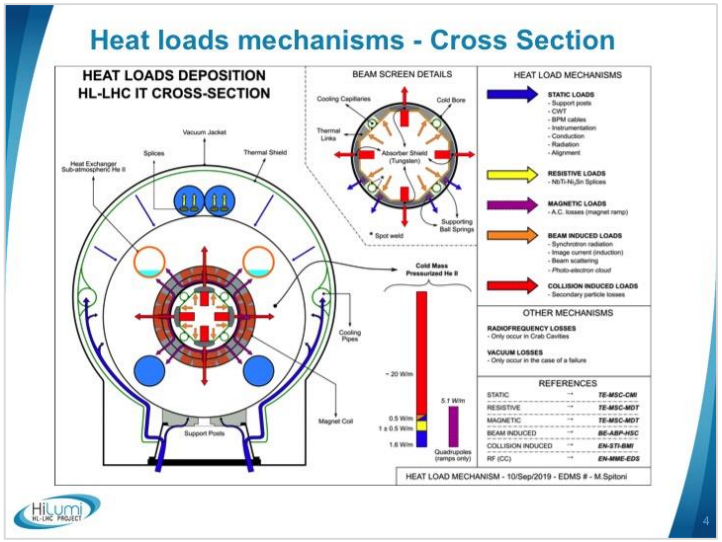
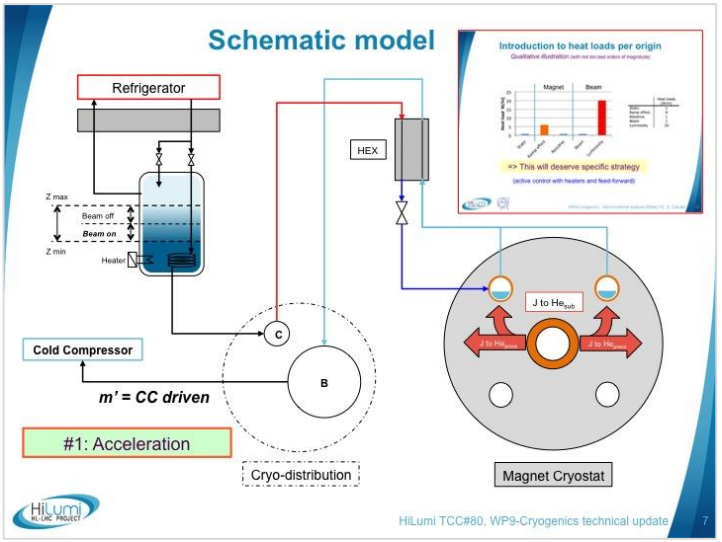
HL-LHC
WP9 Cryogenics, Process studies, Coping with Peak Lumi (ramps)

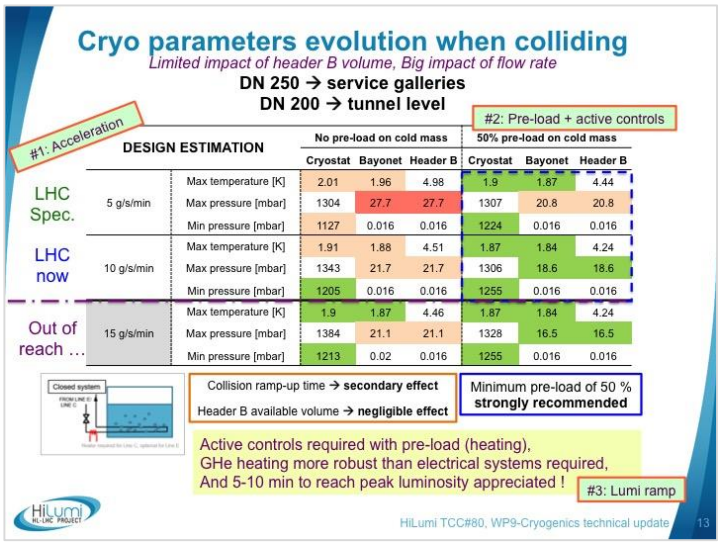
S. Claudet, 24Mar'20

(HiLumi – follow up of WP2_160th meeting on 24Sept'19)

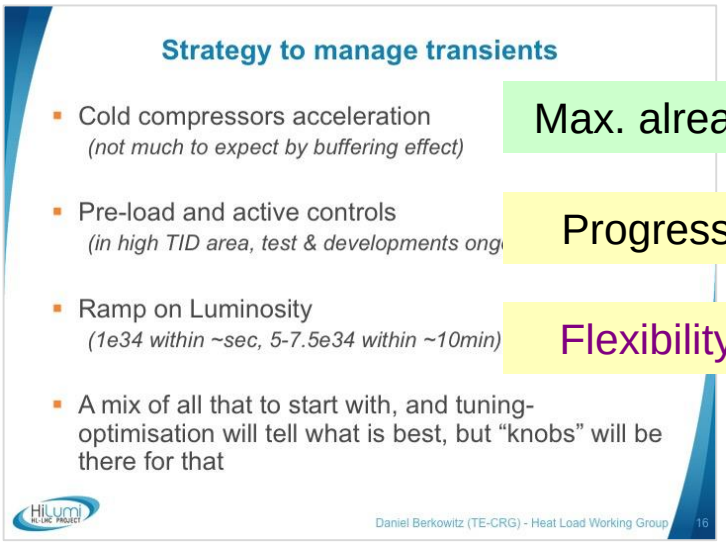
Introduction (recall) of context







			No pre-load on cold mass			50% pre-load on cold mass		
			Cryostat	Bayonet	Header B	Cryostat	Bayonet	Header B
LHC Spec.	5 g/s/min	Max temperature [K]	2.01	1.96	4.98	1.9	1.87	4.44
		Max pressure [mbar]	1304	27.7	27.7	1307	20.8	20.8
		Min pressure [mbar]	1127	0.016	0.016	1224	0.016	0.016
LHC now	10 g/s/min	Max temperature [K]	1.91	1.88	4.51	1.87	1.84	4.24
		Max pressure [mbar]	1343	21.7	21.7	1306	18.6	18.6
		Min pressure [mbar]	1205	0.016	0.016	1255	0.016	0.016
Out of reach …	15 g/s/min	Max temperature [K]	1.9	1.87	4.46	1.87	1.84	4.24
		Max pressure [mbar]	1384	21.1	21.1	1328	16.5	16.5
		Min pressure [mbar]	1213	0.02	0.016	1255	0.016	0.016



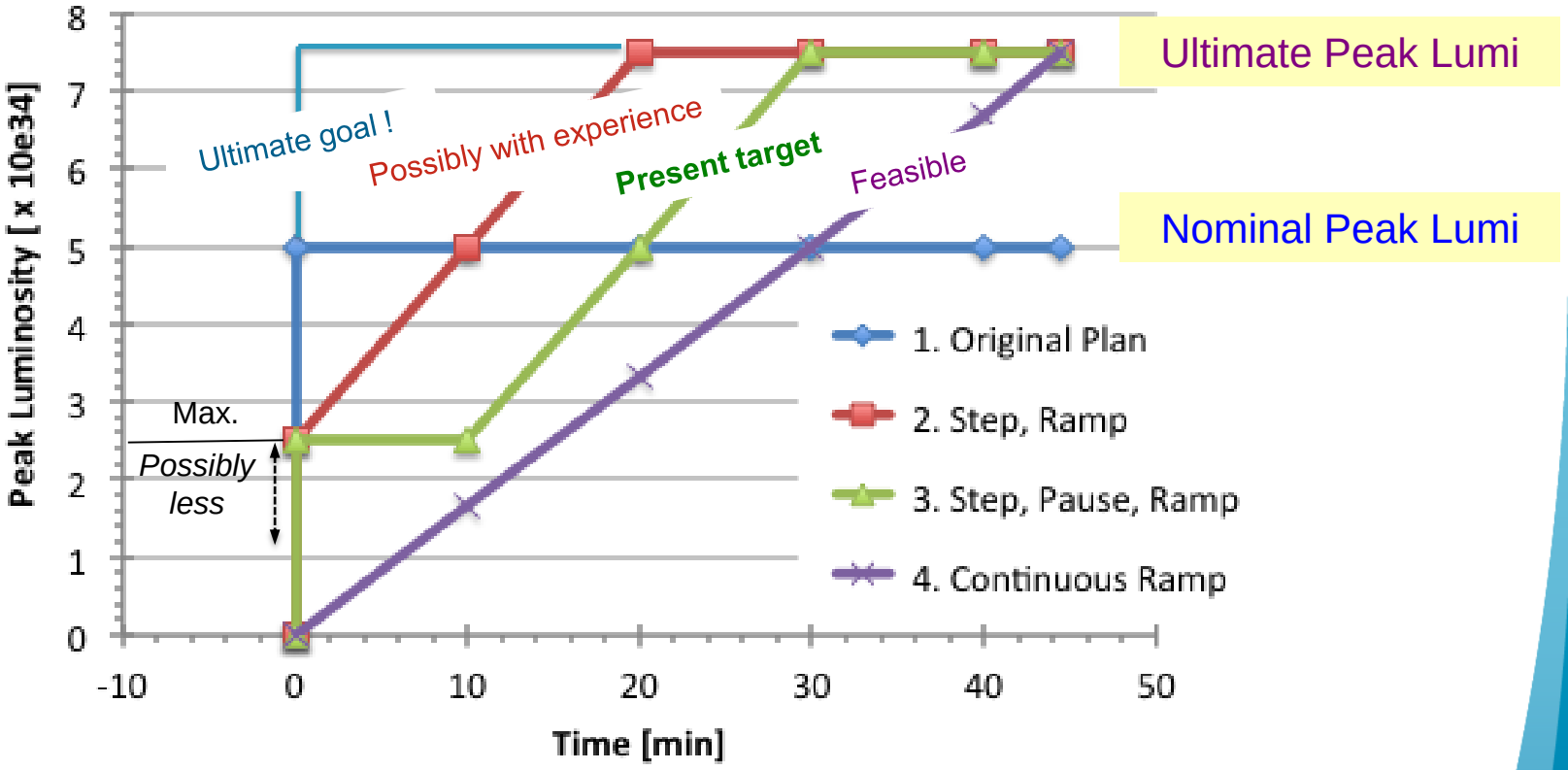
Max. already reached

Progress expected

Flexibility expected

Luminosity scenarii considered by WP9-Cryo

Considered for Cold Compressors control and mass-flow adjustment capabilities



Rmk: Control/adjustment for beam dump feasible, with positive effect (reduction) of magnet temperature (while increase not acceptable at ramp-up)