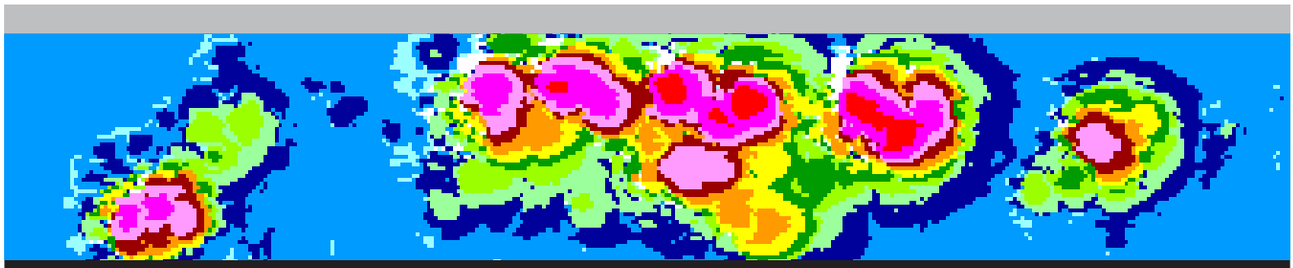
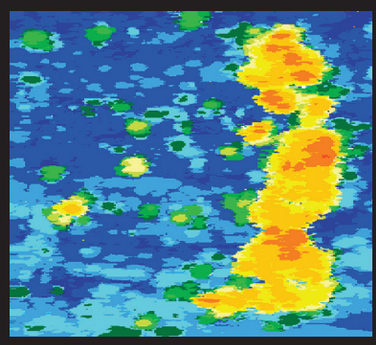
sonomatic®

innovative inspection technologies



Micromap Inspection

Corrosion mapping involves scanning with one or more straight beam ultrasonic probes over a pipe or pressure vessel surface, whilst capturing thickness measurements. The measurements are converted into digital values which are colour-coded to create topographic maps (C-scans) of the vessel or pipe wall thickness profile. Images from individual scan areas can be assembled together to create composite images covering large areas of material. This is a very powerful technique for equipment integrity management and for visualising the effects of corrosion/erosion on the material under inspection.



Various types of corrosion mapping services are offered by Sonomatic, ranging from our rugged, track-mounted Nautilus scanner, the magnetic wheeled crawler, Mimic, and our UT corrosion mapping system, MicroMap, with video-tracking of probe position.

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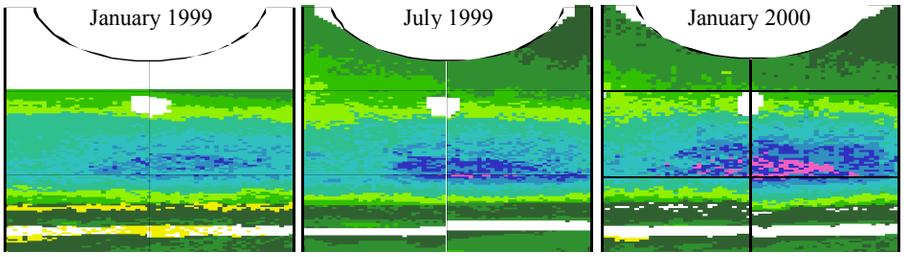
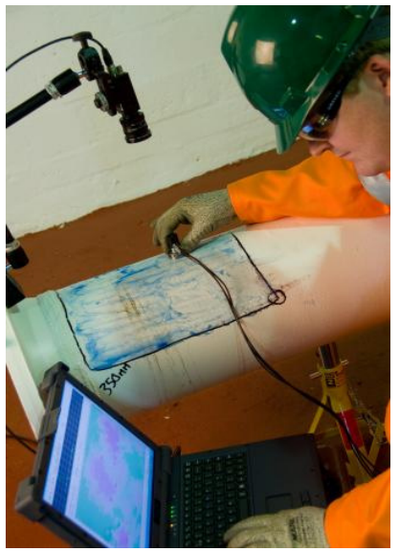
Sonomatic has offices in strategic global locations so we can respond quickly to customers' requirements wherever they may be situated. Our high quality products are matched only by our customer service. In addition to our field services, we offer training and consultancy at our sites in the UK or at clients' premises anywhere in the world. Sonomatic is committed to improving asset performance through applied and innovative technology; to delivering these benefits to our customers in the products and services that we provide; and to working with our customers, as value-added partners, to realise the maximum benefits of inspection technology.

Figure 1. Micromap image of the same component at six month intervals highlighting the progress of corrosion depth and extent.





The MicroMap system enables difficult access or awkward geometry components to be inspected by ultrasonic C-scan or corrosion mapping. This includes elbows, Tees, manifolds, sumps, dished ends, nozzles, etc. The system also maintains a record of the area covered, thereby providing assurance of a greater coverage than generally achieved by conventional manual ultrasonic inspection.

Statistical analysis and processing of the data allows detailed fitness for service assessments as well as greater confidence in rate of corrosion, particularly when this differs across the measurement area. The effectiveness of inhibitors, coatings and other protective measures can be confirmed or assessed in this way. The high confidence in knowledge of the condition of equipment provided by this data can be used to underpin managerial decisions affecting plant availability and reliability.

Principles of Micromap Corrosion Mapping

Allows real-time non intrusive colour graphic images of areas of corrosion or erosion at the internal surface

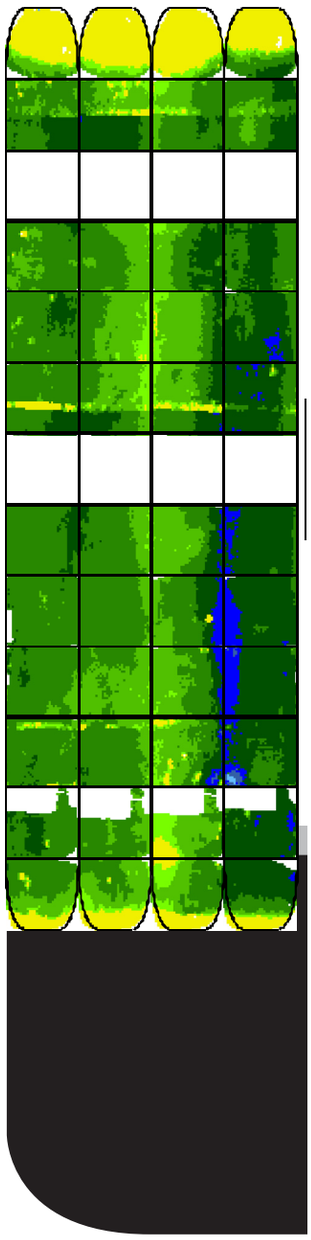
This is achieved by using:

- A specialised 0° transducer incorporating a Light Emitting Diode (LED)
- A CCD camera at a set stand off from the probe that can track the LED to obtain the grid position
- Video-tracking software to create colour images by monitoring the probe position and measured depth. 100% coverage is achieved by real time display of the results which also indicates the area to be covered.

Micromap combines conventional ultrasonic practice with the technology of miniature CCD video camera to provide a simple yet highly effective method of recording the position of the probe and presenting ultrasonic data during corrosion and erosion inspections.

Micromap uses a Charged Couple Device (CCD) camera and video tracking system to generate real-time graphic images by scanning with standard 0° transducer. A light-emitting diode (LED) is attached to the transducer, and the video camera is positioned to view the area selected for inspection. The camera then tracks and records the position of the LED. The ultrasonic scan is graduated into depth slices and each slice is assigned a unique colour. As the transducer is manually scanned over the area, the appropriate depth colour is recorded and imaged on the screen for each probe location. The computer constantly updates the image in real time always recording the thinnest reading at each probe location. The colour graphic images are built up in real time, providing colour related thickness readings in C-Scan (Plan) graphical format providing a record of all areas examined and thickness readings recorded.

For larger inspection areas, individual sectional scans are performed and then they can be re-presented in a full composite view to provide an overview of the complete component inspected.



Benefits

- As no mechanical scanners are necessary, this technique permits the ultrasonic imaging of complex geometries such as Tees, valves and bends
- Colour composite images may be generated by joining individual scan areas, to show the overall condition of plant
- Coverage is guaranteed as uninspected areas are highlighted
- Real time on-line analysis
- 3-D enhancement
- Automatic report generation
- Can be deployed at high temperature with plant running
- Can be deployed with an automated X Y scanner for ongoing monitoring and plant assessment.

QA and HS&E

It is Sonomatic's ongoing commitment to supply services and products, through the application of technical and engineering excellence, which complement both the customer's and our own QA and HS&E requirements.

Sonomatic's commitment to quality is maintained through continuous assessment and review of our Quality Management Systems to BS EN ISO 9001:2008. Sonomatic actively promotes the development, implementation and improvement of our QMS as a part of our ongoing drive to enhance customer satisfaction by meeting or exceeding customer requirements. In 2009 Sonomatic achieved UKAS accreditation as an Inspection Body to BS EN ISO/IEC 17020 (UKAS IB4276).