Renewal of Hot Cell 6 at PSI

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1. Objective

Renewal of systems inside Hot Cell 6 (HZ 6) at Paul Scherrer Institute, Switzerland

Necessary steps:

1. Creation of application documents for approval by authorities
2. Decontamination of components and Hot Cell itself
3. Dismantling of existing components
4. Removal of dismantled components and secondary wastes
5. Complete decontamination and cleanup of HZ 6
6. Installation of new components
2. Basis

Requirements for new system:

• Introduction of AB 210 or AB 050 into HZ6
• Compaction of AB’s
• Insertion of into PB 250,
• Storage of several PB 250

- AB 210: 210 mm * 505 mm
- AB 050: 050 mm * 135 mm
- PB 250: 250 mm * 1100 mm
2. Basis
Overview on new concept

Fig. 1
3. Application documents and safety aspects

HZ6 is classified as SK4 (lowest Safety Class in Switzerland)

• No special conditions for equipment inside HZ6

• Main change: new introduction lock system into the rolling door lock (Rolltorschleuse – RTS)
  
  - Shielding design for RTS introduction lock
3. Application documents and safety aspects

Conditions for shielding design (introduction lock system):

- Normal operation: < 10 µSv/h outside
- Bringing in operations: < 2000 µSv/h outside

Fig. 2
3. Application documents and safety aspects

Calculation basis

- 3 PB 250 (30 Sv/h each at surface)

Result:

- Inner door: 18 cm Steel shielding
- Outer door: 18 cm Steel shielding

Fig. 3&4
4. Preparatory Works – dismantling and decontamination

Fig. 5: Status inside HZ6 before dismantling: Manipulator area
4. Preparatory Works - dismantling and decontamination

Fig. 6: Status inside HZ6 before dismantling: scissor table
4. Preparatory Works - dismantling and decontamination

Fig. 7: Decontamination in HZ6 after removal of former inventory
4. Preparatory Works - dismantling and decontamination

Fig. 8: HZ6 after decontamination
5. Installation Works

Fig. 9:
Installation of crane above LTS (Storage and Transport System)
5. Installation Works

Fig. 10: Installation of LTS (Storage and Transport System)
5. Installation Works

Fig. 11: Installed LTS (Storage and Transport System)
5. Installation Works

Fig. 12:
Operator view
Tilting device horizontal
5. Installation Works

Fig. 13: Operator view
Tilting device vertical
Inner lock door open
5. Summary

• Approval by Swiss authority (ENSI) reached
• New introduction lock only change to the structure of HZ6
• Removal of existing equipment
• Decontamination
• Installation of new equipment
• Site acceptance test successful completed
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Last minute pictures (received September 27th)

Fig. 14:
Tilting device
Inner lock door open
Last minute pictures (received September 27\textsuperscript{th})

Fig. 15:
Outer lock door
Last minute pictures (received September 27th)

Fig. 16: Outer lock door opened