

Warsaw, 22 June 2016

Installation of Phase Shifting Transformers at Mikułowa substation

- **PSE starts operation of the Phase Shifting Transformers on its southern interconnection between Mikułowa (Poland) and Hagenwerder (Germany) substations**
- **The Transmission System Operators PSE and 50Hertz have agreed on temporary disconnection of their cross border interconnection between Vierraden and Krajnik substations**

PSE has just finalized works aiming at installation of the Phase Shifting Transformers (PST) at Mikułowa substation. The devices passed positively all necessary technical tests and thus are put into operation.

According to the information previously provided in the communication of 13 April 2016, the Transmission System Operators PSE and 50Hertz had agreed a temporary disconnection of their cross border interconnection between Vierraden and Krajnik substations. The line has been switched off on Tuesday, 22 June 2016 at 12:15 CET.

The temporary disconnection of the Vierraden-Krajnik interconnector will help to maintain secure operation of both transmission grids, even in case of high load flows through the German-Polish interconnection. This is also needed for effective utilization of the PST at Mikułowa substation, so as regulatory capabilities of this device could be fully used. Putting the PST at Mikułowa substation into operation in conjunction with disconnection of Krajnik-Vierraden interconnector should decrease the necessity of using costly remedies in form of bilateral and multilateral redispatch, which – as the experience of summer 2015 has demonstrated – may not always be available when needed.

Context of the case

The PST are as potentiometers whose effect is analogous to a valve for regulation of the water flow in a water pipeline. Their use enables power flows on a particular transmission line to be reduced or increased to some extent which, in a meshed network, leads to corresponding changes in the power flows on other lines.

The start of operation of the PST at Mikułowa substation will mark the completion of the first stage of a coordinated PST Investment project agreed between PSE and the German Transmission System Operator 50Hertz. The second stage involves the commissioning of another PST at the German substation Vierraden, together with the upgrade of the Vierraden-Krajnik line from the current 220 kV voltage level to 380 kV. The PSTs on the German-Polish border will be operated in a bilaterally coordinated way.

Due to a claim against granting of a permit to build the 50Hertz Uckermark line needed to upgrade the Vierraden-Krajnik interconnection, the second stage of the PST investment project carried out by 50Hertz is has been delayed. Whilst the Uckermark line is not built, 50Hertz will apply a temporary solution to allow the first two of planned four PSTs at Vierraden to be used. This consists of combining the currently incoming 220 kV lines on the 50Hertz' side with the upgraded 380 kV Vierraden-Krajnik line via two 380/220 kV transformers. At the same time PSE will upgrade the Krajnik substation to 380 kV. 50Hertz and PSE will therefore temporarily shut down the 220 kV Vierraden-Krajnik tie line until it becomes possible to switch it on to 380 kV. The current investment schedule foresees the Vierraden-Krajnik line to be shut down for about two

years. Reconnection of Vierraden-Krajnik line together with the first two PSTs in Vierraden are expected in 2018.

It is expected that steering of the physical flow on the remaining Hagenwerder - Mikołowa line by the PST operation would allow for an increase of commercial transmission capacities to Poland. The TSOs intend to offer a cross-border capacity to the market in the Day-Ahead timeframe, based on technical analyses and the PST operational experience.

The final mode of operation with all four PST in Vierraden and a connection to the Uckermark line are expected for 2020, although this depends on the permit proceedings regarding the Uckermark line. This last milestone will mark the completion of the PST investment project agreed between PSE and 50Hertz. Until completion of the PST investment project the temporary solution outlined above will help in regulating the power flows between Germany and Poland and trading capacities to be offered, taking into account the security of operation of the interconnected transmission grids. The high unscheduled flows on the German-Polish border have so far prevented both TSOs from offering trading capacities in direction to Poland.

For further information, please contact:

Beata Jarosz, PSE S.A., tel. +48 22 242 19 27, +48 783 401 171,

e-mail: beata.jarosz@pse.pl