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Produced by the NASA Center for Aerospace Information (CASI)
John F. Kennedy Space Center’s Wireless Hang Angle Instrumentation System

BENEFITS

- Highly Precise: precise measurements down to 15 arc seconds. Ultra-low thermal expansion mounting bracket minimizes errors that can result from changes in temperature.

- Safe: Removes human element from hazardous areas. Does not interfere with other critical systems. Built-in redundancy transmits with no loss of information.

- Low power: Unique power management scheme allows for thousands of readings up to 300 ft with four AA batteries.

- Small and lightweight: The wireless measurement system has dimensions of 4" × 3" × 2" and weighs less than 20 lb.

- Adaptable: Easily modified to meet customer needs.

The National Aeronautics and Space Administration (NASA) seeks partners interested in the commercial application of the Wireless Hang Angle Instrumentation System. The technology is a high-precision, wireless inclinometer. The system was designed for monitoring the suspension angle of the Orbiter vehicle during loading onto the Solid Rocket Boosters of the Space Shuttle. Originally, operators manually measured the alignment of the Orbiter with a hand-held inclinometer on a nonrigid surface. The measurement was open to interpretation by the loader. If the Orbiter is misaligned, it can crush ball joints and delay the loading while repairs are made. With this system, the Orbiter can be loaded without damage and without manual measurement.

www.nasa.gov
Technology Details
The technology is a field-tested, wireless tiltmeter that was designed to measure the suspension angle of an Orbiter vehicle while it is being loaded on booster rockets to prevent damage to the vehicle and rockets. It is composed of a measurement unit attached to the Orbiter and a hand-held unit that allows operators to read the angle. The measurement unit has three main parts: redundant accelerometers to measure the angle, a wireless transceiver to communicate with the hand-held unit, and an attachment piece (made of material with a low thermal-expansion coefficient) that connects the inclinometer to the measured surface. The hand-held unit consists of a wireless transceiver and a read-out screen. The wireless protocol is proprietary to NASA and is based on technology previously patented.

Partnership Opportunities
All NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning commercialization (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or nonexclusive. If your company is interested in the new Wireless Hang Angle Instrumentation System technology, or if you desire additional information, please reference Case Number KSC-12751 and contact:

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