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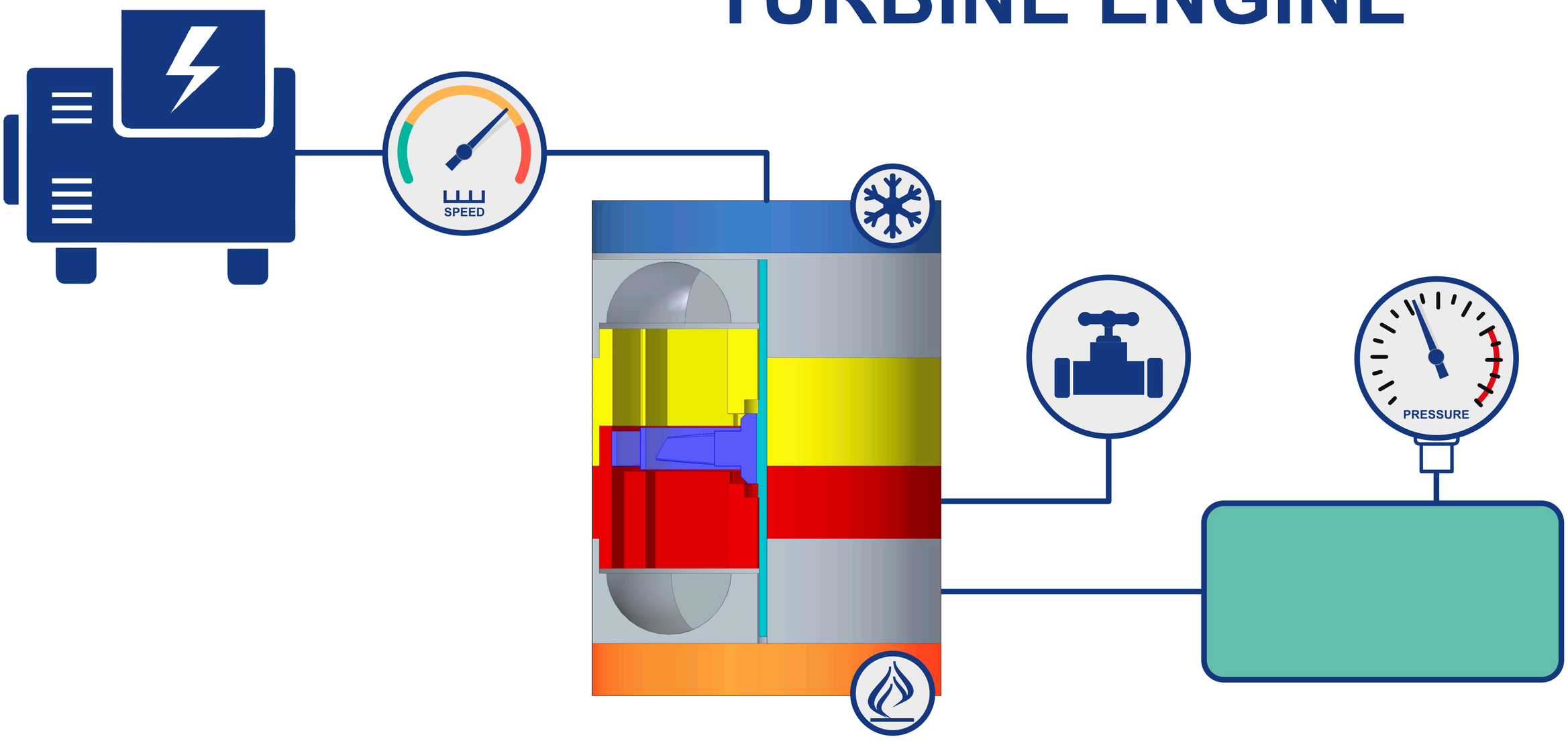
EXTERNAL COMBUSTION TURBINE ENGINE

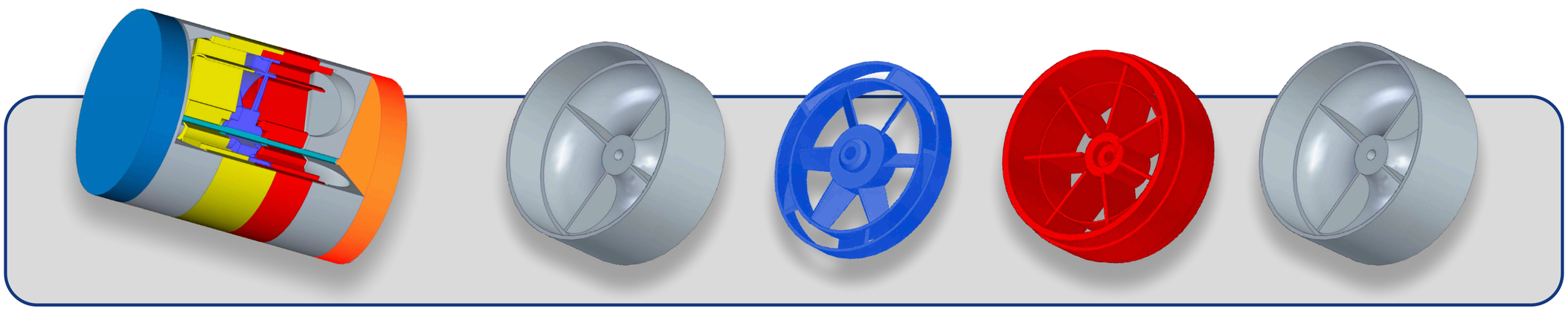


- The novelty of this inventive engine is that it has just one cylindrical working chamber in which a working medium such as steam fills the space between the heater at the bottom and the cooler at the top. Inside the working chamber there is a rotor of the axial working turbine, equipped with - in its horizontal plane of rotation - in two sections of blades with opposite angles of attack, which ensure directing of the working medium stream in the chamber while engine operation. Also guide vanes are installed in the working chamber on both sides of the turbine rotor with an adjustable angle of attack, the setting of which is controlled by a centrifugal regulator. The working chamber is equipped with a pressure relief valve and is connected to a pressure equalizing tank with a pressure gauge connected to it. The heater is powered by thermal energy from methane generators of agricultural installations or solar energy. The turbine rotor shaft has a rotational speed sensor and drives an electrical generator directly connected to it. The rotating rotor of the axial working turbine, due to the opposite angle of attack of its blade sections, arranges the movement of the working medium inside the chamber in the shape of a rotating torus, thus creating heating and cooling zones necessary to obtain the Carnot cycle.

- The turbine rotor, apart from arranging the movement of the working medium stream, generates local zones of pressure fields near the blades, resulting from the compression and suction of the turbine. Those zones enable converting the supplied thermal energy into the kinetic energy of the stream. The kinetic energy of the working medium stream is delivered to the blades of the appropriate section of the rotor. The blade sections act hereby as two independent but interconnected single-flow turbine engines.

- The external combustion turbine engine according to this present invention is designed for production electricity from fuels of low-energy. Can be powered from all kinds of renewable energy sources, becoming an important link in the systems for storing such energy and converting it into electricity. The invention makes it possible to reduce methane emissions by large farms through burning low-energy fuel in the form of biogas. Mobile power stations equipped with such an engine would use any type of fuel including solid fuels. Another advantage of the invention is the simplicity of its mechanical construction. The main regulation of the engine output is possible thanks to the regulation of the heating power.

- Stabilization of the engine speed can be achieved with changing the angle of attack of the guide vanes by means of the centrifugal regulator. Equipping the working chamber with a pressure safety valve and connecting it to the pressure equalization tank comprising the pressure gauge connected to it ensures the safety of the engine operation, which is more reliable than previous designs known in the art. Also its quiet operation favors the use for renewable energy processing in any location. This innovative engine requires no gearing, is small and simple in design, quiet and uncomplicated in operation. It may find an example application as a portable device for charging the on-board battery of an unmanned aircraft system (UAS).



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