Are you already familiar with our industrial-grade accredited inspection services?

- Accredited laboratory in line with DIN EN ISO / IEC 17025, to qualify and validate new non-destructive testing (NDT) processes for industrial applications
- Accelerated time-to-market and opportunity for qualified, norm-compliant deployment in industrial applications as well as for new in-house developments or custom adaptation of innovative NDT technologies, even in fields where norms have not been established
- Certification of the corresponding quality management system in accordance with DIN EN ISO 9001
Situation

Many buildings and infrastructure elements currently reach their projected lifetime limits and require regular condition assessment in order to ensure safe subsequent using and to identify the possible need for repair or replacement. Periodic inspections as prescribed by law can not comply this task with absolute certainty, since they were not designed for the conditions in the lifetime limits.

Permanent condition monitoring is a strategy of choice to provide both need-based examination of structures and early detection of potentially dangerous defects. To this, the ability of permanent condition monitoring to reliably identify structural deviations that require further examination is crucial. Such deviations include formation and growth of cracks or corrosion damage, changes in the inclination angle or material aging. Additionally, the detection of short-term mechanical overloads may be of interest. The detection of some special types of defects is even more reliable by means of permanent monitoring, since often it’s easier to track the change of a state than to detect the mere existence or even the location of a defect. Such condition monitoring requires nondestructive measurement devices which are constantly attached to the specimen. Nowadays, nondestructive sensors are able to detect and to track most of the mentioned damage processes long before failure.

Solution

Using the working title “MoniDAQ”, Fraunhofer IZFP is currently developing a modular, energy self-sufficient board which is able to provide eddy current inspection, inclination measurement, magnetic flux leakage inspection and ultrasonic inspection etc. and to record all sampled data over long periods of time while dissipating extremely low amounts of energy. The read-out of the storage can be carried out easily and fast by means of a radio-controlled interface. These minute “MoniDAQ” boards require neither a crosslinking among themselves nor a server connection. The conceptual design of the boards was specified with special view for cost-effectiveness in such a way as to enable their use for urban environment or industrial enterprises in huge quantity. The power supply is provided by an integrated photovoltaic cell.

Benefits

- Self-sufficient and eco-friendly power supply by integrated photovoltaic cell
- Maintenance-free long-term operation
- Supersensitive defect detection
- Telemetric data recovery by radio
- Low costs per unit
- Unique combination of Fraunhofer IZFP’s proven nondestructive sensor technology

Fields of Application

Applications are found wherever existing infrastructure is subject to ageing or to possible damage so that a periodic monitoring is important to prevent physical injury or loss of property. This comprises amongst others

- Conveyance / operated lifts
- Steelwork
- Power plants / duct systems
- Pressure vessels
- Tendons
- Marker systems of roads or interstates (traffic lights, high-poles, etc.)