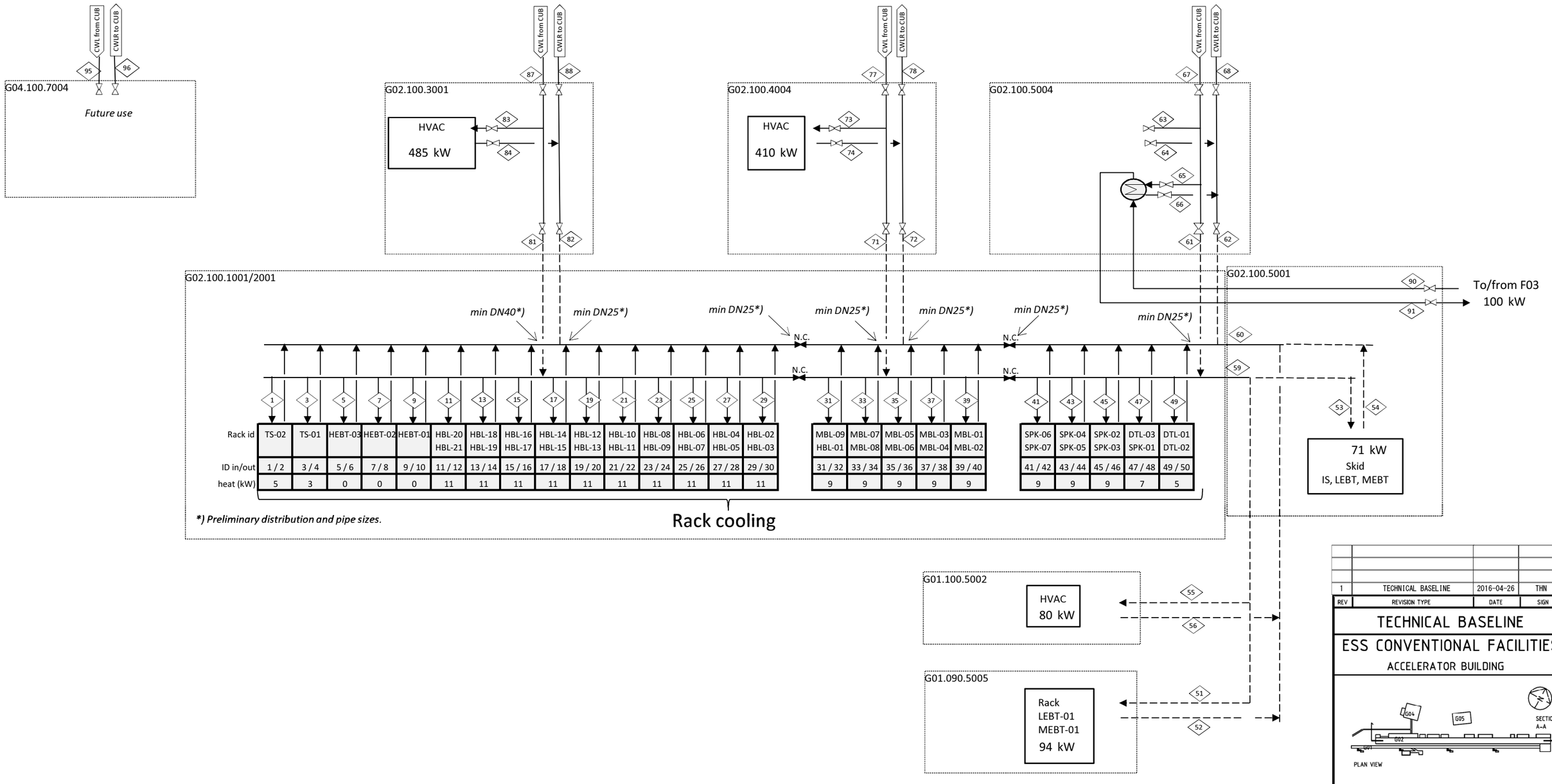

Stream id		1	2	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	50	51	52	53	54	55	56	
Media		CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	
Mass flow	*(kg/s)*	0,1	0,1	0,1	0,0	0,0	0,0	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,1	1,9	1,9	2,1	2,1	2,4	2,4	
Volume flow	*(m3/hr)*	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	7	7	8	8	9	9	
Temperature	*(ºC)*	8	20	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	20	8	20	8	16	8	16	
Pressure	*(bar g)*	7,0	4,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0	
DN		25	25	25	-	-	-	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	40	40	40	50	50	
Nominal capacity	*(m3/hr)*	*(4)*	*(4)*	*(4)*	*()*	*()*	*()*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(4)*	*(10)*	*(10)*	*(10)*	*(15)*	*(15)*	

Stream id		59	60	61	62	63	64	65	66	67	68			71	72	73	74		77	78		81	82	83	84	85	86	87	88		90	91		95	96
Media		CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL	CWL			CWL	CWL	CWL	CWL		CWL	CWL		CWL	CWL	CWL	CWL			CWL	CWL		CWX	CWX		0,0	0,0
Mass flow	*(kg/s)*	6,4	6,4	7,2	7,2	0,0	0,0	3,0	3,0	10,2	10,2			0,9	0,9	12,2	12,2		13,1	13,1		2,2	2,2	14,5	14,5			16,7	16,7		3,0	3,0		0,0	0,0
Volume flow	*(m3/hr)*	23	23	26	26	0	0	11	11	37	37			3	3	44	44		47	47		8	8	52	52			60	60		11	11		0	0
Temperature	*(ºC)*	8	17	8	17	8	16	8	16	8	17			8	20	8	16		8	16		8	20	8	16			8	17		10	18		8	16
Pressure	*(bar g)*	7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0			7,0	4,0	7,0	4,0		7,0	4,0		7,0	4,0	7,0	4,0			7,0	4,0		-	-		7,0	4,0
DN		80	80	100	100	80	80	50	50	150	150			40	40	80	80		150	150		50	50	100	100			200	200		50	50		100	100
Nominal capacity	*(Nm3/hr)*	*(40)*	*(40)*	*(60)*	*(60)*	*(40)*	*(40)*	*(15)*	*(15)*	*(150)*	*(150)*			*(10)*	*(10)*	*(40)*	*(40)*		*(150)*	*(150)*		*(15)*	*(15)*	*(60)*	*(60)*			*(250)*	*(250)*		*(15)*	*(15)*		*(60)*	*(60)*

REV	REVISION TYPE	DATE	SIGN
1	TECHNICAL BASELINE	2016-04-26	THN

TECHNICAL BASELINE

ESS CONVENTIONAL FACILITIES

ACCELERATOR BUILDING

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SWEDEN
www.esss.se

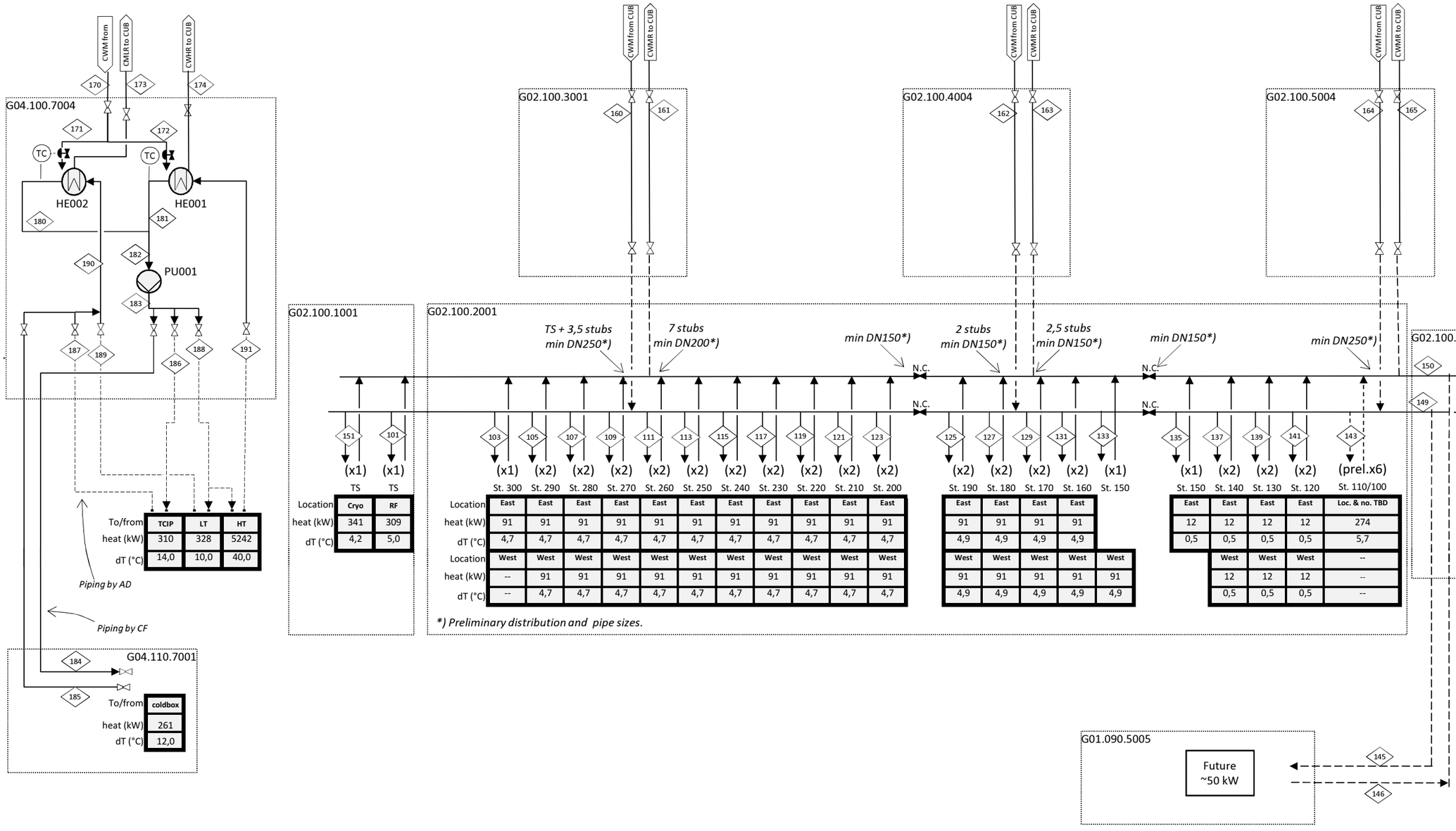
EUROPEAN SPALLATION SOURCE

BUILDING OWNER: LINUS MECK
SYSTEM OWNER: MIKAEL KELFVE
CONSULTANT: AF INDUSTRY AB
DRAWN BY: THN
MANAGED BY:
PROJECT NUMBER:
DATE: 2016-04-26
APPROVED BY: THN
CHECKED BY:

BUILDING G01/G02/G04 PROCESS
FLOW CHART
COOLING WATER LOW TEMPERATURE

SCALE:

DRAWING NUMBER: PS0055---8-G-----201 sh. 1
REV: 1



Stream id		101	103	105	107	109	111	113	115	117	119	121	123	125	127	129	131	133	135	137	139	141	143	145	146	147	148	149	150	151					
Media		CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM	CWM					
Mass flow	*(kg/s)*	14,8	4,6	9,3	9,3	9,3	9,3	9,3	9,3	9,3	9,3	9,3	9,3	8,9	8,9	8,9	8,9	4,4	6,3	12,5	12,5	12,5	11,5	0,0	0,0	38,3	38,3	38,3	38,3	19,4					
Volume flow	*(m3/hr)*	53	17	33	33	33	33	33	33	33	33	33	33	32	32	32	32	16	23	45	45	45	41	0	0	138	139	138	139	70					
Temperature	*(°C)*	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	25	30	25	30	25					
Pressure	*(bar g)*	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	4,0	7,0	4,0	7,0	4,0	7,0					
DN		150	80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	2 x 80	80	80	2 x 80	2 x 80	2 x 80	6 x 50	100	100	200	200	200	200	150					
Nominal capacity	*(m3/hr)*	*(150)*	*(40)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(80)*	*(40)*	*(40)*	*(80)*	*(80)*	*(80)*	*(90)*	*(60)*	*(60)*	*(250)*	*(250)*	*(250)*	*(250)*	*(150)*					

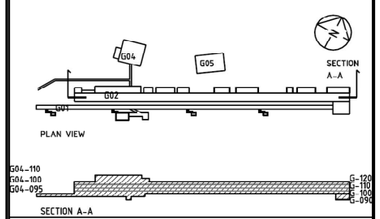
Stream id		160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193
Media		CWM	CWM	CWM	CWM	CWM	CWM					CWM	CWM	CWM	CWM	CWH						CWX	CWX	CWX	CWX	CWX	CWX	CWX	CWX	CWX	CWX	CWX	CWX		
Mass flow	*(kg/s)*	131,5	131,5	39,9	39,9	93,6	93,6					45,5	15,6	29,8	15,6	29,8						18,3	31,3	49,6	49,6	5,2	5,2	5,3	5,3	39,1	7,8	18,3	31,3		
Volume flow	*(m3/hr)*	475	475	144	144	338	338					164	57	108	57	110						66	113	179	179	19	19	19	19	142	28	67	115		
Temperature	*(°C)*	25	30	25	30	25	28					25	25	25	39	67						30	30	30	30	30	42	30	44	30	40	42	70		
Pressure	*(bar g)*	7,0	4,0	7,0	4,0	7,0	4,0					7,0	7,0	7,0	4,0	4,0						2,0	2,0	2,0	5,0	5,0	4,5	5,0	4,5	5,0	4,5	4,5	4,5		
DN		350	350	200	200	250	250					200	150	200	200	200						150	200	200	200	80	80	80	80	200	150	150	200		
Nominal capacity	*(Nm3/hr)*	*(700)*	*(700)*	*(250)*	*(250)*	*(350)*	*(350)*					*(250)*	*(150)*	*(250)*	*(250)*	*(250)*						*(150)*	*(250)*	*(250)*	*(250)*	*(40)*	*(40)*	*(40)*	*(40)*	*(250)*	*(150)*	*(150)*	*(250)*		

REV	REVISION TYPE	DATE	SIGN
1	TECHNICAL BASELINE	2016-04-26	THN

TECHNICAL BASELINE

ESS CONVENTIONAL FACILITIES

ACCELERATOR BUILDING



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EUROPEAN SPALLATION SOURCE

BUILDING OWNER	SYSTEM OWNER
LINUS MECK	MIKAEL KELFVE

CONSULTANT: AF INDUSTRY AB

DRAWN BY	MANAGED BY	PROJECT NUMBER
THN		

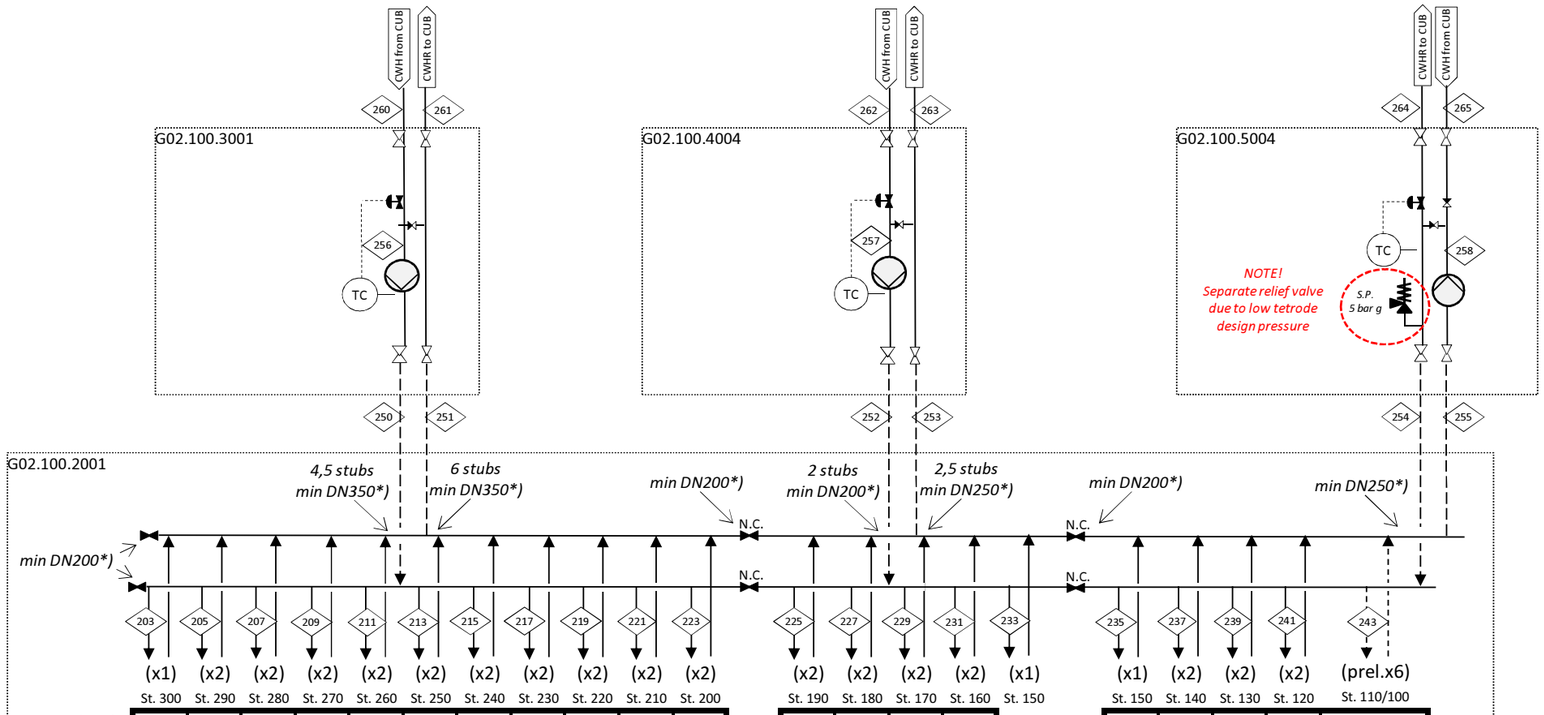
DATE	APPROVED BY	CHECKED BY
2016-04-26	THN	

BUILDING G01/G02/G04 PROCESS
FLOW CHART
COOLING WATER MEDIUM TEMPERATURE

SCALE

DRAWING NUMBER: PS0055---8-G-----201 sh. 2

REV: 1



Location	East	East	East	East	East	East	East	East	East	East	East
heat (kW)	241	241	241	241	241	241	241	241	241	241	241
dT (°C)	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5
Location	West	West	West	West	West	West	West	West	West	West	West
heat (kW)	--	241	241	241	241	241	241	241	241	241	241
dT (°C)	--	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5

East	East	East	East
201	201	201	201
2,9	2,9	2,9	2,9

West	West	West	West	West
201	201	201	201	201
2,9	2,9	2,9	2,9	2,9

East	East	East	East	Loc. & no. TBD
80	80	80	80	954
14,3	14,3	14,3	14,3	4,8

West	West	West	--
80	80	80	--
14,3	14,3	14,3	--

*) Preliminary distribution and pipe sizes.

Stream id		201	203	205	207	209	211	213	215	217	219	221	223	225	227	229	231	233	235	237	239	241	243	245	247	249	251	252	253	254	255	256	257	258	259
Media			CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH											
Mass flow	(kg/s)		16,7	33,4	33,4	33,4	33,4	33,4	33,4	33,4	33,4	33,4	33,4	33,3	33,3	33,3	33,3	16,7	1,3	2,7	2,7	2,7	47,5											
Volume flow	(m3/hr)		61	122	122	122	122	122	122	122	122	122	122	122	122	122	122	61	5	10	10	10	173											
Temperature	(ºC)		55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55											
Pressure	(bar g)		7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	7,0	4,0	4,0	4,0	4,0	4,0											
DN			150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	2 x 150	100	50	2 x 50	2 x 50	2 x 50	6 x 100											
Nominal capacity	(m3/hr)		(150)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(60)	(15)	(30)	(30)	(30)	(360)											

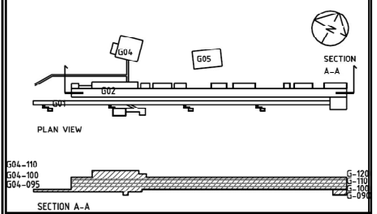
Stream id		250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283
Media		CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH	CWH		CWH	CWH	CWH	CWH	CWH	CWH																		
Mass flow	(kg/s)	350,4	350,4	150,0	150,0	56,8	56,8	350,4	150,0	56,8		143,0	143,0	54,8	54,8	31,8	31,8																		
Volume flow	(m3/hr)	1280	1282	548	549	208	208	1280	549	208		521	524	200	201	116	117																		
Temperature	(ºC)	55	58	55	58	55	61	55	58	55		50	58	50	58	50	61																		
Pressure	(bar g)	7,0	4,0	7,0	4,0	4,0	1,0	4,0	4,0	4,0		7,0	4,0	7,0	4,0	7,0	4,0																		
DN		500	500	400	400	250	250	500	400	250		300	300	250	250	200	200																		
Nominal capacity	(Nm3/hr)	(1500)	(1500)	(900)	(900)	(350)	(350)	(1500)	(900)	(350)		(500)	(500)	(350)	(350)	(250)	(250)																		

REV	REVISION TYPE	DATE	SIGN
1	TECHNICAL BASELINE	2016-04-26	THN

TECHNICAL BASELINE

ESS CONVENTIONAL FACILITIES

ACCELERATOR BUILDING



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EUROPEAN SPALLATION SOURCE

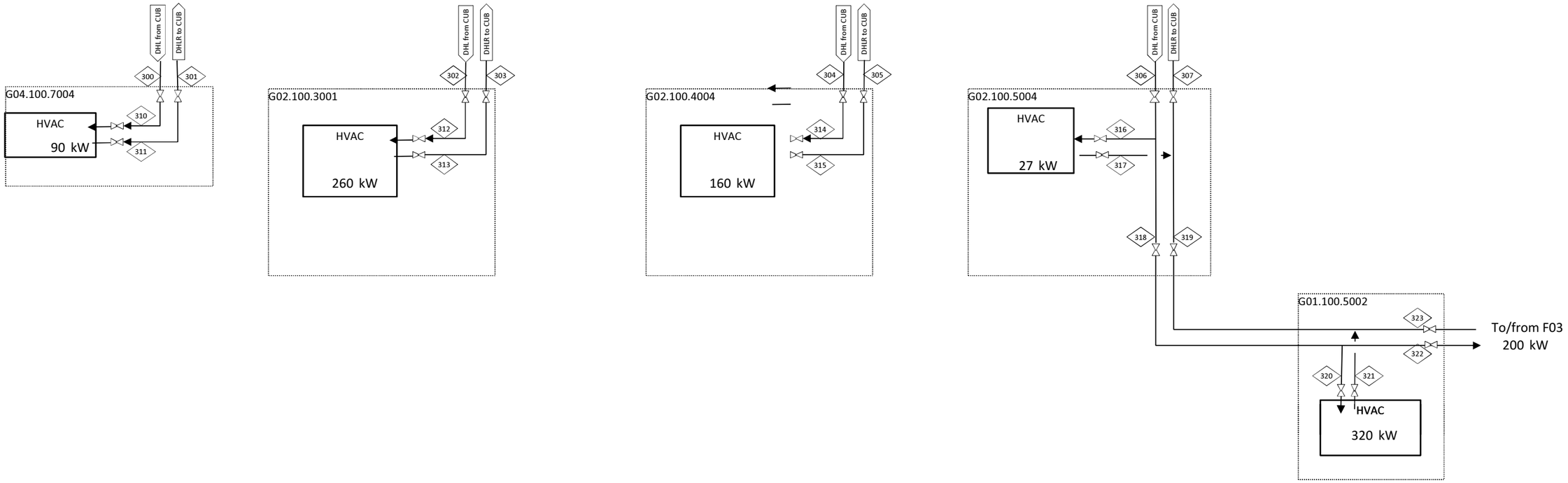
BUILDING OWNER: LINUS MECK
SYSTEM OWNER: MIKAEL KELFVE
CONSULTANT: AF INDUSTRY AB
DRAWN BY: THN
MANAGED BY:
PROJECT NUMBER:
DATE: 2016-04-26
APPROVED BY: THN
CHECKED BY:

BUILDING G01/G02/G04 PROCESS
FLOW CHART
COOLING WATER HIGH TEMPERATURE

SCALE:

DRAWING NUMBER: PS0055---8-G-----201 sh. 3

REV: 1



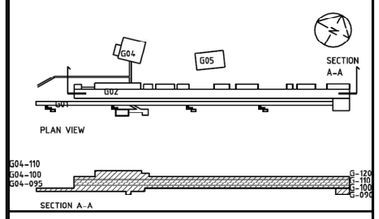
Stream id		300	301	302	303	304	305	306	307			310	311	312	313	314	315	316	317	318	319	320	321	322	323
Media		DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL			DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL	DHL
Mass flow	*(kg/s)*	1,1	1,1	3,1	3,1	1,9	1,9	6,5	6,5			1,1	1,1	3,1	3,1	1,9	1,9	0,3	0,3	6,2	6,2	3,8	3,8	2,4	2,4
Volume flow	*(m3/hr)*	4	4	11	11	7	7	24	24			4	4	11	11	7	7	1	1	23	22	14	14	9	9
Temperature	*(°C)*	55	35	55	35	55	35	55	35			55	35	55	35	55	35	55	35	55	35	55	35	55	35
Pressure	*(bar g)*	7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0			7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0	7,0	4,0
DN		50	50	80	80	80	80	100	100			40	40	50	50	40	40	40	40	80	80	50	50	50	50
Nominal capacity	*(Nm3/hr)*	*(15)*	*(15)*	*(40)*	*(40)*	*(40)*	*(40)*	*(60)*	*(60)*			*(10)*	*(10)*	*(15)*	*(15)*	*(10)*	*(10)*	*(10)*	*(10)*	*(40)*	*(40)*	*(15)*	*(15)*	*(15)*	*(15)*

REV	REVISION TYPE	DATE	SIGN
1	TECHNICAL BASELINE	2016-04-26	THN

TECHNICAL BASELINE

ESS CONVENTIONAL FACILITIES

ACCELERATOR BUILDING



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EUROPEAN SPALLATION SOURCE

BUILDING OWNER: LINUS MECK

SYSTEM OWNER: MIKAEL KELFVE

CONSULTANT: AF INDUSTRY AB

DRAWN BY: THN | MANAGED BY | PROJECT NUMBER

DATE: 2016-04-26 | APPROVED BY: THN | CHECKED BY

BUILDING G01/G02/G04 PROCESS
FLOW CHART
DISTRICT HEATING LOW TEMPERATURE

SCALE

DRAWING NUMBER: PS0055---8-G-----201 sh. 4

REV: 1