



Contribution ID: 145

Type: **Contributed Oral Presentation**

Commissioning of multistage cold compressor systems

Tuesday 11 July 2017 11:00 (15 minutes)

Refrigeration at 2 K and below has become the new standard in cryogenically cooled particle accelerators. Up to four cryogenic turbo compressors need to be operated in series in order to reach the required sub-atmospheric helium bath pressure. Such highly developed systems shall operate at high reliability not interrupting the entire research facility. Linde Kryotechnik successfully supplied several cold compressors over the last 20 years. This long experience is the basis for a deeper understanding of the behavior of such sophisticated systems. Typical process arrangements for transient and part load operation, optimized control concepts as well as potential risks and corresponding mitigation measures will be discussed. Together with the unique in-house developed control logics for multistage cold compressors these machines present a fully packaged solution for highly efficient and reliable refrigeration at 2 K and below.

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Session Classification: C2OrB - Expanders, Pumps, Compressors and Regenerators