

Intelligent Power Management for Autonomous Vehicles (PPEM016)

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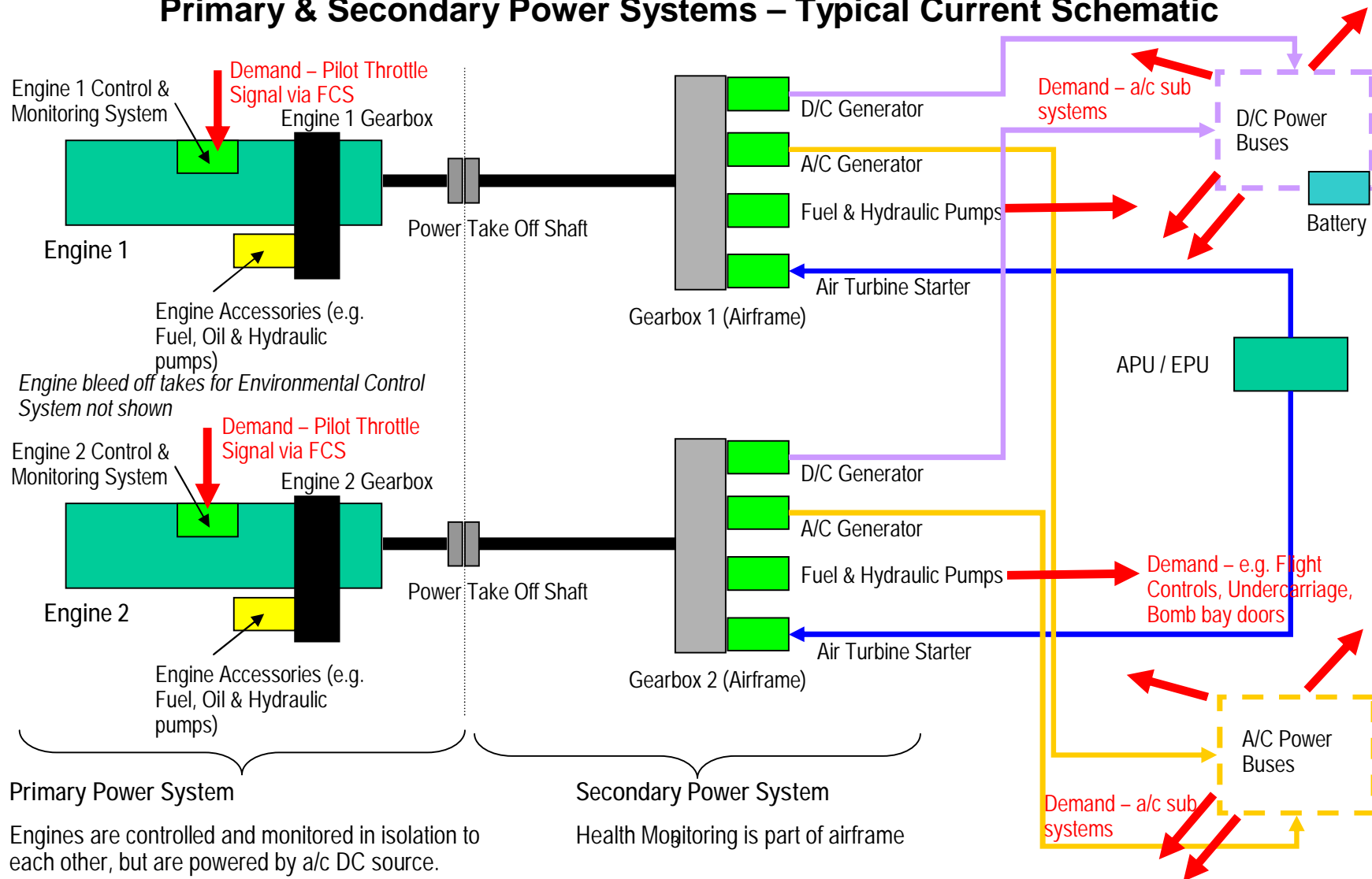




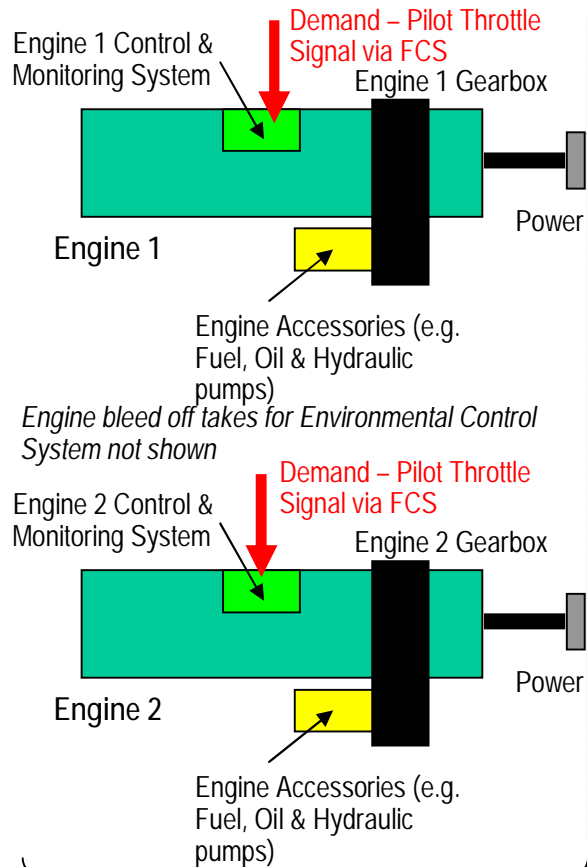
- SEAS DTC Project ADD020, Power Management highlighted the need for Power Management within an autonomous vehicle.
- ADD020 also summarised the overall requirements for a Power Management System (common to all domains) as follows:
 - Knowledge, understanding, awareness
 - Management of power sources and loads
 - Deal with the unexpected
 - Basic communication
- PPEM016 Intelligent Power Management (IPM) was undertaken to progress ADD020 and additionally to scope out the future direction for research into IPM.
 - IPM is equally applicable to manned and unmanned platforms.



Primary & Secondary Power Systems – Typical Current Schematic



Primary & Secondary



Primary Power System

Engines are controlled and monitored in isolation to each other, but are powered by a/c DC source.

Primary power system has no visibility or management of the demands originating from the air vehicle secondary power system or downstream networks.

The primary power system is therefore acting
In an 'open loop'



- RR led scoping study with BAE Systems ATC, Cranfield University, QinetiQ and Roke Manor, covering:
 - Work Package 1: Systems issues surrounding power management in an unmanned vehicle (BAES Systems ATC)
 - Work Package 2: Simulation of factors affecting a UxV mission (Cranfield University)
 - Work Package 3: Quantitative Assessment Framework (QinetiQ)
 - Work Package 4: IPM Architecture Study (Roke Manor Research)
 - Work Package 5: Integration & Project Lead (Rolls-Royce)