

# NMI 3 FP7 JRA Sample Environment *LLB status report*

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## Sub task 21.2.1

### *Gas handling and pressure cells for inert gases*

D21.18 "Manufacture two cells for up to 8 kbar".

(□ 30/06/2011)

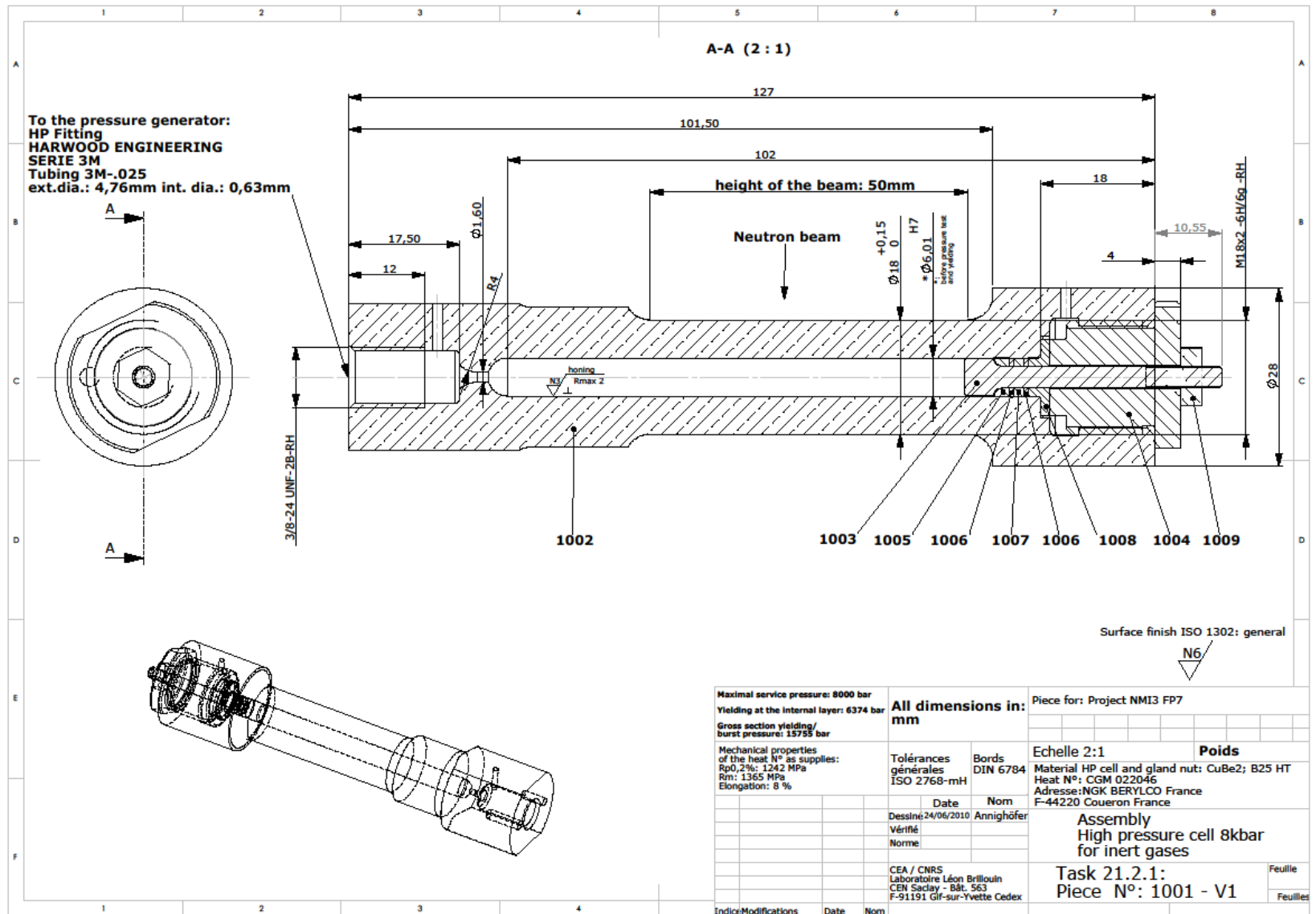
- 3 pressure cells have been designed and manufactured at LLB.
- Tests were performed at ISIS in September 2010

Cell ② was subjected to a destructive pressure test and reached 12.7 kbar without breaking.

Cells ① and ③ were tested up to 9.2 kbar for a service pressure of 8 kbar. One of them is currently in use at the HZB.

- Helium pressure run at low temperature will be carried out this spring.

# High pressure cells for inert gases to 8 kbar



# High pressure cells for inert gases to 8 kbar

## I. Design features

- Inner diameter: 6 mm
- Outer diameter: 18 mm
- Beam height: 50 mm
- Material: CuBe2, B25 HT



## II. Development of cell achieved

- Calculated burst pressure: 15.7 kbar
- Yielding at the internal layer: 6.3 kbar

## III. Prototypes tested at ISIS-facilities

- Cell ②: applied pressure 12.7kbar → heavy yielding
- Cell ① and ③: applied pressure 9.2kbar → ready for use at 8kbar

❖ *from Burkhard and François:*

*many thanks for support and hospitality !*

## Sub task 21.2.1

### *Gas handling and pressure cells for inert gases*

M21.2.1.3 "Design plan review for cell up to 10 kbar at 300 K".

(□ 30/06/2011)

- Design in progress. Detailed drawings expected on schedule.

D21.07 "Procure 10 kbar automated gas handling system".

(□ 30/06/2012)

- Defining the scope of the project: cost-benefits analysis of different options.

# Automated 10 kbar gas handling system

- Existing (manual) system certified for 10 kbar.
- Bells and whistles automation *not* required for foreseen operation (by qualified staff only).

## *Main focus:*

- Provide smooth ramping up and down
- Ensure  $P$  stability while warming and cooling, or in case of minor leakage.

## *Implementation:*

- “CNRS valve” currently not usable at these pressures.
- Electro-valves + impedences and/or buffers
- Logic stage: Eurotherm controller? (ILL expertise...)