Measuring the Ship As Built: Portable Metrology for Shipbuilding

NCMS Technology Showcase

PROBLEM STATEMENT

US shipyards are being asked to deliver more hulls, faster, with a thinner skilled workforce. Large welded structures move as they are built: blocks distort, engine foundations settle, and the real shaft centerline drifts from the design centerline.

Conventional methods such as optical tooling, taut wire, total stations and discrete point checks need scaffolding, clear line of sight and expert operators. Fit-up problems are often found only when a component is already on the crane, driving repeat lifts, weld corrections, rework and lost schedule days on shaft alignment, block alignment and machined-interface inspection.

BENEFITS

- **ATS800: Direct Scanning to 40 m**
  - Scans edges, holes and surfaces with no targets or scaffolding, plus reflector tracking for the tightest tolerances. One device does the work of two.
- **AT960: 160 m Measurement Volume with 6DoF**
  - Reflector, T-Probe and scanner measurement across blocks, dry docks and the full shaft line. PowerLock re-acquires after line-of-sight breaks.
- **Absolute Arm: Close-In Accuracy, Yard-Ready**
  - The first IP54-rated portable arm, for probing machined propulsion parts. The AS1 scanner moves between the arm and AT960.

TECHNOLOGY SOLUTION

Hexagon pairs Leica Absolute Trackers and the Absolute Arm with SpatialAnalyzer to put every instrument in one coordinate frame. The ATS800 scans foundations, hull blocks and nozzle bores at distance; the AT960 covers long-range and 6DoF probing along the shaft line; the Absolute Arm inspects machined components up close. SpatialAnalyzer fits true centerlines from as-built geometry, runs virtual fit-up before the lift and automates repeat measurements for weld-distortion monitoring.

GRAPHIC

