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Aspects of electric transmission implementation on a battle tank

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Abstract

In the paper, a high performance electric transmission designed for heavy military vehicles is presented. The power source is a 1300 hp gas turbine and a 200 hp supercharged diesel engine. Both engines drive a synchronous generator. The electric current supplied by the generator is rectified. Each sprocket is mounted on the output shaft of a gearbox driven by an asynchronous electric motor. An Insulated Gate Bipolar Transistors (IGBTs) inverter control AC motors in a separate way to achieve dynamic performance. Diesel engine alone is used for driving on paved roads with speeds of up to 15 km/h with low fuel consumption. Gas turbine and diesel engine are automatically coupled to the generator to reach the maximum torque and dynamic performances. The tank can thus reach a maximum speed of 70 km/h.

Keywords: electric transmissions, military vehicles, gas turbines, Diesel engines

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