CORESO Engineers ***North :*** ROCHET Jonathan ***South :*** HECKMANN Steffi	**Day Ahead report for** **05 February 2018**

Security Levels:

CWE: Constraint detected requiring low PST tap position and the return of service of Mercator 380KV busbar to manage the constraint.

CEE: Constraints detected requiring redispatch and topological actions to solve.

CSE: High constraints detected on Italian borders which requires an increase of the SI-IT target flow to 1100 MW and the use of preventive remedial actions.

Key overall conditions

Load & Generation margin forecast			Main generating units connected to the grid in DACF					
ELIA			Elia	Doel	Pmax (MW)	1000	**1**	1900
						450	2	
Peak load [MW]	10 600	18:00		Tihange		1000	2	2900
						450	2	
Generation Margin	Sufficient			Coo		230	3	1170
						160	3	
			50HzT	Rostock	Pmax (MW)	530	1	530
				Janschwalde		500	6	3000
				Boxberg		500	2	2800
						900	2	
				Schw. Pumpe		800	2	1600
				Lippendorf		920	2	1840
RTE			RTE	Gravelines	Pmax (MW)	900	**5**	4500
Peak load [MW]	86 100	19:00		Chooz		1500	2	3000
Generation Margin	Sufficient			Cattenom		1300	4	5200
				Fessenheim		900	**1**	900
NATIONAL GRID (UK time)				Penly		1300	2	2600
Peak load [MW]	48380	18:00		Paluel		1300	**3**	3900
Generation Margin	Sufficient			Nogent s/ Seine		1300	2	2600
				Bugey		900	4	3600
TERNA				St Alban		1300	**1**	1300
Peak load [MW]	46126	18:30		Cruas		900	**3**	2700
Generation Margin	Sufficient			Tricastin		900	**3**	2700

Generation margin legend:

Green: Sufficient margin available. No risk for need of inter-TSO solicitation due to margin issues.

Orange: Tight margin available. Low risk for need of inter-TSO solicitation due to margin issues.

Red: Insufficient margin available. High risk for need of inter-TSO solicitation due to margin issues.

Comments:

CWE / CEE

CWE: Very high constraint detected in Doel-Mercator 380.54 in the first dataset of Elia. PST adapted to 6/6/12/15 and return of service of a busbar in Mercator 380KV substation from 18:30.
The remaining intraday ATC NL->BE has been reduced to zero to avoid worsening the situation.

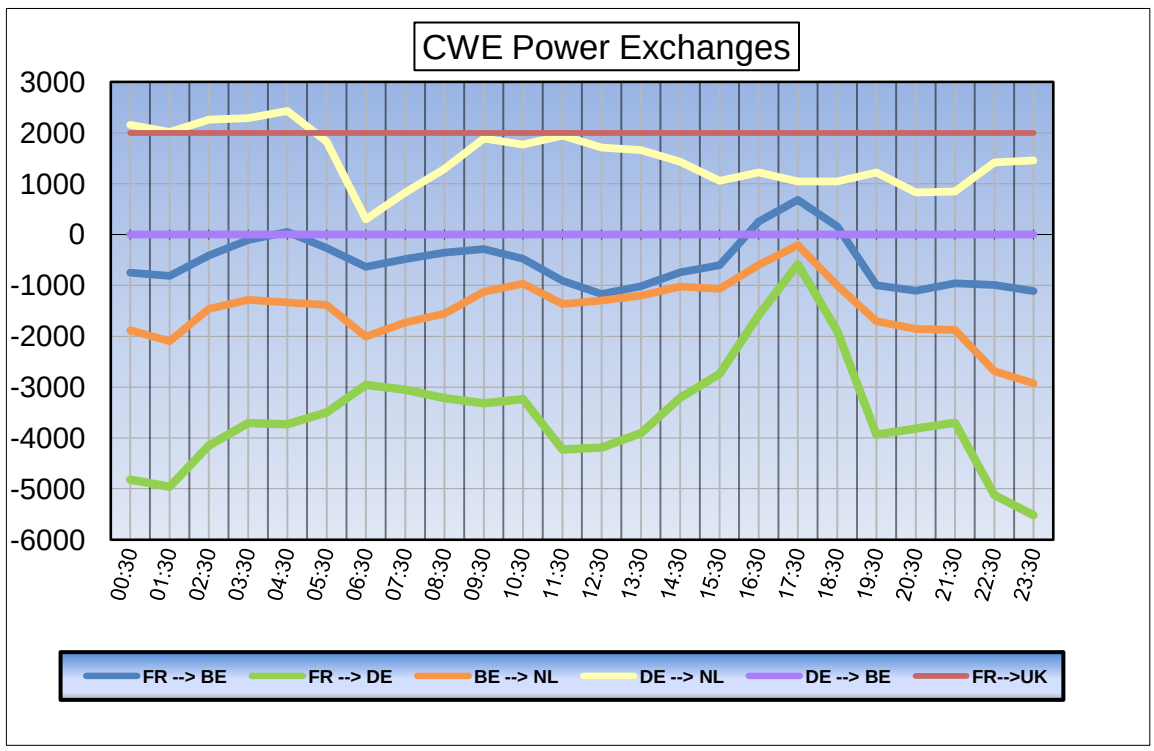
CSE

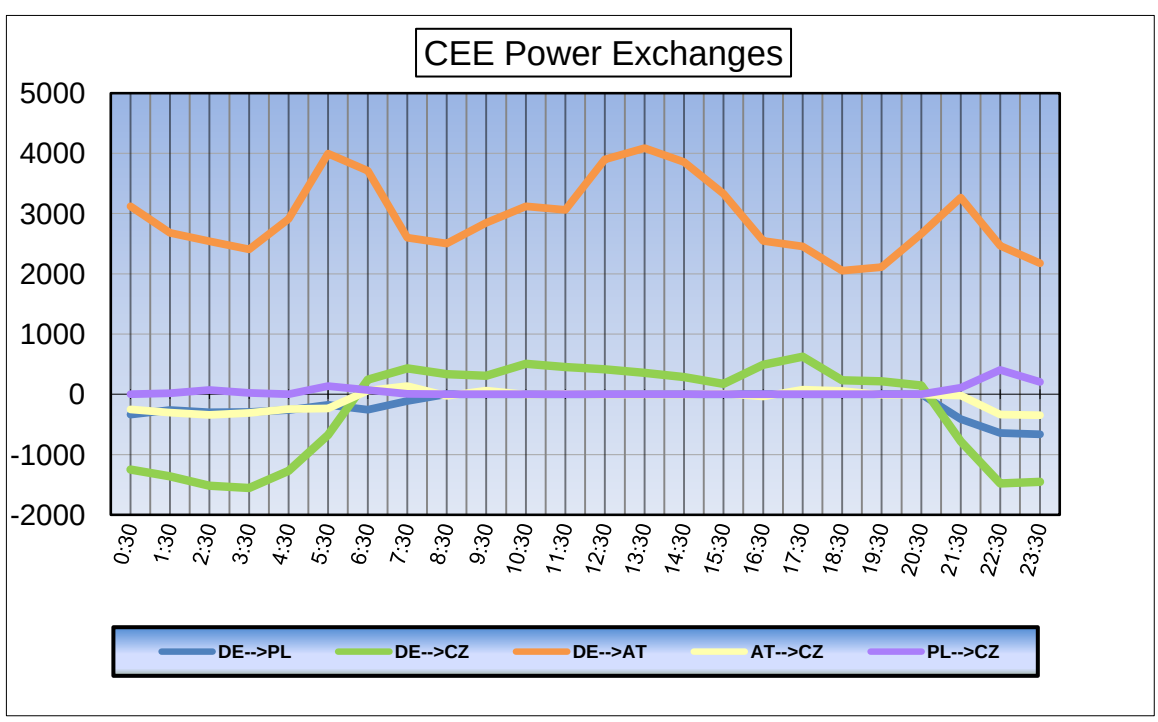
Outages table

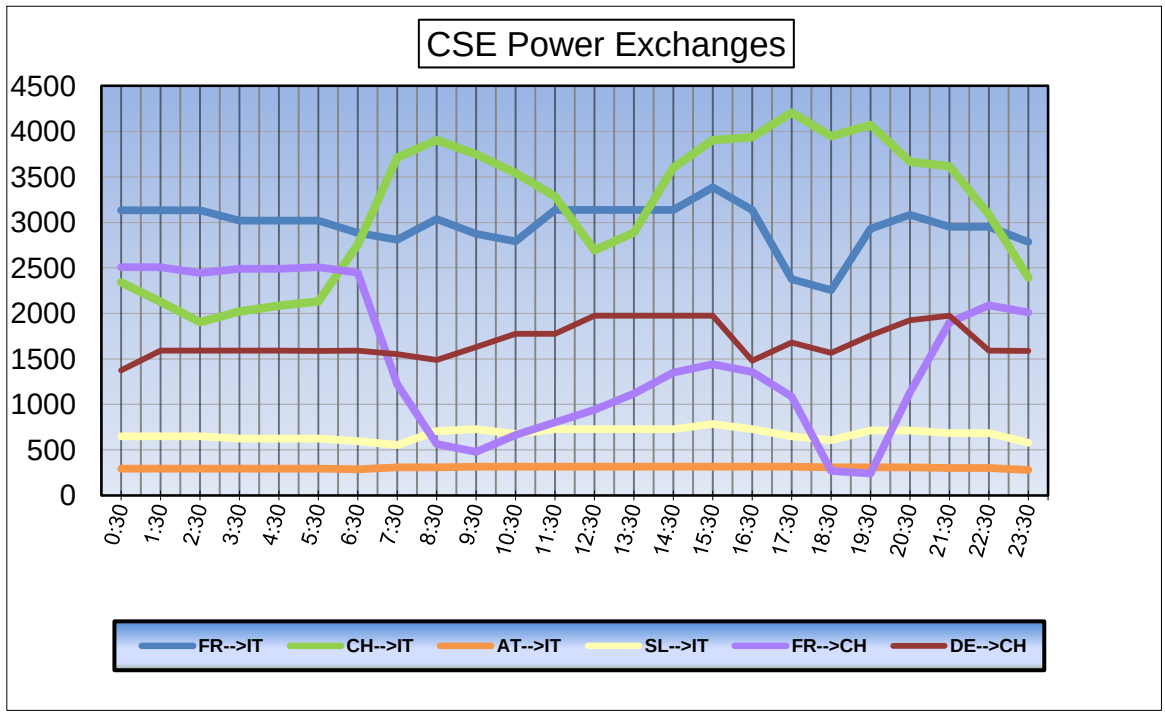
OUTAGES					
Owner	Type of element	Line name	start	end	Comments
50HzT	Hydro.Gen	MARKERSBACH _ Unit D 400 kV	28/09/2017	27/04/2018	160 MW
50HzT	Line	EULA _ Wolkramhausen 357 220 kV	04/02/2018	11/02/2018	
50HzT	Line	HAGENWERDER _ SCHMÖLLN 554 400 kV	22/01/2018	09/02/2018	permanently
50HzT	Line	HAMBURG Nord _ HAMBURG Ost 961 400 kV	05/02/2018	09/02/2018	daily - alternatively with line 962
50HzT	Line	HAMBURG Nord _ HAMBURG Ost 962 400 kV	05/02/2018	09/02/2018	daily - alternatively with line 961
50HzT	Line	REMPTENDORF _ VIESELBACH 416 400 kV	05/02/2018	11/02/2018	permanently
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 508 225 kV	22/06/2017	31/05/2018	long term outage
50HzT / TEN DE	Line	HELMSTEDT _ WOLMIRSTEDT 491 400 kV	05/02/2018	09/02/2018	daily
50HzT / TEN DE	Line	HELMSTEDT _ WOLMIRSTEDT 491 400 kV	05/02/2018	09/02/2018	daily
50HzT / TEN DE	Line	HELMSTEDT _ WOLMIRSTEDT 492 400 kV	05/02/2018	09/02/2018	daily
AMP / TEN DE	Line	NEHDEN _ TWISTETAL W 400 kV	08/01/2018	23/02/2018	daily
CEPS	Line	BABYLON _ BEZDECIN 451 400 kV	01/02/2018	20/02/2018	permanently
CEPS / SEPS	Line	NOSOVICE _ VARIN 404 400 kV	15/01/2018	02/03/2018	permanently
CREOS	Line	BERTRANGE _ SCHIFFLANGE West 220 kV	08/01/2018	02/03/2018	
ELES / HOPS	Line	KRSKO _ TUMBRI 1 400 kV	22/01/2018	02/03/2018	permanently
ELIA	Line	DOEL _ MERCATOR 52 400 kV	01/02/2018	07/02/2018	permanently
ELIA	Line	GEZELLE _ MAERLANT 109 400 kV	25/01/2018	09/02/2018	permanently
ELIA	Line	GEZELLE _ STEVIN 111 400 kV	19/09/2017	02/03/2018	permanently
ELIA	Line	GEZELLE _ STEVIN 112 400 kV	19/09/2017	02/03/2018	permanently
ELIA	Line	MAERLANT _ GEZELLE 110 400 kV	25/01/2018	09/02/2018	permanently
ELIA	Line	MAERLANT _ HORTA 104 400 kV	05/02/2018	09/02/2018	permanently
ELIA	Nuc.Gen	DOEL _ Unit 3 (1000MW) 400 kV	23/09/2017	16/04/2018	forced outage
PSE	Fossil.Gen	DOLNA ODRA _ Unit 7 400 kV	30/01/2018	07/02/2018	
PSE	Line	BUJAKOW _ KOMOROWICE 1 220 kV	05/02/2018	05/02/2018	daily
PSE	Line	POLANIEC _ TARNOW 400 kV	05/02/2018	10/02/2018	daily
PSE	Line	TUCZNAWA _ RZESZOW 400 kV	05/02/2018	09/02/2018	daily
RTE	Line	BEAUMONT _ CHAFFARD 2 400 kV	05/02/2018	06/02/2018	
RTE	Line	CHEVALET _ ARGOEUVES 1 380 kV	24/01/2018	23/02/2018	
RTE	Line	CHEVALET _ ARGOEUVES 1 380 kV	24/01/2018	23/02/2018	
RTE	Line	CREYS _ ST VULBAS 1 400 kV	31/01/2018	07/02/2018	
RTE	Line	GENISSIAT _ VIELMOULIN 1 400 kV	29/01/2018	23/02/2018	
RTE	Line	MAZURES _ REVIN 2 400 kV	05/02/2018	09/02/2018	
RTE	Nuc.Gen	CRUAS _ Unit 2 (900MW) 400 kV	02/12/2017	30/03/2018	
RTE	Nuc.Gen	FESSENHEIM _ Unit 2 (900MW) 400 kV	01/01/2017	15/03/2018	
RTE	Nuc.Gen	PALUEL _ Unit 2 (1300MW) 400 kV	01/08/2015	15/04/2018	
S.GRID	Line	CHAMOSON _ MUHLEBERG "Sanetsch 2" 220 kV	24/10/2017	30/03/2018	
S.GRID	Line	CHATELARD _ NANT DE DRANCE 400 kV	16/01/2018	27/04/2018	
S.GRID	Line	HANDECK _ MOREL 220 kV	17/01/2018	06/02/2018	

Owner	Type of element	Line name	start	end	Comments
S.GRID	Nuc.Gen	BEZNAU _ BEZNAU G11 220 kV	13/03/2015	28/02/2018	182 MW
S.GRID	Nuc.Gen	BEZNAU _ BEZNAU G12 220 kV	13/03/2015	28/02/2018	182 MW
S.GRID	Transformer	BASSECOURT _ Transformer 400 kV	13/12/2017	31/03/2018	Trfo 32
TENNET DE	Generation	KUHTAI _ Unit 1 220 kV	02/10/2017	31/01/2019	142 MW
TENNET DE	Generation	KUHTAI _ Unit 2 220 kV	01/01/2017	01/10/2019	142 MW
TENNET DE	Generation	SILZ _ 2 220 kV	01/10/2017	01/10/2019	250 MW
TENNET DE	Generation	SILZ _ Unit M1 TIWAG 220 kV	01/10/2017	31/12/2018	250 MW
TENNET DE	Hydro.Gen	WALDECK _ UNIT 5 400 kV	15/01/2018	30/11/2018	240 MW
TENNET DE	Hydro.Gen	WALDECK _ UNIT 6 400 kV	15/01/2018	14/02/2018	240 MW
TENNET DE	Line	BORKEN _ BERGHAUSEN 1 400 kV	05/02/2018	06/02/2018	daily
TENNET DE	Line	FLENSBURG _ AUDORF GRUN 380 kV	05/02/2018	07/02/2018	
TENNET DE	Line	IRSCHING _ OTTENHOFEN 421 400 kV	05/02/2018	07/02/2018	daily
TENNET DE	Line	JARDELUND _ AUDORF Grün 380 kV	22/01/2018	05/02/2018	daily
TENNET DE	Line	KARBEN _ BORKEN 2 380 kV	05/02/2018	07/02/2018	daily
TENNET DE	Line	TWISTETAL _ BORKEN 3 400 kV	16/05/2017	11/10/2018	
TENNET DE	Line	WAHLE _ ALGERMISSEN 2 400 kV	05/02/2018	06/02/2018	daily
TENNET NL	Fossil.Gen	EEMSCENTRAAL _ EC6 400 kV	05/02/2018	09/02/2018	359 MW
TENNET NL	Fossil.Gen	EEMSHAVEN _ UNIT 1 400 kV	05/02/2018	09/02/2018	442 MW
TENNET NL	Generation	HEMWEG _ 8 380 kV	05/02/2018	09/02/2018	650 MW
TENNET NL	Generation	MAXIMA _ UNIT FL4 400 kV	05/02/2018	09/02/2018	435 MW
TENNET NL	Generation	MD _ 1 380 kV	05/02/2018	09/02/2018	348 MW
TENNET NL	Generation	MD _ 2 380 kV	05/02/2018	09/02/2018	426 MW
TENNET NL	Line	ENS _ ZWOLLE WT 400 kV	03/02/2018	09/02/2018	
TENNET NL	Line	WATERINGEN _ BLEISWIJK Black 400 kV	04/02/2018	09/02/2018	
TENNET NL	Line	WATERINGEN _ BLEISWIJK White 400 kV	04/02/2018	09/02/2018	
TERNA	Line	PLANAIS _ UDINE OVEST 321 400 kV	30/01/2018	05/02/2018	
TransnetBW	Line	BUNZWANGEN _ LAICHINGEN Grün 380 kV	05/02/2018	24/02/2018	
TransnetBW	Line	BUNZWANGEN _ LAICHINGEN Grün 380 kV	01/01/2018	24/02/2018	
TransnetBW	Line	DAXLANDEN _ PHILIPPSBURG GE 400 kV	05/02/2018	09/02/2018	daily
TransnetBW	Line	NEUROTT _ PHILIPPSBURG RT 400 kV	15/01/2018	07/02/2018	daily

Exchange program forecasts






CSE Power Exchanges
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0:30
1:30
2:30
3:30
4:30
5:30
6:30
7:30
8:30
9:30
10:30
11:30
12:30
13:30
14:30
15:30
16:30
17:30
18:30
19:30
20:30
21:30
22:30
23:30
FR-->IT
CH-->IT
AT-->IT
SL-->IT
FR-->CH
DE-->CH

ELIA expected flows & PSTs tap position

		Node 1	Node 2	Order	03:30	07:30	08:30	09:30	10:30	12:30	17:30	18:30	19:30	20:30	22:30	23:30
BE	FR	ACHENE	LONNY	380.19	315	657	633	639	674	805	263	478	797	803	813	822
BE	FR	AUBANGE	MONT ST MARTIN	220.51	-8	60	15	24	14	75	-86	-32	86	107	80	100
BE	FR	AUBANGE	MOULAINE	220.51	-21	47	2	10	2	58	-98	-36	67	87	61	85
BE	FR	AVELGEM	AVELIN	380.80	253	578	676	670	750	975	208	537	1111	1005	820	831
BE	FR	AVELGEM	MASTAING	380.79	-69	89	140	133	193	363	-191	-76	179	176	92	94
BE	FR	MONCEAU	CHOOZ	220.48	-129	-36	-35	-36	-24	23	-97	-75	-12	9	-93	-95
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-603	-712	-717	-698	-664	-682	-440	-627	-776	-747	-849	-933
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	-820	-866	-867	-767	-733	-860	-311	-597	-901	-964	-1104	-1204
BE	NL	ZANDVLIET	BORSSELE	380.29	-244	-823	-801	-729	-719	-762	-498	-713	-859	-865	-965	-753
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	132	-197	-173	1	36	-35	341	21	-254	-273	-448	-590
BE	LU	BELVAL	SCHIFFLANGE	220.511	1	-54	-90	-96	-31	-98	12	-55	-154	-102	-122	-182

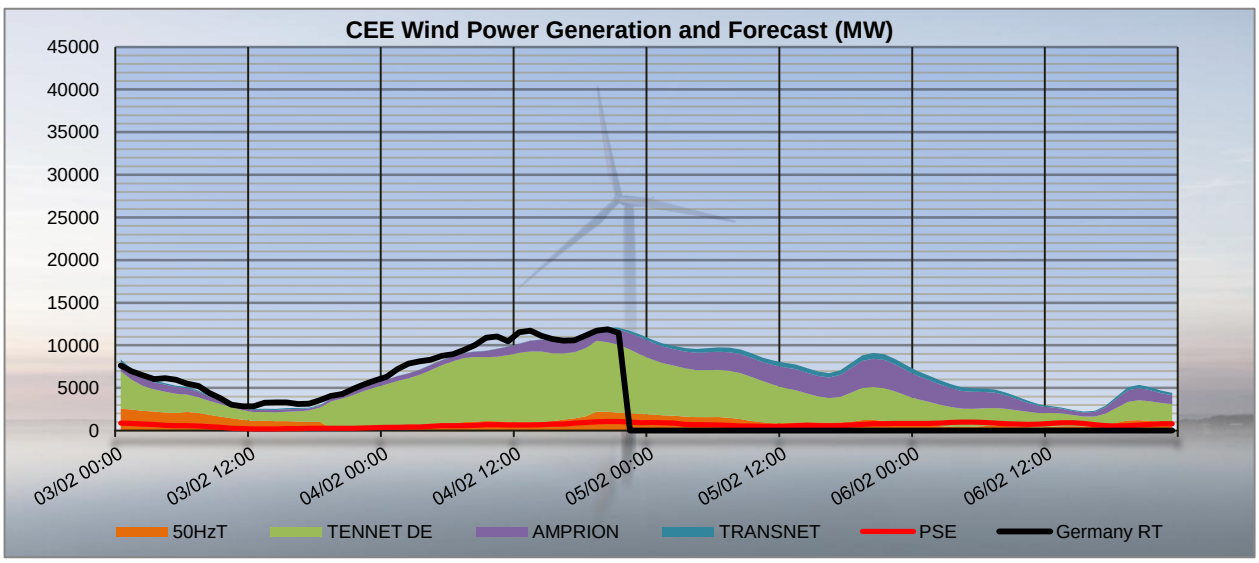
				03:30	07:30	08:30	09:30	10:30	12:30	17:30	18:30	19:30	20:30	22:30	23:30
BE	FR	TOTAL		341	1395	1431	1440	1609	2299	-1	796	2228	2187	1773	1837
BE	NL	TOTAL		-1535	-2598	-2558	-2193	-2080	-2339	-908	-1916	-2790	-2849	-3366	-3480
BE	LU	TOTAL		1	-54	-90	-96	-31	-98	12	-55	-154	-102	-122	-182
TOTAL BELGIAN IMPORT/EXPORT				-1193	-1257	-1217	-849	-502	-138	-897	-1175	-716	-764	-1715	-1825

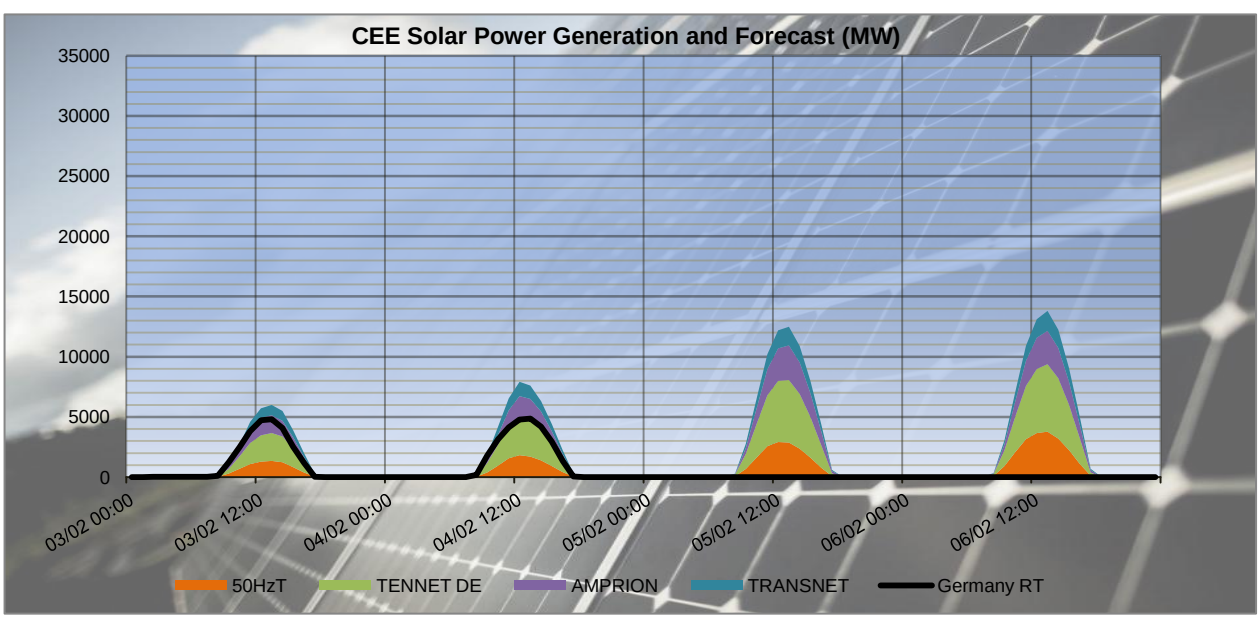
		03:30	07:30	08:30	09:30	10:30	12:30	17:30	18:30	19:30	20:30	22:30	23:30
PST taps in DACF	**Zandvliet 1**	6	6	6	6	6	6	6	6	6	6	6	6
	Zandvliet 2	6	6	6	6	6	6	6	6	6	6	6	6
	Van Eyck 1	12	12	12	12	12	12	12	12	12	12	12	12
	Van Eyck 2	15	15	15	15	15	15	15	15	15	15	15	15
	Average	10	10	10	10	10	10	10	10	10	10	10	10

		03:30	07:30	08:30	09:30	10:30	12:30	17:30	18:30	19:30	20:30	22:30	23:30
CREOS PST in DACF	**Schifflange**	13	13	13	13	13	13	13	13	13	13	13	13

Proposal for real time after D-1 studies																								
Timestamps		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
PSTs																									
Zandvliet PST 1	[1;35]	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Zandvliet PST 2	[1;35]	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Van Eyck PST 1	[1;35]	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Van Eyck PST 2	[1;35]	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Schifflange PST 1	[1;35]	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

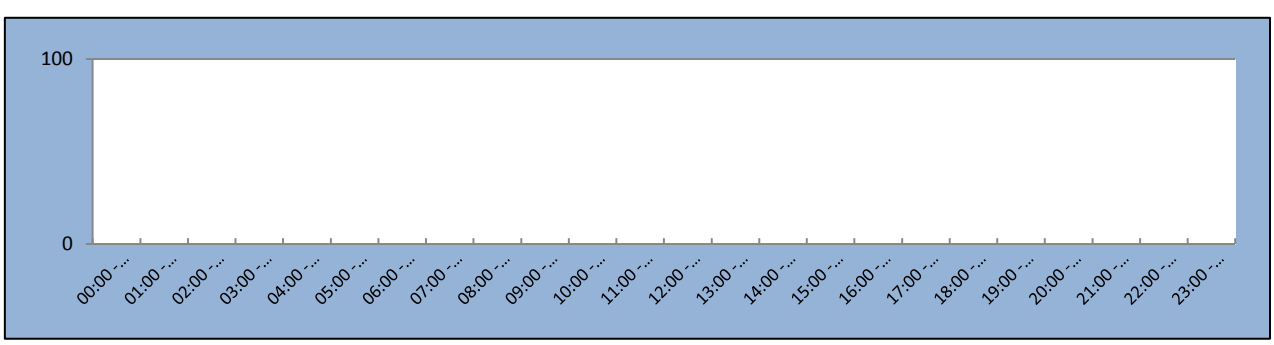
CEE Renewable Power Generation & Forecast



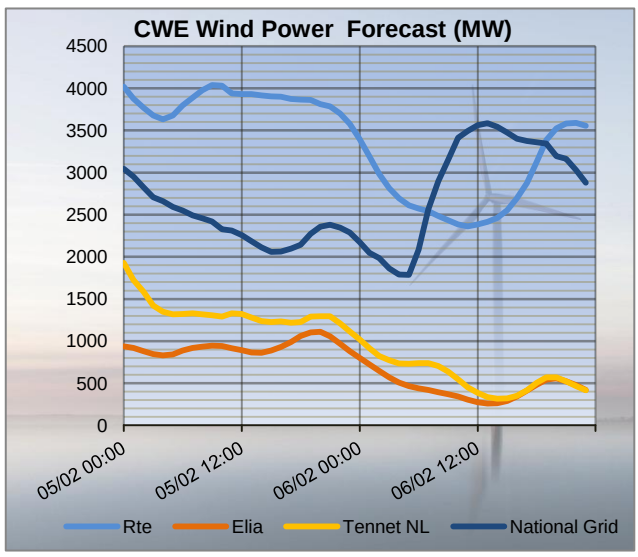


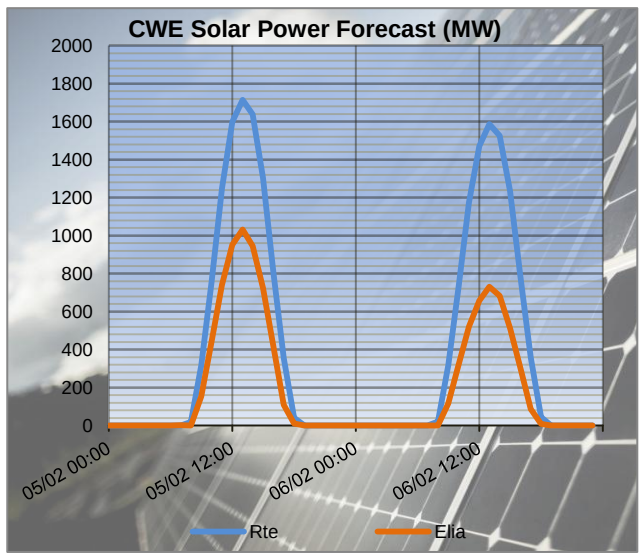
The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

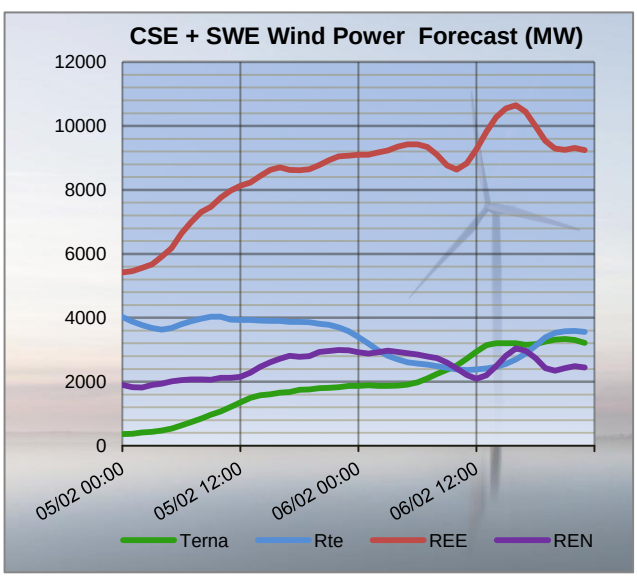
50HzT Preventive Redispatch

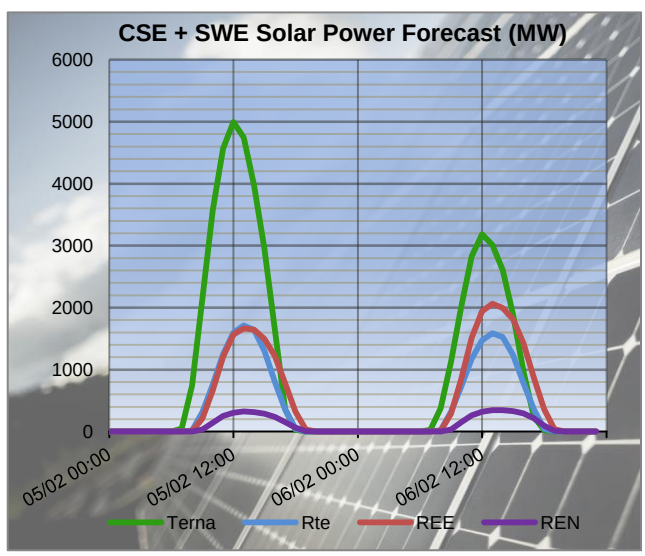


CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)









The charts above show the latest wind and solar generation forecasts for D-1 and D-2 for all the European TSOs in CWE, CSE and SWE with a significant installed capacity. Source: Meteologica

RTE flows on cross-border lines

With last provided tap position on Belgian PSTs:

				03:30			07:30			10:30			12:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	-367	-319	48	-593	-661	-68	-563	-678	-115	-607	-810	-203
FR	BE	MONT ST MARTIN	AUBANGE	-51	-29	22	-70	-97	-27	9	-52	-61	-18	-112	-94
FR	BE	MOULAINE	AUBANGE	-35	-14	21	-56	-83	-27	21	-37	-58	-4	-94	-90
FR	BE	AVELIN	AVELGEM	-542	-252	**290**	-780	-577	203	-838	-750	88	-891	-974	-83
FR	BE	MASTAING	AVELGEM	-101	70	171	-92	-89	3	-80	-192	-112	-105	-362	**-257**
FR	BE	CHOOZ	MONCEAU	57	129	72	53	36	-17	48	24	-24	66	-23	-89
FR	DE	MUHLBACH	EICHSTETTEN	183	162	-21	54	164	110	-188	-29	159	-263	-80	183
FR	DE	VOGELGRUN	EICHSTETTEN	-31	-13	18	-18	-11	7	-66	-46	20	-71	-61	10
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	-247	-234	13	-247	-191	56	-256	-311	-55	-340	-466	-126
FR	DE	VIGY	ENSDORF 2	-237	-221	16	-197	-125	72	-239	-282	-43	-345	-457	-112

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	-330	-267	63	-889	-797	92	-640	-822	-182
FR	BE	MONT ST MARTIN	AUBANGE	42	49	7	-128	-86	42	-51	-100	-49
FR	BE	MOULAINE	AUBANGE	56	62	6	-107	-67	40	-39	-85	-46
FR	BE	AVELIN	AVELGEM	-234	-208	26	-1090	-1111	-21	-728	-831	-103
FR	BE	MASTAING	AVELGEM	196	192	-4	-154	-179	-25	-42	-94	-52
FR	BE	CHOOZ	MONCEAU	129	97	-32	43	12	-31	63	95	32
FR	DE	MUHLBACH	EICHSTETTEN	172	285	113	-266	-196	70	-214	-132	82
FR	DE	VOGELGRUN	EICHSTETTEN	2	48	46	-81	-54	27	-77	-64	13
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	81	136	55	-398	-451	-53	-319	-564	-245
FR	DE	VIGY	ENSDORF 2	177	249	72	-410	-453	-43	-361	-613	**-252**

				03:30			07:30			10:30			12:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	303	374	71	115	291	176	-52	204	**256**	-113	217	**330**
FR	CH	MAMBELIN	BASSECOURT	-153	-323	-170	-322	-365	-43	-377	-383	-6	-436	-427	9
FR	CH	SIERENTZ	BASSECOURT	649	324	**-325**	571	366	-205	518	384	-134	523	429	-94
FR	CH	BOIS TOLLOT	ROMANEL	194	28	-166	-89	-284	-195	-10	-233	-223	-31	-125	-94
FR	CH	SIERENTZ	LAUFENBURG	254	356	102	10	175	165	-104	67	171	-162	107	**269**
FR	CH	CORNIER	RIDDES	-75	-48	27	-139	-105	34	-123	-93	30	-133	-81	52
FR	CH	CORNIER	ST TRIPHON	-88	-82	6	-144	-124	20	-125	-102	23	-144	-98	46
FR	CH	PRESSY	VALLORCINES	-173	-163	10	-335	-305	30	-289	-286	3	-302	-273	29
FR	CH	BOIS TOLLOT	VERBOIS	142	164	22	155	179	24	146	212	66	135	223	88
FR	CH	GENISSIAT	VERBOIS	96	71	-25	61	31	-30	74	67	-7	46	82	36
FR	CH	GENISSIAT	VERBOIS	96	71	-25	61	31	-30	74	67	-7	46	82	36
FR	IT	ALBERTVILLE	RONDISSONE	602	562	-40	615	599	-16	570	582	12	494	541	47
FR	IT	ALBERTVILLE	RONDISSONE	625	537	-88	687	631	-56	644	614	-30	540	544	4
FR	IT	MENTON	CAMPOROSSO	258	203	-55	155	193	38	160	209	49	153	203	50
FR	IT	VILLARODIN	VENAUS	131	232	101	554	692	138	446	710	**264**	343	654	**311**

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	122	355	233	-116	104	220	-54	255	**309**
FR	CH	MAMBELIN	BASSECOURT	-212	-254	-42	-437	-421	16	-408	-471	-63
FR	CH	SIERENTZ	BASSECOURT	467	255	-212	527	423	-104	603	473	-130
FR	CH	BOIS TOLLOT	ROMANEL	120	-196	**-316**	-62	-375	**-313**	-170	-130	40
FR	CH	SIERENTZ	LAUFENBURG	70	128	58	-115	-44	71	-50	159	209
FR	CH	CORNIER	RIDDES	-75	-66	9	-130	-120	10	-173	-112	61
FR	CH	CORNIER	ST TRIPHON	-79	-78	1	-131	-131	0	-223	-154	69
FR	CH	PRESSY	VALLORCINES	-196	-241	-45	-280	-313	-33	-340	-263	77
FR	CH	BOIS TOLLOT	VERBOIS	176	237	61	124	183	59	77	142	65
FR	CH	GENISSIAT	VERBOIS	98	69	-29	40	11	-29	-11	34	45
FR	CH	GENISSIAT	VERBOIS	98	69	-29	41	11	-30	-11	34	45
FR	IT	ALBERTVILLE	RONDISSONE	730	707	-23	573	594	21	402	420	18
FR	IT	ALBERTVILLE	RONDISSONE	822	740	-82	610	566	-44	411	383	-28
FR	IT	MENTON	CAMPOROSSO	145	192	47	145	208	63	145	198	53
FR	IT	VILLARODIN	VENAUS	630	873	243	527	792	**265**	114	293	179

N state flows at 10:30 and 19:30

The Imax and load values in the table below are extracted from the merged TSOs' DACF.

TSO	Line (380 kV)	10:30		19:30	
		Imax (A)	% of Imax	Imax (A)	% of Imax
ELIA	Champion - Gramme (32)	2448	44	2448	45
	Doel - Mercator (51)	2239	46	2239	42
	Doel - Mercator (52)	2239	0	2239	42
	Doel - Mercator (54)	2448	46	2448	42
	Doel - Zandvliet (25)	2349	12	2349	25
	Mercator - Horta (73)	2569	43	2569	55
	Courcelles - Gramme (31)	2349	49	2349	50
	Mercator - Rodenhuize/Horta (74)	2349	47	2349	60
RTE	Attaques - Warande 2	3780	58	3780	61
	Avelin - Gavrelle	2622	70	2622	84
	Avelin - Warande	3458	7	3458	13
	Lonny - Seuil	4149	32	4149	34
	Mandarins - Warande 1	3780	55	3780	57
	Muhlbach - Scheer	2598	25	2598	21
	Revigny - Vigy	2596	57	2596	61
	Warande - Weppes	3458	6	3458	10

X < 50 % of Imax 50 ≤ X < 75 % of Imax X ≥ 75 % of Imax

TSO	Voltage	Line (380 kV)	10:30		19:30	
			Imax (A)	% of Imax	Imax (A)	% of Imax
50 HzT	380 kV	Eisenach - Mecklar (450-2)	2520	3	2520	11
		Hagenwerder - Mikulowa (567)	2520	18	2520	22
		Hagenwerder - Mikulowa (568)	2520	18	2520	22
		Remptendorf - Redwitz (413)	3572	34	3594	39
		Remptendorf - Redwitz (414)	3572	34	3594	39
		Röhrsdorf - Hradec (445)	2520	31	2520	27
		Röhrsdorf - Hradec (446)	2520	31	2520	27
		Vieselbach - Mecklar (449-1)	2520	5	2520	15
		Wolmirstedt - Helmstedt (491-1)	2400	0	2400	5
		Wolmirstedt - Helmstedt (492-2)	2400	0	2400	5
	220 kV	Vierraden - Krajnik (507)	1370	0	1370	0
		Vierraden - Krajnik (508)	1370	0	1370	0

X < 50 % of Imax 50 ≤ X < 75 % of Imax X ≥ 75 % of Imax

Special topologies at 10:30 and 19:30

Nodes in North area				
			10:30	19:30
380 kV	Elia	Doel	1	1
		Avelgem	2	1
	Rte	Warande	1	1
		Cergy	2	2
		Terrier	1	1
		Plessis Gassot	1	1
		Mery/Seine	2	2
		Muhlbach	1	1
		Vigy	2	2
	Transnet bw	Eichstetten	1	1
	Amprion	Uchtelfangen	1	1
	Tennet DE	Redwitz	1	1
	50 HzT	Remptendorf	1	1
		Wolmirstedt	1	1
	CEPS	Hradec Vychod	1	1
220 kV	50 HzT	Pasewalk	1	1

North analyses results

Security analyses have been performed for 24 timestamps.
All remedial actions have been agreed with concerned TSO during the day ahead process.

Constraints on Elia, RTE (North) and 50HzT 400kV grids and tie-lines

TSO	Validity	Contingency				Constraint					Timestamps of max
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
Elia	19:30 & 22:30-23:30	380	Mercator	Busbar	1A	107%	380	Horta	Mercator	74	23:30
		Curative action: 2 nodes in Horta 380 KV substation => 96% remaining									
Rte	11:30-12:30 & 19:30-23:30	380	Mandarin	Warandes		105%	380	Attaques	Warandes		19:30
		Curative action: 2 nodes Warande 380 KV substation => 91% remaining									
Rte	09:30 -14:30 & 19:30-20:30	380	Avelin	Busbar		98% (5')	380/220	Mastaing	TFO	1	19:30
		Preventive action: Isolate busbar in Mastaing 380 KV with TFO 1 **Curative action:** Open 220KV line Beautor-Setie, then 2 nodes in 220KV Dechy, then open 220KV line Beautor-Capel, then open 220 KV line Vezilly-Longchamp => 94% remaining									

Constraints greater than 100% on NL + Amprion 400kV grids and greater than 120% on DE, CZ, PL and SK 400kV grids

TSO	Validity	Contingency				Constraint					Timestamps of max
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
Amprion	06:30 - 15:30 & 20:30	380	Opladen	Halfeshof	W	107%	380	Knapsack	Sechtem		08:30
		Preventive action: redispatch (note: constraint not detected after final run of TSCnet)									

Constraints on ELIA 220/150kV grid at 10:30

Contingency				Constraint					Comments
U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
380	Horta	Busbar		110%	150	Koksijde	Slijkens		
380	Mercator	Busbar	1A	131%	150	Lillo	Zandvliet		

50HzT DC loopflows sensitivity

Vierraden-Krajnik 220kV axis in long term outage till end of May 2018.

South analyses results

Security analyses have been performed for these 2 timestamps:

- Off-peak period (23:00 – 07:00): **01:30**
- Peak period (07:00 – 23:00): **15:30**

Adaptations made on merged DACFs:

Off-peak:

- SI ➔ IT physical flow adapted to **1070 MW** (not possible to reach the target flow of 800 MW)
- Mendrisio-Cagno flow adapted to the schedule : **110 MW**
- PST of Lienz adapted to **130 MW**
- PST of Camporosso adapted to **200 MW**
- PST of La Praz on **tap 1**

Peak:

- SI ➔ IT physical flow adapted to the target of **800 MW**
- Mendrisio-Cagno flow adapted to the schedule : **100 MW**
- PST of Lienz adapted to **130 MW**
- PST of Camporosso adapted to **200 MW**
- PST of La Praz on **tap 1**

Special topologies

Nodes in South area				
			Off Peak	Peak
380 kV	Swissgrid	Sils	1	1
		Robbia	2	2
	Rte	Génissiat	1	1
		Albertville	2	2
		Grande Ile	1	1
	Terna	Turbigo	1	1
		Baggio	1	1
		Bovisio	**1**	**2**
		Ostiglia	1	1

N state flows Off-Peak & Peak

The Imax and load values in the table below are extracted from the **adapted** merged TSOs' DACF.

TSO	Voltage	Line (380 kV)	Off Peak		Peak	
			Imax (A)	% of Imax	Imax (A)	% of Imax
Terna	380 kV	Albertville - Rondissone 1	2370	33	2370	45
		Albertville - Rondissone 2	2370	32	2370	48
		Bulciago - Soazza	2300	41	2300	56
		Cagno - Mendrisio	855	18	855	19
		Musignano - Lavorgo	2270	58	2270	76
		Redipuglia - Divaca	2700	38	2700	34
		Robbia - San Fiorano	2530	41	2530	58
		Robbia - Gorlago	2530	55	2530	70
		Venaus - Villarodin	2715	12	2715	46
	220 kV	Airolo - Ponte	900	10	900	7
		Lienz - Soverzene	750	43	750	42
		Menton - Campo Rosso	1165	41	1165	43
		Padriciano - Divaca	960	95	960	41
		Riddes - Avise	1010	8	1010	42
		Riddes - Valpelline	1010	9	1010	46
		Serra - Pallanzeno	900	18	900	25

For Terna:

X < 50 % of Imax | 50 ≤ X < 75 % of Imax | X ≥ 75% of Imax

Sensitivity coefficients for the Pentalateral instruction

The amount of the control program curtailment on peak and off-peak can be calculated thanks to the sensitivities in the table below:

		FR → IT	CH → IT	AT → IT	SI → IT
Off Peak	Initial physical flows on adapted base case	1472	3494	131	1071
	Compensation ratio (calculated from NTC)	39%	49%	4%	8%
	Pentalateral impact on physical flows	-26%	-56%	-4%	-14%
Peak	Initial physical flows on adapted base case	2540	4862	126	802
	Compensation ratio (calculated from NTC)	38%	50%	4%	9%
	Pentalateral impact on physical flows	-27%	-54%	-4%	-15%

OFF PEAK

Off Peak constraints on APG, Eles, RTE (South), Swissgrid and Terna 400kV grids and tie-lines

	TSO	Contingency				Constraint				
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code
Off - Peak	SWG / Terna / Eles	380	Sils - Filisur	Robbia - Pradella - Sils	N-2	123%	380/220	Redipuglia	Tfo	
						119%	220	Padriciano	PST	
						115%	220	Padriciano	Divaca	
						105%	220	Monfalcone	Redipuglia	
		Curative action: Increase 7 taps on Divaca PST (from -32 to -25) => 95% remaining on Padriciano-Divaca, 98% on Padriciano PST, 96% on Monfalcone - Redipulglia, 105% on Redipuglia Tfo Note: 98% on Divaca PST								
	Terna / Eles / APG	380 / 220	Divaca	Redipuglia / Padriciano	N-2	106%	220	Lienz	Soverzene	
		Curative action: Decrease 2 taps on Lienz PST (22 -> 20) => 94% remaining								
	RTE	380	Albertville	Busbar	2A	103% (1')	220	Albertville	Longefans	
		Preventive action: Increase 3 taps on La Praz PST (1 -> 4) => 99% (1') remaining **Curative action:** Change tap position to tap 22 on La Praz PST => 98% (20') remaining								
After the preventive actions mentioned above, no more additional constraints detected.										

PEAK

Peak constraints on APG, Eles, RTE (South), Swissgrid and Terna 400kV grids and tie-lines

	TSO	Contingency				Constraint				
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code
Peak	SWG / Terna	380/220	Robbia	San Fiorano / Gorlago	N-2	110%	380	Lavorgo	Musignano	
						101%	380	Bulciago	Soazza	
						111%	380	Sils	Soazza	
		Preventive action: Increase the SI-IT target flow to 1100 MW => 104% remaining on Lavorgo - Musignano, 106% on Sils - Soazza, 95% on Bulciago - Soazza **Preventive action:** 2 nodes in Sils + Increse 8 taps on Lavorgo PST (8 -> 16) (agreed by Swissgrid) => 99% remaining on Lavorgo - Musignano, 92% on Sils - Soazza, 91% on Bulciago - Soazza, 102% on Lienz -Soverzene **Curative action:** Decrease 1 tap on Lienz PST (20 -> 19) => 99% remaining on Lavorgo - Musignano, 92% on Sils - Soazza, 92% on Bulciago - Soazza, 96% on Lienz - Soverzene									
	SWG / Terna / APG	380/220	Sils - Filisur	Robbia - Pradella - Sils	N-2	112%	380	Lavorgo	Musignano	
						100%	220	Lienz	Soverzene	
						106%	380	Sils	Soazza	
		Preventive action: Increase the SI-IT target flow to 1100 MW => 106% remaining on Lavorgo - Musignano, 101% on Sils - Soazza, 109% on Lienz - Soverzene **Preventive action:** 2 nodes in Sils + Increse 8 taps on Lavorgo PST (8 -> 16) (agreed by Swissgrid) => 98% remaining on Lavorgo - Musignano, 98% on Sils - Soazza, 96% on Bulciago - Soazza, 112% on Lienz - Soverzene **Curative action:** Decrease 2 taps on Lienz PST (20 -> 18) => 99% remaining on Lavorgo - Musignano, 98% on Sils - Soazza, 97% on Bulciago - Soazza, 99% on Lienz - Soverzene Note: 99% on Divaca PST									
	SWG	380/220	Bonaduz	Sils	N-2	107%	380	Pradella	La Punt	
		With preventive actions above: 84% remaining								
After the preventive actions mentioned above, no more additional constraints detected.										

Final PSTs settings

The tables below present the tap positions and the physical flows on different PSTs with the adaptations described at the top of the page (IT-SI target flow...) and preventive actions (before Pentalateral reduction).

PST	Off Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	214
Rondissone 1 (1/33)	30	517
Rondissone 2 (1/33)	32	541
Camporosso (-32/32)	-12	195
Lienz (-32/32)	-11	132
Padriciano (1/33)	33	364
Divaca (-32/32 each)	-32	709

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	621
Rondissone 1 (1/33)	30	746
Rondissone 2 (1/33)	32	703
Camporosso (-32/32)	2	187
Lienz (-32/32)	-13	170
Padriciano (1/33)	19	223
Divaca (-32/32 each)	-3	873

Conclusion

CWE: Constraint detected requiring low PST tap position and the return of service of Mercator 380KV busbar to manage the constraint.

CEE: Constraints detected requiring redispatch and topological actions to solve.

CSE: High constraints detected on Italian borders which requires an increase of the SI-IT target flow to 1100 MW and the use of preventive remedial actions.