ROCKWELL COLLINS FLIGHT DYNAMICS

Head-up Guidance System (HGS®)

THE INDUSTRY LEADER.

Flight Dynamics systems have logged more than four million flight hours. Twenty airlines worldwide rely on Flight Dynamics HGS precision flight-path guidance and energy management, permitting thousands of flights to depart and arrive on schedule.

Since 1985, when the FAA certified Flight Dynamics Head-up Guidance System (HGS®) to provide Cat III approach and landing capability for commercial aircraft, we've completed twelve Cat IIIa certifications. No other manufacturer can match our achievements.

We pioneered Cat III approvals for regional and business aircraft, Cat II operations on Cat I runways, and takeoffs in low visibility conditions. And we're now certifying low visibility roll-out guidance. NASA's Ames and Langley Research Centers are utilizing Flight Dynamics HGS components in low visibility research to develop taxi-guidance, and integrating synthetic vision for tomorrow's commercial airline applications.

IMPROVED SITUATIONAL AWARENESS AND SAFETY MARGINS

A critical issue for today's commercial airlines is situational awareness. With flight data projected at infinity and displayed on a transparent glass combiner in the pilot's forward field of view, the pilot is able to see actual aircraft flight symbology registered against the outside world. This flight guidance information allows the pilot to respond to TCAS and windshear alerts without taking his or her eyes away from where the airplane is flying. The conformance of HGS information to the outside world and the improved accuracy of approaches and landings provide increased margins of safety in both VMC and IMC conditions.

With the cost savings realized for lower takeoff and landing minima, many of the world's leading airlines have found the investment in HGS pays off in increased customer loyalty and satisfaction – while providing enhanced operations and safety throughout their systems. Rockwell Collins Flight Dynamics HGS assures that airline operations benefits from the proven technologies that come from the industry leader.

HGS OPERATIONAL AND SAFETY BENEFITS.

- Constant view of flight path and aircraft energy state
- Improved situational awareness
- Improved safety from projected flight path and head-up operations
- Improved manual touchdown precision
- Improved windshear awareness
- Conformal display of critical flight parameters
- Flight path acceleration
- Attitude
- Stall margin
- Wide field of view head-up display
- Precise speed/acceleration control
- Precise aircraft control
- Stabilized approaches to non-ILS equipped and "black hole" runways
- Inertial flight path – instantaneous indication of where the aircraft is going
- Unusual attitude recovery
- Tail strike avoidance
- TCAS alert and avoidance guidance
- Low visibility roll-out guidance
- Platform for growth using emerging technologies
  - *Taxi guidance*
  - *Synthetic vision*
  - *EVS*
  - *Advanced database applications*

EXPANDED OPERATIONAL CAPABILITY

Cat IIIa approach and landing capability
50 ft decision height and 600 ft (200m) RVR

Lower RVR requirement on Type I ILS facilities

Low-visibility take-off
300 ft (100m) RVR

HEAD-UP GUIDANCE SPECIFICATIONS

Avionics interface:
Commercial avionics interface

Display Fields of View:
Total: 24° vertical x 32° horizontal

Instantaneous:
24° vertical x 30° horizontal

Binocular overlapping:
24° vertical x 30° horizontal

Combiner transmission	82% photopic
Display contrast ratio	>1.3 against a 10,000 ft-L background
Display brightness	>2,400 ft-L
Total display accuracy	<7.5 Milliradians
Reliability	>25,000 hours average LRU MTBF
BIT coverage	>95%
Total power consumption	<200 W @ 28 VDC
Combiner design	One-hand stowable Alignment fully monitored

For more information contact:

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