



**ESS**  
**Bilbao**



**EUROPEAN  
SPALLATION  
SOURCE**

## **09. Schedule**

### **ESS-Bilbao**

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CDR PBW-PB & Vessel - 04 July 2019, Lund (ESS)

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## Foreseen Schedule

# Schedule

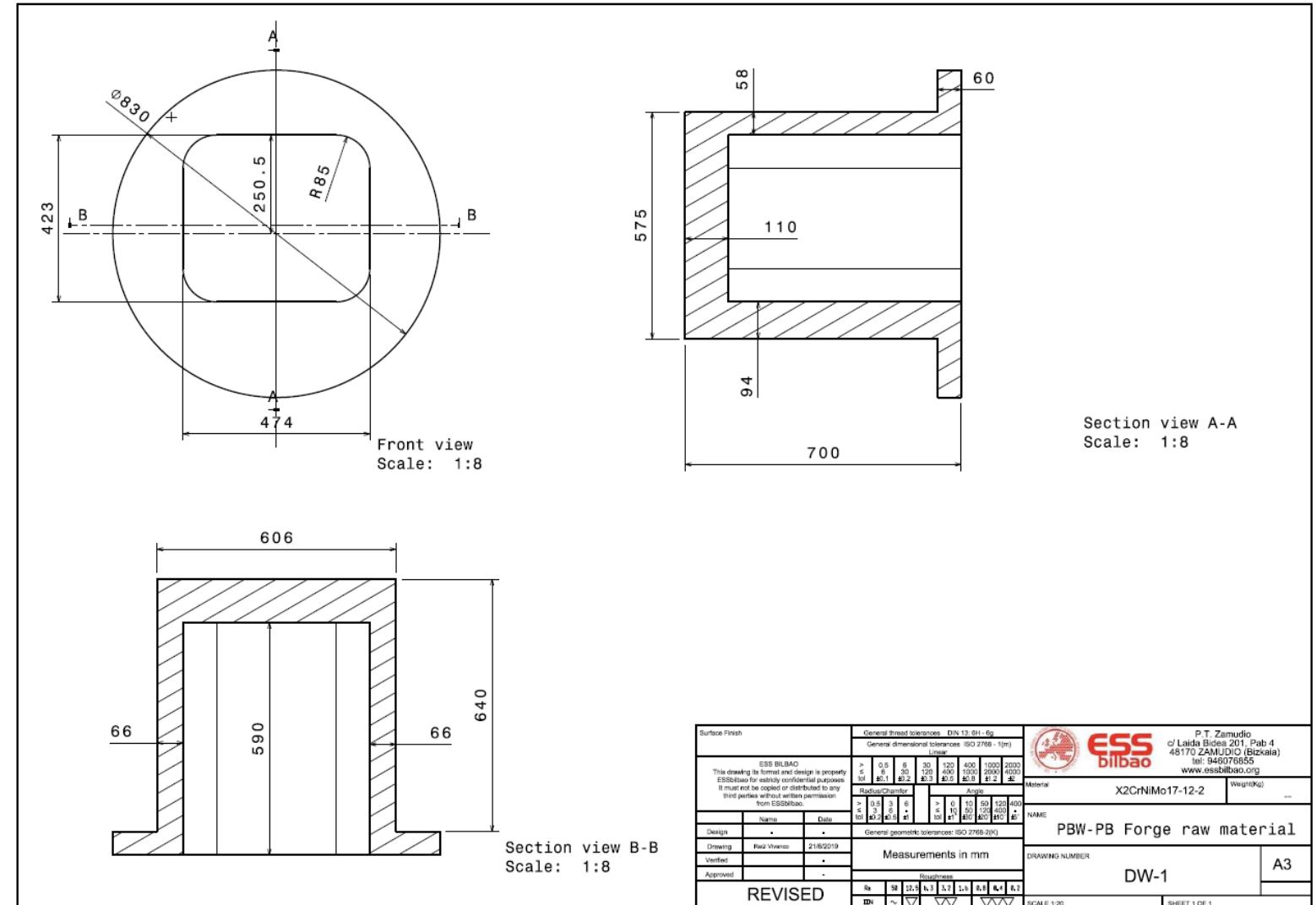
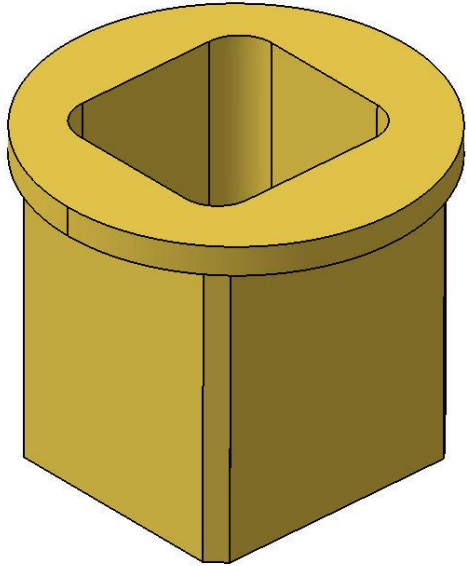
| Event   | Expected time [w] | Start date                   | End date   |
|---|-------------------|------------------------------|------------|
| CDR   | -                 | 04/07/2019                   | -          |
| Contract signed with NM                       | -                 | 15/06/2019                   | -          |
| Manufacturing review                          | 4                 | 27/06/2019                   | 31/07/2019 |
| Procurement of Forged block for the PB        | 12 (August!)      | CDR approval<br>(19/07/2019) | 15/11/2019 |
| Manufacturing PB+Vessel                       | 20                | 16/09/2019                   | 03/02/2020 |
| Hydrostatic and Vacuum tests                  | 3,5               | 04/02/2020                   | 27/02/2020 |
| Packaging and Transport                       | 2                 | 26/02/2020                   | 12/03/2020 |
| Connecting Pipe Manufacturing                 | 14                | Waiting for ESS OK           | -          |
| Connecting Pipe change (if needed) → Redesign | 8 (August!)       | CDR approval<br>(19/07/2019) | 18/10/2019 |
| Complete tests with Connecting Pipe           | 3,5               | 03/02/2020 (if OK)           | 27/02/2020 |

## Possible stopping issues

# Schedule

## Forged block procurement

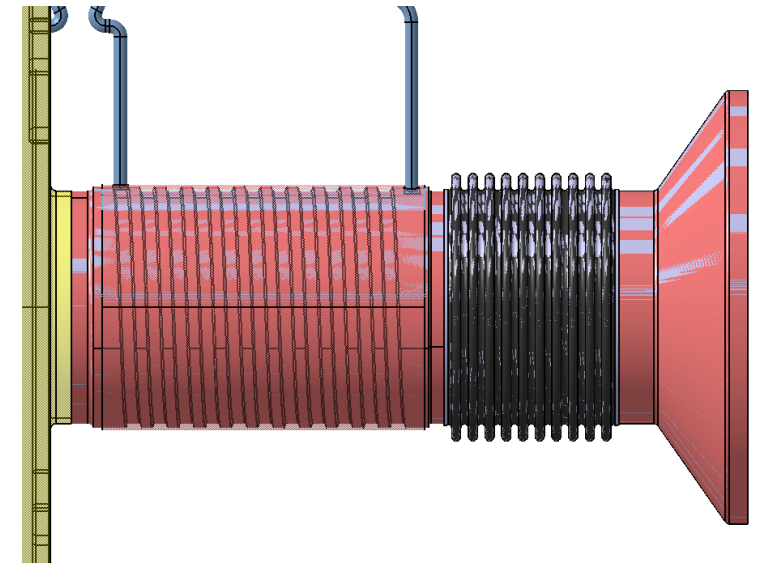
- 12 weeks.
- Difficult to find and expensive.
- “Non-working August” in between.
- Need ESS approval.



# Schedule

## Connecting Pipe Bellow

- Decision by ESS.
- Verified design by RCC-MRx.
- Risks if absent:
  - There is no decoupling from MV. Stresses to the Rigid pipe.
  - Cyclic thermal loads are not absorbed.
  - Stresses from seismic scenarios.
- If ESS decides to ELIMINATE THE BELLOW:
  - Need to repeat mechanical calculations.
  - Estimated required time = 8 working weeks.
  - Stops the PB forge block procurement until calculations assessed.
- Pros:
  - The installation process won't change.
  - Manufacturing simplified a bit: procurement of bellow is 4w. But can be done in parallel to PB&Vessel Manufacturing.
- Tests:
  - Will be removed from planned tests. Will be delivered to ESS if there is no time for testing.
  - Isolated tests can be performed.



# Schedule

## Interference with Outer shielding after re-dimensioning of Flanges

- EPDM Gasket and Helicoflex changed and approved by ESS by 23/05/2019.
- Needed to repeat calculations and flange dimensioning.
- Interference with Outer shielding.
- Possibilities:
  - Re-machine outer shielding:  $17.5\text{ mm} = 15\text{ mm (clearance)} + 2.5\text{ mm (bolt head)}$ .
  - Reduce clearance from 15 mm.
  - Re-dimension PB and Vessel:
    - PB: Reduce height
    - Vessel: enlarge and weaken.
    - Impact in PBW-System.
    - Need to repeat calculations. Delay of 8w.

