

PSI Center for Accelerator Science
and Engineering

PSI subSMCC2b

Production of the ESC coils

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"This work was performed under the auspices of and with support from the Swiss Accelerator Research and Technology (CHART) program."

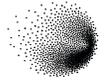
"This work was partially supported by HFM program"

CHART PSI
2025/11/19

Agenda



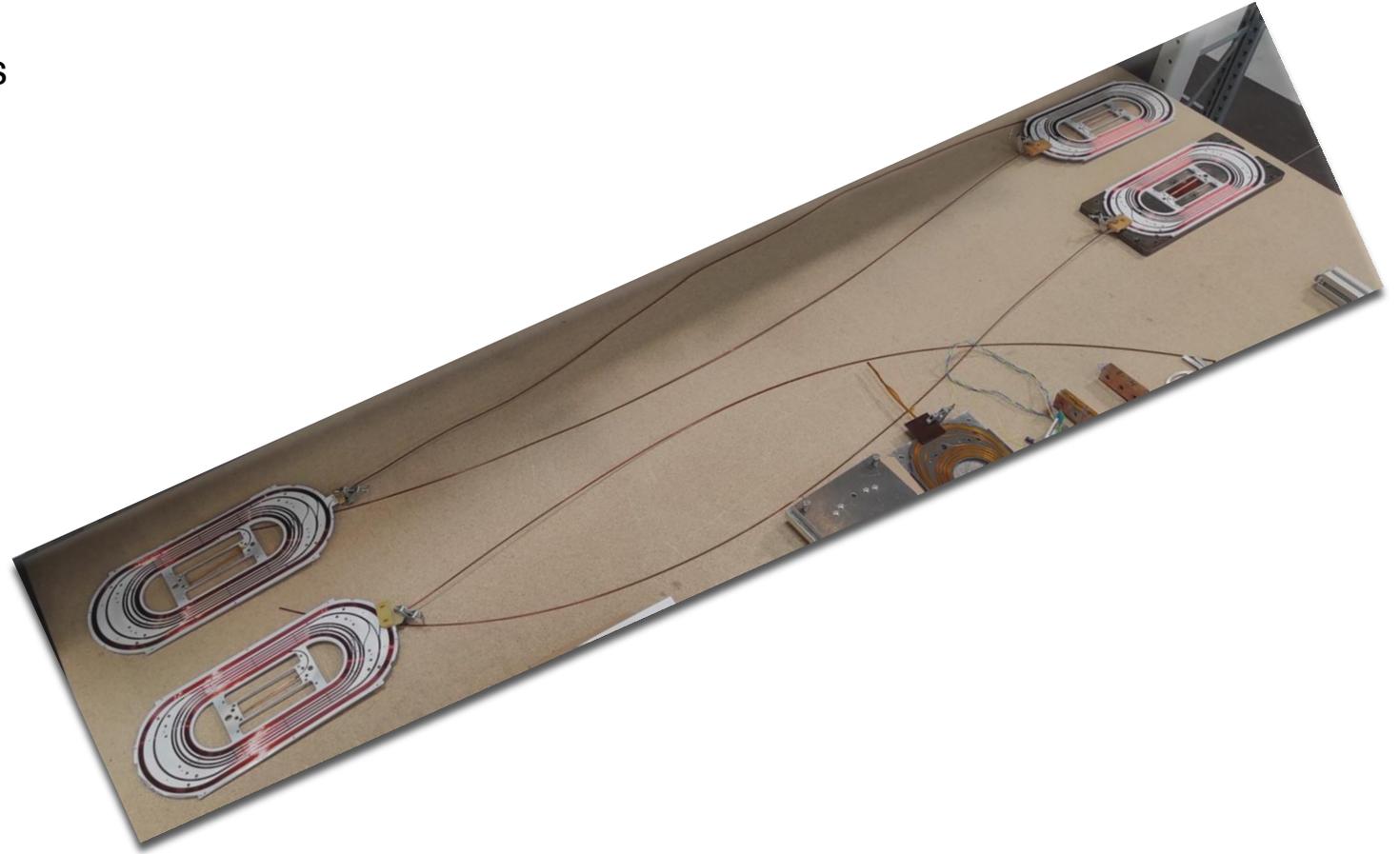
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High Field Magnets
Programme



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Manufacturing process of 4 new ESC coils

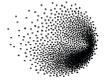
- Winding the ESC coils
- Impregnation of the ESC coils



Winding process 1



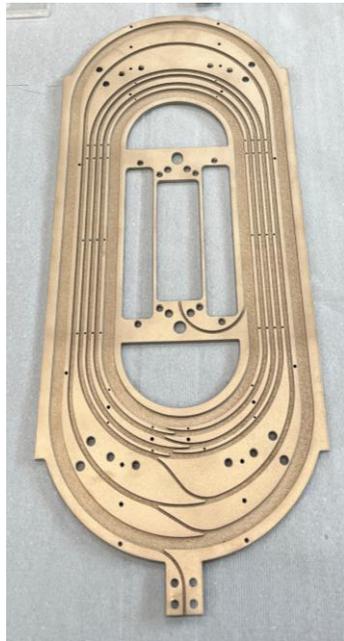
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Important components of the winding process:

Coated ESC coil former



Winding tooling



Pusher plate



Ridgway winding machine



The PVBAA coating of the former was developed and implemented by Andre Brem.

Winding process 2



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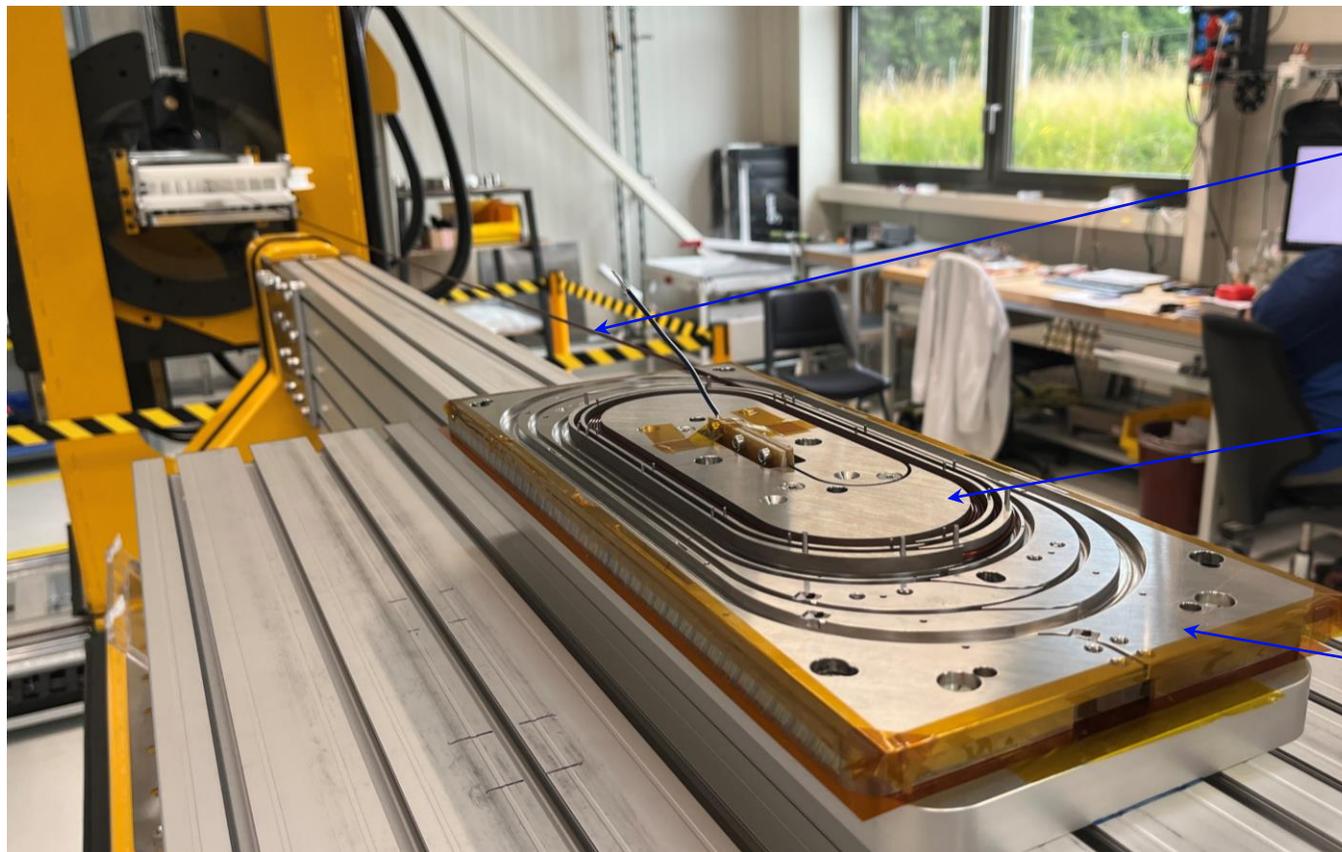


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Set up on the winding machine:



Copper wire

Winding tool attached to the top of the former with pins and screws

ESC coil former

Winding process 3



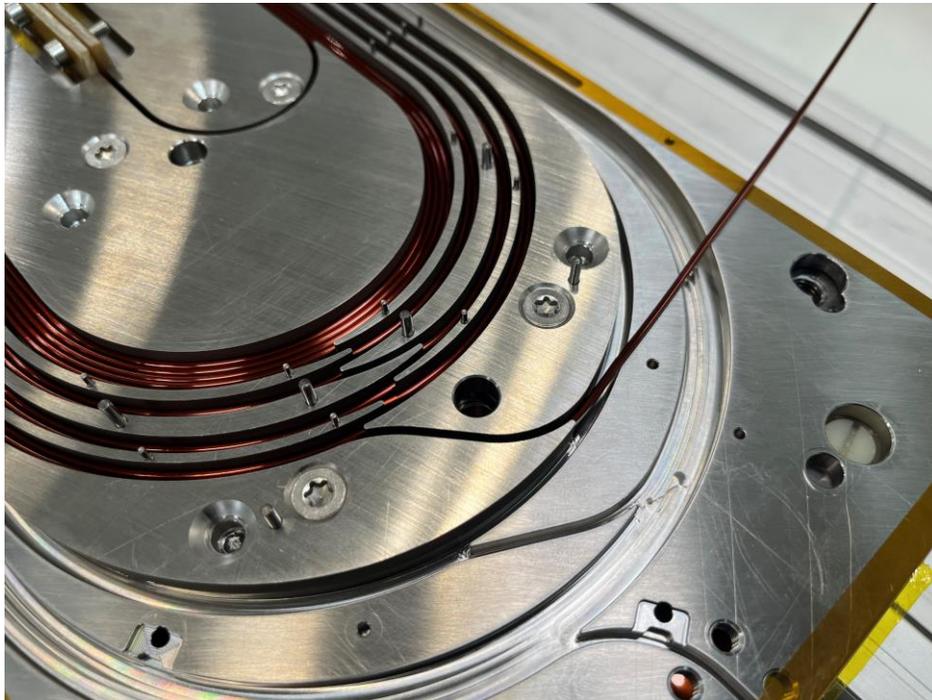
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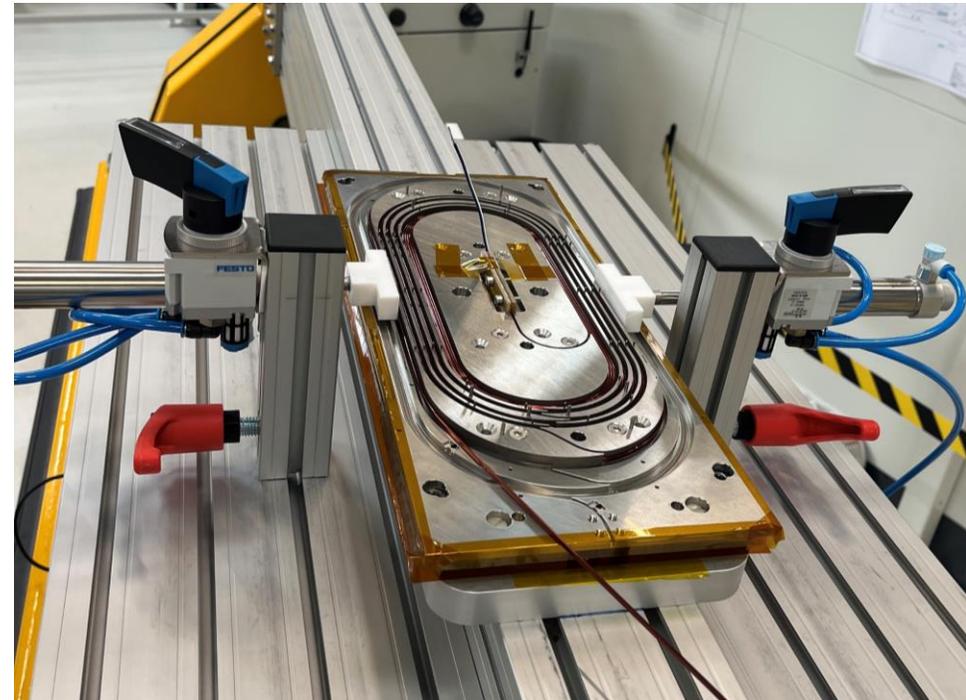
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Winding method:

Winding with tooling. The tool is located above the former.



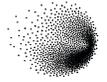
Pneumatic pushers support the winding on straight side of the coil.



Winding process 4

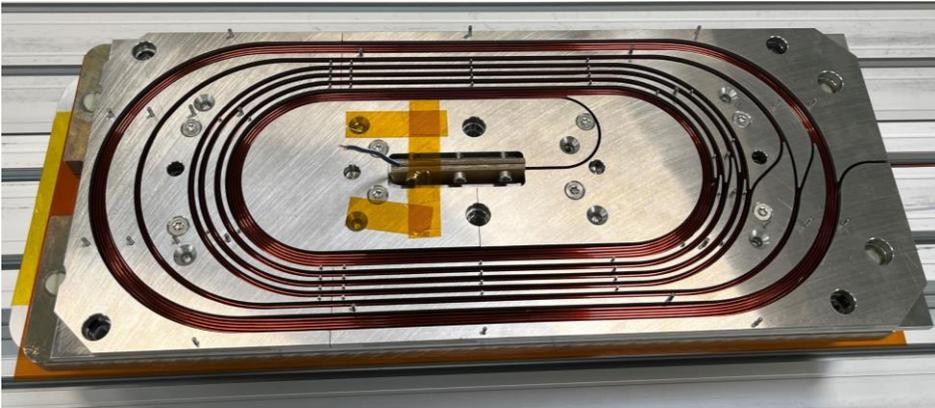


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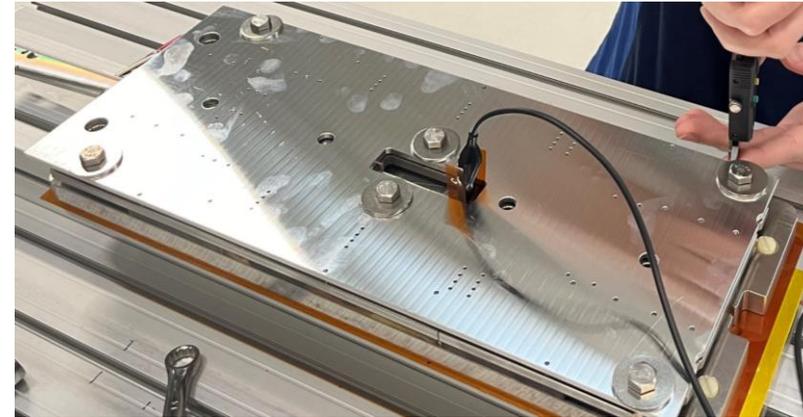


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Final step in the winding process:
Fully wound coil and completely assembled tools.



Assembled pusher plate for pressing the coil into the former.
Continuous monitoring for short circuits.



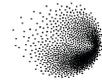
Impregnation process 1



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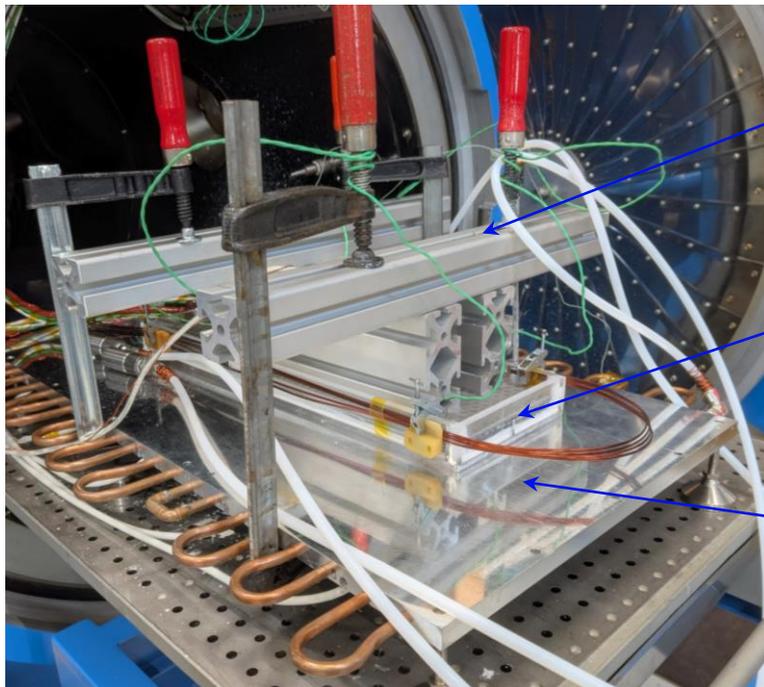
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The development and implementation of the impregnation process was carried out by Anna Stampfli.

Simultaneous impregnation of all 4 coils with wax



Hold-down device for a compact stack of coils.

All coils are stacked on top of each other in a mold.

Cooling/heating plate.

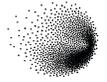
Impregnation in the autoclave



Impregnation process 2



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Finished ESC coils after impregnation

