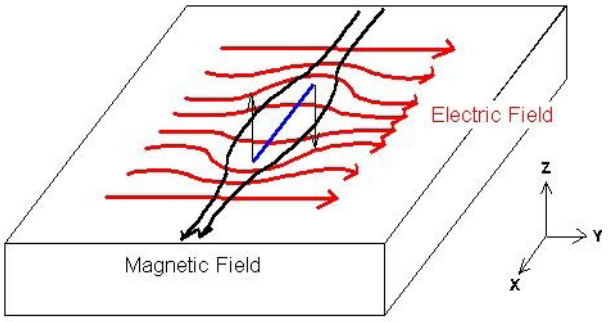
ALTERNATING CURRENT FIELD MEASUREMENT (ACFM)

Alternating Current Field Measurement (ACFM) is an electromagnetic technique for the detection and sizing of surface breaking cracks. Principal advantage of the technique is that it works through several millimetres of coatings. This means that paint and other protective coatings do not have to be removed and then reapplied.

Technique:
The ACFM Amigo U19 Crack Microgauge uses a probe to induce a uniform alternating current in the area under test and detects the resulting current flow near to the surface. This current is undisturbed if the area is free of surface breaking cracks. A surface breaking crack will redirect the current around the ends and faces of the crack.



The ACFM instrument measures these disturbances in the field and uses mathematical algorithms to estimate the crack depth.

An ACFM inspection can be carried out while the vessel/pipework is still in service and with certain types of probe can also inspect at elevated temperatures. Minimal preparation before the test is required and the system holds permanent records of all indications. Minimal disruption to the plant and the high productivity of the ACFM equipment (hundreds of metres of weld can be scanned per day) make it a very efficient method of inspection.

Capabilities:

- No need to remove paint or thin coatings
- Detects and sizes both crack length and depth
- Offline analysis of data
- Provides a permanent record of indications
- Ongoing monitoring capability
- No chemical agents and therefore requires no COSHH assessment
- Provides an immediate evaluation of the weld area
- Quick and efficient method of inspection
- High temperature capability
- Works equally well on plain material or welds, ferritic or non-ferritic.
- Has almost no consumable costs.

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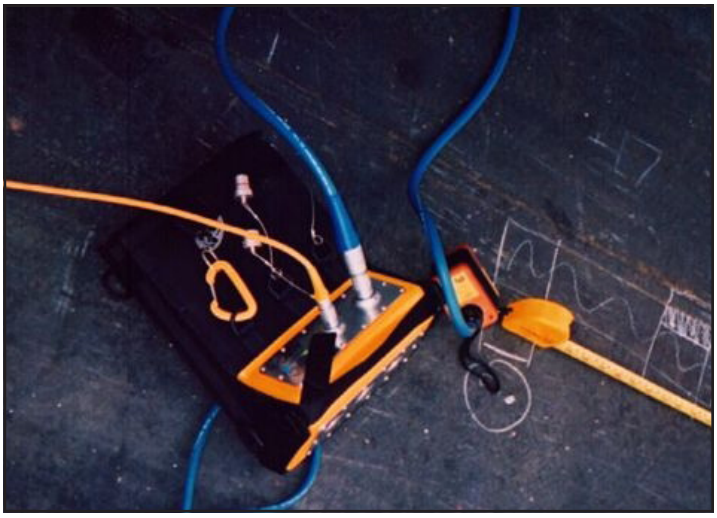
ALTERNATING CURRENT FIELD MEASUREMENT (ACFM)

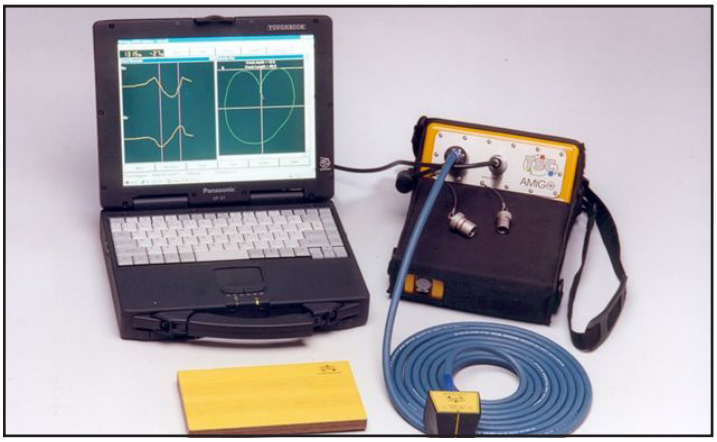
Applications

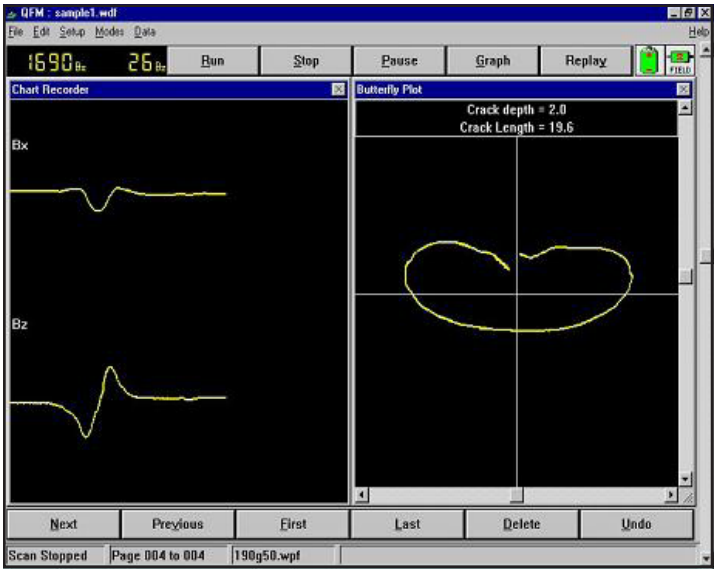
- Structural weld inspection
- Offshore cranes
- Storage Tanks floor and roof ‘lap’ joints
- Storage Tank annular welds internal and external
- Vessel nozzles

Limitations

- Not recommended for short sections or small items
- Locations of weld repairs and grinding can cause spurious indications
- Crack length needs to be longer than 5-10mm
- Multiple defects reduce the ability to depth size crack
- MPI may be more sensitive for shallow defects (<0.5mm deep)







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