Cranfield UNIVERSITY

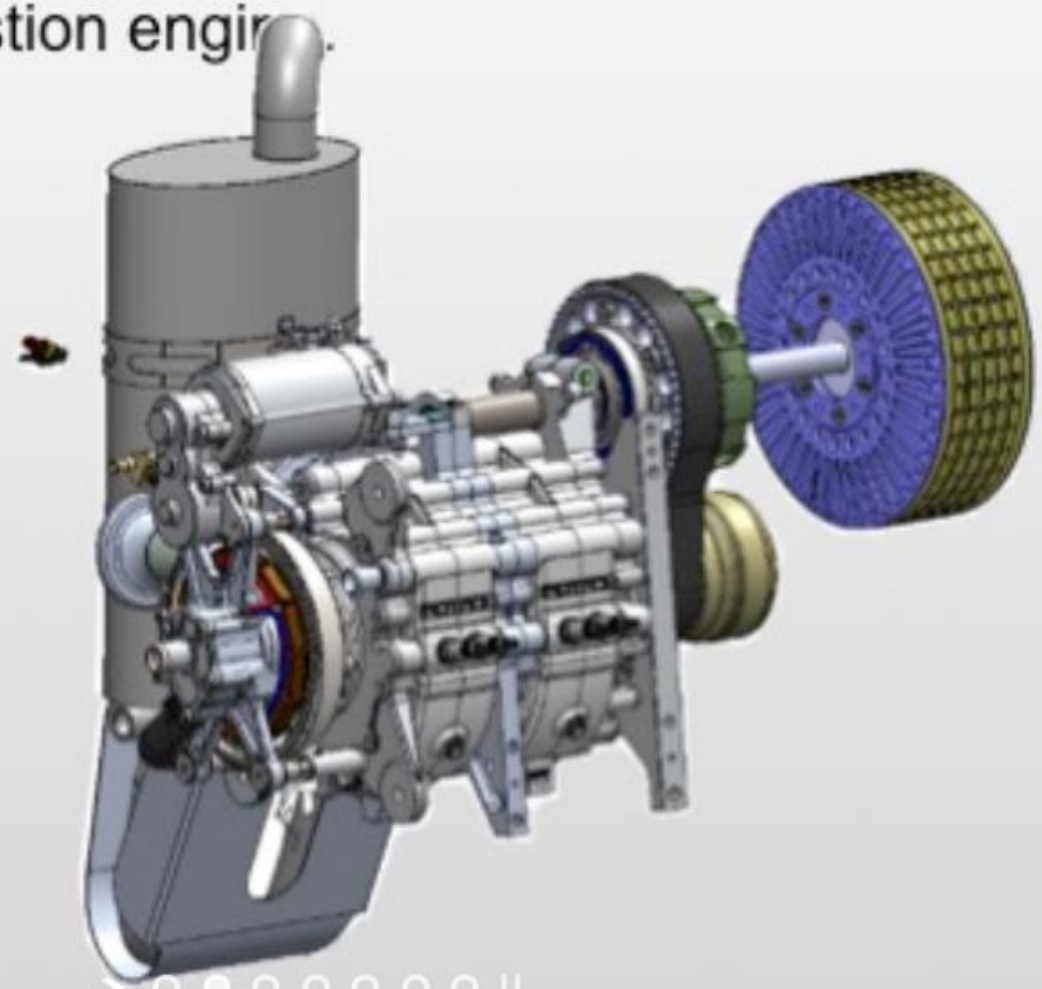
ROTRON

ADVANCED ROTARY TECHNOLOGY

Hybrid Electric Propulsion System

ROTRON & Cranfield University Main Goal

To Develop a TRL5 hybrid electric propulsion system that is recharged by an internal combustion engine.

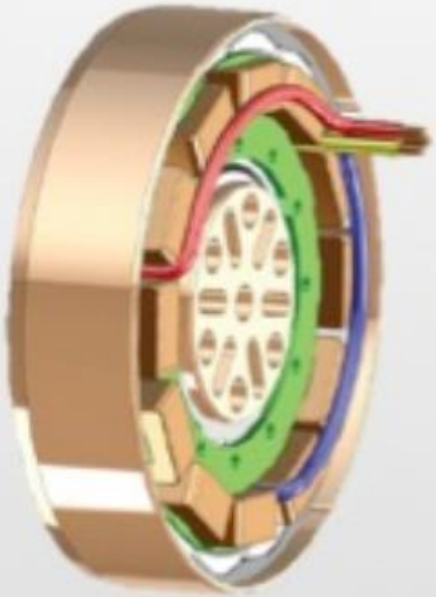


Why a Hybrid Combustion Electric Propulsion System?

- Combustion Engine:
  - Fuel + Engine
  - Higher energy density leads to increased endurance and longer rage
- Electric Motor:
  - Electric Motor + Battery/Fuel Cell/Solar Panel etc.
  - Provides stealth operation, and reduced acoustic/smoke/ thermal signatures and emissions.
- Hybrid-Electric
  - Combines the advantages of both
  - The engine and/or motor size can be reduced and operated near a constant power output extending the TBO of both.
  - Adds redundancy

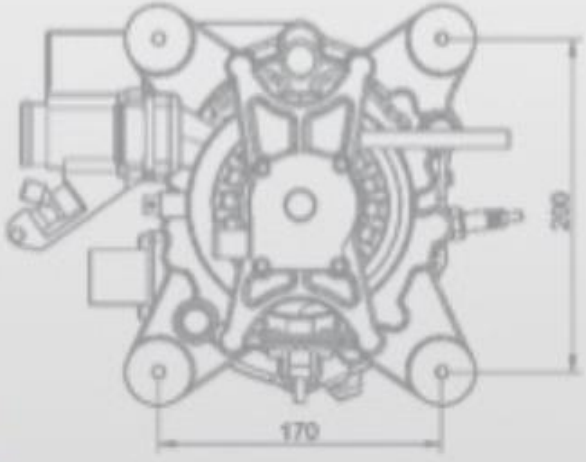
What is ROTRON contributing to AIRSTART?

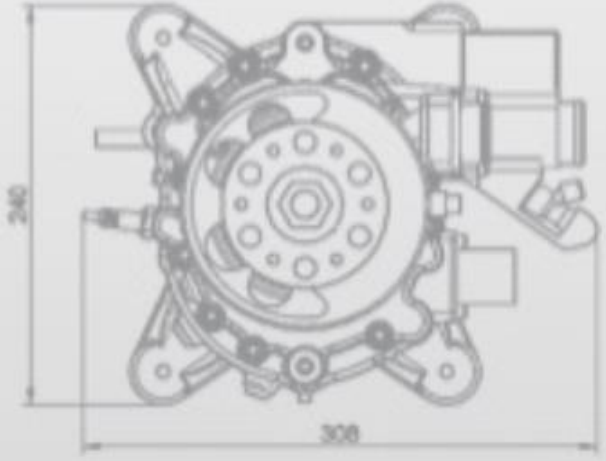
- Design and development of a new engine configuration with on-board generator capable of providing a minimum of 1300W
- Design and provide innovative engine to motor coupling
- Design new bespoke exhaust for propulsion test rig
- Design and provide one of a kind propulsion propeller test rig
- Provide test facilities and support for optimising and validating the hybrid electric propulsion system

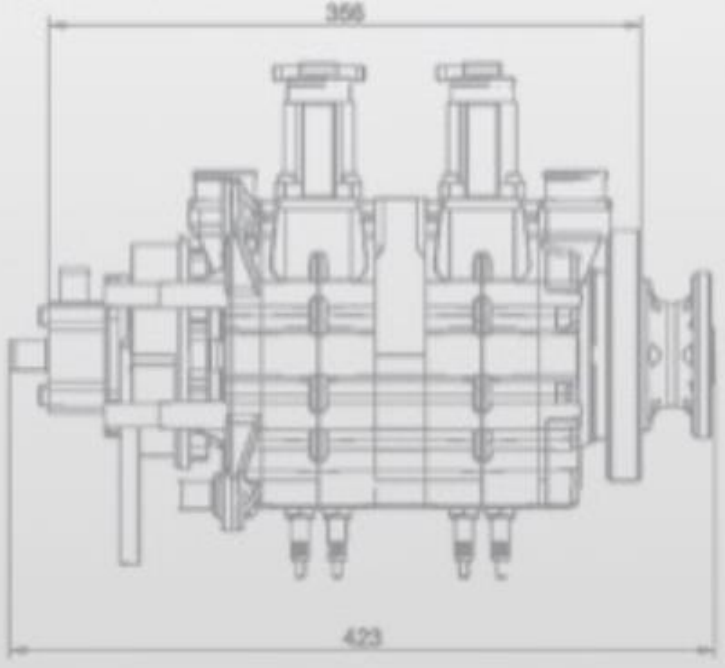


Why a Rotary Engine for a Hybrid Propulsion System

- SMALLER, LIGHTER, FURTHER…







ROTRON Requirements

- Bespoke Combustion Engine capable of 54 bhp at up to 6500rpm
- Onboard generator capable of 1300W+
- Propulsion test rig capable of validating the entire propulsion system
- Engine to motor coupling capable of disengaging to allow the Motor to operate on it's own

Testing Capabilities

- 3 Dyno test cells
- 1 Prop rig test cell
- Expert operators
- FAR 33 testing capabilities and experience