ACFM - Alternating Current Field Measurement

Alternating Current Field Measurement (ACFM) is an electromagnetic technique for the detection and sizing of surface breaking cracks.

The main advantage of the technique is that it works through several millimeters of coatings. This means that paint and other protective coatings do not have to be removed and then reapplied.

FEATURES

- Can be carried out while the vessel/pipework is still in service
- Certain types of probes can inspect at elevated temperatures
- Minimal preparation before the test is required
- The system holds permanent records of all indications
- Minimal disruption to the plant
- High productivity of the ACFM equipment makes it very efficient
**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. The 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.

**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
- Will inspect ferritic and non-ferretic materials

**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 dimensions need to be greater than 5-10mm long and 0.5mm deep
- Multiple defects reduce the ability to depth size cracks