



SLOFEC™ Technique for Tank Scanning



One of the main applications of Innospection's SLOFEC™ technique is the inspection of storage tanks.

The technique has been proven in the field as a high speed and reliable method in detecting local corrosion in storage tanks.

The SLOFEC capabilities in tank inspection include the following:

- Experienced with inspection up to 35mm wall thickness
- Experienced with inspection of coating up to 10mm
- Experienced with inspection of tanks with temperature up to 150 deg C
- Inspection of stainless steel tanks, carbon steel and non-ferrous tanks
- Inspection of lined and unlined tank floors
- Inspection and detection of corrosion at overlap welds in lined tanks
- Differentiation of top and underside defects through separate mapping
- Computer Aided Mapping with high speed results
- Comprehensive inspections, acquisition and interpretation of NDT data, tank life forecasts, repair recommendations and high quality reports (as per EEMUA 159 & API 653)



Due to the electromagnetic technical background, the SLOFEC technique is often compared to the Magnetic Flux Leakage (MFL) technique.

However the advantages of the SLOFEC against the MFL technique in the inspection of storage tanks are proven to be multiple.

Table 1 below shows some key facts of SLOFEC technique versus the MFL technique in storage tank inspection:

Table 1

	SLOFEC	MFL
WT	Up to 30mm (TUEV qualified 35mm)	Up to 10 mm (between 12 to 15mm)
Coatings	Up to 10mm, any type	Up to 2mm
Distinguish Defects / False Calls	YES (by Signal Phase)	NO
Distinguish (report) Topside from Underside Defects	YES (by Signal Phase)	NO
Material magnetic properties	Allows tolerances	Have to remain constant
Defect Detection Sensitivity	From below 20% wall loss	From > 20% wall loss
Shape of corrosion	Relative independent	More dependant
Saturation level in parent material remains constant	Only light influences as no saturation is required	Strong influences as saturation is required
Mapping	YES (by Signal Phase) Topside / underside separate	Limited
Inspecting close to the Shell	YES (by Signal Phase) Dead Zone ~ 20mm	-
Speed	20-30m/min Independent of speed change	20-30m/min speed change influences amplitude

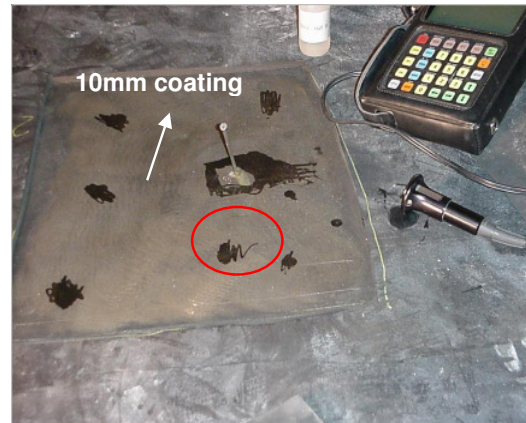
Examples of Tank Inspection using the SLOFEC technique

Example 1: Tank floor inspection

Tankfloor : Chemical Plant
Plate thickness : 12mm
Coating : rubber, 10mm thick

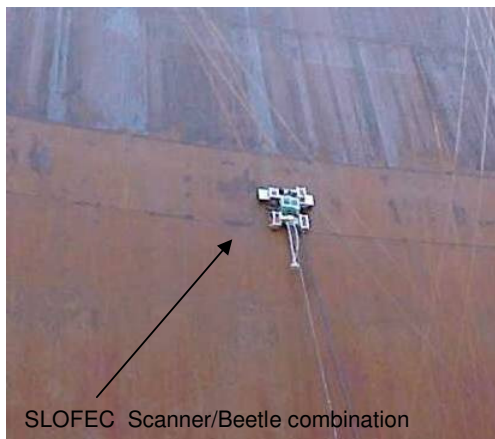
Detected Defects:

- Corrosional pits from the underside
- 20 – 30% loss
- Additional through holes found
- Defects confirmed by Ultrasonic Testing



Example 2 : Tank wall inspection

Tank shell : general tank shell
Detected Defects : isolated pits and general

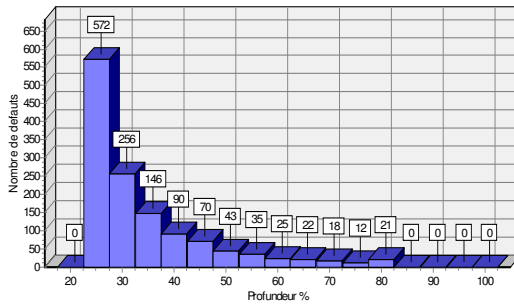


The reporting software also allows the colour display of the individual section as well as for the whole tank. In addition, the various features of the software include individual defect analysis, statistical defect analysis, repair plate modes, the addition of other results such as Ultrasonic verifications and more.

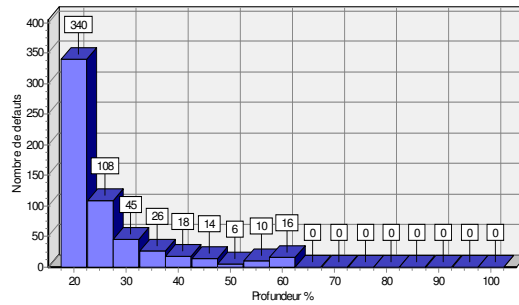
More interesting is the easy handling of the reporting software, setting of the required or changed colour levels and defect severity display. Diagram 2 shows a statistical overview of the inspection results and Diagram 3 shows the repair plate report and repair plate list.

Diagram 2: Inspection Result Statistical Overview

No. of defects detected: Topside



No. of defects detected : Underside



No. of defects detected: Total

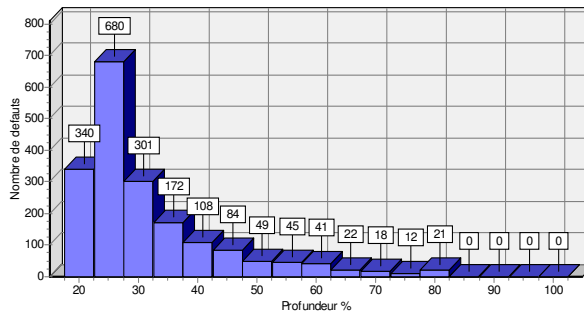

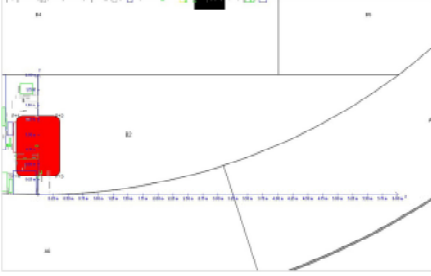


Diagram 3: Repair Plate Report & Repair Plate List

SLOFEC™
Inspection - Repair Plates



Client : Client	Subject : Tank - No.1
Place : Site	K-Nr. : 007-07
Date : 04/08/2007	Order.No. : 123-07
Plate No. : 1	




Reference Plate : B2	
Width	: 0.72 m
Height	: 1.00 m
Coordinates	: X: 0.00 m Y: 0.81 m
P1	: X: -0.36 m Y: 1.31 m
P2	: X: 0.36 m Y: 1.31 m
P3	: X: 0.36 m Y: 0.31 m
P4	: X: -0.36 m Y: 0.31 m
Thickness	: 5.00 mm
Material	: steel

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Client : Client	Subject : Tank - No.1
Place : Site	K-Nr. : 007-07
Date : 04/08/2007	Order.No. : 123-07
Plate No. : 1	Page No. : RP - 1

Plate No.	: 1	Coordinates	: X: 0.00 m Y: 0.81 m
Reference Plate	: B2	P1	: X: -0.36 m Y: 1.31 m
Width	: 0.72 m	P2	: X: 0.36 m Y: 1.31 m
Height	: 1.00 m	P3	: X: 0.36 m Y: 0.31 m
Thickness	: 5.00 mm	P4	: X: -0.36 m Y: 0.31 m
Material	: steel		

Plate No.	: 2	Coordinates	: X: 5.45 m Y: 1.85 m
Reference Plate	: B4	P1	: X: 4.95 m Y: 2.38 m
Width	: 1.00 m	P2	: X: 5.95 m Y: 2.38 m
Height	: 1.02 m	P3	: X: 5.95 m Y: 1.34 m
Thickness	: 5.00 mm	P4	: X: 4.95 m Y: 1.34 m
Material	: steel		

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