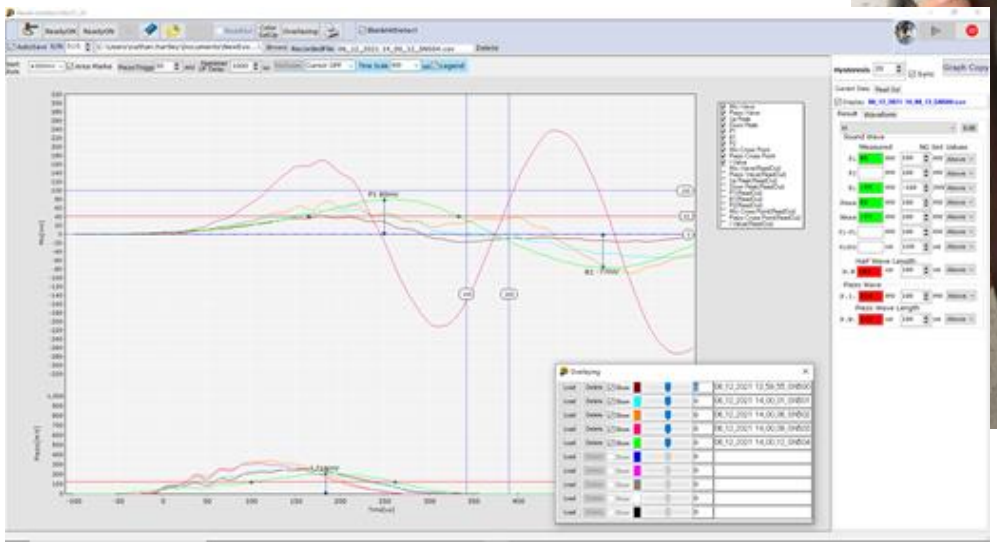
EVOTIS2: Automated Tap Tester - Acoustic

- Advanced Tap Tester using acoustic analysis method
- Two sensors (Piezo crystal and microphone) are used to capture responses from solenoid driven tapping device
- Software allows point measurements to be compared
- Potential to integrate with probe tracking and visualisation software



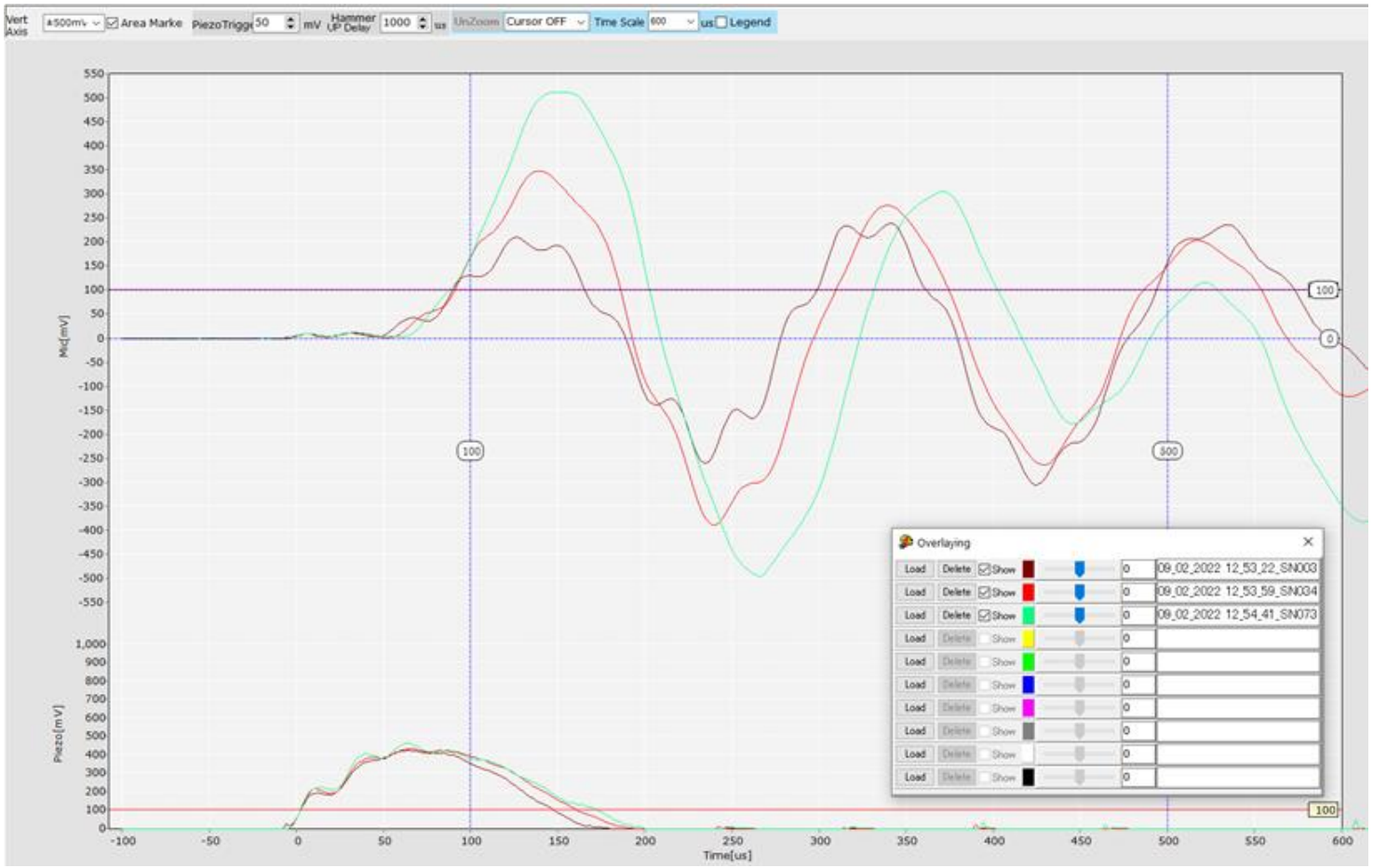
Features:

- Monitoring of acoustic response (microphone) & feedback from piezoelectric crystal integrated in the actuator
- Easy operation
- ON line mode:
  - Quantitive & graphical display in real time
  - Logging of values (export to Excel)
- OFF line mode
  - Export to .csv file for analysis
- Different frequency settings
- Examination possible in noisy environments

Applications:

- Detection in: thick structural components (30 mm+)
- Detection of inserts & changes in structure
- Marine: inspection of boded parts to include bulkheads, beams, hull/deck bond; currently being used to revalidate legacy lifeboats
- Offshore: inspection of skins, ribs & spar bonds to include lightning strike parameters of damage
- Civil: inspection for voids, ceramic tile bonds, material levels behind shuttering, concrete cancer, moisture damage

Typical EVOTIS software display



WHAT'S IN THE BOX?

CD with software

4 x AA Batteries

4 x AA Battery Pack

Evotis Control Box

Cables & replacement parts

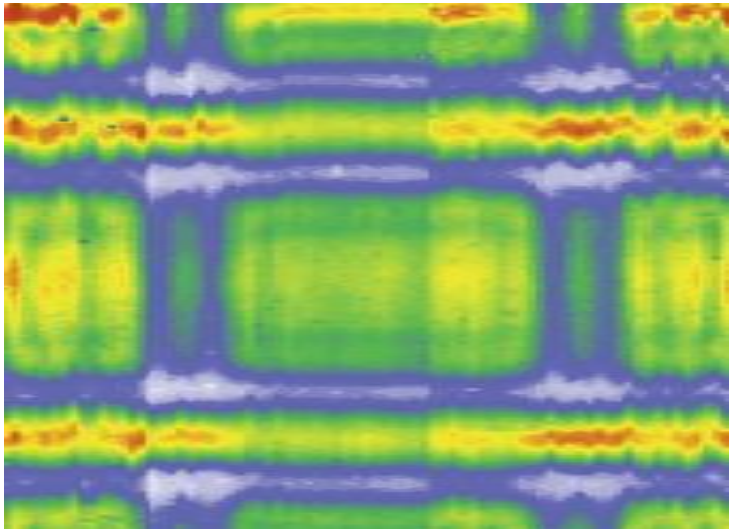
Evotis Probe

Specification:

- Handheld device to be used in real time with a PC/laptop
- Size (mm) : H100 × W230 × L190
- Weight (Kg) : 2
- Power : 4 x AA batteries; life about 5 hours
- Monitoring of acoustic response (microphone) & feedback from piezoelectric crystal integrated in the actuator
- Optional probe tracking & visualization (3D) software

Optional Probe Tracking and Visualisation Software

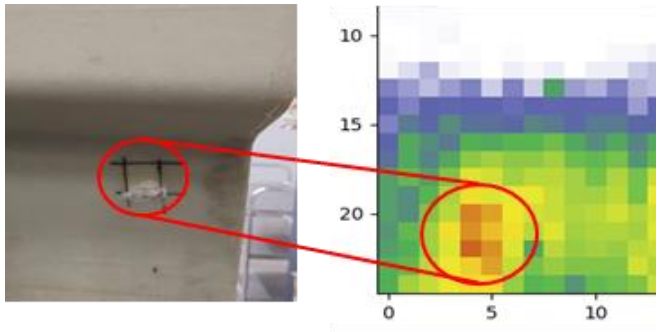
TWI have developed an automated tap-test system based on a modified Evotis unit & bespoke software for data acquisition, signal processing & visualisation



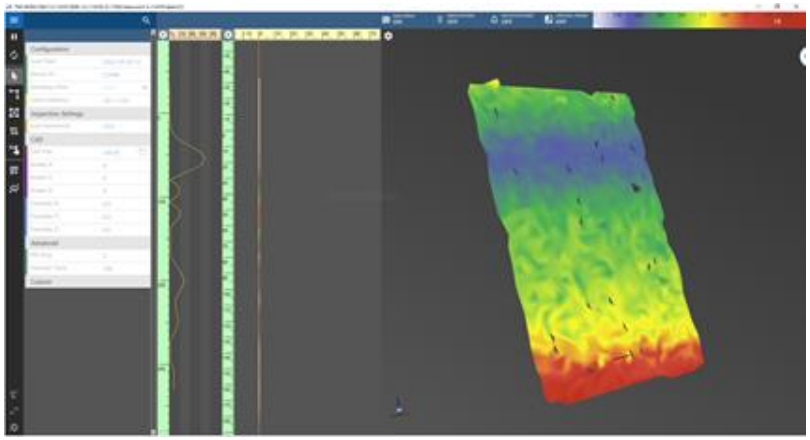
Typical results from a large area scan

The system allows inspection of large areas, including complex GFRP structures. The software automatically tracks the position of the probe & records the responses from the unit, digitally processes them & displays the results in the familiar “heat map” or c-scan type format

The system has been trialled on a number of structures including very thick GFRP laminates such as wind turbine blades & complex structural geometries like boat hulls, with excellent results



Artificial defect and inspection results for GFRP structure



Fully automated inspection enable 3D visualisation of the results, overlaid onto a CAD model of the structure. This allows easy interpretation and analysis of the results and mapping of defects, anomalies and indications for lifetime records and future reference

Screenshot from TWI's 3D data acquisition and visualisation software, showing data obtained from robotic tap testing prototype

J R T E C H N O L O G Y L I M I T E D

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Large area mapping utilising a number of integrated options for example: co-bot, crawler or encoder

HausBot HB1 Crawler Robot

Evotis tap tester mounted on a UR10e Collaborative Robot for automated inspection of a large GFRP sample

TWI licence the software & offer the training package - PAO

16/08/2022

CERTIFIED ISO 9001 UKAS MANAGEMENT SYSTEMS 001

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