eddyfi®

Near-Field Array Probes

Fast Tube Imaging for Fin-Fan Air Cooler Inspection

Benefits and Features

- High-resolution array fin-fan air cooler tube inspection at the speed of NFT

- Single-pass defect detection and sizing

- Axial and circumferential crack detection

- Intuitive C-scan imaging

- As easy to use as NFT probes

- Hardened-steel, replaceable wear guides

- Rugged design and kink-resistant poly

- Wide variety of probe diameters

Eddyfi has taken near-field testing (NFT) to a new level, supercharging it with an array of coils, giving birth to near-field array (NFA) technology. It is designed to efficiently and reliably inspect aluminum-finned tubes and ferromagnetic heat exchangers.

Aluminum-finned carbon steel tubes are the most challenging tubular component to inspect. The external aluminum fins on these tubes greatly influence the quality of inspection signals.

Our NFA probes can easily detect common defects found in fin-fan air cooler tubes. They include: inner-diameter (ID) pitting, internal cracking at the tubesheets, internal erosion, and wall loss.

Array Performance and Quality Signals

Eddyfi NFA probes can have up to 30 coils, optimized for performance. They are multiplexed, which yields high-quality signals and enables C-scan imaging at a scan speed of 305 mm/s (12 in/s) in tubes ranging from 19.05 mm to 38.10 mm (0.75–1.5 in).

Sizing Capability

NFA gives our probes the high resolution necessary to reliably detect and size small, volumetric defects (approximately 3 mm or 1/8 in) in a single pass.

Ease of Use

Unlike other inspection techniques, our NFA probes are easy to use. Because they don't incorporate any magnets, they are easy to push and pull through tubes, and are not as sensitive to pull speed as MFL probes. NFA probes also do not require water or complex tools, making them much easier to use than IRIS.

Intuitive Imaging

With Eddyfi's *Magnifi*®, you can display NFA probe data as 2D/3D C-scans, which are intuitive and rich in information. This enables the discrimination and sizing of defects.

Durability

Our NFA probes are equipped with hardened-steel, wear-resistant guides to maintain a constant liftoff and yield more reliable results. These guides are replaceable, so when they do wear down, it's easy to keep using the same probe.
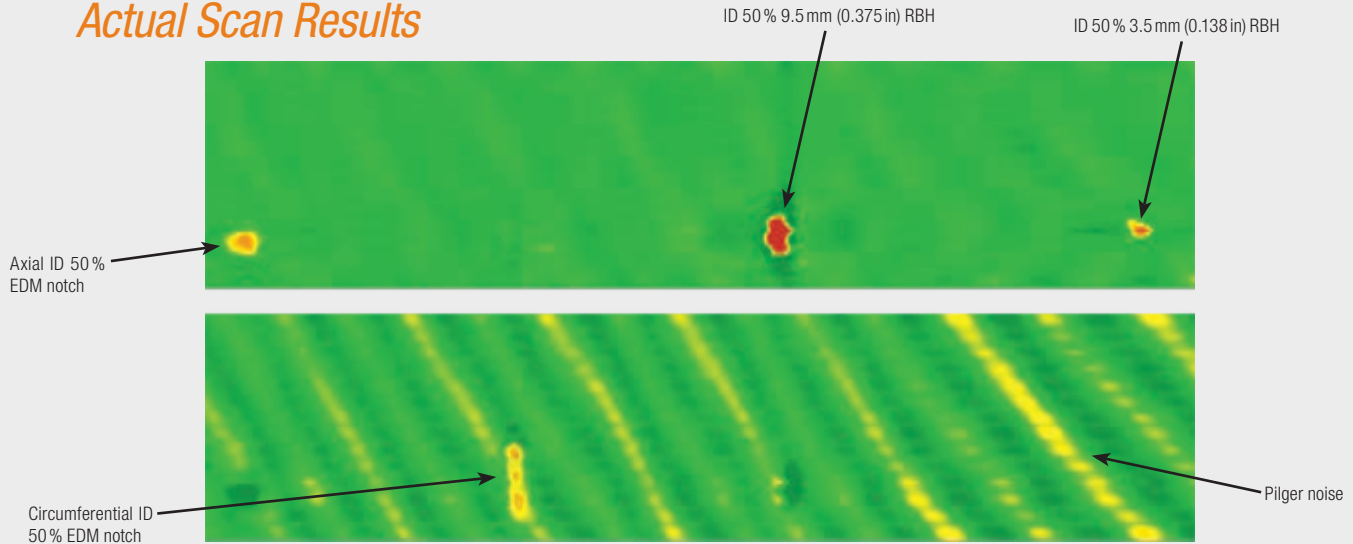
They are also equipped with a high-end, kink-resistant poly, enhancing probe usability and life.

Specifications

Coil technologies	• Absolute • Array (pitting, circumferential, and axial)
Maximum test speed	305 mm/s (12 in/s)
Min. detectable defect size	3 mm (1/8 in)

Target materials	Ferrous. Carbon steel and low-carbon steel alloys
Poly	9 mm (0.375 in) premium, non-kink nylon
Connector	160-pin array connector
Calibration standard	Modified Eddyfi NFT standard

Actual Scan Results

ID 50 % 9.5 mm (0.375 in) RBH

ID 50 % 3.5 mm (0.138 in) RBH

Axial ID 50 % EDM notch

Circumferential ID 50 % EDM notch

Pilger noise

PRBT-NFA-BBAA-wwwXX-Nzz

TUBE OD		TUBE WT			DIAMETER			FREQ.		POLY		PROBE PART NUMBER
mm	in	BWG	mm	in	CODE	mm	in	CODE	RANGE	CODE	LENGTH	
19.05	0.750	12	2.77	0.109	124	12.4	0.488					PRBT-NFA-BBAA-124MF-Nzz
		13	2.41	0.095	130	13.0	0.512					PRBT-NFA-BBAA-130MF-Nzz
		14	2.11	0.083	138	13.8	0.543					PRBT-NFA-BBAA-138MF-Nzz
		15	1.83	0.072	142	14.2	0.559					PRBT-NFA-BBAA-142MF-Nzz
25.40	1.000	10	3.40	0.134	170	17.0	0.669					PRBT-NFA-BBAA-170MF-Nzz
		11	3.05	0.120	180	18.0	0.709					PRBT-NFA-BBAA-180MF-Nzz
		12	2.77	0.109	184	18.4	0.724	MF	1–40 kHz	20 30	20 m (65 ft) 30 m (98 ft)	PRBT-NFA-BBAA-184MF-Nzz
		13	2.41	0.095	188	18.8	0.740					PRBT-NFA-BBAA-188MF-Nzz
		14	2.11	0.083	194	19.4	0.764					PRBT-NFA-BBAA-194MF-Nzz
		15	1.83	0.072	200	20.0	0.787					PRBT-NFA-BBAA-200MF-Nzz
31.75	1.250	10	3.40	0.134	230	23.0	0.906					PRBT-NFA-BBAA-230MF-Nzz
		11	3.05	0.120	236	23.6	0.929					PRBT-NFA-BBAA-236MF-Nzz
		12	2.77	0.109	244	24.4	0.961					PRBT-NFA-BBAA-244MF-Nzz
		13	2.41	0.095	250	25.0	0.984					PRBT-NFA-BBAA-250MF-Nzz
38.10	1.500	10	3.40	0.134	290	29.0	1.142					PRBT-NFA-BBAA-290MF-Nzz
		11	3.05	0.120	296	29.6	1.165					PRBT-NFA-BBAA-296MF-Nzz
		12	2.77	0.109	302	30.2	1.189					PRBT-NFA-BBAA-302MF-Nzz
		13	2.41	0.095	308	30.8	1.212					PRBT-NFA-BBAA-308MF-Nzz

info@eddyfi.com   www.eddyfi.com