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To:	Huening, Markus
Cc:	Meyners, Norbert; Negodin, Evgueni; Noelle, Dirk; Lipka, Dirk; Gerth, Christopher; Schlarb, Holger; Branlard, Julien; Wierba, Woyciech; Brinker, Frank; Obier, Frank; Wagner, Richard; Witt, Thorsten; Lederer, Sven; Rathjen, Andreas; Ladwig, Tobias; Vogel, Elmar; Rothenburg, Jens; Weichert, Gabriele
Subject:	Re: Racks im Injektortunnel
Date:	Dienstag, 21. August 2012 12:10:40
Attachments:	Radiation_Shield-3.jpg RadShield.jpg

Dear All,
At first I see two major problems from my side:

1. Cooling power
The existing in FLASH Schroff cooling units in 16U racks cabinets
have usable cooling capacity (inlet water temp. 8-12C) = 3 kW.
Temp. inside the cabinet is foreseen to be 25-30C.
I will ask Schroff for more precise estimation, but preliminary,
changing inlet water temperature from ~10C to 20C will increase
inner racks air temperature to ~35-40C.
In XFEL injector in 3racks 16U cabinet we have to estimate total
dissipated power more than ~5-6 kW (?) (because of dense packing al
systems in one cabinet).
Increasing the usable cooling capacity (water 20C) will extend the width
of cooling unit from 400 mm to 800 mm (most probably, because
of added second heat exchanger and fans).
In that case (extended to ~6 kW cooling power) the length of 3 racks cabinet
will increase from 2.2 m to 2.6 m.
For 2 racks cabinet may be the 3 kW is enough but is should be
investigated carefully.

2. Radiation Shielding
It is possible to design one Rad. Shield. for set of cabinets (i.e.
3+3+2+2) without shielding plates
between set of racks , but:
in my opinion, it is not possible to have one single frame for sliding
doors (front and rear)
with length of more than 7 m. The frame should be divided in at least 2
parts.
The frame should have 100 mm clearance on both sides (left and right) of
racks cabinet
to allow sliding doors open fully.
The shielding plates on left and right sides of set of cabinets needs 2
times 25 mm = 50 mm

If the frame is divided into two part we have clearances 100 mm (left) +
200 mm (middle) + 100 mm (right) + 50 mm = 450 mm
For 2 sets of 3 racks with extended (6 kW, 20C)cooling plus 2 sets of
standard (3 kW, 20C, ~40C air inside) we have:
2.6 + 2.6 + 1.6 + 1.6 + 0.45 (Rad. Shield) = 8.85 m.
For sure, it will not fit between two supporting columns.

Kind regards.
Wojciech Wierba