

DESIGNING BLADE WHEELS FOR MICROTURBINE PLANTS BASED ON PROTOTYPES

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One of the main microturbine plant elements is a turbine impeller. Development of effective turbines demands considerable costs, that is why the method of turbine design based on existing prototypes is offered. Microturbines have a high-speed rotor. Therefore, there is a problem related to strength ensuring of the turbine at high speeds of rotation. In this article it is said about gasdynamic and strength optimization of turbine impellers. The offered method allows to reduce stresses in a turbine impeller during an operating mode without changing of useful gasdynamic characteristics. Several modifications of blade and wheel joint are considered in this research and also strength analysis is presented. Verification of method of turbine design is carried out. It based on the strength and gasdynamic analysis of working processes in a flow channel of the microturbine.

Keywords: microturbine, turbine wheel, strength, gas-dynamic calculation, stress reduction method, blade.

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For citations

Pugachuk A. S., Muller D. V., Chernyshev A. V. Designing blade wheels for microturbine plants based on prototypes // *Omsk Scientific Bulletin. Series Aviation-Rocket and Power Engineering*. 2019. Vol. 3, no. 3. P. 40–46. DOI: 10.25206/2588-0373-2019-3-3-40-46.

Received 26 June 2019.

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