



elajo

We accelerate to target

**Mock Up and Test Stand
MUTS**

INTRODUCTION

Introduction to MUTS



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An attractive business partner

Elajo is one of Sweden's leading companies for electrical, mechanical, engineering and energy installations, offering broad expertise and knowledgeable staff.

With our focus on energy efficiency, high quality and unique solutions, we want to increase our customers' competitiveness and be an attractive business partner. We never turn down a job - our flexibility means that nothing is too big or small.

858 employees

1
BILLION

36
CITIES IN SWEDEN

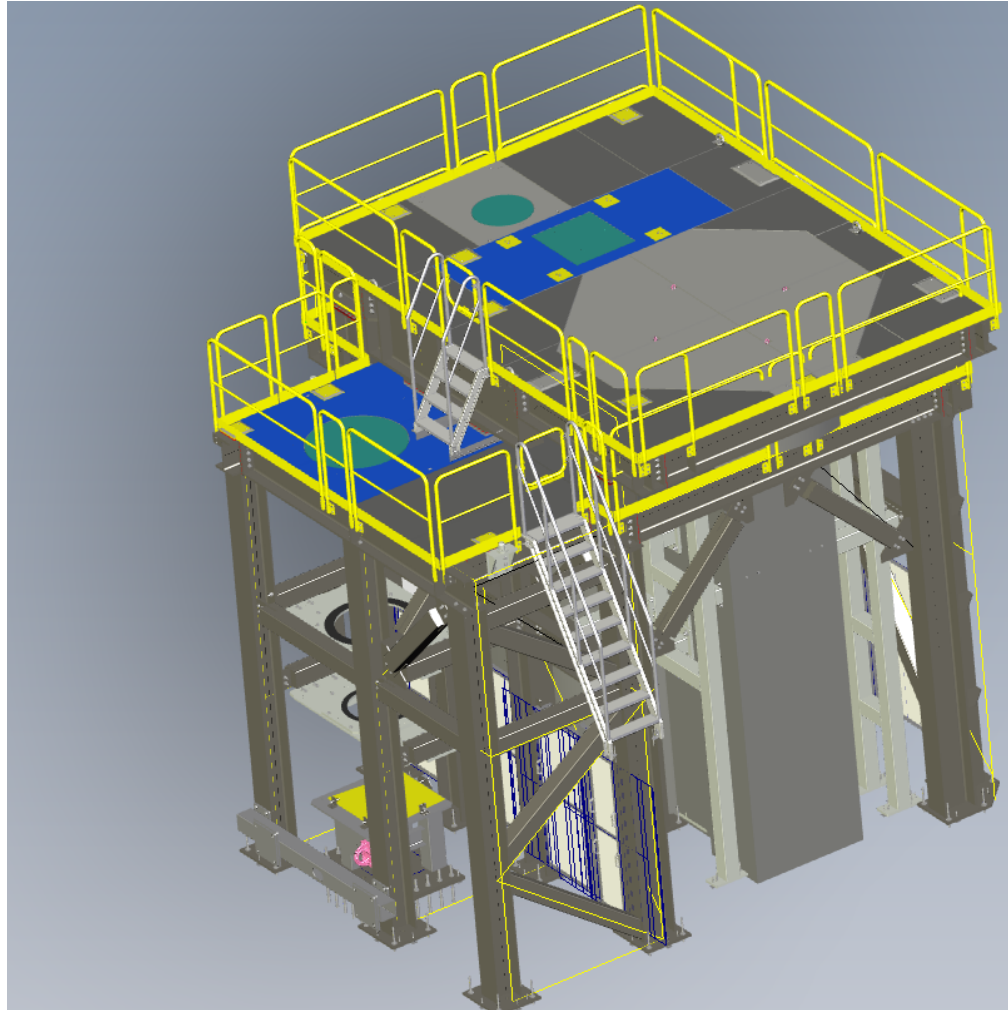
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Projekt nr	Projekt namn	Förfrågan	Offert	Kontrakt	Ritningar	Material	Arbetsmappar	Prefab	Transport	Överlämning Site	Installation	Slut dok
3	L19208	MUTS	Klar	Klar	Klar	Klar	Klar	Klar	Klar	klart	Pågår	
4	L19257	Drain tank system 1047 1048 1049	Klar	Klar	Klar	Klar	Klar	Klar	Klar	klart	Pågår	
5	L19257	Tillägg Drain tanks	Klar	Klar	Klar							
6	L19313	Primary cooling system 1041 1042 1043	Klar	Klar	Klar						Okärt när	
7	L19312	Installation of Purification System	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Pågår	
8	L19312	Tillägg Purification System Stativ jonbyttartankar	Klar	Klar	Klar			Klar	Klar	Klar	Klar	Tillsammans med systemet
9	L19293	Reparation Skiden	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar
10	L19324	HVAC	Klar	Klar	Klar	Pågår	Pågår	NA	NA	NA	Pågår	
11	F20002	Pipe supports	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar
12	L19314	Samlingsrör	Klar	Klar	Klar	Klar	Klar		Klar	Klar	Klar	Klar
13		Race	Klar	Klar	Klar							
14	L20636	TSS	Klar	Klar	Klar	Klar	Klar		Klar	Klar	Klar	Pågår
15		Helium cooling system cvrez	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Pågår	
16	L19293	Tanken Skid	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar
17	L20662	Service media system	Klar	Klar	Klar	v42??	Rörstöd kvarstår	NA				
18	L20707	Off-gas system (endast Monolith pressure system Part 1	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Klar	Pågår	
19	L20707	Offgas system, Monolith pressure relief Part 2 och 3	Klar	Klar	Klar	Vi har delat av ritningar	Rörstöd kvarstår					
20	L20707	Offgas system, Offgas 1140 Part 1	Klar	Klar	Klar	Klar	Upphandlar, men oklar leverans	Pågår	Stöd men inte rör			
21		Generella arbete										
22	L20832	Bunkers D03 structural frame	Klar	Klar	Klar	Klar	NA	Klar	NA	NA	Klar	Pågår
23	L20821	IB245-05	Klar	Klar	Klar	Klar	Klar	Klar	NA	NA	Klar	Pågår
24	L20847	Dränrör säkerhetsventil accelerator	Muntlig	---	Muntlig		Klart				Klar	Klar
25		Monolith vessel	Klar	Klar	Klar	Klar	NA	NA	NA	NA	Klar	NA
26		Mock up - Jonbyttartankar	Klar	Klar	Klart	Klart	Klar	NA	Klar	NA	NA	NA
27		Hållare till strålningsmätare	Klar	Klar	Klar	Klar	Klar	NA	Pågår	NA		
28		Hållare till hållarna	Klar	Klar	Troligen ingår i ovan	Klar	Klar	NA	Pågår	NA		
29		Lyftbalk	Klar	Klar	Klar	Pågår internt						
30												
31												

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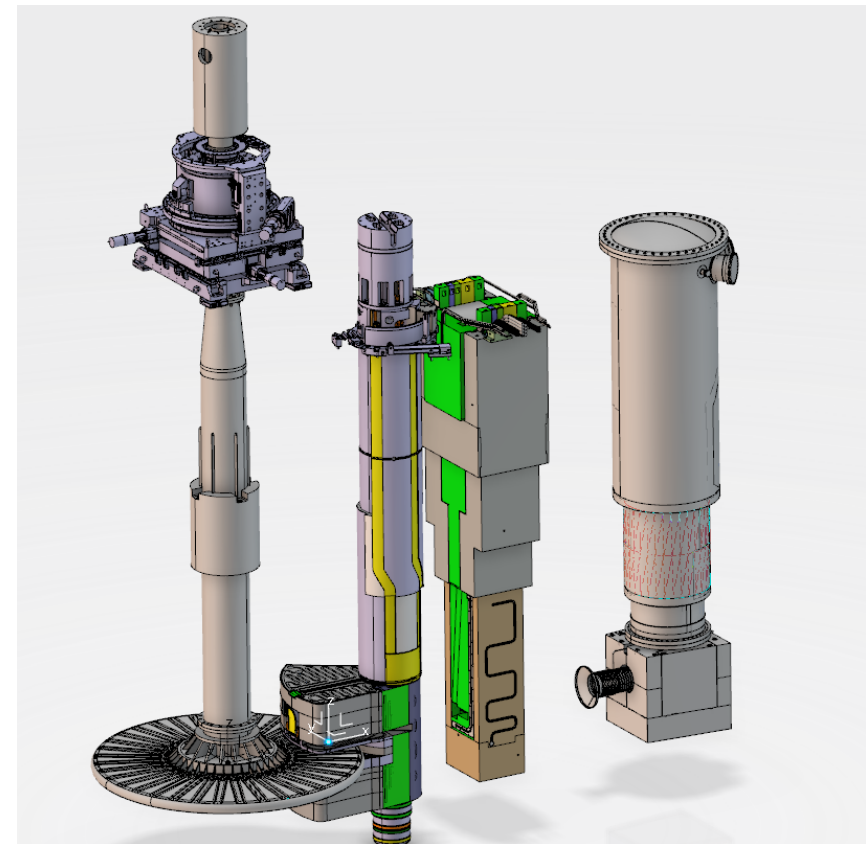


What is MUTS?

- Mechanical steel structure that shall provide SAT and functional testing possibilities of different Target components.
- The structure shall mimic important interface positions from the Monolith in order to provide realistic operations training with remote handled Casks.
- It shall be used for Remote Handling Operators training, as well as alignment, testing and adjustments of Target components.

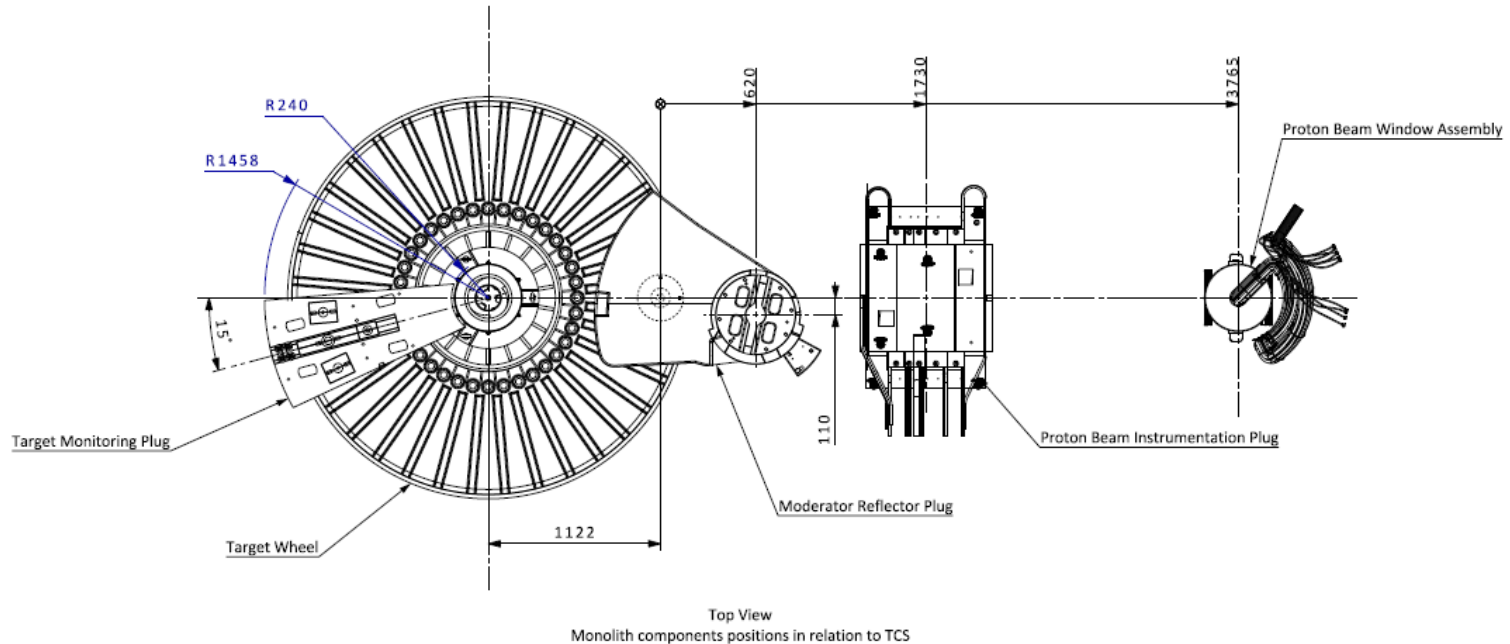
Components and Stakeholders

- Cask Assembly
- Target Wheel, Shaft and Drive Unit
- Target Monitoring Plug
- Moderator Reflector Plug
- Proton Beam Instrumentation Plug
- Proton Beam Window
- Neutron Beam Extraction System



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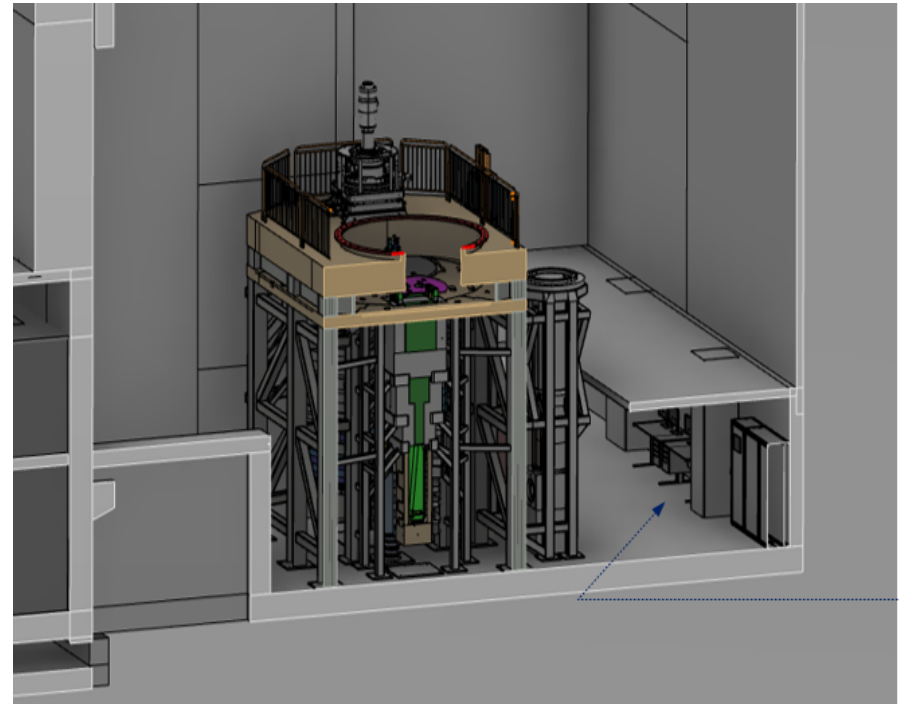
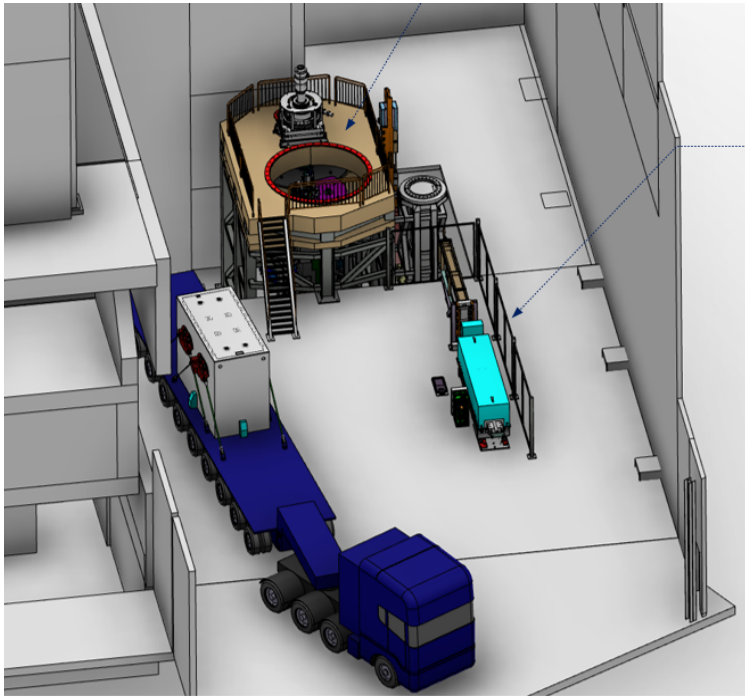
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System design



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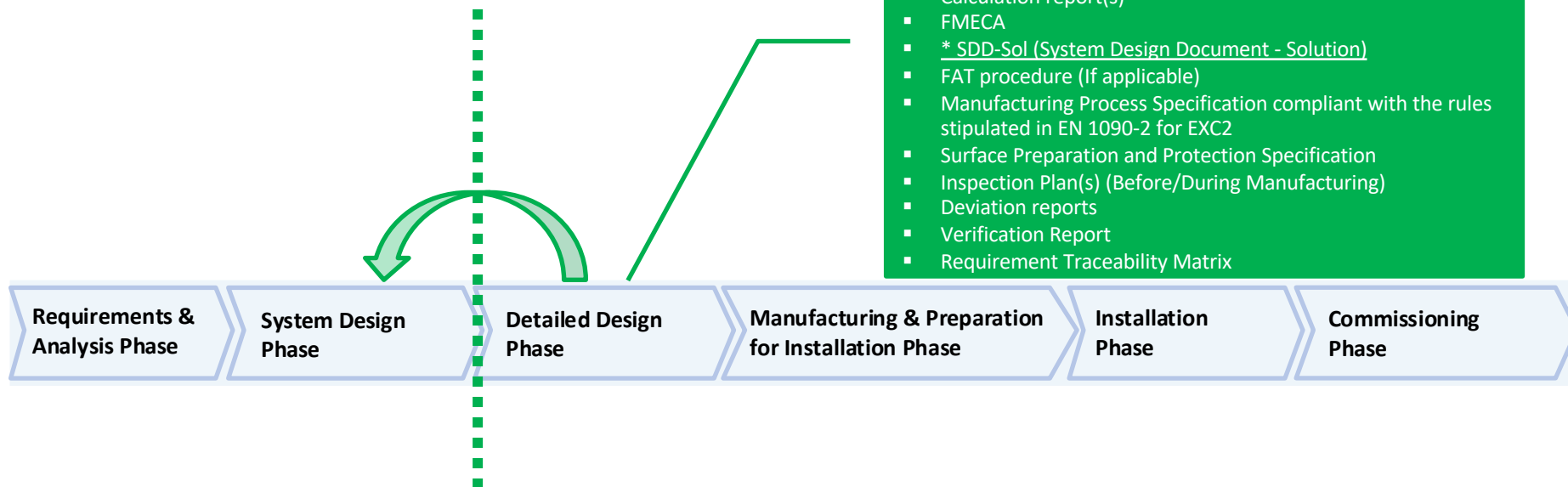
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CDR

Relevant and minimum required engineering documentation acc. to
ESS Engineering Handbook ESS-0092276 and Tech. Spec. ESS-
1078134

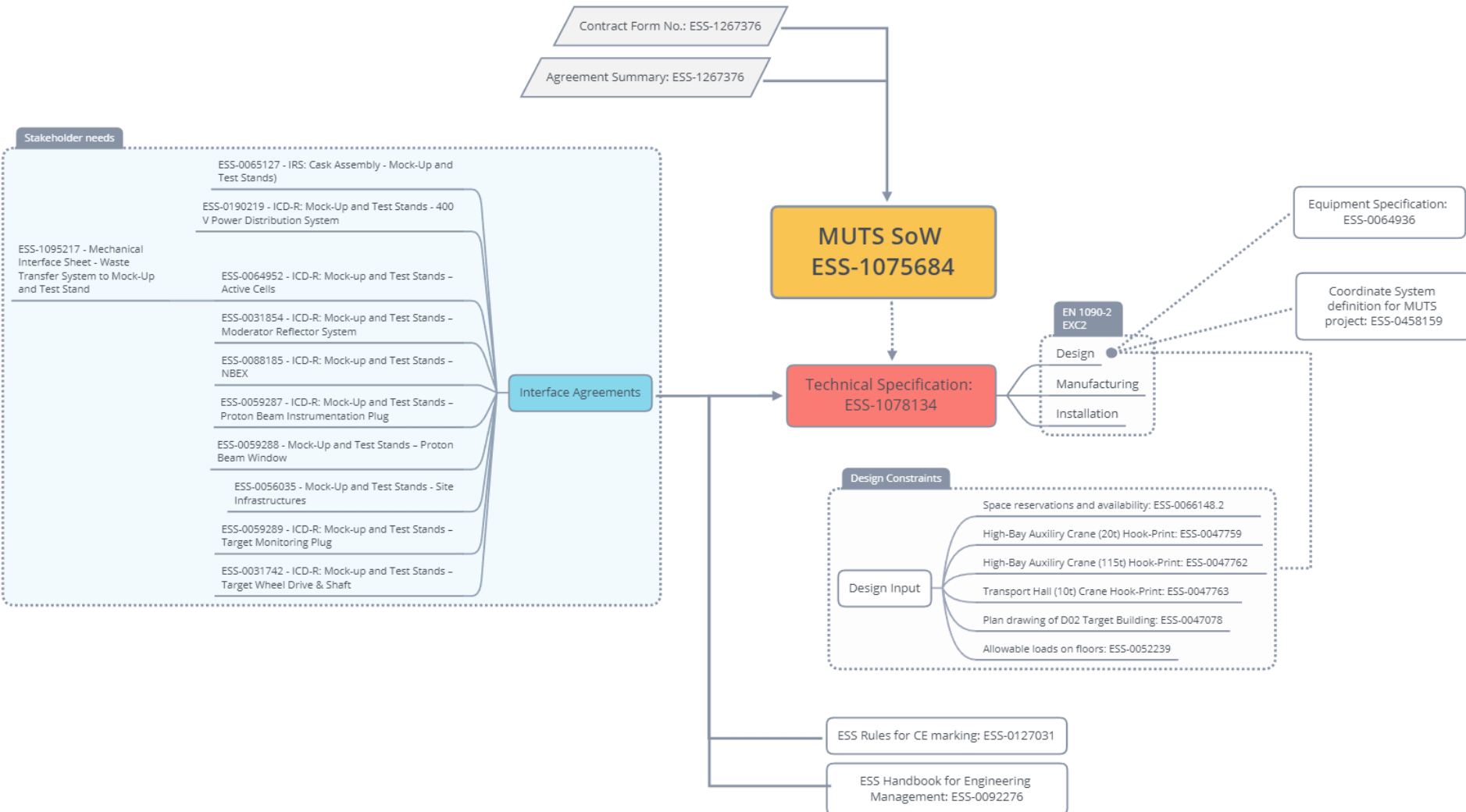
Deliverables for this phase (Approved/Released documentation):

- Document list
- CAD models
- Drawings/Bill of material
- Components part list
- Calculation report(s)
- FMECA
- * SDD-Sol (System Design Document - Solution)
- FAT procedure (If applicable)
- Manufacturing Process Specification compliant with the rules stipulated in EN 1090-2 for EXC2
- Surface Preparation and Protection Specification
- Inspection Plan(s) (Before/During Manufacturing)
- Deviation reports
- Verification Report
- Requirement Traceability Matrix



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		Filters															Requirement					Sub Requirements					
ID	Type	Mech	Superseceded	Analysis	Design	Detailing	Monolith Head	MRP Structure	MRP Structure	PBIP Structure	PBW Structure	PBW Fixture	Guarding/Ladder	ANL	ELAJO	ESS	Revision	Document	Clause/Ref.	Requirement	Specific	Measurab	Modification Ease	Risk Score	Comments	Verification 1	Verification 2
156	R	X	X	X	X	X							X				2	ESS-0088186	ID-1093-406	NBEY shall deliver the test stands and equipment to perform the intended tests, while MUTS shall deliver frame parts e.g. to fasten the LSS vertical handling test stand				0			
157	R	X		X			X						X				2	ESS-1078134	ESS-1051243	The MUTS Frame Structure shall include Permanent Shielding Mock-Ups as alignment features for the Target System components acc. To interface drawing ESS-1078148.2				0	The alignment features all provided with adjustment.	ANL0010921	
158	R	X		X				X		X			X				2	ESS-1078134	ESS-1051250	The MUTS Frame Structure shall include Permanent Shielding Mock-Ups as alignment features for the MRP acc. To interface drawing ESS-1083583.2				0	The alignment features are included in the inner structure.	ANL0010921	ESS-1592848
159	R	X		X			X						X				2	ESS-1078134	ESS-1051270	The MUTS Frame Structure shall include Permanent Shielding Mock-Ups as alignment features for the Target Monitoring Plug acc. To interface drawing ESS-1083593.2				0	The alignment features are included in the inner structure.	ANL0010921	
160	R	X		X				X					X				2	ESS-1078134	ESS-1051280	The MUTS Frame Structure shall include Permanent Shielding Mock-Ups as alignment features for the PBIP acc. To interface drawing ESS-1084545.2				0	The alignment features are included in the inner structure.	ANL0010921	
161	R	X		X						X			X				2	ESS-1078134	ESS-1051294	The MUTS Frame Structure shall include Permanent Shielding Mock-Ups as alignment features for the PBW acc. To interface drawing ESS-1083588.2				0	The alignment features are included on the outer structure	ANL0010924	
162	R			X	X	X	X						X				2	ESS-1078134	ESS-1051242	The MUTS Frame Structure supporting the Target Drive Unit shall have a minimum stiffness of 10 ⁴ 9 N/m and have a first Eigen frequency of ≥ 2 Hz.				0		64931-TR-0001	
163	R	X		X	X					X			X				2	ESS-1078134	ESS-1051253	The max. allowable deformation of the MRP Test Stand Structure is ±0,1 mm in Z-axis in relation to TCS.	Y	N	4	16	This is shown to be achieved by analysis.	ANL0021183-CAL-001	
165	R			X	X		X	X					X				2	ESS-1078134	ESS-1051273	The max. allowable deformation of the MUTS Frame Structure that supports the Target Monitoring Plug in XYZ-axis is: ±0.5 mm in relation to MUTS-TCS.	Y	N	4	16	This following deformations have been achieved. X: +/- 0.55mm Y: +/- 0.34mm Z: +/- 0.13mm	64931-TR-0001	
166	R	X		X		X	X						X				2	ESS-1078134	ESS-1051248	The MUTS Frame Structure shall be able to support the MRS Rotation Unit acc. To information defined in the interface drawing ESS-1085581.2				0	This is understood to be mounted from the MRP cask interface.		
168	R	X		X		X	X						X				2	ESS-1078134	ESS-1051291	MUTS Frame Structure shall handle the loads from all CA configurations during Monolith Components maintenance handling in acc. To the interface drawing ESS-1083605.2				0	The interface points are as defined in ESS-1083605.2 Rev 2		
495	R												X				5	ESS-1078134	ESS-1080687	The MUTS Frame Structure must provide two flat surfaces (plates) to act as end stops at the limit of travel for the Active Cells Waste Transfer System Trolley. For more details, see interface 01 as defined in the Interface Sheet document ESS-1095217 [44].	Y	Y	4	4	Design Change will be incorporated post CDR pack release		
496	R	X											X				5	ESS-1078134	ESS-1080689	The MUTS frame structure shall provide an anchor point for the installation and operation of a recovery system (e.g. winch) for the Waste Transfer System. For more details, see interface 02 as defined in the Interface Sheet document ESS-1095217	Y	Y	4	4	Design Change will be incorporated post CDR pack		

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