

TECH OFFER

Ultraspectral Vision Based Corrosion Detection Probe



KEY INFORMATION

TECHNOLOGY CATEGORY:

Electronics - Lasers, Optics & Photonics

Electronics - Sensors & Instrumentation

TECHNOLOGY READINESS LEVEL (TRL): **TRL4**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO174900**

OVERVIEW

Corrosion of metal structures is often addressed as one of the main prevailing problems in aerospace, petrochemical, marine, automobile and aeronautical industries. Most of the currently existing technologies for corrosion detection lack sensitivity and focus on direct viewing, which restricts defect detection in difficult to access areas such small channels, technical cavities, pipelines, tunnels, oil wells and others. A flexible ultraspectral imaging-based probe, capable of providing more than hundreds of spectral bands would be the best choice in case of sensitive and early stages detection of defects and corrosion in human inaccessible area. This invention discloses a portable specialised imaging probe that uses fast (snapshot) and non-destructive imaging technology for early detection of stresses, contamination, and corrosion.

TECHNOLOGY FEATURES & SPECIFICATIONS

The ultraspectral probe presented here consists of bundles of lighting and imaging fibres in a small diameter flexible

configuration. The main features of the probe are -

- Integrated wideband lighting source.
- Flexible with a diameter of less than 5mm.
- Optical NDT capability in multiple spectral bands.
- Early corrosion detection capability.
- Real-time remote monitoring capability
- Applicable to any metal inspection.

POTENTIAL APPLICATIONS

Paired with a reference library specific to the material under inspection, the probe can potentially automate the corrosion inspection process. The probe essentially offers ultraspectral imaging capability in difficult to access area. There are multiple use cases that can benefit from this -

- Corrosion monitoring in technical cavities and slots of aircrafts, automobiles and gas pipelines.
- Bond pad corrosion detection in semiconductor industry.
- Characterisation and detection in areas such as biomedical imaging, metrology, agriculture etc.

UNIQUE VALUE PROPOSITION

The flexible integrated ultraspectral probe allows inspection in previously inaccessible areas for visual NDT inspections. The inherent digitization of the data in multiple spectral bands further adds to the possibility of using the probe for early detection of corrosion and for automating the inspection task. The probe also simplifies inspection in small cavities and pipes and facilitates efficient and early remedial actions.