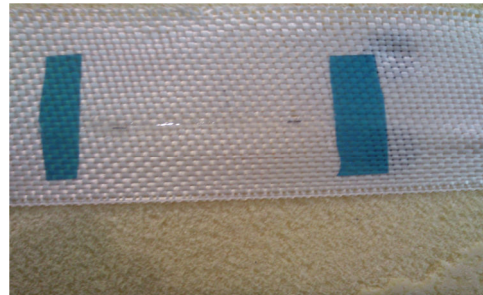
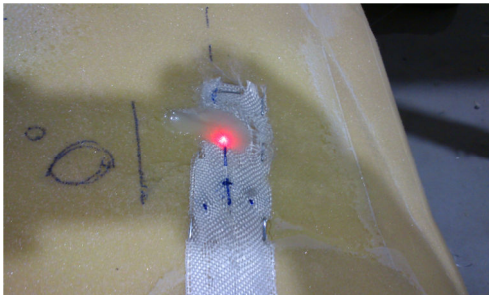


## **Fiber Optic Based Structural Health Monitoring For Wind Turbine Blades**

Indra has developed a Structural Health Monitoring (SHM) system for wind turbine blades based on measurements made by a network of DTG sensors. The system consists of: acquisition module, analysis module and a results presentation module.



The acquisition module monitors pairs of DTGs along the blades. Fibers can be embedded or attached directly to the surface and are placed at high fatigue areas. An optical technique is preferred because of its high linearity, reliability and long life without maintenance.



Equipment housed inside the hub of the turbine and connected to the optical fibers monitors the sensor network and transmits the data to the analysis module. Using advanced algorithms the analysis module is able to determine if any structural change has taken place. Finally, the results presentation module communicates timely warnings to the proper recipients.



The SHM system has been deployed recently and the results and benefits will be assessed in the long term.



This development has been undertaken through “NEWIND” project, a research collaborative project sponsored by the Spanish Centre for Industrial Technological Development (CDTI) and co-funded by the European Regional Development Fund (ERDF) within 2007-2013 Technological Fund.

National Renewable Energy Centre (CENER) and Higher Technical School of Aeronautical Engineers (ETISA) belonging to Technical University of Madrid (UPM) have collaborated with Indra to achieve the goals of this project.

- *Technical University of Madrid, (UPM)*



- *National Renewable Energy Centre (CENER)*



- *Spanish Centre for Industrial Technological Development/ European Regional Development Fund (ERDF)*

