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(ESS-0019347)

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N/A

# Introduction

This document is referred to from document **ESS-0005738 Integrated control system - Target Systems** [2] in accordance with [1].

Interfaces between **Target helium cooling systems** and the **Process control/MPS** is described in this document. There are no interface with PSS. Interface descriptions included in this document are marked red in figure 1 below.

Target helium cooling systems consists of several sub systems, i.e. Target preliminary cooling circuit (PCool), Pressure control of PCool (PrC), Helium Storage (HeSto), Helium Relief (HeRel) and Helium Injection (HeInj).

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Interfaces included in this document marked in red

# Interface agreement

## Object signal interfaces summary Target Cooling – Process control

Each line in Appendix 1 represents a signal or a control object with defined signal exchange between Target cooling and Process control/MPS. I.e. process values shall be transmitted to the central process monitoring system together with alarm signals if applicable. Also configuration signals and order signals to be exchanged are defined.

|  |  |  |
| --- | --- | --- |
| **Reference ID** | **Description** | **Value or Reference** |
| N/A | Object signal interfaces | Appendix 1 |

## Functional interfaces Target Cooling – Process control

Control objects with more complex functions is also included in Appendix 1. This kind of objects has the functionality defined since it is standard object types, e.g. a controller. Also configuration signals and order signals to be exchanged are defined in the same way as for simple objects.

The table below defines a general interface requirement imposed on Target helium cooling system by MPS.

| ID | **MPS-201** | **Machine protection process values** |
| --- | --- | --- |
| **Requirement** | A set of machine protection process values defined in Appendix 1 shall be available for the MPS system. Included signal are marked “MPS”, column “Description” in Appendix 1.  |
| **Rationale/Reference** | To enable functions to be executed by MPS, e.g. action logic that uses helium temperature value out from target AND pressure value out from target to perform a certain machine protective action. Proposed signals are marked **MPS:xx**, exactly which signals defined in Appendix 1 to be included in this requirement is to be defined by MPS! E.g. **MPS:HighHigh alarm**.  |

The tables below defines Functional interface requirements that are not covered by Appendix 1.

| ID | **PCool-301** | **GUI main process picture** |
| --- | --- | --- |
| **Requirement** | The main graphical user interface for Target Cooling shall include all surrounding systems represented in a simplified way. Systems to be included: PCool, PrC, HeSto, HeRel, HeInj, Pristine Helium and Helium purification. |
| **Rationale/Reference** | To fulfil reliability-, ergonomics- and basic functions.  |

| ID | **PCool-302** | **GUI detailed process pictures** |
| --- | --- | --- |
| **Requirement** | When selecting a sub system in the main process picture for Target Cooling a more detailed process picture of the sub system shall be shown on top of the main picture for easy access to both pictures |
| **Rationale/Reference** | To fulfil reliability-, ergonomics- and basic functions |

# References

1. ESS-0002917 Interface Management Plan
2. ESS-0005738 Integrated control system - Target Systems

List of Abbreviations

| Abbreviation | Definition |
| --- | --- |
| TSS | Target Safety System |
| MPS | Machine Protection System |
| PSS | Personal Safety System |

# Document Revision history

| Version | Reason for revision | Date |
| --- | --- | --- |
| 1.0 | New document (using new template) | 2015-03-26 |
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