

Rotorcraft Fleet Logistics Optimization: Cutting Down on Spares and Overheads

**CURTISS -
WRIGHT**

DEFENSE SOLUTIONS



Challenge

- High accuracy air data computer (ADC) required
- Diverse fleet of rotorcraft
- Reduce logistics burden

Solution

- Rotorcraft optimized ADC supplied
- Software configurable ADC with source error correction tables for multiple rotorcraft
- Pin-strapping and multiple configurations in one unit allowing a single part number to serve multiple aircraft

Results

- High accuracy air data information available that compensates for downwash and no mechanical damping required
- Commonality of spares and reduced spares inventory across a multi-platform fleet of aircraft
- Simplified installation, reduced component count, training and documentation overhead

Challenge

An operator of a diverse fleet of rotorcraft required a sensing solution that could give the accurate data they needed to reliably perform various missions. Such information is typically acquired from air data computers (ADC) and is critical to the effective and safe operation of all aircraft.

However, rotorcraft air data systems face some additional challenges because of how rotors push air past the body of the craft at low speeds – an effect known as rotor downwash. Without compensating for resultant air pressure variations, the air data can be unreliable. One solution is to use mechanical dampening which filters the pneumatic noise

in air pressure to offset these effects. While this approach is proven, it adds weight, takes space and increases the maintenance burden on the operator.

A challenge the operator faced was it had several platform variations. Different platform types, or some variants of a single platform, will need air data computers with different source error correction settings. This is because the positioning of the pneumatic ports will affect the relationship between air pressure and speed. This approach would create an increased maintenance burden as each variation would require separate spares, documentation and training.



Air Data Computer

Solution

Curtiss-Wright has over 50 years' experience developing air data systems and has evolved its line of ADCs to include features that address the unique requirements for rotorcraft operations. To reduce the pneumatic noise associated with the rotor blades, we implement digital filtering algorithms in the ADC that yields better low speed accuracy without creating maintenance issues for the operators compared to a mechanical solution.

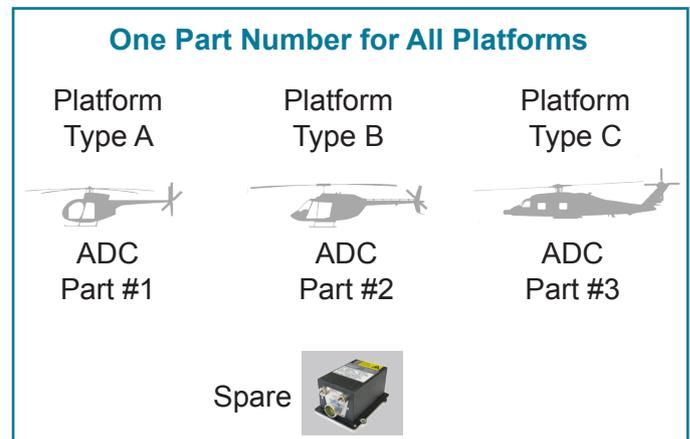
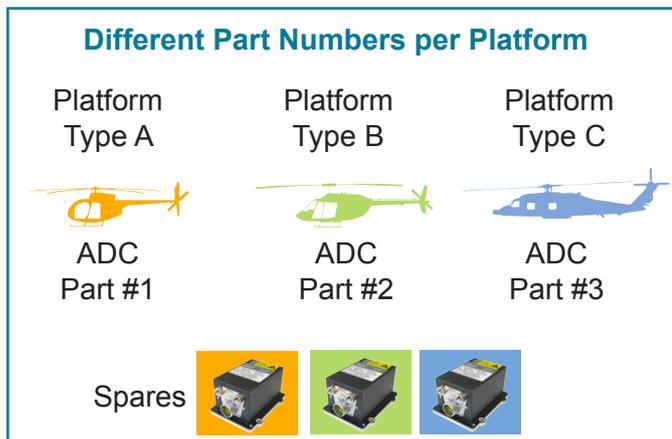
The solution to multiple ADC part number variations was to create a single product that could contain multiple configurations, one for each platform type. Selection is achieved by linking discrete input pins to a configuration common pin in the loom of the mating connector. Thus it is simple to replace an ADC on up to 15 different aircraft platforms using a single part number – a spare ADC automatically selects the correct configuration when installed.

Results

The operator's rotorcraft were equipped with high accuracy air data information available that compensated for downwash. This enabled pilots to have better information at low speed, creating a safer operating environment – particularly at take-off and landing.

The commonality of product part numbers reduced the inventory needs across a fleet of six different aircraft. This lowered logistics overheads and saves money by reducing the number of spare units that must be purchased, stored and managed.

The elimination of mechanical dampening systems allowed the operator to simplify installation, reduce the number of components required, the training needs and lower documentation overhead.



A bank of configurations stored within one ADC model eliminates the need to carry spares for all platform types