PRELIMINARY DESIGN CONCEPT OF THE HORN

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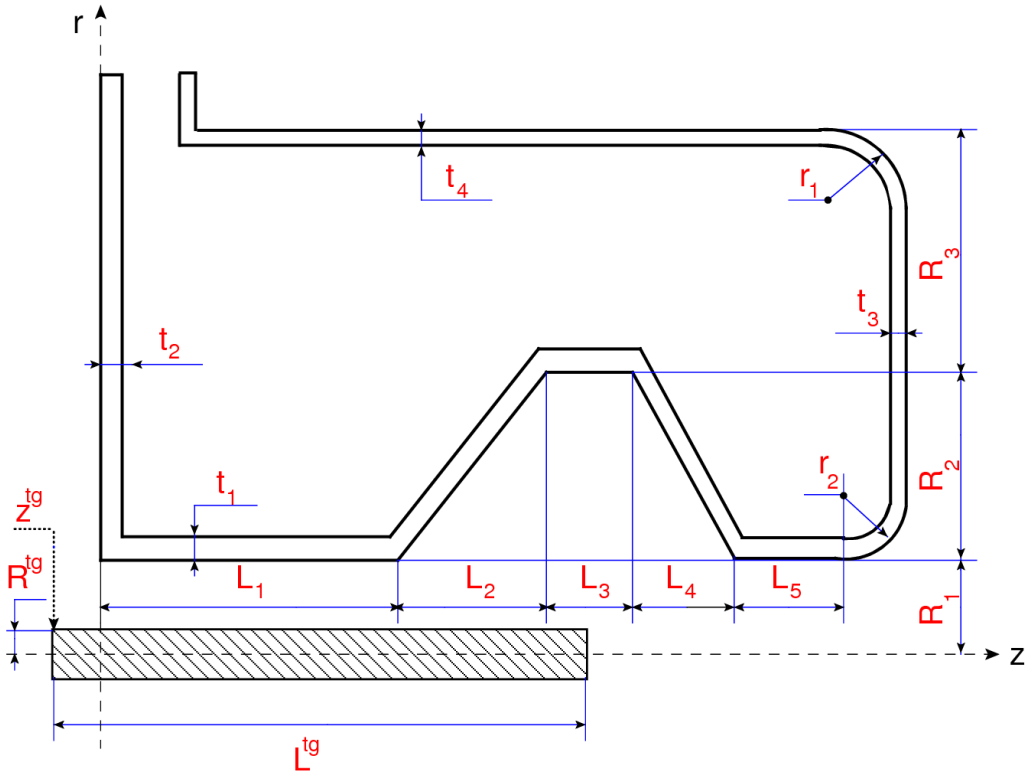
EUROnu Project

Model

02.05.
2011



Physics simulation: all t = 3mm

Real design: (front plate) t2 = 35mm, (outer conductor) t4 = 30mm

Model cont.

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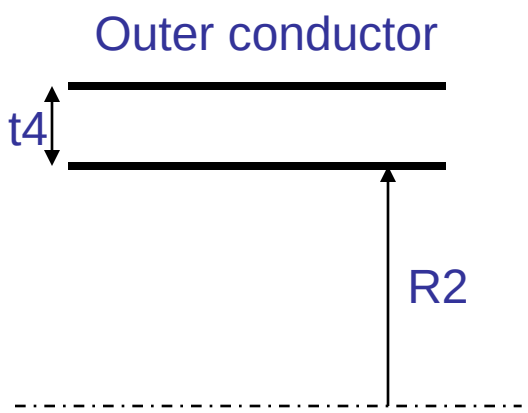
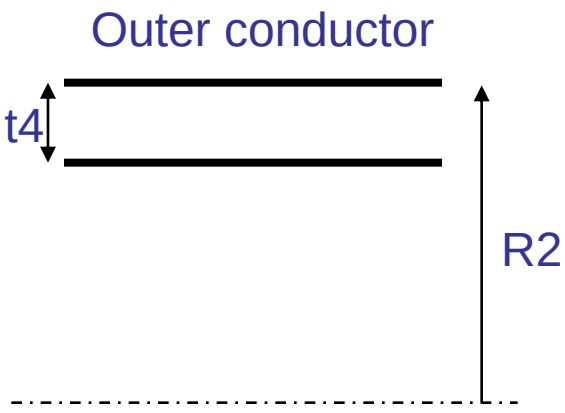


or



Which one is correct??

Model cont.

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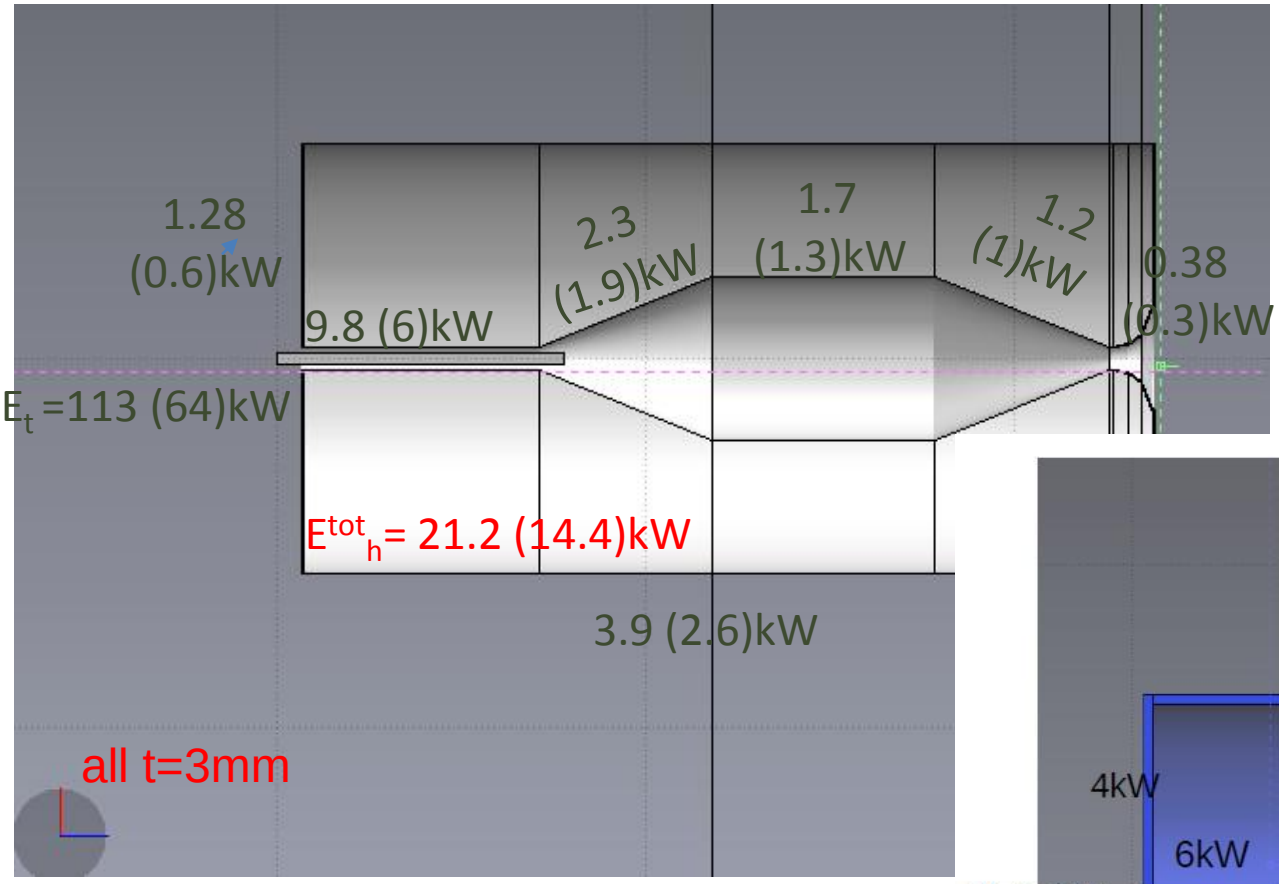
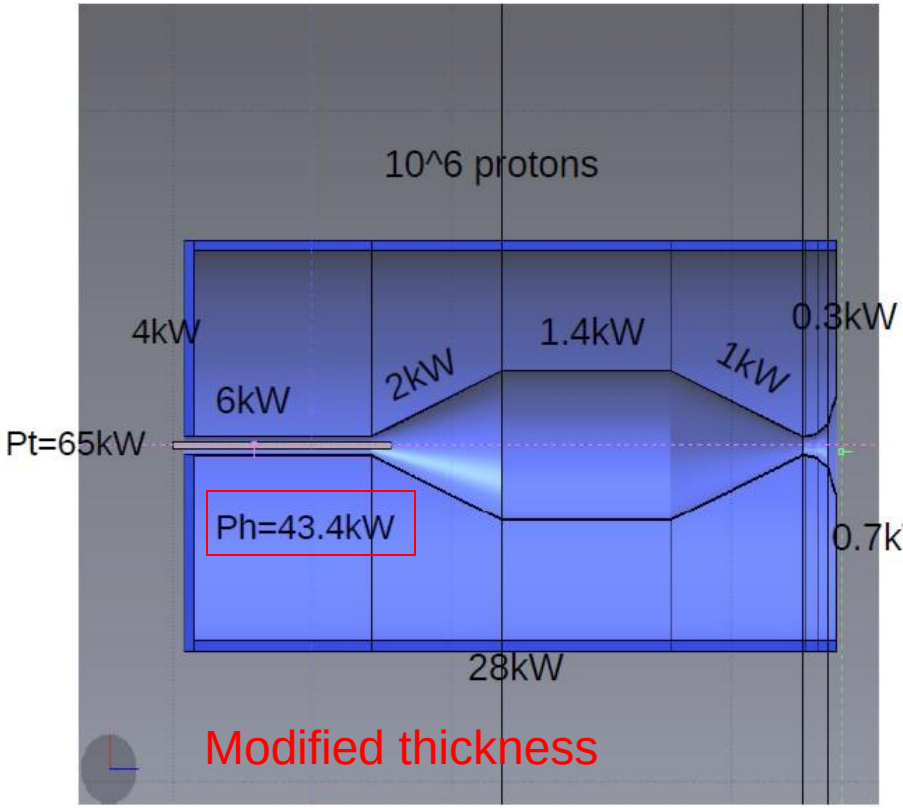
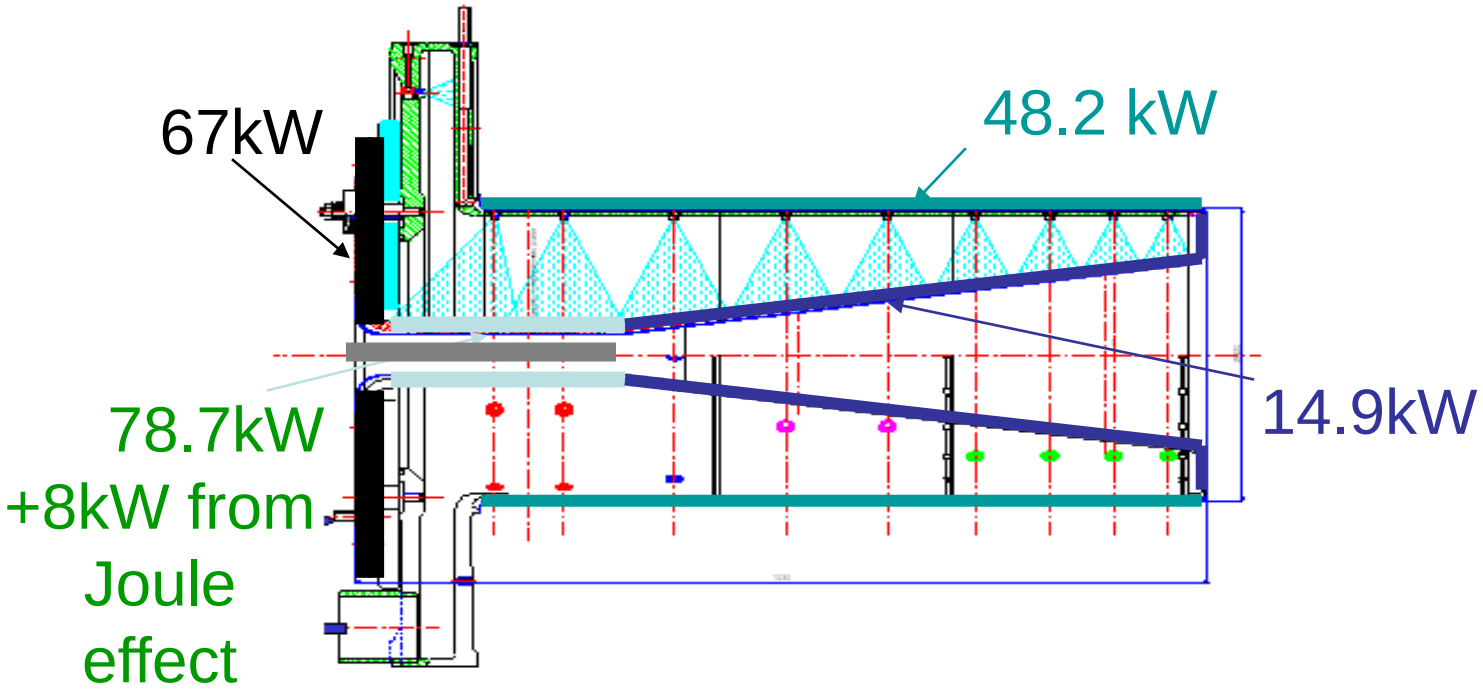




Nicos simulations

Model cont.

Neutrino factory



Water mass flow

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Total energy (particle + Joule) Q_{tot}150kW
Increase of water tempearure ΔT=15deg
Water capacity at 20C c_p =4183 J/kg/deg

$m=Qt_{ot}/\Delta T/c_p$= 2.39 kg/s or $m=0.00239\ m^3/s$

Outlet:

$A_O=m/v_0$ v_0= average water velocity = 0.5m/s

$A_O=0.00478m^2$

1 hole D = 78mm
2 holes D = 55mm
3 holes D = 45mm
4 holes D = 39mm

Preliminary design concept

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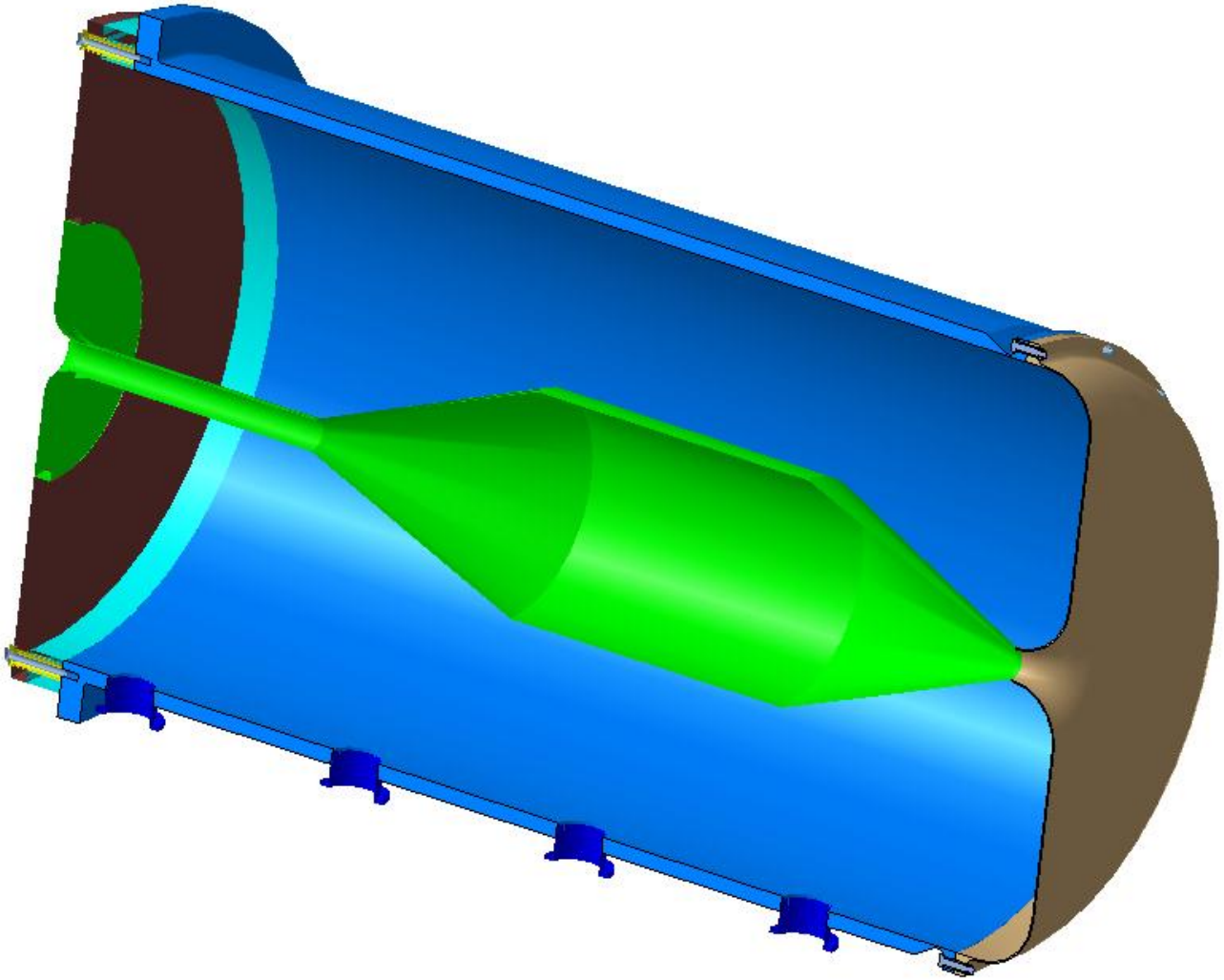

Preliminary design concept

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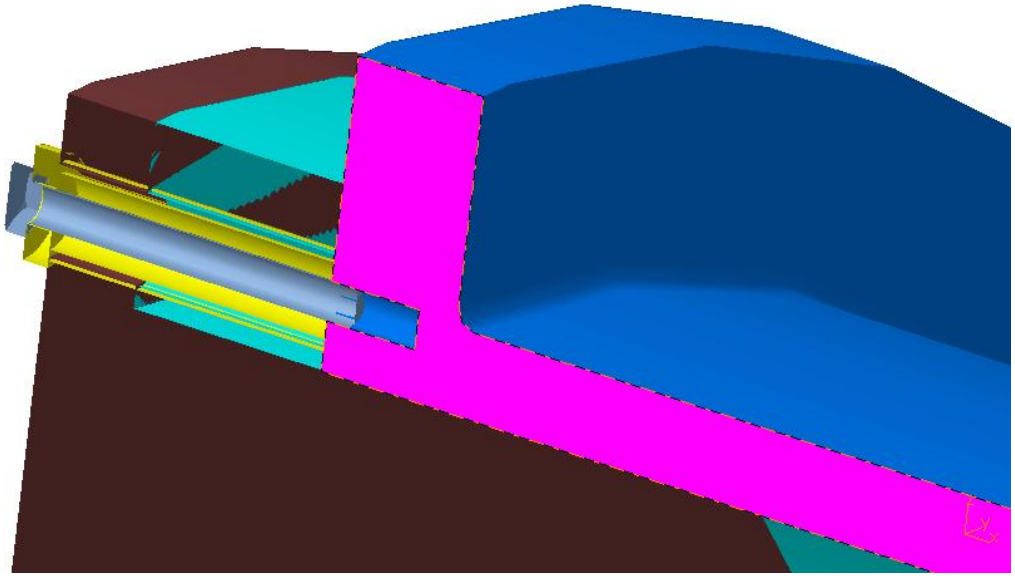

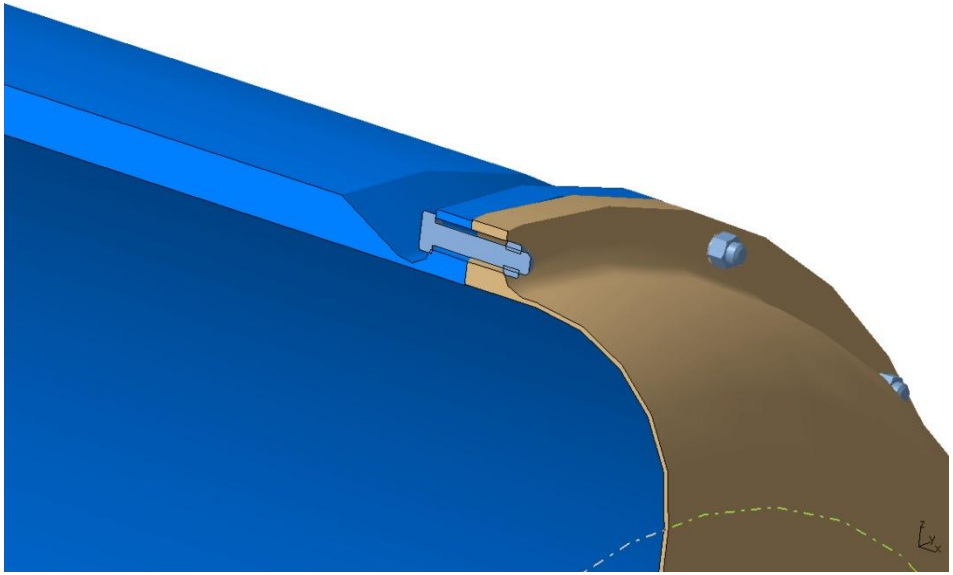

Nozzle connection

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