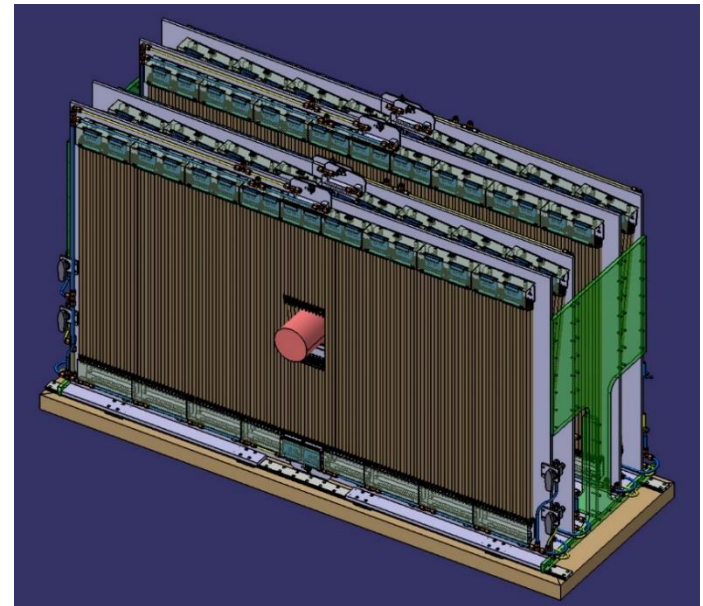# News on the Forward Tracker

Jerzy Smyrski, Jagiellonian University, Krakow
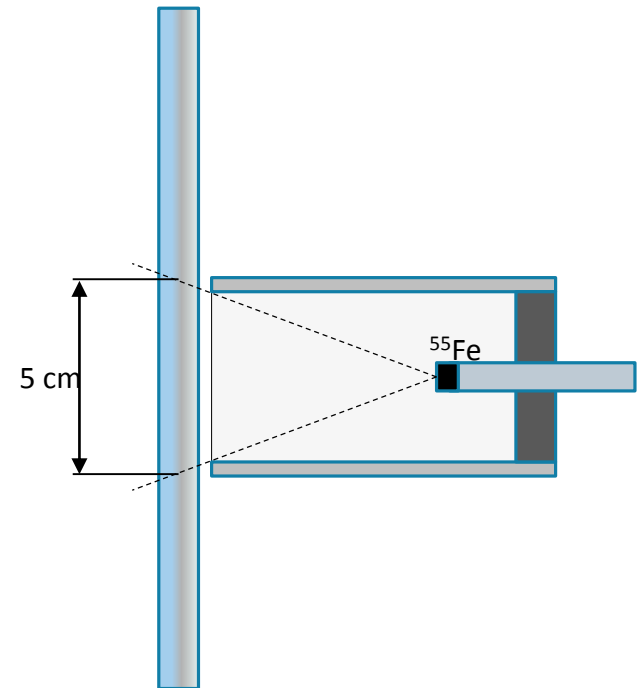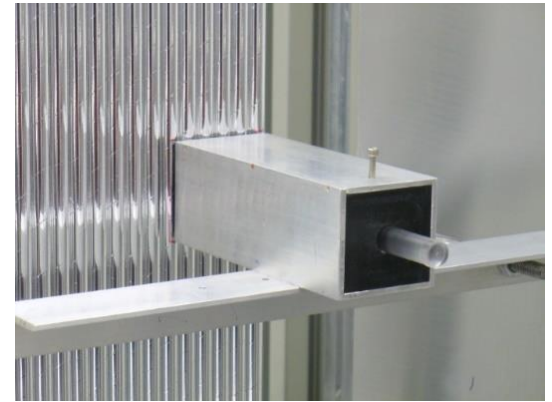
FT1, 2

- ➢ Aging studies with new, clean gas system

- ➢ Production of FT1, 2 modules and construction of frames

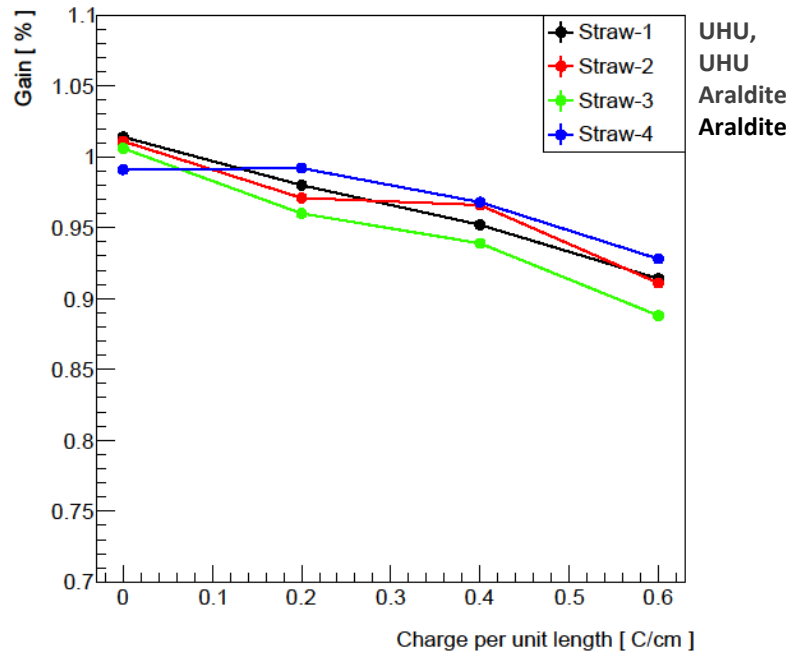- ➢ Construction of gas distribution system

The new aging test

- **New - clean gas system used,** gas mixture: Ar:CO2 (90:10) @ 2 bar

- 4 straws with ^{55}Fe, two glued with **UHU Endfest 300** and the other two with **Araldite AY103-1**


5 cm

^{55}Fe

Gas gain drop

- Gas gain drop of ~10% at accumulated charge ~0.6 C/cm (comparable with aging observed with the old gas system)

- No significant difference between straws glued with **UHU** and **Araldite;** for the production of straw we decided to use **UHU** because **Araldit** is more difficult to apply due to its low viscosity

Addition of oxygen in the gas mixture (to mitigate aging)

• Strong effect of electron attachment even for oxygen content of 0.5%

• In LHCb Outer Tracker, 1.5% O_2 admixture was used, but the straw diameter is 5 mm only

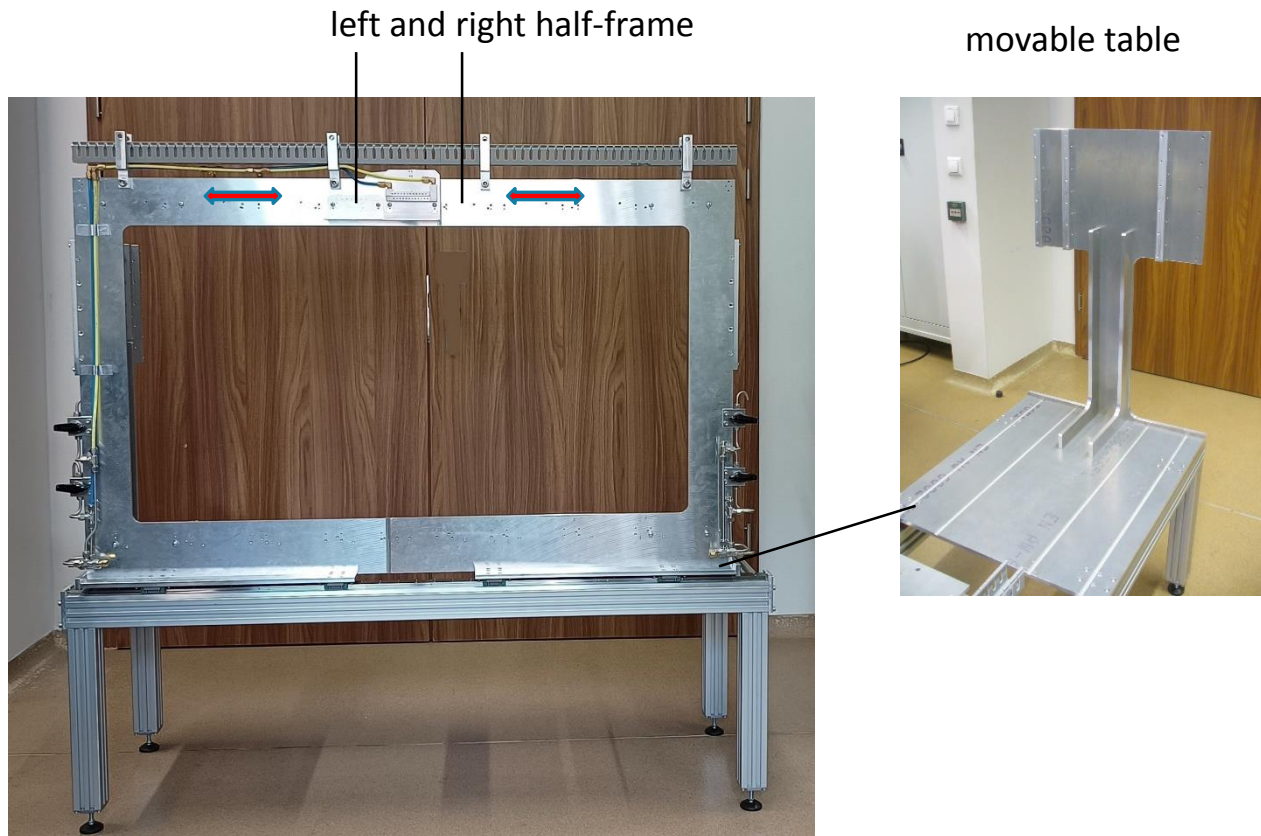• Study of the influence of oxygen content on detection efficiency and position resolution is needed
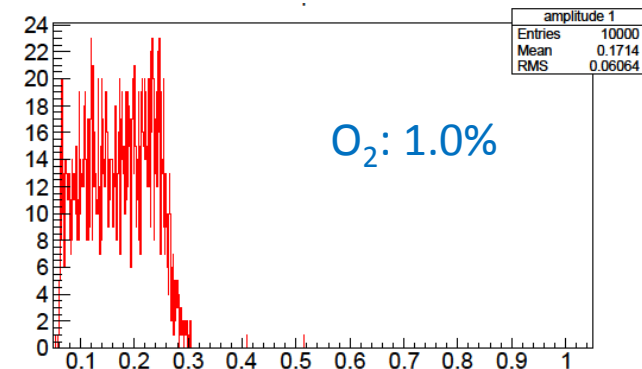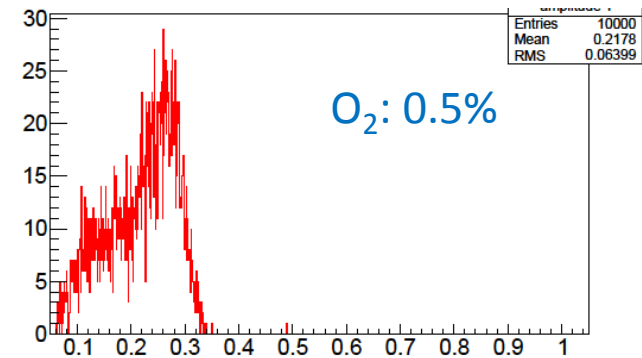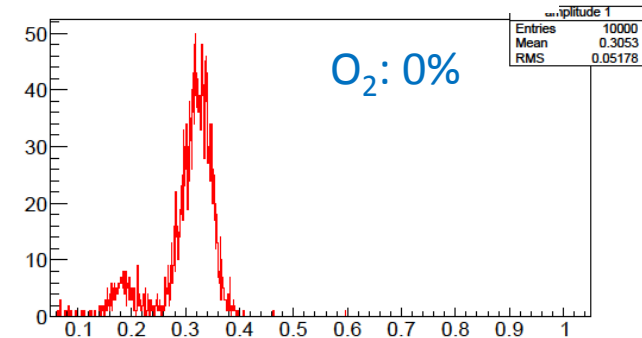

Ampl. [V]

FT1, 2 frames

- The first of four pairs of half-frames to support the FT1,2 modules was made. The half-frames are mounted on two movable tables, which will facilitate the installation of the FT1,2 on the beam line.

left and right half-frame

movable table

Production of modules

- Produced modules undergo quality control

- They are stored with a continuous argon flushing
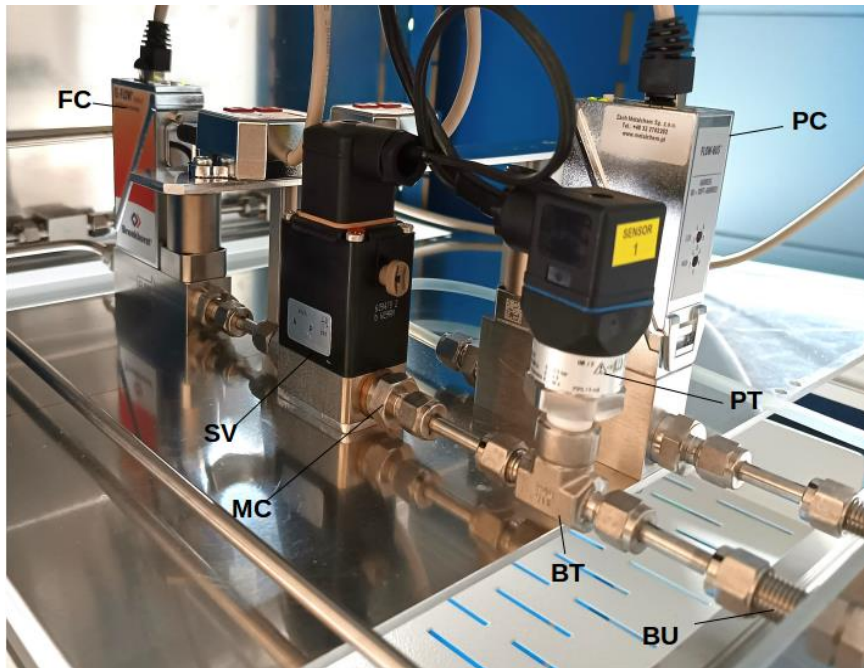
three modules mounted on half-frame
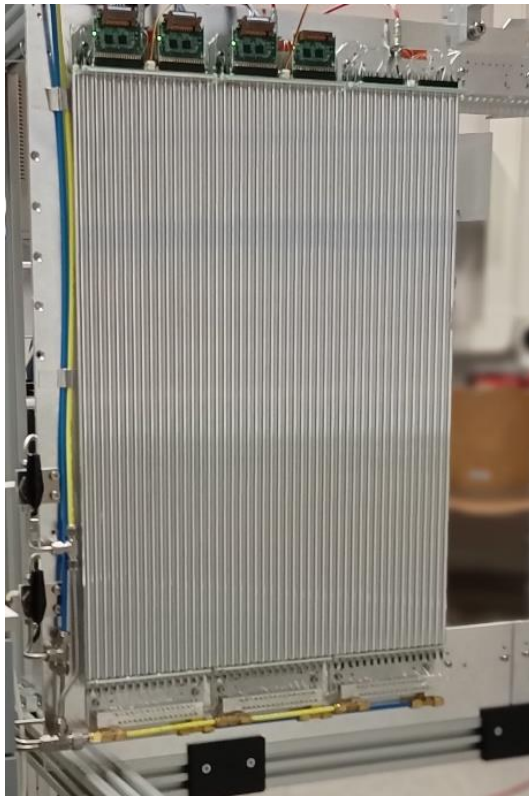
Gas distribution system for FT1..4

- 4 units each containing 2 channels

- one channel: Flow Controller (**FC**) + Pressure Controller (**PC**) + Solenoid Valve (**SV**) + Pressure Transmitter (**PT**)

- control via EPICS
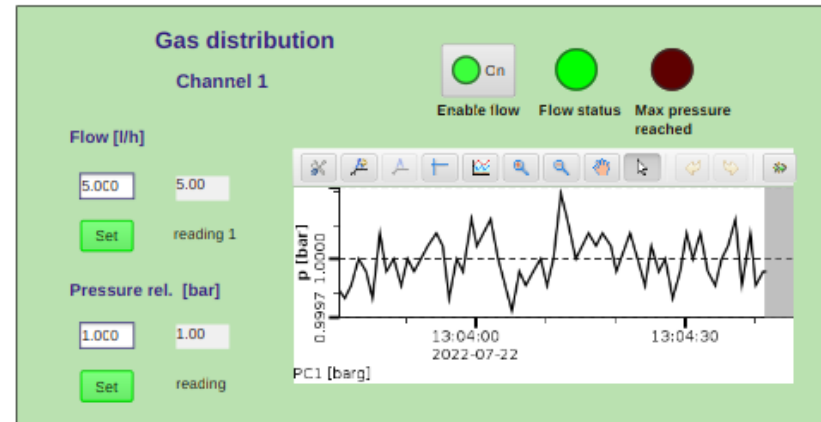

GAS DISTRIBUTION SYSTEM
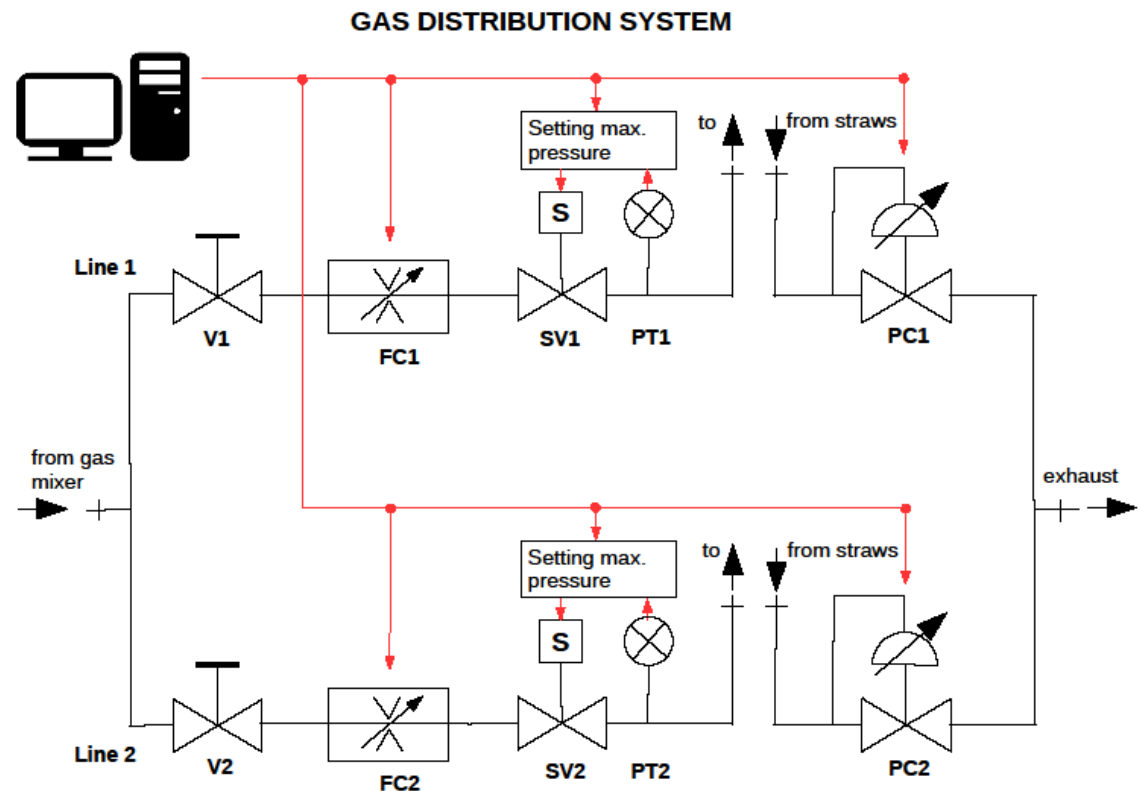
Prototype

One gas channel

GUI in CSS

Gas distribution system for FT1..4

- Purchase of all components by the end of 2023, assembly in 2024

- The overpressure protection system already completed