

A new metallography box for PSI

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Content of the presentation

- Why a new metallography box
- Dismantling of the old box
- Concept of the new metallography box
- Status of the project

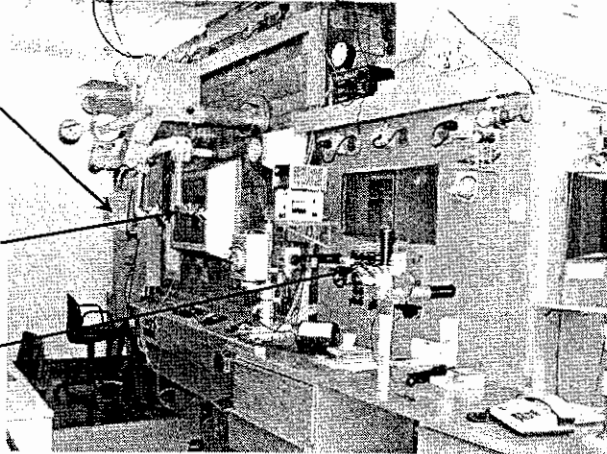
Why a new metallography

- The LWV metallography box was constructed in 1974

Microscope 2
(Leitz - Mortimer)

Preparation Box

Microscope 1
(Telatom)

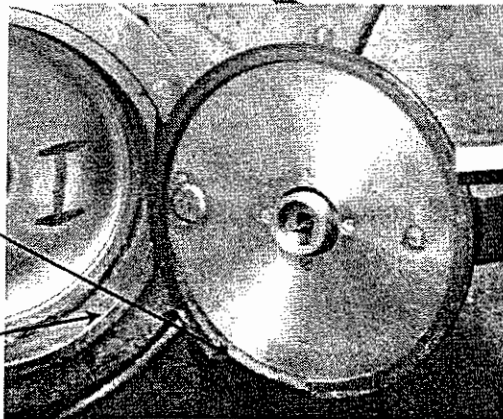


Ageing of the metallography box

- Safety problems : double door for material transfer

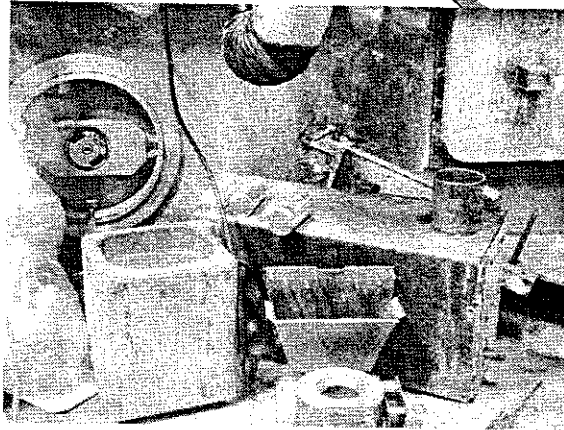
Broken seal

Reparation :
Exchange of the double
door system



Ageing of the metallography box

- Corrosion problems / cleaning Problems



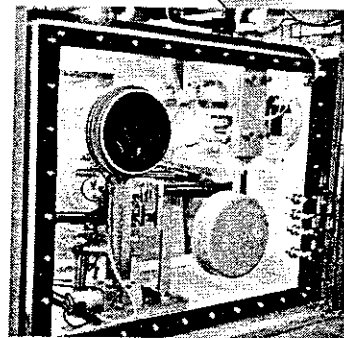
Ageing of the metallography box

- Old infrastructure
No spare parts, no more manufactured

Polishing machines



Microscopes



Status of the old box in 1999

- > After 25 years, the box was strongly corroded, contaminated and dirty
- > The instrumentation (microscopes, cutting tools, polishing machines) were no more reliable
- > Spare parts for the old instrumentation were no more available (microscopes, polishing machines)
- > In 1998 and 1999 we had more service down time than production time with the box



The old box was put out of service in september 1999

Construction of a new metallography box with modern infrastructure

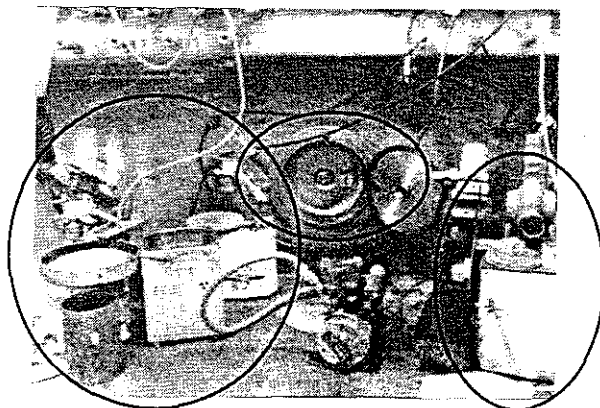


Dismantling of the old box

To be synchronized with the refurbishing of the hot-lab ventilation system

Dismantling of the old box

- Removal of the specimens, infrastructure (when possible) and waste

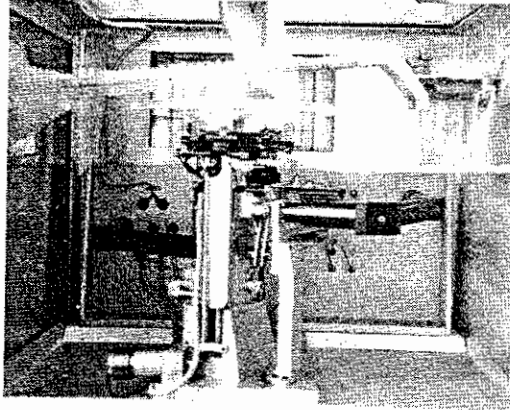


Polishing machines,
Ultrasonic cleaner,
Pump, etc....
(removed)

Cutting machine
(too large)

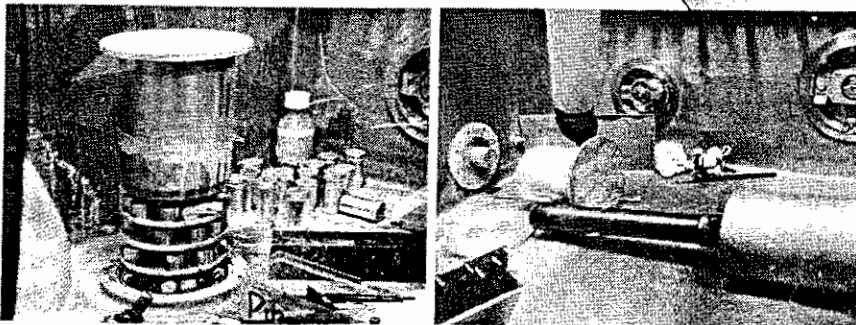
Dismantling of the old box

- Dismantling, cleaning and removing of the microscope boxes



Dismantling of the old box

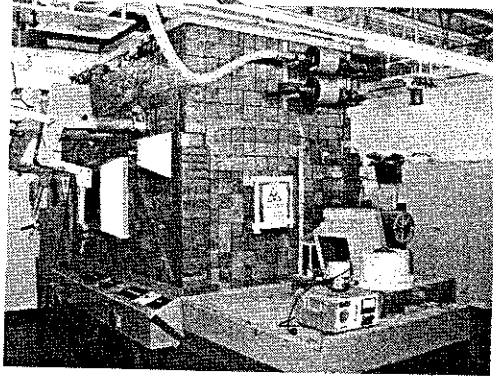
- Decontamination of the preparation box and the left infrastructure with the manipulators (wet mechanical cleaning)
- Dismantling of the specimen storage



Dismantling of the old box

➤ Dismantling of the shielding (started now)

- Removing of the last large waste piece from the box
- Final cleaning
- Dismantling of the shielding
- Transport of the alpha-containment to the operation's box for the final waste disposal



Forseen for November 2000

A new metallography box for LWV – PSI

with up to date infrastructure

Schedule for the new box

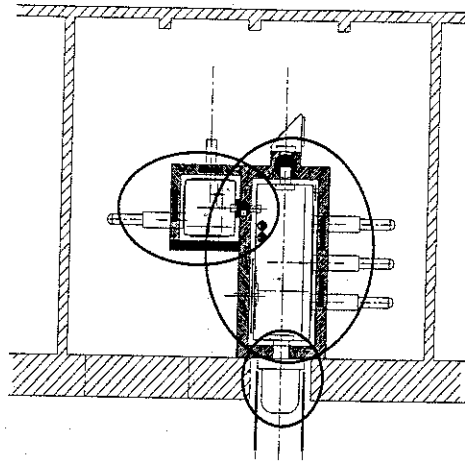
- **Beginning 1999** Formal decision to start the project
- **End 1999** Specification for the new box and of the microscope
- **February 2000** Acceptation of the concept and the financement of the new box
- **March 2000** WTO call for the main components
- **July 2000** Final evaluation of the bids
- **September 2000** Order for the main components (Box and microscope)

Concept of the new box

- **Only one new top of the art microscope**
- **One preparation box large enough to physically separate the preparation processes**
(cutting, grinding down, polishing, etching)
- **All movable infracstructure can be dismantled in the box and removed through the double door system**
(Ø 210 mm, lenth 500 mm)
- **Storage place for specimens in the preparation box**
- **PADIRAC docking system for specimen / material transfer outside PSI**

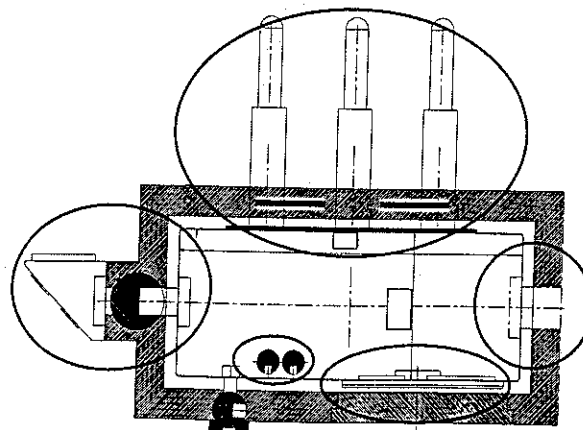
General view of the new box

- Preparation's box
- Microscope's box
- PADIRAC docking station



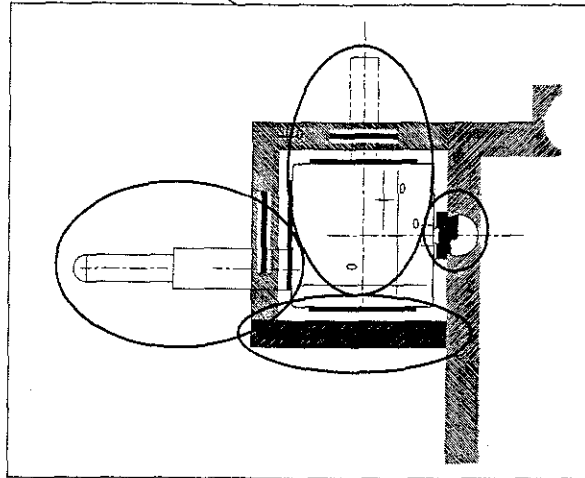
The preparation's box

- 25 cm steel shielding
- 3 manipulators and two windows
- 2.5 m x 1.2 m x 2.0 m
- Transfer port for consumables
- PADIRAC docking station
- Specimen storage
- Double door docking station for specimen and waste transfer in hotlab



Microscope's box

- 20 cm steel shielding
- 1 manipulators
- 1.0 m x 1.0 m x 2.0 m
- Microscope
- Rotation transfer door
- Shielding door



Status of the construction of the new box

- The box has been ordered.
- The microscope will be ordered in few days
- The polishing machines will be delivered in october 2000
- We are evaluating now cutting machines (the main problem is their size)
- The delivery time for the box and the microscope is July 2001
- The box is scheduled to be in service beginning 2002

And.....

We have a problem...!

- We must „survive“ without metallography box for about two years !
- We have rescheduled the work that can be delayed
- The absolutely needed metallography works are under-contracted to other European hot-laboratory
- We try to get the new metallography box in service as soon as possible