CORESO Engineers ***North :*** EL JAFOUFI Mohamed ***South :*** SCHÜLKE Arnaud	**Day Ahead report for** **12 February 2018**

Security Levels:

CWE: No critical constraint detected. Tight margins for Elia.

CEE: Constraints detected that require topological measures.

CSE: One constraint detected in Switzerland that requires topological action.

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]	11000	18:00		Tihange		1000	2	2900
						450	2	
Generation Margin	Tight			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	6	5400
Peak load [MW]	84000	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]	47800	17:55		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]	46509	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:

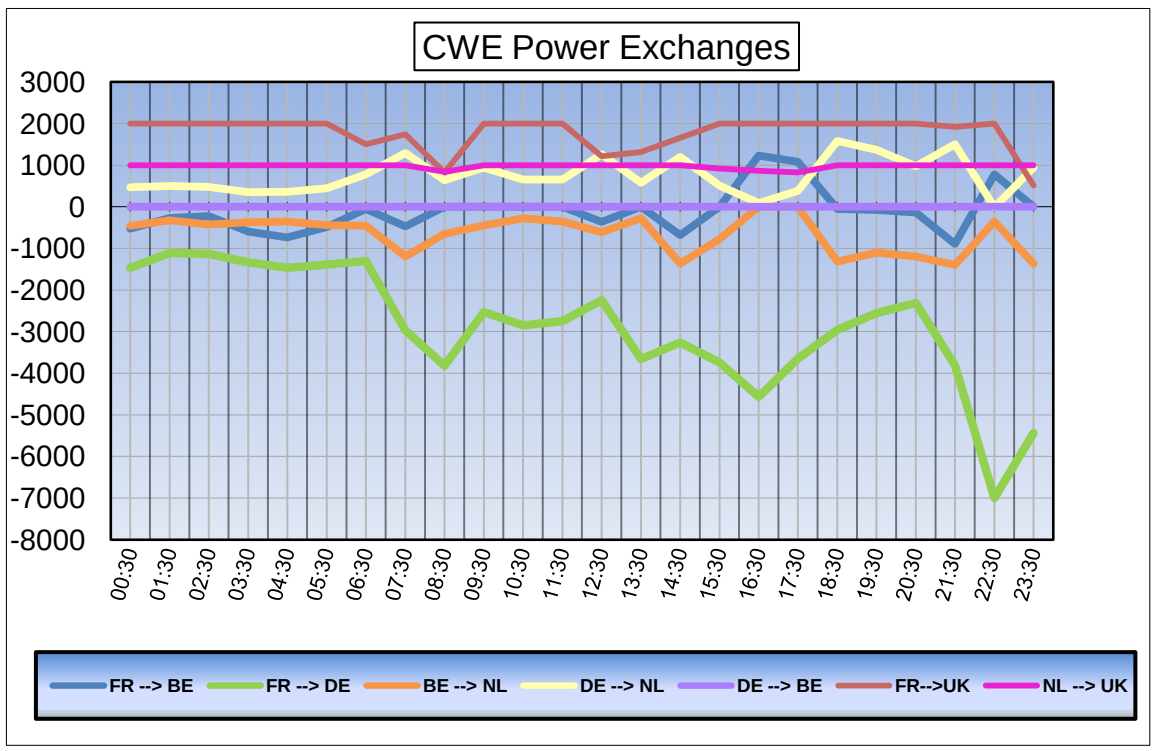
CWE / CEE

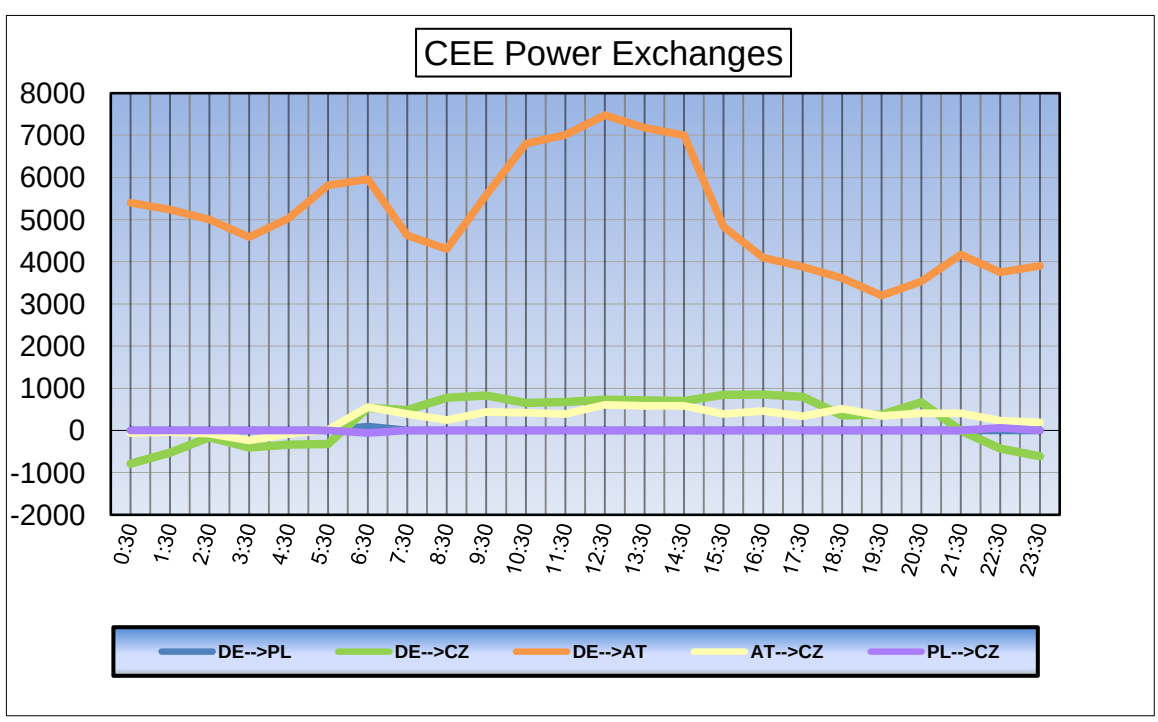
CSE

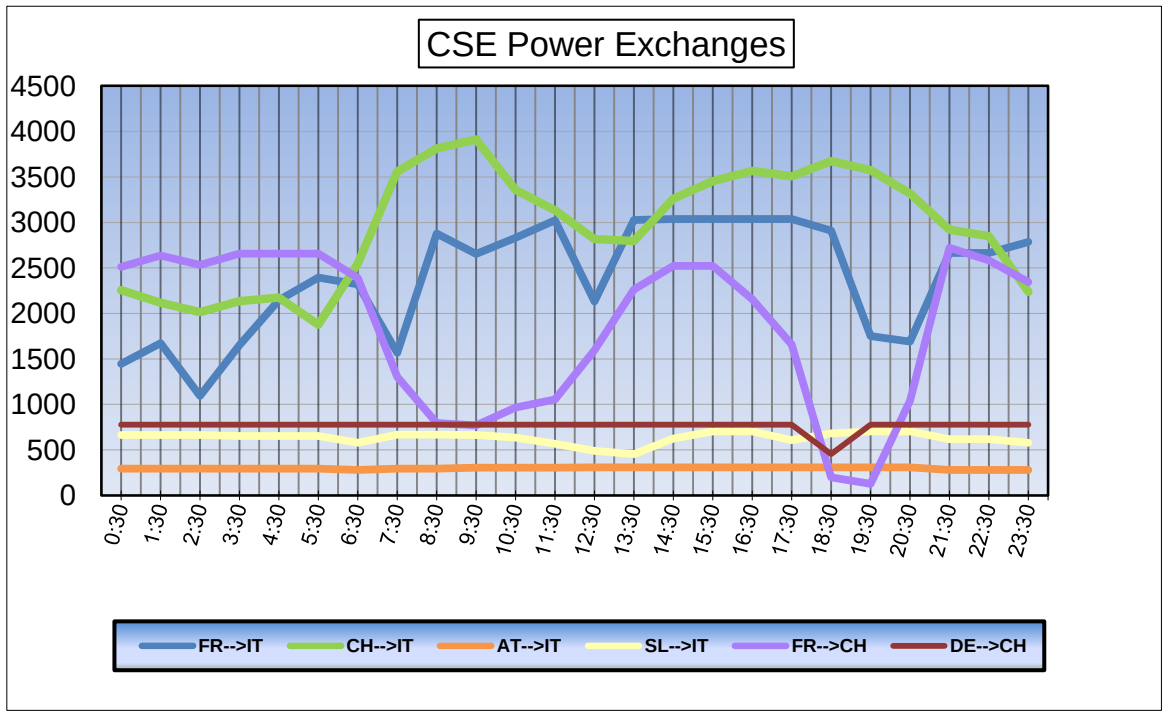
Outages table

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	HAMBURG Öst _ HAMBURG Süd 372 380 kV	12/02/2018	16/02/2018	
50HzT	Line	LUBMIN _ WIKINGER 281 220 kV	04/02/2018	18/02/2018	
50HzT	Line	REMPTENDORF _ VIESELBACH 416 400 kV	11/02/2018	16/02/2018	
50HzT	Line	WOLMIRSTEDT _ WUSTERMARK 494 400 kV	04/02/2018	18/02/2018	
50HzT / PSE	Line	KRAJNIK _ VIERRADEN 508 225 kV	22/06/2017	31/05/2018	long term outage
CEPS	Line	BABYLON _ BEZDECIN 451 400 kV	01/02/2018	20/02/2018	permanently
CEPS	Line	KOCIN _ REPORYJE 1 400 kV	29/01/2018	14/02/2018	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	GEZELLE _ STEVIN 111 400 kV	19/09/2017	02/03/2018	permanently
ELIA	Nuc.Gen	DOEL _ Unit 3 (1000MW) 400 kV	23/09/2017	16/04/2018	forced outage
PSE	Line	POLANIEC _ TARNOW 400 kV	12/02/2018	17/02/2018	Daily
PSE	Line	TUCZNAWA _ RZESZOW 400 kV	12/02/2018	16/02/2018	Daily
RTE	Line	BOCTOIS _ MORBRAS 1 400 kV	12/02/2018	12/02/2018	
RTE	Line	CHEVALET _ ARGOEUVES 1 380 kV	24/01/2018	23/02/2018	
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	LIMMERN _ TIERFEHD 1 400 kV	28/01/2018	08/06/2018	
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	JARDELUND _ AUDORF Blau 380 kV	12/02/2018	02/03/2018	Daily
TENNET DE	Line	SOTTRUM _ LANDESBERGEN 2 400 kV	12/02/2018	16/02/2018	Daily
TENNET DE	Line	TWISTETAL _ BORKEN 3 400 kV	16/05/2017	11/10/2018	
TENNET NL	Line	ENS _ ZWOLLE WT 400 kV	10/02/2018	16/02/2018	
TERNA	Line	FORLI _ PORTO TOLLE 334 400 kV	12/02/2018	15/02/2018	

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	06:30	07:30	08:30	10:30	12:30	14:30	17:30	19:30	21:30	23:30
BE	FR	ACHENE	LONNY	380.19	417	387	403	618	633	617	592	591	398	565	660	641
BE	FR	AUBANGE	MONT ST MARTIN	220.51	87	52	90	123	134	127	124	132	73	100	150	151
BE	FR	AUBANGE	MOULAINE	220.51	79	40	74	100	112	106	105	113	56	83	134	132
BE	FR	AVELGEM	AVELIN	380.80	330	211	303	790	780	803	643	593	338	702	656	456
BE	FR	AVELGEM	MASTAING	380.79	-26	-10	-39	123	136	121	94	80	-64	43	91	22
BE	FR	MONCEAU	CHOOZ	220.48	-71	-57	-65	-33	-26	-27	-14	-25	-72	-62	-8	-55
BE	NL	VAN EYCK 1	MAASBRACHT	380.27	-392	-311	-496	-680	-641	-585	-530	-579	-539	-685	-597	-751
BE	NL	VAN EYCK 2	MAASBRACHT	380.28	-66	-66	-225	-556	-493	-350	-333	-426	-284	-449	-449	-654
BE	NL	ZANDVLIET	BORSSELE	380.29	-251	-159	-251	-674	-824	-786	-671	-820	-706	-808	-770	-640
BE	NL	ZANDVLIET	GEERTRUIDENBERG	380.30	-63	30	-165	-399	-342	-227	-187	-273	-177	-357	-284	-536
BE	LU	BELVAL	SCHIFFLANGE	220.511	12	104	-41	-139	-118	-78	-81	-79	-106	-161	-95	-140

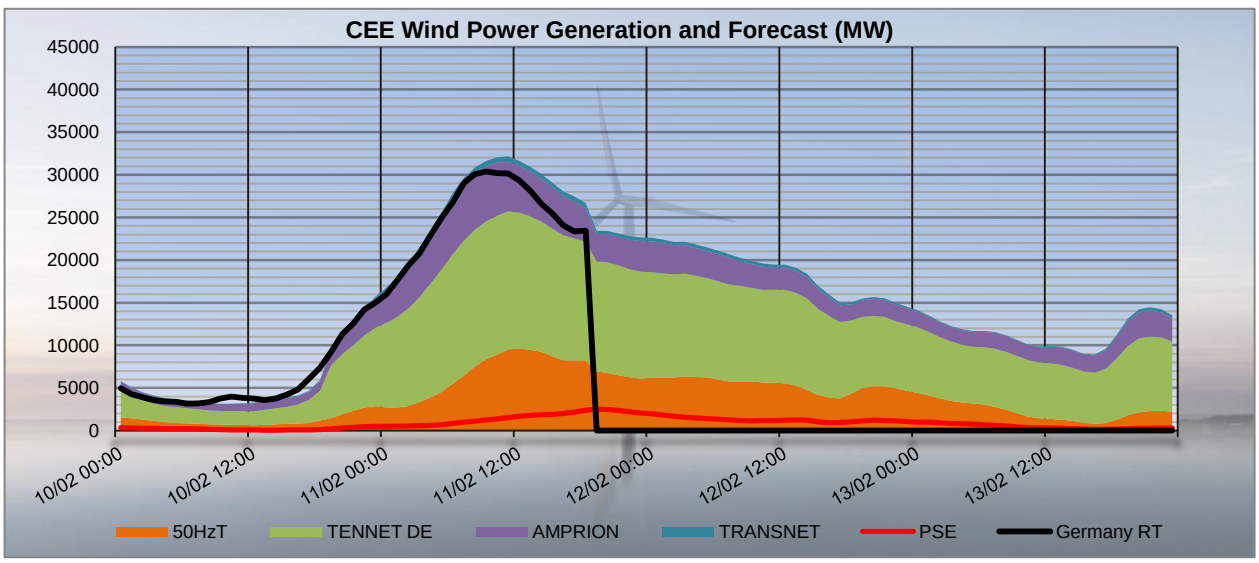
BE	FR	TOTAL		816	623	766	1721	1769	1747	1544	1484	729	1431	1683	1347
BE	NL	TOTAL		-772	-506	-1137	-2309	-2300	-1948	-1721	-2098	-1706	-2299	-2100	-2581
BE	LU	TOTAL		12	104	-41	-139	-118	-78	-81	-79	-106	-161	-95	-140
TOTAL BELGIAN IMPORT/EXPORT				56	221	-412	-727	-649	-279	-258	-693	-1083	-1029	-512	-1374

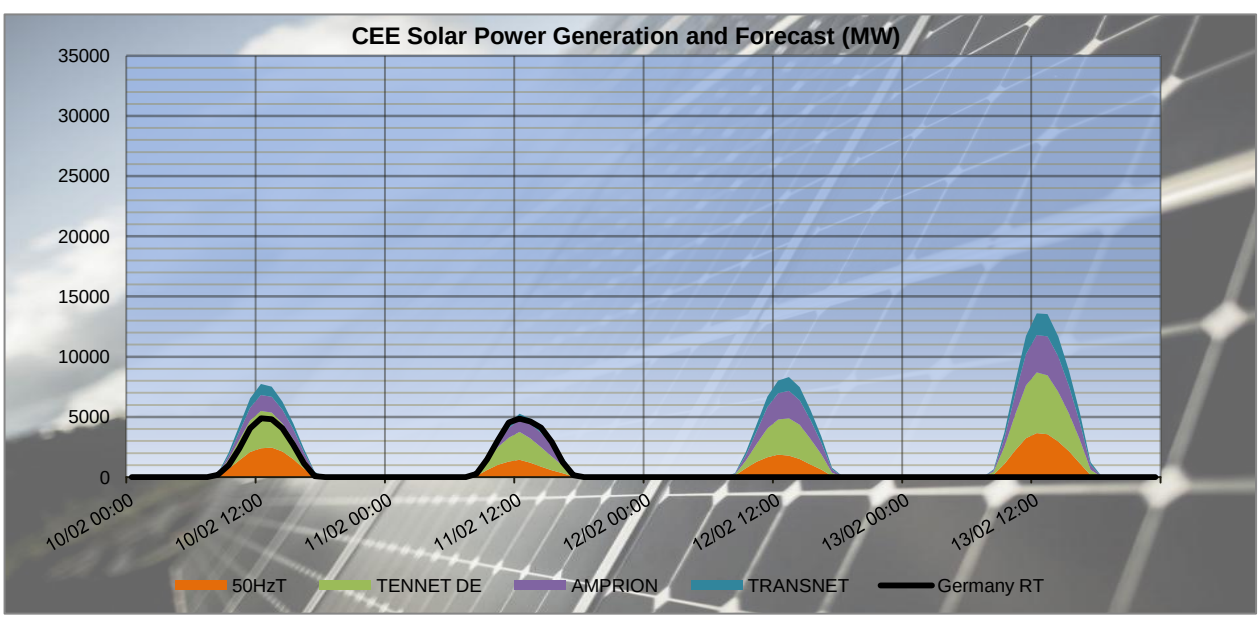
PST taps in DACF	**Zandvliet 1**	12	12	12	12	12	12	12	12	12	12	12	12
	Zandvliet 2	12	12	12	12	12	12	12	12	12	12	12	12
	Van Eyck 1	15	15	15	15	15	15	15	15	15	15	15	15
	Van Eyck 2	15	15	15	15	15	15	15	15	15	15	15	15
	Average	14	14	14	14	14	14	14	14	14	14	14	14

CREOS PST in DACF	**Schifflange**	17	17	17	17	17	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]	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Zandvliet PST 2	[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
Van Eyck PST 1	[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
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
Schifflange PST 1	[1;35]	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

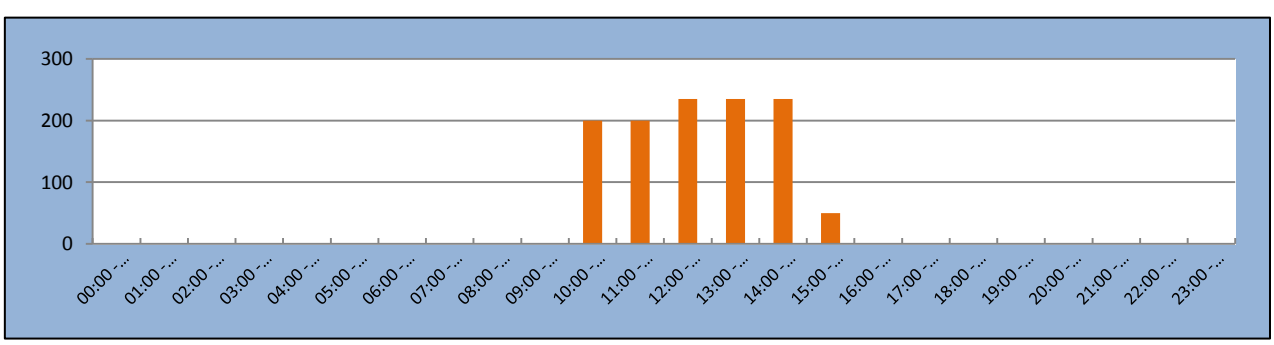
CEE Renewable Power Generation & Forecast



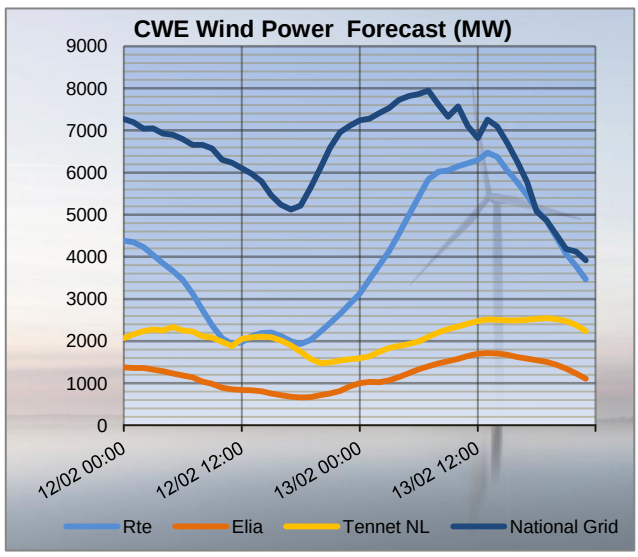


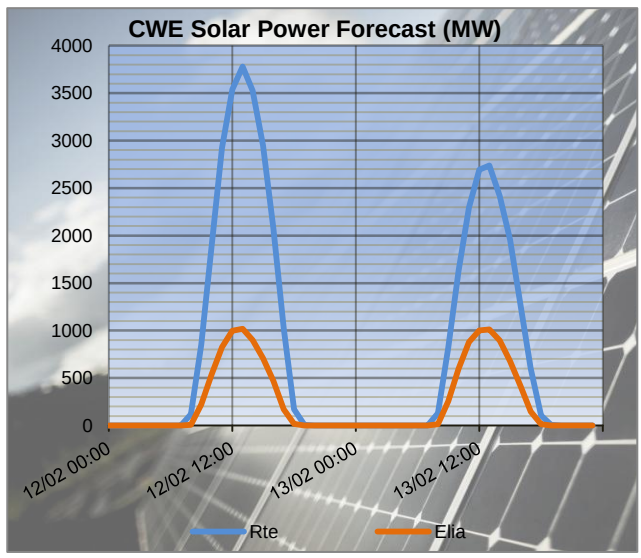
The charts above show the wind and solar generation forecasts for the TSOs in CEE (most significant) from D+1 until D-2 and the realised generation in Germany in real time. Source: Meteologica and 50HzT (RT)

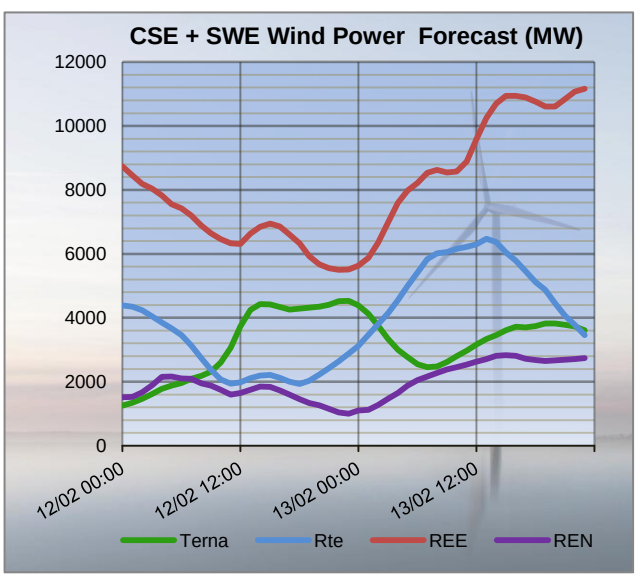
50HzT Preventive Redispatch

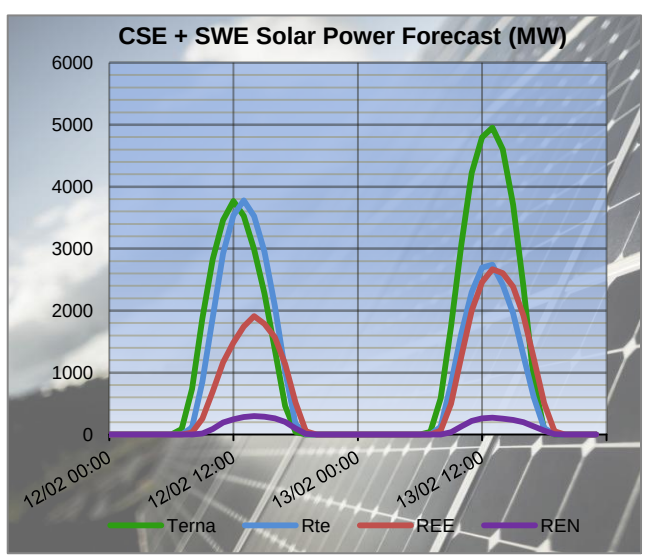


CWE, CSE & SWE Renewable Power Forecast (D-1 and D-2)









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	-562	-387	175	-578	-618	-40	-630	-617	13	-483	-592	-109
FR	BE	MONT ST MARTIN	AUBANGE	-85	-52	33	-93	-123	-30	-94	-127	-33	-60	-124	-64
FR	BE	MOULAINE	AUBANGE	-71	-40	31	-71	-100	-29	-74	-106	-32	-44	-105	-61
FR	BE	AVELIN	AVELGEM	-425	-211	214	-645	-790	-145	-652	-803	-151	-537	-643	-106
FR	BE	MASTAING	AVELGEM	-120	10	130	-28	-123	-95	-18	-121	-103	-31	-94	-63
FR	BE	CHOOZ	MONCEAU	136	57	-79	154	33	-121	84	27	-57	54	14	-40
FR	DE	MUHLBACH	EICHSTETTEN	406	481	75	-353	43	396	-145	144	289	-150	169	319
FR	DE	VOGELGRUN	EICHSTETTEN	-33	-13	20	-60	110	170	32	152	120	45	173	128
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	228	226	-2	-50	-151	-101	59	-56	-115	76	-42	-118
FR	DE	VIGY	ENSDORF 2	169	169	0	-66	-132	-66	75	-8	-83	100	2	-98

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	BE	LONNY	ACHENE	-380	-398	-18	-539	-565	-26	-647	-641	6
FR	BE	MONT ST MARTIN	AUBANGE	-67	-73	-6	-61	-100	-39	-129	-151	-22
FR	BE	MOULAINE	AUBANGE	-50	-56	-6	-46	-83	-37	-111	-132	-21
FR	BE	AVELIN	AVELGEM	-285	-338	-53	-641	-702	-61	-534	-456	78
FR	BE	MASTAING	AVELGEM	107	64	-43	-1	-43	-42	-68	-22	46
FR	BE	CHOOZ	MONCEAU	132	72	-60	156	62	-94	148	55	-93
FR	DE	MUHLBACH	EICHSTETTEN	-119	178	297	-409	-180	229	-298	-77	221
FR	DE	VOGELGRUN	EICHSTETTEN	26	160	134	-52	60	112	24	130	106
FR	DE	ST AVOLD	ENSDORF	0	0	0	0	0	0	0	0	0
FR	DE	VIGY	ENSDORF 1	144	17	-127	-4	-142	-138	-261	-261	0
FR	DE	VIGY	ENSDORF 2	170	77	-93	-39	-148	-109	-281	-265	16

				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	407	374	-33	-84	51	135	14	204	190	87	225	138
FR	CH	MAMBELIN	BASSECOURT	-90	-299	-209	-375	-332	43	-298	-253	45	-267	-294	-27
FR	CH	SIERENTZ	BASSECOURT	654	299	-355	467	333	-134	377	253	-124	445	294	-151
FR	CH	BOIS TOLLOT	ROMANEL	-18	-50	-32	-354	-461	-107	-289	-350	-61	-265	-199	66
FR	CH	SIERENTZ	LAUFENBURG	266	410	144	-178	63	241	-90	204	294	-12	203	215
FR	CH	CORNIER	RIDDES	-98	-43	55	-179	-103	76	-148	-41	107	-147	-44	103
FR	CH	CORNIER	ST TRIPHON	-116	-91	25	-185	-140	45	-147	-72	75	-151	-84	67
FR	CH	PRESSY	VALLORCINES	-241	-216	25	-296	-242	54	-243	-163	80	-289	-210	79
FR	CH	BOIS TOLLOT	VERBOIS	153	187	34	182	179	-3	190	242	52	194	234	40
FR	CH	GENISSIAT	VERBOIS	44	50	6	22	-5	-27	39	54	15	45	80	35
FR	CH	GENISSIAT	VERBOIS	44	50	6	22	-5	-27	39	54	15	45	80	35
FR	IT	ALBERTVILLE	RONDISSONE	592	518	-74	566	561	-5	736	540	-196	665	616	-49
FR	IT	ALBERTVILLE	RONDISSONE	602	460	-142	604	554	-50	809	443	-366	703	601	-102
FR	IT	MENTON	CAMPOROSSO	247	201	-46	146	197	51	156	196	40	145	193	48
FR	IT	VILLARODIN	VENAUS	114	208	94	423	557	134	739	1070	331	530	591	61

				17:30			19:30			23:30		
		Node 1	Node 2	DACF	Merge	Delta	DACF	Merge	Delta	DACF	Merge	Delta
FR	CH	SIERENTZ	ASPHARD	49	333	284	-204	-41	163	23	142	119
FR	CH	MAMBELIN	BASSECOURT	-277	-279	-2	-443	-335	108	-376	-422	-46
FR	CH	SIERENTZ	BASSECOURT	465	279	-186	303	336	33	642	424	-218
FR	CH	BOIS TOLLOT	ROMANEL	-213	-265	-52	-434	-519	-85	-82	-171	-89
FR	CH	SIERENTZ	LAUFENBURG	-1	155	156	-290	-164	126	70	173	103
FR	CH	CORNIER	RIDDES	-154	-75	79	-196	-118	78	-149	-94	55
FR	CH	CORNIER	ST TRIPHON	-170	-119	51	-184	-132	52	-173	-135	38
FR	CH	PRESSY	VALLORCINES	-348	-243	105	-357	-253	104	-271	-221	50
FR	CH	BOIS TOLLOT	VERBOIS	229	235	6	149	208	59	127	175	48
FR	CH	GENISSIAT	VERBOIS	44	37	-7	-22	-11	11	44	49	5
FR	CH	GENISSIAT	VERBOIS	44	37	-7	-22	-11	11	44	49	5
FR	IT	ALBERTVILLE	RONDISSONE	754	663	-91	579	496	-83	536	415	-121
FR	IT	ALBERTVILLE	RONDISSONE	815	660	-155	652	538	-114	597	384	-213
FR	IT	MENTON	CAMPOROSSO	155	203	48	159	205	46	154	192	38
FR	IT	VILLARODIN	VENAUS	595	717	122	711	801	90	447	479	32

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	33	2448	37
	Doel - Mercator (51)	2239	39	2239	42
	Doel - Mercator (52)	2239	39	2239	42
	Doel - Mercator (54)	2448	39	2448	42
	Doel - Zandvliet (25)	2349	21	2349	26
	Mercator - Horta (73)	2569	44	2569	45
	Courcelles - Gramme (31)	2349	38	2349	43
	Mercator - Rodenhuize/Horta (74)	2342	49	2349	50
RTE	Attaques - Warande 2	3780	65	3780	65
	Avelin - Gavrelle	2622	70	2622	68
	Avelin - Warande	3458	5	3458	4
	Lonny - Seuil	4149	31	4149	31
	Mandarins - Warande 1	3540	65	3540	65
	Muhlbach - Scheer	2598	21	2598	10
	Revigny - Vigy	2596	46	2596	50
	Warande - Weppes	3458	11	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	12	2520	19
		Hagenwerder - Mikulowa (567)	2520	36	2520	14
		Hagenwerder - Mikulowa (568)	2520	35	2520	14
		Remptendorf - Redwitz (413)	3551	50	3594	44
		Remptendorf - Redwitz (414)	3551	50	3594	44
		Röhrsdorf - Hradec (445)	2520	0	2520	40
		Röhrsdorf - Hradec (446)	2520	84	2520	40
		Vieselbach - Mecklar (449-1)	2520	16	2520	22
		Wolmirstedt - Helmstedt (491-1)	2400	3	2400	1
		Wolmirstedt - Helmstedt (492-2)	2400	3	2400	1
	220 kV	Vierraden - Krajnik (507)	1370	0	1361	0
		Vierraden - Krajnik (508)	1370	0	1361	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	1	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	
Rte	00:00 - 01:00 & 04:00 - 23:00	380	Attaques	Warande	2	116%	380	Mandarins	Warande	1	09:30
		Curative action : 2-nodes topology in Warande 380 kV => 91 % remaining.									
50HzT/ Tennet DE	07:00 - 18:00	380	Wilster	Dollern	axis	130%	380	Hamburg N	Hamburg O	962	07:30
		Preventive action: Cancellation of the outage of the line Hamburg N - Hamburg O. (replaced by an outage Hamburg O - Hamburg S).									
50HzT / Tennet DE /CEPS	11:00 - 14:00	380	Redwitz	Mechlenreuth		125%	380	Röhrsdorf	Hradec		12:30
						133%	380	Röhrsdorf	PST		12:30
		Preventive action: Decrease 12 taps on Rohrsdorf PST --> 99% remaining on Rohrsdorf - Hradec and 117% remaining on Rohrsdorf PST (then redispatching)									

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	
50HzT / Tennet DE /CEPS	09:00 - 15:00	380	Röhrsdorf	Hradec	axis	117%	380	Redwitz	Mechlenreuth		12:30
		Observability area: No cascading effect after tripping (see table above)									
TenneT DE / Amprion	00:00 - 17:00	380	T-line Diele-Niederlangen-Meppen		axis	124%	380	Hanekenfahr	Dorpen West	remaining	07:30
		Preventive action: 2 nodes in Hanekenfähr. **Observability area:** +9 taps in Gronau and tap +1 at Meeden --> 108% remaining									

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	
No constraint detected									

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): **05:30**
- Peak period (07:00 – 23:00): **16:30**

Adaptations made on merged DACFs:

Off-peak:

- SI ➔ IT physical flow adapted to target flow **800 MW**
- Mendrisio-Cagno flow adapted to its schedule: 82 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 target flow **800 MW**
- Mendrisio-Cagno flow adapted to its schedule: 178 MW
- PST of Lienz adapted to **115 MW**
- PST of Camporosso adapted to **150 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	39	2370	44
		Albertville - Rondissone 2	2370	38	2370	47
		Bulciago - Soazza	2300	24	2300	49
		Cagno - Mendrisio	855	15	855	29
		Musignano - Lavorgo	2270	43	2270	62
		Redipuglia - Divaca	2450	38	2450	35
		Robbia - San Fiorano	2530	29	2530	53
		Robbia - Gorlago	2530	36	2530	62
		Venaus - Villarodin	2715	17	2715	32
	220 kV	Airolo - Ponte	900	19	900	23
		Lienz - Soverzene	704	44	704	39
		Menton - Campo Rosso	1165	43	1165	33
		Padriciano - Divaca	960	35	960	39
		Riddes - Avise	1010	6	1010	19
		Riddes - Valpelline	1010	6	1010	21
		Serra - Pallanzeno	900	27	900	51

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	1767	2494	126	792
	Compensation ratio (calculated from NTC)	39%	49%	4%	8%
	Pentalateral impact on physical flows	-27%	-55%	-4%	-14%
Peak	Initial physical flows on adapted base case	2220	4466	109	763
	Compensation ratio (calculated from NTC)	37%	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										
		No 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	Swissgrid / Terna	380	Robbia	Gorlago - S. Fiorano	N-2	103%	380	Sils	Soazza	
		Preventive action : 2 nodes in Sils 380 kV => 93% remaining (agreed by Swissgrid)								

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	318
Rondissone 1 (1/33)	33	616
Rondissone 2 (1/33)	33	623
Camporosso (-32/32)	-9	203
Lienz (-32/32)	6	127
Padriciano (1/33)	13	136
Divaca (-32/32 each)	7	658

PST	Peak	
	Tap position	Physical flow to Italy (MW)
La Praz (1/33)	1	605
Rondissone 1 (1/33)	33	755
Rondissone 2 (1/33)	33	700
Camporosso (-32/32)	-4	152
Lienz (-32/32)	-16	110
Padriciano (1/33)	20	152
Divaca (-32/32 each)	-3	613

Conclusion

CWE: No critical constraint detected. Tight margins for Elia.

CEE: Constraints detected that require topological measures.

CSE: One constraint detected in Switzerland that requires topological action.