

- Evaluate Pb photocathode deposition for improved performance of SRF guns
- Characterise and optimise performance of Diamond Amplifier Cathode solutions for SRF guns
- Material R&D for advanced photo cathodes for NC RF guns

- SAPI commissioning and photocathodes characterisation
- Pb photocathodes: deposition improvement, post-deposition treatment, Q and QE measurements
- DAC photocathodes

STFC

NCBJ, DESY, HZDR

HZDR, HZB

Milestones

Number	achievement	Performer	Deadline	Product
MS80	Demonstrated operation of improved deposition system, Pb layers of 1 μm in thickness	NCBJ	M30	Report on sample characterisation
MS73	Commissioning of the SAPI for operation with metal photocathodes	STFC	M8	Publication report
MS75	Investigation of quantum yield and energy spectrum of the electrons, emitted from the metal photocathode surface in SAPI	STFC	M18	Intermediate scientific report
MS83	Manufacturing and commissioning of the photocathode transport system	STFC	M36	Technical design report
MS85	Investigation of the brightness of different metal photocathodes in a S-band NCRF gun	STFC	M42	Scientific report

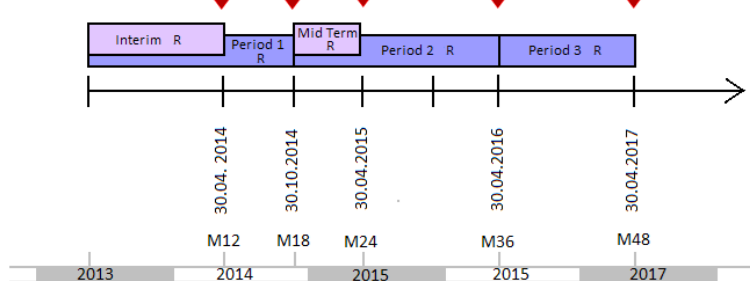
Deliverables

Number	achievement	Performer	Deadline	Product
D12.4	Scientific report on photocathode R&D	STFC	M18	Report
D12.8	Optimised procedure for microdroplets flattening with an UV laser	NCBJ	M36	Report
D12.9	Pb/Nb plug photocathodes measurements and characterization.	HZDR	M42	Report
D12.13	Results of DAC implementation in SRF guns.	HZB	M48	Report

DELIVERABLES (REPORTS) photocath. R&D droplets flattening photocath. meas. DAC implementation

MILESTONES (REPORTS) improved deposition sys. SAPI commiss. SAPI QE meas. transfer system commiss. photocath. brightness meas.

PERIODIC REPORTS

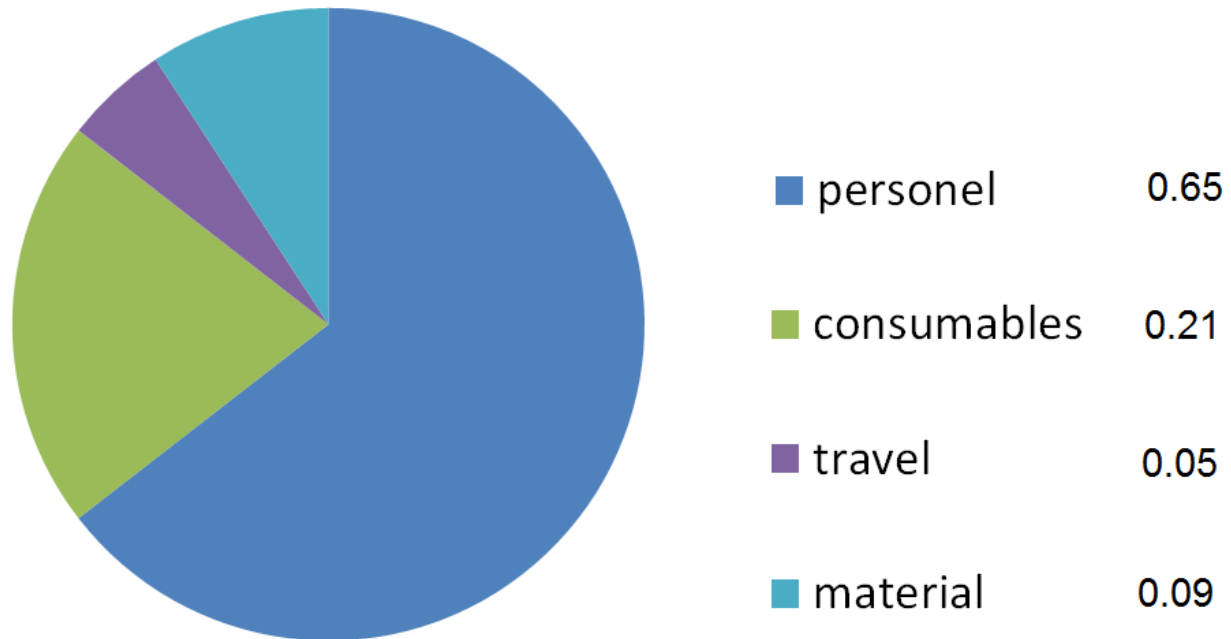


Budget

Beneficiary	Person*month	Budget
DESY	6	196,838
HZB	10	160,528
HZDR	14	184,636
NCBJ	36	251,023
STFC	22	340,793

88 pm

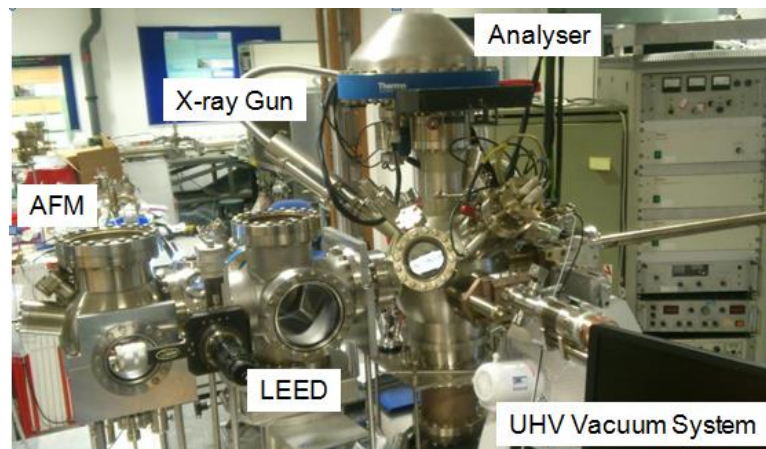
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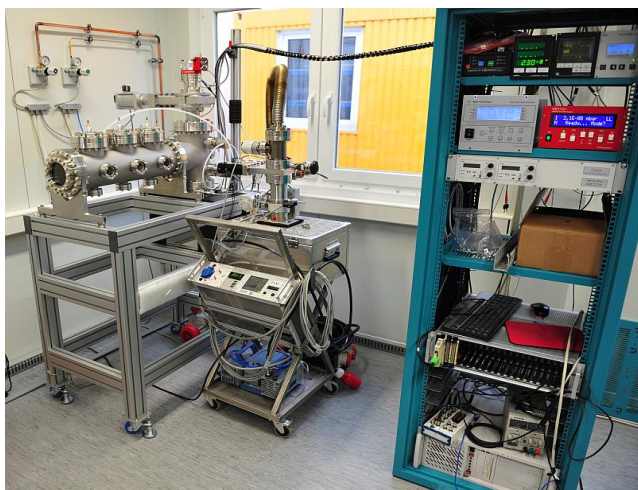
SAPI commissioning and photocathodes characterisation

The construction and commissioning of a Surface Analysis and Preparation Installation for metal photocathodes for normally conducting RF photoinjectors.

- Instruments setup and commissioning
- Surface diagnostics
- Cleaning procedure studies
- QE measurements
- Accelerator performance
- High Repetition Rate Gun low power commissioned and installed in VELA beam line



DAC photocathodes



Works concentrated on the primary cathode – an experimental setup for evaporation and diagnostics of CsK_2Sb photocathodes has been established

- momentatron
- QE measurement setup

Measurements under cryogenic conditions showed stable QE in the range 0.01

Pb photocathodes: deposition improvement, post-deposition treatment, Q_0 and QE measurements

- Deposition method based on arc deposition and separated pulsed plasma flattening (NCBJ)
- Dark current measurements and surface morphology studies, (HZDR, NCBJ)
- e-gun reconstruction - plug photocathode (DESY)
- QE measurements at BNL and QE maps at HZB
- Q_0 measurements (DESY)
- Laser cleaning and QE measurements for metallic photocathodes Mg, Nb, Pb/Nb (HZDR)
- Accelerator test at ELBE, long term stability tests (HZDR)...



