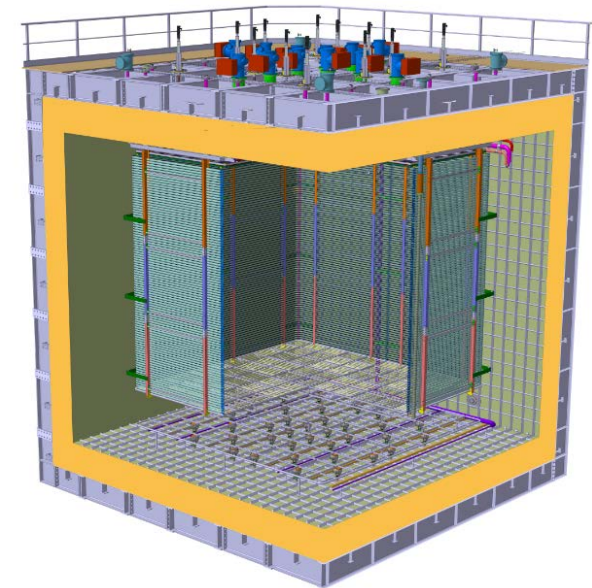


ProtoDUNE-DP integration meeting

D. Duchesneau / S. Murphy

- News
- Updates on various items



Integration 30/06/2017

Integration News

Discussion with E. James last Monday 26/06/17:

- Possibility to get engineering time to help in safety calculations for some items (Ex: the Field Cage supporting structure, the cathode structure...)
- Possibility to share some manpower during installation for common items between SP and DP

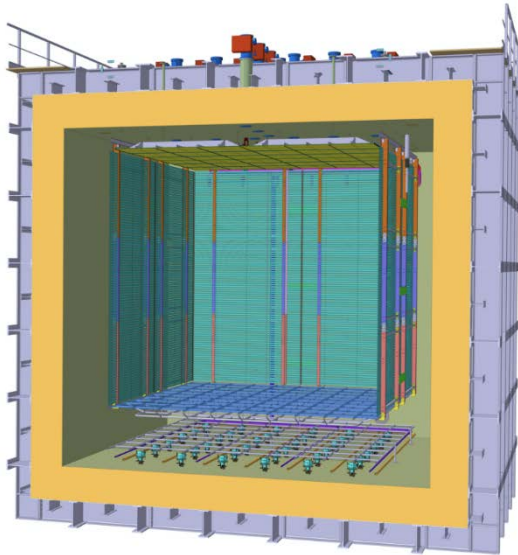
Discussion with R. Rameika and S. Kettel last Monday 26/06/17:

- About what has been learned from the HSE safety analysis assembly/installation procedure development work.
- Documents for Single Phase: FC, APA and DSS (Detector Support Structure) available on DUNE DocDB

DP Safety document layout revised:

ProtoDUNE-DP installation sequence and safety analysis

WA105 collaboration - June 2017
Draft



1. Detector and Installation sequence overview

- >describe each area and safety related aspects-
>Sebastien/Dominique
- >provide complete Bill Of Material for the detector.. ->Adamo
- >provide all cable specs & material ->Cosimo/Yann

2. Structural analysis & Load calculations

- 2,1 Intro with codes safety factors etc..->Benjamin (already there)
- 2.2. Field Cage & suspension ->Adamo
- 2.3. Cathode & ground grid ->Adamo
- 2.4. CRP & suspension ->Benjamin (almost done)
- 2.5. SGFT ->Adamo/Benjamin/Franco (discuss next week)
- 2.6 VHVFT ->?
- 2.7 probably other things..

For each item need load calculations during each phase:

1. installation
2. cool down
3. cold operation

Status of detector construction and schedule

Reminder the steps established for each element entering in the detector construction:

- Final design => based on various inputs (cf: Technical Board) + experience from 3x1x1 in some cases
- Validation of the design by safety
- Procurement
- Preparation of the sites for assembly (CR185, CRB....)
- Pre-assembly, tests QA/AC, prepare safety installation document (PPSPS + Impact)
- Installation in EHN1 (in cryostat or on platforms)
- Additional tests

To be completed by each responsible group after being contacted.
Under way.

ProtoDUNE-DP schedule and level of advancement and details:

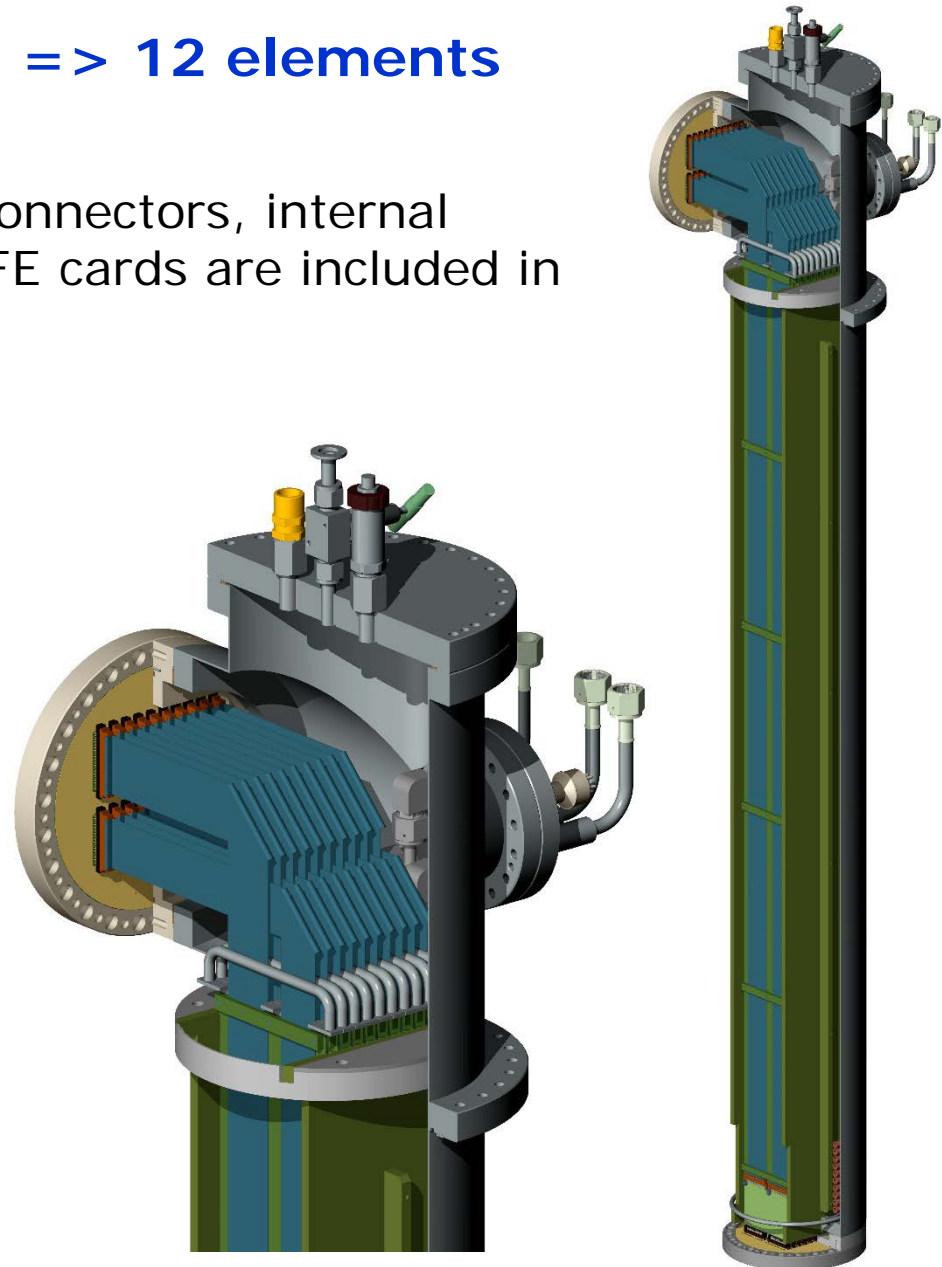
- Infrastructures (EHN1 cryostat, CRB, CR185) ✓
- CRP mechanical frame ✓ This meeting => CR185 activities this summer
- CRP instrumentation/internal cabling ✓ This meeting => CRP electrical and connectors
- CRP LEM-Anodes ✓ This meeting => first 2 pre-serie LEMs and Eltos news
- Drift cage ✓
- Cathode and ground grid ✓
- Light Readout ✓
- Charge Readout ✓ => next meeting
- Feedthroughs and Chimneys
 - TANK-INST ✓ => design work underway
 - CRP-INST ✗ => design work starting
 - SGFT ✗ => design work underway
 - HVFT and extension ✗
 - CRP-SPFT ✗
 - FC-SPFT ✗
- HV systems ✗
- VHV ✗
- Beam-plug ✗
- Detector slow control ✗ This meeting => about cameras,
- Tank instrumentation/internal cabling ✗ This meeting => sensors + internal cabling
- Electrical distribution and grounding ✗
- External cabling and roof layout ✗ This meeting
- CRT

SGFT: Signal Feedthroughs => 12 elements

SGFT includes: PCB flanges + connectors, internal cables + connectors + blades (FE cards are included in Charge readout item)

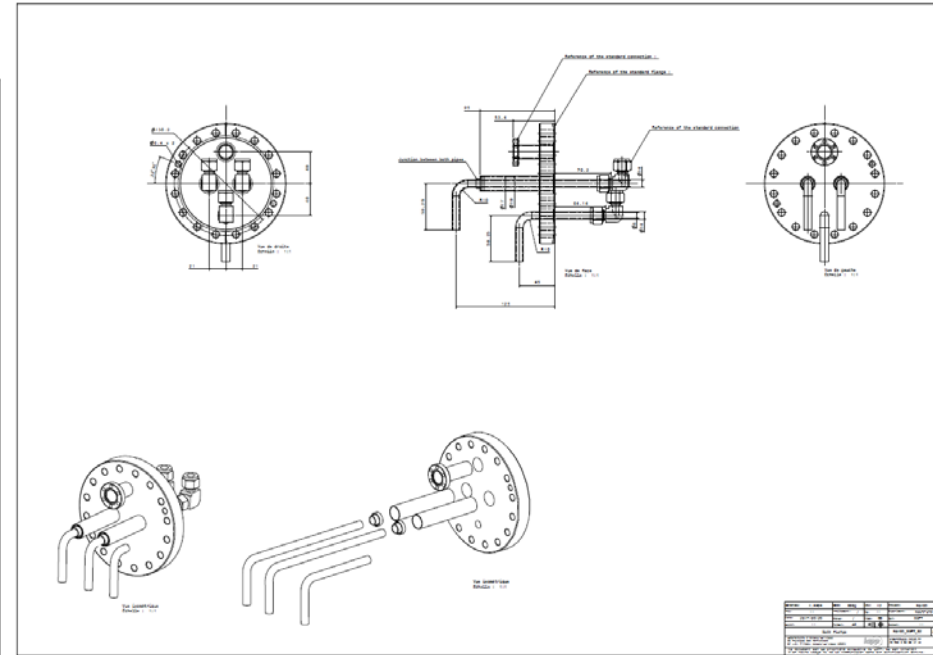
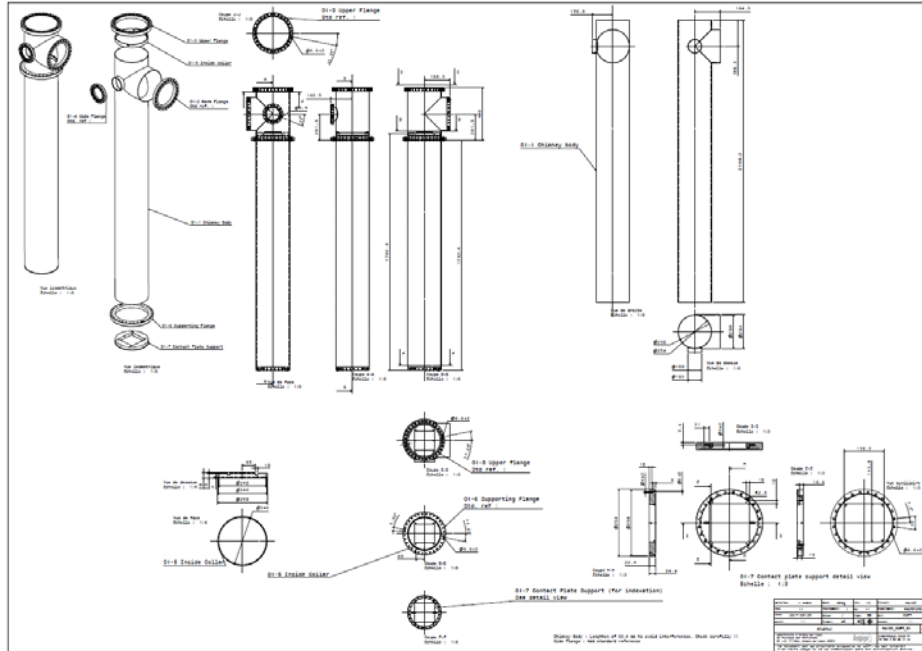
Tasks:

- Final design including PCB flanges: *feedback from 3x1x1*;
- Safety validation: in process but will take time.
- Procurement
- Proto for design validation
- Reception of the full set



SGFT: Signal Feedthroughs

Adamo, Benjamin
Franco



- 2D drawings performed (LAPP and ETH) and full design revision
- Special meeting among engineers next Tuesday at CERN

Pending: Decision about a design simplification (keep or not the coil?)
very soon (should be discussed at the TB)

Chimneys and Feedthroughs

TANK_INST: PMTs HV + optical fibers + slow control => 2 elements

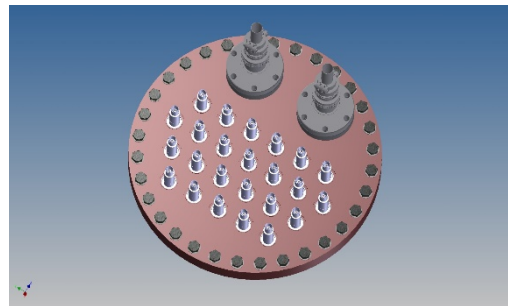
Tasks:

- Final design under progress: end June 2017
- Procurement: July 2017
- Pre-Assembly/control: Sept. 2017
- Installation on top of cryostat: Oct. 2017

Ressources/task:

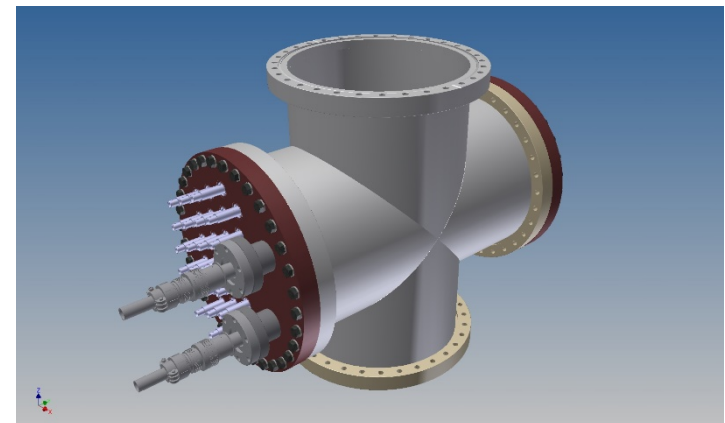
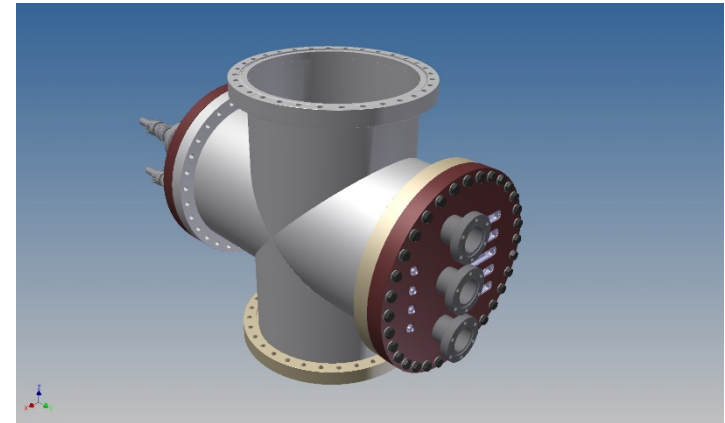
- group in charge: Bern (design and procurement); CERN technician (installation?)
- number of FTE:

Some minor changes may be needed but near to be final



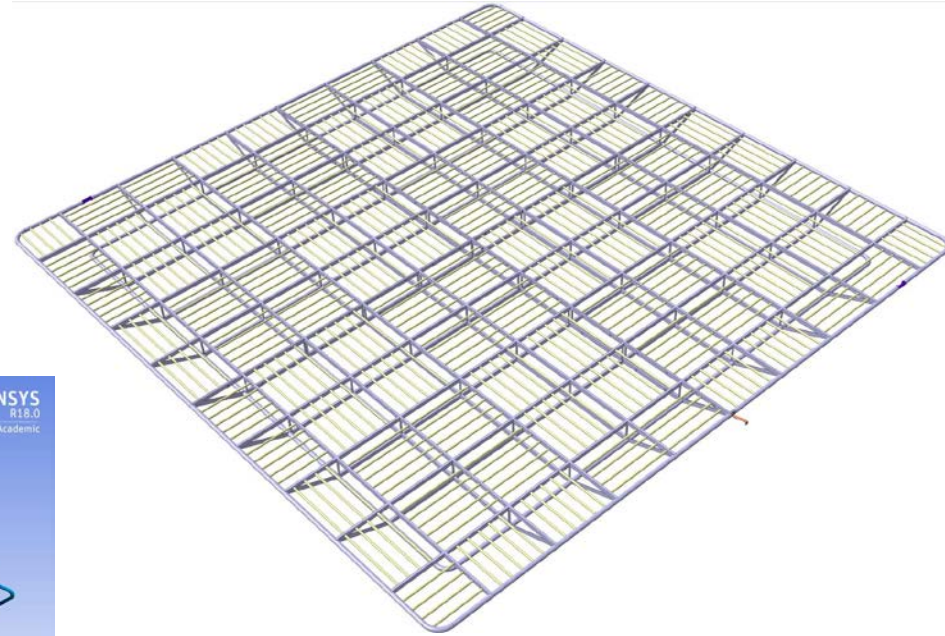
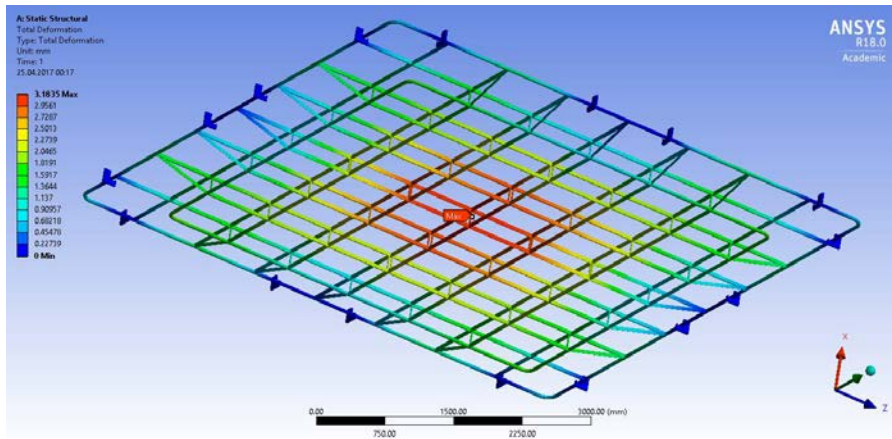
1st version

R. Hänni



Cathode

- Final design under way
- Need asap latest load calculation for safety validation



Urgent: Final design (pipe diameters) depends on the decision about going to 600 kV or staying at 300 kV
=> should be decided at the TB

Drift Cage:

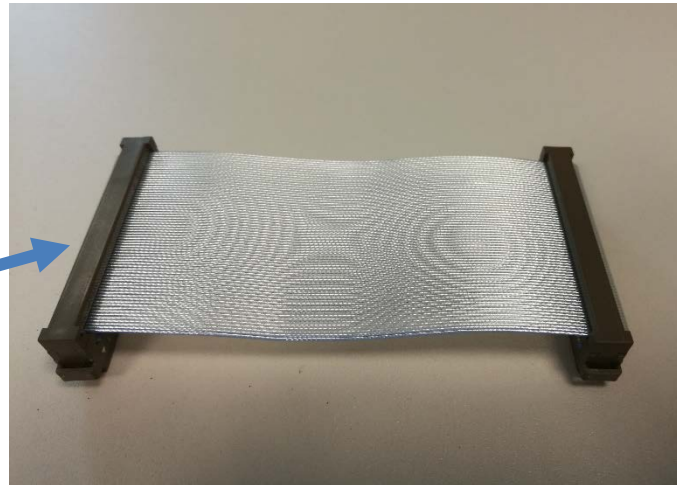
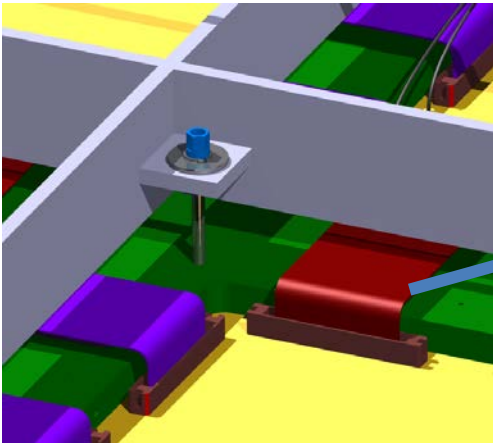
CERN has launch the order for the full production of the bent profiles

Clip ordering being processed



Anode bridges:

Final cable chosen (Franco);
Next step will be to order



Next ProtoDUNE-DP Integration meeting (14/07/2017) we foresee status updates about:

- Charge Readout
- SGFT
- LEMs and Anodes
- Any news from the other systems
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