TWEED

Marc Duquenne July 4, 2022



BEBLUE

Beblue is proposing testing capabilities with cryogenic fluids, namelly Hydrogen, Oxygen and Nitrogen both liquid or gazeous.

More than 3 decades expertise in cryo tests One of the 3 recognized ESA test centers





BBLUE

MISSION

We want to accelerate the adoption of new fuels for space and e-mobility, by enabling stateof-the-art cryogenic testing capabilities.

BeBlue



SECTORS



- A unique expertise in Europe
- University of Liège
- Training
- Research
- Provide access to modern & efficient means



- Strategic player in the testing
- Secure current activities
- Ensure future developments
- Support new space markets



- H2 sector development
- Fuel Cells
- Vessels and components testing
- European partners & stakeholders
- Participate in the future development of the European H2 sector

WHAT?

BEBLUE offers a wide range of expertise and capabilities



Material Characterization

- Pin On Disk
- Impact
- Auto-Ignition
- Adiabatic compression



Components & System Testing

- Complex components testing in real conditions
- Dynamic testing



Engineering & Expertise

- Cryo-tribology
- Test rig design
- Test rig integration
- Test management

MATERIAL CHARACTERIZATION

- Pin-on-disk tests in gaseous and liquid environments (N2, O2, H2, He)
- Impact tests in oxygen (LOx)
- Auto-ignition tests in Gox (120 bars , up to 500°C)
- Adiabatic compression test (GOx, H2...) up to 1000 bars
- High cycling fatigue under cryogenic conditions
 (update for 2022)





COMPONENTS AND SYSTEM TESTING

Fully operational benches for tests in real dynamic conditions for space engine components

- Dynamic seals
- Bearings
- Valves
- Liquid or gaseous nitrogen and oxygen.
- 700+ sensors and measurement lines

Focus on H2 based systems testing:

- Fuel cells with ULiege
- H2 distribution & storage (composite)





OUR EXPERTISE

Engineering office with strong expertise in testing :

- Cryotribology
- Design capabilities for specific test rigs
- Test rigs integration
- Project management
- Test management & reporting
- 30+ years experience in cryotechnic



BEBLUE



OUR ADDED VALUE



(*) Fuel cells department will be located on BEBLUE site

HOW?

- Gazeous Hydrogen
 - up to 200 bars
 - Max flow : 6 g/sec
 - Capabilities will be extended
- A liquid oxygen (or nitrogen) tank:
 - Capacity 10.000 liters
 - Max. pressure 32 bars
- Liquid oxygen line & accessories :
 - Flow : 5 kg/s
 - Pressure : up to 120 bar
- A liquid nitrogen tank :
 - Capacity of 10.000 liters
 - Max. pressure of 10 bar
 - Flow: 0.75 kg/s
 - Used to cool liquid oxygen



HOW?

- High speed motors and gear boxes for dynamic tests
 Available characteristics :
 - up to 14.000 rpm / 22 kW
 - up to 25.000 rpm / 110 kW
 - Up to 30.000 rpm / 30 kW
 - Up to 80.000 RPM for testing combustible pump components
- Composite tank testing up to 700 bars (by 2022)
- LOX supercritic (> 50bars)
- 4000m² secured test site qualified for cryotesting, located at Liege Science Park and University



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Test Site

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OUR POSITION

We are a strategic player for cryogenic testing.

