GE Aviation

Optimized performance, maximized safety in challenging environments

GE Precision Landing System
Oil rig approach
The guidance system for difficult landings

System overview

The Precision Landing System consists of three main components:

1. **Electro Optical (EO) Grid Transmitter** - Laser transmitter mounted at fixed landing sites or man-portable. Provides a relative navigation reference grid for landing aircraft
2. **EO Grid Detectors** - Sensors mounted on landing aircraft that observe the relative navigation reference grid and report 3-D aircraft position and velocity
3. **Data link** - Mounted on the transmitter and landing aircraft. Provides a short range wireless local access network to ensure continuity, integrity, accuracy, and availability of navigation solutions

Concept of Operation

GE’s Landing Guidance System calculates landing aircraft and landing surface position by measuring azimuth and elevation angles from the EO Grid Transmitter to multiple grid detectors. Slant range is formed from the azimuth and elevation angle measurements to two or more detectors. A common navigation point location is computed and transformed into relative X, Y, Z Cartesian coordinates, which is shared between the landing aircraft and transmitter via the datalink.

Applications

- Oil rig landings
- Building landings
- Unimproved fields
- Degraded visual environments / brownouts
- EMS accident landing zones
- Slung load positioning
- Ship landings

Operational characteristics

**EO Grid Transmitter**
- Weight: <15 lbs (1st generation)
  - <5 lbs (Next generation)
- Size:
  - 6”L x 6”W x 8”H (1st generation)
  - 4”L x 4”W x 5”H (Next generation)
- Power: <100 Watts
- Grid field of regard: 30° x 30°, expandable to customer requirements
- Grid range:
  - 500-1,000 feet (1st generation)
  - 1,000 - 2,600 feet (Next generation)
- Eye-safe laser

**EO Grid Detectors and Common Navigation Processor**
- Weight: <1 lbs
- Detector size: 1.5”L x 0.875”W x 0.875”H
- Common Navigation Processor size:
  - 6”L x 3.5”W x 1”H (1st generation)
  - 4”L x 2.5”W x 1”H (Next generation)
- Power: <4 Watts
- Positioning accuracy: <1” (3-D @ 100’)

GE patents/applications: 8352100, 8326523, 20130107219, 2339295, 20110153210 + 29 other related

Value

- GPS independent
- Operates in degraded visual environments
- Accurate to less than 1 inch
- Enhance current CONOPS, reduce minimums
- Integrate with aircraft systems
- < 5 pounds of aircraft kit
- Easy to install

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EO grid transmitter