

FA-EMAT – Float Arm with Integrated EMAT Sensor for Industrial Non-Destructive Inspection

FA-EMAT automates wall-thickness inspection of industrial infrastructure using a ground-deployed robotic arm with an EMAT sensor and JARVIS digital twin path planning, eliminating scaffolding and removing workers from hazardous zones.

THE CHALLENGE AND WHY IT MATTERS

Inspecting pipes, tanks, and columns for corrosion requires workers to climb scaffolding or use rope access in hazardous zones. Each campaign involves lengthy safety permitting, scaffold assembly, and manual couplant gel application — adding hours of preparation time and exposing inspection personnel to serious risks.

OUR SOLUTION AND VALUE PROPOSITION

FA-EMAT integrates hibot's Float Arm (8-link robot, 5 m reach, ground-deployed) with an EMAT end-effector with 2-DOF gimbal and 5 active DOF — no couplant gel needed. Operators plan paths in the JARVIS Digital Representation tool and execute with 2 gamepad buttons. Field-validated at BASF Antwerp (June 2026), 7 test cases, 5 operators: TRL 7 achieved, zero human exposure to hazardous zones, commercially available as a modular Float Arm add-on.

ADDED VALUE FROM JARVIS

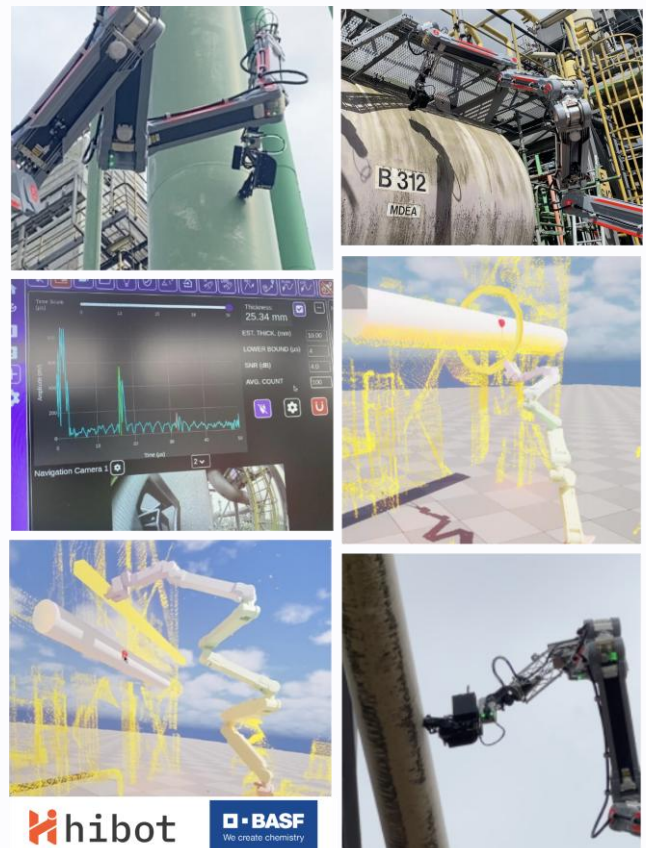
The JARVIS Digital Representation tool displays a 3D point-cloud replica of the asset and the FA-EMAT arm. It generates prismatic and circular path guides, streams joint configurations to the OCU, and enables supervisory inspection with minimal operator training.

KEY RESULTS

- ✓ TRL 7 achieved – full system demonstrated in real operational environment (BASF Antwerp, June 2026); operator acceptance 79.4% vs. 60% target
- ✓ 56–83% inspection time reduction: circular pipe 6→1 min (–83%); WT elbow 7.8→3.4 min (–56%)
- ✓ 0% human exposure to hazardous zones; ergonomic improvement ≥45% (OCRA index); BASF Antwerp confirmed adoption

POTENTIAL MARKET OPPORTUNITIES

Primary: oil, gas & chemical plants, aerospace and inspection service providers for critical infrastructure.



PILOT AT A GLANCE

Lead organization: hibot Europe GmbH

Consortium: hibot Europe GmbH, BASF Antwerp N.V., CEA

Sector / use case: Oil, gas & chemical – infrastructure wall-thickness inspection

JARVIS module(s): Digital Representation tool

Demonstration environment: BASF Antwerp N.V. (Belgium)

MORE INFORMATION

Website: www.hibot.co.jp | www.jarvis-project.eu

Contact: Michele Guarnieri, CEO – info@hibot.co.jp

Videos: <https://www.youtube.com/@JARVISHorizonEuropeProject>

