

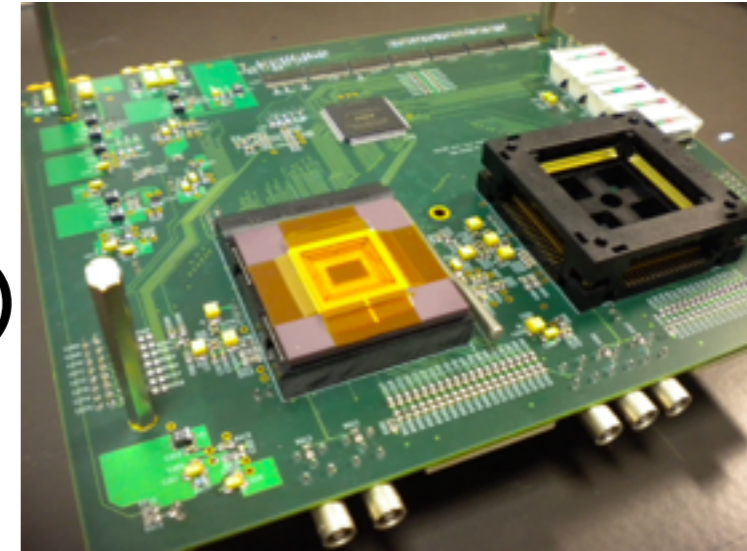
Low Voltage issue

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How much Low Voltage do we need ?

RO electronics

40mW for sAltro16/ch @40MHz op. w/o PP
(1/18 by PP from 2012 coll. mtg)



New elec. w/ new process

4mV /ch (factor 10 improvement for 20 years)

1.5 10^6 ch/endplate

total 60 kW for sAltro ~ 6kW for new elec./EP
most probable

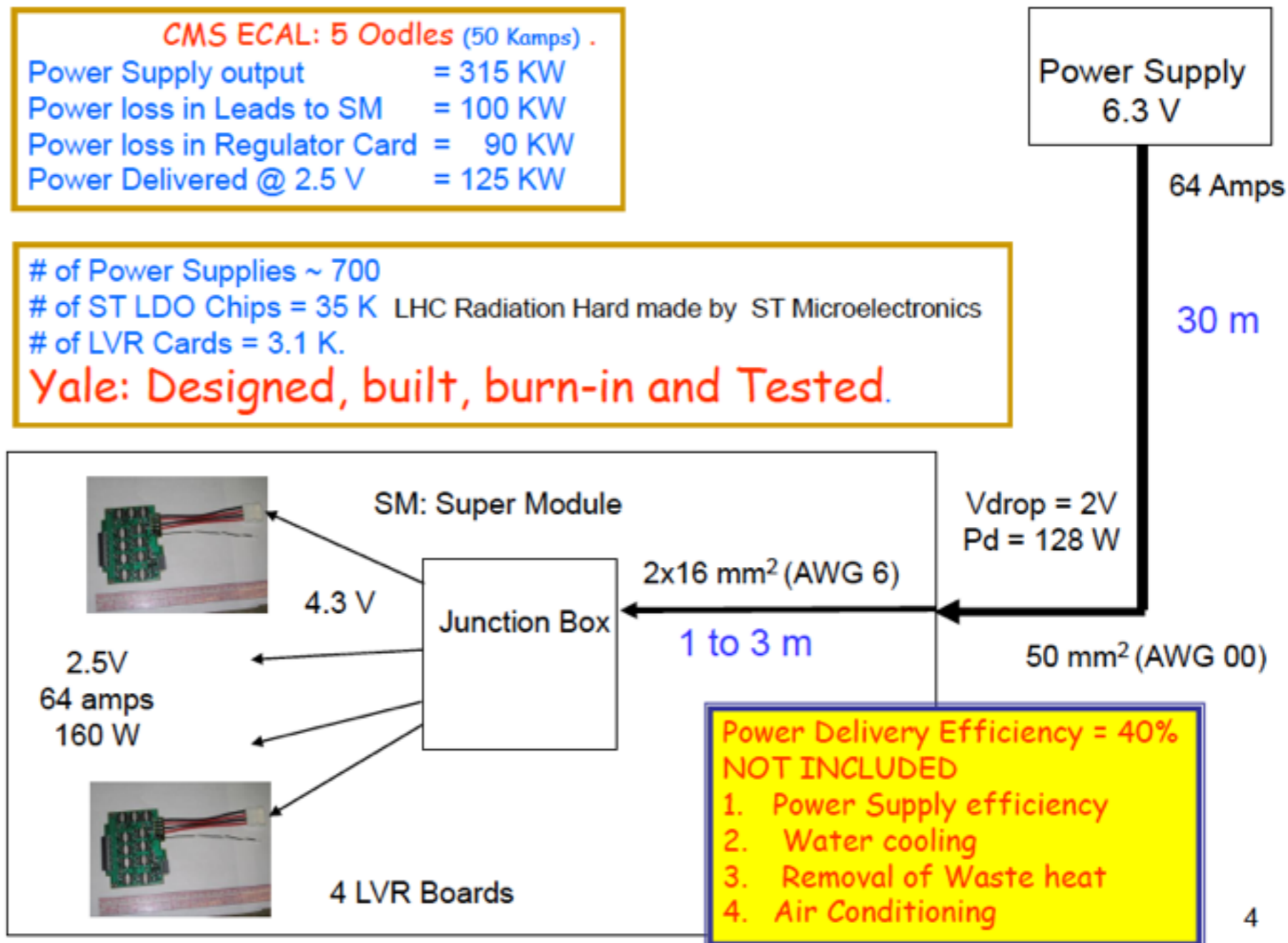
Assume 3V power supply

-> 2kA@3V current must be delivered to TPC EP

Example @ CMS Ecal

They lose power more than 50%
even they use very thick cable 50mm² for 30m from PS

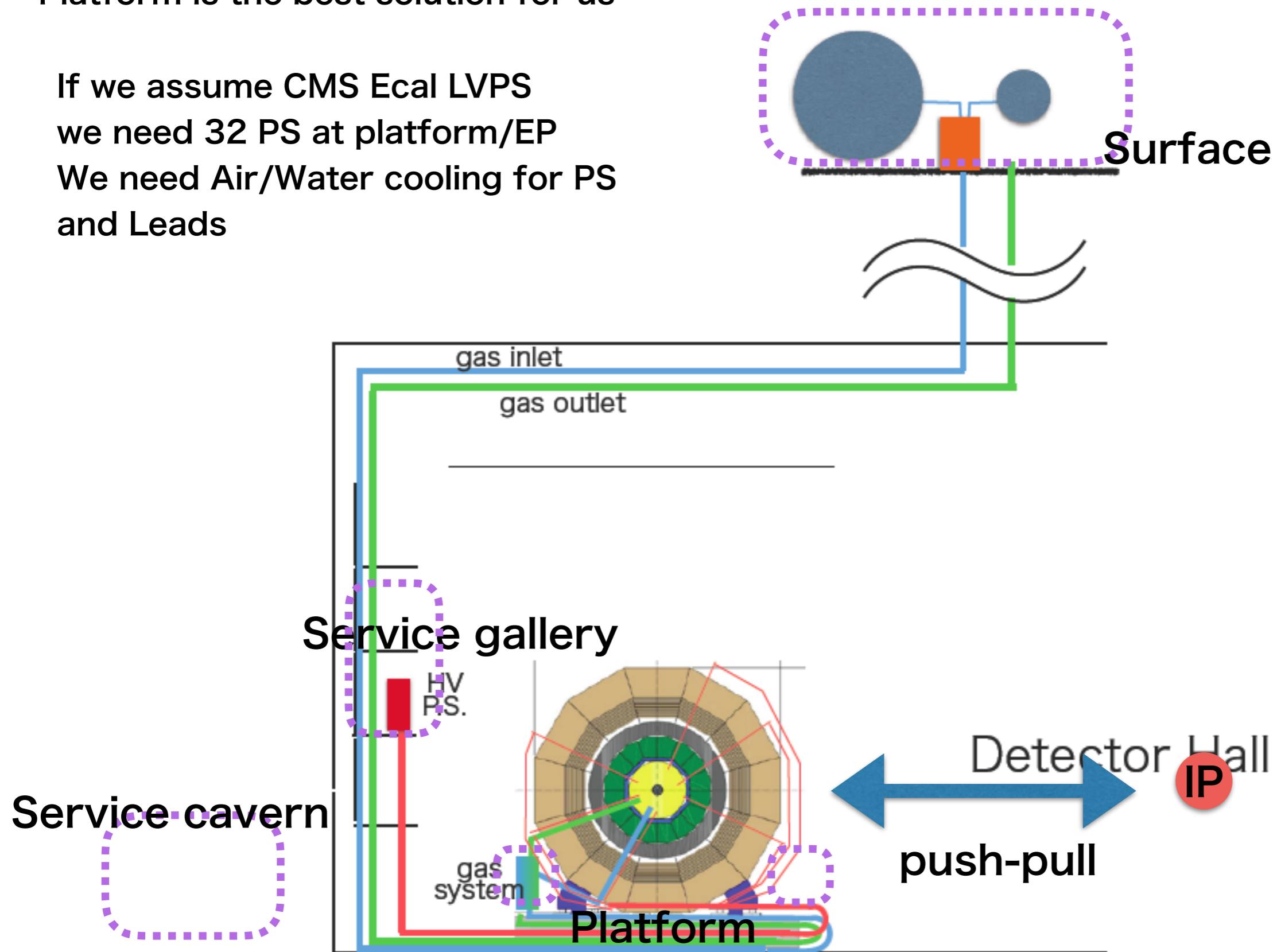
?? copper's $\rho=0.0172\text{mm}^2\Omega/\text{m} \rightarrow 0.01\Omega$ but $0.03=2\text{V}/64\text{A}$



Where we can put Low Voltage Power Supply

Platform is the best solution for us

If we assume CMS Ecal LVPS
we need 32 PS at platform/EP
We need Air/Water cooling for PS
and Leads

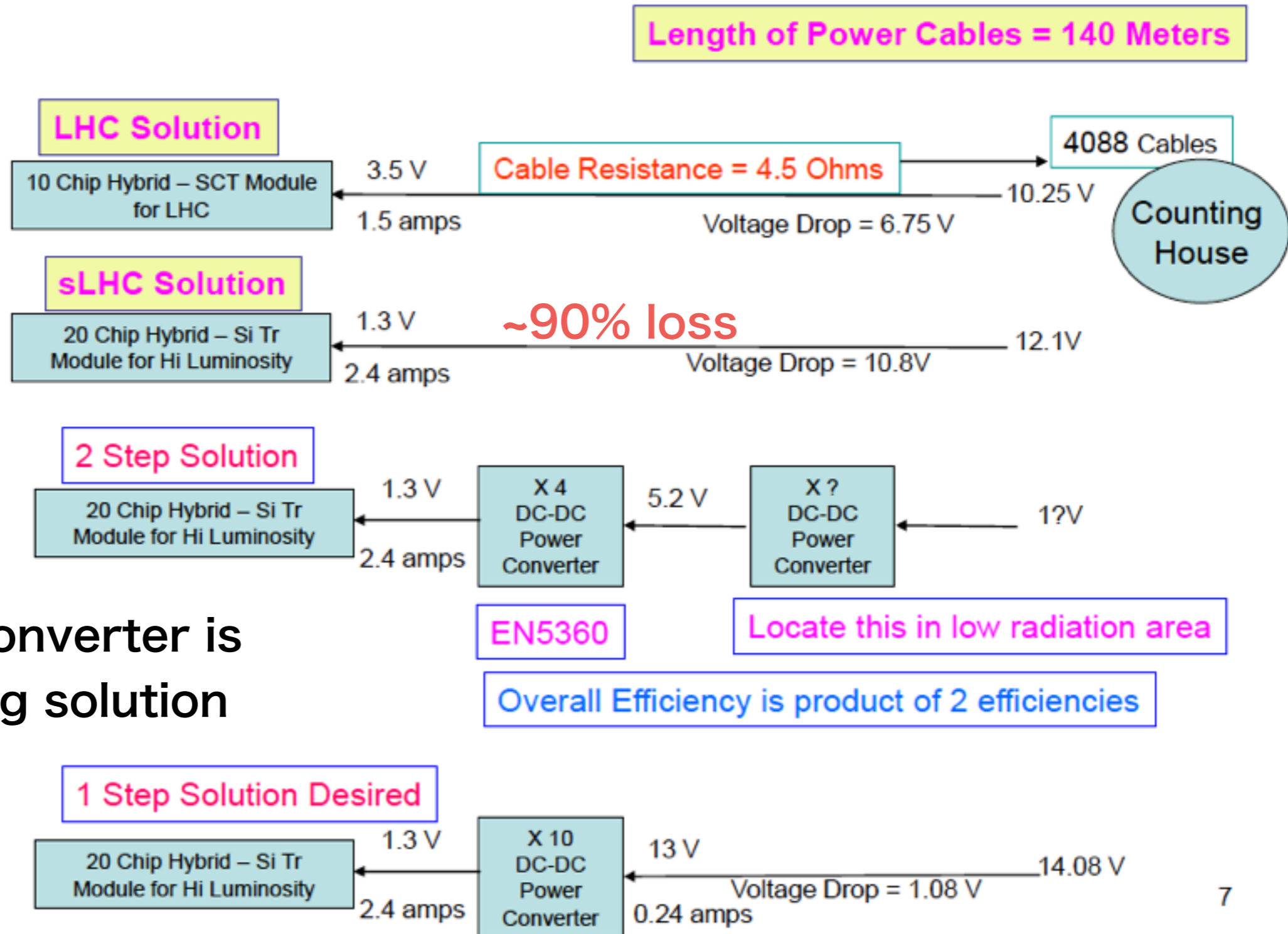


Gallery case

LHC SCT case

power loss is more : 70% loss@140m cable 0.5mm²

This is not the case for us



But DC-DC converter is promising solution

**Power supply situation of LCTPC
must be much easier than that for LHC**

**But we must clarify how we supply power to TPC
for Interface Control Document**

Can we have enough space of LV PS at platform?

**Do we need DC-DC converter placed at patch panel (EP)?
reduction of power loss in Leads
reduce cooling requirements**

Power cycling

Need consideration