

## ROTARY-SCREW-ENGINES

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The relevance of this work is caused by the necessity of developing installations for distributed generation of energy using local fuels. There is a need for more distributed energy sources not only in the form of heat, but also electricity. This is important, for example, to remote and Northern territories of Russia that are without centralized energy supply, as well as for new construction areas. In addition, the distributed cogeneration enables more efficient use of energy of fuel combustion and minimizes the loss of energy transfer.

The aim of this work is to review the existing schemes and development of power devices used for the production of electricity. On this basis, highlighted new approaches to the development of engines suitable for distributed systems additional energy sources are presented. The main research method is the thermodynamic consideration of options power cycles. At the same time, important design features and kinematic principles of the engine are analyzed. The degree of compression, as a constructive feature, here is crucial. The important role is played by the principle of balancing the active forces in the engine.

The results are as follows. There was proposed a new class of power machines, suitable for installations of distributed energy production - rotary-screw engines. Rotary-screw-engines may be used as expansion machines in a Rankine cycle. They can also be used in cycles of engines internal and external combustion. These engines have a high compression ratio. Radial and axial forces acting in the engines operating on the proposed circuits are mutually balanced.

**Key words:** Electronic resource, distributed production systems, energy, manufacturing, steam, steam engines, turbines, compressors, cogeneration the Rankine cycle.

### REFERENCES:

1. <https://www.ted.com/> (video name: "A solar energy system that tracks the sun", by Bill Cross)
2. <http://izvestiya.tpu.ru> (Articles of 2014-th year)