

## **FGC UES introduced approximately 2000 MVA<sub>r</sub> of reactor capacity in 2009 February 26<sup>th</sup>, 2010**

In 2009, FGC UES introduced 1,926 MVA<sub>r</sub> of reactor capacity. The installation of reactive power compensating units was completed within the framework of the Company's investment program and the project to cut energy losses within the Unified National Electric Grid (UNEG). As a result, energy supply reliability increased significantly and the regime for electric grid functioning in Russia's highest energy-consuming regions improved.

Of the total installed capacity, 590 MVA<sub>r</sub> was from bypass reactors, 260 MVA<sub>r</sub> was introduced via strategic thyristor compensators and an additional 610 MVA<sub>r</sub> was introduced through dirigible bypass reactors (DBRs). This equipment is a method to compensate for reactive capacity. Using this equipment at the Company's substations (SSs) helps manage network load in a manner that minimizes losses, increases the carrying capacity of energy transmission lines and prevents network overload. This has resulted in a high level of system operation reliability and energy is significantly economized during transmission.

During the past year, seven reactors were installed at seven substations in the Tyumen Region, as well as in the Khanty-Mansiysk and Yamalo-Nenetsk Autonomous Regions of Russia. DBRs were installed at the 500 kV Tomskaya SS in the Tomsk Region and the 500 kV Vladivostok SS (the Primorye Region), which was launched in 2009.

An additional 466 MVA<sub>r</sub> of reactor capacity was introduced by installing capacitor banks (CBs). This equipment effectively stabilizes grid voltage. It provides for reactive capacity output, increases the active capacity output by auto-transformers and also corrects cross-flows of reactive capacity. This allows voltage to be sustained in the grid at the necessary level and also decreases risks of energy gaps. In particular, 416 MVA<sub>r</sub> of CBs was introduced at the Oznachennoye SS in the Khakassia Region. As a result, the reliability of power supply for both industrial and household consumers in the Region increased significantly under complex power regime conditions, which appeared after the accident at the Sayano-Shushenskaya HPP.