

LOCA Laboratories in Research Centre Řež

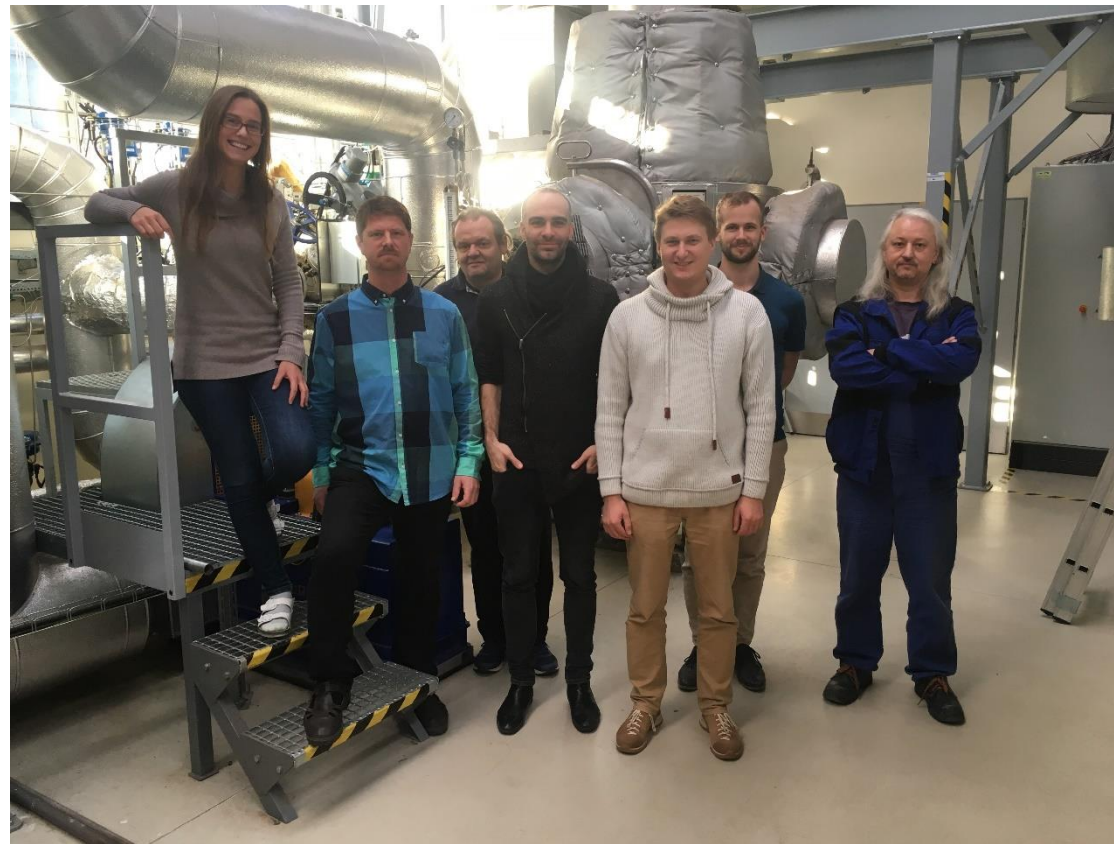
Roman Mohyla
Research Centre Řež



Who we are and what we do



- Testing components for NPP
- Testing new materials for NPP (geopolymers, concrete)



Laboratories



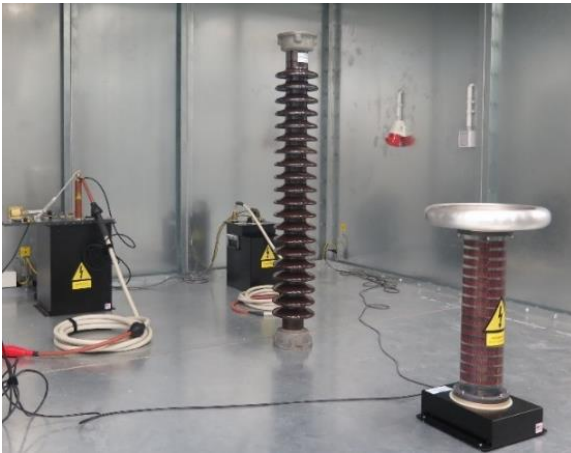
1. High Voltage laboratory
2. Gamma irradiation laboratory
3. LOCA laboratory



1. High Voltage Laboratory



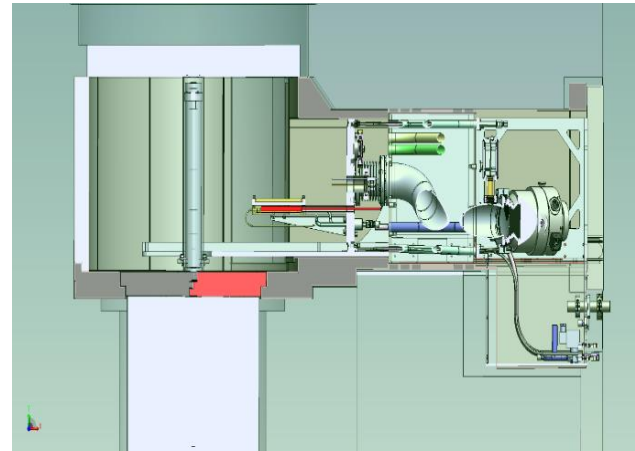
- **Withstand Voltage Test**
 - 50 kV AC / 100 kV DC
- **Insulation Resistance Test**
- **Test in water pool with controlled water temperature up to 90°C**
- **Possibility to test large and heavy specimens (crane)**
- **Accredited laboratory**



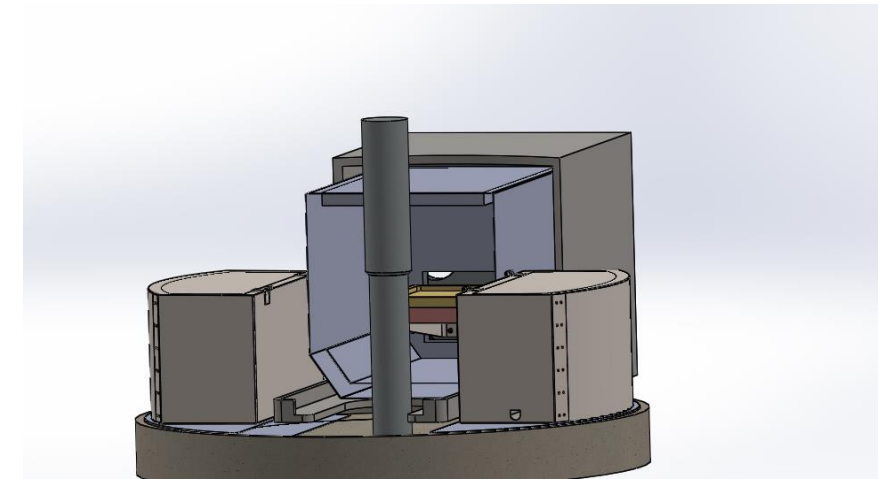
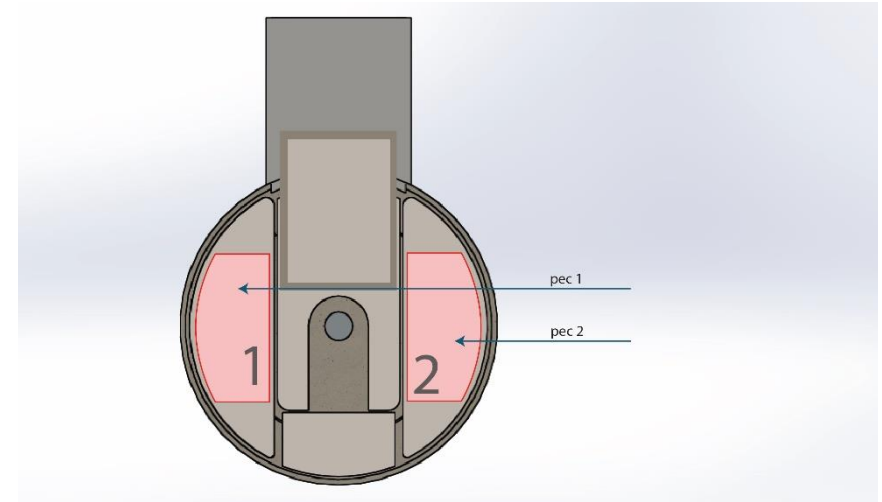
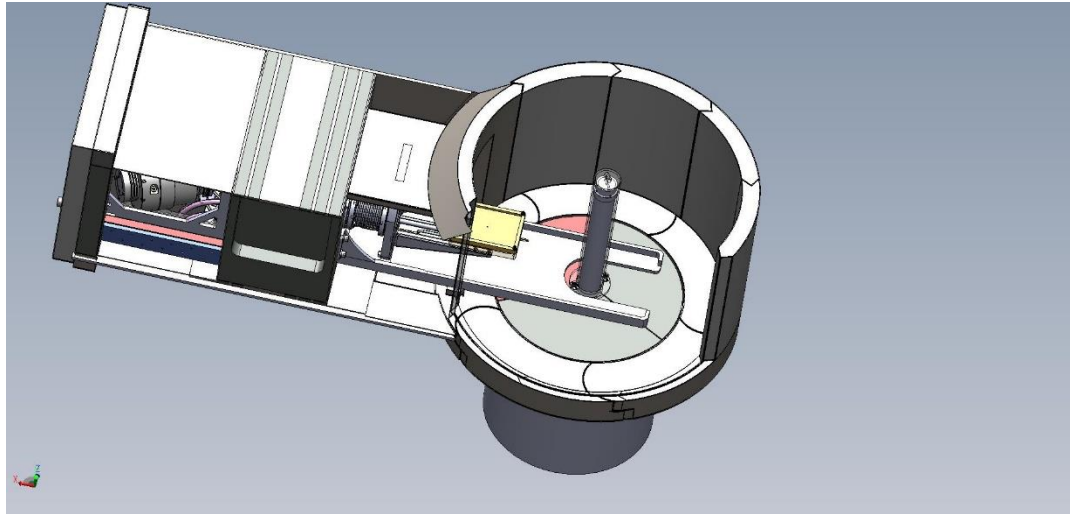
2. Gamma Irradiation Laboratory



- Irradiation source ^{60}Co , activity 200 TBq
- Experimental box with possibility to irradiate with various temperatures
- Temperature aging irradiated components
- Laboratory designed for small samples



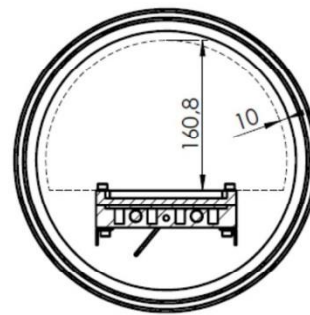
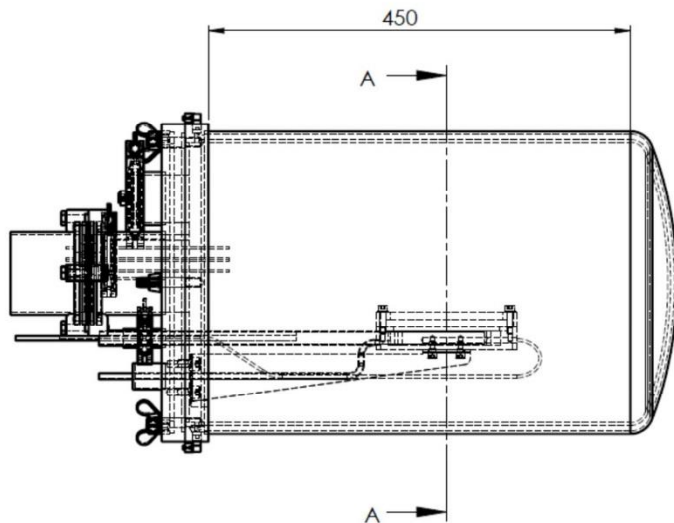
2. Gamma Irradiation Laboratory



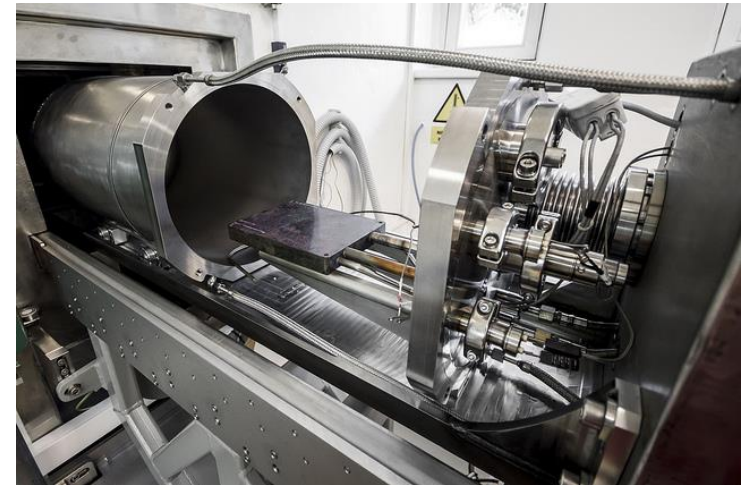
2. Gamma Irradiation Laboratory – experimental box



- Sample holder 150x200 mm
- Max. height irradiated samples 160 mm
- Length of the box 450 mm
- -196°C/ +400°C and high vacuum.
- Polymers, electronic devices and equipment, plastic components, geopolymers



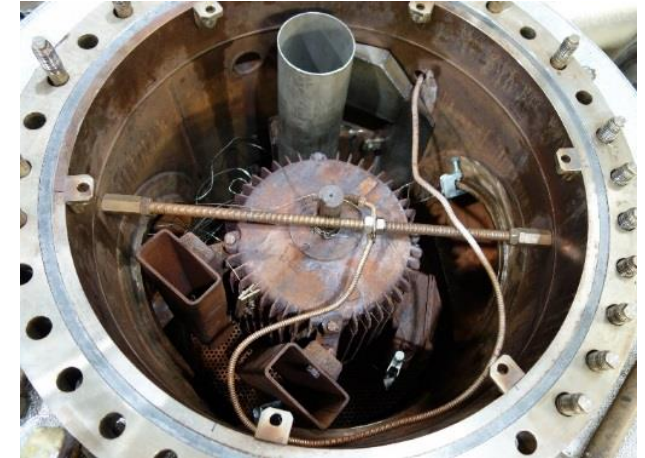
ŘEZ A-A



3. LOCA Laboratory



- LOCA (Loss of Coolant Accident)
- Designed for large specimens
- Testing cables, motors, pumps, sensors,...



3. LOCA Laboratory



■ Main parts of LOCA technology:



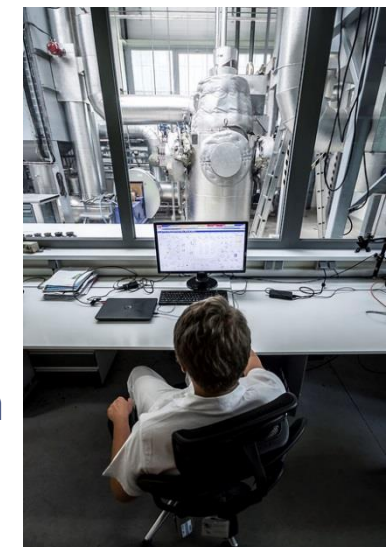
Pressure vessels for tested samples



Spray solution system



Steam boiler for generating steam



Control room

3. LOCA Laboratory



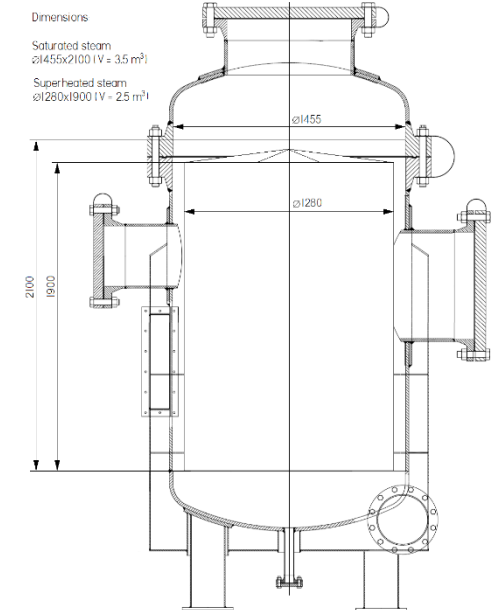
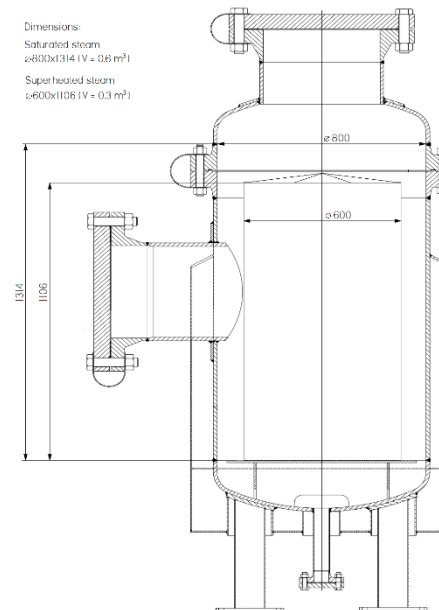
Large LOCA
 $V = 3.5 \text{ m}^3$
 $T_{\text{max}} = 300 \text{ }^\circ\text{C}$
 $p_{\text{max}} = 20 \text{ bar}$



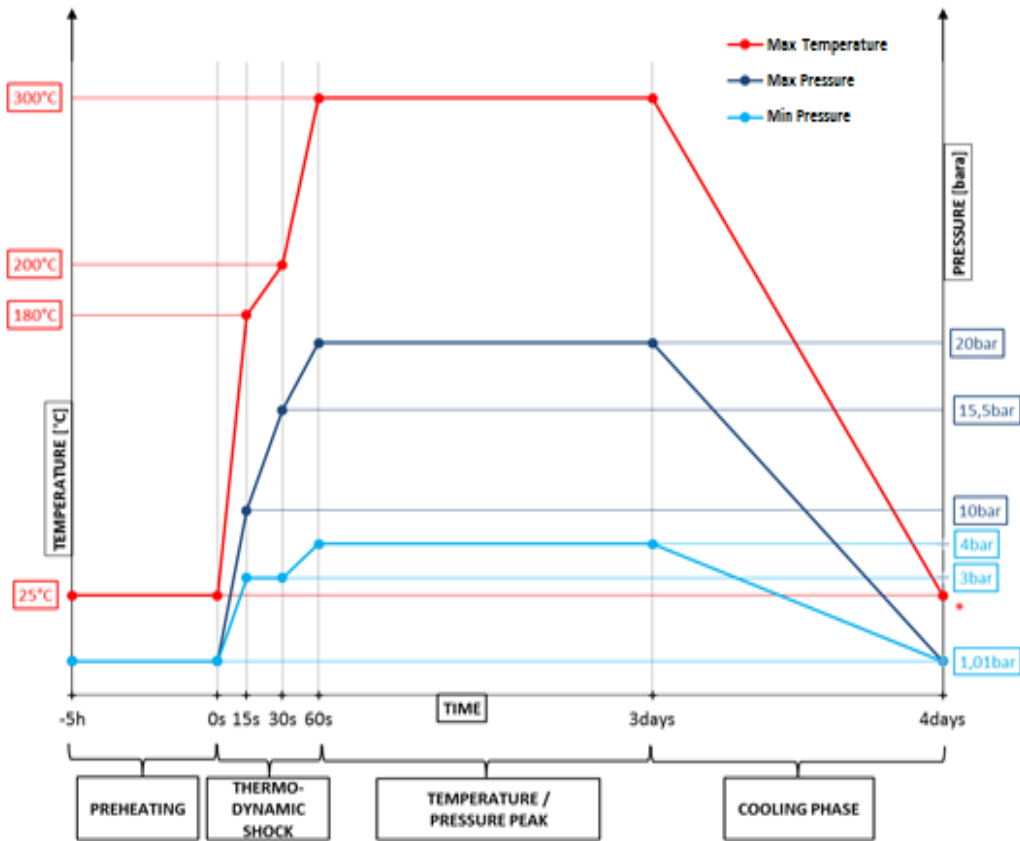
Small LOCA
 $V = 0.6 \text{ m}^3$
 $T_{\text{max}} = 300 \text{ }^\circ\text{C}$
 $p_{\text{max}} = 20 \text{ bar}$



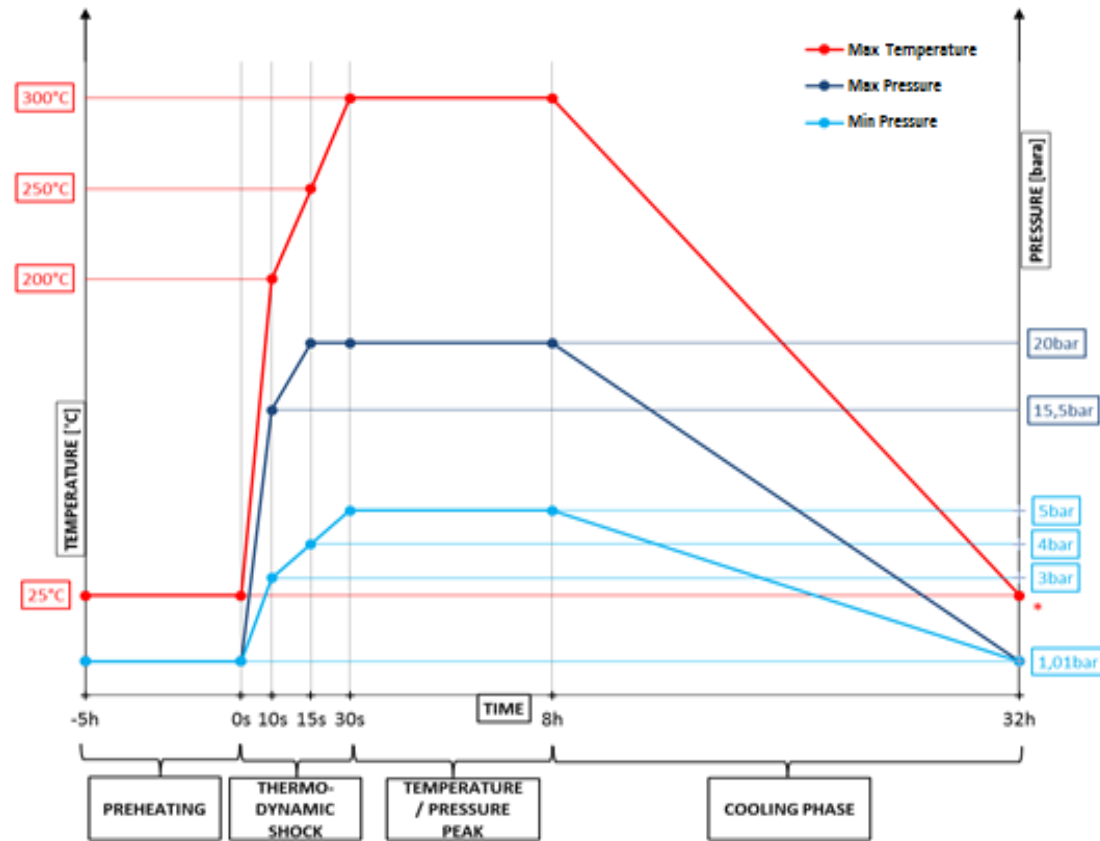
H2 Chamber
 $V = 0,3 \text{ m}^3$
 $T_{\text{max}} = 800 \text{ }^\circ\text{C}$
 $P_{\text{max}} = 20 \text{ bar}$



3. Thermodynamic profiles of LOCA Laboratory



Large LOCA

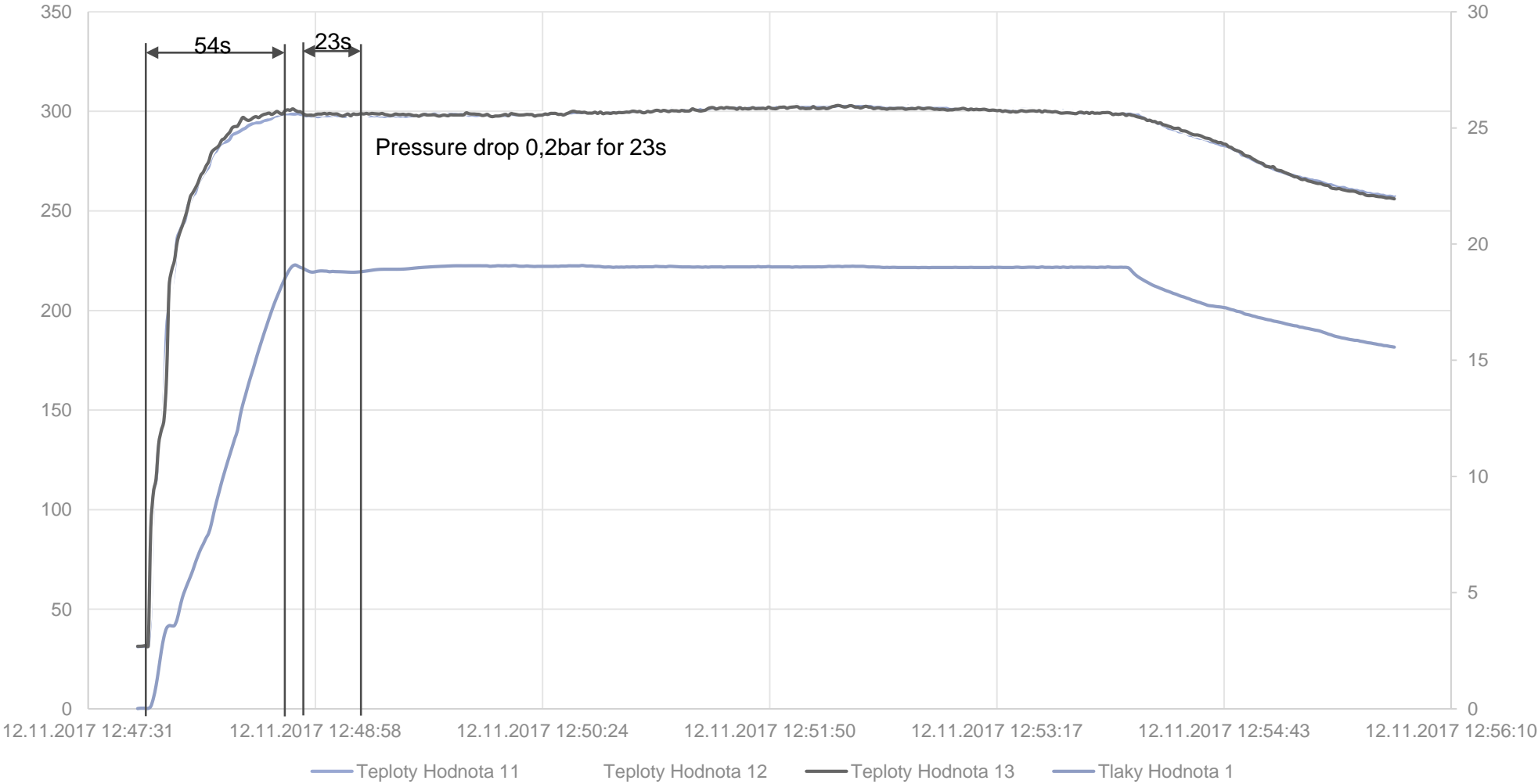


Small LOCA

3. Thermodynamic profile of Large LOCA



300°C 20bara



Thank you for your attention



Any Questions?

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