Eddyfi Technologies
Beyond current

Technical Specifications

GEKKO

High-Resolution Flaw Detector with UT, PAUT, TOFD and TFM

Gekko® is a field-proven flaw detector offering UT, PAUT, TOFD and TFM through the streamlined user interface Capture™. Released in 32:128, 64:64 or 64:128 channel configurations, Gekko combines high-resolution and speed while reducing inspectors' training time.

A COMPLETE PAUT PORTABLE UNIT

Gekko includes all basics and advanced UT features in a reinforced compact casing designed for field use. It natively comes with conventional UT, TOFD and all beam-forming phased array UT techniques for single-beam and multi-group inspection and its 3-encoded axis capabilities make the Gekko ready for any challenging inspection. This rugged PAUT equipment also offers real-time TFM/FMC (Full Matrix Capture) and Adaptive TFM techniques.

PORTABLE AND ROBUST

Bumpers and connectors are designed for robustness and accessories versatility. The bright resistive touch screen allows outdoor use in rough conditions. Powered by 2 hot-swappable batteries, Gekko now reaches up to 6 hours of autonomy and becomes the ultimate reference in its product range. Designed for IP66 with a drop test rating in accordance with MIL-STD-810G, the rugged enclosure can withstand the harshest site conditions.

Gekko, the #1 PAUT unit with Total Focusing Method (TFM), has been upgraded based on inspectors' feedback. Offering both conventional UT, TOFD and advanced PAUT, Gekko is the most versatile unit adapted to field conditions.

NO COMPROMISE ON PERFORMANCE

The innovative electronics offers up to 128 channels, great signal quality and TFM resolution for improved detection and confidence. It now reaches a high scan speed and productivity. The connectivity solutions—dongle-activated WIFI, USB 3.0 connector and Gigabit Ethernet output—allow to speed up data transfer and to remotely control your inspection in challenging conditions (TeamViewer licence included). Moreover, the 256 GB SSD makes the operator's work very comfortable with unlimited data file size, thus saving time in the field.

BENEFITS

- Increased accuracy with high-resolution imaging
- Advanced defect analysis with TFM
- Robust field unit with high battery autonomy
- Easy setup with embedded scan plans
- Evolutive software following inspectors feedback

INNOVATION DRIVEN BY MARKET APPLICATIONS

- Multi-group weld inspection procedures fully covered
- HTHA and hydrogen damages inspection with TFM
- Thick welds and CRA/stainless steel weld inspection enhanced with 128-element aperture
- Corrosion mapping of large areas [up to 5 × 5m (16.4 × 16.4 ft) /1mm (0.04in) step]
- Complex geometry dedicated solution for nozzle and fillet welds (Y and T joints)

COMPATIBLE WITH MOST ACCESSORIES

Coming with an IPEX type PA connector and a LEMO16 encoder, Gekko is compatible with Eddyfi® accessories and most probes and scanners on the market. For other configurations, Eddyfi can provide the adapter to ensure compatibility with your current accessory.

Figure 1: Annotated breakdown of Gekko showing its key features.

REINVENTING HIGH-DEFINITION PORTABLE UT

Pioneering real-time TFM since 2013, Gekko innovation keeps being driven by market applications. Used in accredited training centers and ready for TFM standards, it benefits from advanced algorithms through a streamlined software user interface(Capture). Simply powerful, Gekko brings the latest technology at your fingertips.

POWERED BY CAPTURE

- Fully embedded PAUT software for all techniques—from application design to inspection and reporting
- Streamlined intuitive user interface limiting training time and reducing operator errors
- Complete probe and scanner database embedded
- Fast setup creation, thanks to smart 3-click calibration wizards
- International standards & code compliant
- Evolutive platform continuously updated by inspectors' feedback

OFFERING UNIQUE SOLUTIONS

- Complete toolbox for TFM including TCG calibration
- High resolution TFM imaging up to 128 elements
- 3-axis nozzle inspection with live overlay display
- 3-axis paintbrush for composite and corrosion mapping
- Live display of fillet weld inspection
- Real-time Adaptive TFM (ATFM) for inspection of wavy surfaces

Figure 2: In-field inspection using Gekko.

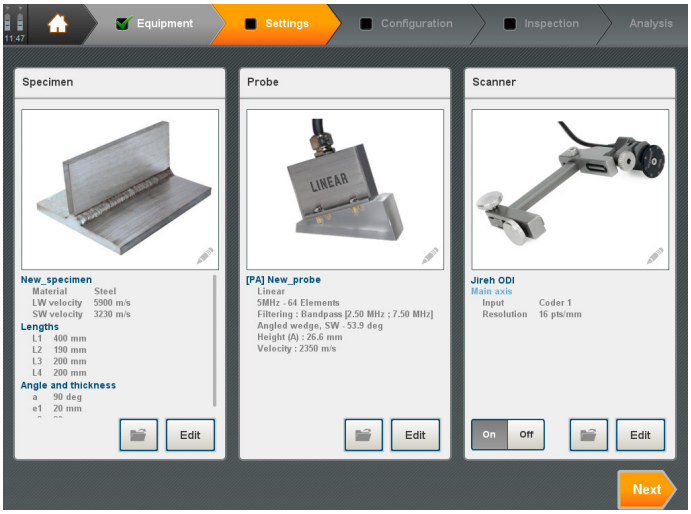

Figure 3: Streamlined workflow powered by Capture.

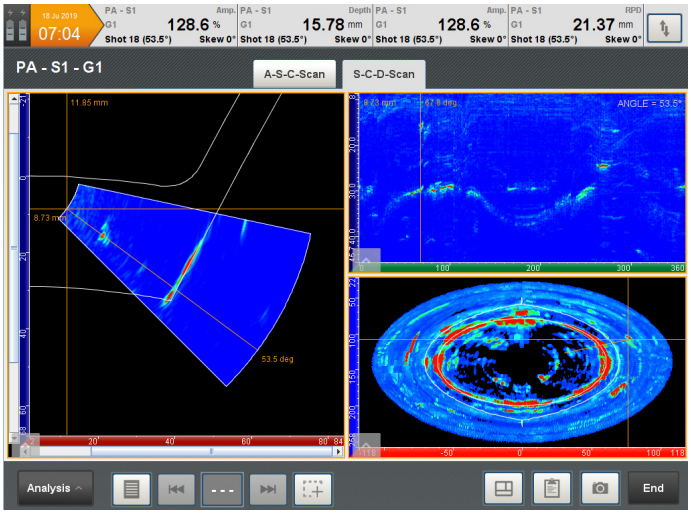

Figure 4: Nozzle inspection using 3-axis scanner.

Figure 4: Gekko performs aerospace composite material inspection.

SPECIFICATIONS

INSTRUMENT

Dimensions (W × H × D)		410 × 284 × 126mm (16.1 × 11.2 × 5.0in)
Weight (with 1 × battery)		6.5kg (13.2lb)
Power Supply		15 V, 5.67 A
Batteries (hot-swap capabilities)	**Type**	Li-ion, 94 Wh capacity (×2)
	Typical Life	Up to 6 hours
Display		26.4cm (10.4in) resistive touchscreen 1024 × 768 px screen resolution
Storage		256 GB SSD

CONNECTIVITY

Fast Gigabit Ethernet, WIFI connection with USB dongle	
Micro display port (×1)	USB 3.0 (×1), USB 2.0 (×3)
IPEX PA connector (×1)	LEMO 00 UT connectors (4P/R)
3-axis encoder input	I/O 12 TTL (5 V/24 V), 6 open collectors

ENVIRONMENT

IP Rating		Designed for IP66
Operating Temperature		-10–45°C (14–113°F)
Storage Temperature Range	**w/ batteries**	-20–60°C (-4–140°F)
	w/o batteries	-20–70°C (-4–158°F)
Drop-tested		According to MIL-STD-810G

PHASED ARRAY

PAUT channel configurations: 32:128PR, 64:64PR or 64:128PR	Linear, sectorial, compound scanning & CIVA-laws import
Active aperture up to 64 elements	CIVA-fueled phased-array calculator
Linear, matrix, Dual linear & Dual matrix arrays	True-depth, constant sound-path & projection focusing modes
Up to 8 beam sets | Up to 2,048 focal laws	On-board focal law calculator on plates, pipes, fillet welds, nozzles

DIGITIZER

Digitizing and summation on 64 channels max.	16 bits amplitude resolution
Adjustable FIR filters	Sampling frequency up to 100 MHz
Real-time averaging up to 32×	Rectified, RF, envelope A-Scan processing
FMC A-Scan range up to 8k samples	A-scan range up to 65k samples

FMC/TFM*

Real-time TFM up to 128 elements 256 kpi	Image resolution above 4 Mpi in post-processing
Refresh rate up to 110 Hz at 65 kpi	Direct, indirect and converted modes
Real-time Adaptive TFM (ATFM)**	FMC recording
All calibration wizards available	8 manual resolution levels, 1 auto resolution setup

PULSERS

Phased Array Channels[1]	Bipolar square pulse Voltage from 12 V to 120 V (1 V step) Pulse Width from 35 ns to 1250 ns Fall time < 6 ns
UT-TOFD Channels[2]	Negative square pulse Voltage from 12 V to 200 V (1 V step) Pulse Width from 30 ns to 1250 ns (1 ns step) Fall time < 5 ns

RECEIVERS

Phased Array Channels[1]	Input impedance 50 Ω Frequency Range 0.4 MHz to 20 MHz Max. input signal 2 Vpp Gain up to 120 dB (0.1 dB step)
UT-TOFD Channels[2]	Input impedance 50 Ω Frequency Range 0.6 MHz to 25 MHz Max. input signal 1.4 Vpp Gain up to 120 dB (0.1 dB step)

ACQUISITION

Hardware acquisition gates	A-Scan/Peak data recording
PRF up to 40 kHz	Data compression up to 32×
Data flow on SSD up to 180 MB/s	Live data missed information
Live 3D/overlay display	Data file size: Limited by SDD capacity

1. Standard: EN ISO 18563-1 for phased array channels.
2. Standard: EN ISO 12668-1 for conventional channels.

* TFM on Gekko exists in 32, 64 and 128-channel options
** Additional software module

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