

1200 bar Hydraulic Cycling Facility for Extreme Temperature Tests

Key words

Cyclic internal pressure tests, hydraulic life time assessment (fatigue strength)

Fields of application

Assessment of pressure receptacles and gas storage systems within the frame of approvals, improvement of regulations and research studies

Methodology and instrumentation

Cyclic load changes at controlled temperature
Monitoring of pressure, temperature, strain and delivered volume
Multiple regulated pressure – time – sequence
Medium: water-glycol-mixture

Items tested

Pressure receptacles (cylinders, tubes) and gas storage containments made of metal or composite materials up to geometry of 4000 mm length and 800 mm diameter.

Quantities / characteristics tested

Maximum cycling pressure: 1200 bar
Test chamber and fluid conditioning: -60 °C to +90 °C
Volume flow up to 5.5 litre per stroke/cycle at a cycling pressure of 1200 bar
and 11 litre per stroke at a cycling pressure of 600 bar

Uncertainty / reliability of results

Desired pressure deviation ± 10 bar at a test pressure of 1200 bar

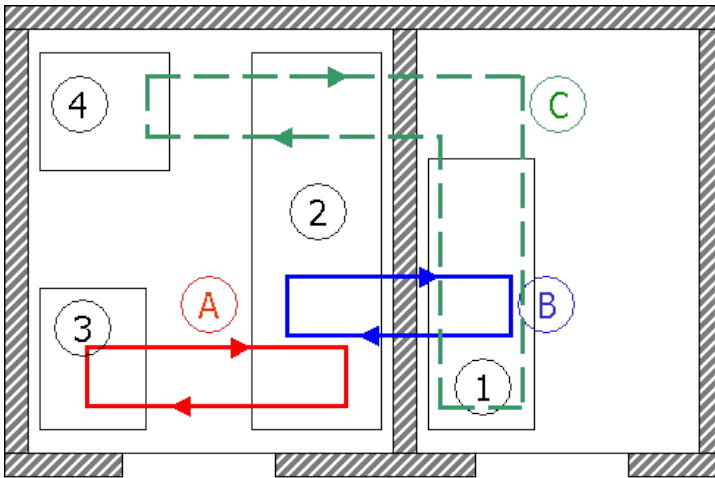
Qualification and quality assurance

Unique in Europe, BAM quality management system

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Further information

Overview of the different technical units



- ① Testing chamber
- ② Pressure intensifier
- ③ Hydraulic power unit
- ④ Climate control unit

Fig. 1: Disposition of the different technical units

- Ⓐ Closed oil circuit at 350 bar
- Ⓑ Open circuit of the test medium
- Ⓒ Heat exchange

① Testing chamber



Fig. 2: Opened testing chamber

② Pressure intensifier



Fig. 3: Two pressure intensifiers with back-pressure unit