CORESO Engineers ***North :*** CARNANDET Benoit ***South :*** GOSSIAUX Alain	**Day Ahead report for** **31 January 2018**

Security Levels:

CWE: Topological changes and redispatching (Germany) required on the 380kV grid to solve constraints.
In Zandvliet area high constraint detected on 150kV grid.

CEE: some N state overloads detected in Tennet DE grid and some constraints detected require redispatching, topological actions in 50Hertz area.

CSE : some constraints detected during the off-peak which need preventive actions on La Praz PST and Genissiat transformer.

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]	10000	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	1900
						900	**1**	
				Schw. Pumpe		800	2	1600
				Lippendorf		920	2	1840
RTE			RTE	Gravelines	Pmax (MW)	900	6	5400
Peak load [MW]	75000	19:00		Chooz		1500	2	3000
Generation Margin	Sufficient			Cattenom		1300	**3.5**	4550
				Fessenheim		900	**1**	900
NATIONAL GRID (UK time)				Penly		1300	2	2600
Peak load [MW]	45700	18:00		Paluel		1300	**3**	3900
Generation Margin	Sufficient			Nogent s/ Seine		1300	2	2600
				Bugey		900	4	3600
TERNA				St Alban		1300	2	2600
Peak load [MW]	47393	18:30		Cruas		900	**3**	2700
Generation Margin	Sufficient			Tricastin		900	4	3600

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

Creos : -2 taps in Schifflange PST between 07:00 - 09:00 to reduce LU-> BE flows.
RTE : Cattenom 3 in unplanned outage should come back at 06:00 am.

CSE

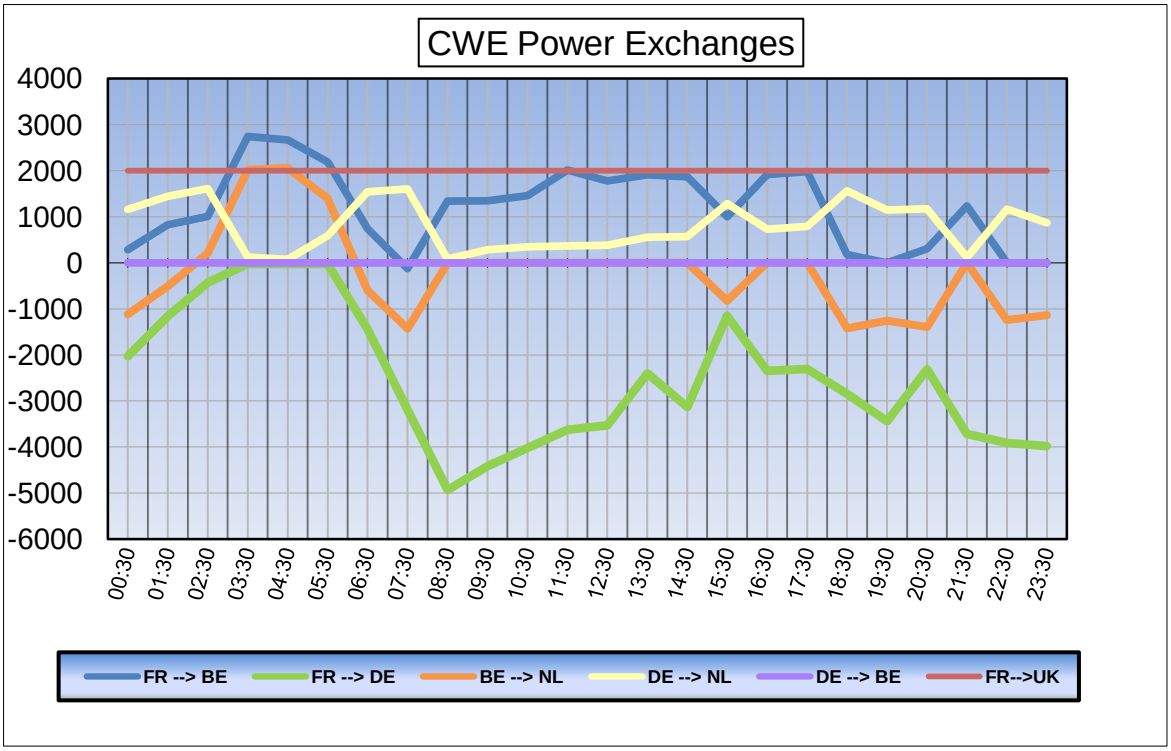
For the timestamp of 09:30, the Serra-Pallanzeno 220 kV line is open on the merged file on Swissgrid demand concerning an outage in the zone.

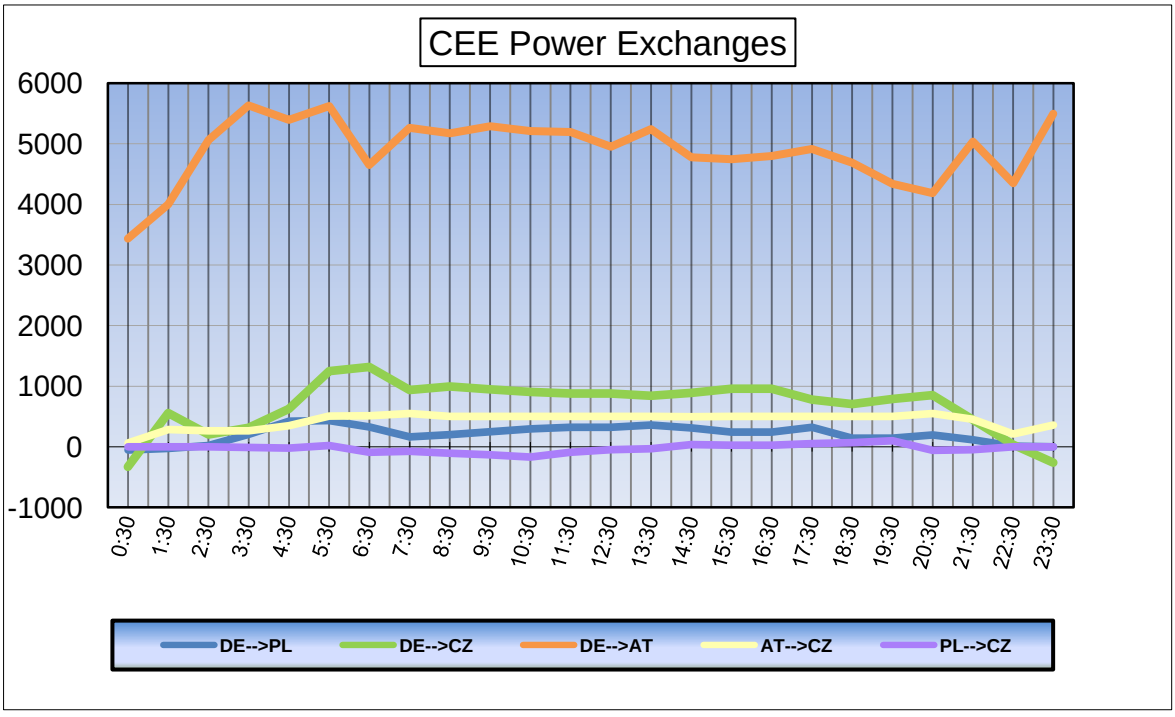
Outages table

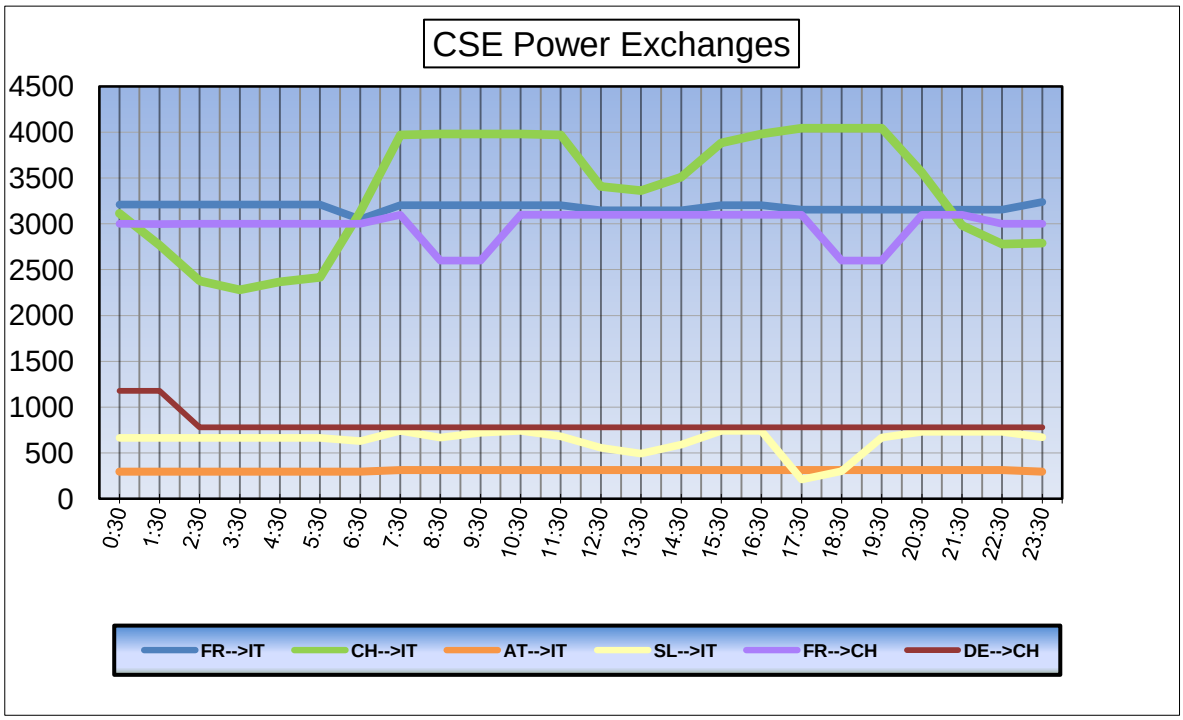
OUTAGES					
Owner	Type of element	Line name	start	end	Comments
50HzT	Hydro.Gen	MARKERSBACH _ Unit D 400 kV	28/09/2017	27/04/2018	160 MW
50HzT	Line	BERTIKOW _ NEUENHAGEN 303 220 kV	29/01/2018	31/01/2018	
50HzT	Line	EULA _ Wolkramhausen 357 220 kV	28/01/2018	04/02/2018	
50HzT	Line	HAGENWERDER _ SCHMÖLLN 554 400 kV	21/01/2018	14/02/2018	
50HzT	Line	HAMBURG Nord _ HAMBURG Ost 961 400 kV	29/01/2018	02/02/2018	Daily
50HzT	Line	HAMBURG Nord _ HAMBURG Ost 961 400 kV	29/01/2018	23/02/2018	
50HzT	Line	RAGOW _ WUSTERMARK 521 400 kV	28/01/2018	04/02/2018	
50HzT / CEPS	Line	HRADEC VYCHOD _ ROHRSDORF 445 400 kV	29/01/2018	02/02/2018	
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 507 225 kV	22/06/2016	31/05/2018	Long term outage
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 508 225 kV	22/06/2017	31/05/2018	Long term outage
AMP / TEN DE	Line	NEHDEN _ TWISTETAL W 400 kV	08/01/2018	23/02/2018	daily
AMP / TEN DE	Line	EHRENDORF _ OHLENSEHLEN DÜMMERSEE SÜD 1 400	31/01/2018	31/01/2018	
AMPRION	Line	NEHDEN _ ARPE Sud 400 kV	15/01/2018	02/02/2018	
APG	Line	ST PETER _ Salzburg 455 220 kV	29/01/2018	02/02/2018	
CEPS	Line	KOCIN _ REPORYJE 1 400 kV	29/01/2018	15/02/2018	
CEPS / SEPS	Line	NOSOVICE _ VARIN 404 400 kV	15/01/2018	02/03/2018	
CREOS	Line	BERTRANGE _ SCHIFFLANGE West 220 kV	08/01/2018	02/03/2018	
ELES / HOPS	Line	KRSKO _ TUMBRI 2 400 kV	22/01/2018	02/03/2018	
ELIA	Line	GEZELLE _ MAERLANT 109 400 kV	25/01/2018	09/02/2018	
ELIA	Line	GEZELLE _ STEVIN 111 400 kV	19/09/2017	02/03/2018	
ELIA	Line	GEZELLE _ STEVIN 112 400 kV	19/09/2017	02/03/2018	
ELIA	Line	MAERLANT _ GEZELLE 110 400 kV	25/01/2018	09/02/2018	
ELIA	Nuc.Gen	DOEL _ Unit 3 (1000MW) 400 kV	23/09/2017	16/04/2018	Forced outage
ELIA / TEN NL	Tie - line	MAASBRACHT _ VANEYCK 27 400 kV	31/01/2018	02/02/2018	
HOPS	Line	BRINJE _ KONJSKO 220 kV	29/01/2018	31/01/2018	
PSE	Line	CZARNA _ PASIKUROWICE 400 kV	27/01/2018	02/02/2018	
PSE	Line	POLANIEC _ TARNOW 400 kV	22/01/2018	02/02/2018	daily
PSE	Line	TUCZNAWA _ RZESZOW 400 kV	29/01/2018	02/02/2018	daily
RTE	Line	BOIS TOLLOT _ GENISSIAT 1 400 kV	29/01/2018	31/01/2018	
RTE	Line	CHEVALET _ ARGOEUVES 1 380 kV	24/01/2018	23/02/2018	
RTE	Line	COULANGE _ PIVOZ CORDIER 2 400 kV	29/01/2018	02/02/2018	
RTE	Line	GENISSIAT _ VIELMOULIN 1 400 kV	29/01/2018	23/02/2018	
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	
S.GRID	Line	LIMMERN _ TIERFEHD 1 400 kV	28/01/2018	31/07/2018	

Owner	Type of element	Line name	start	end	Comments
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	Trafo 32
TEN DE / APG	Line	SILZ _ OBERBRUNN 220 kV	30/01/2018	01/02/2018	
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	GROHNDE _ ALGERMISSEN 2 400 kV	29/01/2018	**31/01/2018**	
TENNET DE	Line	JARDELUND _ AUDORF Grün 380 kV	22/01/2018	09/02/2018	daily
TENNET DE	Line	MECKLAR _ DIPPERZ 2 400 kV	30/01/2018	01/02/2018	
TENNET DE	Line	OBERBACHERN _ OBERBRUNN 220 kV	30/01/2018	01/02/2018	
TENNET DE	Line	PLEINTIG _ KUPPLUNG 380 kV	22/01/2018	26/02/2018	
TENNET DE	Line	TWISTETAL _ BORKEN 3 400 kV	16/05/2017	11/10/2018	
TENNET NL	Line	BLEISWIJK _ KRIMPEN WT 400 kV	29/01/2018	02/02/2018	
TENNET NL	Line	BLEISWIJK _ KRIMPEN ZT 400 kV	29/01/2018	02/02/2018	
TENNET NL	Line	EINDHOVEN _ GEERTRUIDENBERG ZT 400 kV	29/01/2018	**31/01/2018**	
TERNA / S.GRID	Line	AVEGNO _ CAVERGNO 220 kV	**31/01/2018**	02/02/2018	
TERNA / S.GRID	Line	AVEGNO _ GORDUNO 1 220 kV	**31/01/2018**	02/02/2018	
TERNA / S.GRID	Line	PONTE _ AIROLO 225 kV	18/01/2018	05/02/2018	
TransnetBW	Line	BUNZWANGEN _ LAICHINGEN Grün 380 kV	01/01/2018	24/02/2018	
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	00:30	03:30	04:30	07:30	08:30	10:30	12:30	15:30	17:30	19:30	21:30	23:30
BE	FR	ACHENE	LONNY	380.19	281	-275	-234	332	407	285	124	-18	45	471	295	416
BE	FR	AUBANGE	MONT ST MARTIN	220.51	55	-87	-62	110	113	85	38	-24	-23	126	50	88
BE	FR	AUBANGE	MOULAINE	220.51	46	-87	-64	100	110	79	27	-23	-22	116	45	83
BE	FR	AVELGEM	AVELIN	380.80	59	-554	-531	282	353	172	65	-176	-193	459	276	510
BE	FR	AVELGEM	MASTAING	380.79	-47	-247	-222	-1	27	-94	-166	-306	-287	-19	-18	107
BE	FR	MONCEAU	CHOOZ	220.48	-94	-123	-111	-90	-78	-106	-134	-160	-159	-94	-109	-75
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-576	-115	-112	0	0	0	0		0	0	0	0
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	-31	506	491	-757	-822	-658	-611	-348	-483	-846	-758	-719
BE	NL	ZANDVLIET	BORSSELE	380.29	-636	-242	-251	-878	-944	-912	-873	-759	-764	-969	-658	-655
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	-444	219	214	-275	-375	-249	-192	-28	-86	-425	-289	-843
BE	LU	BELVAL	SCHIFFLANGE	220.511	-20	274	269	-130	-132	-68	-61	17	-9	-79	-76	-55

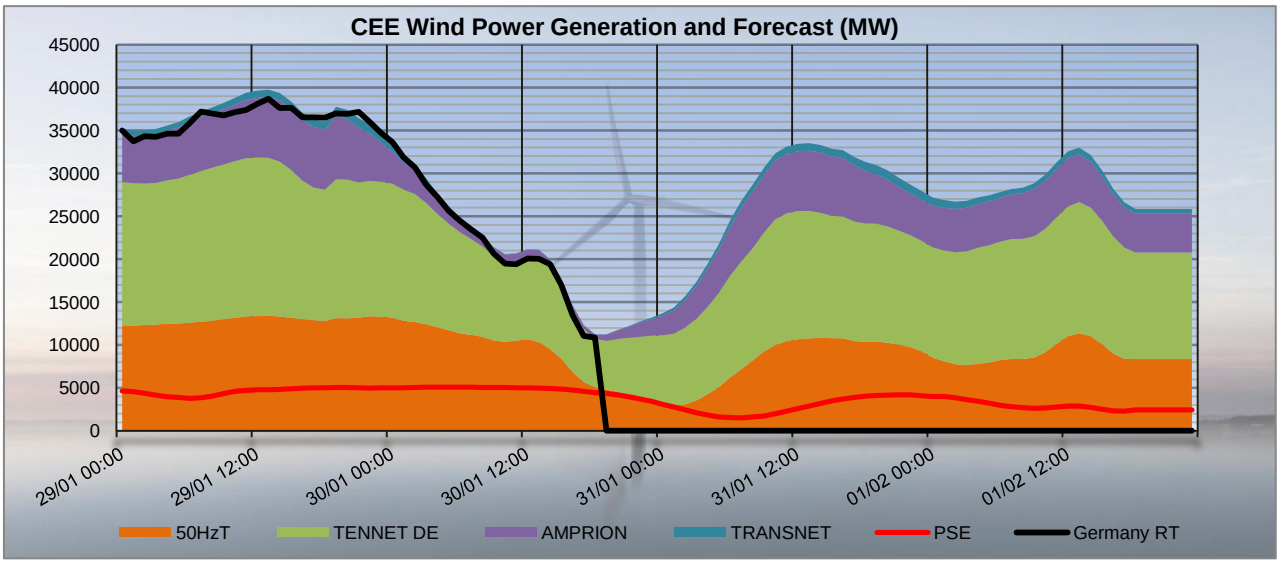
BE	FR	TOTAL		300	-1373	-1224	733	932	421	-46	-707	-639	1059	539	1129
BE	NL	TOTAL		-1687	368	342	-1910	-2141	-1819	-1676	-1135	-1333	-2240	-1705	-2217
BE	LU	TOTAL		-20	274	269	-130	-132	-68	-61	17	-9	-79	-76	-55
TOTAL BELGIAN IMPORT/EXPORT				-1407	-731	-613	-1307	-1341	-1466	-1783	-1825	-1981	-1260	-1242	-1143

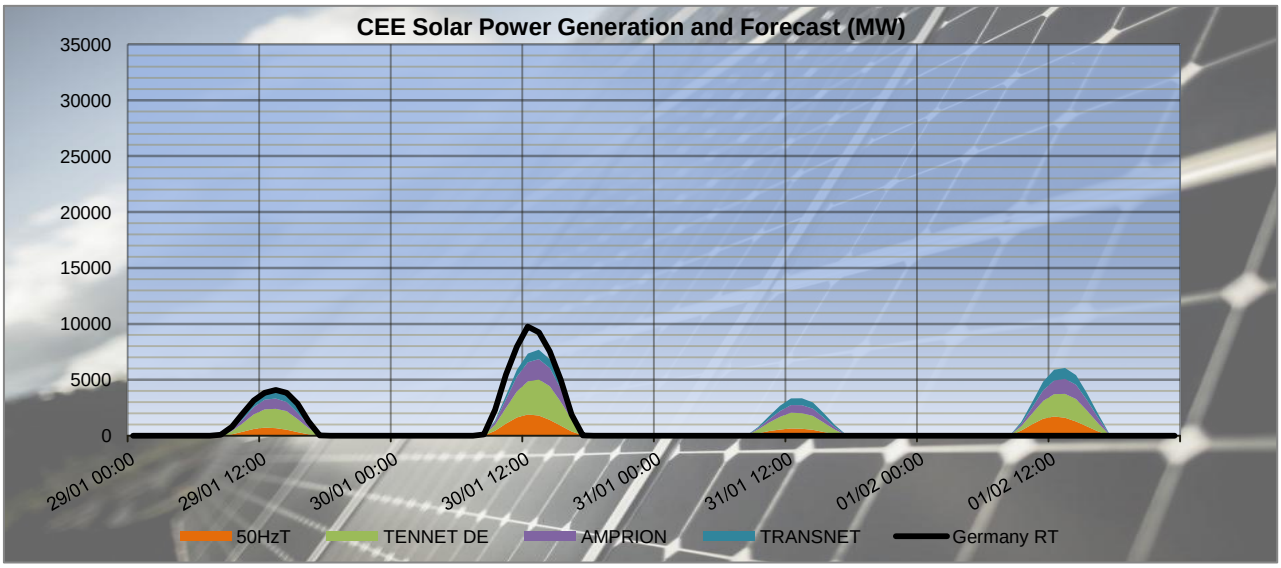
PST taps in DACF	**Zandvliet 1**	18	18	18	12	12	12	12	12	12	12	12	18
	Zandvliet 2	18	18	18	12	12	12	12	12	12	12	12	18
	Van Eyck 1	18	18	18	18	18	18	18	18	18	18	18	18
	Van Eyck 2	15	15	15	15	15	15	15	15	15	15	15	15
	Average	17	17	17	14	14	14	14	14	14	14	14	17

CREOS PST in DACF	**Schifflange**	17	17	17	15	15	17	17	17	17	17	17	17

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]**	18	18	18	18	18	18	18	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18
Zandvliet PST 2	**[1;35]**	18	18	18	18	18	18	18	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18
Van Eyck PST 1	**[1;35]**	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
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]**	17	17	17	17	17	17	17	13	13	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

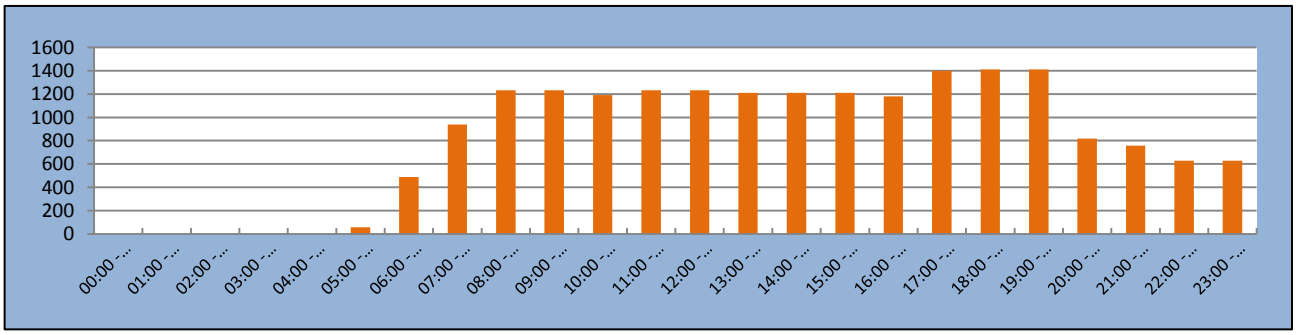
CEE Renewable Power Generation & Forecast



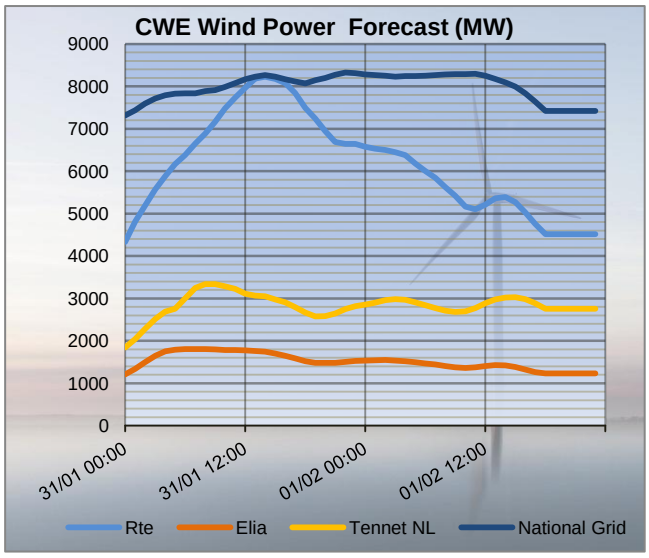


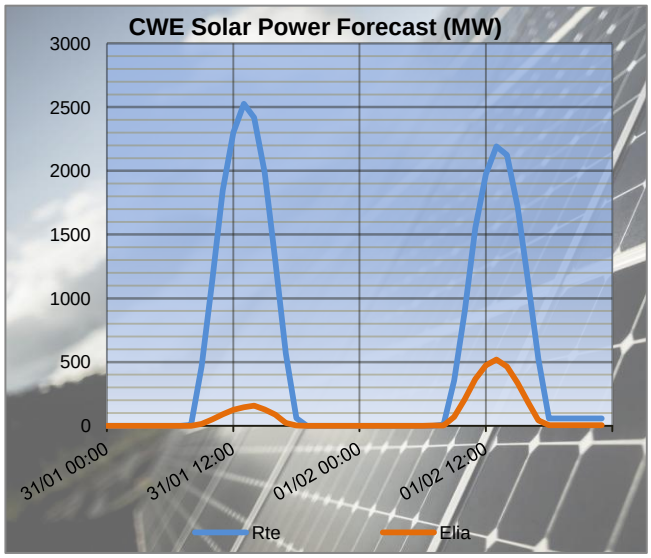
The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

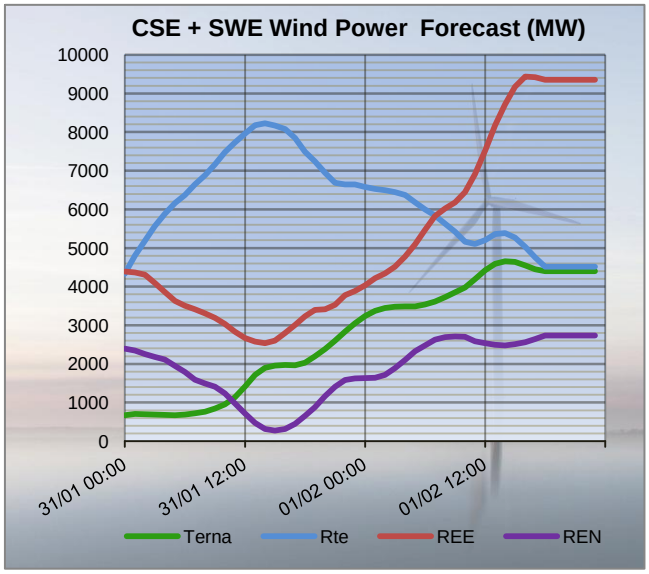
50HzT Preventive Redispatch

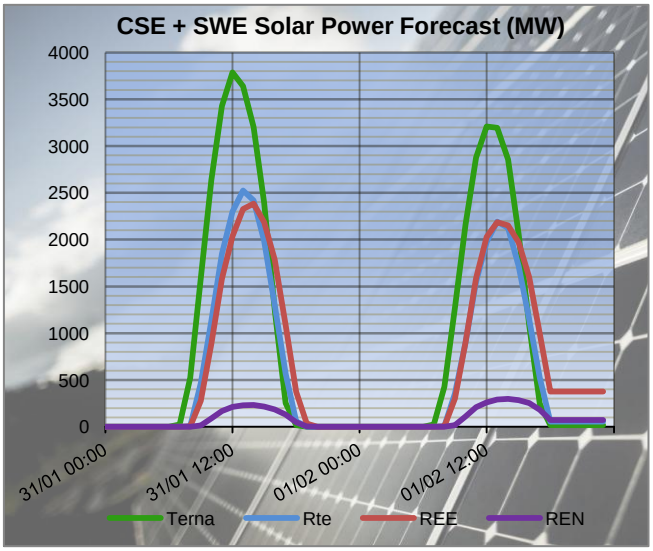


CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)









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	508	275	-233	-129	-332	-203	-84	-285	-201	58	-124	-182
FR	BE	MONT ST MARTIN	AUBANGE	116	87	-29	-44	-110	-66	-51	-85	-34	-18	-38	-20
FR	BE	MOULAINE	AUBANGE	114	87	-27	-38	-100	-62	-46	-79	-33	-7	-27	-20
FR	BE	AVELIN	AVELGEM	998	554	**-444**	141	-282	**-423**	228	-172	**-400**	337	-65	**-402**
FR	BE	MASTAING	AVELGEM	537	247	**-290**	314	1	**-313**	381	94	**-287**	436	166	**-270**
FR	BE	CHOOZ	MONCEAU	202	123	-79	152	90	-62	167	106	-61	196	134	-62
FR	DE	MUHLBACH	EICHSTETTEN	677	914	237	114	501	**387**	135	479	**344**	164	500	**336**
FR	DE	VOGELGRUN	EICHSTETTEN	69	103	34	-38	38	76	-34	60	94	-21	77	98
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	649	762	113	-142	-94	48	-91	23	114	-19	96	115
FR	DE	VIGY	ENSDORF 2	227	386	159	-289	-201	88	-175	-21	154	-87	65	152

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	121	-45	-166	-373	-471	-98	-273	-416	-143
FR	BE	MONT ST MARTIN	AUBANGE	47	23	-24	-110	-126	-16	-32	-88	-56
FR	BE	MOULAINE	AUBANGE	45	22	-23	-101	-116	-15	-29	-83	-54
FR	BE	AVELIN	AVELGEM	436	193	-243	-97	-459	**-362**	-46	-510	**-464**
FR	BE	MASTAING	AVELGEM	454	287	-167	263	19	-244	193	-107	**-300**
FR	BE	CHOOZ	MONCEAU	198	159	-39	142	94	-48	148	75	-73
FR	DE	MUHLBACH	EICHSTETTEN	493	709	216	164	352	188	-16	311	**327**
FR	DE	VOGELGRUN	EICHSTETTEN	61	104	43	-24	34	58	-63	36	99
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	150	236	86	-238	-96	142	-271	-76	195
FR	DE	VIGY	ENSDORF 2	114	234	120	-348	-172	176	-400	-167	233

				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	438	628	190	171	353	182	211	288	77	222	292	70
FR	CH	MAMBELIN	BASSECOURT	84	219	135	-244	-119	125	-204	-92	112	-166	-71	95
FR	CH	SIERENTZ	BASSECOURT	458	509	51	527	552	25	440	463	23	417	432	15
FR	CH	BOIS TOLLOT	ROMANEL	81	-16	-97	-304	-313	-9	-281	-323	-42	-243	-305	-62
FR	CH	SIERENTZ	LAUFENBURG	385	537	152	151	324	173	186	324	138	204	302	98
FR	CH	CORNIER	RIDDES	55	107	52	-124	-53	71	-109	-37	72	-69	-14	55
FR	CH	CORNIER	ST TRIPHON	46	77	31	-120	-76	44	-96	-54	42	-70	-21	49
FR	CH	PRESSY	VALLORCINES	-22	30	52	-277	-201	76	-266	-214	52	-216	-114	102
FR	CH	BOIS TOLLOT	VERBOIS	-183	-86	97	158	168	10	136	179	43	103	166	63
FR	CH	GENISSIAT	VERBOIS	333	333	0	119	95	-24	142	134	-8	160	167	7
FR	CH	GENISSIAT	VERBOIS	333	333	0	119	95	-24	142	134	-8	160	167	7
FR	IT	ALBERTVILLE	RONDISSONE	911	888	-23	804	784	-20	895	843	-52	859	806	-53
FR	IT	ALBERTVILLE	RONDISSONE	983	936	-47	870	826	-44	973	893	-80	946	868	-78
FR	IT	MENTON	CAMPOROSSO	260	195	-65	153	194	41	152	203	51	144	196	52
FR	IT	VILLARODIN	VENAUS	474	594	120	549	762	213	670	823	153	669	781	112

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	314	421	107	171	223	52	213	212	-1
FR	CH	MAMBELIN	BASSECOURT	-104	-10	94	-213	-151	62	-188	-122	66
FR	CH	SIERENTZ	BASSECOURT	393	429	36	420	443	23	566	562	-4
FR	CH	BOIS TOLLOT	ROMANEL	-234	-237	-3	-302	-308	-6	-33	-58	-25
FR	CH	SIERENTZ	LAUFENBURG	263	337	74	160	219	59	196	287	91
FR	CH	CORNIER	RIDDES	-108	-27	81	-137	-67	70	-92	-32	60
FR	CH	CORNIER	ST TRIPHON	-99	-40	59	-149	-80	69	-122	-74	48
FR	CH	PRESSY	VALLORCINES	-280	-185	95	-333	-205	128	-218	-148	70
FR	CH	BOIS TOLLOT	VERBOIS	264	269	5	201	234	33	138	199	61
FR	CH	GENISSIAT	VERBOIS	86	88	2	67	85	18	89	118	29
FR	CH	GENISSIAT	VERBOIS	86	88	2	67	85	18	89	118	29
FR	IT	ALBERTVILLE	RONDISSONE	884	826	-58	842	779	-63	740	674	-66
FR	IT	ALBERTVILLE	RONDISSONE	981	898	-83	957	864	-93	792	696	-96
FR	IT	MENTON	CAMPOROSSO	150	202	52	150	206	56	159	205	46
FR	IT	VILLARODIN	VENAUS	766	867	101	690	846	156	471	540	69

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	38	2448	42
	Doel - Mercator (51)	2239	42	2239	46
	Doel - Mercator (52)	2239	42	2239	46
	Doel - Mercator (54)	2448	42	2448	45
	Doel - Zandvliet (25)	2349	25	2349	32
	Mercator - Horta (73)	2569	26	2569	37
	Courcelles - Gramme (31)	2250	45	2349	48
	Mercator - Rodenhuize/Horta (74)	2260	30	2349	40
RTE	Attaques - Warande 2	3780	55	3780	61
	Avelin - Gavrelle	2622	35	2622	55
	Avelin - Warande	3458	11	3458	9
	Lonny - Seuil	4149	20	4149	24
	Mandarins - Warande 1	3780	52	3780	57
	Muhlbach - Scheer	2598	33	2598	29
	Revigny - Vigy	2596	28	2596	32
	Warande - Weppes	3458	16	3458	16

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	24	2520	30
		Hagenwerder - Mikulowa (567)	2520	26	2520	28
		Hagenwerder - Mikulowa (568)	2520	26	2520	28
		Remptendorf - Redwitz (413)	3440	57	3394	59
		Remptendorf - Redwitz (414)	3440	57	3394	59
		Röhrsdorf - Hradec (445)	2520	49	2520	42
		Röhrsdorf - Hradec (446)	2520	69	2520	60
		Vieselbach - Mecklar (449-1)	2520	25	2520	30
		Wolmirstedt - Helmstedt (491-1)	2400	3	2400	16
		Wolmirstedt - Helmstedt (492-2)	2400	3	2400	16
	220 kV	Vierraden - Krajnik (507)	1370	0	1307	0
		Vierraden - Krajnik (508)	1370	0	1307	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	19:00-24:00	380	Mercator	Busbar	1A	104%	380	Doel	Mercator	54	23:30
		Curative action: Decrease -3 taps 2 on Zandvliet PSTs (18->15) -> 97% remaining									
Rte	18:00-24:00	380	Warrande	Mandarins	1	105%	380	Warrande	Attaques	2	19:30
		Curative action: 2 Node in Warrande -> 87% remaining									
Tennet DE Tennet NL	02:00-06:00	380	Diele	Meeden	axis	108%	380	Diele	Meeden	remaining	04:30
		Preventive action: Decrease -1 tap on Meeden PST (17->16) -> 95% remaining									
50HzT / CEPS	06:00-19:00	380	Röhrsdorf	Hradec	446	111%	380	Röhrsdorf	PSTs	441	09:30
		Preventive action: Decrease -10 taps on Hradec PSTs -> 98% remaining									
50HzT	09:00-15:00 & 23:30	380	Rohrsdorf	Streumen	axis	106%	380	Rohrsdorf	Streumen	remaining	23:30
		Preventive action: 2 node in Streumen --> 99%, & Decrease -10 taps on Hradec PSTs -> 95%									
50HzT	14:30 & 20:00-24:00	380	Lauchstadt	Vieselbach	axis	108%	380	Lauchstadt	Vieselbach	remaining	21:30
		Preventive action: 2 node in Vieselbach & 2 node in Lauchstadt --> 85% remaining									
50HzT	05:00 - 06:00	380	Bärwalde	Schmölln	axis	100%	380	Bärwalde	Schmölln	remaining	05:30
		Preventive action: 2 node in Barwalde --> 84% remaining or monitoring in Real Time									

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

Tennet DE : some lines in N state overload. Maximum values detected at 9:30, 101% in Mekklar - Dipperz and Irsching-Ottenhofen. They lead some constaints and needing of redispatching (DOPT information).

TSO	Validity	Contingency				Constraint					Timestamps of max
		U (kV)	Substation 1	Substation 2	Code	Overload	U (kV)	Substation 1	Substation 2	Code	
TenneT DE / Amprion	07:00-21:00	380	Hanekenfahr	Meppen		117%	380	Hanekenfahr	Dorpen West		11:30
		Preventive action : +8 taps on Gronau PST -> 103% then wind reduction (decision in Real Time) Note : 3 node topology in Hanekenfah already implemented in DACF files									

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	Mercator	Busbar	2A	141%	150	Lillo	Zandvliet	117	(6:00-24:00) Max at 18:30 at 145%

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): **03:30**
- Peak period (07:00 – 23:00): **11:30**

Adaptations made on merged DACFs:

Off-peak:

- SI ➔ IT physical flow adapted to the target flow : **800 MW**
- Mendrisio-Cagno flow adapted to the schedule : **120 MW**
- PST of Lienz adapted to **120 MW**
- PST of Camporosso adapted to **200 MW**
- PST of La Praz on **tap 1**

Peak:

- SI ➔ IT physical flow adapted to the target flow : **800 MW**
- Mendrisio-Cagno flow adapted to the schedule : **80 MW**
- PST of Lienz adapted to **120 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	2	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	57	2370	54
		Albertville - Rondissone 2	2370	59	2370	58
		Bulciago - Soazza	2300	25	2300	44
		Cagno - Mendrisio	855	25	855	20
		Musignano - Lavorgo	2270	43	2270	64
		Redipuglia - Divaca	2450	39	2450	39
		Robbia - San Fiorano	2530	36	2530	54
		Robbia - Gorlago	2530	36	2530	56
		Venaus - Villarodin	2715	33	2715	45
	220 kV	Airolo - Ponte	900	4	900	7
		Lienz - Soverzene	704	44	704	41
		Menton - Campo Rosso	1165	41	1165	44
		Padriciano - Divaca	960	35	960	40
		Riddes - Avise	1010	22	1010	41
		Riddes - Valpelline	1010	26	1010	49
		Serra - Pallanzeno	900	33	900	55

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	2387	3079	132	819
	Compensation ratio (calculated from NTC)	41%	47%	4%	8%
	Pentalateral impact on physical flows	-2%	-77%	-4%	-16%
Peak	Initial physical flows on adapted base case	2851	4390	113	808
	Compensation ratio (calculated from NTC)	39%	48%	4%	9%
	Pentalateral impact on physical flows	-26%	-56%	-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	RTE	380	Albertville	Busbar	2A	141% 1'	220	Albertville	Longefan-Randens	
		Preventive action : Change tap position from 1 to tap 27 on La Praz PST-> 95% 1' night BUT constraint 100% 1' on Genissiat-Verbois axis => **open a transformer 380/220 kV at Genissiat 220 kV** in preventive **Curative action :** Change tap position to tap 33 on La Praz PST -> 120% remaining on the night 20' IMAX of the line AND Stop 3 pumps in Super Bissorte (total in DACF 465 MW) -> 96% 20' night								
	RTE	380	Albertville	Grande Ile	N-k	103% 1'	220	Passy	Pressy	
		Preventive action : Change tap position from 1 to tap 27 on La Praz PST-> 96% 10' **Curative action :** take a 2-nodes topology at Pressy 220 kV (information taken in the RTE report, 63kV grid not represented so constraint detected is worse than in reality)								
	RTE/ Swissgrid	220	Genissiat	Verbois 1	N-1	102% 20'	220	Genissiat	Verbois 2	
		Preventive action : open a transformer 380/220 at Genissiat 220 kV -> 92 % 20' remaining								

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	Rte / Terna	380	Albertville	Rondissone	N-2	116%	380	La Praz	PST	
		Curative action : Change tap position on La Praz PST from tap 1 to tap 17 -> 95% 20' remaining								

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)	27	111
Rondissone 1 (1/33)	33	1059
Rondissone 2 (1/33)	33	962
Camporosso (-32/32)	-2	230
Lienz (-32/32)	8	134
Padriciano (1/33)	7	138
Divaca (-32/32 each)	16	683

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	864
Rondissone 1 (1/33)	33	919
Rondissone 2 (1/33)	33	855
Camporosso (-32/32)	-5	202
Lienz (-32/32)	-5	115
Padriciano (1/33)	14	153
Divaca (-32/32 each)	5	657

Conclusion

CWE: Topological changes and redispatching (Germany) required on the 380kV grid to solve constraints.
In Zandvliet area high constraint detected on 150kV grid.

CEE: some N state overloads detected in Tennet DE grid and some constraints detected require redispatching, topological actions in 50Hertz area.

CSE : some constraints detected during the off-peak which need preventive actions on La Praz PST and Genissiat transformer.