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# Cryogenics for Super-FRS at FAIR

*Wednesday, 9 July 2014 14:15 (1h 45m)*

The challenge of cooldown the huge cold mass up to 1400 tons (dominated by iron) to 4.5 K is addressed as one of the most important features for Super-FRS cryogenics at FAIR. For such large cold mass the precooling with LN2 is necessary due to the reason that approximately ˜80% of the cool down load is from 300K to 80K. The capacity of the LN2 precooler at 80 K as well as the 4.5 K cooling power have been specified in order to reach reasonable cooldown time of 3 to 4 weeks. In the presentation we will also discuss the technical specification for Super-FRS magnet testing at CERN in terms of the limitations of cooldown / warmup rate on magnets, operation conditions, interface definition, and the magnet cryostat protection against over-pressure under worst-case scenarios, i.e., quench and insulation vacuum loss to air, which are the key issues for the cryogenic test facility planning. In addition the important features of the refrigerator and the cryogenic distribution system for the Super-FRS at FAIR will be presented.

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