

# EDDYFI DEFHI

High-Definition Multiplexed Eddy Current Array Tubing Probes



# HIGH-DEFINITION MULTIPLEXED ECA

In our quest to make eddy current array (ECA) a truly universal and easy-to-use tubing inspection method, here is DefHi, an ECA probe engineered to inspect non-ferromagnetic heat exchanger and condenser tubing.

The Eddyfi® DefHi probe is a high-definition, multiplexed ECA probe that use electronic channel multiplexing to leverage, via timeslots, the physical inputs of an ECT test instrument and to accommodate up to 128 ECT channels. DefHi is available in variety of configurations and sizes.

DefHi does away with many of the downsides associated with conventional tube inspection techniques. It allows you to detect and size circumferential cracks, a major limitation of bobbin probes. Furthermore, DefHi's multichannel configuration is capable of the high acquisition speed of bobbin probes (much higher than that of rotating (RPC) probes) and can inspect entire lengths of tube.

DefHi offers a uniform, high-definition sensitivity to identify defects in any orientation. Other types of so-called array probes (categorized as non-multiplexed array probes) and air conditioning (A/C) probes are incapable of this level of sensitivity. They are generally limited to a combination of bobbins and coils equal to the number of physical channels of the source ECT tester (usually 4 or 8), which results in suboptimal performance, simply because an insufficient number of coils cannot provide adequate definition.

The patented DefHi probe is therefore the utmost in ECT tubing inspection performance.

| BENEFITS AND FEATURES  |  |
|--|--|
| One-pass combination bobbin and array probe  |  |
| Sizing of circumferential and axial cracks <sup>1</sup>                                |  |
| Optimum resolution and uniform sensitivity with oval-coil technology <sup>2</sup>      |  |
| Uncompromising durability (highly kink-resistant cable, replaceable centering devices) |  |
| Wide frequency range (HW to HF)  |  |
| Convenient analysis with strip chart for bobbin and 2D/3D C-scans for array imaging    |  |

<sup>1</sup> Advanced options only

<sup>2</sup> Patented, Eddyfi NDT, Inc.

## DEFHI-TUV-WWWXX-NZZ

| OPTION | MULTIPLEXER    | BODY       | CONFIGURATION |         |       | DIAMETER   | FREQUENCY  | POLY LENGTH                         |
|--------|----------------|------------|---------------|---------|-------|--|--|-------------------------------------|
|        | ECTANE 2/PROBE | RIGID/FLEX | BOBBIN        | CIRCUM. | AXIAL |  |  |                                     |
| 1      | E              | R          | B             | C       | -     | Probe diameter 3-digit code, e.g., 146 = 14.6 mm<br>Contact for availability of required diameters | HW: 4-60 kHz<br>LF: 20-200 kHz*<br>MF: 50-500 kHz*<br>HF: 100-1200 kHz** | 05: 5 m (16 ft)<br>15: 15 m (50 ft) |
| 2      | E              | R          | B             | C       | A     |  |  |                                     |

\* Maximum MF is reduced to 400kHz with 15m cable.

\*\* Maximum HF is reduced to 1MHz with 15m cable.

## PROBE DIAMETERS

|         |          | TUBE WALL THICKNESS |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------|----------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|         |          | BWG                 | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    | 18    | 19    | 20    | 21    | 22    | 23    | 24    |
|         |          | MM                  | 3.40  | 3.05  | 2.77  | 2.41  | 2.11  | 1.83  | 1.65  | 1.47  | 1.24  | 1.07  | 0.89  | 0.81  | 0.71  | 0.65  | 0.56  |
|         |          | IN                  | 0.135 | 0.120 | 0.109 | 0.095 | 0.083 | 0.072 | 0.065 | 0.058 | 0.049 | 0.042 | 0.035 | 0.032 | 0.028 | 0.025 | 0.022 |
| TUBE OD | 12.70 mm | 0.500 in            | -     | -     | -     | -     | -     | -     | -     | 096   | 096   | 102   | 102   | 106   | 106   | 106   |       |
|         | 15.87 mm | 0.625 in            | -     | -     | 096   | 102   | 106   | 114   | 118   | 118   | 126   | 126   | 132   | 132   | 136   | 136   | 136   |
|         | 19.05 mm | 0.750 in            | 114   | 118   | 126   | 136   | 140   | 148   | 148   | 148   | 156   | 156   | 162   | 162   | 166   | 166   | 170   |
|         | 22.22 mm | 0.875 in            | 148   | 148   | 156   | 166   | 170   | 178   | 178   | 186   | 186   | 192   | 192   | 196   | 196   | 196   | 200   |
|         | 25.40 mm | 1.000 in            | 178   | 186   | 186   | 196   | 200   | 208   | 208   | 208   | 216   | 220   | 220   | 226   | 226   | 226   | 230   |

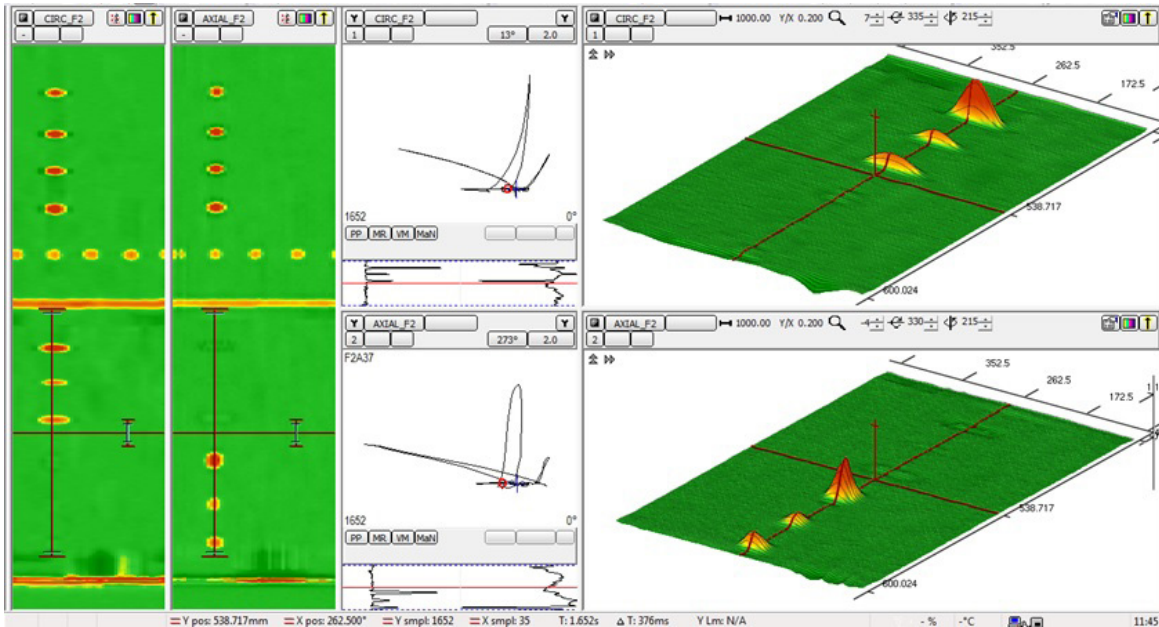
# SPECIFICATIONS

| GENERAL              |  |
|----------------------|--|
| Coil technologies    | <ul style="list-style-type: none"> <li>Differential and absolute bobbin + transmit/receive array</li> <li>Patented oval pancake coils                             <ul style="list-style-type: none"> <li>1 row for circumferential only</li> <li>2 rows for circumferential and axial</li> </ul> </li> </ul> |
| Material             | Non-ferromagnetic.<br>Experience on 300-series stainless steel, INCONEL®, copper/nickel, brass, titanium   |
| Maximum speed        | 1 m/s (40 in/s)  |
| Poly                 | 9 mm (0.375 in) strong, premium, non-kinkable nylon  |
| Calibration standard | Modified ASME standard   |
| Connector            | 160-pin Eddyfi Ectane® connector   |

| EDDY CURRENT CHANNELS FOR AVAILABLE SIZES <sup>1</sup> |                              |       |                    |
|--|------------------------------|-------|--------------------|
| TUBE OD  | BOBBIN                       | CIRC. | AXIAL <sup>2</sup> |
| 12.70 mm (0.500 in)                                    | 2                            | 18    | 36                 |
| 15.87 mm (0.625 in)                                    | 2                            | 18    | 36                 |
| 19.05 mm (0.750 in)                                    | 2                            | 24    | 48                 |
| 22.22 mm (0.875 in)                                    | 2                            | 24    | 48                 |
| 25.40 mm (1.000 in)                                    | 2                            | 30    | 60                 |
| Larger sizes   | Custom. Inquire for details. |       |                    |

<sup>1</sup> Values for the MF frequency range. Values differ for HW, HF, and LF ranges.

<sup>2</sup> Advanced options only.



Bobbin coils (B)  
(All models)

1<sup>st</sup> row for circumferential defects (C) — All models  
2<sup>nd</sup> row for axial defects (A) (optional) — Model 2

The information in this document is accurate as of its publication. Actual products may differ from those presented herein.

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2018-10-05

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