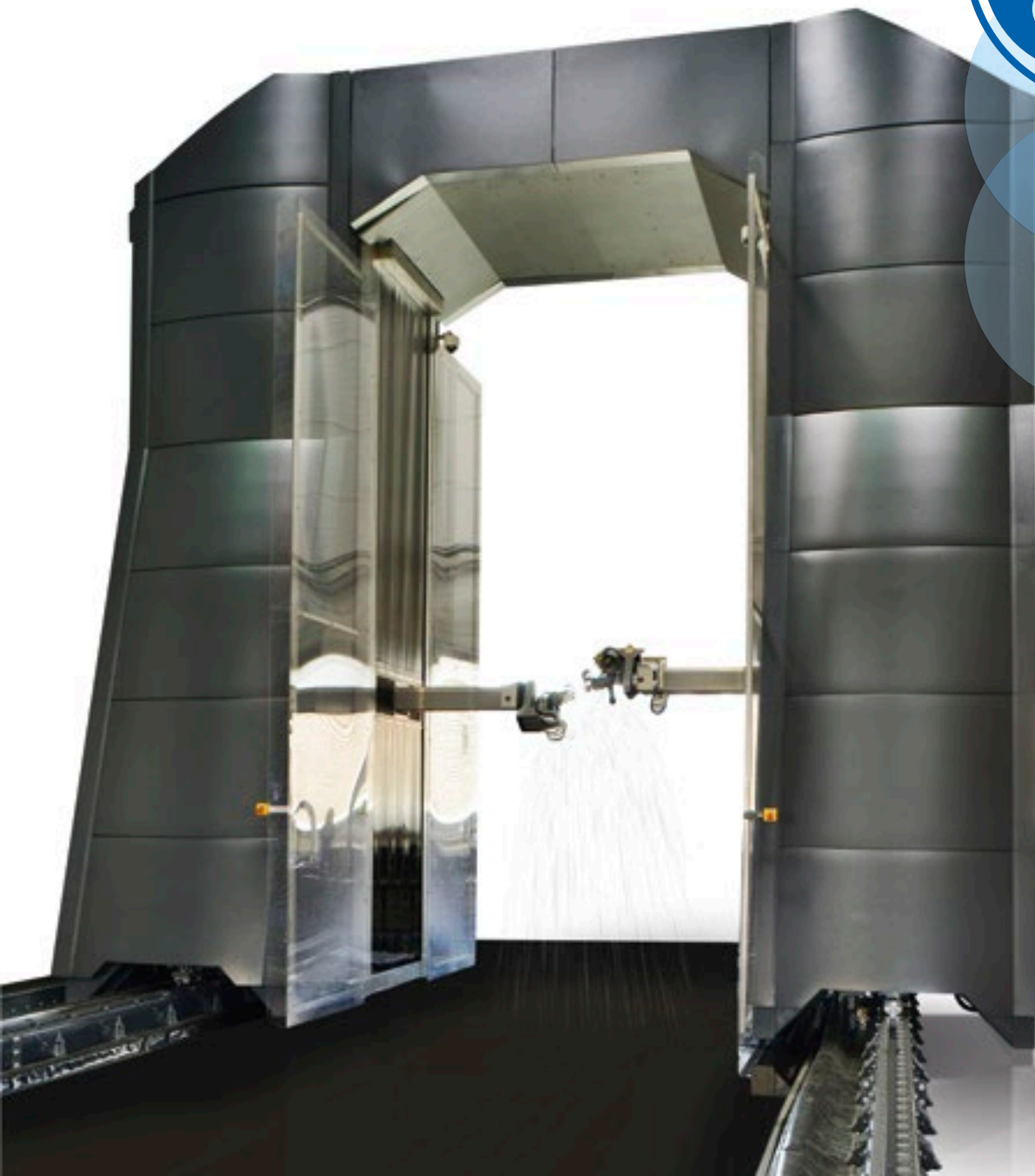


GE
Measurement & Control

Rokstar

Automated Ultrasonic Solution
for composite inspection



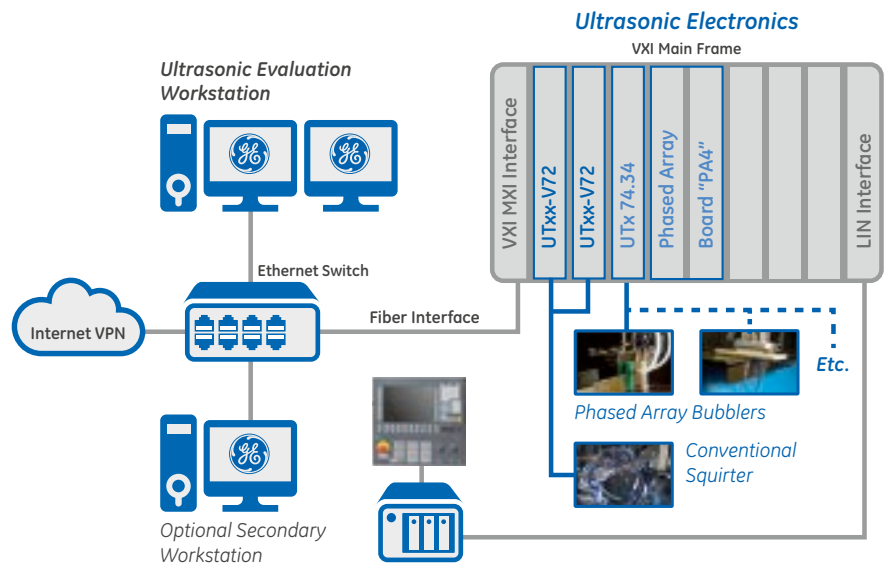
Rok Solid Composite Inspection Performance

RokStar is the ultimate ultrasonic inspection solution for aerospace composite structures. This hybrid machine combines the dimensional control of Cartesian gantry systems with the flexibility of articulating robot solutions. The result is a rock solid, 13 axis scanning system with a wide operating range capable of accurately and efficiently inspecting a variety of fabricated parts from large relatively planar wing skins to small complex 3D components.

System Design

RokStar's novel design provides enhanced stability during scanner movement. The scanner rides on two steel beams in the primary X direction. All other axes are interpolating indexed axes. For scans of complex 3D parts, the machine uses an additional trigger axes to ensure equidistant data acquisition through the entire scan path.

Ultrasonic instrumentation used in the RokStar is based on GE's UTxx modular digital flaw detector platform providing extreme flexibility in channel count and inspection setup.



Application Tooling for High Scanning Productivity



Conventional TTU Squirters

Dual frequency inspection in a single pass using GE's annular ultrasonic transducer design achieving twice the throughput of conventional single channel squirters.



Wide Area Phased Array TTU Squirters

GE's patented Phased Array squirters provide up to a 15 mm wide scan area in a single pass.



Phased Array Skin Bubbler

Provides Pulse Echo inspection with up to a 38 mm track width in a single pass. Adaptable to changing surface geometry via GE's patented Reverse Phasing Contour Adaptation method.



Features & Benefits

RokStar provides:

- Robust industrial design with global service and support structure
- Industry leading application tooling for high throughput pulse echo and through transmission scanning
- Common ultrasonic instrument and software platform for conventional and phased array ultrasonic testing
- Outstanding, high dynamic range ultrasonic testing performance
- Simple operation by a single operator
- Advanced software tools for inspection analysis and automated report generation
- Quick change or semi-automated application tool selection and attachment to the scanning axes.



Phased Array Inside Radius Bubbler

Inspects internal radii in a single pass adapting to geometry changes using GE's patented Reverse Phasing Contour Adaptation method.



Phased Array Outside Radius Bubbler

Inspects external in a single pass radii adapting to geometry changes using GE's patented Reverse Phasing Contour Adaptation method.



14th Axis Extended Reach Squirter

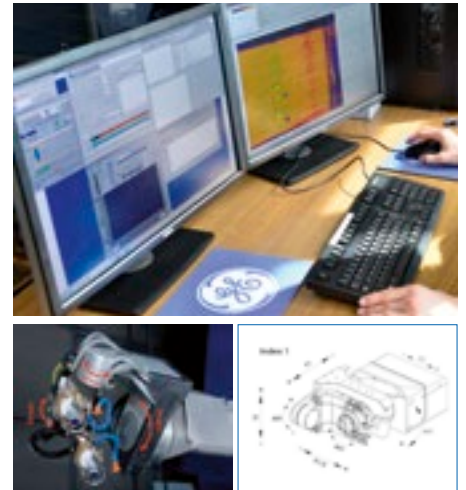
Allows access to narrow passages to facilitate TTU inspection with an additional rotational axis at the end of the extender and miniature squirter nozzle.



Advanced Application Software

GE's NuScan data acquisition and analysis software is the central hub that controls the entire ultrasonic inspection process providing the following functions.

- Geometric teach in from CAD models, laser metrology and manual methods
- Control of scan trajectories
- Real time acquisition and mapping of ultrasonic data for individual parts or collection of parts in a single scan
- Manual and Assisted Defect Recognition and automated inspection report generation



Technical Specifications - Scanning Performance

Axis	Stroke	Vmax	Absolute Accuracy	Repeatability	Min. Step
X1, X2	13.000 mm	1000 mm/s	$\leq \pm 0.4$ mm / overall	$\leq \pm 0.1$ mm	0.1 mm
Y1, Y2	2.400 mm	300 mm/s	$\leq \pm 0.25$ mm / overall	$\leq \pm 0.1$ mm	0.1 mm
Z1, Z2	3.600 mm	300 mm/s	$\leq \pm 0.25$ mm / overall	$\leq \pm 0.1$ mm	0.1 mm
S1, S2	± 350 mm	150 mm/s	$\leq \pm 0.3$ mm / overall	$\leq \pm 0.1$ mm	0.1 mm
A1, A2	$\geq 180^\circ$	30 $^\circ$ /s	$\leq \pm 0.1^\circ$ / overall	$\leq \pm 0.05^\circ$	0.1 $^\circ$
B1, B2	$\geq 110^\circ$	30 $^\circ$ /s	$\leq \pm 0.1^\circ$ / overall	$\leq \pm 0.05^\circ$	0.1 $^\circ$
C1, C2	$\geq 180^\circ$	30 $^\circ$ /s	$\leq \pm 0.1^\circ$ / overall	$\leq \pm 0.05^\circ$	0.1 $^\circ$

Imagination at work

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