



Contribution ID: 209

Type: not specified

## **Exergetic analyses of the Cold Mass Cooling and the Beam Screen Cooling systems of the Future Circular Collider (FCC)**

*Tuesday 10 April 2018 18:04 (1 minute)*

The cryogenic distribution and discharge system of the FCC-hh beam-bending sections (arcs) will require 220 MW of electric power in nominal operation. The two biggest consumers are the Cold Mass Cooling ( $\approx 60\%$  of the supplied power) and the Beam Screen Cooling including the Thermal Shielding of the Cold Mass and the Cryogenic Distribution Line ( $\approx 37\%$  of the supplied power). The cryogenic system will be operated with an exergetic efficiency of around 20%, resulting in 176 MW of exergy losses. Using an exergy analysis, the exergy losses can be matched to the corresponding origins to detect energy sources and determine the potentials for improvement.

This poster presents the results of the exergy analyses of the current designs of the Cold Mass Cooling and the Beam Screen Cooling system of the FCC-hh. The different energy sources are presented and the generated exergy losses are quantified. Possible improvements of the exergetic performance are proposed and will be discussed.

**Author:** KOTNIG, Claudio

**Co-author:** TAVIAN, Laurent Jean (CERN)

**Presenter:** KOTNIG, Claudio

**Session Classification:** Poster session

**Track Classification:** I&O