

Press release
January 17, 2017

Electricity flows between 50Hertz (Germany) and CEPS (Czech Republic) are regulated by phase-shifting transformers

The Czech transmission system operator ČEPS has put into service two of the four phase shifting transformers (transformers with phase angle regulation) at the Hradec u Kadaně substation. The commissioning was implemented in two steps at the beginning of January and last Friday. Since January 13, dispatchers thus can better regulate the electricity flows on one of the two lines connecting the system with the eastern part of Germany, keeping them within safety limits. The German transmission system operator 50Hertz is planning to launch similar devices at the Röhrsdorf substation in the second half of this year.

17.01.2017 - Berlin, Prague. The ČEPS Company took a decision to launch two of the four machines due to the delayed delivery of the fourth transformer. The Czech and German substations are connected by two 400 kV power lines. After commissioning of the second two machines in Hradec, two PSTs will be connected in parallel on each of the two lines.

“The commissioning of the first two PST transformers along with operational changes in the connection will contribute to the safe operation of the Czech transmission system,” says Jan Kalina, Chairman of the Board of ČEPS, a.s.

The optimum connection pattern is prepared daily according to the current conditions in the transmission system.

“The current launch of the two machines is not as effective as the final deployment of all four transformers will be. Nonetheless, it helps maintain the flows at a safe level and contributes to minimizing the use of costly remedial measures,” says Kalina.

The fourth machine was repaired in the Italian manufacturing plant of the TAMINI Company after a fault had been detected, and at the end of last year, it successfully passed acceptance tests. During February, it should be transported into the Hradec u Kadaně substation. The actual transport takes about a month. The transport could be endangered by extreme climatic conditions, namely by outside temperature of below -20 °C, and the lack of navigability of the river Elbe. The assembly of the machines and their testing on site will take at least another two months. The last two PSTs could thus be put into operation by mid-2017.

“Start of PST operation in Hradec substation will enable active power flow regulation on the Czech-German interconnection. With commissioning of further two PST in the German substation

Röhrsdorf, that is foreseen by 50Hertz in the second half of 2017, the coordinated PST Investment project agreed between CEPS and 50Hertz will be completed.” says Dirk Biermann, Chief Markets & System Operations Officer of 50Hertz.

Phase-shifting transformers are machines that are used to control the power flow through manipulation of the phase angle of the voltage between the transmitting end and the receiving end of the line. Put simply, if we imagine the transmission system as a reservoir with many tributaries and distributaries, the PST works as a valve, which reduces, or increases the flow in the given distributary. Reducing the flow on one power line results in redistribution of flows in the entire interconnected system. Since electricity takes the path of least resistance, part of the flows will move to other power lines with more available capacity, thus eliminating possible overloads in the transmission network.

Setting up the regulatory parameters of the PSTs is coordinated with foreign partners at the pre-launch phase with the primary objective of ensuring the reliability of electricity networks throughout the region of Central Europe. The coordination of the operation is incorporated in the processes established within the TSO Security Cooperation (“TSC”) - an association of 13 European transmission system operators supported by the company TSCNET Services GmbH. The operation of our PSTs in coordination with similar devices operated at the German-Polish border will help to reduce the amount of costly remedial measures significantly.

High unscheduled flows between northern Germany and its neighboring countries – Czech Republic and Poland – are a threat to the safe operation of transmission systems. Remedial measures for maintaining the system security, that the individual grid operators must take, are often very expensive. In addition, unscheduled flows also have a negative impact on international electricity trading. By reducing unscheduled flows, it is expected that PST operation on the Czech-German border will increase utilization of the cross-border capacities for the realization of electricity trades.

ČEPS, a.s.:

The ČEPS joint-stock company operates in the Czech Republic as the sole operator of the transmission system (400 kV and 220 kV power lines) based on the electricity transmission license, issued by the Energy Regulatory Office under the Energy Act.

The company maintains, restores and develops 41 substations with 71 transformers transferring electricity from the transmission system to the distribution system, and 3,508 km of power lines with a voltage level of 400 kV and 1,910 km of power lines with a voltage level of 220 kV.

Within the Czech power system, ČEPS a.s. provides transmission services and services related to ensuring the balance between production and consumption of electricity in real time (system services).

ČEPS is integrated into European structures. It provides cross-border transmissions for export, import and transit of electricity. For a long time, ČEPS has also been involved in the creation of liberalized electricity market in the Czech Republic and Europe. For more information visit www.ceps.cz.

50Hertz:

With over 950 collaborators, 50Hertz handles the operation and the expansion of the transmission system. Moreover, the company is responsible for managing the overall electrical system throughout the German Laender of Berlin,

Brandenburg, Hamburg, Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt and Thuringia. As transmission system operator active in the Central European market, 50Hertz is responsible for the secure integration of renewable energy, the development of the European electricity market and for maintaining a high level of security of supply. Since 2010, Belgian grid operator Elia and Australian infrastructure fund IFM Investors are shareholders of 50Hertz, holding stakes of 60% and 40% respectively. As a European transmission system operator, 50Hertz is part of the Elia Group and a member of ENTSO-E, the European Network of Transmission System Operators for Electricity.