National Aeronautics and
Space Administration

technology solution

Sensors

Highly Accurate Level Sensor

For aerospace fuel tanks

NASA's Langley Research Center has developed a SansEC Sensor Technology for use with aerospace fuel delivery systems.

The SansEC technology is a patented and proven platform for multiple applications, including fluid level measurement. The platform utilizes a flat coil geometry antenna operated at its resonant frequency to measure dielectric properties or property changes of materials near the coil.

The technology is well-suited for situations where wireless, powerless, or non-contact measurements are needed with high sensitivity and accuracy.

NASA Langley Research Center is seeking industrial partners/ licensees to commercialize this technology. The research team at NASA Langley is available to assist with further development.

BENEFITS

- Sensor is low cost, wireless, and offers design flexibility
- Requires only a simple and inexpensive radio frequency transponder
- Sensing can be accomplished without any electrical or direct physical contact with the coil
- Eliminates direct wire ingress into the tank
- Sensor can simultaneously detect hazardous gas fumes when coated with the appropriate chemically sensitive material

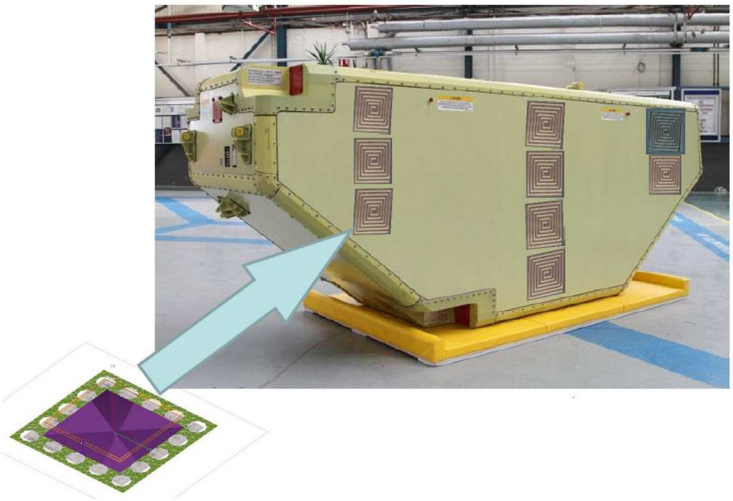
THE TECHNOLOGY

The FAA and Aircraft Industry recognize the need to reduce fuel tank explosion risk by eliminating ignition sources and changing fuel tank design and maintenance.

This technology can be utilized to wirelessly sense the level of fuel in aircrafts, thus mitigating risk of inadvertent electrical failures and sparks. NO wires enter the fuel tank and the radio frequency transponder typically requires 10 milliwatts of power or less.

The technology can be used for dielectric tanks, by simply applying the sensors to the tank surface (as pictured). Through certain techniques the technology can be applied on metal tanks with no wires entering the tank from the outside.

Currently, there are more than 20,910 jet aircraft in service. This presents a large market opportunity for retrofitting this technology onto existing airplane fuel tanks Rapidly evolving aviation services are expected to spur worldwide requirement for 36,770 new jet aircraft by 2033. This presents a growing market for new installations.



Fuel Quantity Indication System (FQIS) with SansEC sensors applied to the outside

APPLICATIONS

The technology has several potential applications:

- Fuel and other liquid measurements in aerospace vehicles
- Above or below ground fuel storage tanks
- Cryogenic fluid tanks

PUBLICATIONS

Patent Pending

More Information

National Aeronautics and Space Administration

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NASA's Technology Transfer Program pursues the widest possible applications of agency technology to benefit US citizens. Through partnerships and licensing agreements with industry, the program ensures that NASA's investments in pioneering research find secondary uses that benefit the economy, create jobs, and improve quality of life.

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