ATEKO a.s.

1949 – 2020

Cryogenics & Low Temperatures Equipment
Low Temperature Heat Exchangers

- Spiral wound design
- Temperature: up to 77 K
- Pressure: up to 1.6 MPa,g
Helium Expansion Turbines (HET)

• A single shaft high-speed cryogenic machine braked by eddy current brake
• Designed as a one stage expansion of He or other gases (N₂, Ar, CO₂, CH₄ etc.)
• Up to 300 000 rpm
• HET 2 – 10 kW, HEXT 0.1 – 2 kW
• Inlet temperature: from approx. 5 K (or by customer requirements)
• Pressure: up to 2.5 MPa,a (or by customer requirements)
Cold Compressors (CC)

- A single shaft high-speed machine
- Designed as a one stage compression of cryogenic Helium
- Up to 54,000 rpm (or higher according operating param. and customer requirements)
- 0.1 - 10 kW
- Temperature from approx. 2.5 K
- Pressure from: 3 kPa (or lower or higher)
Turbo-Expander Circulator (TEC) – Cryogenic Cooling System Brayton (CSB)

- A cryogenic cooling system Brayton
- 250 000 rpm
- Cooling power: 0.1 - 20 kW
- Temperature: 170 - 5 K
- Pressure: 2.5 Mpa,a (or higher according to customer requirements)
International Underground Laboratories - Radon Removal Systems

Laboratories:
- Modane, France, 2004,
- Gran Sasso, Italy, 2011-12,
- Y2L, Korea, 2015
- LSC, Spain, 2015
- SURF, USA, 2017
- Jin Ping, China, 2019

Technical data:
- Air flow 120 – 300 m³/h
- Input radon concentration 20 - 100 bq/m³
- Reduction of radon concentration 1000
- Output air humidity -70°C
KIMM – Korea Institute of Machinery and Materials, Korea
• Neon Turbo Expander
• Brayton Cycle Test Circuit
• Design and delivery
NFRI – National Fusion Research Institute, Daejeon, Korea
- Cold Compressor
- Delivery and on-site commissioning
- Helium vapours - 3.8 K Working Temperature
Shanghai Jiao Tong University, Jin Ping, China
- Radon Removal System
- Delivery 2018, on-site commissioning 2019
- 220 m³ / hour
- Reduction of Radon concentration: 1000
Wounded Heat Exchanger, customer in Russia via Germany
• Total heat area of heat exchanger is approx. 42,6 m².
• Design pressure (for all spaces) 5 MPa,g
• Design temperature (for all spaces) -90°C - +50°C
• Working medium - mixture of: Hydrogen, Ethane, Ethylene, Propane, Propylene, Nitrogen
• ASME Sect. VIII, Div.1 without U-stamp, EAC (TR TS 032/2013, TR TS 010/201)
TIPC, China
• 3 pcs.
• Cold compressors
• Including control system
• Delivered and on-site tested
• Inlet pressure 3 – 25 kPa,a
• Max. 43 000 rpm
ASIPP, China
- Helium turbo-expanders
- Cooling power: 500 - 10 000 W
- Inlet temperature 14 K – 80 K
- Inlet pressure 0.5 – 2.0 MPa,a
- Max. 250 000 rpm
- 2 types (HET and HEXT)
- 9 pieces – 5x HET, 4x HEXT
TIPC, China
- Helium turbo-expanders
- Cooling power: 500 - 10 000 W
- Inlet temperature 14 K – 45 K
- Inlet pressure 0.5 – 1.8 MPa,a
- max. 250 000 rpm
- 5 pieces – 1x HET, 4x HEXT
ELI Beamlines
• AV CR, 2014 - 2015, Czech Republic
• Cooling System Brayton
• 1x Helium turbo-expander-circulator, 1x Turbo-circulator
• Cooling power: 300 W
• Cooling temperature 150 K
• Design pressure 1.2 MPa,a
• 120 000 rpm
Low temperature spiral wound heat exchanger, Lukoil Stavrolen, Russia
• 1 pc., Hydrogen and Hydrocarbons
• ASME VIII Div. 1
Thank you for your attention

http://www.ateko.cz
ateko@ateko.cz