

EP-DT Group meeting

1 November 2016

Fluidic Systems Section

P. Tropea

The section mandate & objectives

Mandate

To design, prototype, construct, commission, operate and maintain fluidic systems (gas & cooling) for detectors in CERN experiments. To perform selective R&D in areas relevant to novel detector thermal management, gas systems, and for the upgrade of the existing systems in view of higher detector performances and sustainable operation.

2015-16 The challenges of the new section

1. Optimise our common infrastructure: workshop, tools
2. Define and follow a policy to handle spare parts & consumables
3. Create a uniform approach for our service towards experiments
4. Share knowledge & training

Gas & Cooling M&O (24/7 for cooling as of 2017)
Intense R&D for Phase II detectors

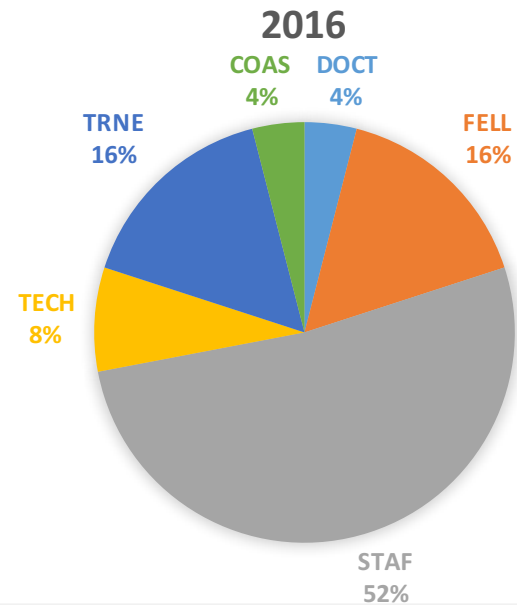
These come on top of the Gas and Cooling Project objectives, which are not treated in this presentation!

For details about the two projects:

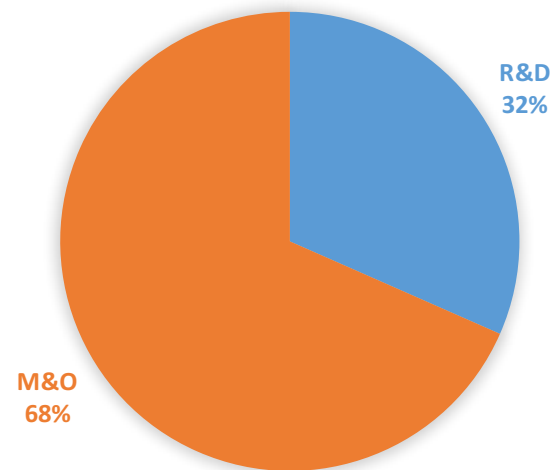
1. <http://indico.cern.ch/event/459747/>
2. <http://indico.cern.ch/event/581322/>

Who are we?

EP-DT-FS PERSONNEL - NOV



ACTIVITY TYPE EP-DT-FS



November 2016

| Name | First Name | Office 1 |
|--------------------|------------------|-----------|
| BERRUTI | Gaia Maria | 20-1-014 |
| BHANOT | Viren | 20-1-030 |
| CANDREVA | Giulio | 21-1-035 |
| CARRIE | Patrick | 155-R-012 |
| D'AURIA | Andrea | 21-1-023 |
| DAGUIN | Jerome | 20-1-012 |
| DE MENEZES | Louis-Philippe | 21-1-027 |
| GIAKOUMI | Konstantina | 20-1-014 |
| GUIDA | Roberto | 21-1-017 |
| HELLENSCHMIDT | Annabell Desiree | 20-1-014 |
| JAROCKI | Rafal | |
| MANDELLI | Beatrice | 21-1-017 |
| MERLET | Frederic | 21-1-011 |
| NOEL | Jerome | 20-1-012 |
| OSTREGA | Maciej Stanislaw | 21-1-013 |
| PAVIS | Steven | 21-1-027 |
| PETAGNA | Paolo | 20-1-048 |
| PIMENTEL DAS NEVES | Tiago Filipe | 20-1-040 |
| SLIWA | Krzysztof | 20-1-040 |
| STACHON | Piotr | |
| TROPEA | Paola | 20-1-018 |
| VERLAAT | Bartholomeus | 20-1-030 |
| WASEM | Albin | 21-1-011 |
| WASIKOWSKI | Jakub | |
| ZWALINSKI | Lukasz Krzysztof | 21-1-013 |

- * 25 people sitting in 6 different buildings
- * 4 FSU closely involved with all our activities

A unique section for two well defined projects

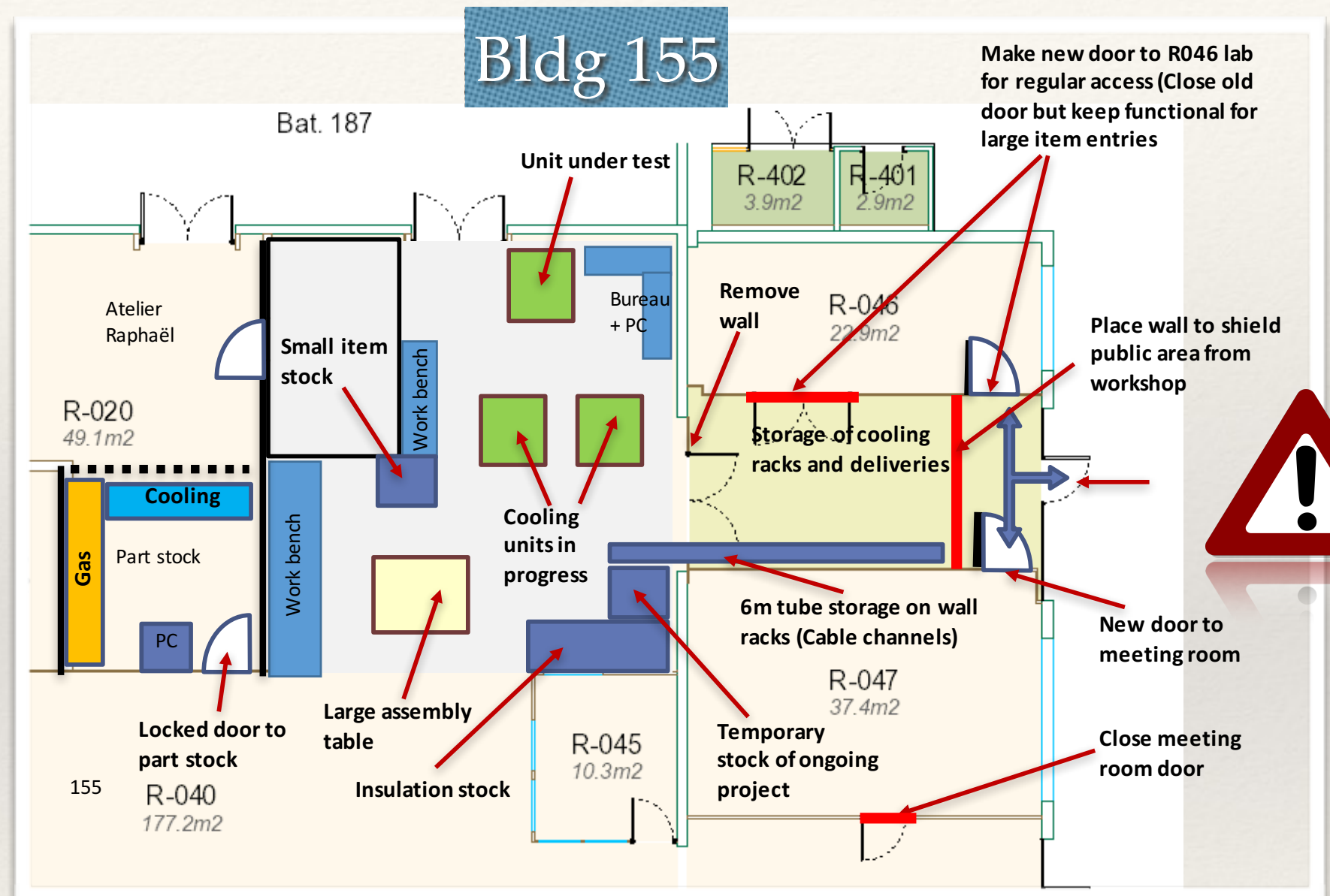
Cooling (P. Petagna) & Gas (R. Guida)

Efforts on going to

- * Cope with replacement of retirements
(new LD position <https://jobs.web.cern.ch/job/12145>)
- * Team renovation
- * Consolidation of gas & cooling piquet service

1) Optimise our common infrastructure

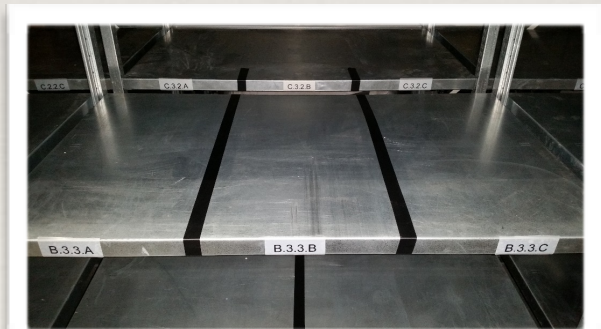
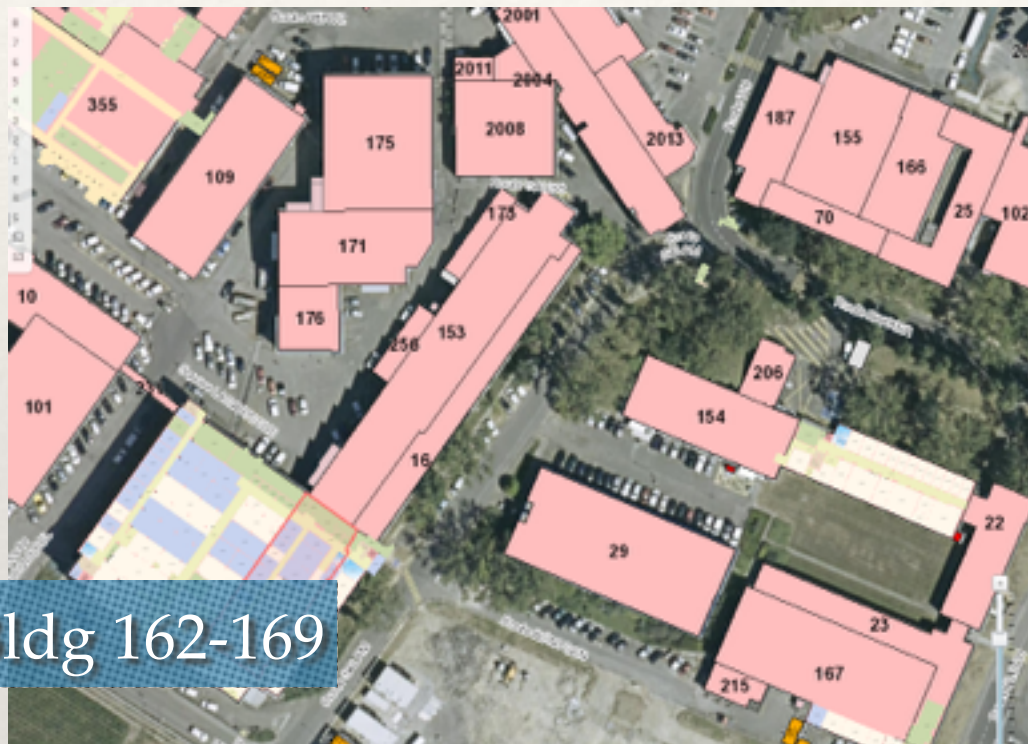
- ❖ Make our workshop comfortable for both production & maintenance activities
- ❖ Create ad-hoc storage of construction parts
- ❖ Control material flow



Refurbishment & reorganisation of spaces on-going!
Request for new Cool LAB space in bldg 153: pricing being finalised, hope to get structural works in 2017!

2) Spare part policy & storage - I

- ❖ Find a proper space for spare parts & organise it



2) Spare part policy & storage - II

- ❖ Adopt a dedicated tool for spare part management
- ❖ CERN standard to: INFOR EAM



Definition of parts

➤ Assets example: **XFMF01**-CR001

XF: SECTION IDENTIFICATION
MF: ASSET NAME (MF FOR MANIFOLD)
01: VERSION OF THE INSTALLED ASSET
CR: MANUFACTURER
001: NUMBER OF INSTALLED VERSION

➤ Classes
 XFFPIX: FPIX system

➤ CATEGORIES
 HCXFLPU, HCXFMB... (HC is required by t



Database population


| Asset | Description | Area | Department | Class | Commission Date | Production | Out of Service |
|------------|--------------------|------------|------------|-------|-----------------|------------|----------------|
| XF001-0001 | Manifolder unit 01 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0002 | Manifolder unit 02 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0003 | Manifolder unit 03 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0004 | Manifolder unit 04 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0005 | Manifolder unit 05 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0006 | Manifolder unit 06 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0007 | Manifolder unit 07 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0008 | Manifolder unit 08 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0009 | Manifolder unit 09 | Manifolder | 001 | 0010 | 14/08/2016 | | |
| XF001-0010 | Manifolder unit 10 | Manifolder | 001 | 0010 | 14/08/2016 | | |



Long term use

- Spare part location
- Part data sheet
- Part history (M&O)

3) A uniform approach for our services


| | | | |
|---|---|------------------------|---------------------------------------|
|  Experimental Physics Department Detector Technology group | Work Package Gas System Operation 2016 to 2017 | | |
| | Document identifier: EDMS id 1721624 | Institute Document No. | Created: 20-Jan.-2016 Page: 1 of 9 |

**Work Package M&O agreement
for the Gas Systems of the LHC**

This document is an M&O agreement between the EP-E (ALICE, ATLAS, CMS, LHCb and TOTEM). It describes the service provided by EP-DT to maintain and operate the LHC detector gas systems during the period 2017-2019, as well as the financial implications.

<https://edms.cern.ch/document/1720879>

| | |
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| | | | |
|--|---|--|---|
|  EP-DT Detector Technologies | Work Package M&O CMS CO₂ cooling 2017 to 2019 | | |
| | Document identifier: version 1.0 | Institute Document No. EDMS 1720879 | Created: 20 Sept 2016 Modified: 31/10/16 |

**Work Package
M&O CMS CO₂ cooling
2017 to 2019**

Abstract

This document is an M&O agreement between EP-DT and the CMS experiment. It describes the service provided by EP-DT to maintain and operate the CO₂ cooling system for CMS during the period 2017-2019, as well as the financial implications.

<https://edms.cern.ch/document/1720879>

| | | |
|---|--|--|
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| <i>Distribution List</i> | | |
| EP-DT, CMS | | |

- ❖ M&O work packages for gas & cooling: gas one on-going, cooling one being upgraded to stand-by duty (as of February 2107)
- ❖ Common planning of workshop activities, calendar for major shut-down periods discussed across projects
- ❖ FSU team working both on gas and cooling project: flexibility!

4) Knowledge share

EP-DT-FS Meetings

novembre 2016

30 nov. Fluidic Systems section meeting 6

septembre 2016

27 sept. Fluidic Systems section meeting 5

juin 2016

29 juin Fluidic Systems section meeting 4

avril 2016

28 avr. Fluidic Systems section meeting 3

février 2016

11 fév. Fluidic Systems section meeting 2

novembre 2015

19 nov. Fluidic Systems section meeting 1

- Section meetings dedicated to common items + 1 scientific talk
- Dynamic simulation (Nov 30th)
 - R&D for gas systems (Sept 27th)
 - Research on predictive CO2 models and micro-channel definition (Jun 29th)

1 Ski outing
1 Apero



Summary & outlook

- ❖ Lot of progress, thanks to the strong involvement of the full team, on many critical points (logistic, spare parts, work organisation)
- ❖ Both gas and cooling projects now having to face a huge variety of activities during EYETS & beyond
- ❖ 24/7 support for both gas and cooling active as of 2017: next year section goals = concentrate on knowledge share and optimisation of experiment service!

A big THANK YOU to all the section members!