Updates on high-pressure

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Agenda

1 Update on the High-Pressure Sample Environment Systems TA (NIK 3.7 #1)

2 Pressure Testing Facility

3 Pressure generators

4 Future tasks

Update on HPSE TA

Deliverable D.1.1: Gas, liquid and clamp systems

LLB is currently in the production phase for gas and liquid cells. Due to the worldwide material shortage, the designs have been adapted to use alloy 7175 instead of 7049A. Note that ILL uses alloy 7075, which is the non-aeronautical equivalent of alloy 7175.

The clamp cell is still in the adaptation phase.

Sample fluid	Material	Bore diameter (mm)	Max. Operating Pressure (kbar)
Gas/Liquid	TiZr	7	5
Gas/Liquid	TiZr	5	5
Gas/Liquid	Al	7	4
Gas/Liquid	Al	5	4
Gas	CuBe2	7	7
Clamp	CuBe2	5.0	15

Deliverable D.1.2: A system to control He gas pressure up to 1 GPa

LLB is in the process of awarding **SITEC** the contract and awaiting signatures from the relevant managers. They will then be able to notify the contract and start its execution, which is planned for the end of March.

Deliverable D.2.1: Paris-Edinburgh Press Suite

The PE presses (1x VX5 - AW819, 2x VX1 - BeCu) will be ordered and delivered by the end of the year.

Deliverable D.2.2: High-pressure Paris-Edinburgh Gas Loading System

CEA is working on finalising the drawings during April, and then it can go for manufacture.
The reliability of the gas loading system is guaranteed up to 3 kbar for neutral gases. At present, the system is not yet perfected for hydrogen. Stefan Klotz is working with the company Top Industrie to improve the reliability of the diaphragm in contact with hydrogen. Therefore, it is wise not to order now and wait a bit for the test results.

Deliverable D.2.3: Cryostat for Paris-Edinburgh presses

LLB is still in the phase of preparing the licence agreement with ILL.

Pressure Testing Facility

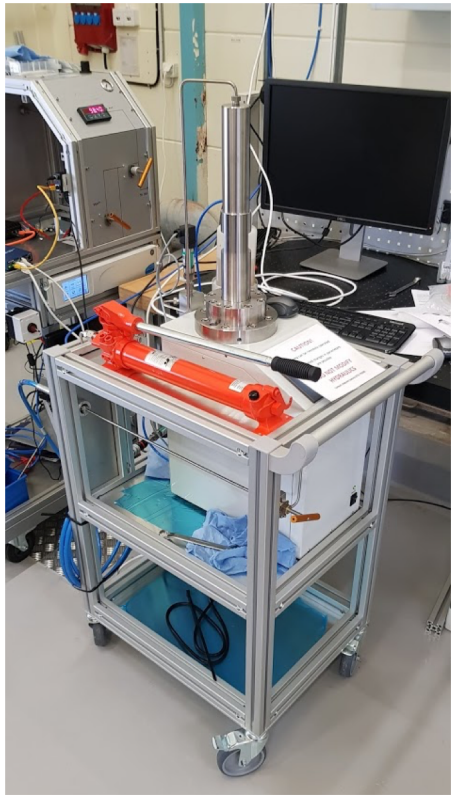
FAT was performed on 2/12-21 at Bofors Test Center and passed with a 35dB reduction in Lcpeak and comfortably stopped 188 joules of impact energy.
PTF was delivered to ESS (D01) on 2/2-22 and can stay and be used there for the foreseeable future.

Pressure generators

2x 200bar gas GE Pace 5000 units (automatic)
2kBar hydraulic Maximator/Pace (manual/automatic)
2kBar syringe pump Vinci (automatic)

Integrated or nearly integrated into EPICS / NICOS

7kBar syringe pump being built in-house (manual) based on the unit built by Burkhard Annighöfer at LLB



Future tasks

Integration and training

Design primary installation via cryostat stick

Training to enable in house construction of cells

Verification of systems and regular pressure testing is (legally) needed:

To verify new systems are safe

To re-verify a system is safe after any change or maintenance

To routinely check performance of safety devices (such as pressure relief valve)

Safety

Operating and maintenance procedures for all HP equipment

Documented and reviewed risk assessments for all equipment

Series of required records (legally) required:

Risk Assessments

Specific activity and area hazard analyses

Calibration certificates

Maintenance records

Log of safety-specific devices (burst discs, P relief valves etc)