

# TPC gas system

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# Two options for circulation system

## 1. Cryogenic circulation system

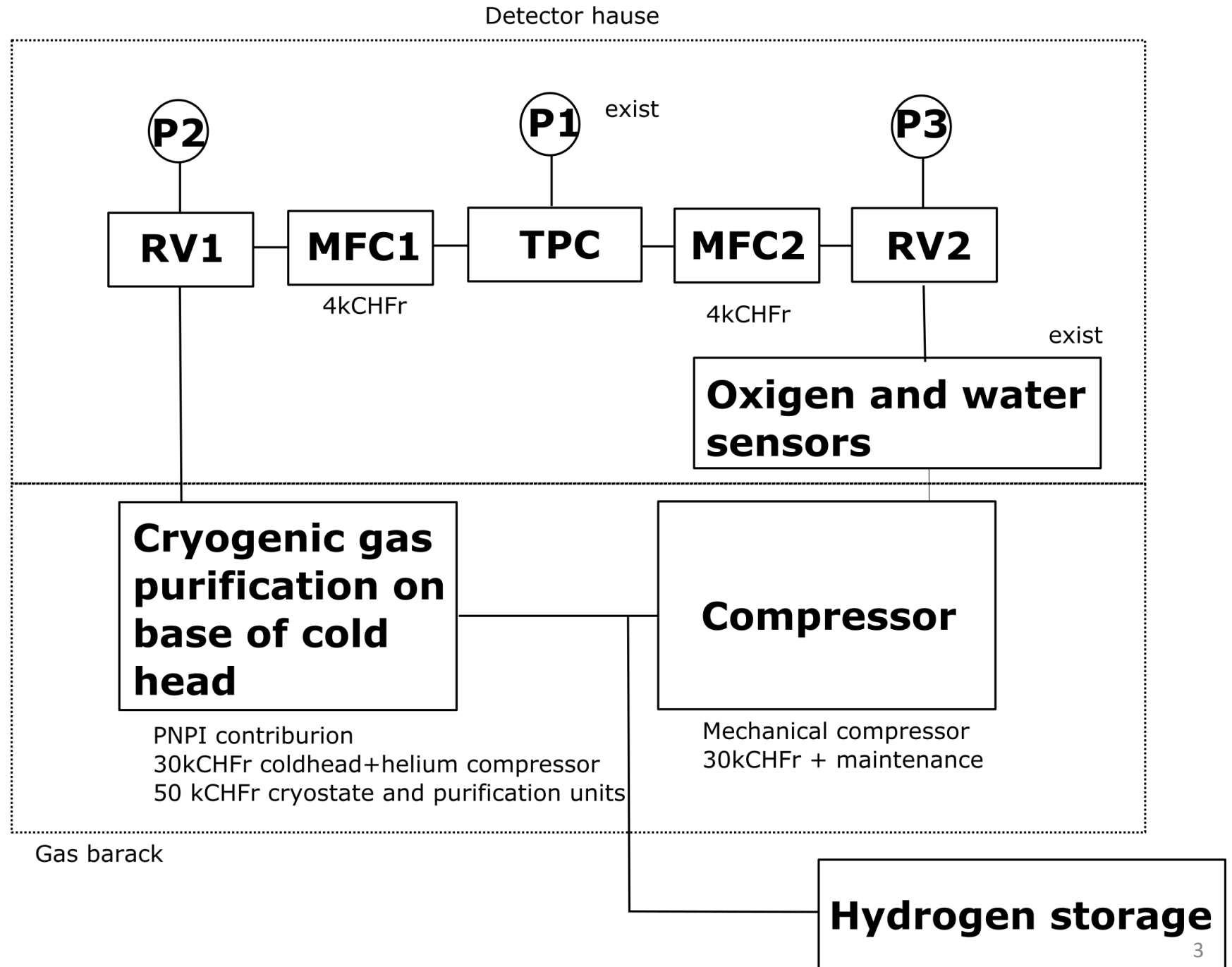
- Absence of movable elements
- No maintenance
- United with purification system
- More expensive
- We have to approve device at CERN
- Only Hydrogen (not possible to use Helium for tests)
- Big consumption of liquid Nitrogen (necessary to control)
- Impossible to have this system in 2022 for tests

## 2. Circulation system based on mechanical compressor

- Cheaper solution
- Simpler approval at CERN
- Helium tests are possible
- Possible to use without cryogenic liquids
- Vibrations
- Maintenance every 1000 hours

***Our opinion: Circulation system based on mechanical compressor is preferable.***

# Proposed scheme



# Planning and responsibilities (proposal)

- **Production of “Cryogenic gas purification subsystem”**
  - preliminary design – end 2021
  - approval by CERN - January-March 2022 (few iterations and visit to CERN)
  - production at PNPI – till end of September 2022
- **Ordering of components – till the end of September 2022 (?????)**
- **Assembling TPC and circulation system – from September 2022 (after delivery all necessary parts including main detector body)**
- **Tests on Helium in TPC at suitable place in experimental Hall - on readiness**