

Status and Way Forward Science Support Systems

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Review of ESS baseline and initial operation



Arno Hiess

Scientific Activities Division

www.europeanspallationsource.se

Key SSS Milestones – *considering potential MS for new baseline*



Milestone	Date	Description
DEMAX ready for initial users	End 2018	Move DEMAX into initial operation
<i>Access E buildings</i>	<i>Late 2019 TBC</i>	
First on-site laboratories and sample env. workshops ready	End 2019	Move SULF into initial operation. RML not ready but on track for Beam on Target (BOT).
<i>Access D buildings</i>	<i>Late 2020 TBC</i>	
First sample environment systems SES ready	End 2021	Move TEFI, PREMP, FLUCO, MESI into initial operation SES for commissioning / demonstrating instr. perform.
<i>Beam on Target and Start hot commissioning first instruments</i>	<i>Mid 2022 TBC</i>	
Initial suite of laboratories and sample environment workshops	Mid 2023	Labs and workshops as needed for emerging user program / early science success on first instruments. End of SSS project within construction funding
Initial suite of sample environment systems	Mid 2023	SES as needed for emerging user program / early science success on first instruments End of SSS project within construction funding
<i>Start of User Program (SoUP)</i>	<i>Late 2023 TBC</i>	<i>Details need further refinement</i>

Sample Environment Reference Suite



https://1drv.ms/x/s!AuCQb_HPf3b9g8g2HHqvybpQKix-Lg

SYSTEM	LABEL	DETAIL	UNIT COST	BUDGET	RESPONSIBLE BUDGET	RESPONSIBLE EXECUTION	READY
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- Sample Environment Reference Suite based on instrument needs / priorities / timelines. Updated when needed. **Additional needs (continuously) identified.**
- Scope of all major In-Kind Contributions ‘agreed’: Magnets, Pressure, Fluids.
- Discussions on used / refurbished Equipment from HZB ‘converging’.
- Several IK SE Systems already completed: Peltier Sub-Cryo and T-Ctrl SANS.
- Following Hi-P and magnet meetings, **prioritization symposia** with instr. Teams identified:

Soft matter sample env.	Gases & chem. Reactions (5/18)	changers & alignment
Magnets (2 nd iteration)	Low-T	In-situ characterization
Mech. processing (5/18)	high pressure (2 nd iteration)	furnaces / levitation

Science Support – towards (initial) operation

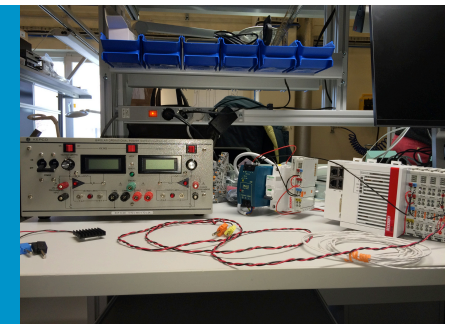


With instrument moving into commissioning from 2021, Scientific Activities Division will:

- **be managing the (early) user program** incl. proposals, scheduling, sample management, user visits, experimental report and also keep publication records.
- **operate chemistry and life science labs** incl. lab consumables and equipment maintenance
- **provide deuteration expertise and support (user program).**
- **install and jointly operate with instrument team sample environment** equipment during experiment, and support users in sample conditioning / mounting.
- **maintain the then existing and also extend the sample environment suite and the support laboratories** to cater for instruments #9-#15 entering hot commissioning and user programme (*).

() The NSS construction budget covers the sample environment suite and support laboratories for the first 8 instruments only and further functionality has been deferred to initial operation in-line with the instrument construction schedule.*

Investment in Sample Environment and Laboratory Equipment



	Revised NSS / SSS equipment scope	5y OPS '19-'23 minor / major	Steady State minor / major inv.
Major strategic investment		4250 k€	1000 k€ / y
Mechatronic & Software Integration	392 k€	175 k€	100 k€ / y
Fluids incl. Gases Liquids ...	1372 k€	75 k€	150 k€ / y
Pressure & Mechanical Processing	1834 k€	75 k€	150 k€ / y
Temperature & Fields	5295 k€	100 k€	260 k€ / y
Sample and User Labs	1696 k€	150 k€	80 k€ / y
Deuteration & Crystallisation	770 k€	560 k€	170 k€ / y

Pre-operation 5y OPS 2019 – **2023** and steady state:

- **major strategic investment** for science support systems managed by division.
- maintenance and **minor tactical investment** managed by individual platforms.

Science Support – in steady state operation



	Staff FTE	Annual budget k€ / year	
Science Support Systems	2.0	1512 incl. major capital projects, on-call support	
Deuteration Crystallization	7.0	1225	
Sample handling general labs	6.0	762	
SAMPLE ENV. 20.4.3	Temperature Field	6.5	1295
	High Pressure Mech. Proc.	5.0	895
	Fluids incl. gases, vapor, compl. fl.	5.0	875
	Sample Env. Syst. Integration	3.5	535
	Scientific Coord. User Office	6.0	2737 incl. user reimbursement and PhD program

Share of SAD Tasks in OPS	Beam ON	Beam OFF
user prg, instr + exp support	60	20
maintenance repair, calibr.	10	50
development projects	20	20
Coordination, IK, procuremnt	10	10

4 Divisions within Science:

- SAD operating Science Support Systems
- Instruments: Experiment support incl. 'hall coordinators' (24/7)
- Technologies incl. Projects
- DMSC