



Target & Frontend Switch Yard & Collection Boxes

Medicis Seminar, 2nd and 3rd March 2016

Stefano Marzari EN-STI & Vincent Barozier EN-ACE



ENGINEERING
DEPARTMENT

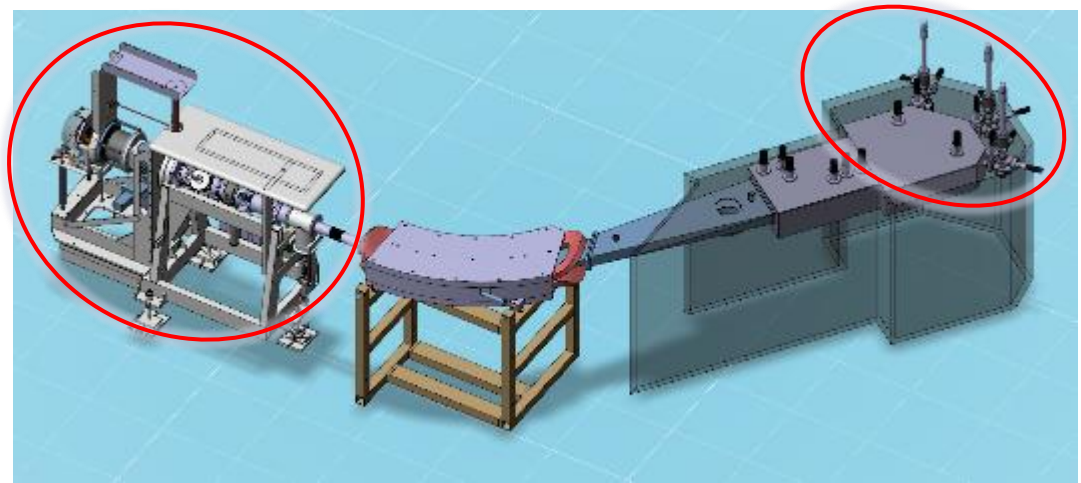
Outline

- Introduction
- MEDICIS Target
- MEDICIS Frontend
- Switch Yard & Collection Boxes
- Beam line integration

Outline

- Introduction
- MEDICIS Target
- MEDICIS Frontend
- Switch Yard & Collection Boxes
- Beam line integration

Introduction



MEDICIS beam line Work Packages :

WP 8: Separator TE-MSC (R.Lopez)

WP 9: Frontend EN-STI (S.Marzari)

WP 10: Vacuum TE-VSC (J.Ferreira)

WP 11: Target EN-STI (S.Marzari)

WP 22: Instrumentation BE-BI (W.Andreazza)

WP 23: Water cooling EN-CV (A.Broche)

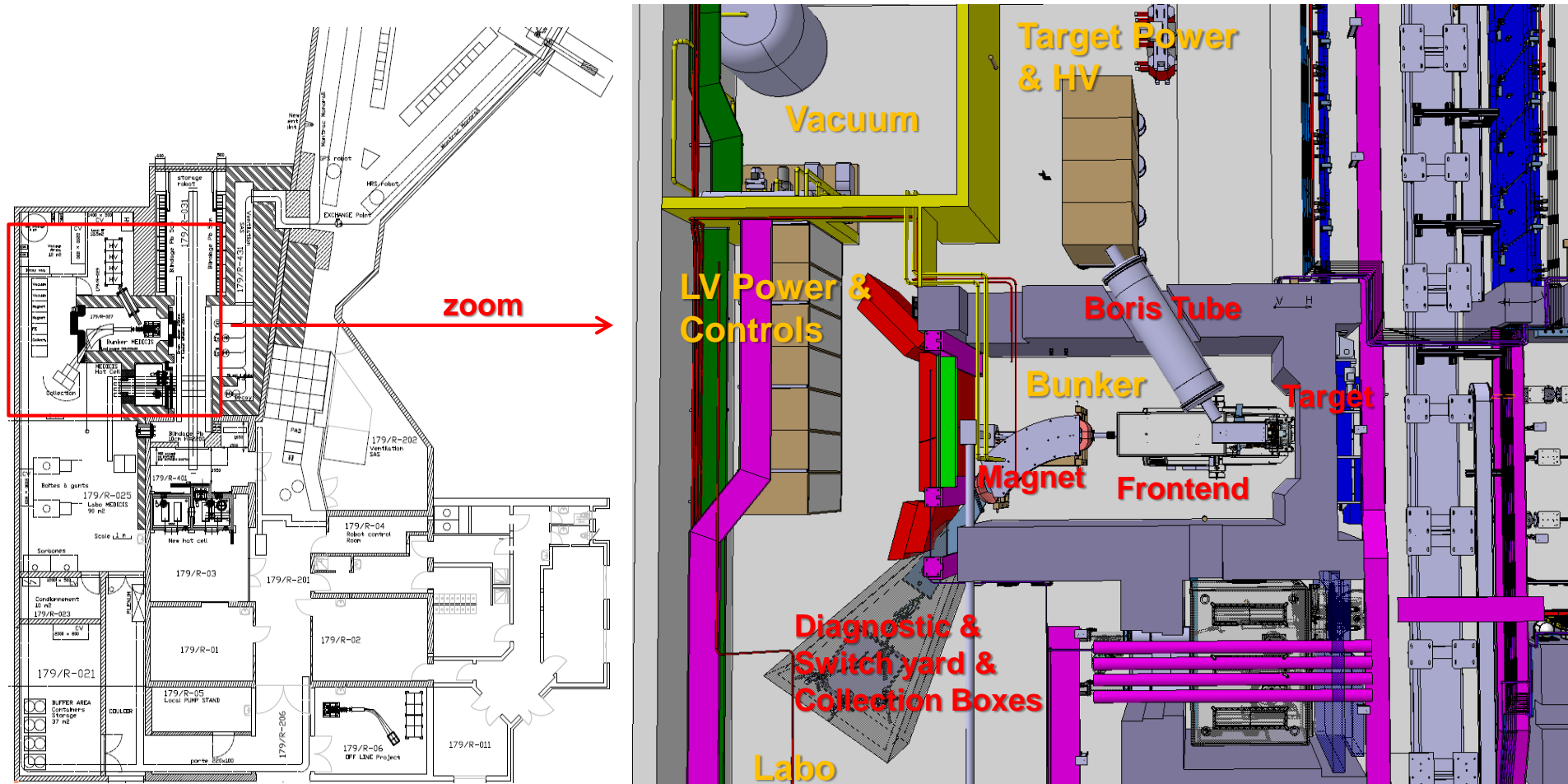
WP 21: Power TE-EPC (J.Parra-Lopez)

WP 26: Switch yard EN-STI (M.Vagnoni & V.Barozier)

WP 27: Collection Boxes

Introduction

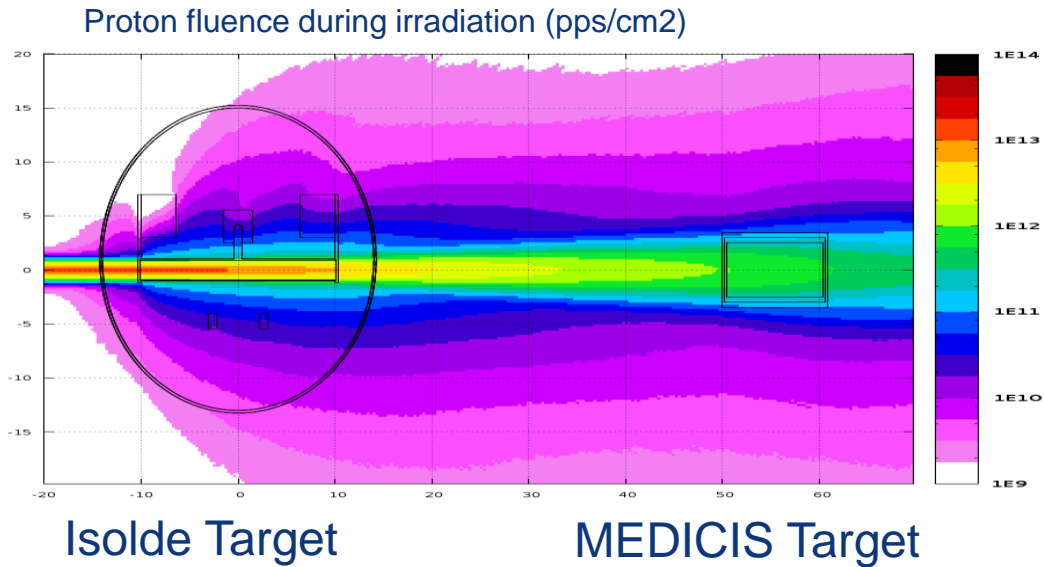
Location into the Bunker and the MEDICIS Lab :



Outline

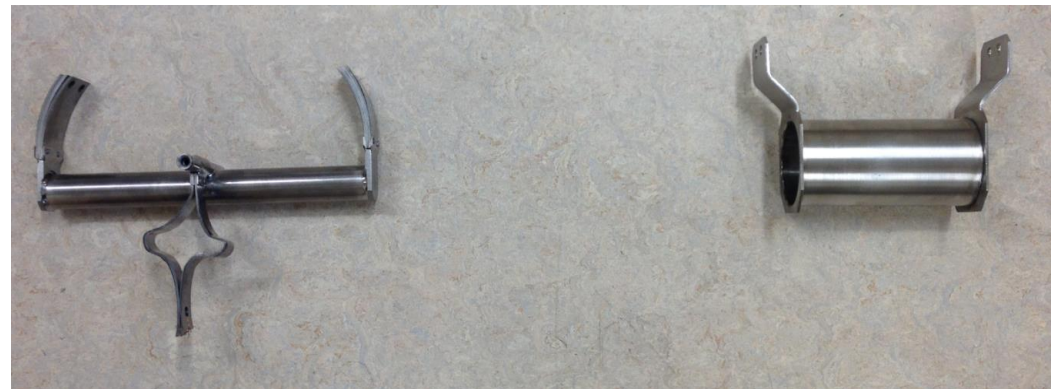
- Introduction
- **MEDICIS Target**
- MEDICIS Frontend
- Switch Yard & Collection Boxes
- Beam line integration

MEDICIS Target



Energy deposition = 212W
(without cooling)

Dimensions change



Isolde type $\varnothing 20 \times 200$ vs MEDICIS type $\varnothing 50 \times 100$

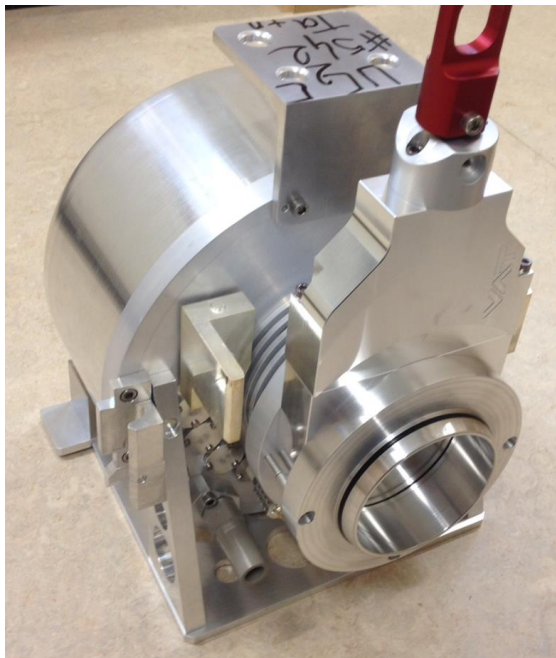
Acknowledgements: R.S. Augusto Fluka study

MEDICIS Target

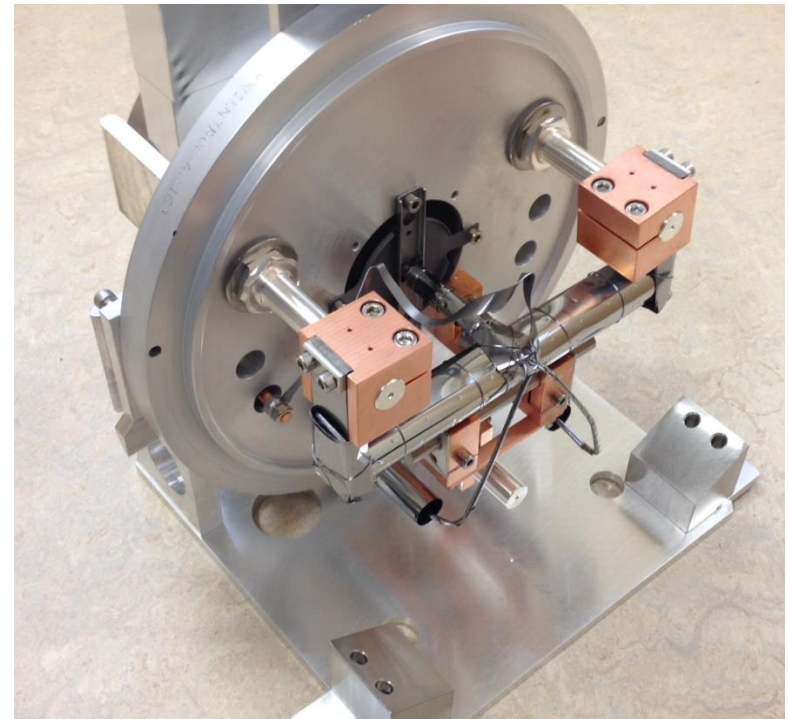
Main constraints:

- Compatibility with standard Isolde Target Bases
- Compatibility with standard Isolde ion sources
- Compatibility with the Power Supply
- Improve robustness for re-use

Isolde standard target
with ion source MK1



Isolde standard and
compatible target
Base



MEDICIS Target

Already done:

- Fluka simulation
- Ansys thermal simulations
- Dummy container and thermal test under Ar low pressure and natural air convection
- Preliminary report EDMS 1403191 (M.Vagnoni)

To be done:

- Real mechanical design of a Tantalum container
- Thermal Tests – optimization
- Ion source integration
- Ion production tests - optimization
- Final report

Budget : 60 kCHF

Manpower : 1.0 FTE (for experimented Mechanical Engineer)

=> Backup solution : in the starting phase we can use of a standard Isolde Target

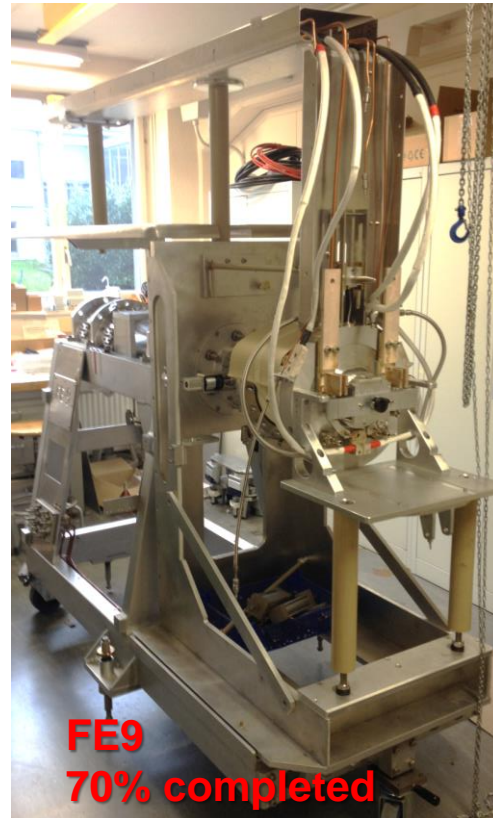
Outline

- Introduction
- MEDICIS Target
- **MEDICIS Frontend**
- Switch Yard & Collection Boxes
- Beam line integration

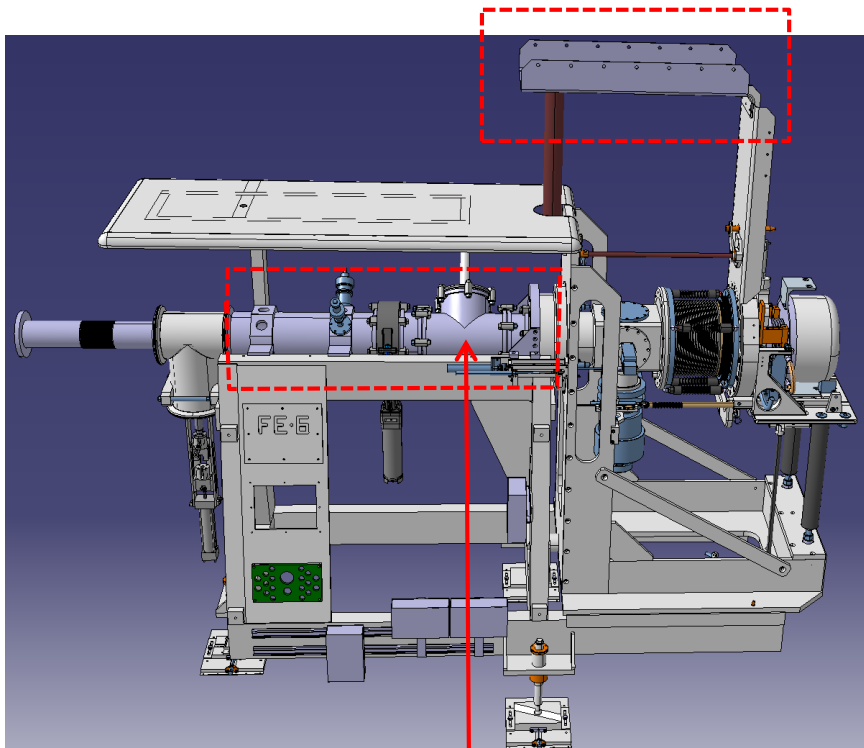
MEDICIS Frontend

Already done:

- We have two spare Frontends for Isolde => **FE9 will be adapted for MEDICIS**
- A provisional 120 kCHF will be used for upgrade Isolde Frontend LS2
- Boris Tube 60 kV feedthrough on production EN-MME

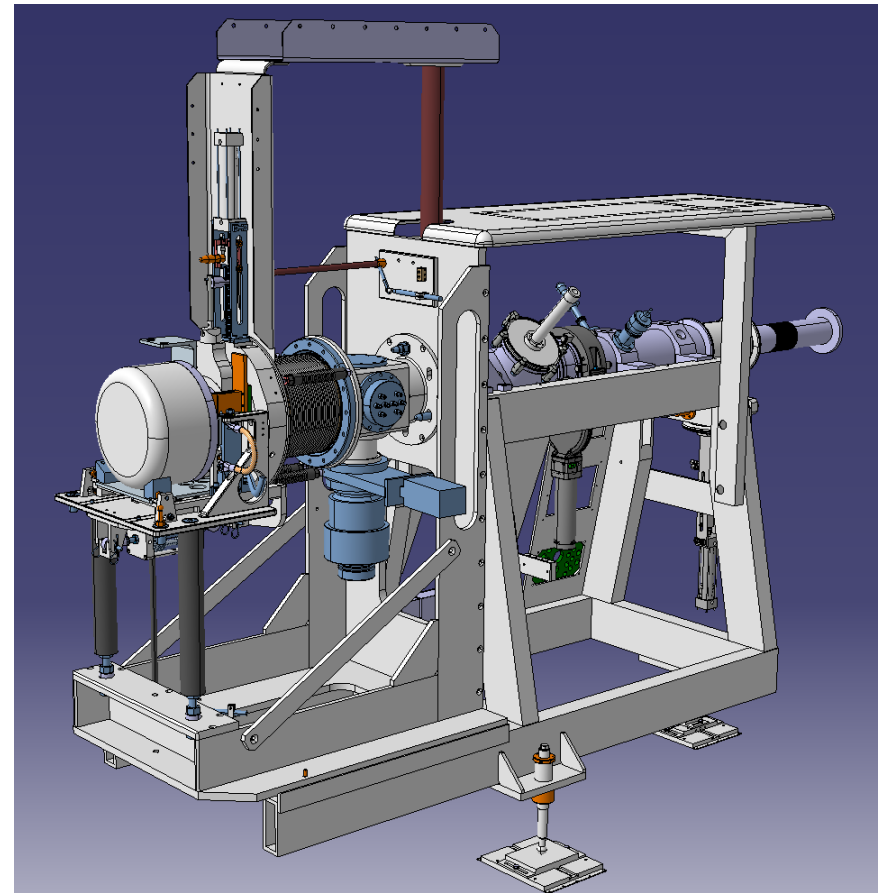


MEDICIS Frontend



Enzel lens

Main modifications



MEDICIS Frontend

To be done:

- Validate the mechanical design
- Purchase and mount pieces – collaboration with EN-MME (D.Aubert)
- Off-line tests
- Installation inside the MEDICIS bunker
- Commissioning

Budget :

60 kCHF (modifications FE9) + 120 kCHF provisional for upgrade for Isolde + 15 kCHF Boris Tube = **TOTAL 195 kCHF**

Manpower:

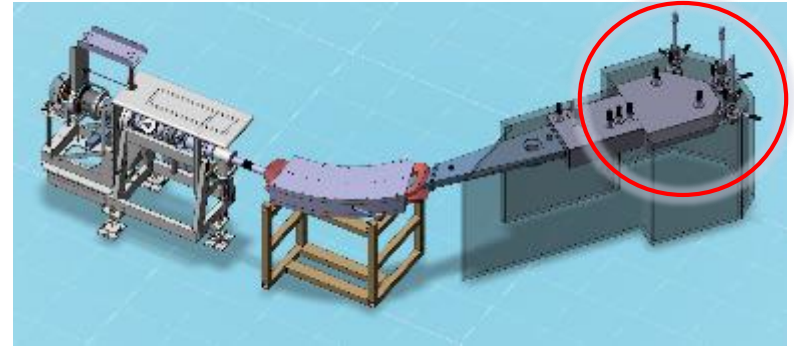
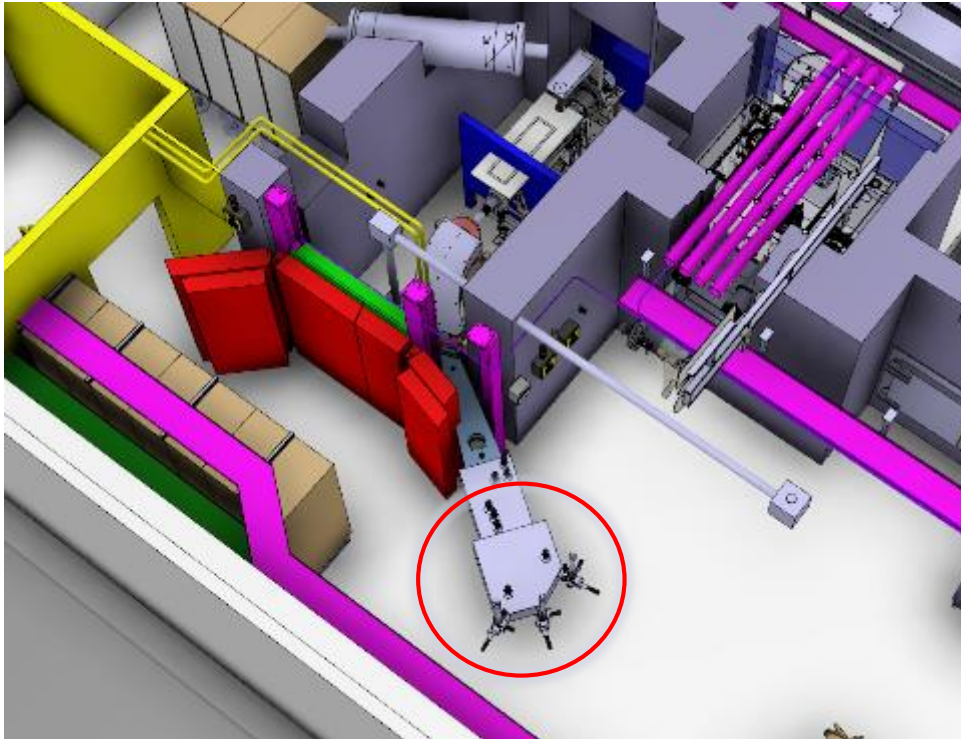
1.0 FTE (0.6 for experimented Mechanical Engineer + 0.4 for Technician EN-MME)

Deadlines: final design May 2016 – purchase July 2016 – mounting Sept. 2016 – off-line tests October 2016 – installation & connection December 2016

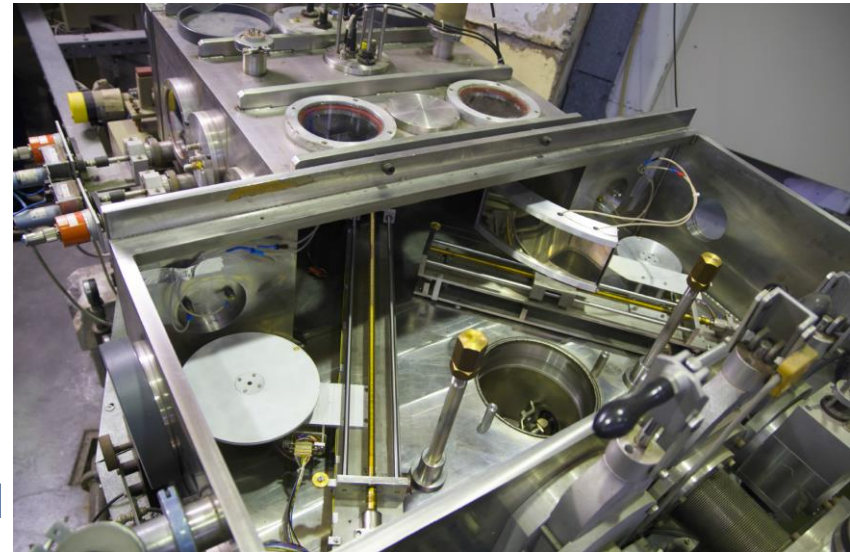
Outline

- Introduction
- MEDICIS Target
- MEDICIS Frontend
- **Switch Yard & Collection Boxes**
- Beam line integration

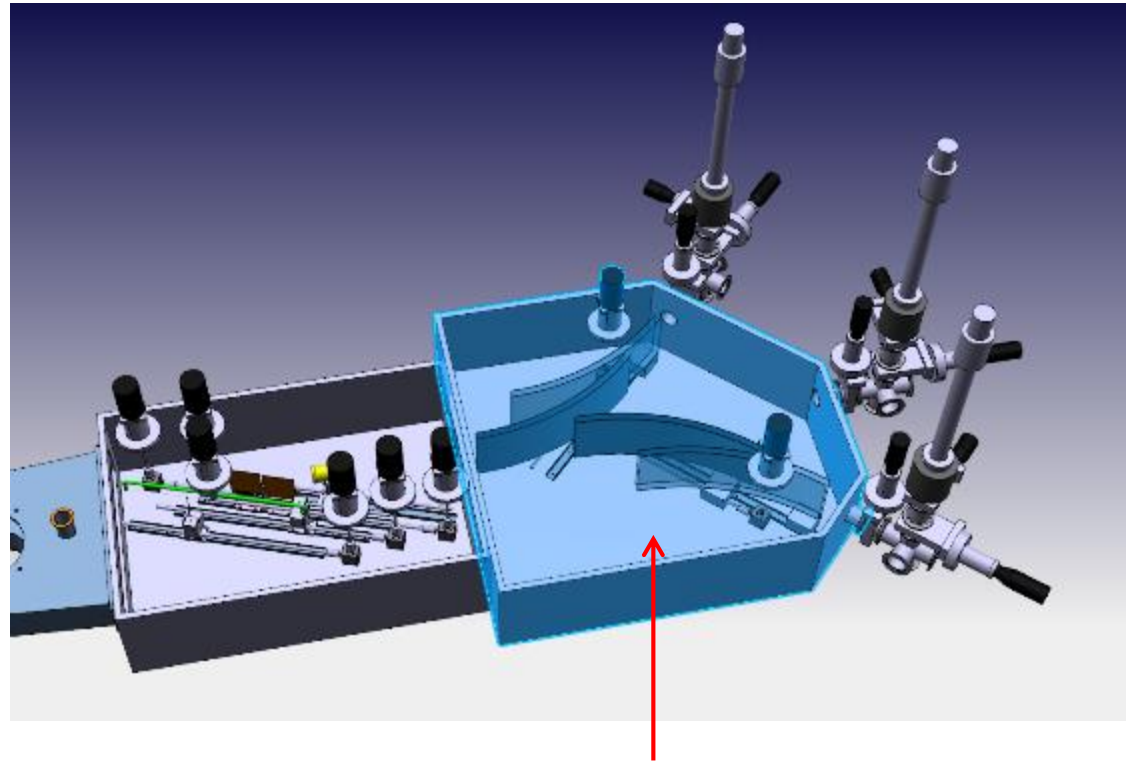
Switch Yard & Collection Boxes



Refurbishment of the KU Leuven switch yard



Switch Yard



3 ways switch yard

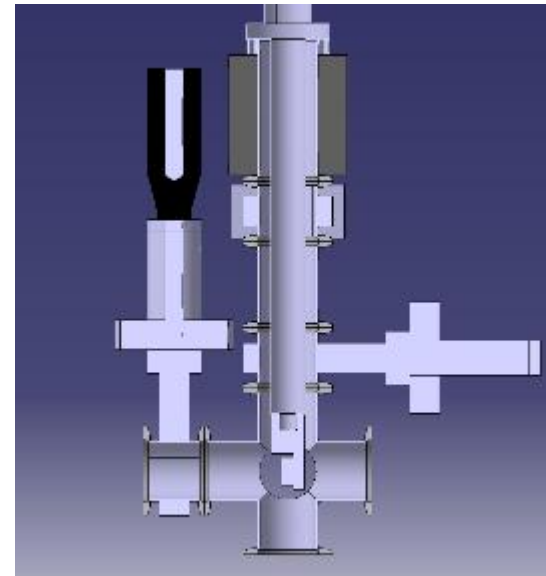
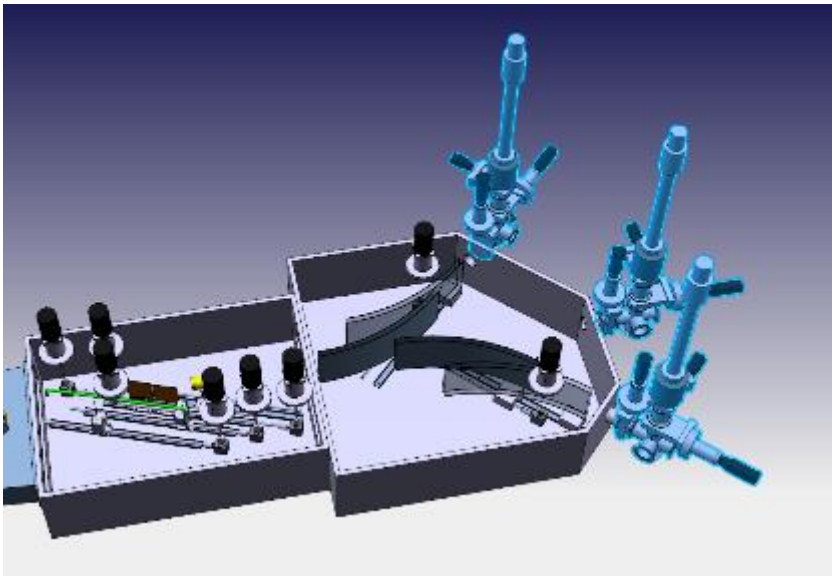
Budget : 120 kCHF

Manpower: 1.0 FTE (0.6 for experimented Mechanical Engineer + 0.4 for Technician EN-MME)

Deadlines: final design July 2016 – purchase October 2016 – mounting Dec. 2016 – off-line tests February 2017 – installation & commissioning April 2017

Collection Boxes

- Conceptual design : EDMS 1549022 (A.Brown Manchester)
- 1.0 FTE with a fellow in 
- Material budget required : 50 kCHF/Box
- Planning : 1 Box delivered by end 2016 (Lemer Pax, FR)





ENGINEERING
DEPARTMENT

Questions?