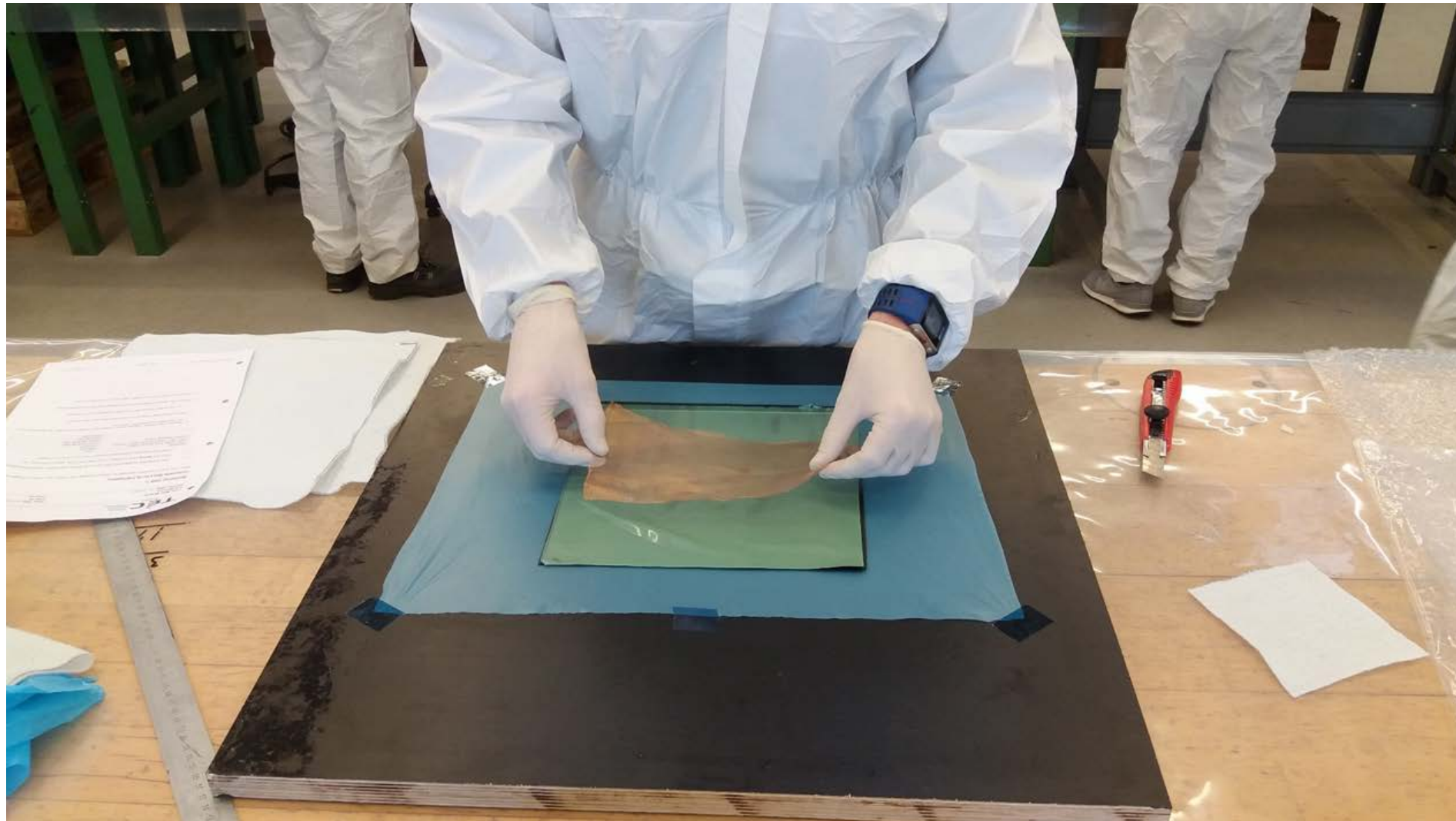
Prepare and cut one layer of adhesive



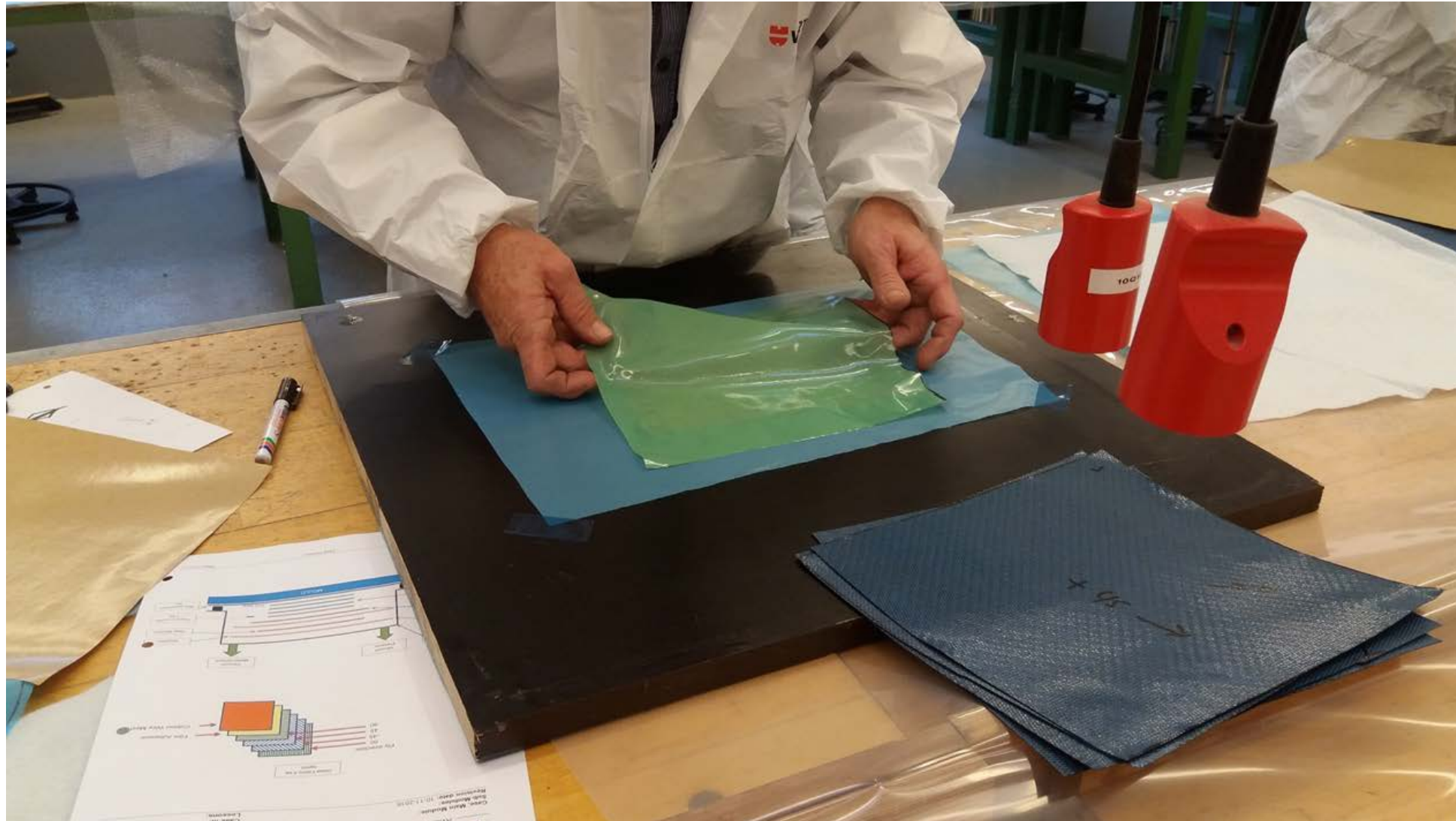
Put adhesive layer



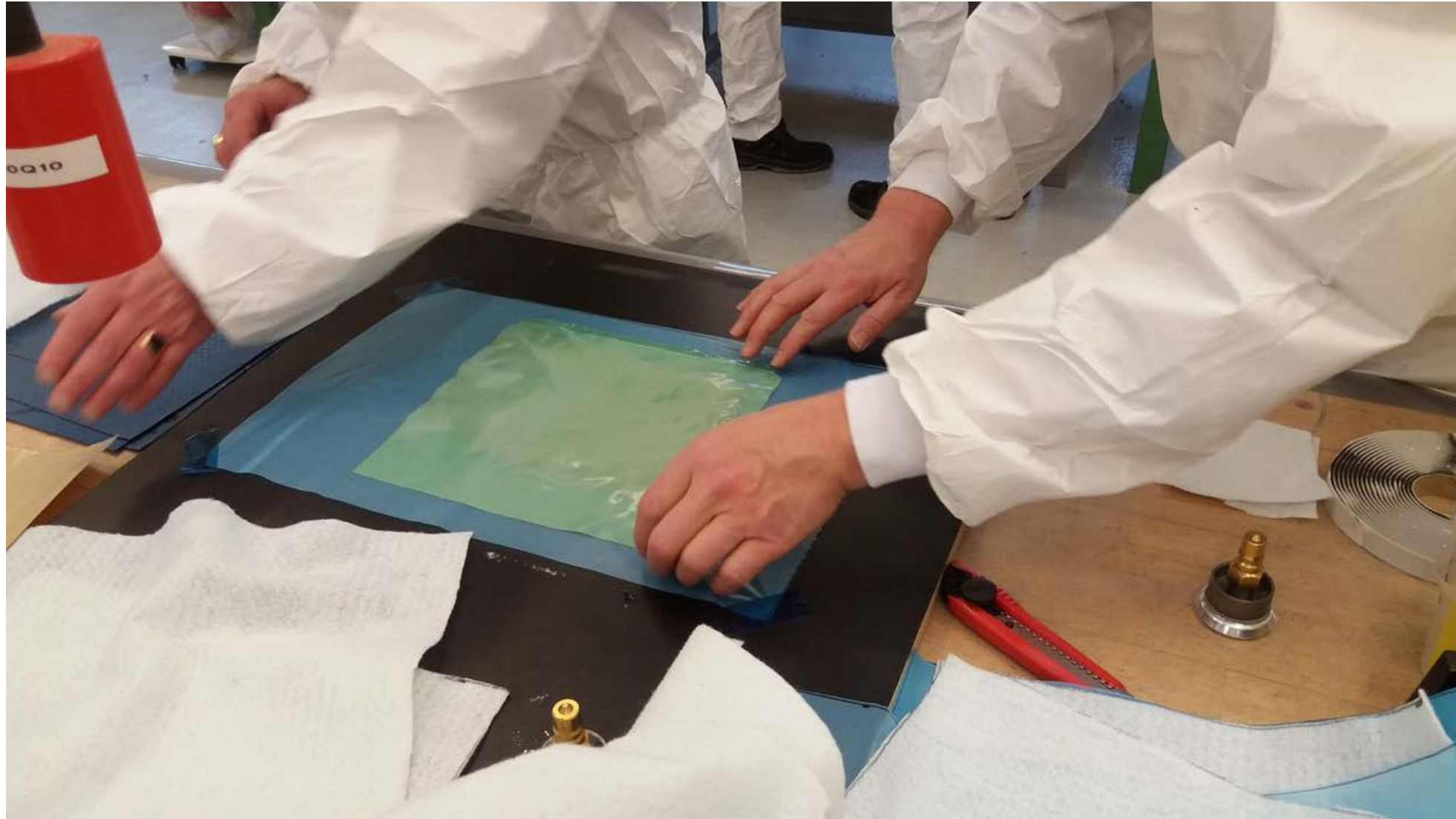
Put copper mesh layer



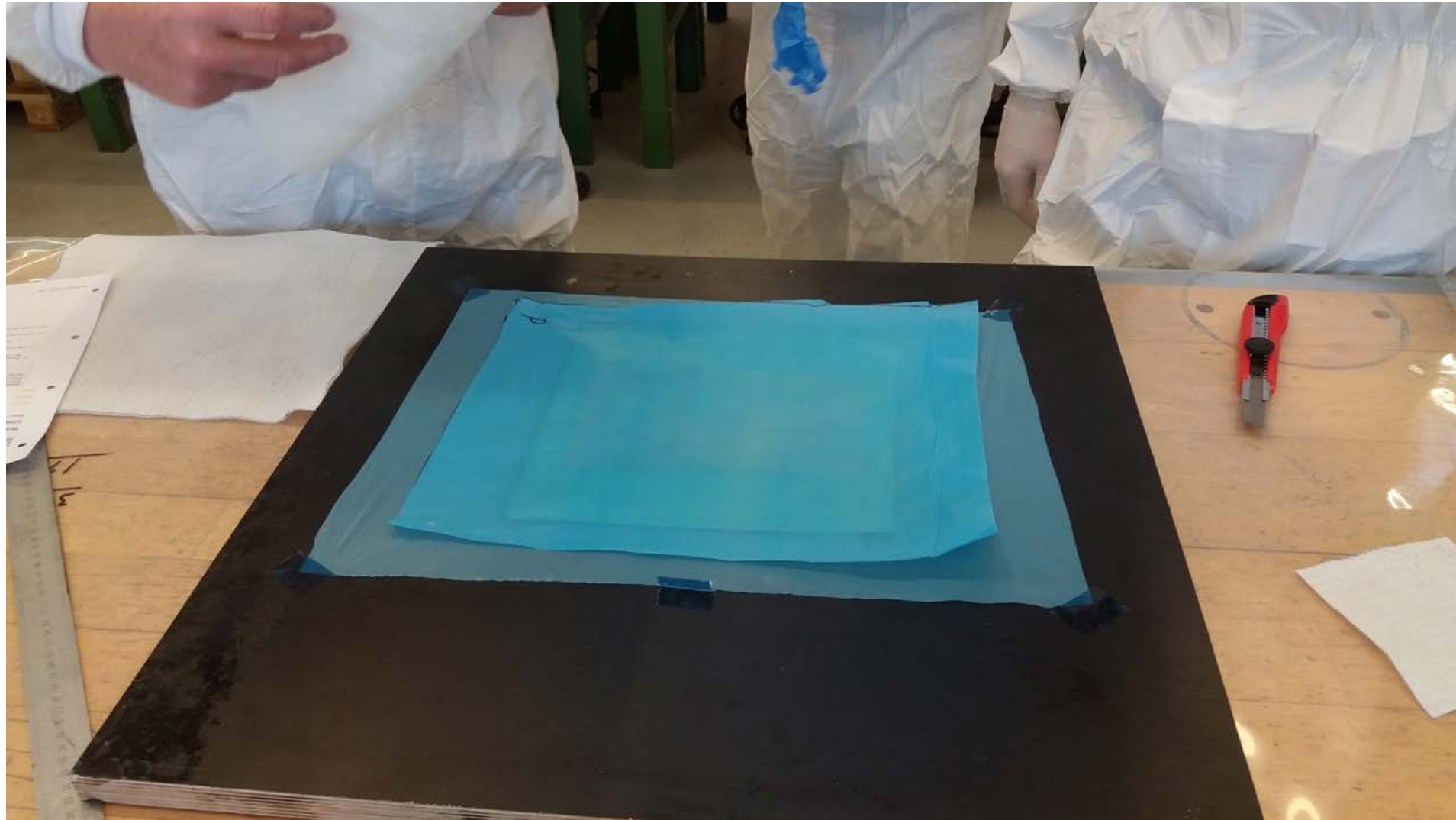
Put adhesive layer



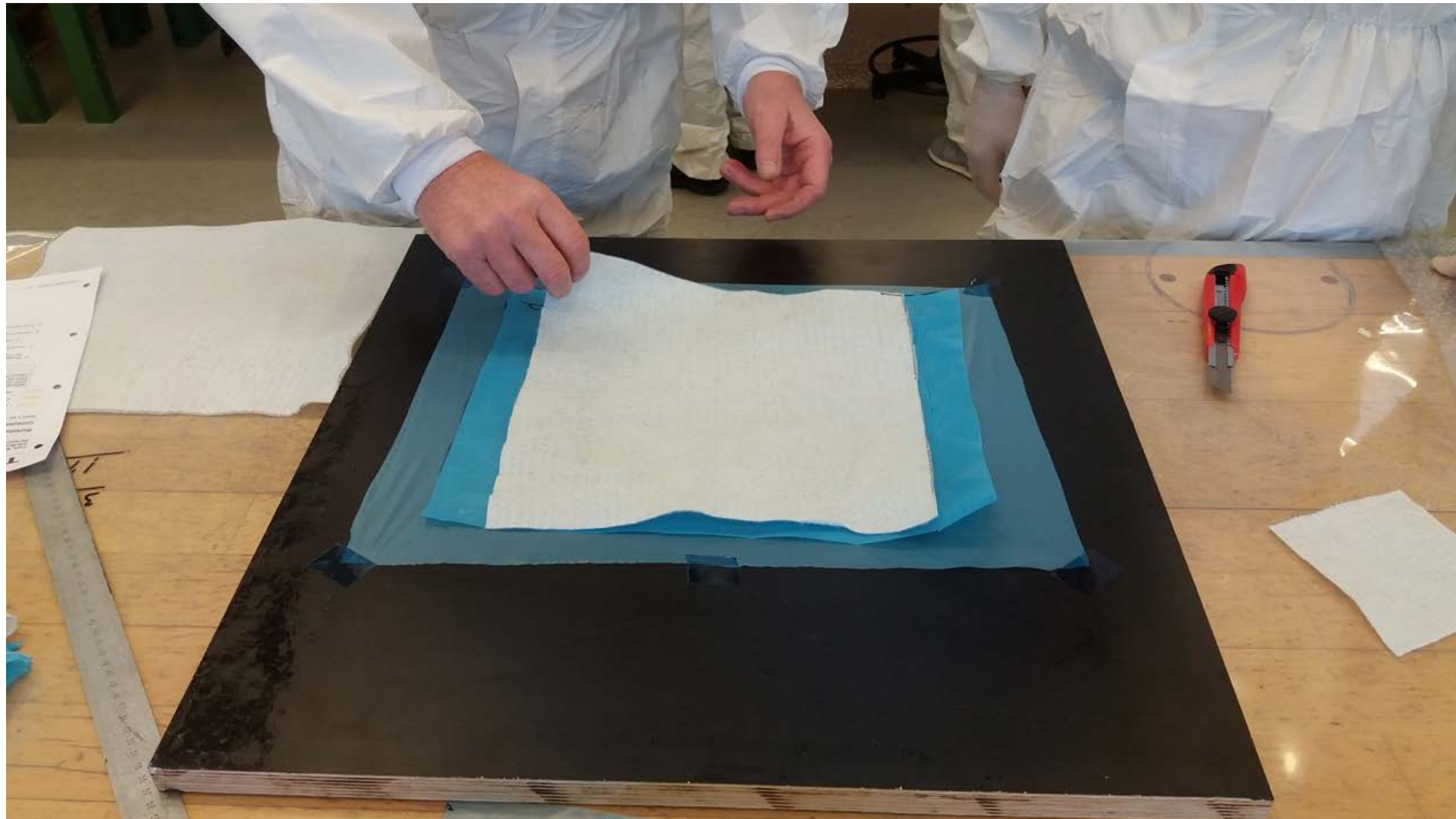
Put adhesive layer



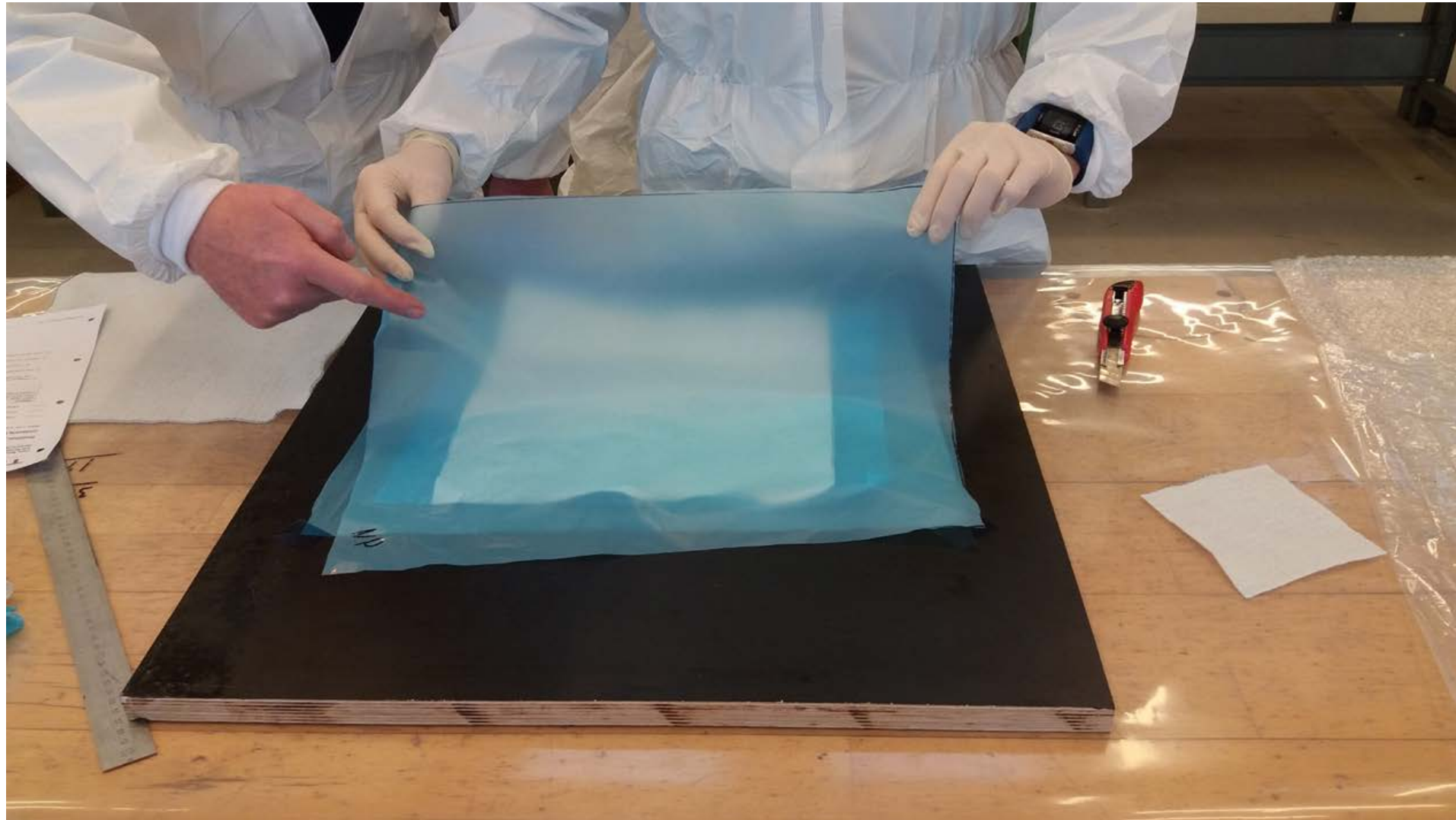
Put peel layer



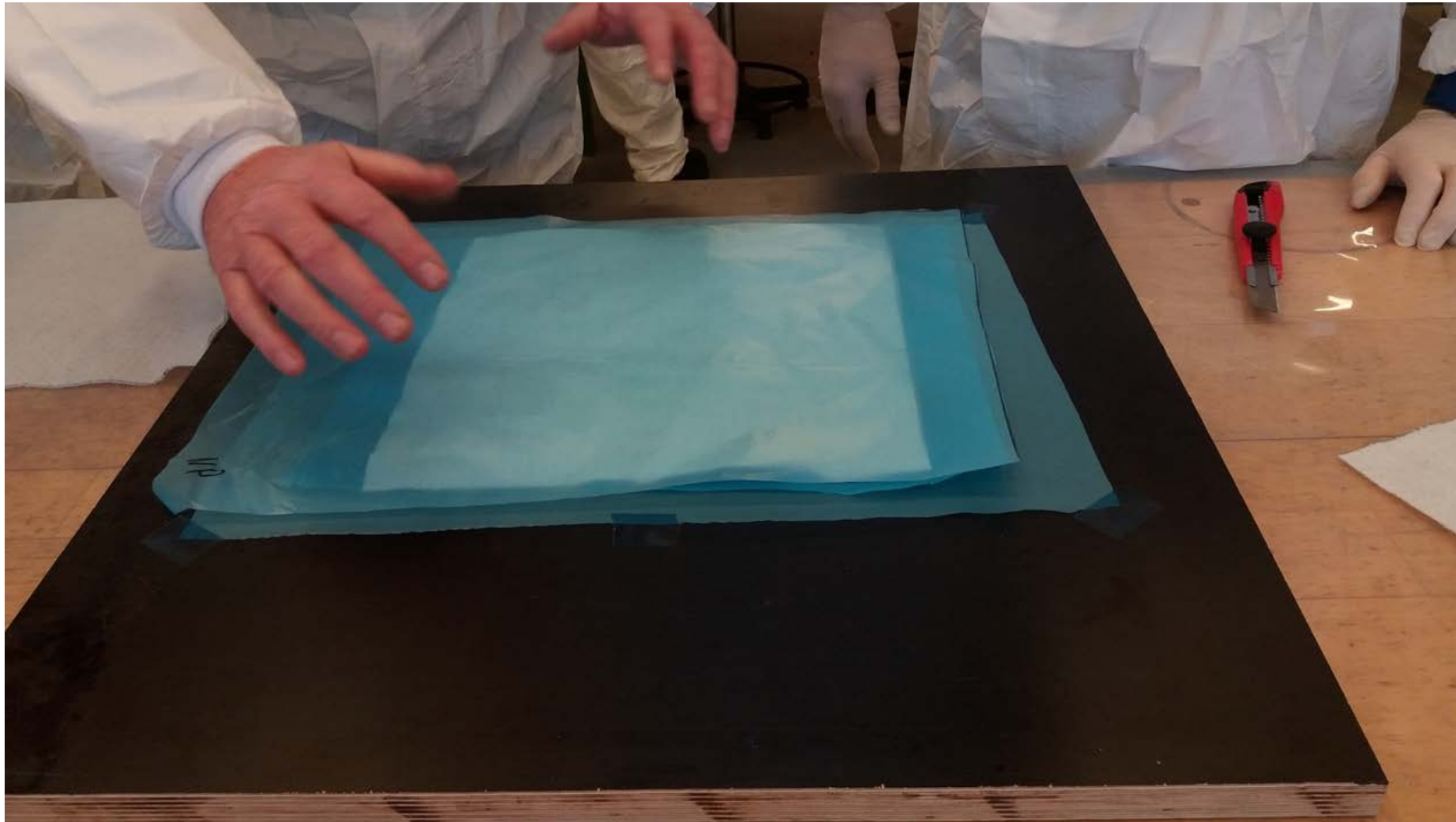
Put breather layer



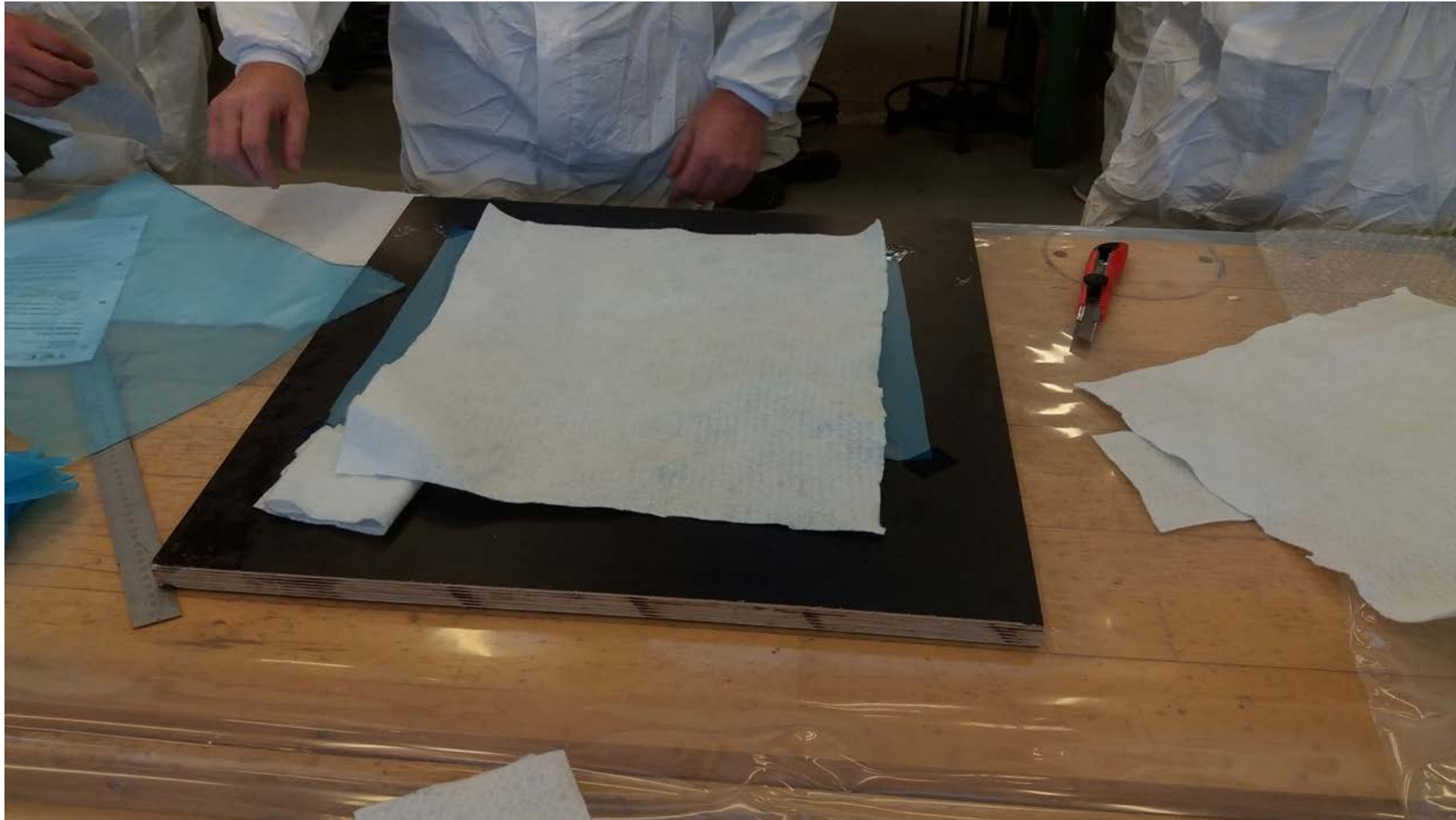
Put peel layer



Put peel layer

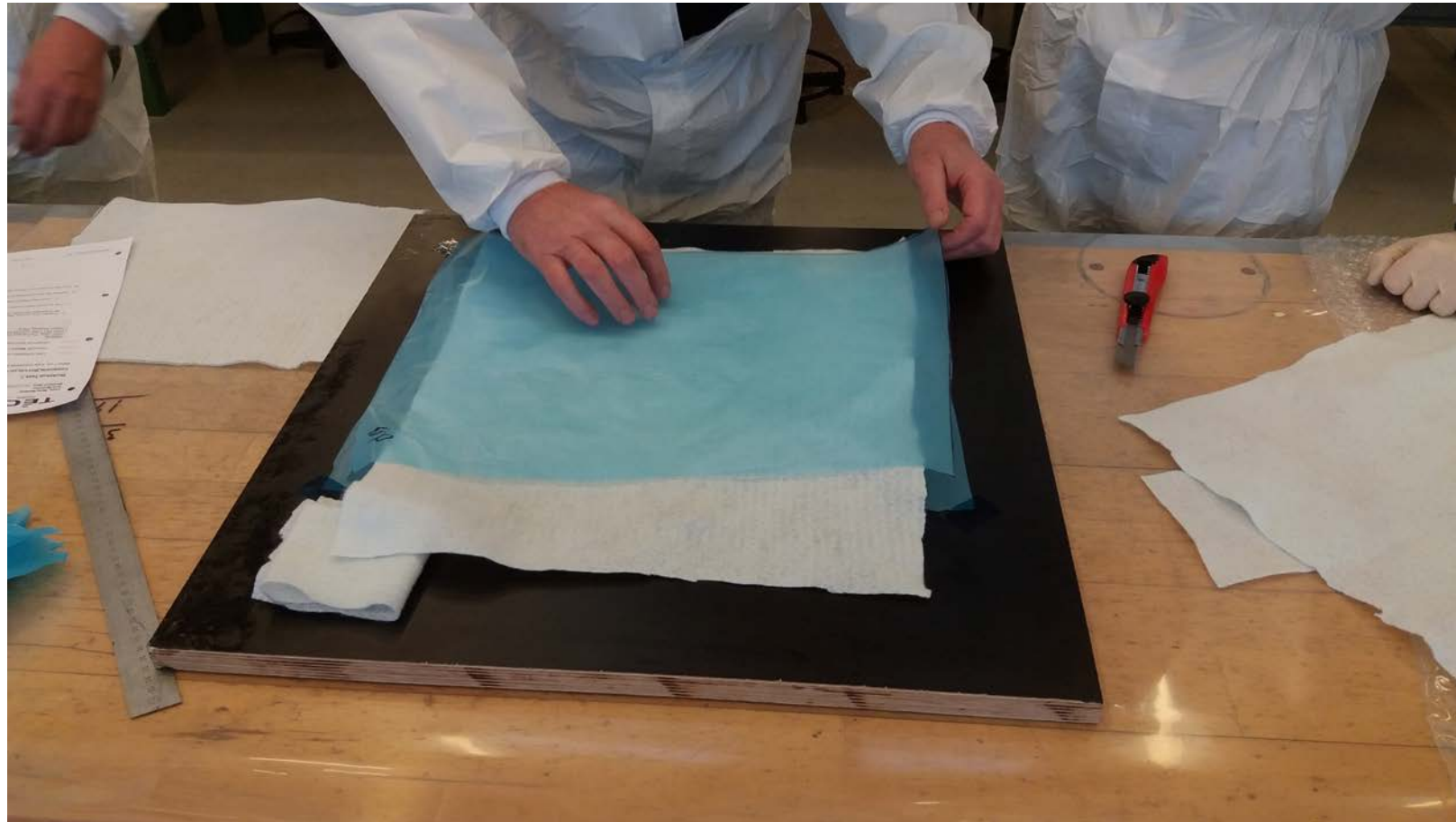


Preparing layers for bagging process



Bagging process: use hot bonder





Put thermo couples for bagging process



Put thermo couples for bagging process according to task diagram



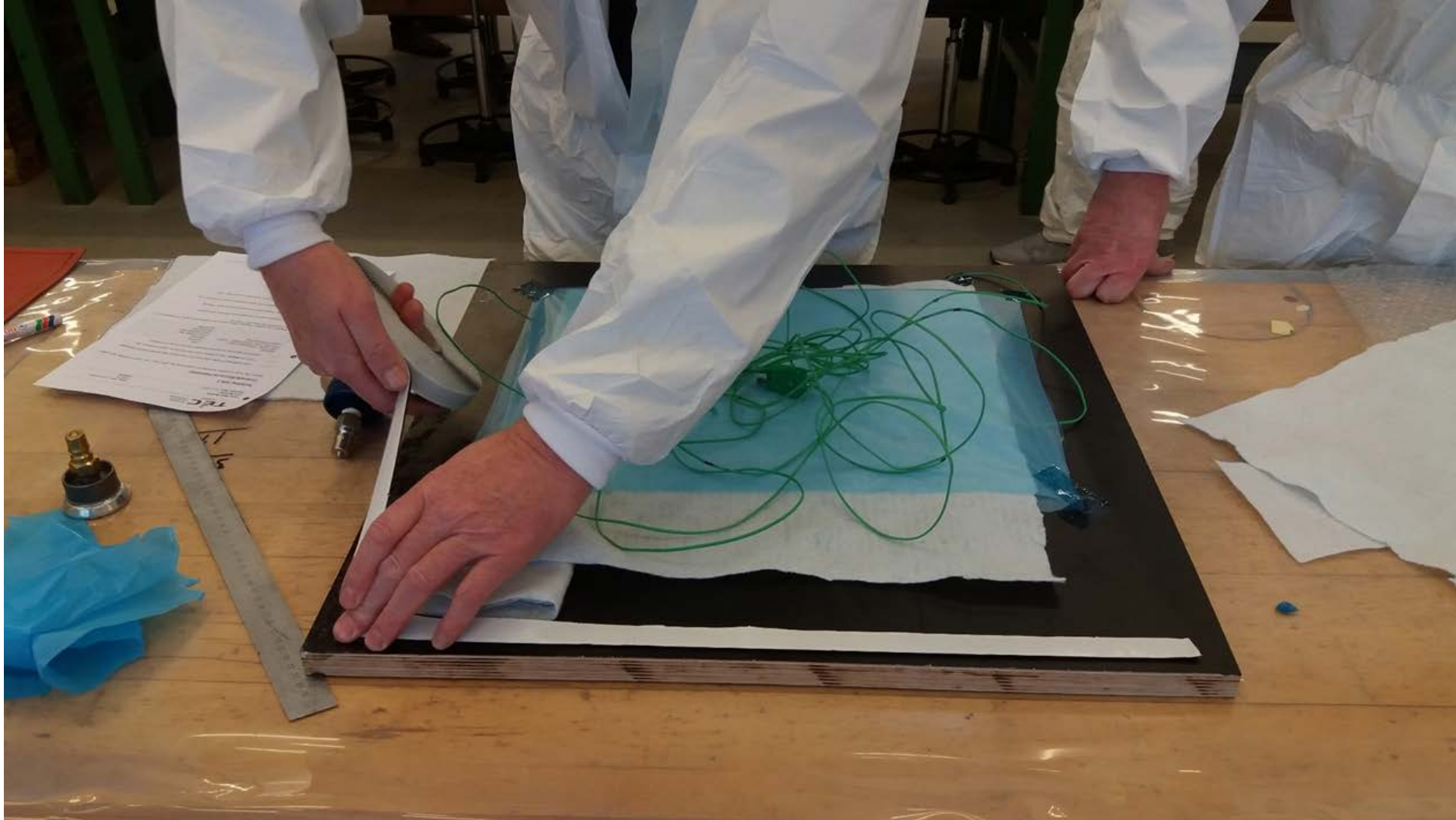
Put thermo couples for bagging process according to task diagram



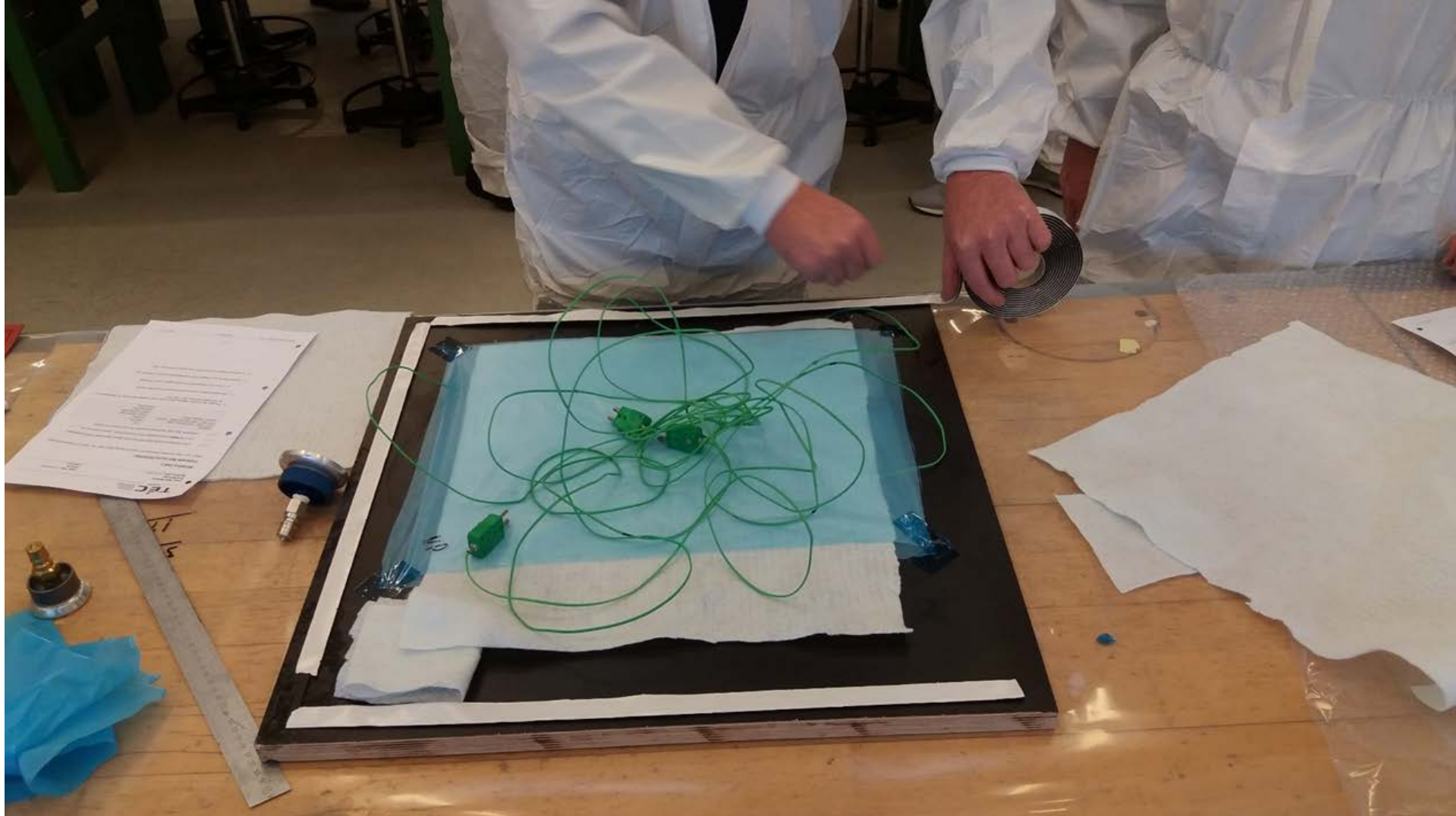
Put thermo couples for bagging process according to task diagram



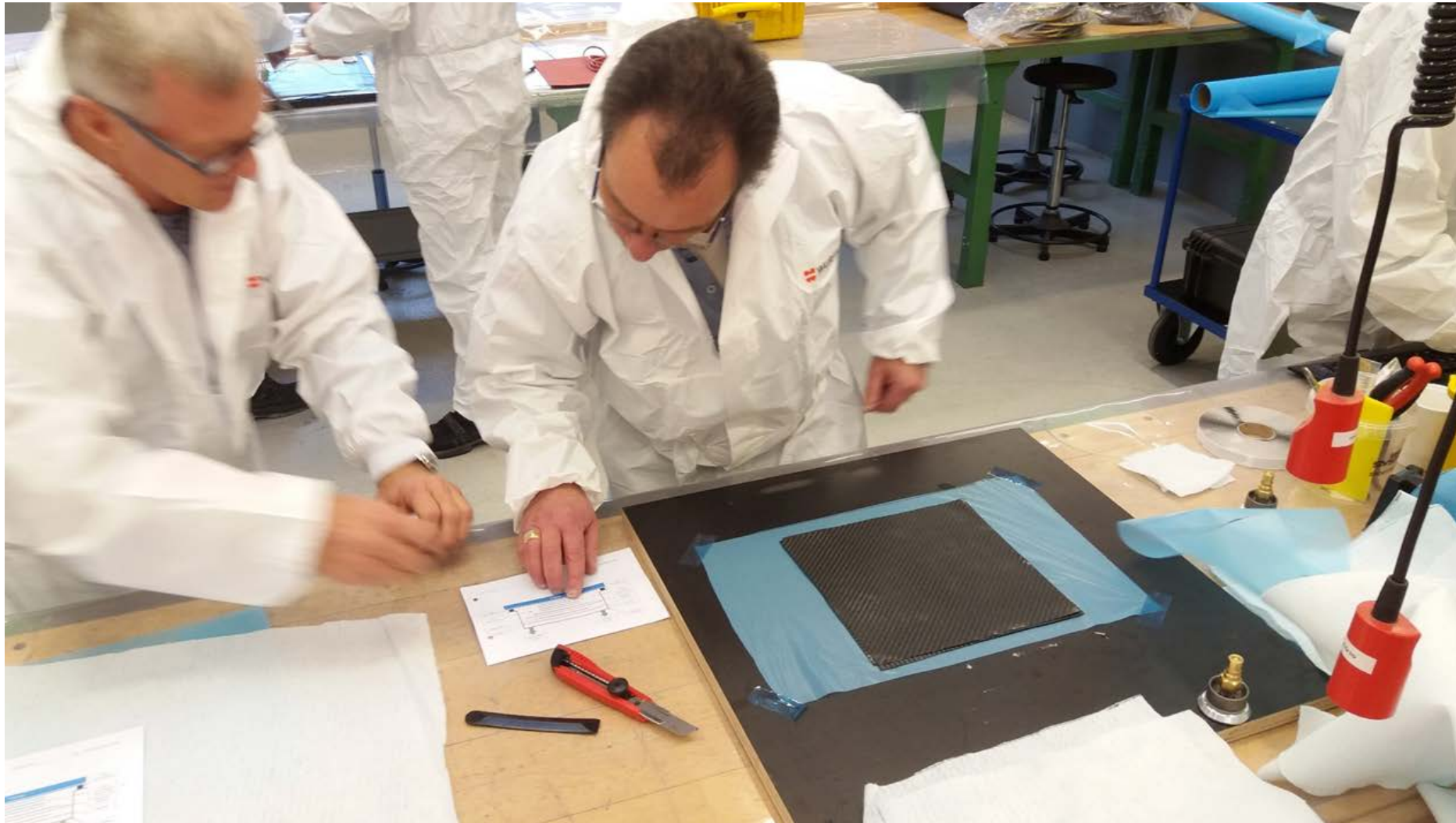
Put tap sealnt around mould for bagging process



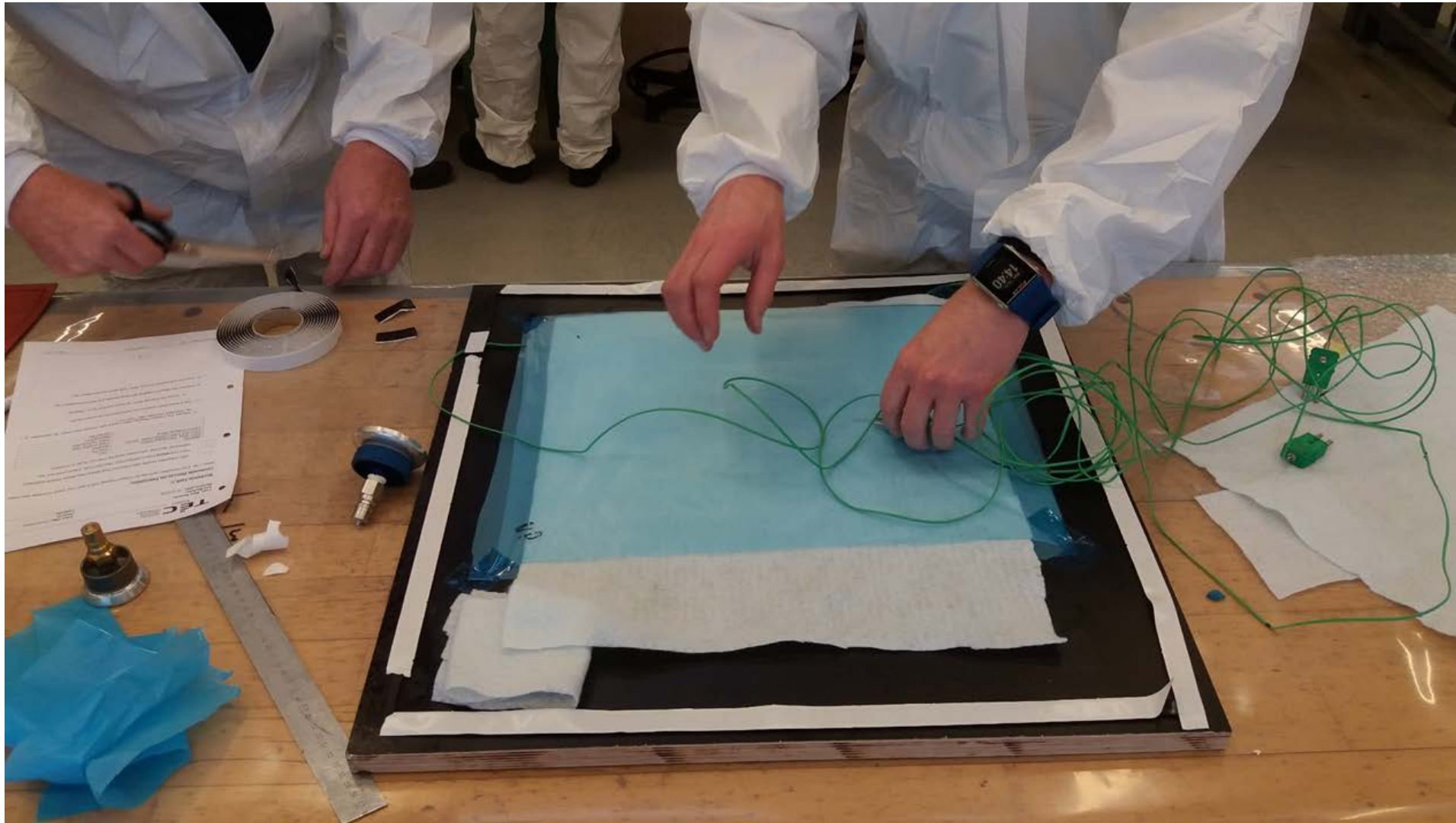
Put tap sealnt tape around mould for bagging process: Do not remove the backing paper on the sealant tape until you are ready to apply the final nylon bagging film.



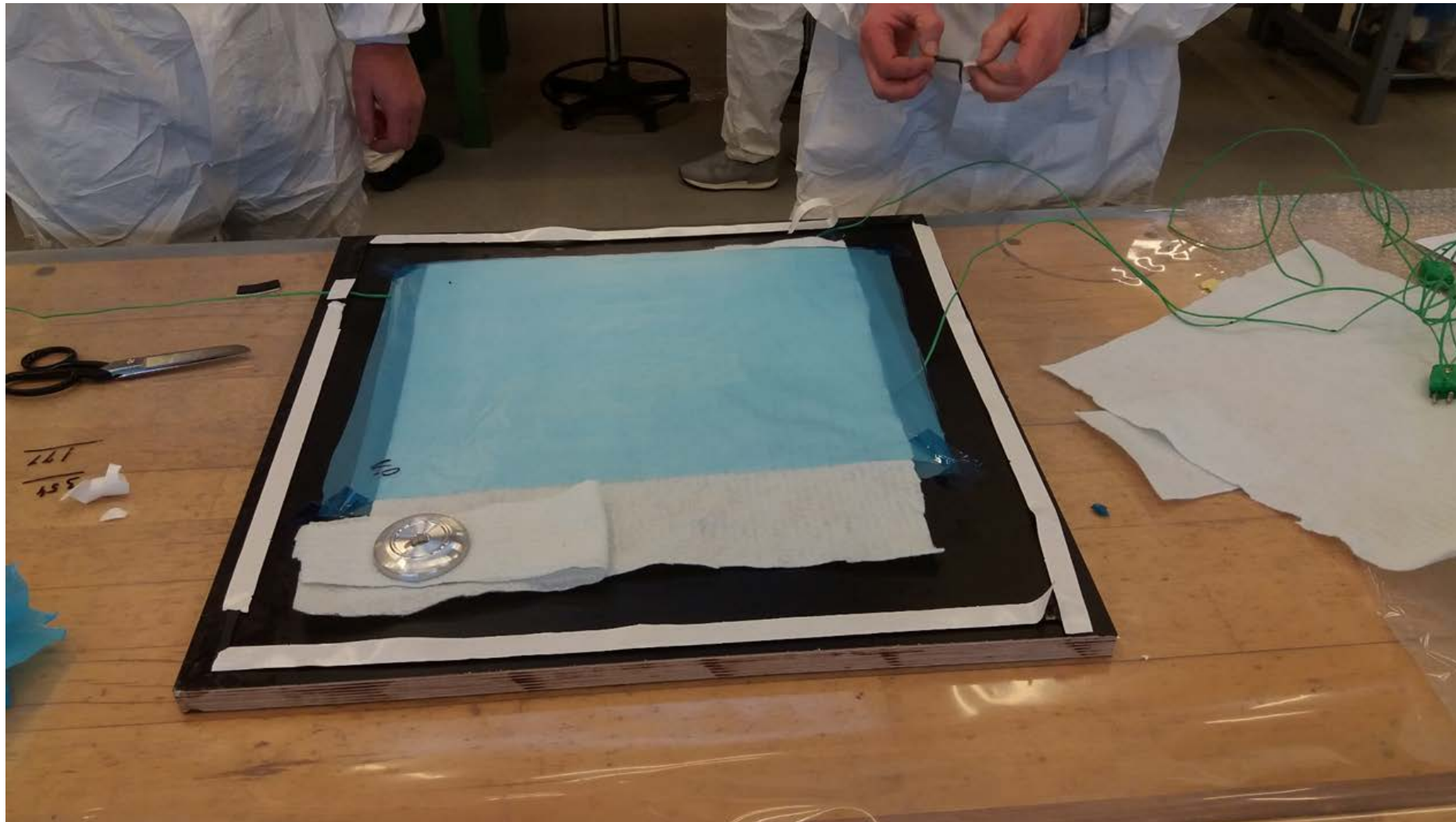
Put all layers according to diagram



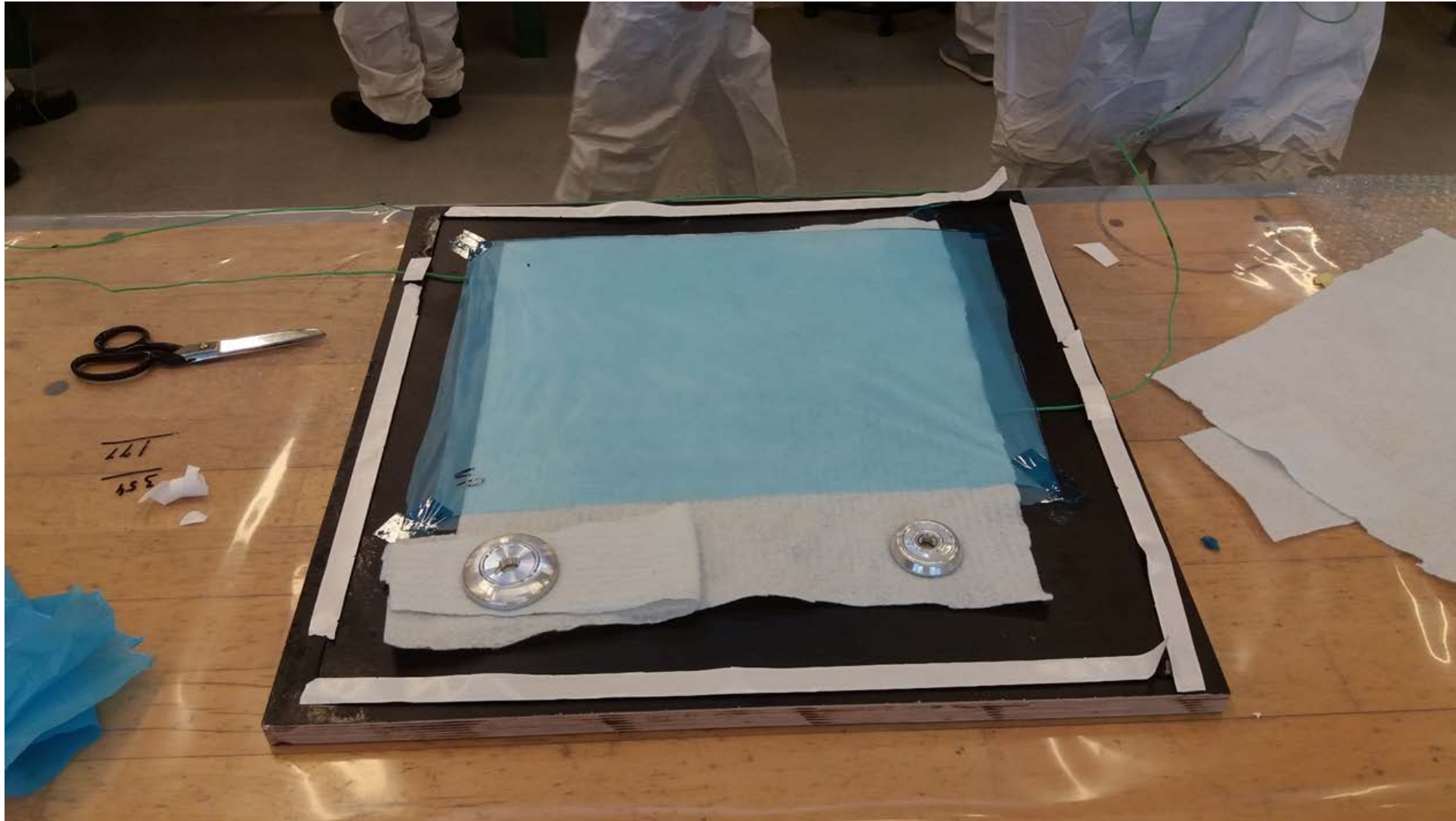
Put tap sealnt around mould for bagging process



When using thermocouple wires (T.C. wires) place one T.C. on each side of the part. Remove a small piece of the sealant tape backing paper and secure wire to seal tape and apply an additional small piece of sealant tape over the wire and press firmly to maintain a proper seal.



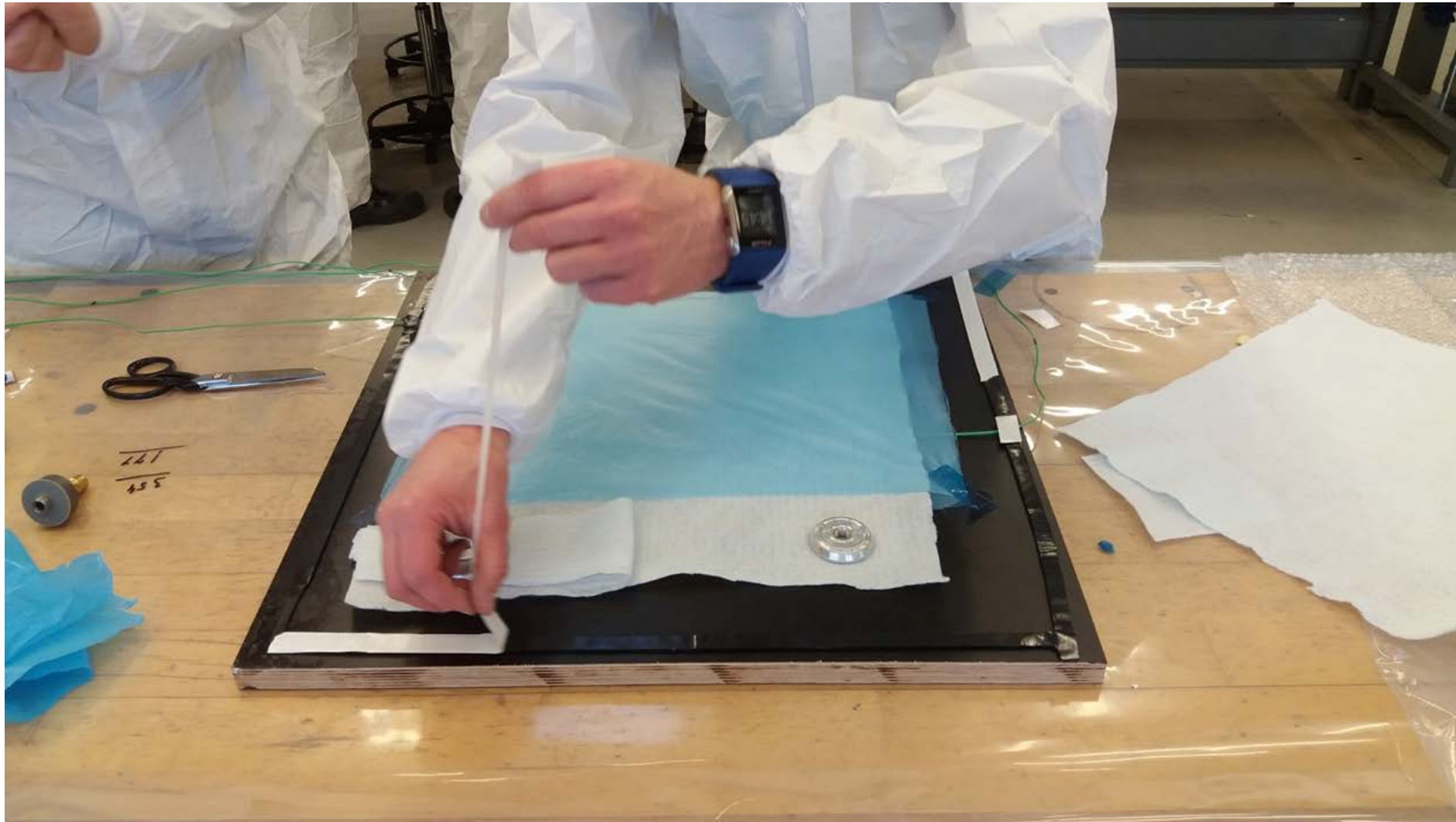
Place two vacuum probe pads at opposite ends of the tool, and put 2 vacuum hoses accessoires for bagging process



Hot bonderfor bagging process



Remove film from tap sealnt around mould for bagging process



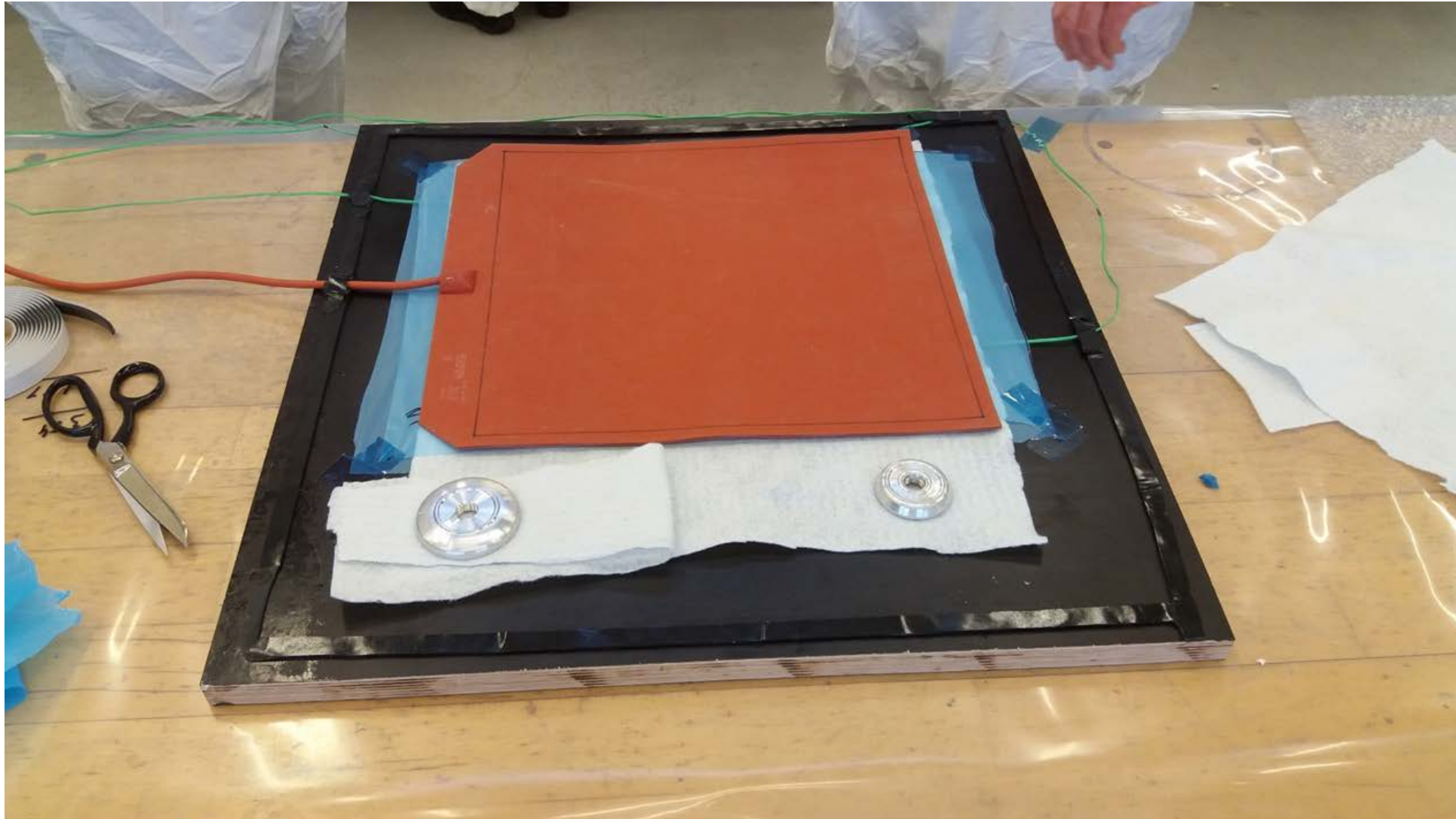
Preparing mould before bagging process



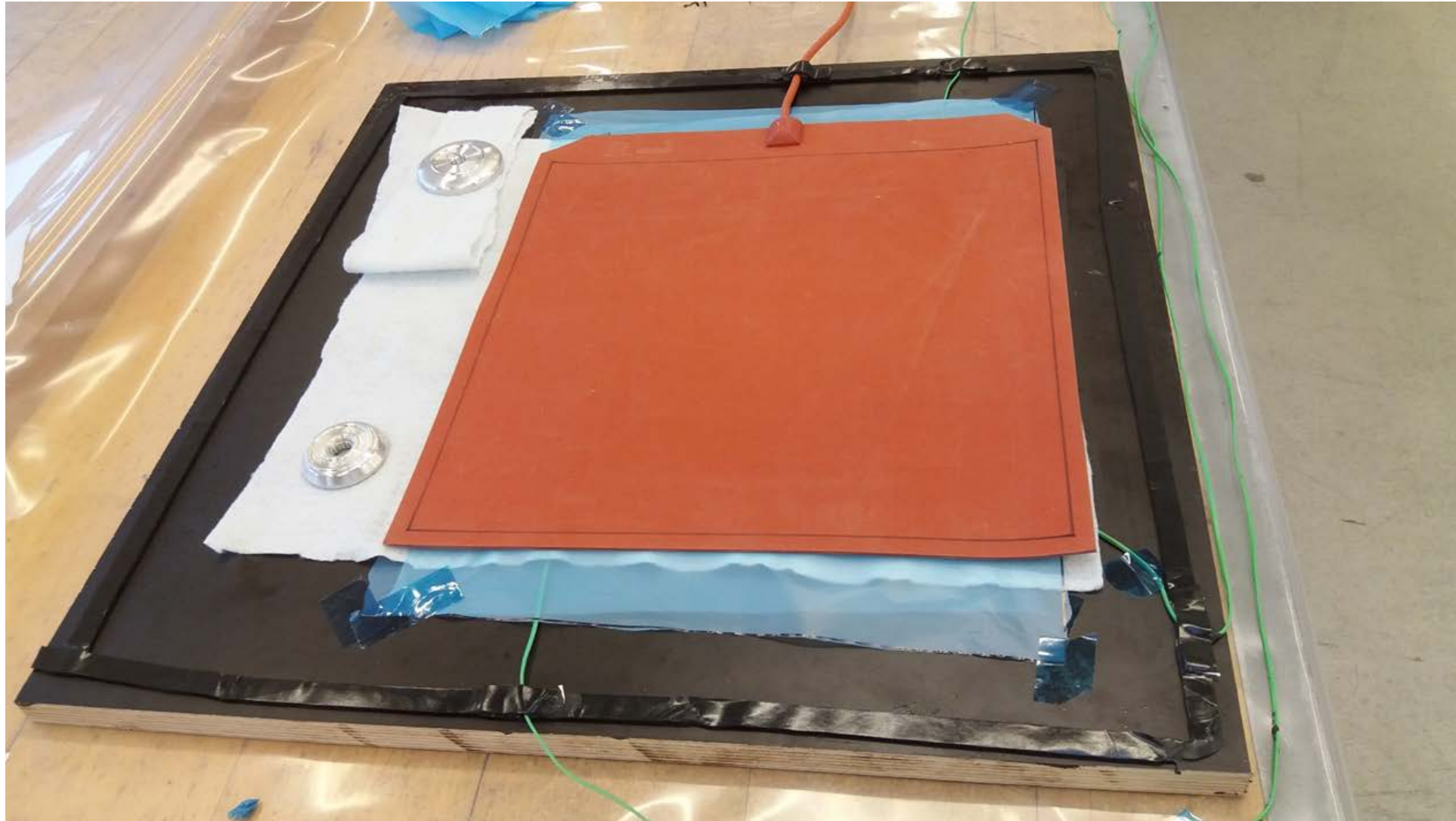
Put tap heater mat above layers for bagging process



Put tap heater mat above layers for bagging process



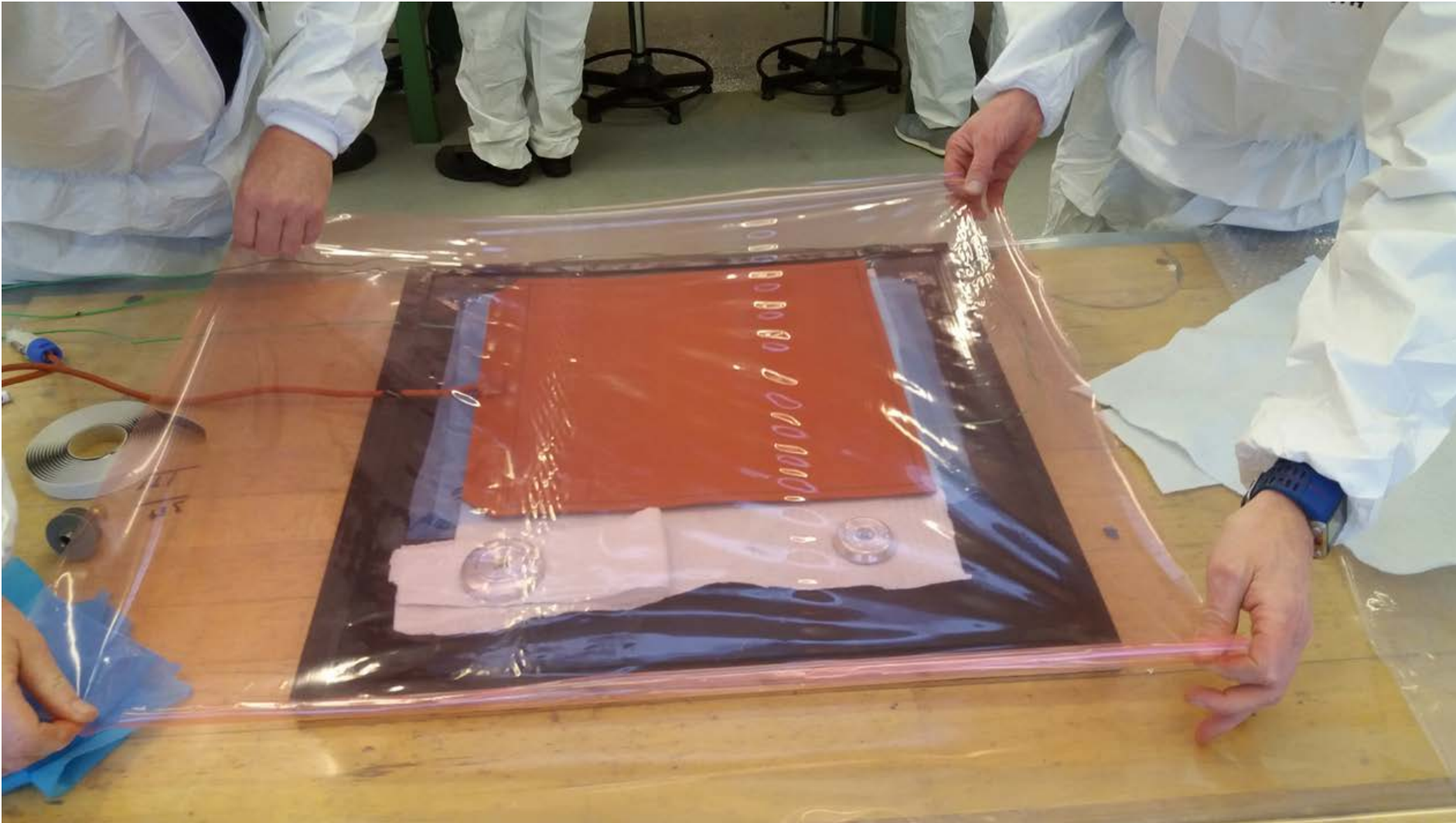
Put tap heater mat above layers for bagging process



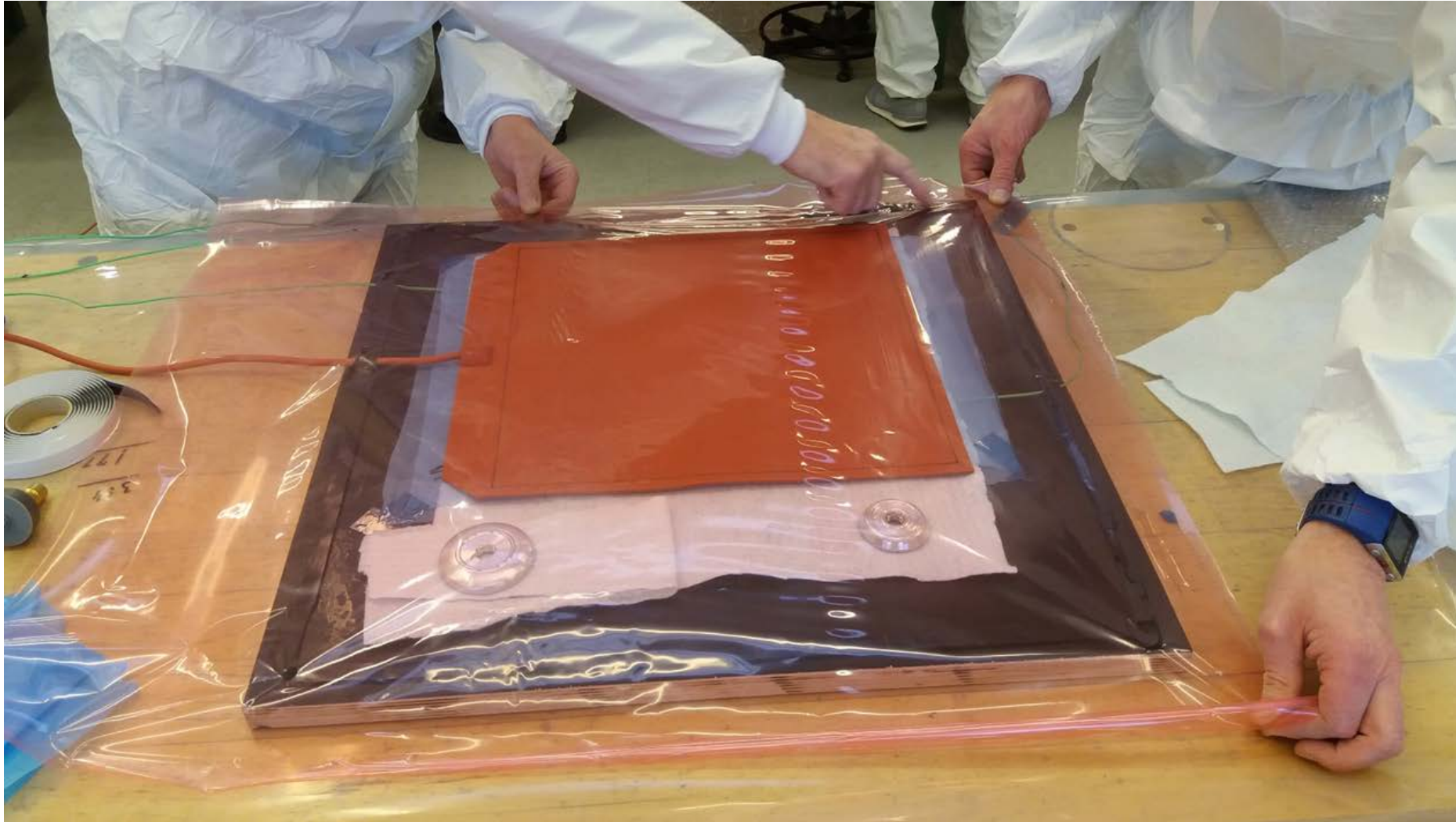
Cover mould by bagging film



Cover mould by bagging film



Apply the final nylon vacuum bag, starting on one edge in the middle, pulling the wrinkles out of the bag, but not so tight that the bag is stretched. Remove the opposite side backing paper and work your way around the bag until you have all sides of the bag sealed without wrinkles or folds in the bagging material.



Open small holes for vacuum hoses



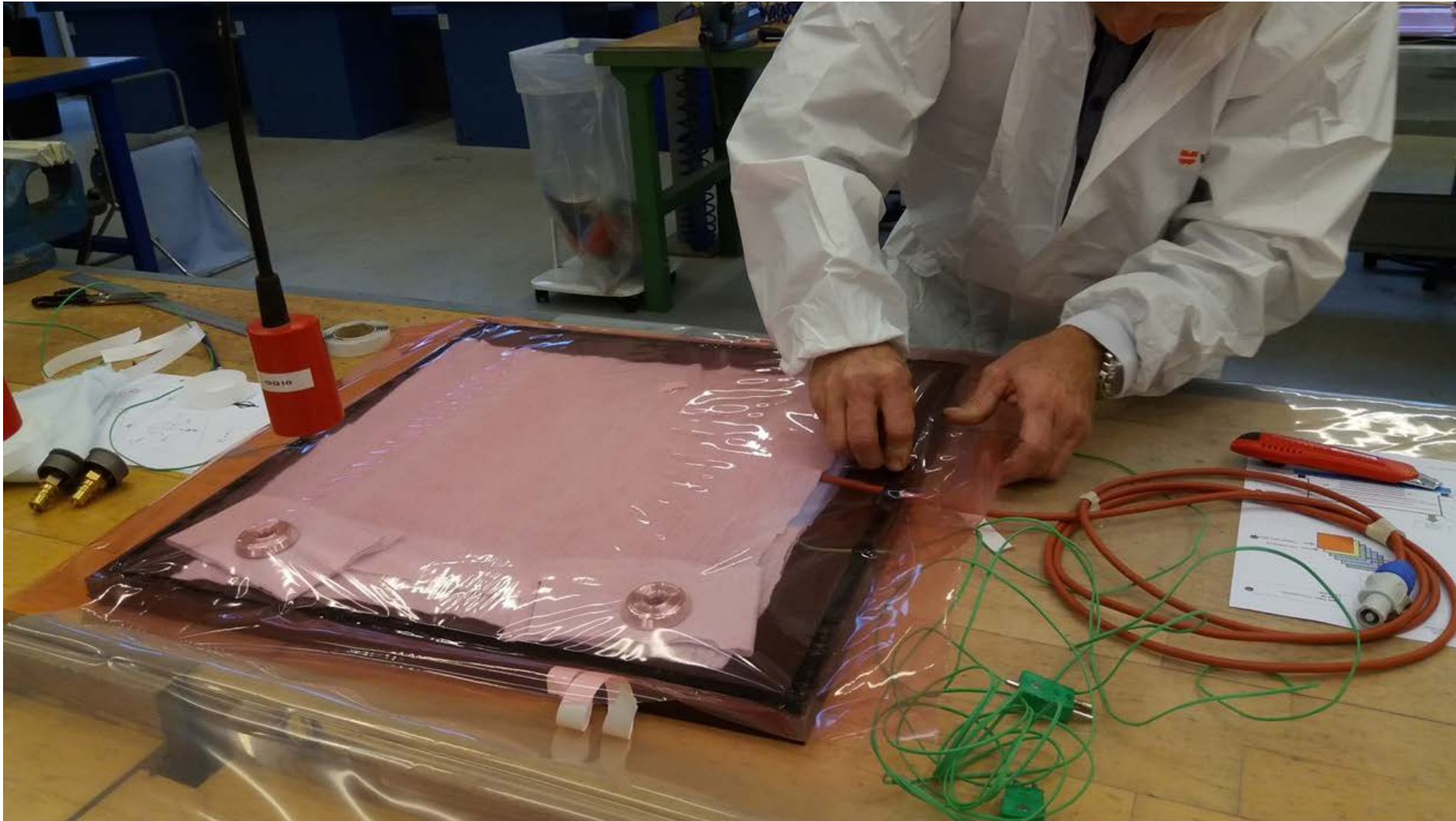
Connect Vacuum hoses accessories



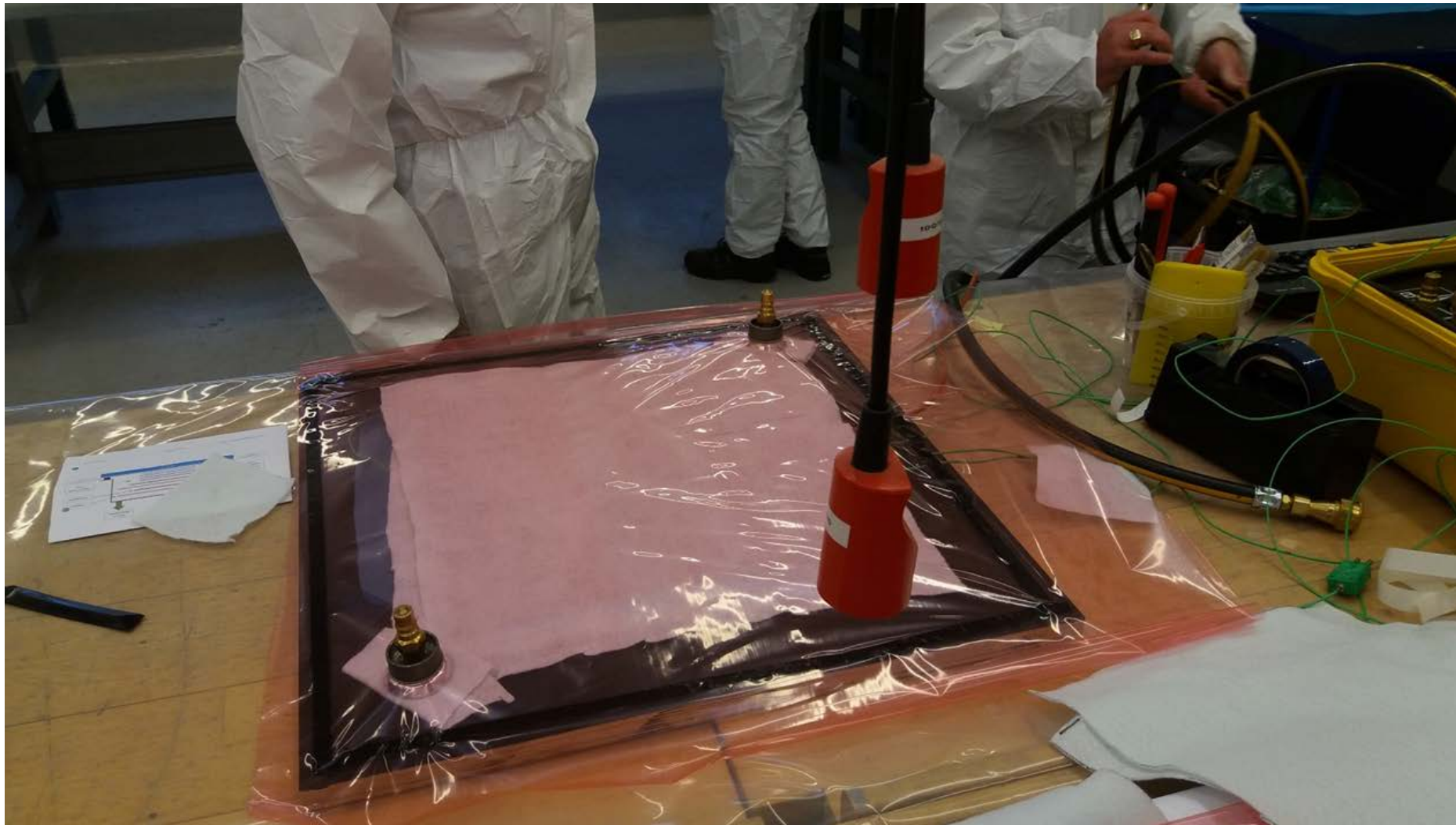
Connect Vacuum hoses accessories



Checking all connections



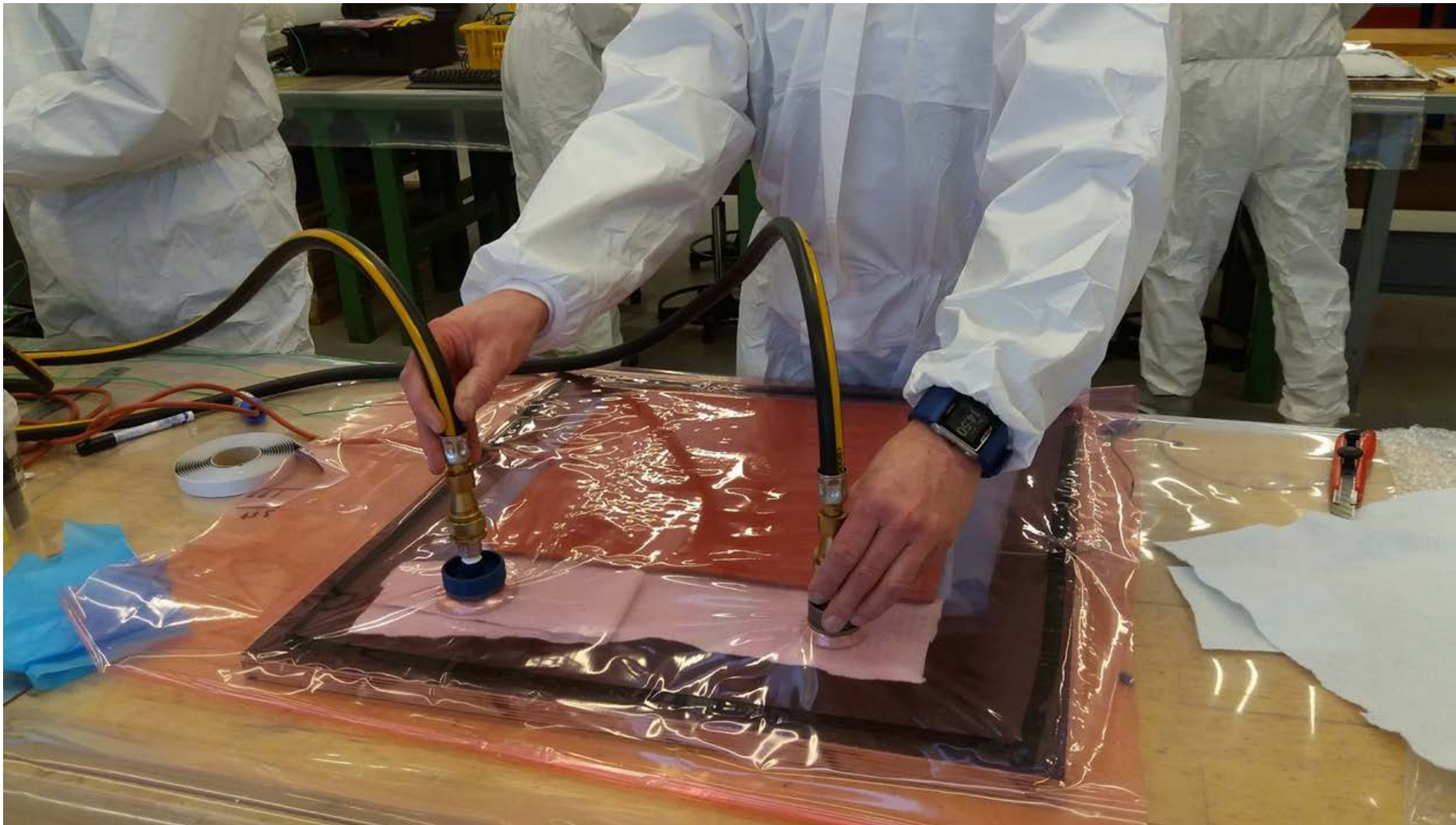
Checking all connections



Apply the vacuum hose to the probe top. As the vacuum pulls the air from the bag, take time to smooth out any wrinkles that may form. Also, look for small leaks around the edge of the sealant tape. Once you are confident that the vacuum bag is in place and will not be moving, cut in and attach the additional vacuum probe tops.



Apply the vacuum gauge hose to the another probe (where the vacuum hose is connected).



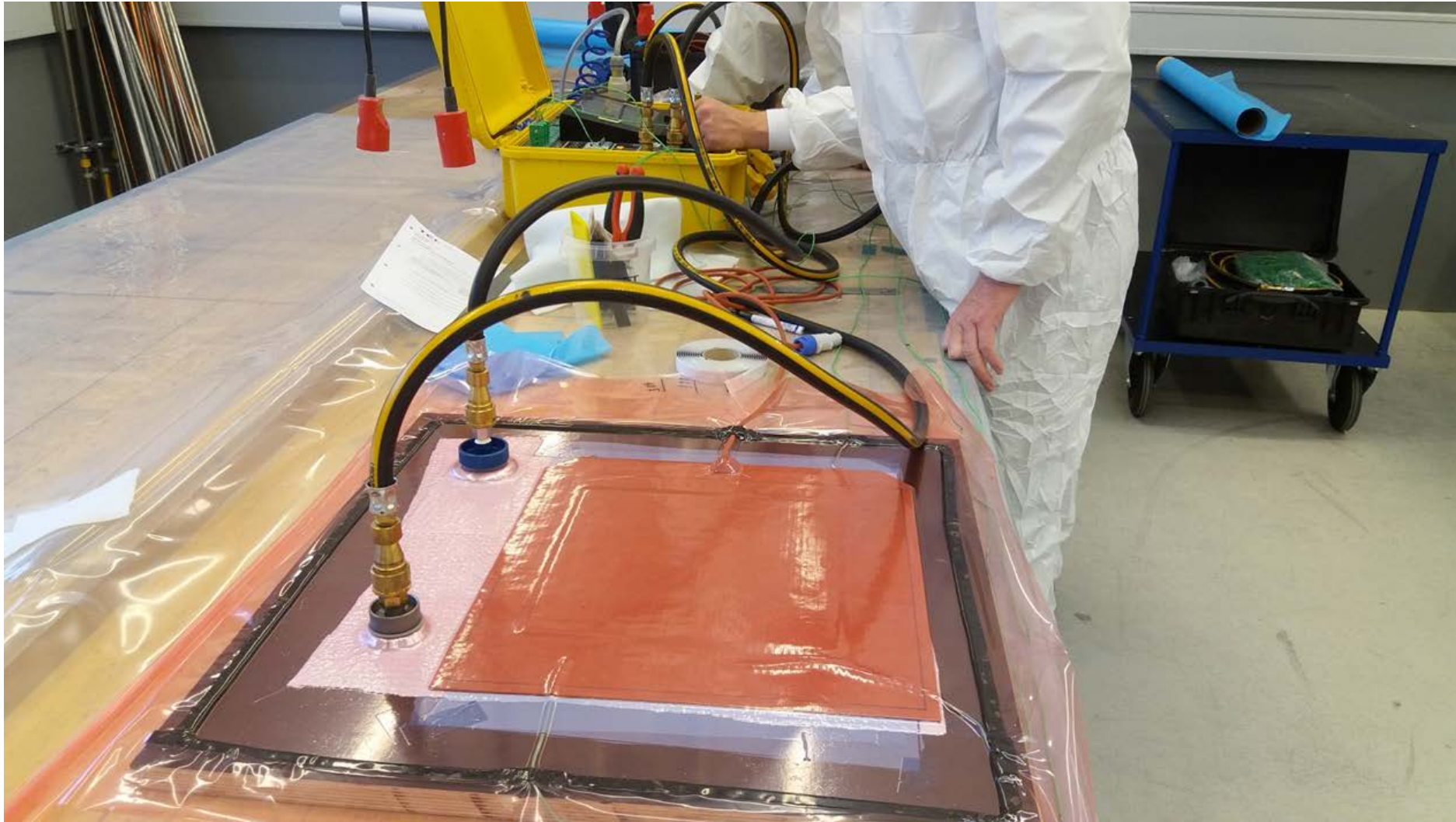
Connect Vacuum hoses and thermocouples to hot bonder



Prepare hot bonder setting (required temperature, vacuum pressure, and time) and all connections, then turn on



Prepare hot bonder setting (required temperature, vacuum pressure, and time) and all connections, then turn on



Checking all connections

