
SESSION 13: Reverse Brayton Coolers

Paper 13.4

Thursday ORAL Session

9:00 AM

Cryocooler Development for Superconducting Applications

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Absolut System has developed an industrial cryocooler, for superconducting applications.

Our cryocooler is based on Reverse Turbo-Brayton technology (RTB), allowing delivery of cold powers from 20K to 80K. It is composed with turbomachinery (compressors and turbine) also designed and developed by Absolut System.

In addition, Absolut System specify and incorporate the necessarily exchangers, piping, controlling devices and a highly insulated cryostat. Every part of the equipment is assembled and tested by our teams as well as the global performances.

Our equipment is assembled on a compact and autonomous skid (about 10m²/100ft²), making it easy to freight, unload and integrate in a larger system anywhere in the world: it will only need to be connected to the customer's utilities (water, electricity, exhausts, liquid nitrogen if needed for the application) to be functional.

As we master each component and each part of the conception, the cryocooler can be adapted in terms of cold power and temperature to suit many superconductor devices such as superconducting motors for ships or planes, superconducting magnets, regular or high temperature superconducting (HTS) cables, etc. With our cryocooler, superconducting cables can also be cooled with liquid hydrogen, for a combination of hydrogen and electricity transportation.

Also, thanks to special designs options on our turbomachinery with contactless bearings, maintenance will be reduced, and the longevity is increased.

The validation tests of this machine are planned early 2024.