

# Manufacturing & Industrial Systems Services Brochure

## 1. Overview — Weld • Automate • Maintain

The Manufacturing & Industrial Systems (Welding, Automation) practice delivers certified welding, fabrication, automation, robotics, maintenance & reliability for heavy industry, energy and infrastructure.

Work is delivered via 1:50 pods — each led by a certified Manufacturing & Industrial Team Leader — so clients engage a managed capability, not a loose collection of trades.

## 2. Core Service Pillars

The practice is organised around six service pillars:

- 1) Welding & Fabrication
- 2) Automation, PLC & SCADA
- 3) Industrial Robotics & Mechatronics
- 4) Maintenance & Reliability
- 5) Industrial Electronics & Drives
- 6) Smart Factory & IIoT

Each pillar is backed by specific certifications, procedures, safety systems and documentation packs.

## 3. Welding & Fabrication Services

Processes covered:

- SMAW (Shielded Metal Arc Welding)
- GMAW / GMAW-S / GMAW-P (MIG, short-circuit, pulsed)
- FCAW (flux-cored, gas-shielded & self-shielded)
- GTAW (TIG)
- SAW (Submerged Arc Welding)
- Brazing and braze welding
- Oxy-fuel welding and cutting
- Carbon arc gouging & back-gouging

Applications:

- Structural steel fabrication and erection
- Piping systems and process spools
- Tanks, pressure parts and boilers (with code-qualified partners)
- Heavy equipment, shipyard and rail repairs

Every weld package is aligned with WPS/PQR, inspection plans and NDT coordination.

## 4. Automation, PLC & SCADA

Automation services include:

- PLC programming (Siemens, Rockwell, Schneider, Mitsubishi and others)
- SCADA configuration (Ignition, Wonderware, WinCC, etc.)
- Field integration with sensors, VFDs, MCCs and safety systems
- Control narratives, interlocks, alarm management and sequence logic

Engagements range from panel upgrades and PLC migrations to full plant automation projects and commissioning.

## 5. Industrial Robotics & Mechatronics

Robotics services include:

- Robotic welding cells for production and repair
- Material handling, palletizing, packaging, cutting and painting cells
- EOAT and fixture concepts for flexible manufacturing
- Safety guarding, risk assessments and robot standards alignment

Mechatronics support includes motion control, servo systems and integrated drives across production lines.

## 6. Maintenance & Reliability Engineering

Maintenance & reliability services include:

- Preventive and predictive maintenance programs
- Vibration, thermography and oil analysis coordination
- Root cause analysis, FMEA/FMECA and reliability studies
- Shutdown and turnaround planning, scheduling and execution support

KPIs such as MTBF, MTTR, availability and OEE are tracked and reported to client management.

## 7. Smart Factory & IIoT

Smart factory services include:

- OEE dashboards and production monitoring
- IIoT sensor networks across machines, lines and utilities
- Energy and compressed air performance tracking
- Digital twin concepts for production, layout and maintenance planning

These capabilities connect shop-floor data to decision-makers and support Industry 4.0 journeys.

## 8. Safety, Codes & Compliance

Safety is treated as a core service, not an afterthought.

The Manufacturing & Industrial Systems practice aligns with:

- AWS, ASME and EN welding codes (via qualified partners)
- IEC and NFPA standards for electrical and automation systems
- OSHA and NEBOSH-aligned safety practices
- ISO and SMRP-aligned maintenance and reliability standards

Clients benefit from structured permit-to-work systems, lock-out/tag-out practices, job safety analysis, toolbox talks and full documentation.

## 9. 1:50 Pod & Leadership Model

Each engagement is delivered by a 1:50 pod:

- 1 Manufacturing & Industrial Team Leader
- Welding & fabrication pod
- Automation & controls pod
- Robotics & mechatronics pod
- Maintenance & reliability pod
- Safety & compliance pod

The Team Leader is trained under the Investor Education and HEXAD mentoring framework to combine technical competence, safety culture and financial stewardship.

## 10. Engagement Models

Clients can work with BTH Manufacturing & Industrial Systems through several engagement models:

1) Project-Based Engagements

- Shutdowns and turnarounds
- Line upgrades and modernisation
- New plant or unit commissioning

2) Managed Services

- Long-term plant support contracts
- Reliability programs
- Automation and controls lifecycle support

3) Capacity Augmentation

- Additional pods for peak workloads
- Rapid deployment for critical timelines

Each engagement is supported by SLAs, KPIs, documentation packs and financial models consistent with the Finance Pack.

## 11. Calls to Action

For industrial clients:

- Request an industrial engagement and scope workshop.
- Ask for the Manufacturing & Industrial Finance Pack and Services Brochure.

For potential 1:50 leaders:

- Apply to become a Manufacturing & Industrial Team Leader.
- Begin the certification pathway towards welding, automation, maintenance and safety leadership.

This brochure summarises the services and positioning of the Manufacturing & Industrial Systems practice. It is designed to accompany the web page and the Finance Pack when presenting to board-level, plant-level and investor audiences.