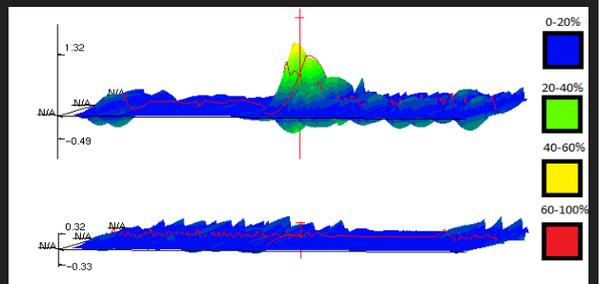
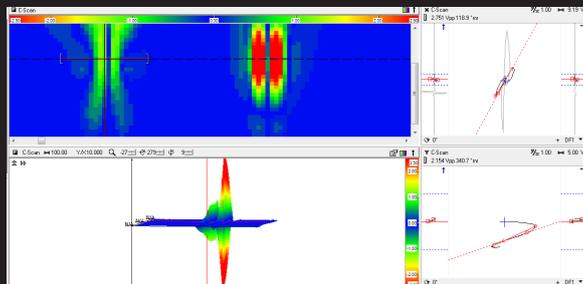


### SEF Saturation Eddy Current Pipeline Inspection

Pitting Corrosion and Microbiologically Influenced Corrosion (MIC) can be difficult to detect in long pipelines. These inspections can be very time consuming. Often Defect Indications will be missed due to large grid patterns chosen to save time.

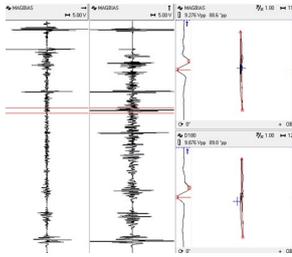
This is where the SEF scanner comes in. Large areas can be screened to locate and **give a size estimation** of these indications. This allows for enough time availability to do more in depth inspection on the defect



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Sonomatic has offices in strategic global locations so we can respond quickly to customer's 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 client's 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.



## SEF Saturation Eddy Current Technique

### Principles of the SEF Eddy Current inspection technique for Pipe Inspection:

When standard eddy current is applied to ferrous tubes the eddy current field is affected by the magnetic properties of the material. The SEF Scanner creates a magnetic field in the material and is set to exactly the correct intensity in order to limit the effects of the magnetic properties of the material. This allows enough of the eddy currents to bypass the skin effect and penetrate the material. Defects in the material will cause a change in the permeability of the material at that position as well as the amount of eddy currents at that point. The detector coil will then pick up this change in eddy currents and the system will then visually present that information on the computer screen.

### Advantages of SEF Bias Eddy Current Inspection

1. It is a very quick screening technique for Ferro Magnetic Materials. The SEF eddy current technique can measure localised defects as small as 0.5mm can be detected.
2. Pipes and Flat Surfaces up to 32mm thick can be inspected

### Disadvantages of Magnetic SEF Eddy Current Inspection

1. The Technique is only sensitive to localised defects such as pitting. Generalised wall loss can't be detected.
2. Defect Indication need to be backed up by other techniques as spurious indications can be caused by inclusions in the material.

## Equipment

### MultiScan MS 5800 Eddy Current Key Features

- **Four simultaneous frequencies per input.** This feature allows for inspection speeds up to **2 m/s** depending on the application with four frequencies on absolute and differential channels, without signal distortion.
- **Electronic probe balancing.** No separate external reference probe is required for absolute channel operation.

**4 ECT inputs and up to 64 multiplexed channels.** The MultiScan™ MS 5800 can support a large number of ECT channels to perform array probe inspections. Compared to single-channel inspection, the array probe technology allows for faster and easier surface coverage.

**Full tube-length recording** Used to analyze data off-line, and to assess results with customers.

## Applications

Application	Wall Thickness Below 16mm	Wall Thickness Above 16mm
Scanner	SEF 1002	SEF 1003
Ferromagnetic Material	✓	✓
Non Ferromagnetic Material	✓	✓
Capability of Detection	Localised Defect Mechanisms deeper than 10% of the pipe wall	Localised Defect Mechanisms deeper than 20% of the pipe wall
Limitation	16mm Max Wall Thickness can be tested. 100mm dead zone from pipe fixtures	32mm Max Wall Thickness can be tested. 140mm dead zone from pipe fixtures
Cleaning Requirements	The surface must be free of magnetic deposits; Coatings need to have a fairly smooth finish and be below 5mm thick.	The surface must be free of magnetic deposits; Coatings need to have a fairly smooth finish and be below 6mm thick.
Always remember that better surface cleaning ensures higher quality inspection with lower equipment wear and less chance for delays due to probe failure.		

## 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).