Integrated Starter/Generator (ISG) for the FCS MULE Vehicle

BAE Systems FCS subcontract, Phase I Oct 2005 through May 2006

RCT Systems supplied the integrated starter/generator (ISG) for the Future Combat System (FCS) Multifunction Utility/Logistics and Equipment (MULE) vehicle Engineering Evaluation Unit (EEU) phase. Lockheed Missiles and Fire Control is the vehicle prime and BAE Systems is the power and propulsion system lead.

The MULE vehicle was to be the largest production unmanned vehicle in the FCS program, which has since been canceled. The power system configuration is a series hybrid with the RCT Systems ISG delivering power to individual traction motor drives in each of the fully articulating wheel arms. There were 3 variants of the MULE planned for production: reconnaissance, mine sweeping, and assault. RCT Systems delivered 3 prototype ISGs to BAE for the first demonstration vehicle systems, and have responded to similar requests since the original contract for potential follow-on vehicles.

The ISG design advances RCT Systems intellectual property in PM machinery technology to achieve further increases in torque density exceeding 5 Nm/kg. It is a high pole count PM machine with a proprietary high temperature water/ethylene glycol (WEG) cooled design. The thermal design takes advantage of advances in stator winding encapsulation combined with a unique cooling channel arrangement to minimize the thermal resistance to the coolant stream.