Mirion Boron-Meter Solutions

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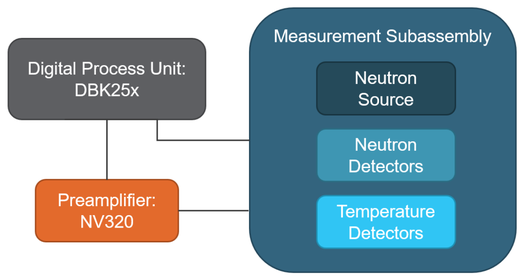
Boron Concentration Measurement

Boron-meter Systems:

- Continuous and non-intrusive measurements of boron concentration in nuclear reactor
- Adaptable solutions
- Flexible range of application (monitoring, prevention, integration)
- Normal and incidental conditions
- Adapted safety classifications
- State-of-the-art uncertainties estimation



France

BM501

48/48 installed and calibrated measurement channels

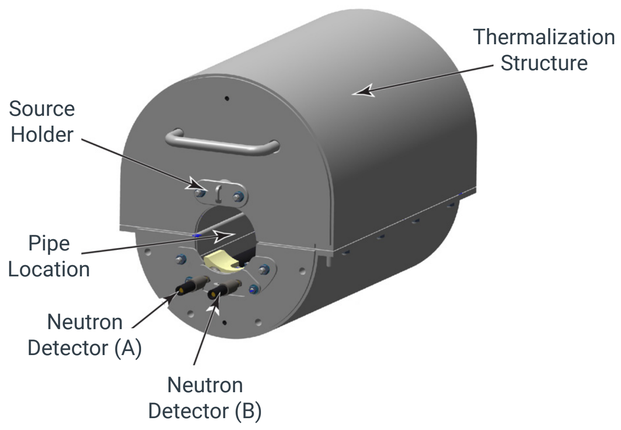
EPRs

BM502

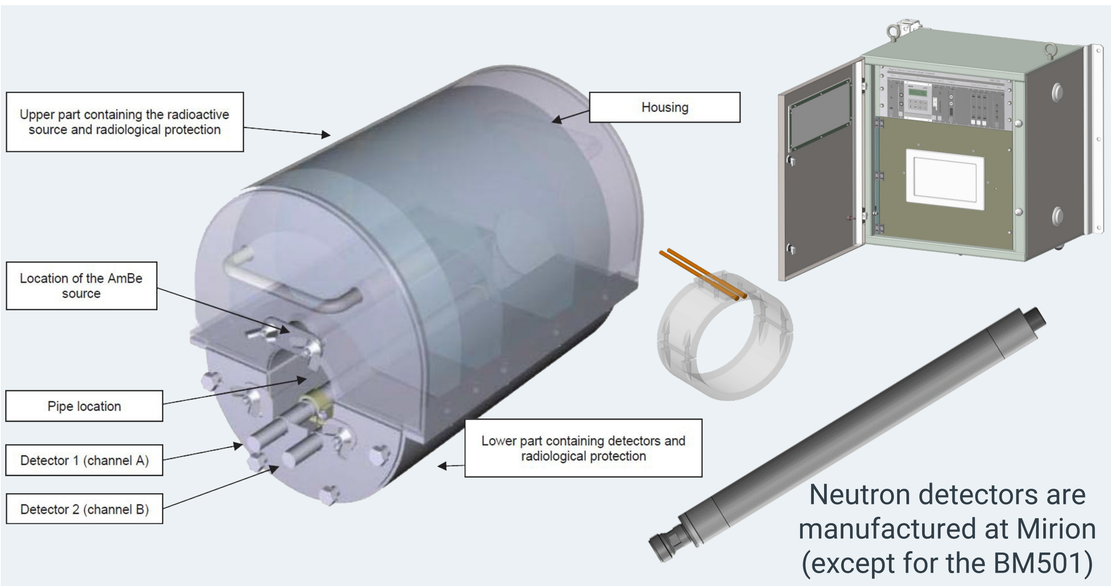
Fabrication Phase

BM503

Fabrication Phase



Sub-Assemblies



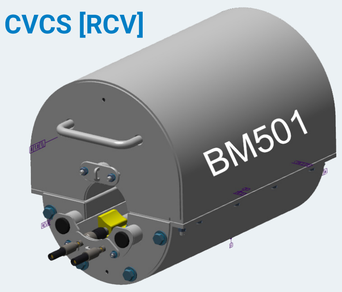
Neutron detectors are manufactured at Mirion (except for the BM501)

Applications

The range of applications is large and depends on the needs of the end customer:

- Prevention of dilution incidents.
- Continuous monitoring of boron concentration (total and/or 10B) for safety-related applications.
- Integration into automated systems (such as the automatic lithium injection system), etc.

@ CVCS [RCV]



- Preventing dilution accident
- CAT-B

@ NSS [REN]

- Continuous Boron concentration measurement
- Higher safety category compared to BM501 (CAT-A)
- New neutron detector developed by Mirion (PN25)

@ NSS [REN]

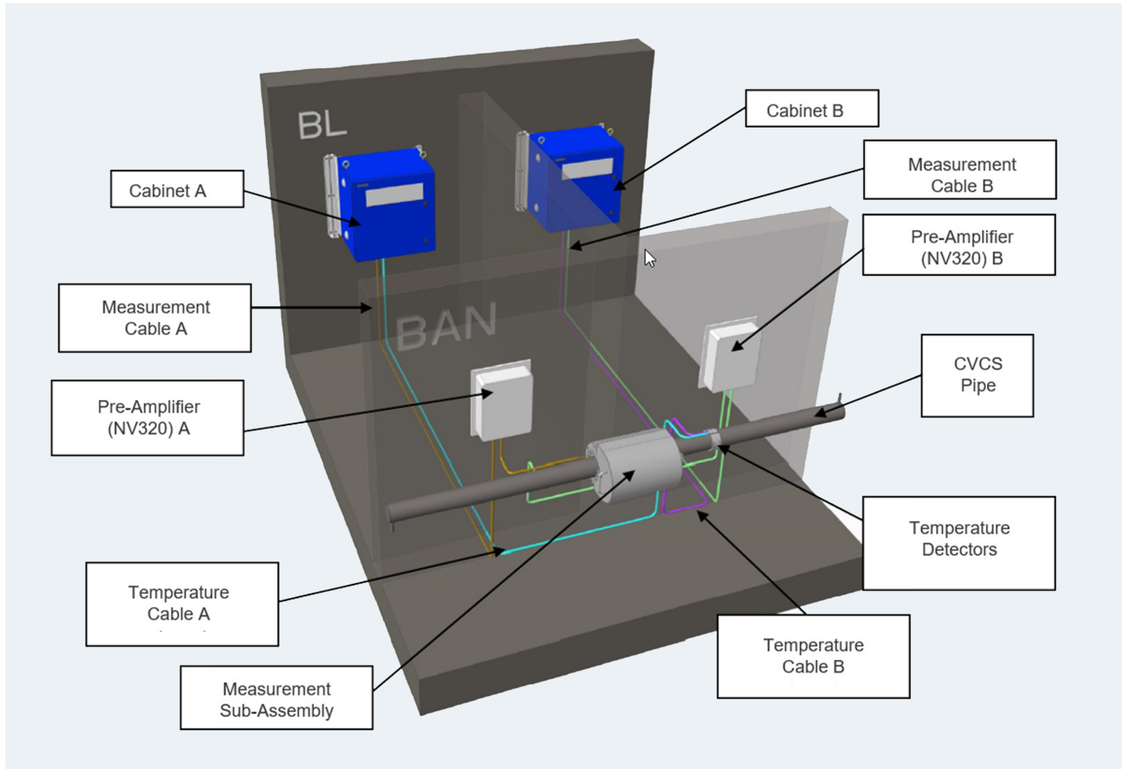
- Integrated to the Lithium injection system
- New calibration model allowing wider measurement range
- Uncategorized

Site Installation

Beyond providing equipment, Mirion offers support in defining solutions tailored to the customer context. This support helps the customer through all commissioning activities.

Installation and commissioning are ensured by Mirion experience, thanks to:

- Technology choices in system design
- Know-how in system qualification
- Knowledge of site procedures
- Adaptation of system commissioning to site constraints



Development (BM501)

Site Calibration & Verification

System calibration is adaptable to site constraints.

Boron-meter site calibration at commissioning: several calibration points:

- **@CVCS:** joint effort between the operator, on-site chemical laboratory and Mirion technicians
- **@NSS:** a portable calibration bench may be used (joint effort between on-site chemical laboratory and Mirion technicians)
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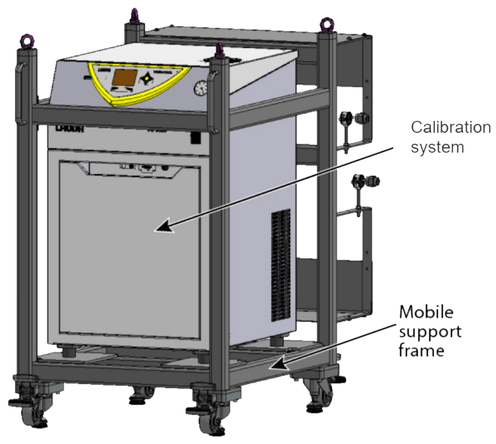
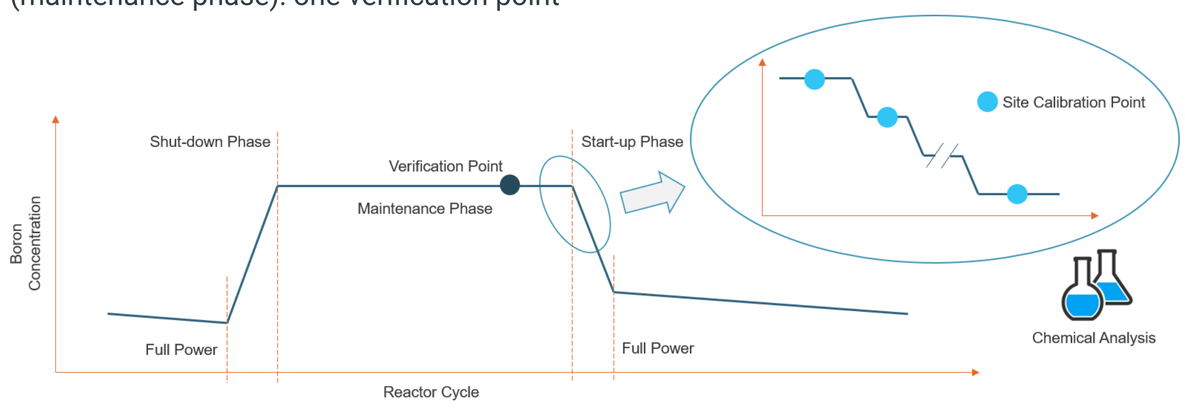
Boron-meter Verification at each cycle (maintenance phase): one verification point





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