Gamma Blockers CDR

- Quality
- Verification plans

NATIONAL CENTRE FOR NUCLEAR RESEARCH ŚWIERK

Karol Szymczyk

17-11-2017

Overview

09:00 - 09:15 Committee discussion (closed) 15'

09:15 - 09:35 Gamma Blockers overview and schedule 20’ Karol Szymczyk

09:35 - 09:55 Requirements and interfaces 20’ Marcin Wojciechowski

09:55 - 10:35 Radiation studies 40’ Karol Szymczyk

10:35 - 10:50 Coffee break

10:50 - 11:30 Mechanical design 40’ Marcin Wojciechowski

11:30 - 11:45 Safety, Machine Protection and RAMI 15’ Marcin Wojciechowski

11:45 - 12:00 Quality and Verification plans 15’ Karol Szymczyk

12:00 - 13:30 Lunch

13:30 - 14:30 Committee deliberations (closed) 1h0'

14:30 - 15:00 Closeout 30'

Quality goals

The major quality goals for the Project are the following:

- Design of the GB products, fully compliant with ESS ERIC specification and requirements
- Manufacturing of the products according to the time schedule set forth by the project plan.
- Design and manufacturing costs 100% within the available budget
- Inspection and test to ensure manufacturing and assembly of GB system units are in compliance with NCBJ Design approved by ESS ERIC
- testing and other verification activities to ensure as-built GB products meet performance specification and requirements
- Delivery, on-site test and installation of GB systems at ESS ERIC according to the time schedule.

Management responsibilities within this quality plan

The following person of the Partner will take part in the provision of the works and services:

- **Sławomir Wronka** **General Coordinators:**
- **Karol Szymczyk** **Work-Unit Coordinator**
- **Marcin Wojciechowski**

The person nominated as the Work-Unit Coordinator and responsible for the communication with customer:

- **Iñigo Alonso –Work-Unit Coordinator**

he communication between the ESS ERIC and NCBJ is done by:

- Monthly reports-every month
- Skype meetings-every 2 weeks
- Communication in case of emergency

Documentation and storage of data

- All documentation and correspondence shall be in English
- All office documents shall be in MS Word and PDF format
- All mechanical models and drawings shall be editable and linked. Drawings shall be also provided in PDF

All documents shall be categorized as:

- Monthly reports - prepared every month
- Technical Reports
- Quality reports

Control of records within this Quality plan

Record No	Place for archive	Retention period
Preliminary Design Review deliverables and protocols:	CHESS Archive of the NCBJ Institute: CD/DVD, printed version	Life of Facility 10 years
Critical Design Review deliverables and protocols:	CHESS Archive of the NCBJ Institute: CD/DVD, printed version	Life of Facility 10 years
Verification reports of requirements and specification verification	CHESS Archive of the NCBJ Institute: CD/DVD, printed version	Life of Facility 10 years
Quality reports of procurement, manufacture and assembly inspections and tests	CHESS Archive of the NCBJ Institute: CD/DVD, printed version	Life of Facility 10 years
Radiation calculation	CHESS Archive of the NCBJ Institute: CD/DVD, printed version	Life of Facility 10 years
Mechanical report	CHESS Archive of the NCBJ Institute: CD/DVD, printed version	Life of Facility 10 years

Production and service provision

- Transportation of the GB system
- Installation of the GB System components in the ESS tunnels
- Performing tests of the GB system
- Preparing a System Installation Test Report

Verification
1) Manufacturing:

- Inspection of delivered and manufactured components (documentation/geometry)
- Functional tests of subsystems on a test bench (linear module with stepper motor in simulated GB configuration and variable loads)
- Vacuum tests of components
- Geometry measurement (air/under vacuum)
- Vacuum test of assembled
- Geometry measurement
- Adjustment devices test
- Functional tests

Verification
2) Factory acceptance tests FAT:

- Visual inspection
- Components documentation
- Vacuum tests
- Validation of adjustment devices
- GB Functional test (power on and power failure, in air/vacuum)

Verification
3) Site acceptance tests SAT:

- Visual inspection
- Components documentation
- Vacuum tests
- Validation of adjustment devices
- GB Functional test (power on and power failure, in air/vacuum)

Verification
Preparation

Equipment reference	Purpose
Multimeter	electrical properties, limit switches
Helium leak detector with vacuum pump station	vacuum properties
3D portable coordinate measuring machine (CMM)	geometry
Stepper motor driver	motor testing
Additional limit switches	delay time
chronograph	time/movement properties

Verification

Acceptance data

- GB in A2T section

Parameter	Requirement	Comments	Result
Geometry (air/vacuum)			
Outline dimensions	x	OK/NOT OK	
GB core diameter		OK/NOT OK	
Core thickness		OK/NOT OK	
Beamline flanges relative position, coaxial and parallel tolerance		OK/NOT OK	
Flange dimensions	DN160 Quick CF	OK/NOT OK	
position adjustment range			
Motion range			
Open position		OK/NOT OK	
Close position		OK/NOT OK	
Between limit switches		OK/NOT OK	
Between mechanical limits		OK/NOT OK	
Functional			
Functional in Air		OK/NOT OK	
Functional in vacuum		OK/NOT OK	
limit switches signal		OK/NOT OK	
Total closing time vacuum/air, engine/without engine	Test by additional limit switch		
Vacuum with working motor	Min 1.5s delay, max 30s overall	OK/NOT OK	
Vacuum without motor	1.5s delay	OK/NOT OK	
Air with motor	Max 30s	OK/NOT OK	
Air without motor		OK/NOT OK	
vacuum test	Leak rate	According to ESS-0037830	

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Verification

Acceptance data

- GB in Beam dump section

Parameter	Requirement	Comments	Result
Geometry (air/vacuum)			
Outline dimensions	x	OK/NOT OK	
GB core diameter		OK/NOT OK	
Core thickness		OK/NOT OK	
Beamline flanges relative position, coaxial and parallel tolerance		OK/NOT OK	
Flange dimensions	DN250 Quick CF	OK/NOT OK	
position adjustment range			
Motion range			
Open position		OK/NOT OK	
Close position		OK/NOT OK	
Between limit switches		OK/NOT OK	
Between mechanical limits		OK/NOT OK	
Functional			
Functional in Air		OK/NOT OK	
Functional in vacuum		OK/NOT OK	
limit switches signal		OK/NOT OK	
Total closing time vacuum/air, engine/without engine	Test by additional limit switch		
Vacuum with working motor	Min 1.5s delay, max 30s overall	OK/NOT OK	
Vacuum without motor	1.5s delay	OK/NOT OK	
Air with motor	Max 30s	OK/NOT OK	
Air without motor		OK/NOT OK	
vacuum test	Leak rate	According to ESS-0037830	

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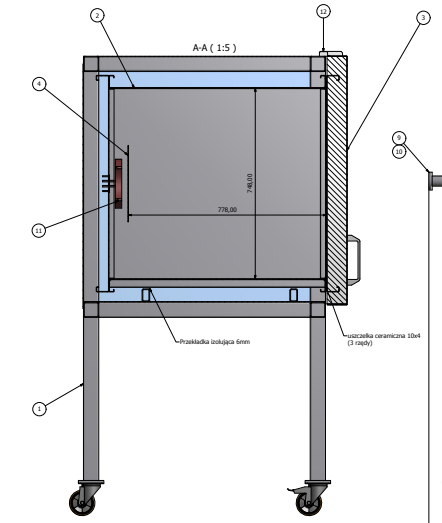

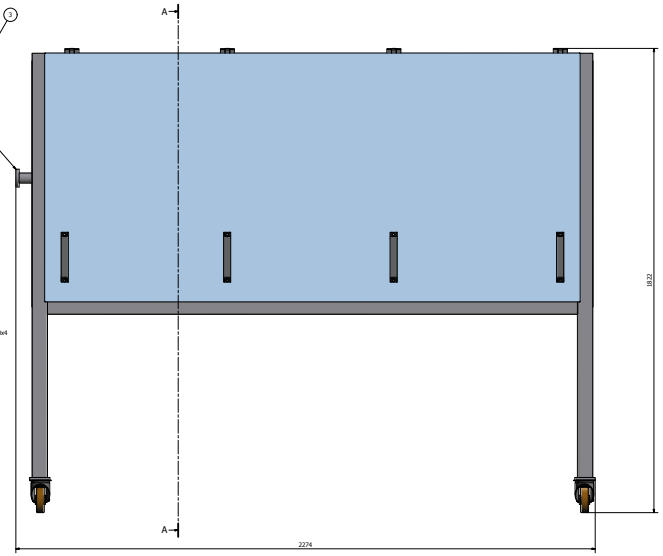

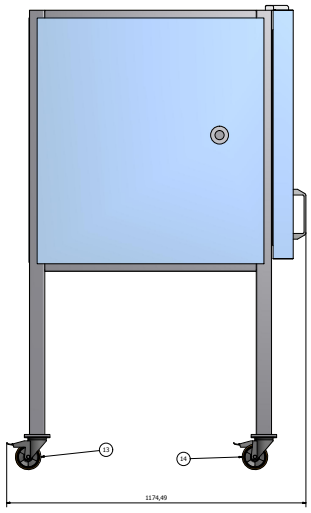

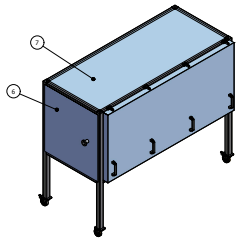

LISTA CZĘŚCI

ELEMENT	ILOŚĆ	NR CZĘŚCI	OPIS
1	1	T31-PdW-01-00	rama
2	1	T31-PdW-02-00	kospus wewn.
3	1	T31-PdW-03-00	klapa
4	1	T31-PdW-00-01	osłona wentylatorów
5	1	T31-PdW-00-02	obudowa
6	1	T31-PdW-00-03	obudowa
7	1	T31-PdW-00-04	obudowa
8	1	T31-PdW-00-05	obudowa
9	1	nypel CF DN40	dł. ok. 250-300mm
10	1	Ranszal CF DN40	
11	4	grzałka + wentylator	
12	4	Hinge GN 129.3-91-SS-A-ST-1	GN 129.3-1-Hinges
13	2	Mould-on polyurethane wheels with steel sheet bracket RE.FS-100-SSF-N	RE.FS-N-Mould-on polyurethane wheels with steel sheet bracket
14	2	Mould-on polyurethane wheels with steel sheet bracket RE.FS-100-SSL-N	RE.FS-N-Mould-on polyurethane wheels with steel sheet bracket

Opracowano przez:	Sprawdzony przez:	Zatwierdzony przez:	Data:
M. Wojciechowski			2017-04-12

NCBJ - T31

T31-PdW-00-00

Skala: 1:5

Arkusz: 1 / 1