



EUROPEAN  
SPALLATION  
SOURCE

# Common Guide Shielding

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Senad Kudumovic – Mechanical Design Engineer

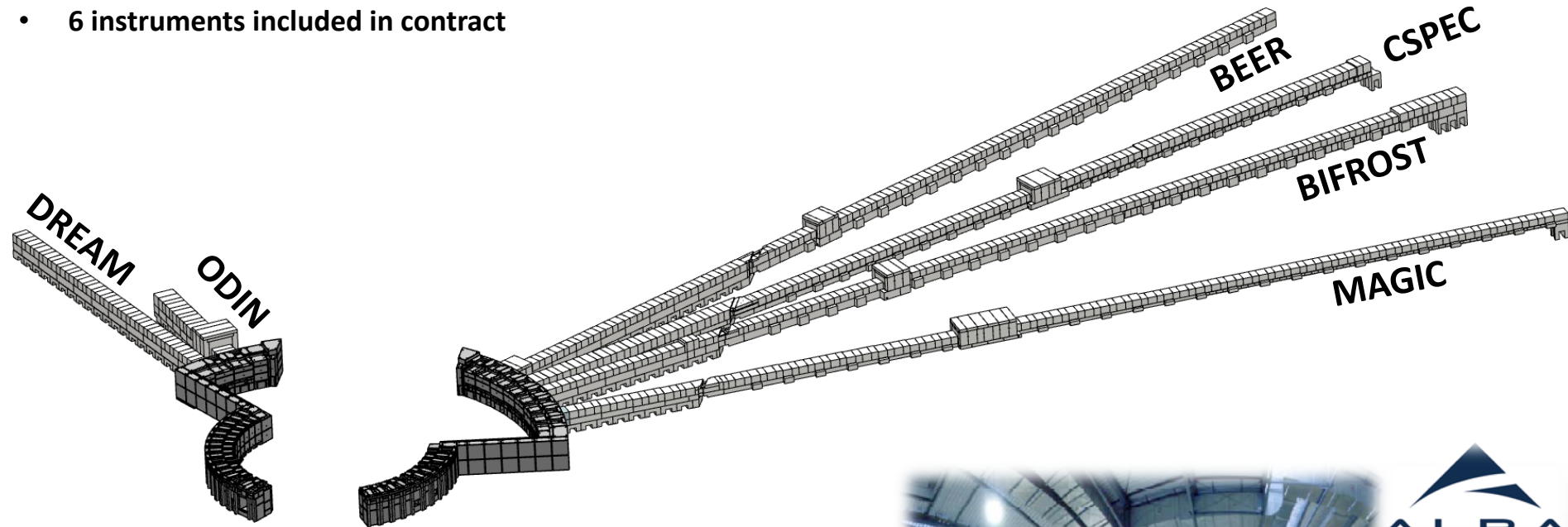
27.02.2020





# Common Guide Shielding Update

- The production of the Common Shielding Project has been recently awarded to a Spanish company (PACADAR)
- 6 instruments included in contract



**GRUPO  
PACADAR**

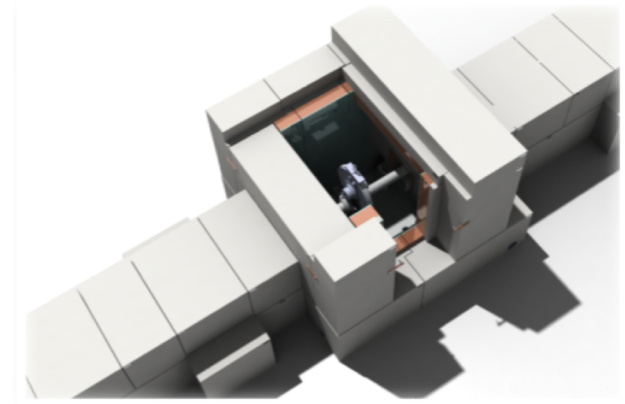
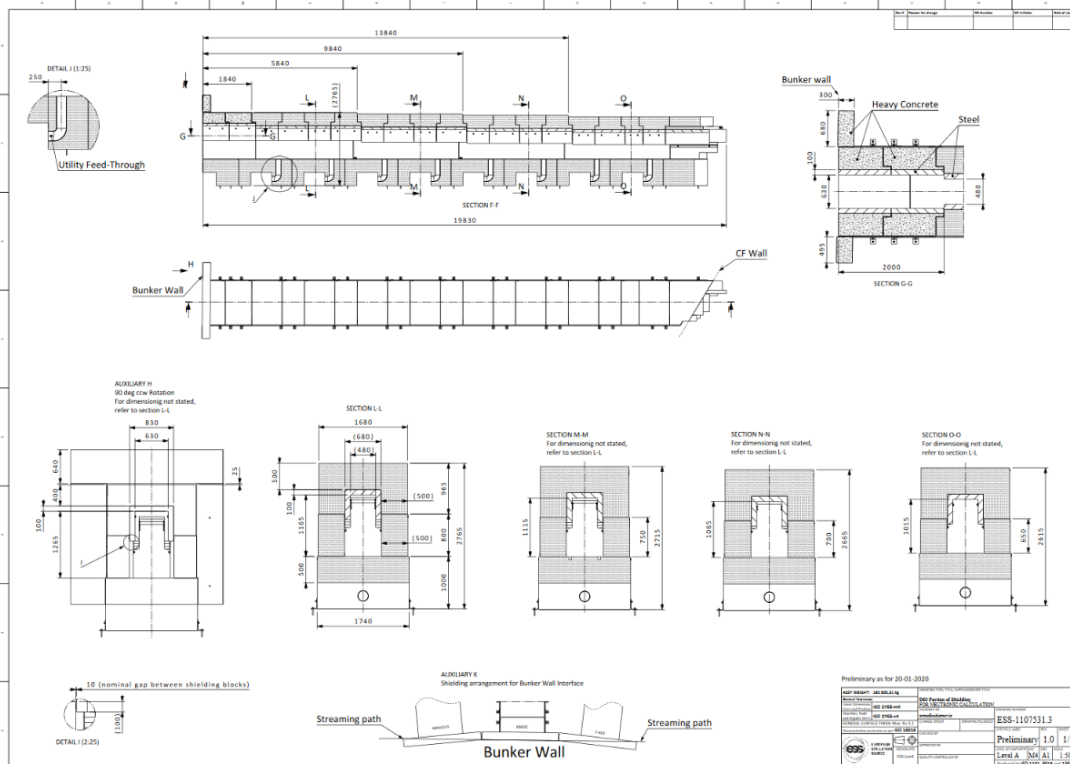
PRECAST CONCRETE <http://www.pacadar.com/>



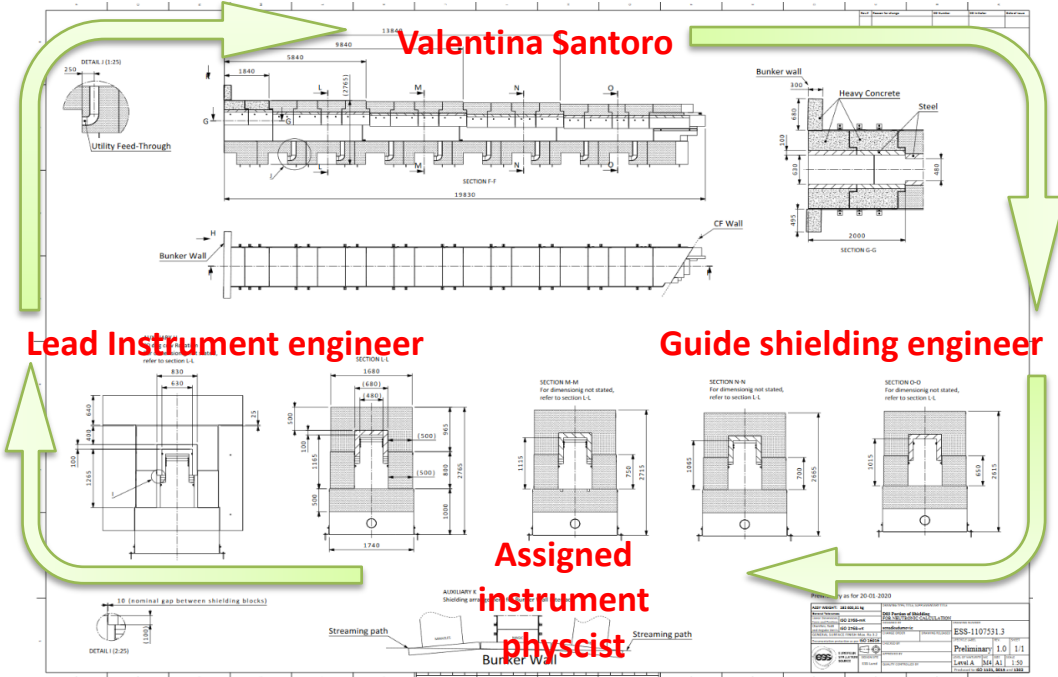
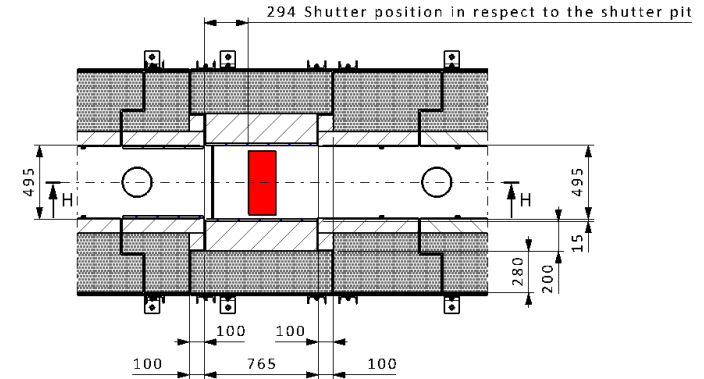
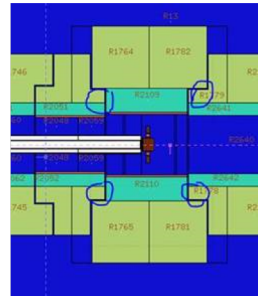
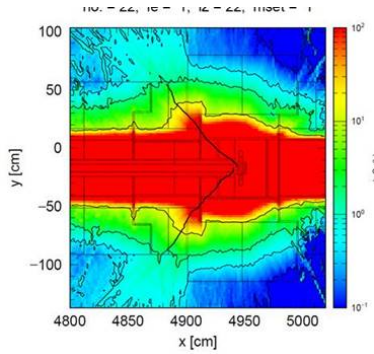
# Informations about guide shielding

<https://confluence.ess.lu.se/display/SPD/Instrument+shielding>

- ESS numbers
- Drawings for neutronic validation
- Pictures



# How it works?

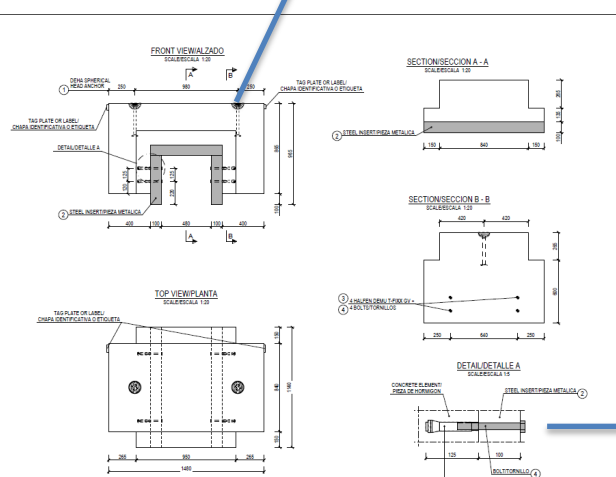


## Priority on C-SPEC and BIFROST guide shielding

- First review (TG3) of the common guide shielding system (C-SPEC) will be organized for Week starting 23<sup>rd</sup> of March 2020.
  - Release process of the C-SPEC Guide Shielding drawings started this week.
- Second review (TG3) of the common guide shielding system (BIFROST) will be organized in May 2020.
  - Release process of the BIFROST Guide shielding will start after neutronic validation is concluded.

# Meanwhile...

## DEHA SPHERICAL HEAD LIFTING ANCHORS



**GENERAL NOTES**

- ALL DIMENSIONS ARE IN mm
- THE ELEMENT SHALL BE IDENTIFIED WITH THE LABEL AND WEIGHT INDICATED IN THE DRAWING
- GENERAL DIMENSION TOLERANCE ± 0.5 mm
- SURFACE AND REINFORCEMENT ACCORDING TO SPANISH CODE EN-12618

**CONCRETE**

- THE BLOCK CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH RATIO OF 25
- COVER 25 mm

**SURFACE COATING**

- 1- STEEL INHERENT METALIC
- 2- CONCRETE SHALL BE PAINTED WITH A SIMILAR COLOUR WHITE PAINT

**PARTICULAR NOTES**

- ALL OUTER CONCRETE EDGES TO BE PROTECTED

**NOTAS GENERALES**

- TODAS LAS MEDIDAS SON EN mm
- LOS ELEMENTOS DEBEN IDENTIFICARSE CON SU NOMBRE Y PESO EN EL DISEÑO
- TOLERANCIA DIMENSIONAL ± 0,5 mm
- ACABADO Y REFORZAMIENTO DE ACORDO AL CÓDIGO ESPAÑOL EN-12618

**CONCRETO**

- EL BLOQUE DE CONCRETO DEBE TENER UNA RESISTENCIA A COMPRESIÓN A LA CIMENTACIÓN DE 25
- COBERTURA 25 mm

**REVESTIMIENTO SUPERFICIAL**

- 1- PIEZAS METÁLICAS
- 2- EL CONCRETO DEBE PINTARSE CON UN COLOR SIMILAR AL BLANCO

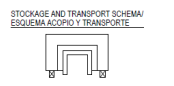
**NOTAS PARTICULARES**

- TODAS LAS ARISTAS DEBEN SER PROTEGIDAS

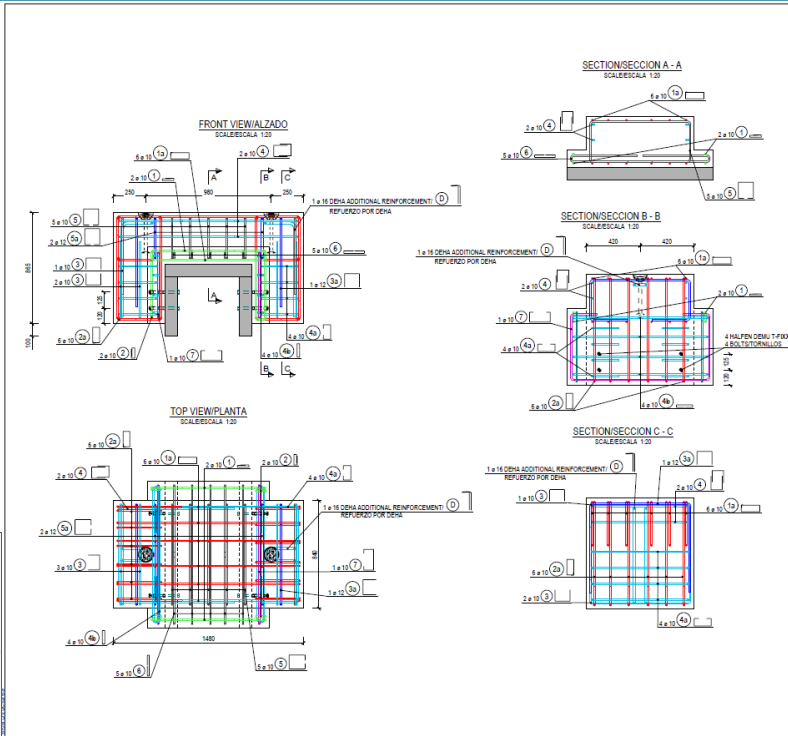
**TAG PLATE OR LABEL**  
CANTAS IDENTIFICATIVAS O ETIQUETA

ESS-900786  
Height: 3661 Kg  
AREA: 100 x 90 mm

| ITEM | QUANTITY | WEIGHT (Kg) |
|------|----------|-------------|
| B-29 | 54       | 3661        |



| ITEM | QUANTITY | DESCRIPTION                | ADDITIONAL INFORMATION | ADDITIONAL DRAWING | MATERIAL | WEIGHT (Kg) |
|------|----------|----------------------------|------------------------|--------------------|----------|-------------|
| 1    | 2        | DEHA SPHERICAL HEAD ANCHOR | LONG GROUP T.1 (900)   |                    | S235     | 1441        |
| 2    | 1        | STEEL LABEL                | MPS 125                |                    | S235     | 1441        |
| 3    | 4        | HALFEN DEMU T-FIX          | MPS 125                |                    | S235     | 1441        |
| 4    | 4        | BOLT                       | MPS 150                |                    | S235     | 1441        |



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EDGE PROTECTION

## HALFEN DEMU T-fix



# Meanwhile....

## Setting up:

- Steel requirements
  - Ni Content
  - Co Content
- Surface treatment (TBY)
  - Pretreatment
  - Paint requirement
  - After treatment
- Welding
  - Welding certificates
  - Welding procedures
  - Welder certificates
- QC marking, edge removal.....

**PLATE/CHAPA 1**

SECTION/SECCION A-A  
SCALE/ESCALA 1:15

TOP VIEW/PLANTA  
SCALE/ESCALA 1:15

**PLATE/CHAPA 2**

SECTION/SECCION B-B  
SCALE/ESCALA 1:15

TOP VIEW/PLANTA  
SCALE/ESCALA 1:15

**GENERAL VIEW/VISTA GENERAL**  
SCALE/ESCALA 1:15

TACK WELDING (ONLY TO FIX POSITION)  
SOLDADURA POR PUNTOS (SOLO PARA FIJAR LA POSICION).

**GENERAL NOTES**

- ALL DIMENSIONS ARE IN mm  
- GENERAL DIMENSION TOLERANCE 5 mm  
- DIMENSION MARKED "OC" (INCL. TOL.) IS A DIMENSION THAT WILL BE CHECKED ON ALL PRODUCED PIECES.

(OC) MEANS THAT THIS DIMENSION IS PRIMARY DIMENSION.

- PRIMARY DIMENSION MEANS THAT IT SHALL STAY INSIDE SPECIFIED TOLERANCES.

- ALL SURFACES WILL BE TREATED.

**SURFACE COATING**

① SURFACE COATING OF SURFACES DIRECTLY EXPOSED TO RADIATION

**NOTAS GENERALES**

- DIMENSIONES EN mm  
- TOLERANCIA DIMENSIONAL 5 mm  
- LINA DIMENSION MARCADA CON "OC" (INCL. TOL.) ES UNA DIMENSION QUE COMPROBAREMOS EN TODAS LAS PIEZAS.

(OC) SIGNIFICA QUE ES UNA DIMENSION PRINCIPAL.

- DIMENSION PRINCIPAL SIGNIFICA QUE ESTARA DENTRO DE LAS TOLERANCIAS ESPECIFICADAS.

- SE TRATARAN TODAS LAS CARAS.

**TRATAMIENTO SUPERFICIAL**

① TRATAMIENTO DE CARAS EXPUESTAS DIRECTAMENTE A LA RADIACION

**TACK WELDING**

- EN ISO 9013:2017 STANDARD WILL BE FOLLOWED. THERMAL CUTTING - CLASSIFICATION OF THERMAL CUTTING - GEOMETRICAL PRODUCT SPECIFICATION AND QUALITY TOLERANCES).

- ALL SHARP EDGES NEEDS TO BE REMOVED. NO NEED TO DEFINE RADIUS OR FILLET. SIMPLE GRINDING (ALSO SURFACE COATING AND SURFACE TREATMENT ARE EASIER TO CARRY OUT ON GRINDED CORNERS) AND PAINT ADHESION IS SIGNIFICANTLY IMPROVED).

- THE SUPPLIER SHOULD CONFIRM IF WELDING PROCEDURE FOR THESE WELDS WILL BE PROVIDED BY THE SUPPLIER. WELDER CERTIFICATE WILL BE PROVIDED BY THE SUPPLIER.

- SE CUMPLIRA LA NORMA EN ISO 9013:2017. (CORTE TERMICO - CLASIFICACION DE CORTE TERMICO - ESPECIFICACION GEOMETRICA DEL PRODUCTO Y TOLERANCIAS DE CALIDAD).

- TODOS LOS BORDES AFILADOS DEBEN ELIMINARSE. NO ES NECESARIO DEFINIR EL RADIO, EL ESMERILADO ES SUFICIENTE (RECTIFICADO SIMPLE). ADJEMAS, LOS TRATAMIENTOS SUPERFICIALES SON MAS FACILES DE REALIZAR Y SE REALIZAN MAS CORRECTAMENTE SOBRE ESQUINAS ESMERILADAS Y LA ADHESION DE LA PINTURA MEJORA SIGNIFICATIVAMENTE).

- EL PROVEEDOR DEBE CONFIRMAR SI TIENE EN ISO 9013:2017. EL PROCEDIMIENTO DE SOLDADURA SERA ENTREGADO POR EL PROVEEDOR. EL CERTIFICADO DE LOS SOLDADORES SERA ENTREGADO POR EL PROVEEDOR.

**EL TRATAMIENTO SUPERFICIAL ① SE APLICA EN LA CARA INTERIOR DE LA FORMA EN "U" EN LAS CARAS TRASERA, DE LA CARA INTERIOR, ASÍ COMO EN LOS 100 mm DE LA CARA EXTERIOR MEDIDOS DESDE LA BASE INFERIOR.**

**EL TRATAMIENTO SUPERFICIAL ② SE APLICA EN LA CARA INTERIOR DE LA FORMA EN "U" EN LAS CARAS TRASERA, DE LA CARA INTERIOR, ASÍ COMO EN LOS 100 mm DE LA CARA EXTERIOR MEDIDOS DESDE LA BASE INFERIOR.**

**ONE LAYER OF PRIMER WITH TOTAL THICKNESS OF 40 MICRONS (µm)**

**UNA CAPA DE IMPRIMACION CON UNA ESPESOR TOTAL DE 40 MICRONS (µm)**

TO CHOOSE 1 OF THESE 3 OPTIONS/ELEJIR 1 DE ESTAS 3 OPCIONES

| THICKNESS/ESPOROR | PRODUCT/PRODUCTO   | COMPANY/EMPRESA        |
|-------------------|--------------------|------------------------|
| 40 µm             | INTERZINC 315      | INTERNATIONAL FARIG AB |
| 40 µm             | TECNOCIN 90 SE A   | TEKNOS OYENKENS AB     |
| 40 µm             | 7401 SIGAMZINC 109 | SIGMA FARIG AB         |

② SURFACE TREATMENT OF SURFACES NOT DIRECTLY EXPOSED TO RADIATION

② TRATAMIENTO DE CARAS NO EXPUESTAS DIRECTAMENTE A LA RADIACION

FACES ①, ②, ③, ④

CARAS ①, ②, ③, ④

OUTER FACES TREATMENT EXCEPT THE LOWER 100 mm OF FACES ② & ④ MEASURED FROM THE BOTTOM. THESE SURFACES SHOULD BE PAINTED WITH "REGULAR" PRIMER CHOSEN BY THE SUPPLIER. PROTECTION TO PREVENT THE RISK OF RUSTED STEEL.

CARAS EXTERIORES TRATADAS EXCEPTO LOS 100 mm INFERIORES DE CARAS ② & ④ MEDIDOS DESDE LA BASE INFERIOR. ESTAS SUPERFICIES SE PINTARAN CON UNA IMPRIMACION NORMAL. ELEJIDA POR EL PROVEEDOR. PROTECCION PARA PREVENIR LA OXIDACION DEL ACERO.

| STEEL | REQUIREMENTS   | NOTES  |
|-------|--|--|
| S355  | - COBALT CONTENT LESS THAN 0.025 %<br>- NICKEL CONTENT LESS THAN 1.25 %                | ANY CERTIFIED S355 SHOULD SATISFY THIS REQUIREMENT BUT THIS MUST BE STATED AND GRANTED FROM THE SUPPLIER TOO.          |
| ACERO | REQUISITOS   | NOTAS  |
| S355  | - CONTENIDO DE COBALTO INFERIOR AL 0.025 %<br>- CONTENIDO DE NIQUEL INFERIOR AL 1.25 % | CUALQUIER S355 CERTIFICADO DEBE CUMPLIR ESTE REQUISITO PERO DEBE SER DECLARADO Y GARANTIZADO TAMBIEN POR EL PROVEEDOR. |

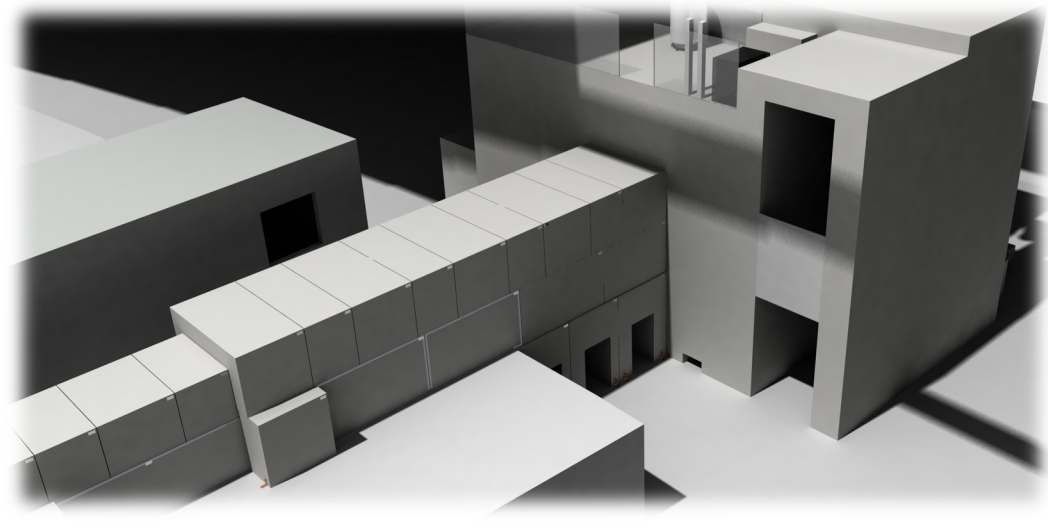
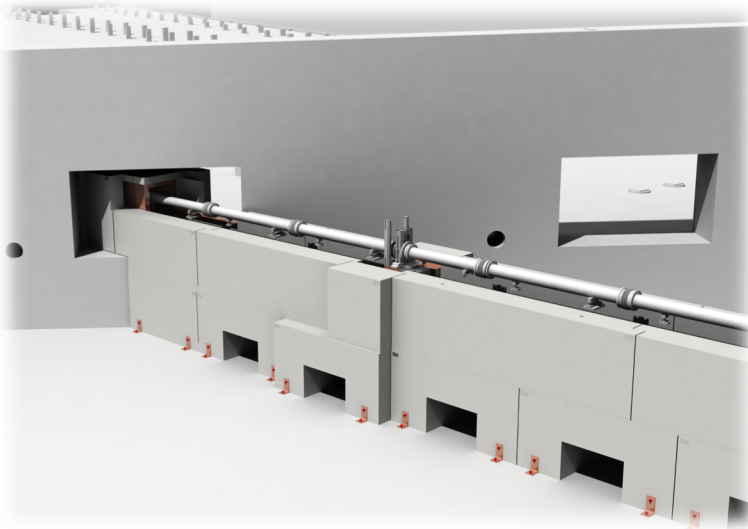
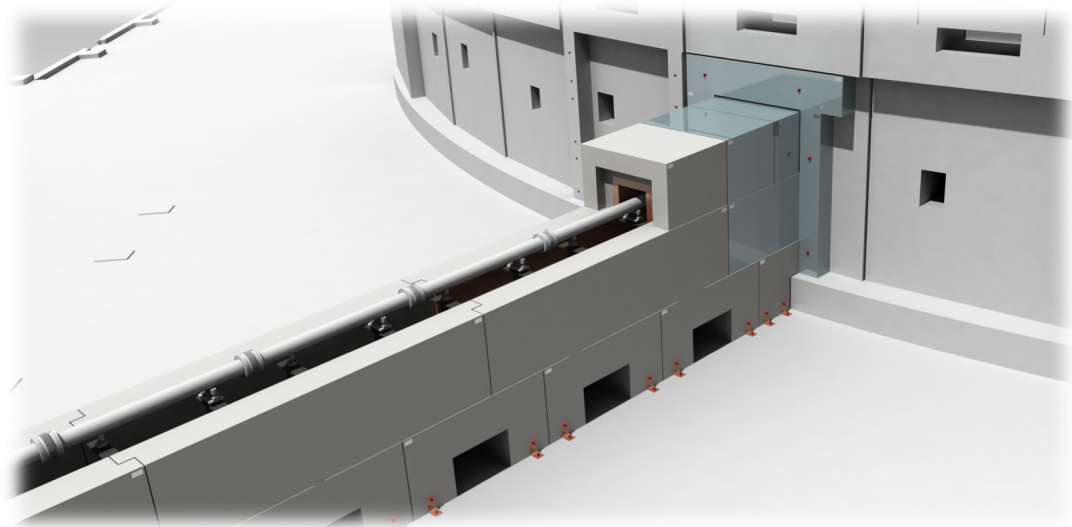
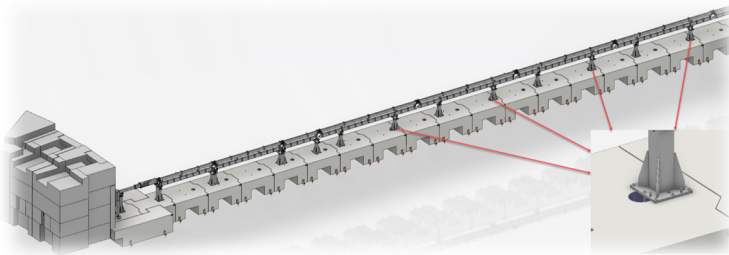
| ITEM  | QUANTITY | WEIGHT (kg) |
|-------|----------|-------------|
| B-A06 | 54       | 1060        |

STEEL INSERT BI-A06  
BIROST INSTRUMENT  
ESS COMMON SHIELDING SYSTEM  
LUND (SUECIA)  
THE EUROPEAN SPALLATION SOURCE (ESS)

PACKADAR

# Critical areas

- Bunker Wall
- CF Wall
- Cave



# Meanwhile....



Thank you for your attention.

Questions?