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| Interface TargetCooling\_Building |
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|  | Name | Title |
| --- | --- | --- |
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Table of Contents

1. Introduction 3

2. Interface agreement 3

2.1. Target Cooling – CF 3

2.2. Electric power and lighting interface requirements imposed on CF by Target cooling systems 4

2.3. Building related interface requirements imposed on CF by Target cooling systems 4

3. References 7

List of Abbreviations 7

Document Revision history 7

# Introduction

This document is referred to from document **ESS-0005745 Site Infrastructure and Target Station Interface Control Document** [2] in accordance with [1].

Interfaces between **Target cooling** and the **Conventional facilities** (CF) is described in this document. Interface descriptions included in this document are marked red in figure 1 below, CF parts included are *Site infrastructure* such as electric power & lighting, and *Building* such as space requirements, doors/openings, wall/floor openings for process pipes/cables and physical support structures incl. weight load requirements.

Note that **Target cooling** consists of several sub systems, i.e. PCool, PrC, HeSto, HeRel and HeInj.

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Figure 1. Interfaces included in this document marked in red

# Interface agreement

## Target Cooling – CF

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| --- | --- | --- |
| **Reference ID** | **Description** | **Value or Reference** |
|  | Electric power, Illuminance, back-up power, signal and control system interfaces between Target cooling and CF | Section 2.2 |
|  | Building Interfaces between Target cooling and CF | Section 2.3 |

## Electric power and lighting interface requirements imposed on CF by Target cooling systems

| ID | **PCool-551** | **Electric power; Switchgear** |
| --- | --- | --- |
| **Requirement** | Total installed power 600kW.  |
| **Rationale/Reference** | Main circulators has a power demand of 300-550kW at maximum flow depending on the total pressure drop. A number of smaller motors has 1.5 – 3 kW each. |

| ID | **PCool-552** | **Grounding** |
| --- | --- | --- |
| **Requirement** | Protective earth connections, total number and capacity according to [8] |
| **Rationale/Reference** |  |

| ID | **PCool-553** | **Electric power; Sockets** |
| --- | --- | --- |
| **Requirement** | Total power 10kW |
| **Rationale/Reference** | Sockets for tools during e.g. maintenance. |

| ID | **PCool-554** | **Lighting** **illuminance** |
| --- | --- | --- |
| **Requirement** | Illuminance 200-500 lux in all open spaces |
| **Rationale/Reference** | Normal office illuminance is 320-500 lux |

| ID | **PCool-155** | **Back-up power capacity** |
| --- | --- | --- |
| **Requirement** | Back-up power system to control system parts; 3kW during 5 minutes |
| **Rationale/Reference** | To enable full data access and recording in case of power loss |

## Building related interface requirements imposed on CF by Target cooling systems

Room numbers in the tables below according to figures 2 and 3. [7] describes wall and floor penetrations in detail.

| ID | **PCool-501** | **Space requirements room 2, level 110** |
| --- | --- | --- |
| **Requirement** | Additional free space in room 2, level 110 approximately 50m2 during installation |
| **Rationale/Reference** | Area marked bright yellow in figure 1 below. |

| ID | **PCool-502** | **Space requirements room 4, level 110** |
| --- | --- | --- |
| **Requirement** | Additional free space in room 4 approximately 50m2 during installation |
| **Rationale/Reference** | Area marked bright yellow in figure 1 below. |

| ID | **PCool-503** | **Roof hatch size** |
| --- | --- | --- |
| **Requirement** | Opening for big equipment intake between room 2 and 5 |
| **Rationale/Reference** | Refer to [6] and [7]. Opening marked bright yellow in figure 1 below. |

| ID | **PCool-504** | **Door size and location** |
| --- | --- | --- |
| **Requirement** | Between rooms 2 and 4 level 110; Door size, location and orientation, i.e. opening outwards/inwards |
| **Rationale/Reference** | Refer to [6] and [7]. |

| ID | **PCool-505** | **Door size and location** |
| --- | --- | --- |
| **Requirement** | Between rooms 2 and 6 level 110; Door size, location and orientation, i.e. opening outwards/inwards |
| **Rationale/Reference** | Refer to [6] and [7] |

| ID | **PCool-506** | **Space requirements, room 2 level 100** |
| --- | --- | --- |
| **Requirement** | Additional free space in room 2, level 100 approximately 50m2 during installation |
| **Rationale/Reference** | Area marked bright yellow in figure 2 below, also refer to [5]. |

| ID | **PCool-507** | **Weight load for main circulator, room 2 level 110** |
| --- | --- | --- |
| **Requirement** | Weight load is maximum 25 tonnes concentrated to an area of minimum 2 x 5 m |
| **Rationale/Reference** | Refer to [7]. Final weight load distribution will be specified in the end of 2016. |

| ID | **PCool-509** | **Floor openings for pipes** |
| --- | --- | --- |
| **Requirement** | Floor openings for process pipes between level 110 and level 100, room 2. Dimensions and positions according to [7]. |
| **Rationale/Reference** |  |

| ID | **PCool-510** | **Wall and floor openings for process pipes and electric installations** |
| --- | --- | --- |
| **Requirement** | Wall and floor openings for process pipes dimensions and positions according to [7]. |
| **Rationale/Reference** | File [7] is a complete 3D-model for the whole Target station building used by CF. It is updated once a week with information from planned installations. |

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Figure 2 Target cooling rooms overview in the target station. Top: aerial view showing level 110. Bottom: side view (From TDR, page 156).

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Figure 3 Target cooling rooms overview in the target station. Top: aerial view showing level 100, same as e.g. floor level of room [6]. Bottom: side view. (From TDR, page 153).

# References

1. ESS-0002917 Interface Management Plan
2. ESS-0005745 Site Infrastructure and Target Station Interface Control Document
3. ESS-0012524 SDD-req. Requirements and functions Target Cooling
4. ESS-0012527 SDD-sol. Solutions and layout Target Cooling
5. ESS-0001479 High bay space allocations, target station floor load ratings
6. ESS-0011043 Target Station Logistics
7. ESS-0026363 Building and installation 3D-model (NAVIS FILE)
8. ESS-0017984 Grounding system requirements specification, standards

List of Abbreviations

| Abbreviation | Definition |
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# Document Revision history

| Version | Reason for revision | Date |
| --- | --- | --- |
| 1.0 | New document (using new template) | 2015-04-14 |
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