Karlsruhe Institute of Technology

Institute for Neutron Physics and Reactor Technology (INR)
Karlsruhe Institute of Technology (KIT), Campus Nord
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen, Germany
http://www.inr.kit.edu/

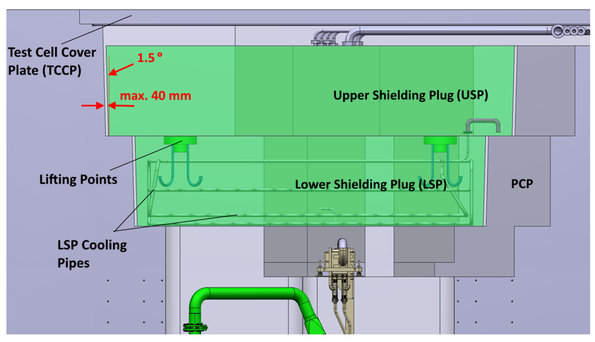
Overview of the Current Status of IFMIF-DONES Test Cell Biological Shielding Design

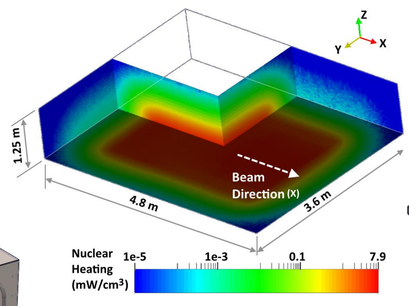
Kuo Tian[a*], Begoña Ahedo[b], Frederik Arbeiter[a], German Barrera[b], Łukasz Ciupiński[c], Tamás Dézsi[d], Jonathan Horne[e], Dániel Kovács[d], Joaquin Molla[b], Fernando Mota[b], Yuefeng Qiu[a], Florian Schwab[a], Marcin Siwek[c], Mátyás Tóth[f], Tamás Varga[g], Angel Ibarra[b]

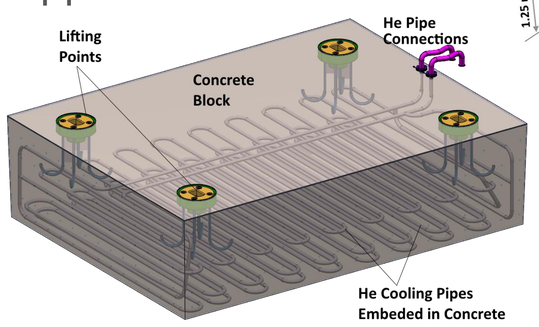
[a]KIT, Germany, [b]CIEMAT, Spain , [c]Warsaw University of Technology, Poland, [d]Wigner RCP / C3D Ltd., Hungary
[e]RACE, Culham Science Centre, United Kingdom , [f]HAS, Wigner RCP, Hungary , [g]Wigner RCP / Fuziotech Ltd., Hungary

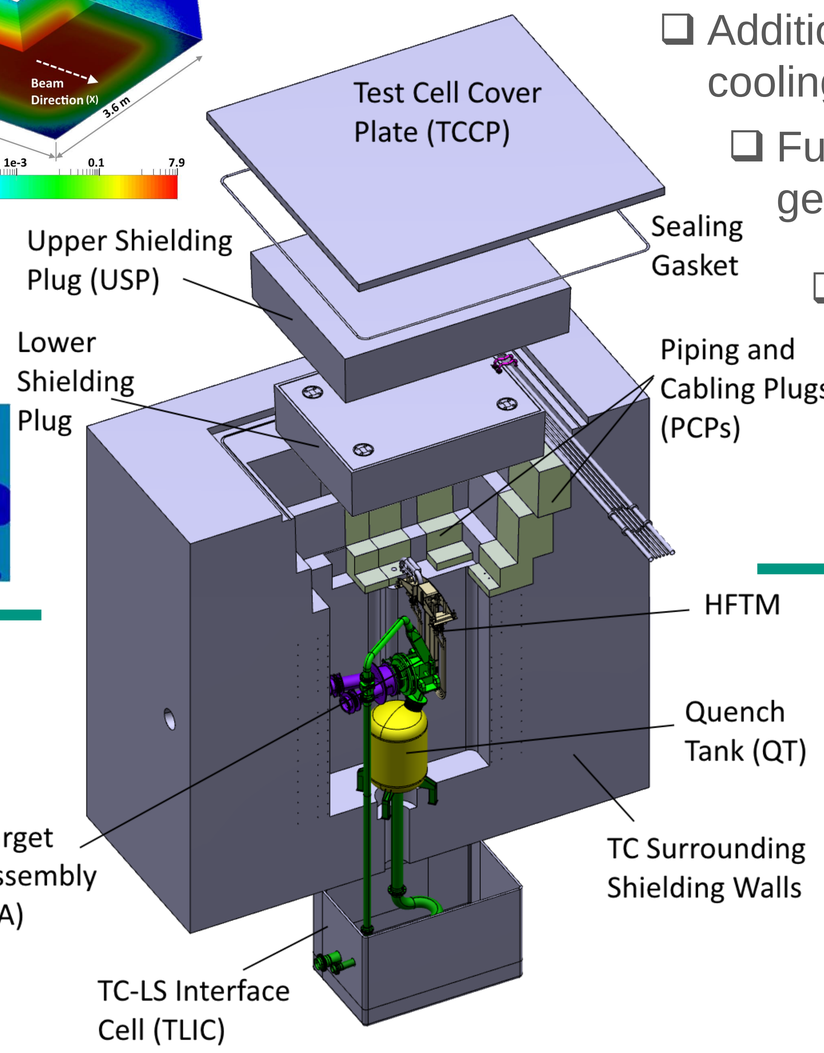
Top Shielding Plugs (TSPs)

- ❑ TSPs including USP & LSP
- ❑ Geometry adapted for RH
- ❑ LSP actively cooled by helium due to high nuclear heating
- ❑ Reinforcement and Cooling pipes arranged in LSP
- ❑ Cooling capacity being approved



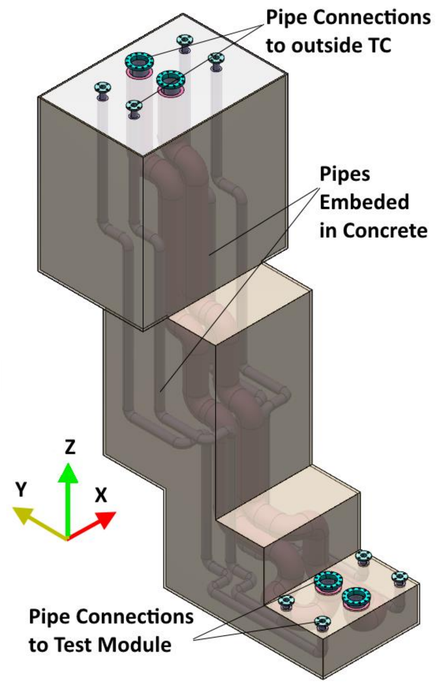


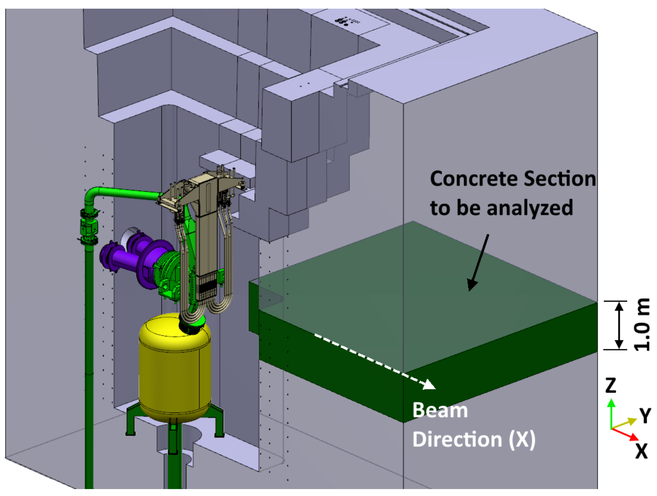


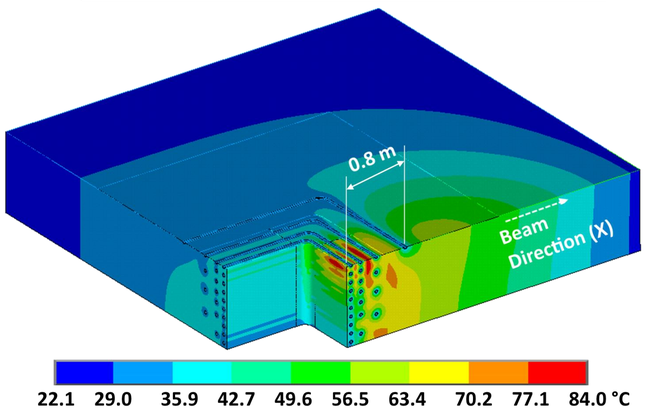


Piping and Cabling Plugs (PCPs)

- ❑ PCPs accommodates all pipe/cable penetrations
- ❑ PCP design based on IFMIF-EVEDA design
- ❑ Lower end of PCP is extended for convenient connection arrangement
- ❑ Embedded pipes have several bends to minimize neutron streaming
- ❑ Insulation materials applied to helium pipes
- ❑ Additional active cooling not required
- ❑ Further update on geometry required
- ❑ Detailed internal structure to be completed



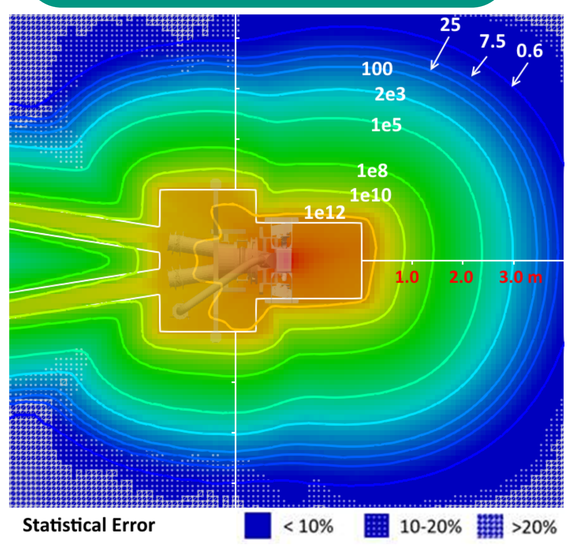




Pipe Arrangement and Temperature Map During Irradiation Experiments

- ❑ Surrounding shielding walls updated according to requirement of RH and water cooling systems
- ❑ Arrangement of water cooling pipes inside surrounding shielding walls defined
- ❑ Cooling capacity is approved based on simulations of a small controlled volume
- ❑ Further analysis on ¼ TC will be implemented

Surrounding Walls



Dose (μSv/h) map in the TC surrounding wall

SUMMARY

- ❑ Design of DONES-TC biological shielding components updated
- ❑ TC surrounding shielding walls: geometry updated, active cooling pipes preliminarily arranged
- ❑ PCPs: geometry updated, piping and cabling defined
- ❑ Lower Shielding Plug: detailed structure and calculations implemented

**Corresponding author: kuo.tian@kit.edu*

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