A new metallography box for PSI

D. Gavillet
F. Groeschel
M. Sauder
M. Gehringer

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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

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
- 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

- 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 infrastructure can be dismantled in the box and removed through the double door system (Ø 210 mm, length 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
20 cm steel shielding
- 1 manipulators
- 1.0 m x 1.0 m x 2.0 m
- Microscope
- Rotation transfer door
- Shielding door

- 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 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.