FLAW DETECTION
REDEFINED

LABQUIP NDT
labquipndt.co.uk

Smarter decisions, faster.
Krautkrämer USM 100

Waygate Technologies
a Baker Hughes business

The new standard in flaw detection

Sleek but rugged, the Krautkrämer USM 100 is a portable, highly versatile flaw detector with smartphone-like capabilities. Designed ergonomically for unrivaled ease of use, it features a large touch screen and buttons that allow seamless ambidextrous operation. Digital features include a best-in-class user interface that streamlines setup, training time and updates.

It's the only flaw detector on the market built for an interconnected world, offering the luxury of greater efficiency through remote access, data management and instant reporting.

So your team can make more informed decisions, faster.

Unmatched comfort

Light and ergonomic, the Krautkrämer USM 100 puts your well-being first. It's also robust, versatile, and built to reliably withstand the toughest conditions (drop/vibration tested with an IP 67 rating). The glove-compatible 7" LCD touch screen — viewable under any lighting conditions — means no more strained eyes. And left- or right-hand operation ensures comfortable handling for any operator in any circumstance. All of this improves ease of use and operator confidence, which ultimately improves inspection reliability and **lets operators comfortably complete more inspections**.

Uncomplicate your inspections

Reduce downtime and increase productivity with a smart and intuitive user interface that's easy to learn and customize. This optimizes and accelerates your inspections and decision-making with digital simplicity, without compromising reliability or performance. Download and modify Waygate Technologies apps from our store, ensuring fast, consistent and compliant inspections by any inspector, in concert with your existing and future technology thanks to USB-C compatibility. In addition, the Create desktop allows you to customize or create inspection "apps" for your individual testing procedures, industrial applications, and experience levels.

Get the most out of your inspections

The next-generation flaw detector boasts additional features for **faster, more accurate data acquisition, analysis & reporting** such as:

B/C Scan capability to complete your inspections faster, with **more accurate and comprehensive insights into your asset.**

Quickly and easily **adding contextual information to your inspection data** in the device **with the Enrich App.**

More flexible and powerful data acquisition, management and transfer through the ability to **connect to any PC or tablet and leveraging the processing power.**
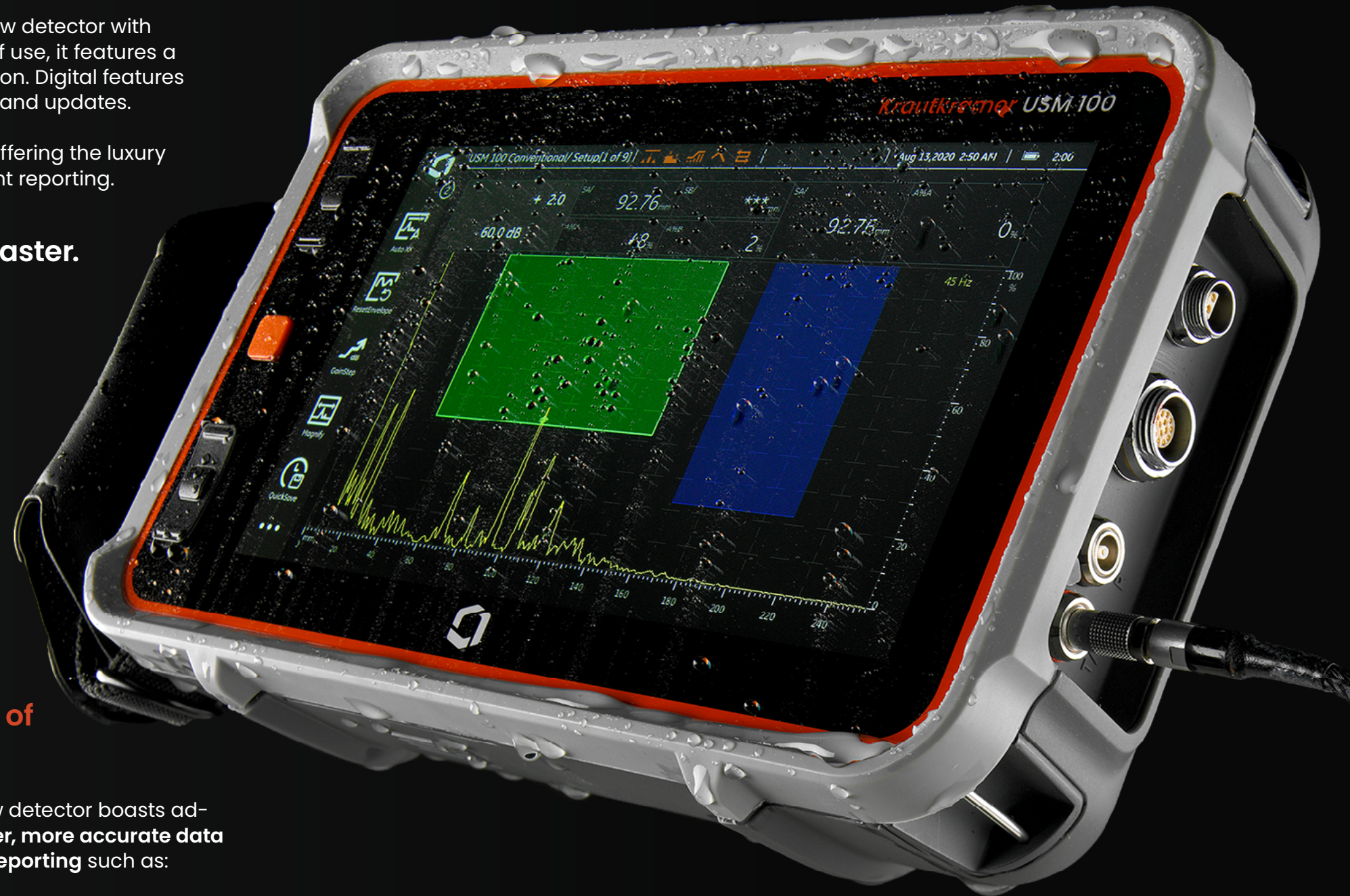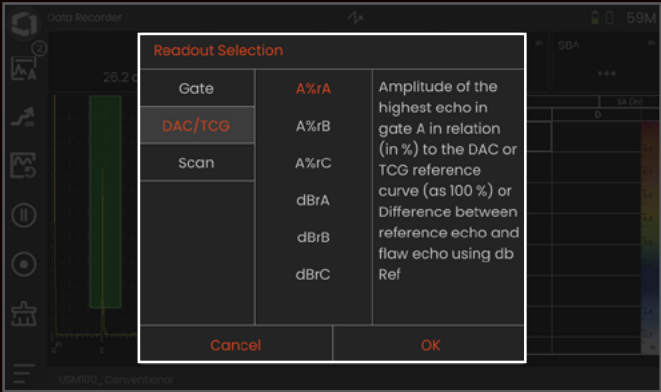
Modern, intuitive user interface
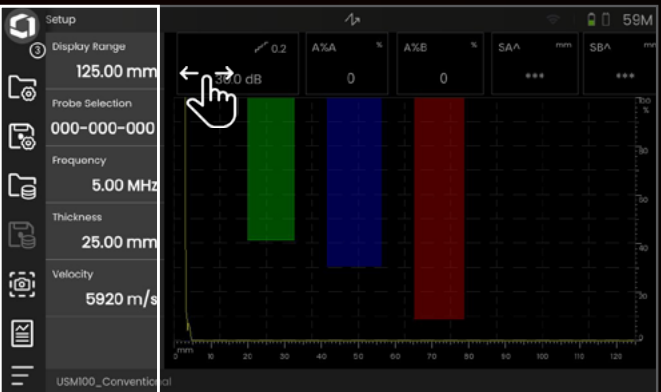

Smartphone-like functionality

Panels guide users through the workflow in logical order.

Interactive and **dynamic readouts** for quick configuration.

Scrollable control bar allows quick access to the most critical functions.


For the most important parameters, swipe right for the **sidebar.**

Next-level excellence for true experts

The Krautkrämer USM 100 amplifies the trusted ultrasonic features already offered by the USM series, taking accurate and repeatable inspections into a new era of flaw detection. The data sets from legacy USM Go+ and USM 36 are compatible with this new model, making for a seamless transition into the future.
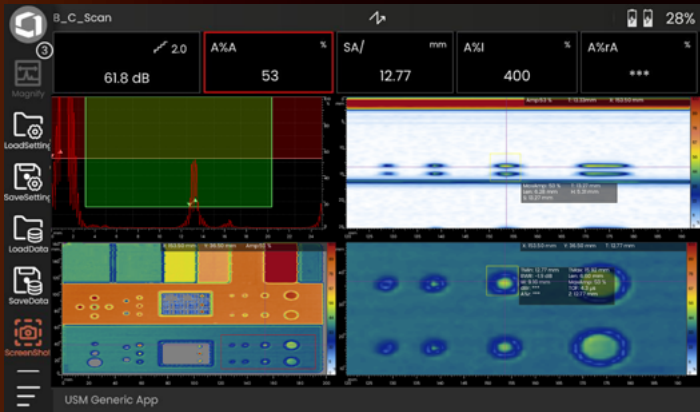
UT features
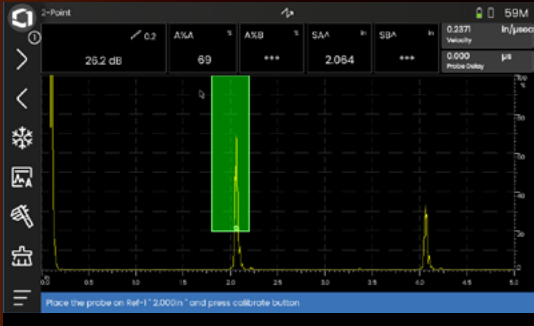
Guided calibration
Prompted calibrations ensure a logical sequence of operations for quick and consistent results.

Advanced data recorder
The color-coded grid view, with its adaptable palette enables easy identification of critical thickness readings. A-Scan storage for every measurement allows data verification and post-processing.

B/C Scan
This feature, an industry first for portable conventional flaw detectors, enables effective visualization and rapid quantification of ultrasound data in real time. With B/C Scan, you can visualize larger amounts of data and identify multiple defects in an asset like corrosion, laminations, and inclusions in one single, comprehensive image. The Krautkrämer USM 100 B/C Scan capability thus not only speeds up your inspections on site, it also facilitates faster data analysis and more insightful reports.

IF Gate/3rd Gate
IF gate enables tracking of the interface echo and maintains a consistent TOF measurement.
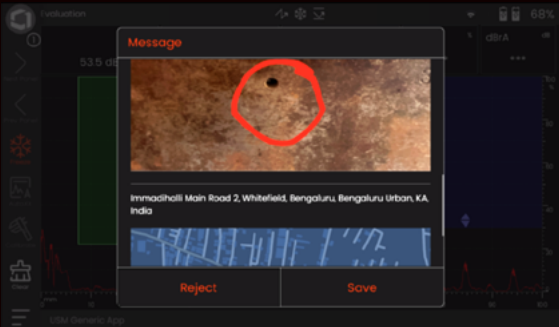
Customizable filter
Enables user configurable filter settings to optimize signal to noise ratio for best possible results.

Averaging
Eliminates noise signals by real-time averaging of A-Scan.

Software and connectivity features

Enrich App
Create more detailed inspection reports and enhance the traceability of your data by adding contextual information like pictures of the inspected part, its geolocation, part annotations and comments. The Enrich App increases confidence in your data and results and helps improve asset management and predictive maintenance – all at the click of an App button.

USM 100 PC Live
Harness the processing power of your tablet or PC to use the USM 100 remotely with the USM 100 PC Live software. When connecting your Krautkrämer USM 100 to any PC, laptop or tablet, you will benefit from the added convenience and speed of working with a large screen and no longer need to cumbersomely transfer data. The additional processing power furthermore allows you to complete data acquisition and analysis much faster. Especially larger data sets like B/C scans are acquired and processed more quickly. Your data is stored directly on the PC, so it can be easily shared with other applications and third parties.

Create
This desktop software allows you to customize or create inspection "apps" for your unique testing procedures, industry applications, and experience levels. These can be as detailed or generic as you see fit.

USM 100 PC
With the data analysis software USM 100 PC, you can utilize all the tools available on the Krautkrämer USM 100 right on your PC. Conveniently upload, analyze and report inspection data without having to purchase or learn another specialized software package.

indicates PRO feature

Raising the bar for industrial inspection applications

Few inspection tools are more versatile than the portable Krautkrämer USM 100, built to tackle a wide range of inspection challenges. Perform comprehensive, accurate inspections on industrial assets, then enrich your inspection data with images and geolocation for improved traceability and reporting.

Weld

Varied cross-segment requirements and myriad materials and inspection codes make weld inspection one of the most diverse and complex inspection fields. The Krautkrämer USM 100 not only has excellent software and hardware capabilities for every type of weld inspection, it also features a guided inspection workflow for simple, quick and consistent inspections and calibrations.

- DAC/TCG, AWS, DGS, JISDAC, CDNAC: provide extensive flaw sizing capability

- 400% Amplitude range: avoids saturated signal while working with scan gain levels

- ASME/AWS apps: provide an optimized inspection workflow to achieve code compliantinspections

- Color Leg: for easy visualization of beam skips

Composite

Complex wave propagation, random scattering and high attenuation can reduce the probability of detection when inspecting composite structures. The Krautkrämer USM 100 offers dedicated features to meet these challenges:

- B/C Scan: effective visualization and fast quantification of ultrasound data in real time

- IF Gate: for inspections with a water column or a flexible wedge

- Customizable filter: enables tuning filters for optimized near surface resolution and S/N ratio

- Up to 0.2 MHz bandwidth and 2500 ns pulsewidth for wind blade spar bond lineinspection

- High slope TCG curve (90 dB/40 ns): for inspection of highly attenuative materialslike rubber and for near surface resolution optimization during immersion testing

Nuclear

Some inspection environments call for specifically high standards and an extra degree of robustness. Despite its light and ergonomic design, the Krautkrämer USM 100 is exceptionally rugged to withstand even harshest conditions.

In addition, the Krautkrämer USM 100 has been approved for use in several procedures standardized by the Electric Power Research Institute (EPRI) and can be used in the nuclear industries that follow guidelines set by the institute. It is also qualified to be used with the 50 most used probes in the nuclear industry. For your convenience, the Krautkrämer USM 100 is also available in a version that comes with an App customized to be used for EPRI inspections.

Corrosion

Traditional access methods such as scaffolding, crane baskets, and man lifts increase risk exposure, crowd work areas, and add significant expense to projects. While rope access is an efficient method for corrosion inspection, you need a lightweight and ergonomic flaw detector that can be operated solely with one hand.

The Krautkrämer USM 100 weighs just 1.2 kg (2.65 lbs.) and can be ergonomically operated with one hand, leaving the other to manage probe manipulation.

- Advanced Data Recorder: for fast and efficient recording of CML

- IF Gate: for inspections with a water column or a flexible wedge

- 400 MHz digitization frequency: enables high-resolution thickness measurement

- 400% Amplitude range: avoids saturated signal while working with scan gain levels for higher sensitivity

Railway

When you're always in motion, you need a flaw detector that moves with you. Our customizable UI makes adding and removing feature sets simple, which is ideal for tailoring the inspection workflow to railways.

- Square Wave pulser enables excellent acoustic penetration and signal to noise

- Touch + button operation enables reliable operation under all weather conditions

- App for geolocation

Specifications

General

Size	width 216 mm, height 138 mm, depth 60 mm
Weight	1,2 kg (including two batteries)
Input supply voltage	+15VDC
Battery operational time	5h
Number and type of batteries	2 LiIon battery packs, 1 for hot swap
Maximum power consumption	45 W
Compliance to UT standard	ISO 22232-1
Languages	English, German, Frensh, Chinese, Japanese, ….
Operation	Touch screen or keys (left or right hand operation)

Display

Screen size and resolution	7 inch wide, 1024 x 600 Pixel, touch screen
Range of sound velocities	250 m/s to 16000 m/s
Available views	A, B, C
Time base:	
Delay	-10 µs to 3500 µs
Depth	3 mm to 15000 mm (steel)
Digitization frequency	100 MHz
Digitization frequency with processing	400 MHz

Data acquisition

Maximum number of samples per A-scan	1024 points
Data storage, internal	64GB
Data Logger size	3000 x 3000 (points including A-scan)

Receiver

Maximum input voltage	40V$_{pp}$
Frequency response	0,2 MHz to 30 MHz (- 3 dB)
Filters	12 bandpass and high pass filters
Dynamic range	110 dB (0,2 dB increments)
Time-corrected gain (TCG)	16 points, 100 dB dynamic, 90 dB/40 ns slope
Cross-talk between transmitter and receiver	>80 dB
Signal averaging	2, 4, 8, 16, 32
Linearity of vertical display	+/-2 %

Gates

Number of gates	3 (one can be used as interface gate)
Measurement modes	flank, peak, zero crossing before, - after, J-flank, first peak
Characteristics of all gates:	
Threshold	5 % - 100 % (1% increments)
Start	0 to 15000 mm (steel)
Width	0 to 15000 mm (steel)
Resolution of TOF	2,5 ns
Measurement modes	flank, peak, zero crossing before, - after, J-flank, first peak
Measurement units	mm, inches, µs, %, dB
Measurement procedures	TCG, DAC, DGS, AWS, API
Calibration procedures	for straight and angle beam probes

Transmitter

Modes	dual, pulse echo
Pulse repetition frequencies	10 to 2000 Hz
Shape of transmitter pulse	negative unipolar pulse
Transmitter voltage	50 V - 350 V (10 V increments)
Pulse width	40 ns - 2500 ns (5 ns increments)
Damping	50 Ω and 400 Ω

Inputs/outputs

Power input	Lemo 0S
Probe connectors	Lemo 00
Interface connector	Lemo 1B, 14 pin (Outputs: 1 alarm (horn), 1 analogue, trigger, Inputs: 2 encoder, 1 start/stop)
USB 2.0	Type A (also for Wifi dongle)
USB 3.0	Type C (also for video output)

Environmental

Protection grade	IP 67
Storage temperature	-20 ºC to 70 ºC
Operating temperature	-10 ºC to 50 ºC
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
Humidity	EN 60068-2-30:2005 Abs. 5a and 7.3 Variante 2
EMC	EN 61326-1, EN 55011
Low Voltage Directive	IEC 61010

Optional accessories

- **WiFi Dongle (148M5844)** External WiFi dongle
- **Magnet Holder (148M5852)** Detachable magnetic pipe stand
- **Belt Holster (148M5854)** Optional belt holster

Features

Standard	
DAC/TCG	X
JISDAC	X
CNDAC	X
Color leg	X
Square Wave Pulser	X
AWS D1.1/D1.5	X
DGS	X
Phantom PRF	X
Advanced Data Recorder	X
BEA - Back Echo Attenuator*	X
Analog Out	X
Guided Calibrations	X
Remote desktop	X
Touch Screen Interface	X
A-Scan Saturation	200%
Apps on device	max. 3 apps

Pro (in addition to Standard)	
Third Gate / IF Gate	X
Encoded B-Scan	X
Encoded C-Scan	X
Customizable Filter	X
USM Enrich - iOS App	X
M.PC Live	X
Waveform Averaging	X
A-Scan Saturation	400%
Apps on device	unlimited

Optional	
Remote Calibration (Non EN)*	O
WiFi	O

* Future feature sets

Individual product configurations subject to change

Product Versions

Part Number	USM 100 Standard	USM 100 Pro*	ISO Certificate	InspectionWorks
150M5734	X			
150M5734C	X		X	
150M5735		X		
150M5735C		X	X	
150M5736		X		X
150M5736C		X	X	X
148M5840				X

InspectionWorks
The smart new way to acquire, analyze and act on inspection data

- Collect, connect, integrate and share NDT data in a single, secure and scalable platform.

- Enrich your data and gain actionable insights with AI and DL engines that help you make better decisions, faster.

- Streamline workflows and inspection processes and easily collaborate across teams – even remotely.

- Improve the performance and uptime of your NDT fleet with remote monitoring and diagnostics.

For more information visit:
www.InspectionWorks.com

A legacy built on reliability

We have pioneered industrial ultrasound technology for more than 70 years. The Krautkrämer brand was built on a reputation for excellence – a testament to the confidence you can expect when using our products, knowing that every component is dependable and built to last.

The Krautkrämer USM 100 carries this same DNA into the future, combining our best-in-class detection with unmatched connectivity.
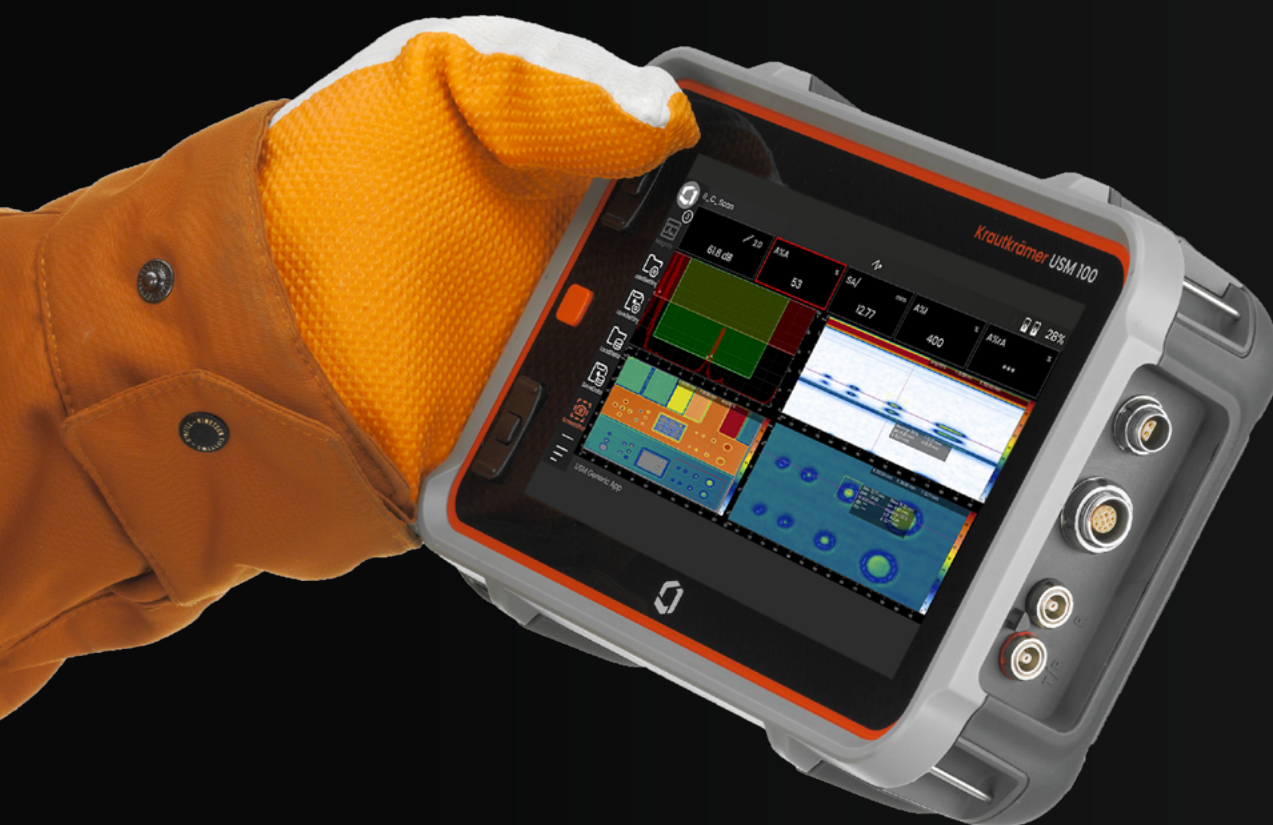
Contact your local sales representative to learn more

Waygate Technologies, formerly GE Inspection Technologies, is a global leader in NDT solutions with more than 125 years of experience in ensuring quality, safety and productivity.

Baker Hughes