

CRYOGENIC LABORATORY

ECOMAT



ECOMAT research and technology center in Bremen pools the expertise of industry and science in the sustainable transformation of the aerospace industry since 2019.

Faserinstitut Bremen e.V. and Airbus started in spring 2024 to operate the common Cryogenic Laboratory in close cooperation for material testing.

Thermal Fatigue Testing

used to expose materials to cycles of different temperatures and to simulate thermal fatigue in a short time frame.

- manufacturer: Cryovac
- measuring in (cryogenic) He
- temperature range: 4 K – 303 K
- size specimen or parts D/H: 100 mm x 300 mm (max)

Thermomechanical Analysis

used to determine the thermal induced elongation or contraction of materials (CTE).

- manufacturer: Linseis
- measuring in (cryogenic) He
- temperature range: 4 K – 473 K
- specimen: 7mm x 30mm (max)

Dynamic / Fatigue Testing

- manufacturer: ZwickRoell/Cryovac
- temp. in LN2: -196°C / in Helium(*) between 10 K and 303 K
- special feature: integration of He permeation test planned
(*) in operation December 2024

Quasistatic Tensile Testing

used for characterization of mechanical material properties, i.e. modulus, elongation at break, transverse contraction and interlaminar shear.

manufacturer: ZwickRoell
force: 100 kN (max)
temperature: -196°C (min)

- special features:
- measuring in liquid N2 (LN2)
 - space D/H: 30 mm/200 mm
 - individual devices possible
 - video-extensometer
 - acoustic emission



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