



Two Kaeser rotary screw vacuum pumps are part of CERN's cryogenic plant – a gigantic experimental installation run by the European Organization for Nuclear Research located on the border between France and Switzerland.

To create these extremely low temperatures, the world's largest cryogenic plant has to extract liquid helium. A consortium made up of Air Liquide, Linde Kryo-technik AG and a service and project management company, Serco GmbH, was awarded the contract.

Due to the stringent demands for efficiency and reliability, Air Liquide purchased two Kaeser rotary screw vacuum pumps for the project. The decision to use these machines "... demonstrates everything we know about extracting gases with rotary screw compressors" according to the Kaeser Managing Director Thomas Kaeser, "and bears witness to Kaeser's expertise and leadership in the field of engineering."

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A Crash Course

Large Hadron Collider (LHC) is the term used for the particle accelerator built just outside Geneva by the Centre Européenne pour la Recherche Nucléaire (CERN). "Large" is certainly no exaggeration. The circular particle accelerator measures 17 miles in circumference and is housed in a tunnel almost 100 yards underground.

On this 'race-track' for elementary particles, 3,500 super conductive magnets

make up the guardrails that keep matter on course. Superconductivity, the complete disappearance of electrical resistance in a substance, is only possible when temperatures are close to absolute zero (0 Kelvin, -273.16 °C, -460 °F). The working temperature of the magnets is 1.9 Kelvin, significantly lower than the mean temperature in outer space. Some theorize that this temperature does not fall below 3 Kelvin due to residual heat from the big bang.

In the LHC, commissioned in 2006, CERN scientists study the head-on collisions of particles. The LHC machine is an accelerator which forces protons to collide at higher energies than have ever been achieved. This allows scientists to recreate the prevailing conditions in the early universe immediately following the big bang and better understand the structure of matter.



Herbert Wahl from Kaeser stands with Gilles Gaillard and Eric Walter from Air Liquide.