

# The Gas Team and the LHC gas systems: introduction

# Outlook

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- Gas Systems Team organization
- Experiment/detectors contact persons, egroups
- M&O Budget update
- Other ALICE projects/activities
- Conclusions

# Gas Systems Team organization

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## First level contacts for non urgent matters:

### Gas system sites responsible:

- ALICE: Louis-Philippe De Menezes
- ATLAS: Mattia Busato
- CMS: Andrea D'Auria
- LHCb: Patrick Carriè

They are your first contact for any gas system issue

If you write an email, please put in cc [gassystems.support@cern.ch](mailto:gassystems.support@cern.ch) :

- we will treat your email in case of absence of the site responsible
- your email will create a jira ticket that will allow (you and us) to follow the issue reported

## Second level contacts for non urgent matters:

**M&O contact persons:** Beatrice Mandelli, Gianluca Rigoletti

**Project leader:** Roberto Guida

**1st contact for any urgent issue: gas piquet 162516**

# Gas Systems Team organization

Roberto  
Project leader



Students: Doct, Tech, Trainee

Maria Cristina  
Analytical chemistry



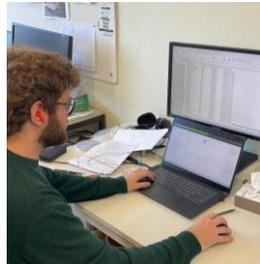
Amin, Damiano  
Gas recuperations



Stefania  
R&D



Bonaventura  
Maintenance analysis,  
EAM/Infor and Pumps



Kacper  
ATLAS and Pumps



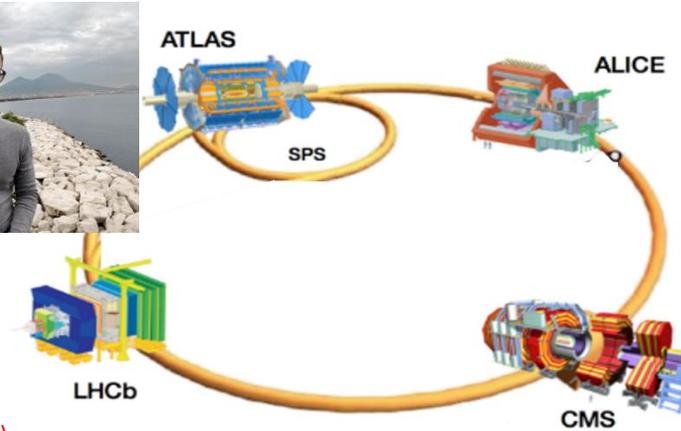
Gianluca  
Software, LHC-M&O,  
ATLAS and R&D



Patrick  
LHCb and electrical  
Spare parts (electrical)



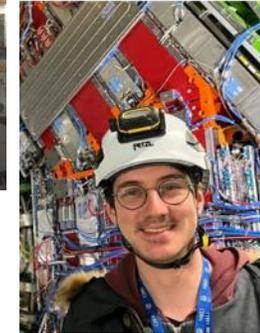
Pieter  
LHCb, R&D



Louis-Philippe  
ALICE, CLOUD



Mattia V.  
ALICE, R&D



Andrea  
CMS



Mattia B.  
CMS, CLOUD  
and R&D



Gianluca  
Software, LHC-M&O,  
ATLAS and R&D



Beatrice  
R&D and LHC-M&O



Frederic  
Gas & Cooling workshop  
Spare parts (mechanical)



# Gas Systems Team organization

**Roberto**  
Project leader



**Mattia B.**  
ATLAS, CLOUD  
and R&D



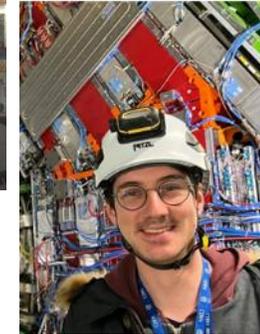
**Gianluca**  
Software, LHC-M&O,  
ATLAS and R&D



**Louis-Philippe**  
ALICE, CLOUD



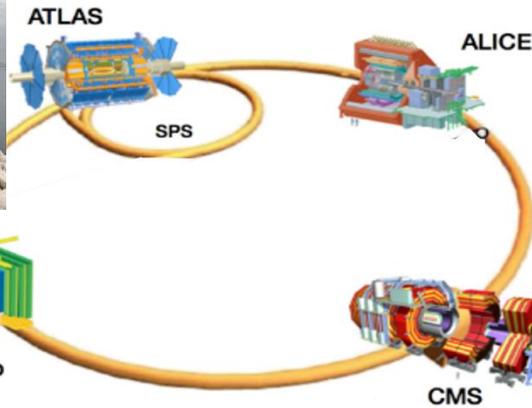
**Mattia V.**  
ALICE, R&D



**Gianluca**  
Software, LHC-M&O,  
ATLAS and R&D



Fellow, Doct, Tech, Trainee



**Beatrice**  
R&D and LHC-M&O



**Maria Cristina**  
gas analysis,  
and CMS



**Amin, Damiano**  
Gas recuperations



**Patrick**  
LHCb and electrical  
Spare parts (electrical)



**Pieter**  
LHCb, R&D



**Andrea**  
CMS and  
workshop



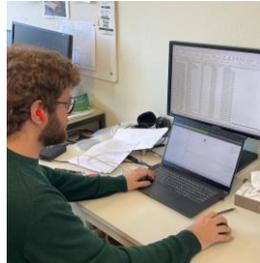
**Maria Cristina**  
gas analysis  
and CMS



**Stefania**  
R&D



**Bonaventura**  
Maintenance analysis,  
EAM/Infor and Pumps



# Detector contact persons

## M&O Workpackage Run3 (EDMS 2779718)

### 8 Annex 1: List of detector gas system experts

List of detector gas system experts for 2022.

#### 8.1 ALICE Gas Systems

| Detector        | Detector gas system expert                                    |
|-----------------|---|
| CPV             | EVDOKIMOV, Sergey;<br>KHARLOV, Yuri;                          |
| HMPID           | VOLPE, Giacomo;   |
| MCH             | BOREL, Herve;<br>HADJIDAKIS, Cynthia;                         |
| MTR             | GAGLIARDI, Martino;<br>MARCHISONE, Massimiliano;              |
| TOF             | COLOCCI, Manuel;<br>HATZIFOTIADOU, Despina;<br>SCIOLI, Gilda; |
| TPC             | GARABATOS CUADRADO, Chilo;                                    |
| TRD             | GARABATOS CUADRADO, Chilo;<br>BRATRUD, Lars;                  |
| Xe recuperation | GARABATOS CUADRADO, Chilo;                                    |

## Knowledge base for Gas Systems Home - Knowledge base for Gas Systems - Global Site

| Experiment | Responsible               | Gas System | Status | Remarks  | Detector contact person  |
|------------|---------------------------|------------|--------|--|--|
| ALICE      | Louis-Philippe De Menezes | TPC        | ✓ON    | Run Mode with nominal Ne, call Chilo first 165327 (don't wait to restart), Don't use backup.   | Chilo Garabatos Cuadrado +41754115327                                |
|            |                           | TRD        | ✓ON    | Run mode. mixer Xenon injecting just when it's needed. call Chilo first 165327<br><br>Leak search on going, purifier OFF and in non standard position. maybe alarms on analysis H2O. | CHILO / Lars BRATRUD 0041754117299                                   |
|            |                           | HMPID      | ✗OFF   | Stop with envelopp ON so the pressure in the input of the distribution have always to be Higher the 8mbars   | GIACINTO De Cataldo 162827 /Giacomo VOLPE 161650                     |
|            |                           | TOF        | ✓ON    | RUN with 7% of SF6 in the mixture, backup C2H2F4 ( don't wait too much to restart)   | MARCO Giacalone 167450 / COLOCCI Manuel 162836 / Sofia Strazzi ----- |
|            |                           | MID        | ✗OFF   | System stop and open to air.   | Martino GAGLIARDI 0041754113763 / Livia Terlizzi 67896               |
|            |                           | MCH        | ✓ON    | Nominal Run with humidifier  | Livia Terlizzi 67896 / Christophe Suire 162257                       |
|            |                           | CPV        | ✗OFF   | Stop ( for the moment no date of restart, certainly never)   | Yuri KHARLOV 0041227676305 / ALEKSANDROV Dmitry 161161               |

# Detector contact persons

Egroup for communications between gas team and experiments.

Free subscription and unsubscription (to facilitate the detector contact persons in keeping the list updated)

For ALICE:  
[gas-users-ALICE](#)

Members are:

| Name                                  | Type   | Login    | Email                                    | Comm                           |
|---------------------------------------|--------|----------|--|--------------------------------|
| AUGUSTINUS, Andre (EP-AID-DC)         | Person | AUGUST   | Andre.Augustinus@cern.ch                 | Self added member              |
| BERDNIKOVA, Anastasia (EP-UAI)        | Person | ABERDNIK | anastasia.berdnikova@cern.ch             |                                |
| BOREL, Herve (EP-UAI)                 | Person | BOREL    | herve.borel@cea.fr                       | MCH user                       |
| CARNESECCHI, Francesca (EP-AID-DT)    | Person | FCARNESE | francesca.carnesecci@cern.ch             | TOF user                       |
| COLOCCI, Manuel (EP-UAI)              | Person | MCOLOCCI | manuel.colocci@cern.ch                   | TOF user                       |
| DE MENEZES, Louis-Philippe (EP-DT-FS) | Person | LSOBRALD | Louis-Philippe.Sobral.De.Menezes@cern.ch | ALICE gas expert               |
| DI MAURO, Antonello (EP-AID-DT)       | Person | DIMAURO  | Antonio.Di.Mauro@cern.ch                 | Alice gas coordinator          |
| EDER, Tabea Maria (EP-UAI)            | Person | TEDER    | tabea.maria.eder@cern.ch                 | Self added member              |
| EVDOKIMOV, Sergey (EP-UAI)            | Person | SEVDOKIM | sergey.evdokimov@cern.ch                 | CPV user contact               |
| GAGLIARDI, Martino (EP-UAI)           | Person | MGAGLIAR | Martino.Gagliardi@cern.ch                | MTR user 1er person to contact |
| GARABATOS CUADRADO, Chilo (EP-UAI)    | Person | CHILO    | chilo.garabatos.cuadrado@cern.ch         | TPC and TRD user               |
| GUIDA, Roberto (EP-DT-FS)             | Person | GUIDAR   | Roberto.Guida@cern.ch                    | Self added member              |
| GUPTA, Anik (EP-UAI)                  | Person | ANIK     | Anik.Gupta@cern.ch                       | PMD user contact               |
| HATZIFOTIADOU, Despina (EP-UAI)       | Person | DESPINA  | despina.hatzifotiadou@cern.ch            | TOF user                       |
| KAPUSNIAK, Kacper (EP-DT-FS)          | Person | KKAPUSNI | kacper.kapusniak@cern.ch                 |                                |
| KHARLOV, Yuri (EP-UAI)                | Person | KHARLOV  | Yuri.Kharlov@cern.ch                     | CPV/PHOS user contact          |
| MANDELLI, Beatrice (EP-DT-FS)         | Person | BMANDELL | beatrice.mandelli@cern.ch                | Self added member              |
| RIGOLETTI, Gianluca (EP-DT-FS)        | Person | GRIGOLET | gianluca.rigoletti@cern.ch               | Self added member              |
| SCIOLI, Gilda (EP-UAI)                | Person | SCIOLI   | Gilda.Scioli@cern.ch                     | TOF user contact               |
| SELYUZHENKOV, Ilya (EP-UAI)           | Person | ISELIOUJ | ilya.selyuzhenkov@gmail.com              | Self added member              |
| TAURO, Arturo (EP-AIO)                | Person | ATAURO   | Arturo.Tauro@cern.ch                     |                                |
| VOLPE, Giacomo (EP-UAI)               | Person | GVOLPE   | Giacomo.Volpe@cern.ch                    | HMPID user contact             |

To facilitate communication add:  
- detector  
- On-call numbers

names to add/remove?

# Gas systems elog

Egroup for elog notification

Free subscription and unsubscription (to facilitate the detector contact persons in keeping the list updated)

For ALICE:

[gas-users-ALICE-ELOG](#)

Members are:

| Name                                  | Type   | Login    | Email                                    | Comments          |
|---------------------------------------|--------|----------|--|-------------------|
| AUGUSTINUS, Andre (EP-AID-DC)         | Person | AUGUST   | Andre.Augustinus@cern.ch                 |                   |
| BERDNIKOVA, Anastasia (EP-UAI)        | Person | ABERDNIK | anastasia.berdnikova@cern.ch             |                   |
| BOREL, Herve (EP-UAI)                 | Person | BOREL    | herve.borel@cea.fr                       |                   |
| CARNESECCHI, Francesca (EP-AID-DT)    | Person | FCARNESE | francesca.carneseccchi@cern.ch           | TOF coordinator   |
| COLOCCI, Manuel (EP-UAI)              | Person | MCOLOCCI | manuel.colocci@cern.ch                   |                   |
| DE MENEZES, Louis-Philippe (EP-DT-FS) | Person | LSOBRALD | Louis-Philippe.Sobral.De.Menezes@cern.ch |                   |
| DI MAURO, Antonello (EP-AID-DT)       | Person | DIMAURO  | Antonio.Di.Mauro@cern.ch                 |                   |
| EDER, Tabea Maria (EP-UAI)            | Person | TEDER    | tabea.maria.eder@cern.ch                 | Self added member |
| EVDOKIMOV, Sergey (EP-UAI)            | Person | SEVDOKIM | sergey.evdokimov@cern.ch                 |                   |
| GAGLIARDI, Martino (EP-UAI)           | Person | MGAGLIAR | Martino.Gagliardi@cern.ch                |                   |
| GARABATOS CUADRADO, Chilo (EP-UAI)    | Person | CHILO    | chilo.garabatos.cuadrado@cern.ch         |                   |
| GUIDA, Roberto (EP-DT-FS)             | Person | GUIDAR   | Roberto.Guida@cern.ch                    | Self added member |
| HATZIFOTIADOU, Despina (EP-UAI)       | Person | DESPINA  | despina.hatzifotiadou@cern.ch            |                   |
| KHARLOV, Yuri (EP-UAI)                | Person | KHARLOV  | Yuri.Kharlov@cern.ch                     |                   |
| MANDELLI, Beatrice (EP-DT-FS)         | Person | BMANDELL | beatrice.mandelli@cern.ch                | Self added member |
| PRASAD, Sidharth Kumar (EP-UAI)       | Person | SPRASAD  | sidharth.kumar.prasad@cern.ch            |                   |
| QUAGLIA, Luca (EP-UAI)                | Person | LQUAGLIA | luca.quaglia@cern.ch                     | Self added member |
| SCIOLI, Gilda (EP-UAI)                | Person | SCIOLI   | Gilda.Scioli@cern.ch                     |                   |
| SELYUZHENKOV, Ilya (EP-UAI)           | Person | ISELIOUJ | ilya.selyuzhenkov@gmail.com              |                   |
| SUIRE, Christophe (EP-UAI)            | Person | SUIRE    | Christophe.Suire@cern.ch                 |                   |
| TAURO, Arturo (EP-AIO)                | Person | ATAURO   | Arturo.Tauro@cern.ch                     |                   |
| TERLIZZI, Livia (EP-AIO)              | Person | LTERLIZZ | livia.terlizzi@cern.ch                   | Self added member |
| VOLPE, Giacomo (EP-UAI)               | Person | GVOLPE   | Giacomo.Volpe@cern.ch                    |                   |

# M&O budget

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## - M&O budget ([EDMS 2779718](#)):

Material and personnel costs covered by the M&O agreement

MFCs maintenance

Consumables (lab, tools, connectors, ...)

Gas analysis (calibration gases, materials, O2 cells, maintenance, ...)

Pump maintenance 2000h & 30000 h

Purifier maintenance

Safety valve maintenance

Pneumatic controls

PLC & Power Supply

Pressure sensors (radiation tolerant)

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Maintenance organization (procedures, reports, ...)

Analysis modules and operation

R&D for upgrade/consolidation

For ALICE:

Up to 2024

→ 133.2 kCHF

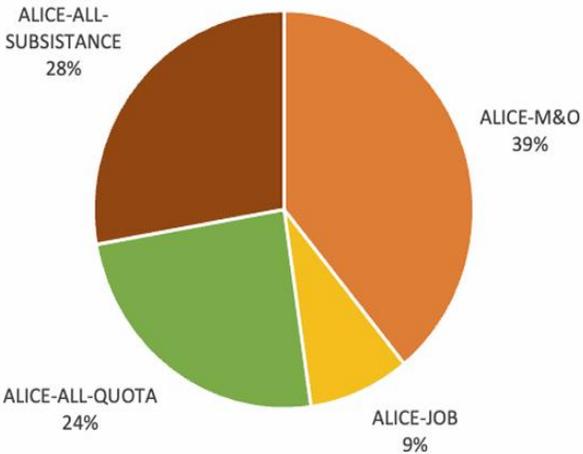
From 2025

→ 161.2 kCHF ([Update to M&O Workpackage \(EDMS 3088231\)](#))

# M&O budget 2022 and 2023

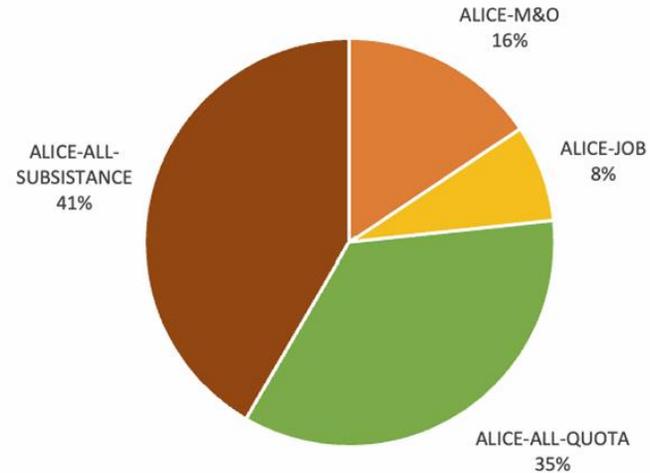
**2022**

*93% budget used*



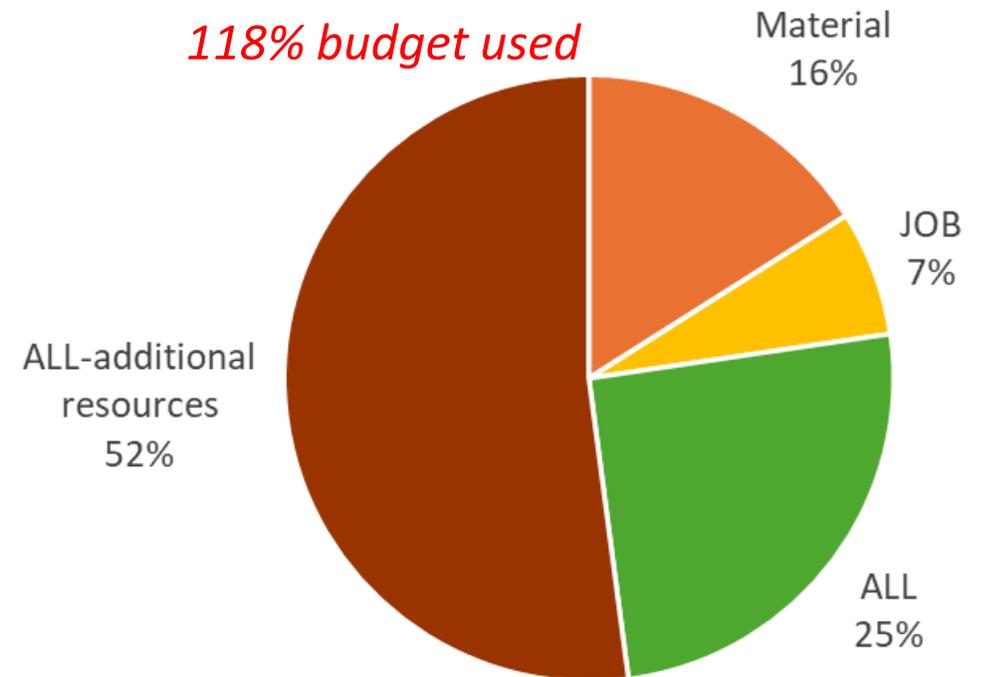
**2023**

*118% budget used*



**2024**

*118% budget used*



- 1 staff (controls) paid on EP budget (from 2025 back to EP budget thanks to a new LD)
- +1 fellow (controls) paid on M&O (same as above, *from 2025 back to EP budget thanks to a new LD*)
- +1/3 fellow (**3D drawings**) paid on M&O
- +1 fellow for **gas systems operation and flowcells**
- +1/2 fellow for **gas systems operation and gas recuperation**
- +1 tech. student/Doctoral for **EAM/Infor, risk assessment and reliability analysis**
- 1.5 staff technical (*opening of a new LD technical under discussion*)

# Other ALICE projects/activities

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- **Consolidation/upgrade:**

Material and manpower costs not covered by the M&O agreement

- CPV humidifier ([EDMS 1953961](#))

- Material 11 k ([TID 7809588](#))
- Human resources: tbc → LPh

- MCH humidifier ([EDMS 3017496](#))

- Material ~23 k (TID to be issued → LPh)
- Human resources: tbc → LPh

<https://its.cern.ch/jira/browse/GASSYSTEMS-246>

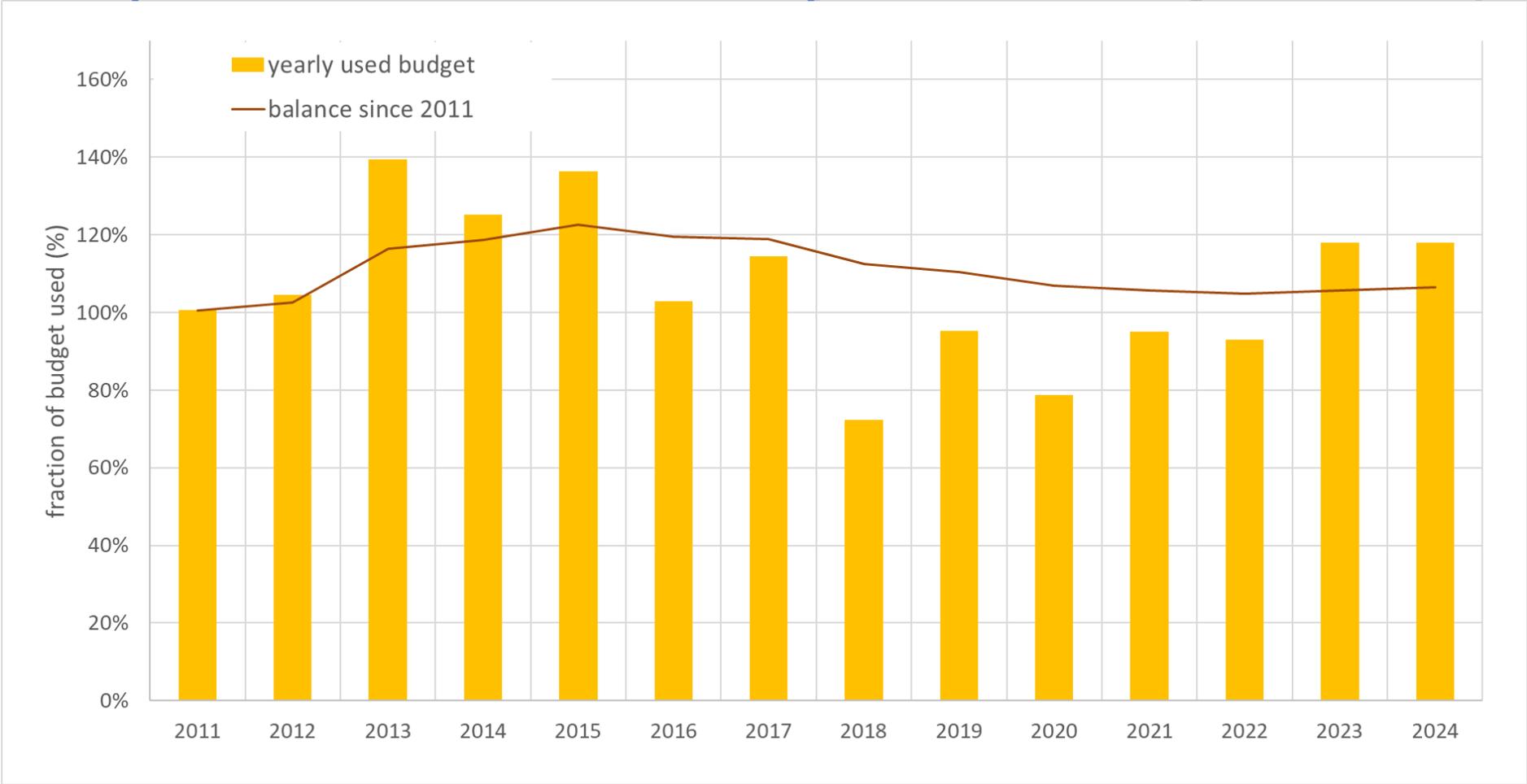
# Budget history since 2011

- ALICE gas system budget status since 2011:

M&O only  
130 k

M&O + Addendum  
130 k + 31 k

New WP  
133 k



# Conclusions

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## LHC M&O

- LHC M&O activities are well defined and supported by the M&O agreement.
- budget situation will normalize from 2025 thanks to “update” to M&O workpackage and 1 LD (controls) replacing a fellow
- ~5 fellow, doctoral, technical for new competencies needed:
  - . 3D drawings
  - . EAM/Infor, maintenance and spare parts organization
  - . Flowcells
  - . Operation of gas systems and gas recuperation

## Other ALICE projects/activities

- CPV, MCH humidifiers
- Others? New needs?

## Beyond M&O budget

- CEPS budget for R&D on new system to optimize GHG usage (examples: improvement of gas systems to cope with new detector needs and R134a, CF4, SF6, C4F10 recuperation plants)
- HostLab for construction of R134a recuperation plants for ATLAS and CMS

## LS3

- We need to collect detector needs asap: to anticipate any potential resource issue