

NASA Langley Research Center is actively seeking partnerships and collaborations to commercialize its technology for Real-Time Monitoring of Wire Insulation in Critical Wiring Applications

The Market Opportunities

Applications of this technology include mission/safety-critical wiring installations in:

- Aerospace vehicles
- Marine vessels
- Automobiles industry
- Nuclear reactors
- Industrial plants
- Control centers
- Electronics

The Benefits

- Detects impending failure caused by arcing, excessive current causing conductor heating, and insulation damage from harsh chemical environments
- Detects impending wiring insulation failures in real-time enabling implementation of shutdown mechanisms to minimize damage
- Pin-points location where short circuits occur and where arcing is intermittent and difficult to locate, thus enabling easier, quicker repair

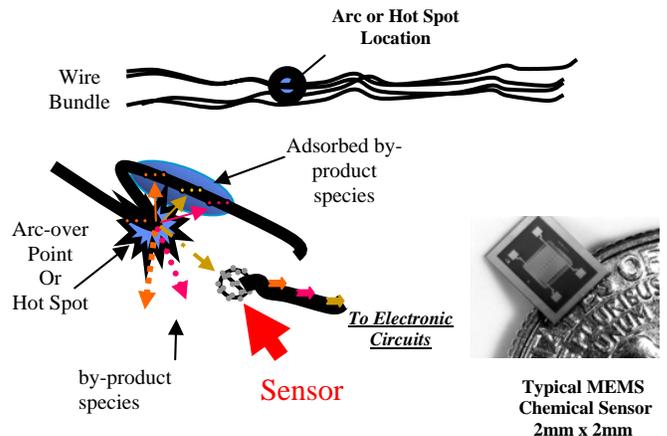
The Technology

This invention provides a method for real-time monitoring of wire insulation for critical wiring applications to determine when wiring insulation is compromised due to aging, chemical exposure, or mechanical degradation. Distributed sensors are used to detect the effluents emitted from wiring insulation resulting from high-temperature, over-voltage, or other forms of degradation. Chemical tracers (markers) added to the wiring insulation respond to possible degradation conditions to enable determination of whether safe or reliable operation can continue. The markers aid cumulative damage assessment, thereby providing inspection capability without down-time.



Real time Monitoring of Wire Insulation for Critical Wiring Applications

Assessment of wire insulation integrity by detection of effluents



Markers are added to insulation or circuit board layers or layered onto the conductive media so that it can be released into the surrounding air or gas. Markers can be tagged for release during over-voltage, overheating or mechanical compromise. Markers can also be chosen for the mode of inspection, such as, fiber-optical sensing techniques to detect effluents, color-shift sensing, ultrasonic techniques, gas chromatography including miniature detectors and specialized sensing devices, etc.

The sensors that determine the damage effects to the wiring insulation or circuit board may be connected to a microprocessor-based monitor to display the location and type of damage to provide appropriate alarm signals, and to disable the affected circuits for prevention of further damage.

Additional Information

To discuss in detail how this technology can profit you and your business, please contact:

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