



iFAST Open Steering Committee Meeting, December 14, 2023

Denise Völker, DESY (filling in for Mike Seidel, PSI/EPFL)

WP11 Overview

task 1: Sustainable Concepts for RIs: networking, workshops on selected topics
deliverable: report

- 1) System Efficiency of Accelerator Concepts (N.Catalan Lasheras, CERN)
- 2) Key Technologies and Components for High Efficiency (C.Martins ESS)
- 3) Cross Linking Accelerator R&D with Industrial Approaches (P.Spiller GSI)
- 4) Ecological Concepts (D. Voelker DESY)

task 2: High Efficiency Klystron (O.Brunner CERN, THALES, ULANC)

- deliverable: industrial prototype
- replacing klystrons in LHC

task 3: Permanent Combined Function Magnets for Light Sources (B.Shepherd, UKRI, DLS, KYMA, DESY)

- deliverable: magnet prototype, applicable for Diamond upgrade, PETRA-4
- several advantages of permanent magnets, not just power consumption

Milestones & Deliverables

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS50	Workshop on energy for sustainable science at research infrastructures, at ESRF	41 - PSI	6	Web site (task 11.1)
MS51	Workshop on efficient RF sources	1 - CERN	13	Web site (task 11.1)
MS52	Workshop on efficient magnet- and RF power supplies	2 - ESS	22	Web site (task 11.1)
MS53	Workshop on sustainable materials and lifecycle management for accelerators	12 - DESY	18	Web site (task 11.1)
MS54	Workshop on industrial approaches for sustainable accelerators	13 - GSI	42	Web site (task 11.1)
MS55	Design review	1 - CERN	12	Web site (task 11.2)
MS56	Magnets constructed and tested	25 - KYMA	25	Magnetic measurements completed (task 11.3)

September 2022, done → next ESSRI Sept. 2024 Ciemat
<https://agenda.ciemat.es/event/4431/>

July 2022, done → follow up workshop in 2024

Delayed to 2024, → **New Developments in Power Converters for Sustainable Operation, planned for April 8-10 2024**
<https://indico.esss.lu.se/event/3396/overview>

February 2023, done → **promotion of results at REPM (Birmingham) and Low Emittance Ring – Permanent Magnets Workshop (WP 11 Task 3) and others** → follow up workshop in 2024

October 2023, done, results: <https://indico.gsi.de/event/17548/overview>

June 2022, done

Prototype to be completed in mid-2024

Deliverables related to WP11	
D11.1: Sustainable Accelerators Report. <i>Report on strategies to improve sustainability and reduce environmental impact of accelerators.</i>	M45
D11.2: Klystron prototype completed and validated. <i>Report on the construction of the klystron prototype and on the test results.</i>	M36
D11.3: Prototype adjustable PM quadrupole and combined function magnets. <i>Two prototype PM-based magnets – one quadrupole and one combined-function magnet designed, built and measured.</i>	M28

