

Observations

[1]	Limited by phase shifting transformer in Meeden
[2]	Limited by phase shifting transformer in Meeden
[3]	Transformer in Borssele
[4]	Former October 2005 in FR Avelin
[5]	Transducer
[6]	Installed in Verbois
[7]	Cross-border power station (220/130)
[8]	Cross-border power station (220/130)
[9]	Cross-border power station (220/130)
[10]	Line property EnBW Netz in Germany partially on the same tower as line Asphard-Kühmoos or Sierentz-Laufenburg
[11]	DC link with three connections
[12]	Transforming station of Lucciana in Corsica
[13]	DC link with three connections
[14]	Transforming station of Lucciana in Corsica
[15]	Partially on the same tower as the Laufembourg-Engstlatt line (No. 105.1)
[16]	Transducer
[17]	Transducer
[18]	On the same tower as line No. 81 Laufenburg-Sierentz 380 kV
[19]	Transducer
[20]	From Kühmoos to Laufembourg on the same tower
[21]	Disconnecter
[22]	Limited by measuring transducer at Laufembourg
[23]	From Kühmoos to Laufembourg on the same tower
[24]	On the same tower as line Sierentz-Laufenburg
[25]	Limited by switching devices in Austria
[26]	Disconnected till approx. 2010; afterwards line will be dismantled
[27]	Cable at Braunau
[28]	Cable at Braunau

T 9	Connection between:						Voltage of the circuit		Conventional trans- mission capacity of the connection (thermal)*		Limited by the transformers or by the substations				T 9
	From substation			to substation							of circuits		of lines		
	Circuit ID (Frontier point.Line.Circuit)	Country	Name	Operated by	Country	Name	Operated by	Forecast	Present	Forecast	Present	at	Voltage	Transmission capacity	
Nr.							kV	kV	MVA	MVA	MVA	kV	MVA	kV	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
11.1.1	DE	Diele	E.ON Netz	NL	Meeden	TenneT TSO B.V.		380		1382	1000 [1]				
11.1.2	DE	Diele	E.ON Netz	NL	Meeden	TenneT TSO B.V.		380		1382	1000 [2]				
13.1.1	DE	Siersdorf	RWE Transportnetz Strom	NL	Maasbracht	TenneT TSO B.V.		380		1645					
13.1.2	DE	Rommerskirchen	RWE Transportnetz Strom	NL	Maasbracht	TenneT TSO B.V.		380		1698					
15.1.1	DE	Gronau	RWE Transportnetz Strom	NL	Hengelo	TenneT TSO B.V.		380		1790					
15.1.2	DE	Gronau	RWE Transportnetz Strom	NL	Hengelo	TenneT TSO B.V.		380		1790					
25.1.1	BE	Gramme	Elia	NL	Maasbracht	TenneT TSO B.V.		380		1207					
25.1.2	BE	Meerhout	Elia	NL	Maasbracht	TenneT TSO B.V.		380		1270					
26.1.1	BE	Zandvliet	Elia	NL	Geertruidenberg	TenneT TSO B.V.		380		1476					
26.2.1	BE	Zandvliet	Elia	NL	Borssele	TenneT TSO B.V.		380		1476	450 [3]				
41.1.1	BE	Aubange	Elia	LU	Belval	SOTEL		220		358					
41.1.2	BE	Aubange	Elia	LU	Belval	SOTEL		220		358					
41.2.1	BE	Aubange	Elia	LU	Belval	SOTEL		150		157	100				
41.3.1	BE	Aubange	Elia	LU	Belval	SOTEL		150		157	100				
51.1.1	BE	Jamiolle	Elia	FR	Chooz	RTE		220		356	290	150			
51.2.1	BE	Avelgem	Elia	FR	Mastaing [4]	RTE		380		1207					
51.2.2	BE	Avelgem	Elia	FR	Avelin	RTE		380		1367					
51.3.1	BE	Achène	Elia	FR	Lonny	RTE		380		1207					
52.1.1	BE	Aubange	Elia	FR	Moulaine	RTE		220		286					
71.1.1	DE	Uchtelfangen	RWE Transportnetz Strom	FR	Vigy	RTE		380		1790					
71.1.2	DE	Uchtelfangen	RWE Transportnetz Strom	FR	Vigy	RTE		380		1790					
71.2.1	DE	Ensdorf	RWE Transportnetz Strom	FR	St-Avoid	RTE		220		261					
72.1.1	DE	Eichstetten	EnBW Transportnetze	FR	Vogelgrün	RTE	380	220		338 [5]		220			
72.1.2	DE	Eichstetten	EnBW Transportnetze	FR	Muhlbach	RTE		380		1751					
81.1.1	CH	Bassecourt	BKW	FR	Sierentz	RTE		380		1186					
81.2.1	CH	Laufenburg	EGL Grid	FR	Sierentz	RTE		380		1167					
81.3.1	CH	Bassecourt	BKW	FR	Mambelin	RTE		380		1046					
82.1.1	CH	Verbois	EOS	FR	Bois-Tollot	RTE		380		1211	800	220 [6]			
82.1.2	CH	Chamoson	EOS	FR	Bois-Tollot	RTE		380		1409	600				
82.2.1	CH	Verbois	EOS	FR	Génissiat	RTE		220		315				11 [7]	
82.2.2	CH	Verbois	EOS	FR	Génissiat	RTE		220		315				11 [8]	
82.3.1	CH	Verbois	EOS	FR	Chancy-Pougny	SFRM C-P		130		52	42			11 [9]	
82.4.1	CH	La Bâtiаз	Atel	FR	Vallorcine	RTE		220		266					
82.5.1	CH	Riddes	EGL Grid	FR	Cornier	RTE		220		275					
82.6.1	CH	St-Triphon	EOS	FR	Cornier	RTE		220		275					
83.1.1 [10]	CH/DE	Asphard	Atel/NOK /EnBW Transp.netze	FR	Sierentz	RTE		380		1167					
91.1.1	FR	Albertville	RTE	IT	Rondissone	Terna		380		1244					
91.1.2	FR	Albertville	RTE	IT	Rondissone	Terna		380		1244					
92.1.1	FR	Trinite Victor	RTE	IT	Camporosso	Terna		220		320					
93.1.1	FR	Villarodin	RTE	IT	Venaus	Terna		380		956					
94.1.1 [11]	FR	Lucciana	EDF	IT	Suvereto	Terna		220 [12]		300			50		
94.1.2 [13]	FR	Lucciana	EDF	IT	Suvereto	Terna		220 [14]		300			50		
95.1.1	FR	Bonifacio	EDF	IT	Santa Teresa	Terna		150		53					
102.1.1 [15]	CH	Laufenburg	EGL Grid	DE	Gurtweil	EnBW Transportnetze		220		485	457 [16]	220			
102.1.2	CH	Laufenburg	EGL Grid	DE	Gurtweil	EnBW Transportnetze		220		469	457 [17]	220			
102.2.1 [18]	CH	Laufenburg	EGL Grid	DE	Kühmoos	EnBW Transportnetze		220		469	457 [19]	220			
102.3.1 [20]	CH	Laufenburg	EGL Grid	DE	Kühmoos	EnBW Transportnetze	380	220		469	476 [21]	220			
102.3.2	CH	Laufenburg	EGL Grid	DE	Kühmoos	EnBW Transportnetze		380		1620	1580				
102.4.1	CH	Laufenburg	EGL Grid	DE	Kühmoos	EnBW Transportnetze		380		1620	1580				
102.4.2	CH	Laufenburg	EGL Grid	DE	Kühmoos	RWE Transportnetz Strom		380		1620	1265 [22]				
102.5.1 [23]	CH	Laufenburg	EGL Grid	DE	Tiengen	RWE Transportnetz Strom		380		1131					
103.1.1	CH	Beznau	NOK	DE	Tiengen	RWE Transportnetz Strom		380		1158					
103.1.2	CH	Beznau	NOK	DE	Tiengen	RWE Transportnetz Strom	380	220		335					
103.1.3	CH	Klingnau	AWAG	DE	Tiengen	RWE Transportnetz Strom	380	110		57	40				
104.1.1 [24]	CH	Asphard	Atel/NOK	DE	Kühmoos	EnBW Transportnetze		380		1340					
105.1.1	CH	Laufenburg	EGL Grid	DE	Engstlatt	EnBW Transportnetze		380		1580					
107.1.1	CH	Laufenburg 220kV	EGL Grid	DE	Laufenburg 110 kV	ED		110		200					
111.1.1	AT	Bürs	VIW	DE	Obermooweller	EnBW Transportnetze		380		1369					
111.1.2	AT	Bürs	VIW	DE	Obermooweller	EnBW Transportnetze		380		1369					
111.2.1	AT	Bürs	VIW	DE	Herbertingen	RWE Transportnetz Strom		220		389					
111.3.1	AT	Bürs	VIW	DE	Dellmensingen	RWE Transportnetz Strom		220		492	457 [25]				
111.4.1	AT	Rieden	VKW -Netz	DE	Lindau	VKW -Netz		110		84					
111.4.2	AT	Hörbranz	VKW -Netz	DE	Lindau	VKW -Netz		110		84					
111.5.1	AT	Vorderwald	VKW -Netz	DE	Weiler	VKW -Netz		110		141					
115.1.1	AT	Braunau	ÖBK	DE	Neuötting	E.ON Netz		110		90 [26]			82 [27]		
115.2.1	AT	Braunau	ÖBK	DE	Stammham	E.ON Netz		110		102			82 [28]		
115.3.1	AT	Ranshofen	Verbund - APG	DE	Neuötting	E.ON Netz		110		90					
115.4.1	AT	Antiesenhofen	Verbund - APG	DE	Eggfling	E.ON Netz		110		102					

*The conventional transmission capacity of cross-frontier tie-lines is based upon parameters standardised within UCTE for the calculation of the thermal load capability of each line. For areal lines these are : ambient temperature of + 35°C, wind velocity of 0,56 m/s at a right angle to the line as well as the voltage value stated in column 10 or 11. The conditions relevant to system operation in various countries at various time of the year can strongly differ from those above. Because the real allowable load capability of the line depends on many other factors, such as load flow distribution, upholding of voltage, real ambient conditions, limits of stability, n-1 security, etc., the conventional transmission capacity has no relevance from the point of view of system operation or economics but allows just a comparison of order of magnitude of the various lines. Adding together the conventional transmission capacity of several tie-lines does not allow to infer on the real total transmission capability and leads to irrelevant results from the point of view of system operation.

Observations

[29]	Transducer at Ering
[30]	Transducer at Ering
[31]	Isolator in St. Peter
[32]	Isolator in St. Peter
[33]	Only Temporary line; from December 2006 toll 2006; afterwards disconnected till approx.2010
[34]	No international interconnector
[35]	CFT blocker at St. Peter
[36]	No international interconnector
[37]	CFT blocker at St. Peter
[38]	Switching device at Oberbrunn
[39]	Switching device at Oberbrunn
[40]	Possible to lay a second circuit
[41]	Possible to lay a second circuit
[42]	New substation with 400kV near spanish frontier: replace Cantegrit
[43]	New substation with 225kV near Spanish frontier: replace Mouguerre
[44]	Limited by transformer in Enstedt
[45]	Limited by transformer in Kassø
[46]	Transducer at Kassø
[47]	Transducer at Kassø
[48]	Monopol
[49]	DC submarine and underground cable
[50]	DC submarine and underground cable
[51]	DC submarine and underground cable
[52]	Under water cable
[53]	Under water cable
[54]	Under water cable
[55]	Limited by high-frequency coil
[56]	Generator line in radial operation - interconnected operation impossible
[57]	Installed at Vianden
[58]	Generator line in radial operation - interconnected operation impossible
[59]	Installed at Vianden
[60]	Generator line in radial operation - interconnected operation impossible
[61]	Installed at Vianden

T 9	Connection between:						Voltage of the circuit		Conventional trans- mission capacity of the connection (thermal)*		Limited by the transformers or by the substations				T 9
	From substation			to substation							of circuits		of lines		
	Circuit ID (Frontier point.Line.Circuit)	Country	Name	Operated by	Country	Name	Operated by	Forecast	Present	Forecast	Present	at	Voltage	Transmission capacity	Voltage
Nr.							kV	kV	MVA	MVA	MVA	kV	MVA	kV	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
115.5.1	AT	St. Peter	Verbund - APG	DE	Altheim	E.ON Netz		220		301					
115.6.1	AT	St. Peter	Verbund - APG	DE	Simbach	E.ON Netz		220		301					
115.7.1	AT	St. Peter	Verbund - APG	DE	Ering	E.ON Netz		110		152	137		114 [29]		
115.7.2	AT	St. Peter	Verbund - APG	DE	Ering	E.ON Netz		110		152	137		114 [30]		
115.8.1	AT	St. Peter	Verbund - APG	DE	Eggfling	E.ON Netz		110		105					
115.9.1	AT	St. Peter	Verbund - APG	DE	Pirach	E.ON Netz		220		518	457 [31]				
115.10.1	AT	St. Peter	Verbund - APG	DE	Pleinting	E.ON Netz		220		518	457 [32]				
115.11.3	AT	Ranna	EAGÖÖ-Netz	DE	Passau/Hauzenberg	E.ON Netz		110		90 [33]					
115.12.1	AT	Oberaudorf	ÖBK	DE	Rosenheim	E.ON Netz		110		93					
115.13.1	AT	Oberaudorf	ÖBK	DE	Kiefersfelden	E.ON Netz		110		102					
115.14.1	AT	Antiesenhofen	EAGÖÖ-Netz	DE	Weidach	Thüga		110		130					
115.14.2	AT	Antiesenhofen	EAGÖÖ-Netz	DE	Weidach	Thüga		110		130					
115.15.1	AT	Aigerding	Verbund - APG/EAGÖÖ-Netz	DE	Passau	ÖBK		110		102					
115.16.1 [34]	AT	St. Peter	Verbund - APG	DE	Schärding	ÖBK		220		301			229 [35]		
115.16.2 [36]	AT	St. Peter	Verbund - APG	DE	Schärding	ÖBK		220		301			229 [37]		
115.17.1	AT	Kufstein	TIWAG-Netz	DE	Oberaudorf	E.ON Netz		110		90					
115.17.2	AT	Ebbs	TIWAG-Netz	DE	Oberaudorf	E.ON Netz		110		127					
116.1.1	AT	Westtirol	Verbund - APG	DE	Leupolz	RWE Transportnetz Strom		380		1316					
116.2.1	AT	Westtirol	Verbund - APG	DE	Memmingen	RWE Transportnetz Strom		220		762					
117.1.1	AT	Silz	TIWAG-Netz	DE	Oberbrunn	E.ON Netz		220		793	762 [38]				
117.1.2	AT	Silz	TIWAG-Netz	DE	Oberbrunn	E.ON Netz		220		793	762 [39]				
117.3.1	AT	Reutte	TIWAG-Netz	DE	Füssen	EW Reutte		110		127					
117.3.2	AT	Reutte	TIWAG-Netz	DE	Füssen	EW Reutte		110		127					
121.1.1	CH	All'Acqua	Atel	IT	Ponte	Terna		220		278					
121.2.1	CH	Gorduno	Atel	IT	Mese	Terna		220		278					
121.3.1	CH	Soazza	EGL Grid	IT	Bulciago	Terna		380		1224					
121.4.1	CH	Lavorgo	Atel	IT	Musignano	Terna		380		1204					
122.1.1 [40]	CH	Campocologno	RE	IT	Poschiavino	Terna		150		103	42				
123.1.1	CH	Riddes	EGL Grid	IT	Avise	Terna		220		309					
123.2.1	CH	Riddes	EGL Grid	IT	Valpelline	Terna		220		309					
123.3.1	CH	Serra	RHOWAG	IT	Pallanzeno	Terna		220		278					
124.1.1	CH	Robbia	RE	IT	Gorlago	Terna		380		1340					
124.1.2	CH	Robbia	RE	IT	San Fiorano	Terna		380		1340					
132.1.1	AT	Lienz	Verbund - APG	IT	Soverzene	Terna		220		257					
141.1.1 [41]	AT	Meiningen	VKW-Netz	CH	Y-Rehag	NOK		220		501					
141.2.1	AT	Meiningen	VKW-Netz	CH	Winkeln	NOK		220		776					
142.1.1	AT	Westtirol	Verbund - APG	CH	Pradella	EGL Grid		380		1340					
142.2.1	AT	Westtirol	Verbund - APG	CH	Pradella	EGL Grid		380		1340					
151.1.1	ES	Hemani	REE	FR	Argia [42]	RTE		380		1136					
151.2.1	ES	Irún	REE	FR	Errondenia	RTE		132		56					
151.3.1	ES	Arkale	REE	FR	Argia [43]	RTE		220		340					
151.4.1	ES	Biescas	REE	FR	Pragnères	RTE		220		237					
152.1.1	ES	Benós	REE	FR	Lac d'Oo	RTE		110		63					
153.1.1	ES	Vic	REE	FR	Baixas	RTE		380		1105					
161.1.1 [44]	DE	Flensburg	E.ON Netz	DK W	Ensted	Energinet.dk		220		332	305				
161.2.1	DE	Flensburg	E.ON Netz	DK W	Kassø	Energinet.dk		220		332	305 [45]				
161.3.1	DE	Audorf	E.ON Netz	DK W	Kassø	Energinet.dk		380		1078	658 [46]				
161.3.2	DE	Audorf	E.ON Netz	DK W	Kassø	Energinet.dk		380		1078	658 [47]				
161.4.1	DE	Flensburg UW Nord	E.ON Netz	DK W	Ensted	Energinet.dk		150		150					
162.1.1 [48]	DE	Bentwisch	VE Transmission	DK E	Bjæverskov	Energinet.dk		400		600 [49]					
163.1.1	NO	Kristiansand	Statnett	DK W	Tjele	Energinet.dk				250 [50]					
163.1.2	NO	Kristiansand	Statnett	DK W	Tjele	Energinet.dk				250 [51]					
164.1.1	NO	Kristiansand	Statnett	DK W	Tjele	Energinet.dk				350 [52]					
165.1.1	SE	Stenkullen	Svenska Kraftnät	DK W	Vester Hassing	Energinet.dk				125 [53]					
166.1.1	SE	Lindome	Svenska Kraftnät	DK W	Vester Hassing	Energinet.dk				360 [54]					
171.1.1	AT	Bisamberg	Verbund - APG	CZ	Sokolnice	CEPS		220		251					
171.2.1	AT	Bisamberg	Verbund - APG	CZ	Sokolnice	CEPS		220		251					
172.1.1	AT	Dürnrohr	Verbund - APG	CZ	Slavetice	CEPS		380		1559	1386 [55]				
181.1.1	AT	Obersielach	Verbund - APG	SI	Podlog	ELES		220		351					
182.1.1	AT	Kainachtal	Verbund - APG	SI	Maribor	ELES		380		1514	450				
182.2.1	AT	Kainachtal	Verbund - APG	SI	Maribor	ELES		380		1514	450				
191.1.1	DE	Niederstedem	RWE Transportnetz Strom	LU	Vianden	SEO		220		490	460 [56,57]				
191.1.2	DE	Niederstedem	RWE Transportnetz Strom	LU	Vianden	SEO		220		490	230				
191.2.1	DE	Bauler	RWE Transportnetz Strom	LU	Vianden	SEO		220		730	345 [58,59]				
191.2.2	DE	Bauler	RWE Transportnetz Strom	LU	Vianden	SEO		220		730	230 [60,61]				
191.3.1	DE	Bauler	RWE Transportnetz Strom	LU	Flebour	CEGEDEL Net SA		220		490			260		
191.4.1	DE	Bauler	RWE Transportnetz Strom	LU	Roost	CEGEDEL Net SA		220		490			260		
192.1.1	DE	Trier	RWE Transportnetz Strom	LU	Heisdorf	CEGEDEL Net SA		220		490					
192.2.1	DE	Quint	RWE Transportnetz Strom	LU	Heisdorf	CEGEDEL Net SA		220		490					

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Observations

[62]	The 400kV DC link between GR-IT is composed of an overhead line and a submarine cable
[63]	In Hungary 2 systems in parallel operation
[64]	DC submarine cable
[65]	Unit is MW instead of MVA
[66]	DC submarine cable
[67]	Unit is MW instead of MVA
[68]	Limited by the connected network
[69]	Nominal voltage in Croatia
[70]	Limited by the connected network
[71]	Nominal voltage in Croatia
[72]	Built for 750 kV
[73]	4500 MVA at 750 kV
[74]	The limitation is 750MW
[75]	Limited by the Albanian network
[76]	Capacity of current transformers at Bistrica
[77]	Limitating installations in CZ
[78]	Limitating installations in CZ
[79]	Disconnected in Yugoslavia
[80]	Destroyed line
[81]	Out of operation

T 9	Connection between:						Voltage of the circuit		Conventional trans- mission capacity of the connection (thermal)*		Limited by the transformers or by the substations				T 9	
	From substation			to substation							of circuits		of lines			
	Circuit ID							Forecast	Present	Forecast	Present	at	Voltage	Transmission capacity		Voltage
	(Frontier point.Line.Circuit)	Country	Name	Operated by	Country	Name	Operated by									
Nr.							kV	kV	MVA	MVA	MVA	kV	MVA	kV		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
201.1.1	IT	Redipuglia	Terna	SI	Divaca	ELES		380		1619						
201.2.1	IT	Padriciano	Terna	SI	Divaca	ELES		220		305						
205.1.1 [62]	IT	Galatina	Terna	GR	Arachthos	HTSO		380		500						
211.1.1	AT	Wien Süd-Ost	Verbund - APG	HU	Győr	MAVIR		220		209						
211.1.2	AT	Neusiedel	Verbund - APG	HU	Győr	MAVIR		220		209						
212.1.1 [63]	AT	Wien Süd-Ost	Verbund - APG	HU	Győr	MAVIR		380		1514						
221.1.1	FR	Mandarins	RTE	GB	Sellindge	National Grid		270 [64]		1000 [65]						
221.2.1	FR	Mandarins	RTE	GB	Sellindge	National Grid		270 [66]		1000 [67]						
231.1.1	ES	Las Conchas	REE	PT	Lindoso	REN		132		90						
232.1.1	ES	Aldeadávila	REE	PT	Bemposta	REN		220		374						
232.2.1	ES	Aldeadávila	REE	PT	Pocinho	REN		220		374						
232.3.1	ES	Saucelle	REE	PT	Pocinho	REN		220		346						
233.1.1	ES	Cedillo	REE	PT	Falagueira	REN		380		1300						
234.1.1	ES	Cartelle	REE	PT	Alto Lindoso	REN		380		1330						
234.1.2	ES	Cartelle	REE	PT	Alto Lindoso	REN		380		1330						
235.1.1	ES	Brovales	REE	PT	Alqueva	REN		400		1347						
241.1.1	MK	Dubrovo	MEPSO	GR	Thessaloniki	HTSO		400		1300						
242.1.1	MK	Bitola	MEPSO	GR	Amyndeo	HTSO		150		120	100					
251.1.1	HU	Lenti	MAVIR	HR	Nedeljanec	HEP-OPS		120		79	50 [68]	110 [69]				
251.2.1	HU	Siklos	MAVIR	HR	Donji Miholjac	HEP-OPS		120		114	50 [70]	110 [71]				
251.3.1	HU	Hévíz	MAVIR	HR	Zerjavinec	HEP-OPS		400		1246						
251.3.2	HU	Hévíz	MAVIR	HR	Zerjavinec	HEP-OPS		400		1246						
261.1.1	CS	Djerdap	EMS	RO	Portile de Fier	TRANSELECTRICA		380		1200						
262.1.1	CS	Kikinda 1	EMS	RO	Jimbolia	TRANSELECTRICA		110		55						
263.1.1	CS	Kusijak	EMS	RO	Ostrovu Mare	TRANSELECTRICA		110		90						
264.1.1	CS	Sip	EMS	RO	Gura Vaii	TRANSELECTRICA		110		90						
271.1.1	BG	Sofija Zapad	NEK	CS	Niš	EMS		380		1309						
272.1.1	BG	Breznik	ESO EAD	CS	HE Vrla 1	EMS		110		97						
273.1.1	BG	Kula	ESO EAD	CS	Zajecar	EMS		110		90						
275.1.1	RO	Isaccea	TRANSELECTRICA	BG	Varna	ESO EAD	750	400 [72]	4500	2300 [73]			750[74]			
276.1.1	RO	Isalnita	TRANSELECTRICA	BG	Kozlodui	ESO EAD		220		330						
277.1.1	RO	Tântareni	TRANSELECTRICA	BG	Kozlodui	ESO EAD		400		1200		1000				
277.1.2	RO	Tântareni	TRANSELECTRICA	BG	Kozlodui	ESO EAD		400		1200						
278.1.1	RO	Isaccea	TRANSELECTRICA	BG	Dobrudja	ESO EAD		400		1660			830			
281.1.1	AL	Vau i Dejës	KESH	CS	Podgorica	EP CG		220		276						
282.1.1	AL	Fierza	KESH	CS	Prizren	EMS		220		270						
291.1.1	AL	Elbassan	KESH	GR	Kardia	HTSO		400		1300	250 [75]					
292.1.1	AL	Bistrica	KESH	GR	Mourtos	HTSO		150		120	40 [76]					
301.1.1	BG	Blagoevgrad	ESO EAD	GR	Thessaloniki	HTSO		400		1300	700					
321.1.1	CZ	Hradec Zapad	CEPS	DE	Etzenricht	E.ON Netz		380		1363	1316 [77]					
321.1.2	CZ	Prestice	CEPS	DE	Etzenricht	E.ON Netz		380		1363	1579 [78]					
322.1.1	CZ	Hradec Vychod	CEPS	DE	Röhrsdorf	VE Transmission		380		1205						
322.1.2	CZ	Hradec Vychod	CEPS	DE	Röhrsdorf	VE Transmission		380		1205						
331.1.1	HU	Sándorfalva	MAVIR	CS	Subotica 3	EMS		380		1295	1050					
332.1.1	HU	Szeged	MAVIR	CS	Subotica	EMS		110		79 [79]	62					
341.1.1	BG	Skakavica	ESO EAD	MK	Kriva Palanka	MEPSO		110		123						
341.2.1	BG	Petric	ESO EAD	MK	Sušica	MEPSO		110		123						
351.1.1	HR	Melina	HEP -OPS	SI	Divaca	ELES		380		1264						
351.2.1	HR	Pehlin	HEP -OPS	SI	Divaca	ELES		220		366						
351.3.1	HR	Buje	HEP -OPS	SI	Koper	ELES		110		89						
351.4.1	HR	Matulji	HEP -OPS	SI	Ilirska Bistrica	ELES		110		53						
352.1.1	HR	Tumbri	HEP -OPS	SI	Krško	ELES		380		1316						
352.1.2	HR	Tumbri	HEP -OPS	SI	Krško	ELES		380		1316						
352.2.1	HR	Žerjavinec	HEP -OPS	SI	Cirkovce	ELES		220		297						
352.3.1	HR	Nedeljanec	HEP -OPS	SI	Formin	ELES		110		115						
361.1.1	BA	Mostar	NOS BiH	HR	Konjsko	HEP-OPS		400		1316						
361.2.1	BA	Mostar	NOS BiH	HR	Zakucac	HEP-OPS		220		311						
361.3.1	BA	Grahovo	NOS BiH	HR	Knin	HEP-OPS		110		90						
361.4.1	BA	Buško Blato	NOS BiH	HR	Kraljevac	HEP-OPS		110		115						
361.5.1	BA	Buško Blato	NOS BiH	HR	Peruca	HEP-OPS		110		90						
361.6.1	BA	Grude	NOS BiH	HR	Imotski	HEP-OPS		110		72						
361.7.1	BA	Kulen Vakuf	NOS BiH	HR	Gracac	HEP-OPS		110		120	101					
362.1.1	BA	Jajce	NOS BiH	HR	Mraclin	HEP-OPS		220		297[80]						
362.2.1	BA	Prijedor	NOS BiH	HR	Meduric	HEP-OPS		220		297						
363.1.1	BA	Trebinje	NOS BiH	HR	Dubrovnik	HEP-OPS		220		460 [81]						
363.2.1	BA	Trebinje	NOS BiH	HR	Dubrovnik	HEP-OPS		220		460						

*The conventional transmission capacity of cross-frontier tie-lines is based upon parameters standardised within UCTE for the calculation of the thermal load capability of each line. For arial lines these are : ambient temperature of + 35°C, wind velocity of 0,56 m/s at a right angle to the line as well as the voltage value stated in column 10 or 11. The conditions relevant to system operation in various countries at various time of the year can strongly differ from those above. Because the real allowable load capability of the line depends on many other factors, such as load flow distribution, upholding of voltage, real ambient conditions, limits of stability, n-1 security, etc., the conventional transmission capacity has no relevance from the point of view of system operation or economics but allows just a comparison of order of magnitude of the various lines. Adding together the conventional transmission capacity of several tie-lines does not allow to infer on the real total transmission capability and leads to irrelevant results from the point of view of system operation.

Observations

[82]	Destroyed line and substation
[83]	Destroyed line
[84]	Destroyed line
[85]	New line 400 kV between CS (EMS) and BA (NOS) Ugljevik - Sremska Mitrovica is operational from EMS side
[86]	Line is destroyed, currently under construction
[87]	Line is destroyed, currently under construction
[88]	DC submarine cable
[89]	Monopol
[90]	Limited by the measuring transformer of current
[91]	Limited by the connections among equipments
[92]	Limited by the measuring transformer of current
[93]	Limited by the measuring transformer of current
[94]	Limited by the wire
[95]	Limited by the wire
[96]	On PL side 400 kV, on DE side 380 kV
[97]	On PL side 400 kV, on DE side 380 kV
[98]	Submarine cable
[99]	Submarine cable
[100]	Limited by current transformer at Krosno
[101]	Limited by current transformer at Krosno
[102]	Out of operation
[103]	Limited by HF attenuator at UA side
[104]	Radial operation
[105]	Out of operation
[106]	Submarine cable
[107]	Limited by the choke coil
[108]	Limited by the choke coil
[109]	Limited by the measuring transformer of current
[110]	Out of operation/ substation local automatic equipment
[111]	Out of operation/ substation local automatic equipment
[112]	Limited by HF attenuator
[113]	Not in operation
[114]	Limitation 900 MW

T 9	Connection between:						Voltage of the circuit		Conventional trans- mission capacity of the connection (thermal)*		Limited by the transformers or by the substations				T 9
	From substation			to substation							of circuits		of lines		
	Circuit ID (Frontier point.Line.Circuit)	Country	Name	Operated by	Country	Name	Operated by	Forecast	Present	Forecast	Present	at	Voltage	Transmission capacity	Voltage
Nr.							kV	kV	MVA	MVA	MVA	kV	MVA	kV	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
363.3.1	BA	Capljina	NOS BiH	HR	Opuzen	HEP-OPS		110		84					
363.4.1	BA	Neum	NOS BiH	HR	Opuzen	HEP-OPS		110		84					
363.5.1	BA	Neum	NOS BiH	HR	Ston	HEP-OPS		110		76					
363.6.1	BA	Trebinje	NOS BiH	HR	Komolac	HEP-OPS		110		84					
364.1.1	BA	Ugljevik	NOS BiH	HR	Ernestinovo	HEP-OPS		400		1264 [82]					
364.2.1	BA	Gradacac	NOS BiH	HR	Đakovo	HEP-OPS		220		229 [83]					
364.3.1	BA	Tuzla	NOS BiH	HR	Đakovo	HEP-OPS		220		229					
364.4.1	BA	Bosanski Brod	NOS BiH	HR	Slavonski Brod 2	HEP-OPS		110		115 [84]					
364.5.1	BA	Orasje	NOS BiH	HR	Županja	HEP-OPS		110		76					
371.1.1	HR	Ernestinovo	HEP-OPS	CS	Sremska Mitrovica	EMS		380		1264					
371.2.1	HR	Nijemci	HEP-OPS	CS	Šid	EMS		110		76					
371.3.1	HR	Beli Manastir	HEP-OPS	CS	Apatin	EMS		110		78					
381.1.1	BA	Trebinje	NOS BiH	CS	Podgorica	EP CG		380		1264					
381.2.1	BA	Trebinje	NOS BiH	CS	Perucica	EP CG		220		276					
381.3.1	BA	Trebinje	NOS BiH	CS	Herceg Novi	EP CG		110		90					
381.4.1	BA	Bileca	NOS BiH	CS	Vilusi	EP CG		110		84					
382.1.1	BA	Sarajevo 20	NOS BiH	CS	Piva	EP CG		220		366					
382.2.1	BA	Goražde	NOS BiH	CS	Pljevlja	EP CG		110		90					
383.1.1	BA	Višegrad	NOS BiH	CS	Požega	EMS		220		311					
383.2.1	BA	Bijeljina	NOS BiH	CS	Lešnica	EMS		110		123					
383.3.1	BA	Zvornik	NOS BiH	CS	HE Zvornik	EMS		110		123					
383.4.1	BA	Višegrad	NOS BiH	CS	Potpec	EMS		110		90					
383.5.1	BA	Ugljevik	NOS BiH	CS	Sremska Mitrovica	EMS		380		1264 [85]					
391.1.1	MK	Skopje 1	MEPSO	CS	Kosovo A	EMS		220		311 [86]					
391.2.1	MK	Skopje 1	MEPSO	CS	Kosovo A	EMS		220		311 [87]					
391.3.1	MK	Skopje 5	MEPSO	CS	Kosovo B	EMS		380		1218					
401.1.1 [88,89]	DE	Herrenwyk	E.ON Netz	SE	Kruseberg	Sydkraft/Vattenfall		450		600					
404.1.1	CZ	Nosovice	CEPS	SK	Varin	SEPS		400		1205	1386 [90]				
410.1.1	CZ	Liskovec	CEPS	SK	Pov. Bystrica	SEPS		220		269					
420.1.1	CZ	Sokolnice	CEPS	SK	Senica	SEPS		220		318					
424.1.1	CZ	Sokolnice	CEPS	SK	Krizovany	SEPS		400		1205	1323 [91]				
430.1.1	CZ	Sokolnice	CEPS	SK	Stupava	SEPS		400		1363	831 [92]				
440.1.1	SK	V.Kapusany	SEPS	UA_W	Mukachevo	NPC Ukrenergo		400		1186	831 [93]				
443.1.1	CZ	Albrechtice	CEPS	PL	Dobrzyen	PSE-Operator S.A.		400		1088					
444.1.1	CZ	Nošovice	CEPS	PL	Wielopole	PSE-Operator S.A.		400		1088					
450.1.1	CZ	Liskovec	CEPS	PL	Kopanina	PSE-Operator S.A.		220		399					
460.1.1	CZ	Liskovec	CEPS	PL	Bujaków	PSE-Operator S.A.		220		399					
501.1.1	DE	Vierraden	VE Transmission	PL	Krajnik	PSE-Operator S.A.		220		402 [94]					
501.1.2	DE	Vierraden	VE Transmission	PL	Krajnik	PSE-Operator S.A.		220		402 [95]					
502.1.1	DE	Hagenwerder	VE Transmission	PL	Mikulowa	PSE-Operator S.A.		380 [96]		1302					
502.1.2	DE	Hagenwerder	VE Transmission	PL	Mikulowa	PSE-Operator S.A.		380 [97]		1302					
601.1.1 [98]	ES	Puerto de la Cruz	REE	MA	Melloussa 1	ONE		380		715					
601.1.2 [99]	ES	Puerto de la Cruz	REE	MA	Melloussa 2	ONE		380		715					
700.1.1	PL	Krosno Iskrzynia	PSE-Operator S.A.	SK	Lemešany	SEPS		400		1252	831 [100]				
700.1.2	PL	Krosno Iskrzynia	PSE-Operator S.A.	SK	Lemešany	SEPS		400		1252	831 [101]				
701.1.1	PL	Rzeszów	PSE-Operator S.A.	UA	Chmielnicka	NPC Ukrenergo		750		2676 [102]	1949 [103]				
702.1.1	PL	Zamosc	PSE-Operator S.A.	UA	Dobrotwor	NPC Ukrenergo		220		309 [104]					
703.1.1	PL	Bialystok	PSE-Operator S.A.	BY	Ros	Grodnoenergo		220		215 [105]					
704.1.1	PL	Slupsk	PSE-Operator S.A.	SE	Stårnø	Svk		450		600 [106]					
710.1.1	HU	Győr	MAVIR	SK	Gabcikovo	SEPS		400		1330	1386 [107]				
711.1.1	HU	Göd	MAVIR	SK	Levice	SEPS		400		1330	1386 [108]				
720.1.1	HU	Albertirsa	MAVIR	UA_W	Zahidno Ukrainska	NPC Ukrenergo		750		4010	1400				
721.1.1	HU	Sajószöged	MAVIR	UA_W	Mukacevo	NPC Ukrenergo		400		1390	693 [109]				
722.1.1	HU	Kisvárd	MAVIR	UA_W	Mukacevo	NPC Ukrenergo		220		209	305				
722.1.2	HU	Tiszalök	MAVIR	UA_W	Mukacevo	NPC Ukrenergo		220		209	305				
730.1.1	HU	Sándorfalva	MAVIR	RO	Arad	TRANSELECTRICA		400		1200					
740.1.1	RO	Rosiori	TRANSELECTRICA	UA_W	Mukacevo	NPC Ukrenergo		400		1186 [110]					
741.1.1	RO	Isaccea	TRANSELECTRICA	UA_W	PivdennoUkrainska AES	NPC Ukrenergo		750		4500 [111]	2100 [112]				
750.1.1	RO	Stânca	TRANSELECTRICA	MD	Costesti	Moldenergo		110		55					
751.1.1	RO	Husi	TRANSELECTRICA	MD	Cioara	Moldenergo		110		55					
752.1.1	RO	Tutora	TRANSELECTRICA	MD	Ungheni	Moldenergo		110		55					
753.1.1	RO	Issaccea	TRANSELECTRICA	MD	Vulcanesti	Moldenergo		400		1340					
760.1.1	BG	Maritsa3	ESO EAD	TR	Babaeski	TEIAS		400		1309 [113]	900				
761.1.1	BG	Maritsa3	ESO EAD	TR	Hamitabat	TEIAS		400	1715	900 [114]					

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Abbreviations used of grid operators

Austria	Verbund - APG TIWAG Netz AG VKW - Netz AG	Verbund - Austria Power Grid AG TIWAG Netz AG VKW - Netz AG	Denmark West	Energinet.dk	Energinet.dk
Bosnia - Herzegovina	ISO BiH	Nezavisni operator sustava u Bosni i Hercegovini	Denmark East	Energinet.dk	Energinet.dk
Belgium	Elia	Elia System Operator SA/NV	Ukraine West	NPC Ukrenergo	NPC Ukrenergo
Bulgaria	ESO EAD	Electroenergien Sistemen Operator EAD	Albania	KESH	Albanian Electroenergetic Corporation
Switzerland	swissgrid	swissgrid ag	Belarus	Grodnoenergo	Grodnoenergo
Serbia & Montenegro	EPCG EPS	Elektroprivreda Crne Gore JP Elektromreža Srbije	Great Britain	National Grid	The National Grid Company plc
Czech Republic	CEPS	CEPS a.s.	Morocco	ONE	Office National de l'Electricité
Germany	E.ON Netz EnBW Transportnetze RWE Transportnetz Strom VE Transmission	E.ON Netz GmbH EnBW Transportnetze AG RWE Transportnetz Strom GmbH Vattenfall Europe Transmission GmbH	Republic of Moldavia	Moldenergo	Moldenergo
Spain	REE	Red Eléctrica de España S.A.	Norway	Statnett	Statnett
France	RTE	RTE EDF Transport S.A.	Republic of Turkey	TEIAS	Türkiye Elektrik İletim A.S.
Greece	HTSO / DESMIE	Hellenic Transmission System Operator/ Diachristis Elinikou Sistimatos Metaforas Ilektrikis Energias	Sweden	SYDKRAFT VATTENFALL SvK	Sydkraft AB Vattenfall AB Svenska Kraftnät
Croatia	HEP - OPS	HEP-Operator prijenosnog sustava d.o.o.			
Hungary	MAVIR ZRt.	MAVIR Magyar Villamosenergia-ipari Rendszerirányító Zártkörűen Működő Részvénytársaság			
Italy	Terna S.p.A.	Terna - Rete Elettrica Nazionale SpA			
Luxembourg	CEGEDEL Net S.A.	Compagnie Grand Ducale d'Electricité du Luxembourg			
FYROM	MEPSO	Elektrostopanstvo na Makedonija AD, Skopje			
The Netherlands	TenneT TSO B.V.	TenneT TSO B.V.			
Poland	PSE-Operator	PSE-Operator S.A.			
Portugal	REN	Rede Eléctrica Nacional, S.A.			
Romania	TRANSELECTRICA	C.N. Transelectrica S.A.			
Slovenia	ELES	Elektro Slovenija			
Slovak Republic	SEPS	Slovenska elektrizacna prenosova sustava, a.s.			

Circuit ID	From substation	To substation	Voltage [kV]	Thermal conventional transmission capacity [MVA]	Major Reason	Time whole year [min]	January [min]	February [min]	March [min]	April [min]	May [min]	June [min]	July [min]	August [min]	September [min]	October [min]	November [min]	December [min]
11.1.1	DE - Diele (E.ON Netz)	NL - Meeden (TenneT TSO B.V.)	380	1382	R1,R2	10013		490			1078		6581	1864				
11.1.2	DE - Diele (E.ON Netz)	NL - Meeden (TenneT TSO B.V.)	380	1382	R1,R2	6938						5196	1572	170				
13.1.2	DE - Rommerskirchen (RWE Transportnetz Strom)	NL - Maasbracht (TenneT TSO B.V.)	380	1698	R1	9430						9430						
15.1.1	DE - Gronau (RWE Transportnetz Strom)	NL - Hengelo (TenneT TSO B.V.)	380	1790	R10	4004			550		1009	2445						
15.1.2	DE - Gronau (RWE Transportnetz Strom)	NL - Hengelo (TenneT TSO B.V.)	380	1790	R10	42301						994			41307			
25.1.1	BE - Gramme (Elia)	NL - Maasbracht (TenneT TSO B.V.)	380	1207	R1	39216								38395		821		
25.1.2	BE - Meerhout (Elia)	NL - Maasbracht (TenneT TSO B.V.)	380	1270	R1	45432								471		22597	22364	
26.1.1	BE - Zandvliet (Elia)	NL - Geertruidenberg (TenneT TSO B.V.)	380	1476	R1,R2	15302	14744									558		
26.2.1	BE - Zandvliet (Elia)	NL - Borssele (TenneT TSO B.V.)	380	1476	R1,R2	27657		13338		7815				500	6004			
41.1.1	BE - Aubange (Elia)	LU - Belval (SOTEL)	220	358	R1	2209		2209										
41.1.2	BE - Aubange (Elia)	LU - Belval (SOTEL)	220	358	R1	391								391				
41.2.1	BE - Aubange (Elia)	LU - Belval (SOTEL)	150	157	R1	1187	497			230		45						415
41.3.1	BE - Aubange (Elia)	LU - Belval (SOTEL)	150	157	R1	4847	404			289	2252	24	1463					415
51.1.1	BE - Jamiolle (Elia)	FR - Chooz (RTE)	220	362	R1	6407							4					6403
51.2.1	BE - Avelgem (Elia)	FR - Mastaing (RTE)	380	1207	R1	3415				3405					10			
51.2.2	BE - Avelgem (Elia)	FR - Avelin (RTE)	380	1367	R1,R9	3392		24		3368								
51.3.1	BE - Achene (Elia)	FR - Lonny (RTE)	380	1207	R1	3466					3466							
52.1.1	BE - Aubange (Elia)	FR - Moulaine (RTE)	220	358	R1	16478									8137	8341		
71.1.1	DE - Uchtelfangen (RWE Transportnetz Strom)	FR - Vigy (RTE)	380	1790	R1	666			666									
71.1.2	DE - Uchtelfangen (RWE Transportnetz Strom)	FR - Vigy (RTE)	380	1790	R1	46170			5203				40967					
71.2.1	DE - Ensdorf (RWE Transportnetz Strom)	FR - St-Avoid (RTE)	220	282	R1,R9,R10	16739			672		489		6466		3271		5841	
72.1.1	DE - Eichstetten (EnBW Transportnetze)	FR - Vogelgrün (RTE)	220	492	R1	8195		1972				568		5634			21	
72.1.2	DE - Eichstetten (EnBW Transportnetze)	FR - Muhlbach (RTE)	380	1790	R2	500					500							
81.1.1	CH - Bassecourt (BKW)	FR - Sierentz (RTE)	380	1340	R1,R9,R10	31863				26326		642					3902	993
81.2.1	CH - Laufenburg (EGL Grid)	FR - Sierentz (RTE)	380	1340	R1,R2	45494	2033				2004	35395	6062					
81.3.1	CH - Bassecourt (BKW)	FR - Mambelin (RTE)	380	1340	R1,R2	9045	2049			564						6432		
82.1.1	CH - Verbois (EOS)	FR - Bois-Tollot (RTE)	380	1564	R1,R2,R9	9963	4869							1736	3358			
82.1.2	CH - Chamoson (EOS)	FR - Bois-Tollot (RTE)	380	1564	R1,R2,R9,R10	31962	4920			420		1912	23930	162	618			
82.2.1	CH - Verbois (EOS)	FR - Génissiat (RTE)	220	428	R1	3204									3204			
82.2.2	CH - Verbois (EOS)	FR - Génissiat (RTE)	220	428	R1	3258									3258			
82.4.1	CH - La Bâtieaz (Atel)	FR - Vallorcine (RTE)	220	370	R1,R2	695				565			41	89				
82.5.1	CH - Riddes (EGL Grid)	FR - Cornier (RTE)	220	360	R1,R9	14987					14800							187
82.6.1	CH - St.-Triphon (EOS)	FR - Cornier (RTE)	220	360	R1	16072					3840	12232						
83.1.1	DE - Asphard (Atel/NOK/EnBW Tr.Netz)	FR - Sierentz (RTE)	380	1660	R1,R9	14157	6460						4819			876		2002
91.1.1	FR - Albertville (RTE)	IT - Rondissone (Terna)	380	1745	R1	18869								18869				
91.1.2	FR - Albertville (RTE)	IT - Rondissone (Terna)	380	1745	R1	18869								18869				
92.1.1	FR - Trinite Victor (RTE)	IT - Camporosso (Terna)	220	320	R1,R9	25328				209	302			15398	9419			
93.1.1	FR - Villarodin (RTE)	IT - Venaus (Terna)	380	956	R1,R9,R10	8415			214		94	60		6127		1920		
94.1.1	FR - Lucciana (EDF)	IT - Suvereto (Terna)	220	300	R1	18240									8160			10080
102.1.1	CH - Laufenburg (EGL Grid)	DE - Gurtweil (EnBW Transportnetze)	220	485	R1	3051						2485	566					
102.1.2	CH - Laufenburg (EGL Grid)	DE - Gurtweil (EnBW Transportnetze)	220	469	R1,R2	1543							623	386	534			
102.2.1	CH - Laufenburg (EGL Grid)	DE - Kühmoos (EnBW Transportnetze)	220	469	R1,R2,R9	10881					3705	2492	4151		533			
102.3.1	CH - Laufenburg (EGL Grid)	DE - Kühmoos (EnBW Transportnetze)	220	469	R1	6370					3705		2665					
102.3.2	CH - Laufenburg (EGL Grid)	DE - Kühmoos (EnBW Transportnetze)	380	1620	R1	4640								547		3513	580	
102.4.1	CH - Laufenburg (EGL Grid)	DE - Kühmoos (EnBW Transportnetze)	380	1620	R1	3091				977				547		987	580	
102.4.2	CH - Laufenburg (EGL Grid)	DE - Kühmoos (RWE Transportnetz Strom)	380	1620	R1	49519	778		43652		5089							
102.5.1	CH - Laufenburg (EGL Grid)	DE - Tiengen (RWE Transportnetz Strom)	380	1131	R1,R10	52734	3468			2031			11094	35541		600		
103.1.1	CH - Beznau (NOK)	DE - Tiengen (RWE Transportnetz Strom)	380	1278	R1	22131								22131				
103.1.2	CH - Beznau (NOK)	DE - Tiengen (RWE Transportnetz Strom)	220	370	R2	22128								22128				
104.1.1	CH - Asphard (Atel/NOK)	DE - Kühmoos (EnBW Transportnetze)	380	1340	R1,R2	32708					24060	2461	3610			608		1969
105.1.1	CH - Laufenburg (EGL Grid)	DE - Engstlatt (EnBW Transportnetze)	380	1580	R1,R9	45357				1957	1920	40757	723					
111.1.1	AT - Bürs (VIW)	DE - Obermooweller (EnBW Transportnetze)	380	1369	R1,R2,R7,R9	3113	934	723				506	284		467	199		
111.1.2	AT - Bürs (VIW)	DE - Obermooweller (EnBW Transportnetze)	380	1369	R1,R2,R9	1362			317			31	356		500	158		
111.2.1	AT - Bürs (VIW)	DE - Herberdingen (RWE Transportnetz Strom)	220	389	R1,R2,R9	35525	55					318			30338		4814	
111.3.1	AT - Bürs (VIW)	DE - Dellmensingen (RWE Transportnetz Strom)	220	492	R1,R2,R10	4500				872	154	103	926	243	2202			
115.2.1	AT - Braunau (ÖBK)	DE - Stammham (E.ON Netz)	110	102	R2	578												578
115.5.1	AT - St. Peter (Verbund-APG)	DE - Altheim (E.ON Netz)	220	301	R1,R2	8703	2964		990		3597	1152						
115.6.1	AT - St. Peter (Verbund-APG)	DE - Simbach (E.ON Netz)	220	301	R1,R2	5598			671		3776	1151						
115.9.1	AT - St. Peter (Verbund-APG)	DE - Pirach (E.ON Netz)	220	518	R1,R9	8835			920							1723	1991	4201
115.10.1	AT - St. Peter (Verbund-APG)	DE - Pleinting (E.ON Netz)	220	518	R1,R2,R9,R10	3299			1023			135	33		420	1604	84	
116.1.1	AT - Westtirol (Verbund-APG)	DE - Leupolz (RWE Transportnetz Strom)	380	1316	R1	729					729							
116.2.1	AT - Westtirol (Verbund-APG)	DE - Memmingen (RWE Transportnetz Strom)	220	762	R1,R2	2240									1838		175	227
117.1.1	AT - Silz (TIWAG-Netz)	DE - Oberbrunn (E.ON Netz)	220	793	R9,R10	16922					15168	4	1431					319
117.1.2	AT - Silz (TIWAG-Netz)	DE - Oberbrunn (E.ON Netz)	220	793	R9	25916					22542	2051	1323					

Reasons: R1 - Maintenance, R2 - Repair, R3 - New construction, R4 - Overload (also calculated), R5 - False operation, R6 - Failure in prodection device or other element, R7 - Outside impacts (animals, trees, fire, avalance,...), R8 - Very exceptional conditions (weather, natural disaster,...), R9 - Other reasons, R10 - Unknown reasons

Circuit ID	From substation	To substation	Voltage [kV]	Thermal conventional transmission capacity [MVA]	Major Reason	Time whole year [min]	January [min]	February [min]	March [min]	April [min]	May [min]	June [min]	July [min]	August [min]	September [min]	October [min]	November [min]	December [min]
121.1.1	CH - All' Acqua (Atel)	IT - Ponte (Terna)	220	905	R1	4213						3472	741					
121.2.1	CH - Gorduno (Atel)	IT - Mese (Terna)	220	370	R1, R9	18133						270			17863			
121.3.1	CH - Soazza (EGL Grid)	IT - Bulciago (Terna)	380	1340	R1	3813				240				3573				
121.4.1	CH - Lavorgo (Atel)	IT - Musignano (Terna)	380	1278	R1, R2, R9	18015				582	710			15412	1151			160
123.1.1	CH - Riddes (EGL Grid)	IT - Avise (Terna)	220	331	R1	8385									6380	2005		
123.2.1	CH - Riddes (EGL Grid)	IT - Valpelline (Terna)	220	331	R1	377										377		
123.3.1	CH - Serra (RHOWAG)	IT - Pallanzeno (Terna)	220	370	R2	1811	539	635		199							438	
124.1.1	CH - Robbia (RE)	IT - Gorlago (Terna)	380	1340	R1, R9	7057					6469				588			
124.1.2	CH - Robbia (RE)	IT - San Fiorano (Terna)	380	1340	R1, R2	585										464		121
132.1.1	AT - Lienz (Verbund-APG)	IT - Soverzene (Terna)	220	257	R1	10320				7740		2100					480	
141.1.1	AT - Meiningen (VKW-Netz)	CH - Y-Pehag (NOK)	220	501	R1, R2, R9, R10	7203	1621				348		1664			3443	127	
141.2.1	AT - Meiningen (VKW-Netz)	CH - Winkeln (NOK)	220	776	R1, R2	32623					276				8232	24115		
142.1.1	AT - Westtirol (Verbund-APG)	CH - Pradella (EGL Grid)	380	1340	R1	3487					3487							
142.2.1	AT - Westtirol (Verbund-APG)	CH - Pradella (EGL Grid)	380	1340	R1	3505					3505							
151.1.1	ES - Hernani (REE)	FR - Argia (RTE)	380	1482	R1, R10	847	308				539							
151.2.1	ES - Irún (REE)	FR - Errondenia (RTE)	132	59	R9	26379			16627	9752								
151.3.1	ES - Arkale (REE)	FR - Argia (RTE)	220	369	R1, R4	2017	38									1979		
151.4.1	ES - Biescas (REE)	FR - Pragnères (RTE)	220	268	R1, R2	4911						1599				3312		
152.1.1	ES - Benós (REE)	FR - Lac d'Oo (RTE)	110	76	R8	870										870		
153.1.1	ES - Vic (REE)	FR - Baixas (RTE)	380	1489	R1	514	514											
161.1.1	DE - Flensburg (E.ON Netz)	DK_W - Ensted (Energinet.dk)	220	332	R2	83											83	
161.2.1	DE - Flensburg (E.ON Netz)	DK_W - Kasso (Energinet.dk)	220	332	R2	318											318	
161.3.1	DE - Audorf (E.ON Netz)	DK_W - Kasso (Energinet.dk)	380	1382	R1	338											338	
161.3.2	DE - Audorf (E.ON Netz)	DK_W - Kasso (Energinet.dk)	380	1382	R1, R2	2764									522		2242	
163.1.1	NO - Kristiansand (Statnett)	DK_W - Tjele (Energinet.dk)		250	R1, R5, R6	3649	137				3464	48						
163.1.2	NO - Kristiansand (Statnett)	DK_W - Tjele (Energinet.dk)		250	R1, R6, R9, R10	15705	2425	2205			6244	48						4783
164.1.1	NO - Kristiansand (Statnett)	DK_W - Tjele (Energinet.dk)		350	R6	447653	12605	40320	44580	43200	44640	43200	44640	44640	43200	44700	41761	167
165.1.1	SE - Stenkullen (Svenska Kraftnät)	DK_W - Vester Hassing- Lindome (Energinet.dk)		125	R1, R2, R4, R5, R6, R9	21701	948	168	2036	1322	281	1152	592	6240	6601	2361		
166.1.1	SE - Lindome (Svenska Kraftnät)	DK_W - Vester Hassing- Lindome (Energinet.dk)		360	R1, R2, R5, R6, R9	7871	106		2020	12		641			684	666	3455	287
171.1.1	AT - Bisamberg (Verbund-APG)	CZ - Sokolnice (CEPS)	220	269	R2, R3	57493			23974	19339		14180						
171.2.1	AT - Bisamberg (Verbund-APG)	CZ - Sokolnice (CEPS)	220	269	R2, R3	52843				18952		26941	6950					
172.1.1	AT - Dürnröhr (Verbund-APG)	CZ - Slavetice (CEPS)	380	1711	R1	42410								42410				
181.1.1	AT - Obersielach (Verbund-APG)	SI - Podlog (ELES)	220	351	R1, R9	530		382	121	14				13				
182.1.1	AT - Kainachtal (Verbund-APG)	SI - Maribor (ELES)	380	1514	R9	1202												
182.2.1	AT - Kainachtal (Verbund-APG)	SI - Maribor (ELES)	380	1514	R9	1064												
191.3.1	DE - Bauler (RWE Transportnetz Strom)	LU - Flebour (CEGEDEL Net SA)	220	490	R10	5260	413	4847										
191.4.1	DE - Bauler (RWE Transportnetz Strom)	LU - Roost (CEGEDEL Net SA)	220	492	R10	5270												
192.1.1	DE - Trier (RWE Transportnetz Strom)	LU - Heisdorf (CEGEDEL Net SA)	220	492	R1	28620	1000	12917	11993		270		2309				131	
192.2.1	DE - Quint (RWE Transportnetz Strom)	LU - Heisdorf (CEGEDEL Net SA)	220	492	R1	63976	9186	8772		11643	19039		1181		13079			1076
201.1.1	IT - Redipuglia (Terna)	SI - Divaca (ELES)	380	1619	R1	9240								9240				
205.1.1	IT - Galatina (Terna)	GR - Arachthos (HTSO)	380	500	R1, R6, R9	23840	346				802	22511					181	
211.1.1	AT - Wien Sued-Ost (Verbund-APG)	HU - Gyoer (MAVIR)	220	305	R1	139		139										
211.1.2	AT - Neusiedl (Verbund-APG)	HU - Gyoer (MAVIR)	220	305	R1	216		216										
221.1.1	GB - Sellindge (National Grid)	FR - Mandarins (RTE)	270	1000	R1, R2, R6, R9, R10	6544	391				106	542		39	5466			
221.2.1	GB - Sellindge (National Grid)	FR - Mandarins (RTE)	270	1000	R1, R9, R10	4011	28	651	39		52				3120		121	
233.1.1	ES - Cedillo (REE)	PT - Falagueira (REN)	380	1621	R1	5475		2742			2733							
235.1.1	ES - Brovaes (REE)	PT - Alqueva (REN)	400	1347	R1, R3	4889			3203	853	833							
241.1.1	MK - Dubrovo (MEPSO)	GR - Thessaloniki (HTSO)	400	1300	R1	2764									2764			
242.1.1	MK - Bitola (MEPSO)	GR - Amyrdeo (HTSO)	150	120	R1	5942									5942			
261.1.1	CS - Djerdap (EMS)	RO - Portile de Fier (TRANSELECTRICA)	400	1250	R1	8049				225							7824	
262.1.1	CS - Kikinda 1 (EMS)	RO - Jimbolia (TRANSELECTRICA)	110	65	R1	16370					16370							
263.1.1	CS - Kusiak (EMS)	RO - Ostrovu Mare (TRANSELECTRICA)	110	90	R1	1972					1972							
264.1.1	CS - Sip (EMS)	RO - Gura Văii (TRANSELECTRICA)	110	90	R1	626											626	
271.1.1	BG - Sofija Zapad (EOS EAD)	CS - Nis (EMS)	380	1309	R1	11643									11192	451		
276.1.1	RO - Isalnita (TRANSELECTRICA)	BG - Kozlodui (EOS EAD)	220	330	R1, R2	24918									6312			18606
277.1.1	RO - Tântareni (TRANSELECTRICA)	BG - Kozlodui (EOS EAD)	400	1200	R1	22683					18900	1965						1818
277.1.2	RO - Tântareni (TRANSELECTRICA)	BG - Kozlodui (EOS EAD)	400	1200	R1	3776						1958						1818
278.1.1	RO - Isaccea (TRANSELECTRICA)	BG - Dobrudja (EOS EAD)	400	1660	R1	8856			4118	3680	1058							
281.1.1	AL - Vau i Dejës (KESH)	CS - Podgorica 2 (EP CG)	220	276	R1, R5	8237	2474	118	1382	17	3952	241		53				
282.1.1	AL - Fierza (KESH)	CS - Prizren (EMS)	220	270	R2, R5	1037	6	160	141	183	36		387	88		36		
291.1.1	AL - Elbasan (KESH)	GR - Kardja (HTSO)	400	1300	R1	6486					6486							
292.1.1	AL - Bistrica (KESH)	GR - Mourtos (HTSO)	150	120	R1	23543										23543		

Reasons: R1 - Maintenance, R2 - Repair, R3 - New construction, R7 - Outside impacts (animals, trees, fire, avalance,...),

R4 - Overload (also calculated), R8 - Very exceptional conditions (weather, natural disaster,...),

R5 - False operation, R9 - Other reasons,

R6 - Failure in prodection device or other element, R10 - Unknown reasons

Circuit ID	From substation	To substation	Voltage [kV]	Thermal conventional transmission capacity [MVA]	Major Reason	Time whole year [min]	January [min]	February [min]	March [min]	April [min]	May [min]	June [min]	July [min]	August [min]	September [min]	October [min]	November [min]	December [min]
301.1.1	BG - Blagoevgrad (EOS EAD)	GR - Thessaloniki (HTSO)	400	1309	R1,R4,R10	20660				46	20574	40						
321.1.1	CZ - Hradec Zapad (CEPS)	DE - Etzenricht (E.ON Netz)	400	1363	R1,R2,R8	24024					16311	5194	2380	139				
321.1.2	CZ - Prestice (CEPS)	DE - Etzenricht (E.ON Netz)	400	1363	R1	6345					263				6082			
322.1.1	CZ - Hradec Vychod (CEPS)	DE - Röhrsdorf (VE Transmission)	400	1205	R1,R2,R3	23707		1580						373		21754		
322.1.2	CZ - Hradec Vychod (CEPS)	DE - Röhrsdorf (VE Transmission)	400	1205	R1,R3	2824		2229								595		
331.1.1	HU - Sándorfalva (MAVIR)	CS - Subotica 3 (EMS)	380	1295	R1,R2	962		539								423		
351.2.1	HR - Pehlin (HEP-OPS)	SI - Divaca (ELES)	220	366	R9	177			177									
352.2.1	HR - Žerjavinec (HEP-OPS)	SI - Cirkovce (ELES)	220	297	R9	167			167									
352.3.1	HR - Nedeljanec (HEP-OPS)	SI - Formin (ELES)	110	115	R9	176			176									
371.1.1	HR - Ernestinovo (HEP-OPS)	CS - Sremska Mitrovica (EMS)	400	1264	R1,R2	638	108								530			
381.1.1	BA - Trebinje (NOS BiH)	CS - Podgorica 2 (EP CG)	380	1264	R1,R5,R9	47522			44580				2240		19	661	22	
381.2.1	BA - Trebinje (NOS BiH)	CS - Perucica (EP CG)	220	311	R1,R2,R5	6346	3		464			9	2467	1761	240	1402		
381.3.1	BA - Trebinje (NOS BiH)	CS - Herceg Novi (EP CG)	110	90	R1,R5	8649		104	360	11	321	6	1814	1793	2785	1306	149	
381.4.1	BA - Bileća (NOS BiH)	CS - Vilusi (EP CG)	110	84	R2,R5	728										179	549	
382.1.1	BA - Sarajevo 20 (NOS BiH)	CS - Piva (EP CG)	220	366	R1,R2,R5	13718	60				2942	444				9795	71	406
383.1.1	BA - Visegrad (NOS BiH)	CS - Pozega (SEPS)	220	311	R1	72					72							
383.2.1	BA - Bijeljina (NOS BiH)	CS - Lesnica (EMS)	110	123	R5	19										19		
383.3.1	BA - Zvornik (NOS BiH)	CS - HE Zvornik (EMS)	110	123	R5	257						130			127			
383.4.1	BA - Visegrad (NOS BiH)	CS - Zamrsten (EMS)	110	123	R1	3840					3840							
383.5.1	BA - Sremska Mitrovica (NOS BiH)	CS - Ugljevik (EMS)	380	1264	R1	4627						237			4390			
391.1.1	MK - Skopje 1 (MEPSO)	CS - Kosovo A (EMS)	220	311	R10	525600	44640	40320	44580	43200	44640	43200	44640	44640	43200	44700	43200	44640
391.2.1	MK - Skopje 1 (MEPSO)	CS - Kosovo A (EMS)	220	311	R10	525600	44640	40320	44580	43200	44640	43200	44640	44640	43200	44700	43200	44640
391.3.1	MK - Skopje 5 (MEPSO)	CS - Kosovo B (EMS)	380	1218	R5	175			175									
401.1.1	DE - Herrenwyk (E.ON Netz)	SE - Kruseberg (Sydskraft/Vattenfall)	450	600	R1,R2,R6,R10	14057	6110	477			989					6481		
404.1.1	CZ - Nosovice (CEPS)	SK - Varin (SEPS)	400	1205	R1,R2	18599		6859	249			8596	2895					
410.1.1	CZ - Liskovec (CEPS)	SK - Pov. Bystrica (SEPS)	220	269	R1	4738	479						743			3516		
420.1.1	CZ - Sokolnice (CEPS)	SK - Senica (SEPS)	220	318	R3,R9	35567				782				492	31400	2893		
424.1.1	CZ - Sokolnice (CEPS)	SK - Krizovany (SEPS)	400	1205	R1,R2,R3,R6	10285			108	1710		6268		42	2042		115	
430.1.1	CZ - Sokolnice (CEPS)	SK - Stupava (SEPS)	400	1363	R1,R2,R6	6746				251		6260	184	51				
440.1.1	UA_W - Mukachevo (NPC Ukrenergo)	SK - V.Kapusany (SEPS)	400	1186	R1	8413				6325						2088		
443.1.1	CZ - Albrechtice (CEPS)	PL - Dobrzyń PSE-Operator S.A.)	400	1205	R1,R3	66914		2329				29849	32477					2259
444.1.1	CZ - Nosovice (CEPS)	PL - Wielopole (PSE-Operator S.A.)	400	1205	R1,R3	79849							309		38442	41098		
450.1.1	CZ - Liskovec (CEPS)	PL - Kopanina (PSE-Operator S.A.)	220	400	R1,R3	6849	2288				2123				572	497	1369	
460.1.1	CZ - Liskovec (CEPS)	PL - Bujaków (PSE-Operator S.A.)	220	400	R1,R9	9586	2289				4173			316	944	495	1369	
501.1.1	DE - Vierraden (VE Transmission)	PL - Krajnik (PSE-Operator S.A.)	220	460	R1	4877				4877								
501.1.2	DE - Vierraden (VE Transmission)	PL - Krajnik (PSE-Operator S.A.)	220	460	R1	1849				1849								
502.1.1	DE - Hagenwerder (VE Transmission)	PL - Mikulowa (PSE-Operator S.A.)	380	1660	R1	2399						372					2027	
502.1.2	DE - Hagenwerder (VE Transmission)	PL - Mikulowa (PSE-Operator S.A.)	380	1660	R1	1941											1941	
601.1.1	ES - Puerto de la Cruz (REE)	MA - Melloussa 1 (ONE)	380	715	R1,R9	5853				4436		1417						
700.1.1	PL - Krosno Iskrzynia (PSE-Operator S.A.)	SK - Lemešany (SEPS)	400	1252	R1,R2,R9	42573								39605			2597	371
700.1.2	PL - Krosno Iskrzynia (PSE-Operator S.A.)	SK - Lemešany (SEPS)	400	1252	R2	40375								39605			399	371
702.1.1	PL - Zamość (PSE-Operator S.A.)	UA - Dobrotvir (NPC Ukrenergo)	220	309	R1,R9	21940	10012	5698		3350	2855	25						
704.1.1	PL - Słupsk (PSE-Operator S.A.)	SE - Stårnø (SvK)	450	600	R1,R6,R9,R10	8832			126	535	43	95	331	1287	12		6403	
710.1.1	HU - Győr (MAVIR)	SK - Gabčíkovo (SEPS)	400	1330	R1,R2	17006					287				16719			
711.1.1	HU - Göd (MAVIR)	SK - Levice (SEPS)	400	1330	R1	11641										11641		
720.1.1	HU - Albertirsa (MAVIR)	UA_W - Zahidno Ukrainska (NPC Ukrenergo)	750	4988	R1	12861	335					6845		5681				
721.1.1	HU - Sajószöged (MAVIR)	UA_W - Mukacevo (NPC Ukrenergo)	400	1390	R1	21867			5315	9312					7240			
722.1.1	HU - Kisvárd (MAVIR)	UA_W - Mukacevo (NPC Ukrenergo)	220	209	R1	7534									7534			
722.1.2	HU - Tiszaik (MAVIR)	UA_W - Mukacevo (NPC Ukrenergo)	220	209	R1	12616			6270						6346			
730.1.1	HU - Sándorfalva (MAVIR)	RO - Arad (TRANSELECTRICA)	400	1330	R1	36889		480									15404	21005
740.1.1	RO - Rosiori (TRANSELECTRICA)	UA_W - Mukacevo (NPC Ukrenergo)	400	1200	R1,R2,R9	35633		280		5030	23540			470		6273	40	
752.1.1	RO - Tutora (TRANSELECTRICA)	MD - Ungheni (Moldenergo)	110	55	R1	388							388					

Reasons: R1 - Maintenance, R2 - Repair, R3 - New construction, R7 - Outside impacts (animals, trees, fire, avalance,...),

R4 - Overload (also calculated), R8 - Very exceptional conditions (weather, natural disaster,...),

R5 - False operation, R9 - Other reasons,

R6 - Failure in prodection device or other element, R10 - Unknown reasons

	Circuit length (km)				Transformers 380/400kV→220kV	
					in the network	
Country	220 kV	of which cable	380/400 kV	of which cable	Number	Capacity GVA
AT ¹	3765	5	2474	56	13	4,0
BA	1507	0	766	0	7	3,0
BE	400	0	1325	0	6	2,0
BG	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CH	4956	20	1780	0	18	10,0
CS ⁴	2598	0	1814	0	13	5,2
CZ	1912	0	3383	0	4	2,0
DE ⁵	16050	30	19450	60	91	53,5
ES	16685	112	17042	57	97	51,0
FR	26392	902	21015	3	210	108,0
GR	11050	232	4156	160	46	13,0
HR ³	1145	0	1159	0	4	2,0
HU ⁴	1188	0	2364	0	3	1,5
IT	11726	860	10809	317	55	22,1
LU	236	6	0	0	0	0,0
MK ²	70	0	397	0	0	0,0
NL	683	6	2052	0	4	2,5
PL	7908	0	5173	254	16	7,2
PT ⁴	2854	19	1501	0	7	3,2
RO	4132	0	4630	0	22	9,0
SI ³	328	0	510	0	3	1,2
SK	962	0	1752	0	3	1,4
UCTE ⁶	116547	2192	103552	907	622	301,8
DK_W	39	0	833	14	0	0,0
UA_W	594	0	590 ⁷	0 ⁷	6 ⁷	2,3 ⁷

¹ Values as of 31 December 2000

² Values as of 31 December 2003

³ Values as of 31 December 2004

⁴ Values as of 31 December 2005

⁵ Values transformers of power units as of 31 December 2000

⁶ Except Bulgaria

⁷ Including 330 kV and 750 kV equipment

Country	Transformers 220kV → < 220kV				Transformers 380/400kV → < 220kV			
	of power units		in the network		of power units		in the network	
	Number	Capacity GVA	Number	Capacity GVA	Number	Capacity GVA	Number	Capacity GVA
AT ¹	64	7,0	67	12,0	17	11,0	3	1,2
BA	15	2,0	15	2,0	3	1,0	7	2,0
BE	3	1,0	24	3,0	14	8,0	27	12,0
BG	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CH	104	4,5	143	21,3	8	4,3	3	0,6
CS ⁴	23	4,6	51	7,7	11	4,9	13	3,8
CZ	5	0,9	20	4,0	33	9,2	41	11,3
DE ⁵	111	31,0	394	74,4	100	62,0	211	60,3
ES	0	0,0	1	0,1	0	0,0	15	5,0
FR	231	29,4	797	83,0	104	86,4	54	13,0
GR	93	8,0	416	17,0	18	6,0	0	0,0
HR ³	7	1,3	21	3,2	2	0,3	7	2,4
HU ⁴	0	0,0	26	4,2	0	0,0	24	6,0
IT	112	23,0	158	26,5	121	36,7	218	56,3
LU	11	1,8	19	2,6	0	0,0	0	0,0
MK ²	0	0,0	4	0,6	2	0,5	7	2,1
NL	9	3,2	26	4,4	6	3,6	39	18,1
PL	56	13,6	126	20,0	26	8,9	35	9,4
PT ⁴	61	4,1	64	7,8	19	4,4	16	4,5
RO	38	7,8	90	18,2	14	5,2	22	5,5
SI ³	0	0,0	15	2,3	0	0,0	5	1,5
SK	8	1,5	13	2,6	20	4,1	21	5,7
UCTE ⁶	951	144,7	2490	316,7	518	256,6	768	220,6
DK_W	0	0,0	2	0,7	4	1,6	20	6,5
UA_W	7	1,8	13	1,9	5 ⁷	1,3 ⁷	1 ⁷	1,0 ⁷

	AT	BA	BE	BG	CH	CS	CZ	DE	ES	FR	GR	HR	HU	IT	LU	MK	NL	PL	PT	RO	SI	SK	DK W	UA W
AT					- 2 2		2 1	20 11 3					2 1	1 -							- 1 2			
BA						6 3 1						11 7 2												
BE										- 2 3					2 2 -		- - 4							
BG					2 - 1						- - 1					2 2 -					- 1 4			
CH							2 5 7		1 5 5				1 5 4											
CS											2 - 1	1 - 1				- 2 1				3 - 1				
CZ								- - 4										- 2 2				5 2 3		
DE									2 4					8 -		- 6	- 2	2 2					1 2 2	
ES									2 2 2										1 3 4					
FR													- 3 3											
GR														- - 1		1 -								
HR													2 - 2								3 2 3			
HU																				- - 1		- - 2		- 2 2
IT																					- 1 1			
PL																						- 2		
RO																								- - 2
SK																								- - 1

<220 kV
220 kV
380/400 kV

As of 31.12.2006

Country	Name of line or equipment	Voltage in kV	Main characteristics
AT	PST 21-Ternitz 220 30/11/2006	220	Phase Shifting Transformer
	PST 21-Ernsthofen 220 17/11/2006	220	Phase Shifting Transformer
	PST 21-Tauern	220	31/10/2006
BE	Woluwe	150/11	New transformer replacing a transformer 36/11 kV
	Avelgem - Ruien	150	Double circuit AC line replacing an existing single circuit AC line, ca.1.1 km
	Wondelgem - Nieuwe Vaart	150	Additional double circuit, 3.3 km, AC line
	Woluwe	150/11	New transformer replacing a transformer 36/11 kV
	Nivelles	150/15	Additional transformer
	Oelegem	150/15	Additional transformer
	Slijkens-Koksijde	150	Single circuit, ca.32.9km, AC cable
	Oisquercq	150/15	Additional transformer
	Harenheide	150/11	Additional transformer
	Zaventem	150/36	Additional transformer
	Harenheide -Witloofstraat	150	Single circuit,ca.1.2 km, AC cable
	Verbrande Brug -Witloofstraat - Zaventem	150	Single circuit, ca.10.9 km, AC cable
	Jamiolle-Monceau	220	Double circuit upgrade from 150kV to 220kV; 2x ca.29.7 km, AC line
DE	Eupen	150/70	Additional transformer
	Oostrozebeke	150/10	Additional transformer
	Second connection Eula	380	Two double circuits, < 1 km, AC
	Weida - Remptendorf	380	Upgrading of an AC; circuit from 220 to 380 kV, 61 km
	Connection Wessin	380	Double circuit, < 1 km, AC
DE	Connection Niedervieland	380	Double circuit, AC, 8 km
	Reiterseich - Redwitz	380	Upgrading of an AC; double circuit from 220 to 380 kV
ES	Ln/ Cabra-La Roda	400	82 km
	I/O Brovales Ln/Balboa-Alqueva	400	0.36 km
	Ln/ Val D'Uxó-Segorbe	220	46 km
	Benejama	400/220	450 MVA
	El Palmar	400/220	600 MVA
	I/O El Palmar - Ln/Litoral-Rocamora	400	95.6 km
	Litoral	400/220	600 MVA
	Moraleja	400/220	450 MVA
	2nd Circuit Spain-Morocco	400	AC submarine
	Ln/ Alvarado-Mérida	220	41.9 km
FR	Ln/ Magallón-Jalón	220	19 km (2nd circuit)
	PST at Niort substation	225	45 MVA phase shifting transformer
	2 RTE Static VAR Compensators	225	In the Bretagne region: one at Plaine Haute substation in the Côtesd'Armor département and another at Poteau Rouge substation in the Morbihan département. Capacity delivered = 300 MVAR, Capacity absorbed = 150 MVAR

Country	Name of line or equipment	Voltage in kV	Main characteristics
FR	Hirsingue to Etupes-Sierentz	225	25.5 km connecting substation to overhead line
	Vezilly to Ormes-Soissons Notre Dame	225	29.6 km connecting substation to overhead line
	PST at Guarbecque substation	225	400 MVA phase shifting transformer
GR	OHL 150KV s/s Egio-Xylokastro	150	Reconstruction of a part, double circuit overhead line
	Autotransformer s/s AG. Stefanos	400/150	
	HT s/s Makryxoriou	150	New substation
	OHL 150KV s/s Komotini - Komotini CCP	150	Single circuit overhead line
	Autotransformer s/s Pallini	400/150	
	HT s/s Oryxeia Kardias	150	New substation
HU	Gyor-Szombathely line	400	
	Szombathely substation	400/120	
IT	Carpi Fossoli - S. Damaso	380	Single line 29.4 km
	Caorso - Carpi Fossoli	380	Single line 92.9 km
	Acciaiolio - Rosignano	380	Single line 24.0 km
	Ferrara Focomorto - Ferrara Nord	380	Single line 9.6 km
	Ferrara Nord - Ostiglia	380	Single line 42.7 km
	Gariglaino - Sparanise	380	Single line 27.7 km
	S.M.Capua Vetere - Sparanise	380	Single line 21.9 km
	Rumianca - Sulcis	220	Single line 53.1 km
	Grosio - Verderio	220	Single line 106.8 km
	S.M. Capua Vetere - Presenzano	220	Single line 47.9 km
	Capriati - S.M.Capua Vetere	220	Single line 56.9 km
	Other 220 kV lines	220	For a total of 75 km
	SAR.CO. (Sardinia-Corse)	150	Submarine 31.06 km AC link
	150/132 kV lines	150/132	22 lines
	Camporosso(IT)-Trinité Victor(FR)	220	Replaced the 220 kV tie-line Camporosso (IT) - Broc Carros (FR)
	Capacitor banks in 13 HV substations	n.a.	700 MVar
	New transformers	n.a.	3180 MVA
PL	Olsztyn – Olsztyn Matki	220	New single line, length 17.5 km
	Transformer in Olsztyn Matki	400/220	New transformer 330 MVA
PT	Rio Maior-Alto de Mira	400	Prolongation of pre-existent Rio Maior-Fanhões line to Alto de Mira substation with 69.9 km length
	Batalha-Pego	400	New single circuit line with 65.9 km
	Bodiosa-Paraimo	220	New double circuit line with one circuit installed, prepared for 400 kV but exploited at 220 kV, 62.7 km
	Derivation from Rio Maior-Trajouce to Fanhões substation	220	One circuit of a double circuit line with 16.5 km
	Cast.Branco-Ferro1&Cast.Branco-Ferro 2	220	New double circuit line with 2 x 55.0 km
	PST of Falagueira	400/150	New Phase-Shifter (450 MVA)
	Tunes-Estoi	150	New double circuit line with 54.1 km

Country	Name of line or equipment	Voltage in kV	Main characteristics
PT	Recarei-Paraimo & Paraimo-Batalha	400	Opening of pre-existent Recarei-Batalha line at Paraimo substation; single circuit lines with 85.3 & 101.5 km, respectively
	Sabóia-Portimão & Portimão-Tunes1	150	Opening of pre-existent Sabóia-Tunes line at Portimão substation; one circuit of a double circuit line with 35.1 and 27.9 km, respectively
	Sines-Portimão & Portimão-Tunes2	150	Opening of pre-existent Sines-Tunes 2 line at Portimão substation; one circuit of a double circuit line with 95.6 and 27.9 km, respectively
	Falagueira-Castelo Branco1 & Falagueira-Castelo Branco2	150	Prolongation to Castelo Branco of pre-existent Falagueira-Ródão1 & 2 lines; double line with 2x41.6km
	Gardunha-Castelo Branco	150	New single circuit line connecting to grid a wind farm power plant, with 31.9 km
	Recarei-Batalha & Batalha-Rio Maior3	400	Opening of pre-existent Recarei-Rio Maior 2 line at Batalha substation, single circuit lines with 182.6 and 41.9 km, respectively
	Penamacor-Ferro	220	New single circuit line connecting to grid a wind farm power plant with 24.9 km
	Vermoim-Custóias2	220	Put in service at 200 kV of a pre-existent line, prepared to 220 kV but previously used at 60 kV, with 6.6 km
	Bodiosa-Valdigem	220	New double circuit line with one circuit installed, prepared for 400 kV, but used at 220kV with 60.3 km
	Pego-Falagueira & Falagueira-Cedillo	400	Opening of pre-existent Pego-Cedillo line at Falagueira substation; single circuit lines with 40.7 and 26.4 km, respectively
RO	Brazi AT 2 200 MVA	220/110	New - 200 MVA
	Iernut Substation	400 + 200	Reinforcement
	Iernut AT 1 - 400 MVA	400/220	New - 400 MVA
	Slatina Substation	400	Reinforcement
	Slatina AT 1 - 400 MVA	400/220	New - 400 MVA
	Gutinas Substation	400	Reinforcement
	Fundeni AT 1 - 400 MVA	220/110	New - 400 MVA
	Gutinas AT 6 - 400 MVA	400/220	New - 400 MVA
	Brazi Vest Substation	400	Reinforcement
	Rosiori Substation	400 + 220	Reinforcement
	Brazi Vest AT 3 - 400 MVA	400/220	New - 400 MVA
	Rosiori AT - 400 MVA	400/220	New - 400 MVA
	Focsani AT 200 MVA	220/110	New - 200 MVA
	Mintia AT 4	400/220	New - 400 MVA
	Slatina AT 3 - 200 MVA	220/110	New - 200 MVA
SI	Okroglo TR 412	400/110	Transformer
SK	Transformer in Lemesany	400/110	350 MVA
	Transformer in Krizovany	400/110	350 MVA
	4 choke coils	33	45 MVar each