

UCTE LIFE

EDITORIAL

Declaration of UCTE concerning the challenges and risks of integrating booming wind power in a reliable electricity system of continental Europe

The members of the Union for the Co-ordination of Transmission of Electricity (UCTE) support the development of Renewable Energy Sources (RES) as well as their integration into the European power systems. Currently more than 70 % of the world wide installed wind power is integrated in the UCTE synchronous interconnected network of continental Europe. Until now the integration of wind power could be managed without serious problems due to extra operational and technical measures by the Transmission System Operators (TSOs) in times of extra large scale wind generation. Integrating the large amounts of wind power planned for the near future as announced in national targets or by individual legal entities can only be realised with additional capacity in the actual transmission infrastructure and with extra help of reserve generation capacity. These newly to be installed on-shore and off-shore wind farms will normally be built far away from the areas where the electricity demand is concentrated. Bulk transport of electricity over long distances will strongly increase. Due to the limited predictability of this intermittent generation the development of this RES is a very big challenge for TSOs in operating the European electricity system at the high quality level known to the European community today.



Grid and system adjustment

It must be emphasized that the continuous and rapid expansion of wind power generation with a growing share of large scale off-shore projects requires significant equivalent grid expansion, improved system operation and control. Also more flexible generation (additional balancing and reserve power, start up and shut down ability of base load units etc.) is needed, as well as market arrangements and incentives compatible with these requirements. These infrastructural, operational and market challenges must be taken seriously and require a close co-operation of the organizations involved (e.g. renewable energy developers, market participants, regulatory authorities, governments) with the grid operators to ensure the security and reliability of the electricity system of continental Europe.

Reliability Standards

The members of UCTE have agreed upon a comprehensive collection of the relevant security and reliability standards and recommendations, referred to as the Operation Handbook. This Handbook becomes legally binding among the UCTE TSOs by a Multilateral Agreement (MLA) in which they assume their responsibility in operational network security and system integrity and express their willingness to safeguard interoperability of the respective transmission systems as well as their intention to act and to co-operate accordingly.

Notwithstanding their own responsibilities, the Parties to this MLA are seriously concerned about growing risks to operational security and system integrity of the European electricity system in the near future. These risks which are outside the sphere of influence of the TSOs are due to

- the unfavourable geographical spread and the increasing share of intermittent power generation which causes extensive long-distance energy transports. Additionally these transports stress the existing congested regions and can detrimentally influence the secure operation of neighbouring grids,
- the increasing share of generation units fed by Renewable Energy Sources (RES) connected to the medium/low voltage level without legal relation to a TSO, so that the compliance of system requirements cannot be assured and needs extra attention within each national regulatory system.

Against this background the Members of UCTE feel themselves responsible and obliged to inform the European Union and the national governments, as well as the community, about the growing risks arising from those situations and difficulties they are facing in order to maintain electric system security and reliability to meet the customers' high expectations. The **recommendations** of UCTE are

- a harmonized approach for studies of new technology for accommodation of new RES generation
- an European promotion scheme for RES accounting to conditions of the transmission infrastructure
- compatible market arrangements conditional for a permanent safe and stable power supply in Europe
- harmonization and synchronization of grid planning and RES expansion
- national rules and procedures expediting the process of granting licences and authorisation for new urgent needed high voltage transmission lines and grid reinforcements

UCTE's member TSOs share the common goal to synchronize the expected expansion of RES with the adequate grid development to ensure sustainable and reliable electricity supply for the European industry and community.

MEMBER NEWS

UCTE AGENDA

UCTE STEERING COMMITTEES

May 11, 2005 in Italy
June 23, 2005 in the Czech Republic
September 22, 2005 in Greece
November 24, 2005 in Serbia-Montenegro

ASSEMBLY

May 12, 2005 in Italy

Common WG meeting

September 9, 2005 in Portugal

ETTRANS - GRTN



New 380 kV double-circuit interconnector between Italy and Switzerland

On 19 January 2005, GRTN and the Swiss utilities involved have put into operation the new 380 kV double-circuit interconnector between Italy and Switzerland 24 years after the first project plans. The new line connects the grids of south-eastern Switzerland and Italy, in the area located to the north-east of Milan. The double-circuit inter-connector has doubled the number of 380 kV circuits on the Italian-Swiss border and has been built partly on the route of the decommissioned 220 kV Robbia – Sondrio interconnector.



HTSO

During the first 3 months of 2005, extensive cooperation of the regulatory authority with HTSO and major market participants has taken place, and the effort to amend the existing Grid Code has been intensified.



Main elements of the amended codes are:

- The creation of a wholesale energy market through the establishment of the Day Ahead Market (DAM) for the system and market operation which is expected to include in the future a market for reserves, while a provision of North-South market splitting under high load conditions is foreseen to cope more effectively with the higher concentration of the load in the southern part of the Greek system.
- The complete unbundling of production, transmission and supply, and the amendment of the use of system tariffs for production and supply.
- The creation of a capacity availability market (mechanism of capacity certificates) where the producers are the issuers (sellers) of the certificates, the suppliers are the holders (buyers) and HTSO is the supervisor of the mechanism and the market operator of the capacity availability market to promote the construction of production units.
- The transitional provisions for the first two years' partial application of the Code during which the system operator (HTSO) will create the IT infrastructure and install the metering devices that are necessary for the final application of the Grid Code and the smooth functioning of the markets.

The final wording and putting into force of the New Grid Code is scheduled for the second quarter of 2005.

PSE - Operator S.A.



PSE-Operator S.A. with uniform congestion management rules on all its interconnections

PSE-Operator S.A. is today one of the first TSOs which have established and applied uniform cross-border power exchange congestion management mechanisms on all its synchronous interconnections. In cooperation with transmission system operators of neighboring transmission systems: CEPS, a.s., VE-T GmbH and SEPS, a.s. PSE-Operator S.A. has worked on an effective congestion management mechanism and a market-based method of transmission capacity allocation to market participants. The mechanism designed by TSOs gives consideration to principles of the Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity as well as to the expectations and requirements raised by market participants, strategic objectives, particularities of its role in the electricity market and technical transmission network constraints.

For 2005, PSE-Operator S.A. together with CEPS, a.s., VE-T GmbH and SEPS, a.s. has designed common congestion management rules in connected transmission systems of Poland, the Czech Republic, Germany and the Slovak Republic to be used for transmission capacity allocation in 2005. The solution designed by the TSOs guarantees a transparent, non-discriminatory and effective mechanism of allocation of existing transmission capacity and its maximal use by market participants.

The auction mechanism applied by TSOs is the most effective capacity allocation solution which allows TSOs to offer all available capacity to the market users. Starting from 12 April, TSOs will organise capacity auctions on three time horizons: yearly, monthly and daily. Almost the entire existing transmission capacity for the coming days has been successfully allocated in yearly and monthly auctions, and they are used by market participants for cross-border transmission of electricity in a daily schedule-based regime.

The solution implemented by PSE-Operator S.A., CEPS, a.s. and VE-T GmbH has fulfilled the expectations of market participants and has met their full acceptance and support. TSOs have already started work on the common congestion management project to be implemented in 2006 by more neighboring countries in Central Europe.

MEMBER NEWS

TenneT

Tennet 

Dutch-Belgian MoU on interconnectivity

Dutch Economic Affairs Minister Laurens-Jan Brinkhorst and his Belgian counterpart, Marc Verwilghen, have agreed that they will make a concerted effort to promote a European energy market, and have signed a Memorandum of Understanding to this end. The TSOs applaud this agreement, considering it crucial that market impediments be removed wherever possible. One of the possible ways of achieving this goal is by linking up individual markets. It is fully in line with the EC Commission policy to improve regional integration of market zones.

The Belgian-Dutch MoU seeks to improve mutual collaboration and interconnectivity in the field of electricity between the two countries. A similar agreement between Belgium and France is being concluded. The agreements provide a useful basis for tackling the various obstacles that currently frustrate the formation of a regional European electricity market. The MoU enables the establishment of a forum in which the grid administrators, authorities and watchdog organizations are represented. Working parties are to be set up at the kick-off meeting involving the Netherlands, Belgium, France and Luxembourg. The kick-off meeting that will also be attended by the TSOs involved is scheduled to be held this spring. The Netherlands concluded a similar MoU with Norway several years ago, while talks with Germany are currently in progress with a view to achieving closer cooperation so as to optimize the use of the cross-border interconnection facilities between the two countries.



REN

ren
Rede Eléctrica Nacional, S.A.

Reinforcements of the Portuguese Transmission Grid towards MIBEL and Green Energy

One of the main requirements for a sound operation of the Iberian Electricity Market (MIBEL) is an adequate level of interconnections between Portugal and Spain. Earlier in 2004, a new 400 kV line, Alto Lindoso–Cartelle 2, was put into operation in the north of Portugal.

On December 23, another 400 kV interconnection, Alqueva–Balboa, was commissioned in the southeast of Portugal. Consequently, there exist four 400 kV and three 200 kV lines between the two countries enabling both systems to be safely operated.

However, flows from Spain to Spain through Portugal will reduce the commercial capacity. So REN, S.A., the Portuguese TSO, has started a process of reinforcement of its lines some years ago to simultaneously avoid this situation and enable renewables-based power plants, in particular wind production, to be implemented.

During the year 2004, the upgrades were realized in the 220 kV grid in the north of the country and, in order to increase the north-south capacity, the axis Pereiros–Zêzere–Santarém–Carregado was upgraded (construction of new lines in old corridors) from 150 kV to 220 kV.

Meanwhile, the increase in electricity demand in the Greater Lisbon area requires upgrading of several lines and the installation of about six kilometres of a new 220 kV underground cable to the very centre of Lisbon. These works are in progress.

On 1st December, a second 392 MW generator was put into service at the NGCC power plant of Ribatejo, 40 km north of Lisbon, being the first one that was built from the beginning to compete in the liberalized market.



MEMBER NEWS

CEPS



Transmission capacity determination

The liberalized market with electricity in Europe is a fact now, although, originally the European well meshed transmission system was designed for other purposes than trading. One of the current biggest jobs for TSO's is to put together such contradictory things as security and reliability on one hand and maximal approach to the net, maximizing available capacities for trading, etc. on the other. The Czech transmission system is a typical transit system due to its interconnections to all neighboring systems. According to this fact, the nowadays so often discussed PTDF topic (distribution factor see figure 1), has been a reality and common procedure in CEPS since 2002.



Figure 1: PTDF example of export CEPS -> E.ON Netz

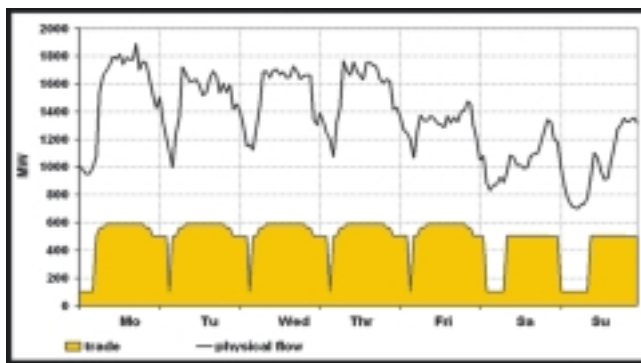


Figure 2: Discrepancy between physical flow and trade

The particular interfaces are differently used and have different transmission capacity, which is given by number of lines, non uniform loading, construction, etc. Furthermore, logically, there are strong interdependencies among these interfaces. These dependencies are non linear. Each particular trading case on given interface projects/distributes to all spare interfaces according PTDF.

Fairly alarming seems to be a growing discrepancy between the "world of trade" and the "world of physics" (see figure 2). So popular Congestion Management procedure – explicit auction on interfaces from bottle neck sites where a lack of capacity exists and high level of prices in auctions leads to bypassing this bottleneck to up to now free interface (eventually where CM hasn't been yet established) paradoxically has partially contributed to this phenomenon. To bridge over this disproportion it is necessary to increase operational reserves.

The ETSO methodology has been used as a framework for NTC calculation. An important part of NTC determination in CEPS is evaluating of PF+LF (parallel and loop flows), where statistics and an archive of PF+LF waveforms (since 2001) has been used (see figure 3).

After "wild years" of liberalization in a such specific field which power engineering surely is, when the trade point of view seemed to be essential, we can (according to the recent blackouts not only in Europe) trust in the return of common sense and respecting physical rules.

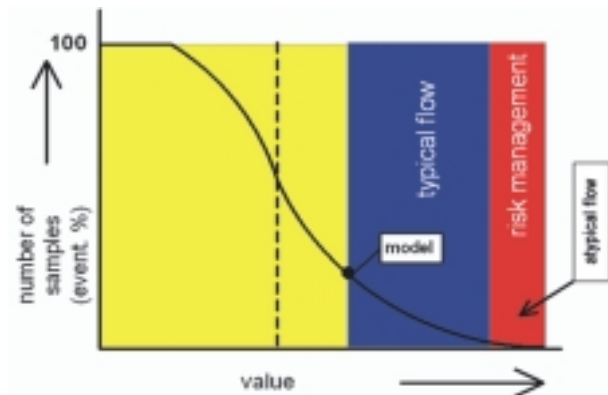


Figure 3: PF+LF frequency curve

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