



Key Features & Benefits

- High defect detection sensitivity for corrosion and pitting in tanks
 - with wall thickness to 30mm
 - with coating thickness to 10mm
- High inspection speed of approx. 25m/min
- Average accuracy of +/- 10%
- Detection capability for internal and external defects from < 10% wall loss, depending on wall thickness and defect size from Ø 3mm
- Detection and distinction between topside and underside defects as well as false calls by means of the signal phase
- Ability to inspect stainless and carbon steel tanks
- Designed to cover maximum inspectable areas of floor plates and overlap welds, including close to the tank shell
- Minimal surface preparation prior to inspection
- Allow tolerances in material magnetic properties

MEC-Floorscanner

The MEC-Floorscanners are designed and built for the high speed and high performance inspection of storage tanks. Based on the Magnetic Eddy Current (MEC) technique which is the next generation and a further development of the fast corrosion mapping SLOFEC™ technique, the MEC-Floorscanners enable the detection of topside and underside defects, including very small diameter and volume isolated internal pits with wall loss from 10% onwards, in coated and uncoated tank floors of both ferrous and non-ferrous materials.

The MEC technique is dynamic electromagnetic technique that operates on a high frequency Eddy Current field with a controlled direct current magnetic field and specially developed sensors to achieve a very high sensitivity in defect detection. The Eddy Current signal analysis within the multiple sensors enables not only the higher defect detection capability but also the direct sizing of topside and underside defects at a higher wall thickness and coating thickness range.

The MEC-Floorscanners have powerful scanning capability and enable 3 times higher material wall thickness inspection and penetrate through 5 times higher coating thickness in comparison to the MFL technique. With its comprehensive reporting software, accurate, reliable and repeatable inspection results are provided in real time. The advanced colour condition mapping report provides an analysis of both the detected external and internal defects in terms of size, wall loss severity and location.

Technical Specifications

	TÜV Certified MEC-F15	MEC-F30
GENERAL SPECIFICATIONS		
Magnet Unit (L x W x H ; Weight)	632 x 310 x 160 mm ; 66 kg	632 x 415 x 200 mm ; 88 kg
Arm Unit (L x W x H ; Weight)	197 x 266 x 1000 mm ; 17 kg	
Control Panel with Handle Bar (L x W x H ; Weight)	201 x 463 x 315 mm ; 5 kg	
No. of sensors	8	8
Sensor width	37.5 mm each	37.5 mm each
Scanning width	300 mm	300 mm
Typical wall thickness range * ¹	0 – 15 mm	0 – 30 mm
Use for diameter	Flat	Flat
Magnetisation Unit	Permanent Magnet System	Electromagnetic System
POWER SUPPLY UNIT		
Outside the tank	110 – 240 VAC (optional external battery pack driven)	
For motor & electronics inside the tank	36 VDC	
Dimensions (L x W x H ; Weight)	500 x 400 x 200 mm ; 15 kg	
SIGNAL CABLE		
Max. cable length * ²	60 metres	
Weight	0.3 Kg/m	
EDDY CURRENT UNIT & COMPUTER		
Electronics	Multiple Channel Eddy Current System with Eddy Current and Multiplexer Electronic Units mounted on scanner unit	
Computer	Industrial laptop system connected via USB port to Multiple Channel Eddy Current System with either: - laptop mounted on scanner drive panel, or - laptop based separately and connected via the scanner umbilical	
TYPICAL FAR SIDE DEFECT DETECTION SENSITIVITY AT MID WT RANGE		
Typical smallest defect size * ³	~ Ø 3 – 5 mm	~ Ø 3 – 5 mm
Typical smallest defect depth * ⁴	From 10% - 20%	From 10% - 20%
Max. stand-off / coating	5 – 7 mm	8 – 10 mm

*¹ Refers to the typical wall thickness range of standard material; may vary depending on material quality.

*² The cable length is divided into sections of 30m; extended cable length is available on request.

*³ Refers to possible detectability, depending on scanner stand-off, quality of material and general surface condition.

*⁴ Refers to possible detectability, depending on general surface condition.

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Advantages of MEC Technique

The MEC technique is a dynamic electromagnetic technique that operates on high frequency magnetic field controlled Eddy Current in combination with specially developed sensors able to generate a higher density Eddy Current field. As a result, the MEC technique offers the following advantages over the Magnetic Flux Leakage (MFL) technique.

- **Lower direct current magnetic field**

The MEC technique generates a lower direct current magnetic field than MFL which enables:

- Higher wall thickness inspection e.g. at the annular plates
- Larger stand-off inspection e.g. coated tank floors up to 10mm coating
- Lesser influence from wavy floor plates
- Higher detection of small and shallow defects on either side of the tank floor

- **Higher frequency Eddy Current**

The higher frequency that the MEC technique operates on provides the following advantages:

- Differentiating and mapping topside and underside defects separately
- Differentiating defects from non-defect indications such as inclusions and laminations through the use of the signal phase
- Very low influence of the defect shape on the defect detection
- High defect detection sensitivity of > 3mm pits from 10% wall loss
 - With a POD of > 90% for defects $\varnothing > 5\text{mm}$ and > 20% wall loss
 - Accuracy of defect sizing of +/- 10% for onsite reporting and +/- 5% for special offline analysis

- **Direct assessment of detected defects**

The MEC technique enables the direct sizing of defects during scanning without the need for Ultrasonic verification which helps to save time

Improved Technical Features of TÜV Certified MEC-F15 Floorscanner

- Ability to scan right up to the tank shell guided by the wheels to the shell
- Ability to change the scanning lift-off for the inspection of surfaces that are not well-cleaned
- Improved signal to noise ratio which enhances the defect detection level
- Improved magnetisation level and magnetic field level control
- Shorter wheel distance which allows lesser influence from wavy bottom plates
- Fast magnet on/off for faster positioning and manoeuvring from track to track during scanning
- Encoder run which enables the C-Scan mapping

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