



INDUSTRY BRIEF

Heat Treatment

Furnace control and records that stand up to every customer audit.



Control system engineering, integration and analytics since 1997
ISO 9001 certified • Cyber Essentials • CHAS • Constructionline • SafeContractor

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YOUR PRIORITIES

What matters most

Heat treaters hold tight limits on time, temperature and atmosphere. Many work for aerospace and automotive customers who audit every detail. Furnaces must run safely, pass their accuracy and uniformity tests and prove that each load was treated correctly. One bad batch can mean scrapped parts and lost approvals.

Pyrometry compliance

Instruments, thermocouples and control loops must pass calibration, system accuracy tests and temperature uniformity surveys. Well-designed control and recording make those tests easier to pass and to prove.

Records that pass audit

Every load needs a complete, tamper-evident record of time, temperature and atmosphere, linked to the parts and recipe used, and ready to show a customer or Nadcap auditor.

Furnace safety

Burners, fuel trains, vacuum systems and flammable or toxic atmospheres need purge, flame and interlock protection that is designed and proven to the level your risk assessment demands.

Repeatable, controlled cycles

Operators should be able to load a recipe and trust it. Controlled recipe management, clear displays and alarms on any deviation keep every cycle the same, shift after shift.

WHAT WE WORK ON

Systems we engineer

- Vacuum furnaces
- Atmosphere and sealed-quench furnaces
- Tempering, annealing and ageing ovens
- Burner management and combustion control
- Recipe management and load traceability
- Temperature recording and pyrometry data

PROJECT EXPERIENCE

Vacuum furnace

Matrix delivered the control system for a vacuum furnace. Vacuum furnaces combine pumping, heating and cooling in one tightly sequenced cycle, and their control must give repeatable results and a clear record of every load.

What this means on your project

Furnace downtime is lost production, and changes to controls can trigger new surveys and tests. We plan upgrades around your schedule, prove recipes and logic against a simulation before site, and schedule commissioning around the tests needed to requalify each furnace. You get the design, code and documentation to run and maintain the system yourselves.

STANDARDS

The standards that shape your project

Customers ask us first about standards. These are the ones we meet most often in this sector, and what they mean in practice.

Standard	What it covers	How we work with it
AMS2750	SAE aerospace pyrometry specification: sensors, instruments, calibration, accuracy tests and uniformity surveys.	Instruments, thermocouples and recording designed to meet each furnace's class and instrumentation type.
AIAG CQI-9	Heat Treat System Assessment, used by automotive customers to audit heat treaters.	Process monitoring, alarms and records designed around the requirements your customers audit.
Nadcap heat treating (AC7102)	Audit criteria for Nadcap heat treating accreditation, required by many aerospace customers.	Recipe control and secure electronic records that support the evidence your Nadcap audit examines.
BS EN 746-1, BS EN ISO 13577-2 and -4	Safety of industrial furnaces: general requirements, combustion and fuel handling, and protective systems.	Burner management, purging and furnace protective systems designed to their requirements.
BS EN 60204-1	Safety of machinery: electrical equipment of machines, including stopping and emergency stop.	Control panels and machine electrics designed to it and verified before and after installation.
BS EN ISO 13849-1	Design of the safety-related parts of machine control systems, rated by performance level (PL).	Safety functions designed and verified to the performance level your risk assessment requires.

The standards listed are those most often relevant to control-system work in this sector. Which apply to your project, and how, is agreed with you at specification stage.

The evidence you receive at handover

✓ Functional design specification	✓ I/O list and cause-and-effect	✓ Alarm list and HMI interface
✓ FAT and SAT records	✓ As-built drawings and source code	✓ Method statements for common faults

ABOUT MATRIX

Standards-led, fully documented control systems that you own and can support.

Matrix International (UK) Ltd has designed, built and supported industrial control systems since 1997. We take projects from specification and electrical design, through PLC, DCS and SCADA software, to installation, commissioning and long-term support, and we build the analysis software that shows how a plant is really performing. We are ISO 9001 certified and hold Cyber Essentials, CHAS, Constructionline and SafeContractor accreditation.

Siemens TIA Portal, S7 and PCS 7 • Rockwell • ABB • Schneider • Mitsubishi • Beckhoff • Emerson DeltaV • Honeywell • GE • WinCC, Ignition, AVEVA (Wonderware), FactoryTalk, iFIX and Citect SCADA

HOW WE DELIVER

From specification to long-term support

01 Specify

Requirements, applicable standards and risks agreed with you up front, itemised into a clear plan.

02 Design

Electrical and control design, PLC/DCS and SCADA software, to your standards and ours.

03 Test

Logic proven against a simulated plant, then factory acceptance testing before anything reaches site.

04 Commission

Installation, commissioning and site acceptance testing, planned around your operation.

05 Hand over

Full documentation, method statements for common faults, and training for your team.

06 Support

Maintenance, upgrades and analysis for the life of the system, with 24/7 cover under a support agreement.

WHY MATRIX

Why customers choose us

Standards first

An ISO 9001 certified quality system, designing to the standards your sector demands, plus any you specify.

You own the system

Clear structure, open interfaces and complete documentation, so you can support it yourself or with any vendor.

Tested before site

Control code is version-controlled and tested against a simulated plant before factory and site acceptance.

Multi-vendor

Siemens, Rockwell, ABB, Schneider, Mitsubishi, Beckhoff, Emerson, Honeywell and GE platforms.

In it for the long term

For us a project is not finished until the control system is decommissioned. 24/7 support is available under a support agreement.

OUR PROMISE

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Talk to us about your project

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