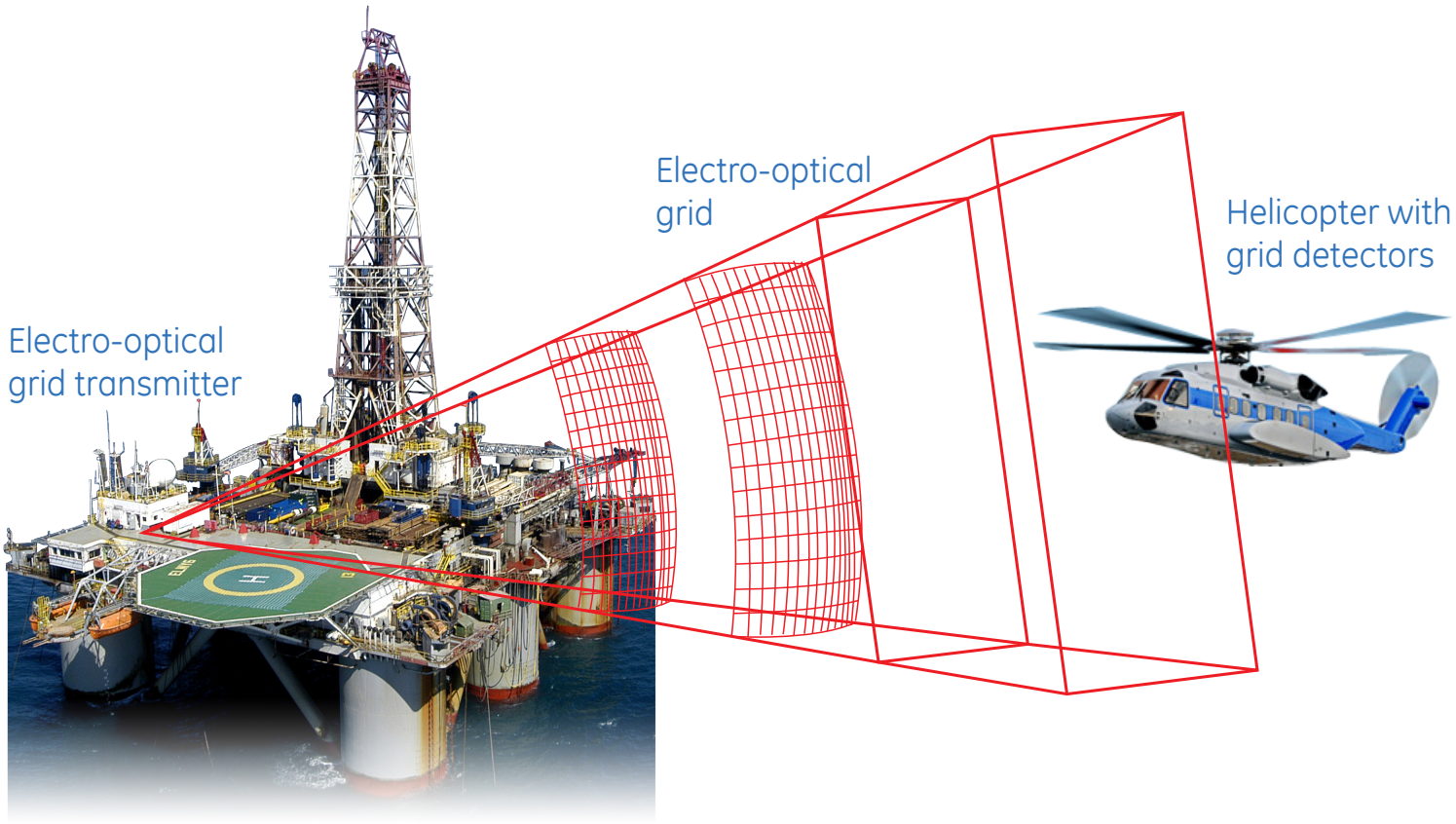
# Optimized performance, maximized safety in challenging environments




# GE Precision Landing System

## Oil rig approach

imagination at work

# 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.

## 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

## Applications

Oil rig landings

Building landings

Unimproved fields

Degraded visual environments / brownouts

EMS accident landing zones

Slung load positioning

Ship landings

## Operational characteristics

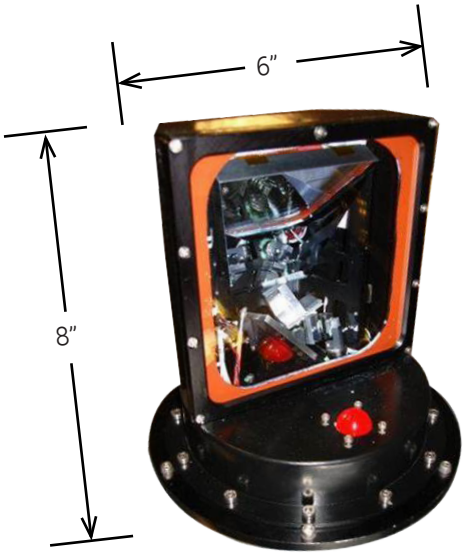
### EO Grid Transmitter

- 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




EO grid transmitter

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