



**High
Luminosity
LHC**

Review of CV loads: Present input data

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Objective of the review

- The TDR of the technical infrastructure has to be written beginning of 2016
- In the past months, some changes have impacted the needs
- Objectives:
 - To review the needs
 - To issue a TDR which will become “The Baseline”
 - To issue the Corresponding Cost to Completion (CtC)
 - To trace future changes via ECRs.
 - To be ready by April’16 for a internal C&S review (dry run)
 - To be ready by October’16 for the official external C&S Review

Present input data : underground area

Location	WP	Equipment	Water cooling		Air cooling	
			Heat load [kW]	Type	Heat load on chillers [kW]	Free cooling [kW]
URx5	WP17.2	DC cables	1860	demi	194	-
	WP6B	Power converters	624	demi	96	-
	WP7	Dumps S+R	326	demi	46	-
	WP17.2	AC warm cables	-	-	20	-
	WP17.2	Transfos	-	-	33	-
	WP17.2	TGTB, UPS,...	-	-	8	-
	WP4	Faraday cage	-	-	15	-
UAx3	WP4	RF amplis	800	demi	50	-
UAx7	WP4	RF amplis	800	demi	50	-
USx7	WP9	QURCG	350	Sec. raw	20	-
	WP17.2	Transfos	-	-	17	-
	WP17.2	TGTB, UPS,...	-	-	5	-
	WP17.2	Safe room	-	-	7	-
	WP4	Faraday cage	-	-	15	-
UWx7	WP17.3	CV pumps	-	-	50	-
Subtotal underground			4760		626	0

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←
← Transient

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Present input data : underground area

- Today, no free cooling in caverns and galleries
- Contribution of the walls ?

	UR	US	UA	UA
Internal circumference [m]	21	49	18	18
Length [m]	311	70	40	40
Internal surface [m ²]	6562	3444	714	714
Natural echange (C + R) [W/m ² /K]	10	10	10	10
<i>Possible free cooling [kW/K]</i>	66	34	7	7

What is the temperature difference between the tunnel wall and the ventilation air ?

Present input data: ground level buildings

Location	WP	Equipment	Water cooling		Air cooling	
			Heat load [kW]	Type	Heat load on chillers [kW]	Free cooling [kW]
SRx7	WP4	HV power supply	100	demi	50	-
SHMx7	WP9	QSCG	5000	Primary	200	-
SDHx7	WP9	QSRG	930	Primary	-	10
SUx7	WP17.3	Chillers	1506	Primary	-	-
	WP17.3	CV pumps	-	-	100	-
	WP17.3	Primary ventilation	-	-	230	-
	WP17.3	Safe area press.	-	-	100	-
SDx7	-	-	-	-	-	-
SEx7	WP17.2	LV room	-	-	-	-
	WP17.2	HV room	-	-	-	11
All surf.		Heat gains estimates	-	-	200	-
Subtotal ground			7536		880	21

