

SibFU scientists to improve the efficiency of diesel generator sets

The research team lead by Professor Vasily Panteleev, D.Eng., studies the theoretical basis for improving the efficiency of diesel generator sets (DGS).

An industrial partner of the research is Nizhnebureyskaya HPS. The research got the support in the framework of a competition for interdisciplinary research conducted by the Russian Foundation for Basic Research in collaboration with the government of the Krasnoyarsk Territory, the Yenisei Siberia Development Corporation, and industry stakeholders.

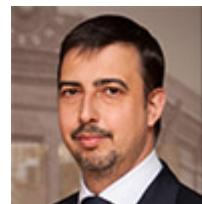
DGSs are conventionally used as local power sources, including the ones for providing backup power and uninterrupted operation of large power facilities. At the same time, one of the main requirements for them is to maintain a stable speed when changing the electrical load. Most of the time, such sources of generation operate at a load less than the nominal one, which leads to excessive fuel consumption and a reduction in the engine's operating life.

A significant part of the Krasnoyarsk Territory and the Republic of Tuva is remote and energy-isolated where diesel-powered generator sets are used for power supply. This requires significant annual subsidies from regional budgets to deliver diesel fuel and equalize the tariffs for the consumers. The DGSs should have increased reliability, maintainability, and efficiency. Variable-speed DGSs are the most suitable for these requirements. They have a number of advantages: 15-30 % reduced fuel consumption, a larger operating range of capacities with an optimal drive mode, a longer equipment life, the ability to work both on diesel fuel and liquefied natural gas, and greater reliability of power supply.

On the basis the results of the research, the scholars will develop a theory of building power supply systems based on DGS with variable speed and valve-inductor generators, as well as the principles of ensuring the quality of electricity when the network load changes.

The project will allow to effectively modernize the operated diesel power plants, which will save budget funds and increase the reliability of power supply to remote areas, and thus positively affect the quality of life of the residents.

*„This is a fairly unique competition. Although the Foundation conducting the competition traditionally focuses on supporting basic research, the partnership with the regional Government and the Yenisei Siberia Development Corporation ensures the applied nature of the developments,” said **Maxim Rumiantsev**, rector of SibFU. „I think that the experience of the scientists engaged in fundamental science in tandem with the industrial partners will allow us to solve very specific production problems which will have a positive impact on the lives of ordinary citizens”.*



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