REAL-TIME DIAGNOSTICS FOR SWIFT INSPECTION AND EASIER TROUBLESHOOTING

Smart solutions to keep your fleet flying

Collins Aerospace

EARLY DETECTION OF INCIPIENT FLAWS

HUMS provides insight into small problems that developed on the last flight or immediately after maintenance. Early detection of imbalances, faulty installation, gear and bearing deterioration or other conditions allows operators to quickly address easily fixed problems before they grow or cause collateral damage to the aircraft.

REDUCTION OF TEST FLIGHTS

By automating inspections and data collection on every flight, pinpointing the root cause of problems and identifying issues immediately after maintenance, HUMS greatly reduces the number of ground turns or other maintenance-related test flights, rendering significant savings through lower use of fuel, engine and aircraft cycles as well as man hours.

REDUCTION OF INSPECTIONS AND INCREASED PART LIFE CYCLES ON AIRCRAFT

By monitoring hundreds of signals, the systems perform automatic electronic examinations to eliminate the need for many maintenance inspections.

FASTER TROUBLESHOOTING

Interactive, intuitive interfaces give the ability to conduct real-time on-aircraft troubleshooting or drill down into data sets at the ground station. Strip-chart parameter tools isolate the root cause of problems, minimizing troubleshooting time and greatly reducing no-fault-found component removals.

LOWER FLEET OPERATING COSTS

Unlike preventive maintenance which relies on time-based upkeep, HUMS enables advanced prognostic functions that give flight crews and ground personnel advance notice before components break to avoid vehicle downtime and greatly reduce maintenance costs.

SUPERIOR SYSTEM FUNCTIONALITY FOR IMPROVED FLIGHT PERFORMANCE

On board, HUMS constantly monitors component health from tip to tail by tapping into hundreds of aircraft flight-control signals and specialized accelerometers distributed throughout the aircraft. By synthesizing performance information including speed, torque, temperature and pressure data as well as comprehensive vibration and rotor track and balance data, HUMS executes real-time diagnostics without pilot involvement. It provides “go” or “no-go” status on the flight line display or more detailed health assessments and recommended maintenance actions on the ground station.

BETTER DATA FOR ENHANCED MISSION READINESS

With HUMS on board, confidence in vehicle health and usage management data equates to mission readiness:

- Unique Collins Aerospace technology synthesizes data from many sensors to detect incipient flaws, even those that develop months ahead of a potential failure
- Comprehensive signal integrity and built-in test checks ensure the highest standard of diagnostics in the industry

Cracked spline adapter

Debonded tail rotor boot cuff

Sand buildup in oil cooler

Comprehensive ground station functionality for improved life-cycle management

All flight data and calculations performed by the HUMS on board are transferred to the flight data transferred to the ground station via removable memory, wired or wireless connection. The solution integrates current and historical flight data into a comprehensive database with full reporting capabilities for use by maintenance crews as well as logistics, operations and engineering personnel.

The ground station facilitates day-to-day maintenance, logistics and planning with an array of functions, including:

- Parametric analysis
- Component usage tracking as determined by cycles, flight time or other parameters
- Diagnose gear, bearing and shaft assembly and wear features requiring maintenance
- Generate motor smoothing instructions for maintenance
- Vibration acquisition review
- Data files that can be read by Flight Operation Quality
- Assurance (FOQA) and Military Flight Operations Quality
- Assurance (MFOQA) aftermarket flight operations software

In addition, HUMS is offered with a database interface to your preferred Maintenance Management Information System (MMIS), which automatically provides flight information, operational usage metrics and maintenance suggestions to the MMIS during the data download.

Legacy HUMS solutions

Our Integrated Mechanical Diagnostics – Health and Usage Management System (IMD-HUMS) provides full-system functionality for heavy-lift aircraft including the H-53E, AH-1Z and UH-1Y platforms.

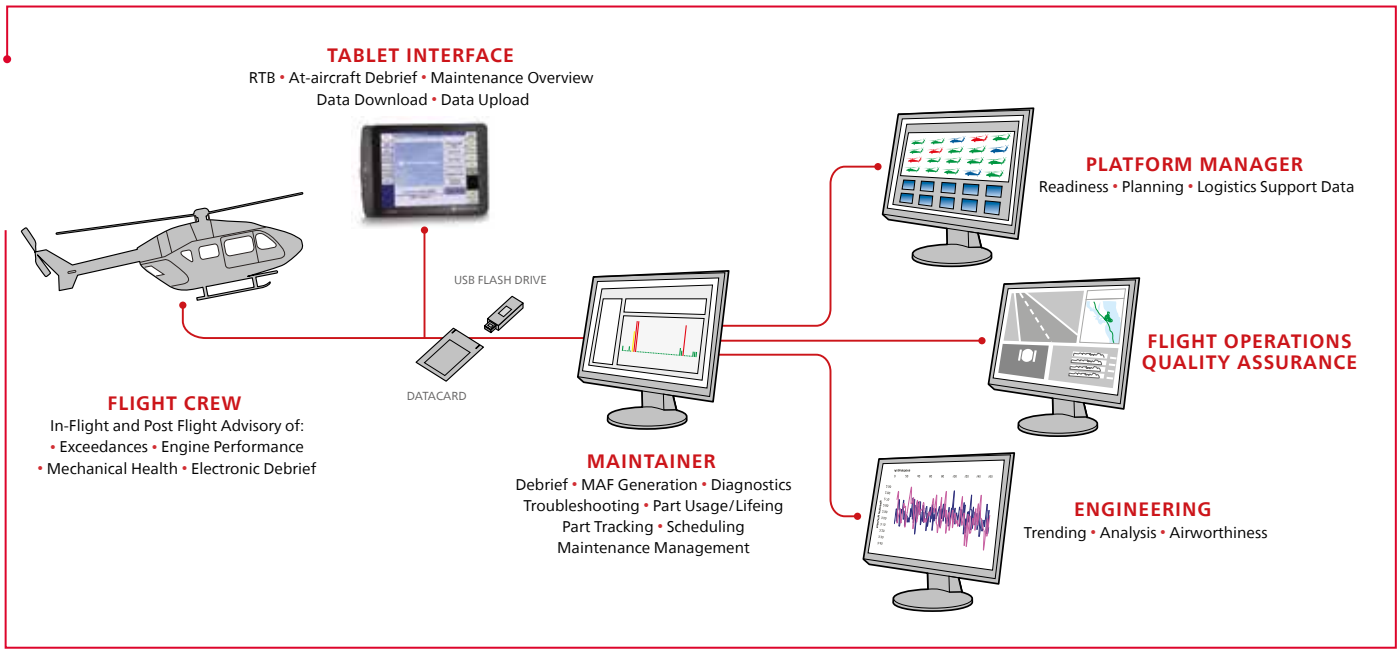
Integrated Vehicle Health Management Systems (IVHMS)

IVHMS provides all the capabilities of the IMD-HUMS but with added functionality, including integrated crash-survivable cockpit voice and flight-data recording with a location beacon that is fully compliant with ED-112 standards.

HUMS is currently flying on the UH-60, MH-60, S-70, H-47 and CH-53K aircraft.

“I never have to schedule a backup aircraft for our planned S-92 flights.”

— Commercial operations manager



VIGOR® SYSTEMS

Our Vigor® Systems are HUMS solutions developed exclusively for small and mid-size helicopters. Solutions provide full-system functionality for digital aircraft in an efficient size and weight.

With the flexibility to adapt to a number of different aircraft, Vigor Systems are currently being certified on commercial helicopters, including the Bell 525.

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