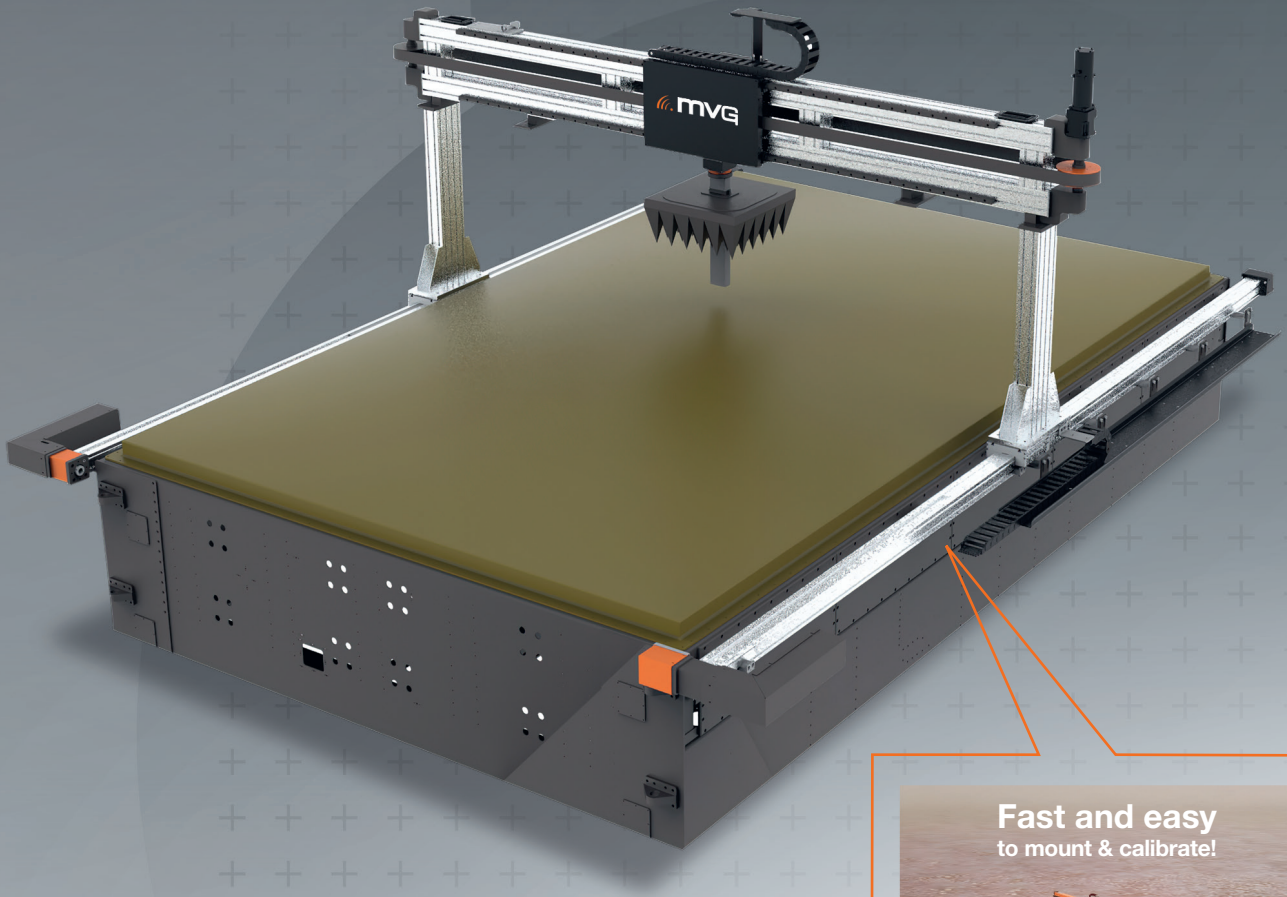
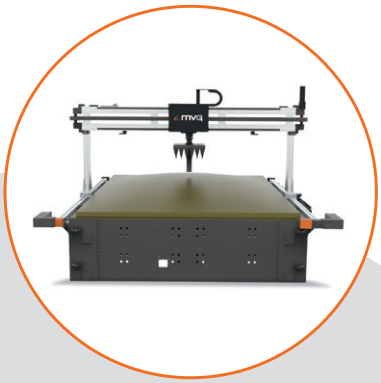
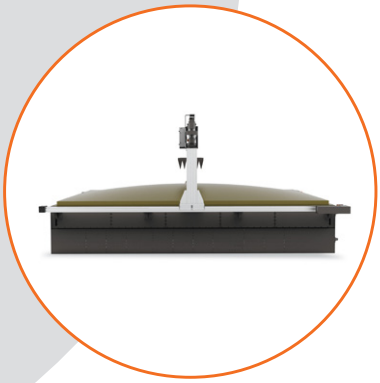
Bolt-On Scanner

Modular Portable Scanner

A fast, lightweight, and accurate solution
for on-field active phased array calibration







General Overview

When a radar requires recalibration, it needs a complex operation involving the dismantling of the asset and its transport to a distant near-field measurement facility.

This process often takes weeks, resulting in substantial downtime, high transportation costs, and increased operational risk.

The Solution: In-Situ Re-calibration

To avoid the need for facility transport, MVG has created an advanced solution: **the Bolt-on-Scanner**. This modular, portable system brings fast, lightweight, and accurate active phased array calibration directly to the field.

This approach transforms a previously high-risk, heavy-logistics event into a routine in-situ maintenance task, ensuring that measurement accuracy does not come at the expense of asset availability.

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SOLUTION FOR

- **Active phased array calibration on the field**
- **Pulsed and continuous wave testing**

PRODUCT CAPABILITIES

Technology

- Near-field / Planar

Features

- X-axis travel: Configurable to antenna dimensions
- Y-axis travel: Configurable to antenna dimensions
- Z-axis: Configurable to frequency needs
- Roll axis: ± 90 deg
- Repeatability: 0.05 mm
- Accuracy: 0.5 mm RMS
- Side rails for the x-axis can be installed as a permanent integral part of the radar's structure
- Planarity: 0.2 mm
- Scan Speed: 100 mm/sec

MEASUREMENT PROBE

+ ADVANTAGES

Maximized Mission Readiness (Uptime)

By eliminating the transport loop to a facility, you reduce downtime from weeks to hours. The radar stays on-site, in position, and ready to re-engage immediately after calibration.

Tactical Agility

No longer need to plan months in advance for transporting assets out of the front lines. Calibration becomes an on-demand capability, ensuring peak performance exactly when and where it is needed most.

Drastically Reduce Logistical Costs

It decreases the heavy costs associated with specialized heavy transport and external facility fees. The Bolt-on-Scanner converts a high-CAPEX/OPEX event into a cost-efficient field operation.

Risk Mitigation

Once sensitive equipment is moved, there is a significant risk of damage during handling and transit. "On-site" testing ensures the system is calibrated in its actual operating configuration and environment, effectively mitigating the risks of re-installation errors or transit damage.

System Overview

X-AXIS

The X-axis dual drive mechanism consists of two parallel and independent, electronically synchronized drive systems.

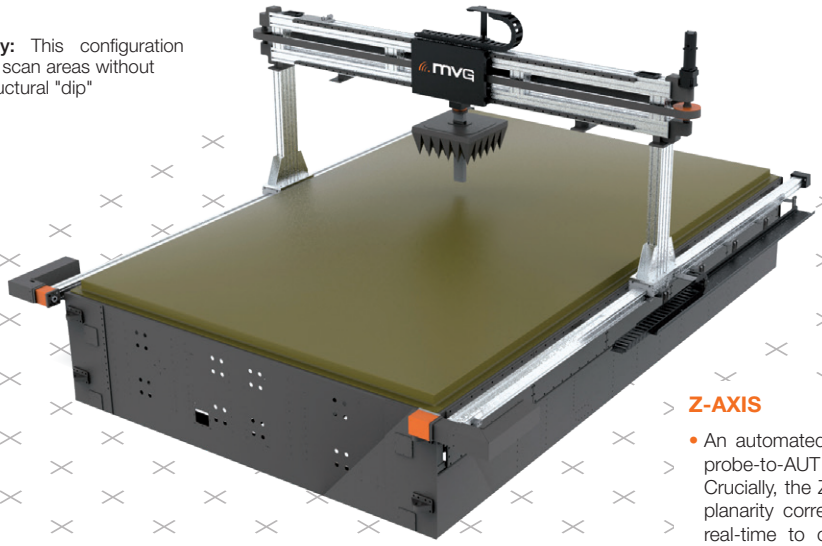
The dual drive system ensures:

- **Structural Parallelism:** By driving the main gantry from both sides, the system eliminates "any angular deflection. This ensures the Y axis (bridge) remains perfectly perpendicular to the scan path at all times
- **High Dynamic Stiffness:** Dual synchronization provides superior torque distribution, allowing the system to move massive structural frames with high repeatability and zero lag between the two drive sides
- **Aperture Stability:** This configuration allows for massive scan areas without the vibration or structural "dip"

Y-AXIS

The Y-axis is the secondary scanning stage mounted orthogonally to the X-gantry.

- **Optimized Sampling Speed:** Designed for high-speed bi-directional movement, the Y-axis acts as the primary data acquisition stroke. It utilizes low-friction linear bearings and high-precision drive mechanisms to minimize settling time between samples
- **Orthogonal Integrity:** Hard-mounted to the stable X-axis gantry, the Y-axis maintains a rigid 90-degree relationship to the X-plane, ensuring a perfectly rectangular sampling grid—critical for accurate Fast Fourier Transform (FFT) processing of RF data



Z-AXIS

- An automated linear stage that controls the probe-to-AUT (Antenna Under Test) distance. Crucially, the Z-axis is often utilized for active planarity correction, dynamically adjusting in real-time to compensate for any structural deviations and maintaining a perfectly flat scan plane.

Executive ROI Summary

Category	Traditional Method (Return-to-Base)	Portable PNF (On-Site)	Direct ROI Impact
Logistics	$50k+ (Shipping/Insurance)	$2k (Scanner Travel)	**95% Reduction**
Facility	$10k/day (Chamber Rental)	$0 (Hangar/Field)	**100% Avoidance**
Downtime	14–30 Days	1–2 Days	**90% Faster Turnaround**
Risk	High (Transit/Handling)	Minimal (In-Place)	**Significant Liability Drop**