

CERN Micro Pattern Technology (MPT) workshop

The workshop, access rules and production capabilities in 2024

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MPT Workshop

<https://ep-dep-dt.web.cern.ch/micro-pattern-technologies>

CERN Detector Seminar:

The use of Micro-Pattern Technologies in Micro-Pattern Gaseous Detectors, Rui De Oliveira


<https://indico.cern.ch/event/1233427/>



CERN MPT Rules

Slides from DRD1 March 2023 Meeting

CERN MPT running rules

- MPT workshop is opened to all CERN user and all CERN recognized experiments
 - For R&D and mass productions
- The workshop is open to all RD51 Members  **Replace RD51 with DRD1**
 - With team accounts or not (STD invoicing is possible)
 - For R&D and mass production for research application.
- Before any production for commercial applications , the CERN technology transfer group should be contacted first to set up:
 - Production License
 - Production contracts
- MPT workshop study all the requests.
 - Prior any production an offer is proposed , and invoiced after technical acceptance of the parts.
 - FIFO mode, but it happens (rarely) that the CERN program is put first (with justifications).
- MPT have connections with external companies for mass productions of:
 - GEM, THGEM
 - Micromegas
 - exotic PCBs - Ceramic circuits - thin film circuits.
- MPT have organized many times and can organize again TT transfer to any company (or simply help to organize).
 - Training directly in the companies
 - Training of company's technician at CERN

MPT Production Capabilities in 2024

(MPGD) R&D Production

- μ Rwell R&D: nearly fully booked, still few slots in November 2024.
- MM (standard production, R&D, and MM/PICOSEC R&D): booked at $\sim 70\%$, new project only from November 2024

Projects that will be difficult to cover

- new R&D on DLC fast RPC projects
- special THGEM projects
- Aluminum electrodes MPGD projects

Vacuum depositions

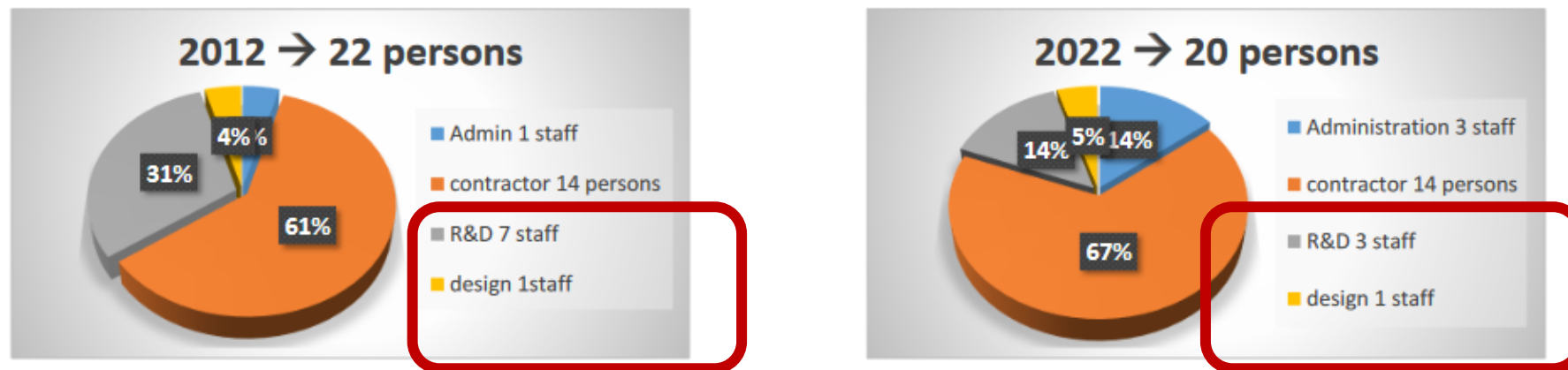
- DLC deposition most likely by the end of February
- DLC/Cr/Cu depositions most likely by the end of March
- B4C and ITO depositions to be postponed to the second half of the year.

STD GEMs and STD THGEM

No problem. Covered by the FSU team can produce them.

MPT activity

Slides from DRD1 March 2023 Meeting



-Administrative tasks have increased: 4 to 14%
(chemical security, machine conformity, shipping and invoicing)
-Skilled personnel dedicated to R&D activities have decreased:
(2 positions lost)

R&D sales have decreased due to increasing administrative tasks and staff reductions. These reductions has been economically compensated by a production increase but loosing some R&D capabilities

Possibility to include a new activity in CERN MPT (wire , RPC MRPC)

- I've heard this option a few time during the preliminary meetings.
- I think that the only possibility is to start smoothly
 - Train a technician or hire a technician already skilled in the new field
 - Start to accept any request in this new field
 - Review the situation after a few months and decide if this is technically and economically viable
- If it works then we can envisaged to increase the team or start sharing the work inside the existing team
 - 10 to 20% of MPT activity are still used to produce STD PCBs to level the load.
 - These 10 to 20% could be used for other purposes.
 - After these 10 to 20% the community should convince CERN to go beyond.
- But there is still some open questions
 - equipment
 - Collect existing equipment of the new field ?
 - Make requests for new equipment ?
 - Room space
 - There is probably not enough space in building 107 to welcome a new activity
 - Could we find other places at CERN ?

Very difficult in current scenario (personnel dedicated to R&D)

Summary

- **The workshop is open to all DRD1 member with the following schema: request, offer and invoice after technical acceptance of the parts.**
- **Everything processed in FIFO mode (except for rare cases driven by needs linked to the CERN research program).**
- **R&D Production Capabilities strongly reduced because of the reduced number of staff working in R&D**
 - **Important fraction (MPGD) of the R&D activities of DRD1 Members is affected**
 - **Several Work Packages (Milestones and Deliverables) affected**
 - **Inclusion of other technologies and manufacturing processes other than MPGD or MPGD-like very difficult.**
- **DRD1 should consider if this will impact the research program and if it does, we should raise the problem internally at CERN aiming for a prompt resolution.**

Back Up

MPT & RD51

RD51 impact on MPT workshop

- Machines for large size detector (also used for other large size circuits)
 - RD51 management (+ATLAS NSW) helped a lot in getting an AIDA fund
 - We bought 5 machines (350 000 Euros)
 - Large development machine
 - Large stripping machine
 - Large copper etching machine
 - Large UV exposure machine
 - Large Oven
- Construction of building 107
 - The idea to make a new building appeared in 2000
 - At the beginning mainly for safety reason.
 - And later to face the growing activity coming from RD51
 - But in 2012 the decision was still pending
 - RD51 management brought new good arguments to the directorate , and they agreed to trigger the building construction
 - On top of the building cost we got a budget of 450 000 CHF to renew old machines

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Resource Pooling and lobbying

DLC DC magnetron deposition machine

- The possibilities of this machine were presented in a dedicated RD51 session
- Surprisingly only two RD51 members decided to join this project !
- Finally MPT , INFN (Frascati/Roma) and EP/DT decided to go forward.
 - 600 kCHF
 - 50% from MPT
 - 25% from INFN
 - 25% from EP/DT group
- The 50% from MPT are taken from the running account and considered as an investment.
- MPT will recover this budget in the coming years with the following activities:
 - DLC deposition for MPGD and may be for other detectors (RPCs , straw tubes?, TGCs?)
 - Aluminum depositions for low mass detector
 - Aluminum depositions for inner tracker detectors
 - Convertors for Gaseous detectors
 - Specific depositions
- In this case the collaboration did not played a significant role in helping to find ways to fund this machine.

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Framework for agreements (MoU)