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| **WPPWIE Deliverables Status Report** | | | | | **Date:** | | | 01-Sep-2022 | | |
| **Subproject:** | SP B / Experiments on erosion, deposition and material migration | | | | **Deliverable ID** | | | PWIE-SP B.3.T-T002-D002 | | |
| **Deliverable owner:** | M. Rasinski (FZJ) | | | | **Deliverable due date** | | | 31-12-2022 | | |
| **WP Leader:**  **SP Coordinator:** | S. Brezinsek (FZJ)  A. Hakola (VTT) | | | |  | | |  | | |
| **Task title:** | SP B.3 Characterization of plasma-exposed materials | | | | | | | | | |
| **Deliverable title:** | SEM, FIB, NRA, and LIBS characterization of selected WEST and W7-X wall tiles and plasma-exposed reference samples (FZJ) | | | | | | | | | |
| **Status:** |  | **Completed** |  | **Partially completed** | |  | **Delayed** | |  | **Cancelled** |
| Please write a short status report (max. ½ pages) here.  Please check the status of the deliverable(s) with a “x” in the row above.  If the deliverable(s) are delayed, please also indicate an estimated completion date in the report text.  If the deliverable(s) include machine time, please indicate the number of days that have been used for the deliverable(s) in the report text.  For reference, the specification of this task from the PMP is given below. | | | | | | | | | | |
| **Reference from PMP:** | | | | | | | | | | |
| The goal of SP B.3 is to carry out post exposure analyses for selected wall tiles and samples, extracted from EUROfusion devices after exposure to extended plasma operations (e.g., experimental campaigns in toroidal devices) or SP B relevant experiments other than those listed in Task SP B.2. The devices involved will be ASDEX Upgrade, WEST, and W7-X but also individual samples from other (linear plasma) devices can be characterized for supporting the overall objectives of SP B. The main interests will be identifying changes in the surface characteristics of the analysed components as well as determining their erosion, deposition, and fuel-retention patterns. In addition, the obtained results are expected to provide deeper insights on the arcing behaviour of plasma-facing components and mechanisms of dust production in toroidal devices. | | | | | | | | | | |
| **Inputs required:**   * Experimental programme for plasma experiments in WPTE * Wall tiles and components removed for post-exposure analyses from AUG, WEST, and W7-X * Samples produced for plasma experiments on AUG, WEST, and W7-X | | | | | | | | | | |
| **Tasks to be performed:**   * Carry out post-exposure analyses of selected PFUs from WEST Phase 1 and pre-characterize selected PFUs for Phase 2: project coordination and surface analyses (CEA) * Project coordination for W7-X analyses; Determine surface changes on selected WEST and W7-X wall tiles, reference coatings from plasma exposures in PSI-2, and from recrystallization studies under SP A in MAGNUM-PSI (FZJ) * Determine surface changes on selected WEST PFUs and reference coatings from plasma exposures in MAGNUM-PSI, PSI-2, and GyM (IPPLM) * Determine erosion, deposition, and fuel retention profiles on selected WEST PFUs and reference coatings from plasma exposures in MAGNUM-PSI, PSI-2 and GyM (IST) * Determine erosion, deposition, and fuel retention profiles on selected WEST wall tiles (IAP) * Project coordination for AUG analyses; Determine surface changes as well as erosion, deposition, and fuel retention profiles on selected AUG, WEST, and W7-X wall tiles and other components (MPG) * Determine composition and surface structure of selected WEST wall tiles as well as W- and Be-based reference coatings before and after plasma exposures in MAGNUM-PSI, PSI-2 and GyM (NCSRD)   Determine erosion, deposition, and fuel retention profiles on selected AUG, WEST and W7-X wall tiles as well as reference coatings before and after plasma exposures in MAGNUM-PSI, PSI-2 and GyM (VTT) | | | | | | | | | | |
| **Deliverables:**   |  |  | | --- | --- | | **Deliverable ID:** | **Deliverable Title:** | | D001 | Database on ageing, erosion, and fuel-retention behavior of selected WEST PFUs (CEA) | | D002 | SEM, FIB, NRA, and LIBS characterization of selected WEST and W7-X wall tiles and plasma-exposed reference samples (FZJ) | | D003 | SEM, TEM and FIB characterization of selected WEST PFUs and plasma-exposed reference samples (IPPLM) | | D004 | RBS and NRA characterization of selected WEST PFUs and plasma-exposed reference samples (IST) | | D005 | GDOES and X-ray tomography measurements of selected WEST PFUs (IAP) | | D006 | RBS, NRA, SEM, and CLSM characterization of selected AUG, WEST, and W7-X wall tiles and components (MPG) | | D007 | RBS, NRA, SEM, XRD and XPS characterization of selected WEST PFUs, plasma-exposed samples, and reference coatings in support of SP E (NCSRD) | | D008 | RBS, NRA, ERDA, LIBS, and SIMS characterization of selected AUG, WEST and W7-X wall tiles and plasma-exposed reference samples (VTT) | | D009 | SEM, TEM and FIB characterization of selected WEST PFUs and plasma-exposed reference samples (IPPLM) (Transfer 2021) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Management Information**  **Human Resources**:   |  |  |  |  | | --- | --- | --- | --- | | **Deliverable Owner** | **Beneficiary** | **PM** | **Deliverable (Team)** | | M. Diez | CEA | 2 | D001 (T. Angot, R. Bisson, M. Diez, G. Giacometti, C. Martin, M. Minissale, C. Pardanaud) | | M. Rasinski | FZJ | 2 | D002 (S. Moeller, J. Oelmann, M. Rasinski, G. Sergienko) | | E. Fortuna-Zalesna | IPPLM | 3+3 | D003, D009 (P. Bazarnik, E. Fortuna-Zalesna, T. Plocinski, M. Spychalski, S. Szpilewicz, J. Zdunek, W. Zielinski) | | E. Alves | IST | 2 | D004 (E. Alves, N. Catarino, R. Mateus, R. Silva) | | E. Grigore | IAP | 2 | D005 (E. Grigore, I. Tiseanu) | | M.. Mayer | MPG | 5 | D006 (M. Balden, C. P. Dhard, S. Elgeti, W. Jacob, K. Krieger, M. Mayer) | | K. Mergia | NCSRD | 3 | D007 (M. Axiotis, S. Dellis, A. Lagoyannis, E. Manios, K. Mergia, P. Tsavalas) | | A. Hakola | VTT | 2 | D008 (A. Hakola, P. Jalkanen, J. Likonen, K. Mizohata, T. Vuoriheimo) | | **Total** |  | **24** |  |   **Machine Resources (2022):**   |  |  |  |  | | --- | --- | --- | --- | | **Device** | **Beneficiary** | **Days** | **Related Deliverable** | | Accelerator | IST | 2 | D004 | | Accelerator | MPG | 7 | D007 | | Accelerator | NCSRD | 3 | D006 | | Accelerator | VTT | 1 | D010 | | Accelerator | FZJ | 3 | D002 | |  |  |  |  |   **Other resources:**  **Collaborations:**   * WPTE (AUG, WEST; including internal program) * WPW7X   **Other information:**   * Connected to TSVVs associated with WPPWIE | | | | | | | | | | | |