Cooling scheme for the cold powering system, WP9_Cryogenic_Aspects

Clarifications

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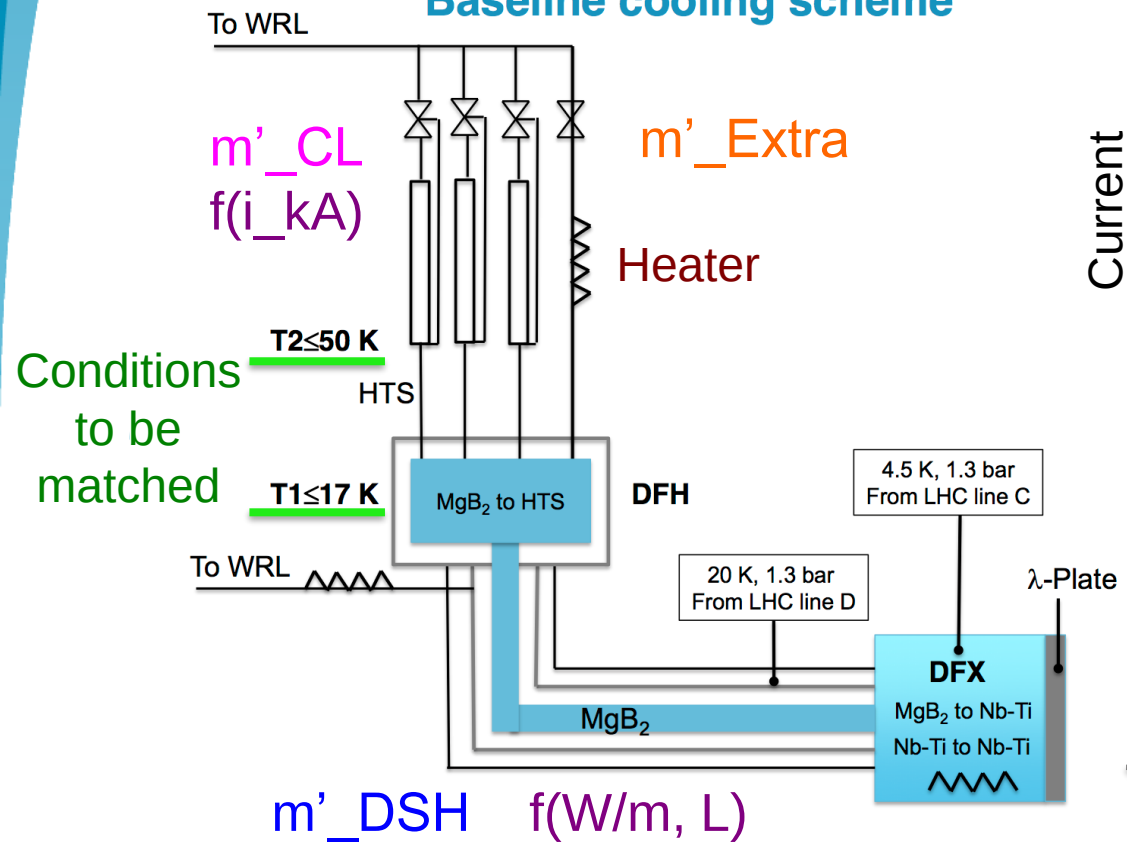
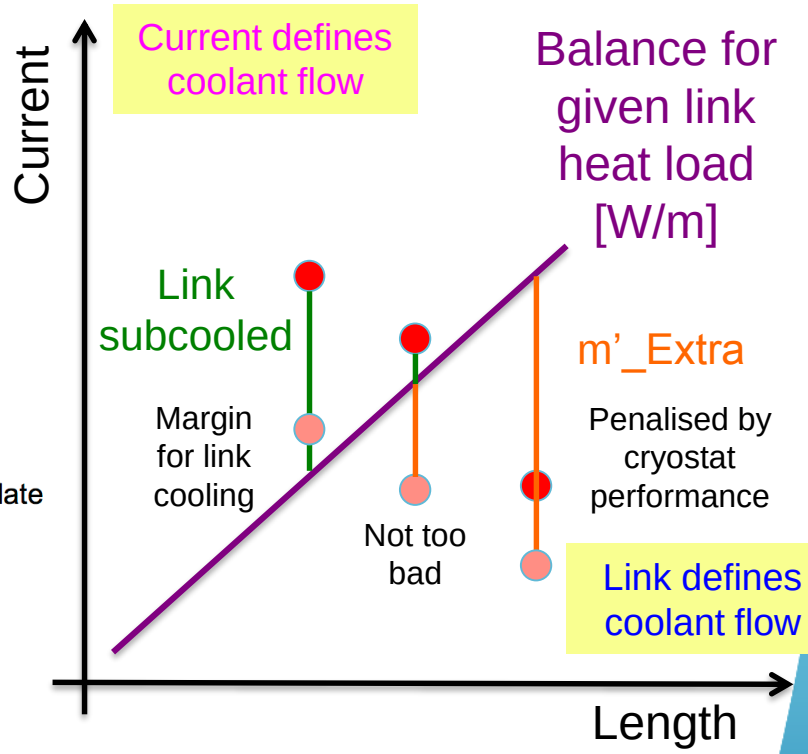
Cooling principle and governing parameters

- A cryogenically optimised sc-link system (flow in series) should not take more mass flow than the one required by the current leads
- Alternative: Separate feeding of the link cryostat (shielded) allowing to cool the leads at a higher temperature that is less “costly” (exergetic) as equivalent load (not HL baseline)

Baseline cooling scheme



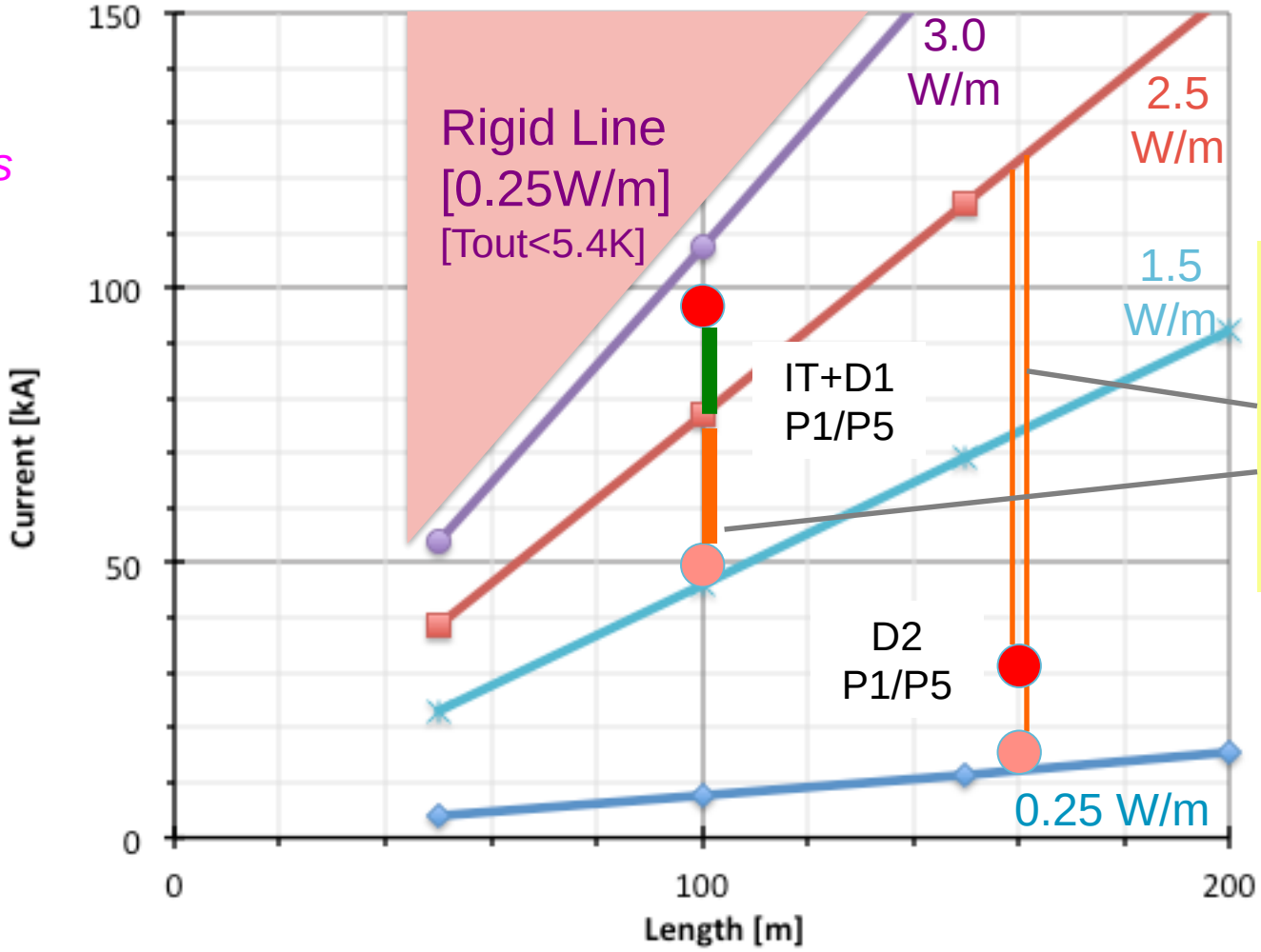


Cooling principle and governing parameters

Basic application to HiLumi, to be completed with splices and other singularities

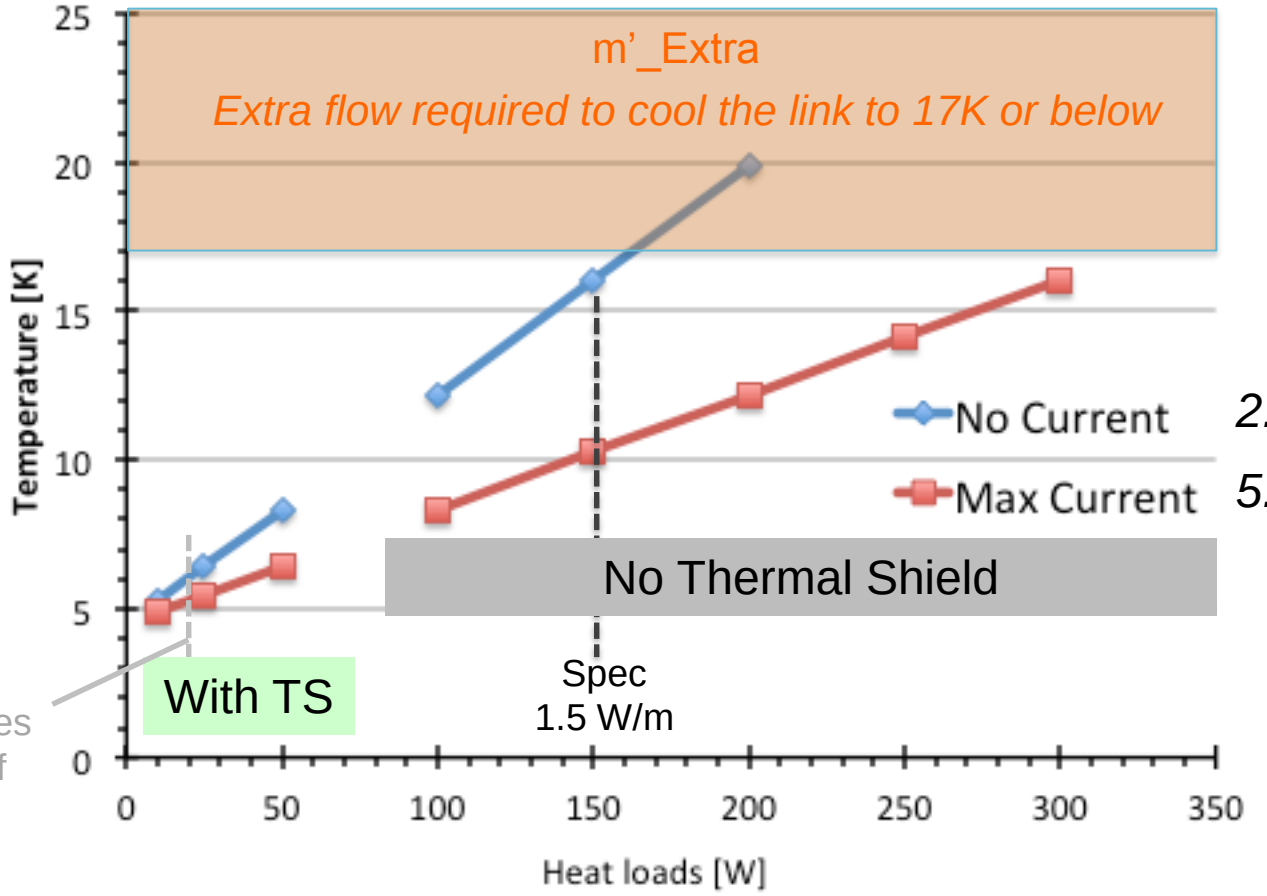
Lines for optimised links (defined before) for a T_out of 17K

50 mg/s per kA



Definitely worth recovering extra flow at low temperature

Temperature at outlet of link



Many references for rigid lines of similar sizes

For 100m cryostat