

3

SECURITY OF THE UCTE SYNCHRONOUS AREA

Security Package

In 2006, UCTE continued to develop its Security Package consisting of three main elements:

- *Operation Handbook*
setting the standards for the secure operation of the interconnected system,
- *Multilateral Agreement*
ensuring the legal obligation for application of the OH standards and
- *Compliance Monitoring and Enforcement Process*
monitoring the current status of OH standards implementation.



The Operation Handbook was extended to 4 further Policies:

Policy 4 – »Coordinated Operational Planning« covers the issues related to TSOs' planning activities including outages planning, cross-border capacity calculation, procedures for Day-Ahead Congestion Forecast.

Policy 5 – »Emergency Operations« covers TSOs activities during alert and emergency states as well as restoration phase after the blackout.

Policy 6 – »Communication Infrastructure« specifies standards and requirements for communication links between TSOs.

Policy 7 – »Data Exchanges« provides a »code of conduct« for the exchange of data.

These Policies were developed as a second step of the whole development process where the old recommendations were updated to current best practices and new rules were developed including the areas not covered in former UCTE recommendations.

These four Policies came into force after their approval by the Steering Committee in June 2005 and were included into the Multilateral Agreement in August 2005.

Additionally, UCTE continued the development of Policy 8 »Operational Training«. This Policy will address the standards on inter-TSO training which is critical in the context of day-to-day TSOs' cooperation.

The year 2006 was also marked by the very first approach to the Compliance Monitoring and Enforcement Process. In January 2006, the Steering Committee approved the launch of the trial pilot compliance monitoring program for the first three (approved at this time) Policies of the Operation Handbook.

The program was based on TSOs' self-assessment where TSOs evaluated systematically their own level of compliance with selected rules of the Operation Handbook. The trial process was concluded with a Compliance Oversight Report (available on the UCTE website). It shows that compliance with the rules was rather the norm than exception. Nevertheless, non-compliances were also identified and action plans to retrieve these situations were proposed. The experiences gained during the 2006 exercise give valuable input for strengthening the rules and improvement of compliance monitoring in 2007.

Compliance monitoring on the European continent has become a new core competence of UCTE aiming at increasing transparency and mutual trust among the community of TSOs and between TSOs and their stakeholders. Furthermore, compliance activities are aiming at recognizing UCTE as a credible self-regulated organization. <<<




Studies aiming at preserving the security of the UCTE synchronous area

European Wind Integration Study (EWIS) – towards a successful integration of wind power into european electricity grids

The EWIS study was launched in April 2006. First results were available at the end of 2006. The final report (phase I) was published in February on the ETSO/UCTE homepage. The EWIS study is a joint investigation for the system integration of wind power, initiated by the European Transmission System Operators and supported by the EU. The study is focused on the extra-high voltage grid and comprises extended steady state and stability investigations in the European synchronous areas (ATSOI, NORDEL, UKTSOA and UCTE) for the installed wind capacities expected in Europe in 2008 and 2015 based on common Europe-wide scenarios.

In 2006, necessary requirements for the further increase of wind power in the national/regional generation mix were analysed on the basis of the developed scenarios. The measures to counteract identified limitations of integration of wind power and the costs of such measures are also analysed. Interactions between operational/technical/technological constraints, market designs and energy policies for synchronous areas in Europe are analysed. Consequences for the existing, medium and long-term issues related to the integration of wind power are discussed.



The final results which will be available in 2009 will also comprise stability impacts for the time horizon of 2015 and give recommendations for harmonised grid code requirements for wind turbines necessary for successful integration of wind power into European electricity grids. EWIS phase II is totally funded by the European Commission.

The EWIS study covered all relevant technical, operational and market aspects related to the integration of large-scale wind power in Europe for the time horizon 2008. In order to determine the major impact of the expected wind power on the operation and security of the European transmission network, two Europe-wide realistic scenarios for the year 2008 were developed. With most European countries planning to increase the installed wind power, it is expected that installed wind power in Europe will grow from 41 GW in 2005 to nearly 67 GW in 2008. The highest amount of wind power is concentrated in Germany, where approximately 40% of the total installed capacity is likely to be represented by wind power in 2008. Spain and Great Britain are ranking second. These 3 countries will represent more than 70% of the total installed wind capacity within Europe. The expansion of variable wind power generation has significant effects on the European electricity system as a whole.

Investigation results showed that the high concentration of wind power in northern Germany is producing large power flows through Germany and the neighbouring transmission systems in Benelux and Central Eastern Europe, increasingly affecting system stability and trading capacities. Detailed analysis of the scenarios reveals overloads on transmission lines in normal operation as well as under N-1 conditions.

Experience showed that the disconnection of old wind turbine technology in case of disturbances can lead to serious outages with a risk to endanger the entire UCTE system. The identified risks should be reduced by risk mitigation methods within the scope of both medium-term system planning and system operation.

For the time horizon 2008, the fundamental medium-term measures comprise installation of additional phase-shifters and reactive power compensators and the realisation of network extensions and reinforcements as planned. Operational measures are grid-related load flow control such as corrective switching and changing of settings of phase-shifters.

In countries with a high concentration of wind power, additional countermeasures, such as security management measures, i.e. the reduction of wind power generation in emergency cases or the adaptation of old wind turbine technology due to fault ride through behaviour have to be taken. Based upon the final results, recommendations will be given as to harmonised grid code requirements for wind turbines to ensure a successful integration of wind power into European electricity grids while maintaining system security and stability. <<<