Sustainability solutions for the glass industry

Eurotherm®

Power and Process Automation Redefined
Designed for long term operational efficiency and energy savings

eurotherm.com/glass

WATLOW®
Powered by Possibility

Flat Glass

- Float
- Ultra-thin
- Display
- Optical
- Sapphire
- Coating

Hollow and Pressed Glass

- Borosilicate
- Crystal
- Tableware
- Jars and Bottles
- Flaconage
- Pharmaceutical

Tube Glass

- Pharmaceutical
- Lighting

Fibreglass

- Reinforcement
- Insulation
- Optical
- Biomedical

Be prepared for a sustainable efficient future

In glass industries that rely on 24/7 processes over long campaign lifecycles, it's important to think ahead before investing in new equipment. How will future energy standards, sustainability regulations and customer requirements affect your business and will you be able to meet them?

Next-gen tech for a new era

Sticking with traditional control and automation solutions may cost less at the start of a campaign, but think about the implications a few years down the line. Those who can't meet environmental targets will be forced to pay taxes, and will not have the flexibility to increase furnace productivity if customer demands increase.

Selecting a supplier who understands your process and offers you well designed adaptable options, puts you in a much better position to minimise the impact of future regulatory and productivity changes.

For over 50 years Eurotherm has been at the forefront of power and process control in the glass industry, providing scalable, next-gen engineered solutions with fast ROI (Return On Investment). Based on our products, systems and services, our solutions are specifically designed to optimise energy and operational efficiency from end to end, with the flexibility to buy what you need now and expand later.

Energy and efficiency solutions

- Energy saving power control
- Energy saving gas combustion control
- High efficiency precision process control
- Adaptable to meet future challenges

Reduce your energy costs and carbon footprint

Melting glass requires high amounts of energy, and traditional heating technologies have not changed for many years. Out-of-date component design and system layout in electrical heating applications cause energy losses, making them less socially or economically viable, while poor gas burner control causes energy waste and unacceptable emissions.

Glass manufacturers who don't make the leap to modern control technologies risk paying unnecessarily high energy costs for day to day operations, plus fines for going over their energy tariff and taxes for failing to meet energy and environmental targets. Old style "fixed" systems also make it difficult to increase the furnace output if you need to meet growing customer demand. Think about how these issues could affect your business over the lifetime of the furnace.

Over the years Eurotherm have developed a range of scalable power control solutions ideal for the efficient operation of high energy glass processes. From advanced power control, best of breed transformers and expertly designed system layout, to intelligent burner control, the methods and technologies used help prevent unnecessarily high energy costs, fines and taxes, and offer a cost effective way to increase furnace productivity in a stepwise manner.

Latest power components and system design methods

- Up to date components and best in class partnerships enable energy and maintenance saving strategies
- Proven best practise system layout based on years of design knowledge minimises energy usage
- Redundant power methodology keeps the process running in the event of component failure

Power management

- Predictive load management and load shedding technologies automatically prevent the plant from exceeding its energy tariff

Fossil fuel combustion

- Strategies for optimising combustion and reducing emissions

Scalable architecture

- Easily add more power to the furnace during the campaign

Advanced power supply control systems

- Electric furnace boosting
- Platinum heating (Bushings)
- Tin bath roof heating
- Drive systems and soft starters
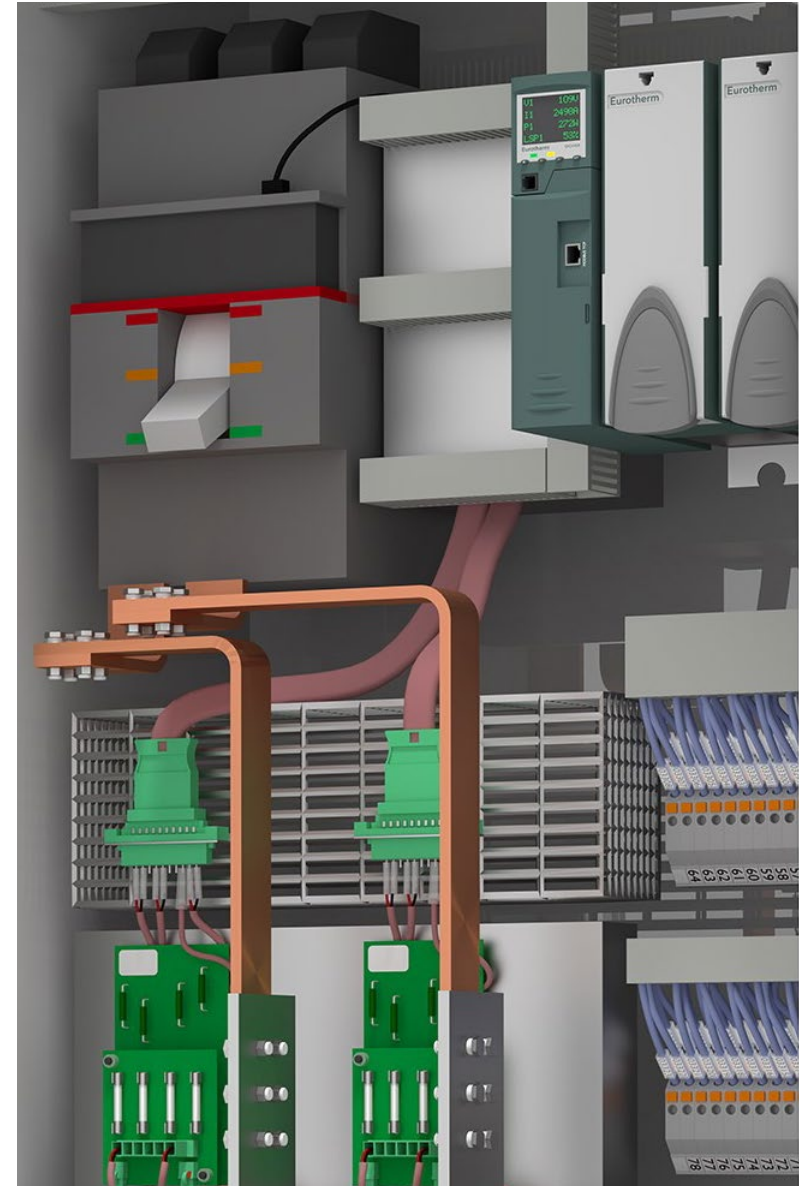- Energy management

Intelligent combustion control

- Furnace
- Forehearth
- Lehr

A one-stop-shop for automation and power

Eurotherm has over 55 years of process automation experience providing leading edge integrated automation and power solutions. In combination with precision power and process control it forms a one-stop shop for industrial glass manufacturing plants.

- Advanced power control
- Intelligent combustion control
- Precision process control

Profit from sustainability power solutions

- Energy and environmental costs are minimised, less risk of related taxes and fines
- High availability of electric heating systems, lowers the risk of downtime.
- Productivity can be increased to meet demand when needed
- Publish energy and environmental KPIs that stand out from the crowd

Moving to the latest Eurotherm power control solution could reduce your energy bill by

10%*

*Based on average savings seen in retrofit electric heating applications

Achieve sustainability while optimising productivity

Getting the most out of your plant assets while meeting sustainability goals is an increasing challenge that impacts both your profitability and the environment. Whether you're a high end manufacturer trying to keep ahead of the competition or a mass producer needing to maximise productivity, in order to improve production efficiency or minimise waste you really need to understand what's going on in the process.

If you're not measuring key process parameters, you don't have visibility of good and bad parts of the process. If you're not recording the data you can't work out what's going on, or see if your improvements are working. It makes it almost impossible to optimise overall equipment effectiveness (OEE), production quality and your resulting operational and sustainability KPIs.

Measure accurately

Signal measurements can be affected by sensor accuracy, operating conditions, wiring layout and input accuracy of the hardware. All of these have been taken into account in our product and system design.

Sensors and where to put them

Eurotherm supply a range of high accuracy temperature sensors and glass level probes, constructed from customisable parts to suit the application. Our expert glass team can also advise on the best cable type and layout for the operating conditions, as well as optimum sensor placement to aquire useful measurements and soft sensor calculations from the system.

Efficient 24/7 process control with high quality output

Specialist control algorithms and strategies are at the heart of Eurotherm control. Designed to prevent common temperature related issues in high temperature applications, they provide stability and repeatability in the process. Combined with redundant architecture and process optimisation techniques designed by our glass engineering experts, the result is continuous high quality glass produced at the optimum rate, with minimum waste.
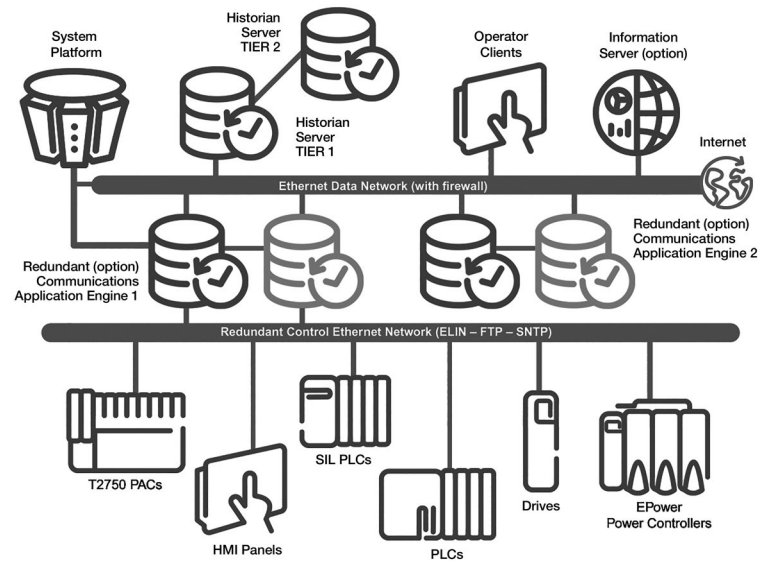
- High accuracy products designed to provide redundant, high precision measurement, control and automation, in electrically noisy environments

- Best practise system layout and processing optimisation strategies implemented by a knowledgeable glass engineering team

Designed for process efficiency from the sensor right to the heart of the control system

- Analyse and improve process efficiency through accurate measurement and precision control

- Achieve a stable, repeatable process with minimal waste, for better sustainability KPIs

- Benefit from glass application know-how to optimise OEE

- Minimise the risk of downtime thanks to redundant architecture and hot-swappable modular design

Precision process control and automation systems

- Batch house control
- Furnace combustion control
- Annealing lehr control
- Intelligent IS-cooling systems
- Environmental Monitoring
- High temperature thermocouple sensors

Process control

Typically this is based on Eurotherm T2750 PAC (Programmable Automation Controller), in combination with EurothermSuite™. As well as offering dual redundancy, choosing this off-the-shelf product instead of a PC based control system removes the hassle of operating system upgrades and software incompatibility during a campaign.

Power control

EPower™and EPack™ power controllers provide intelligent networked control for your electrical heating applications. Measuring, monitoring and controlling your energy plant-wide, while using selectable firing modes that reduce electrical noise in the system, results in optimised energy usage and lower bills, within the bounds of your energy tariff.
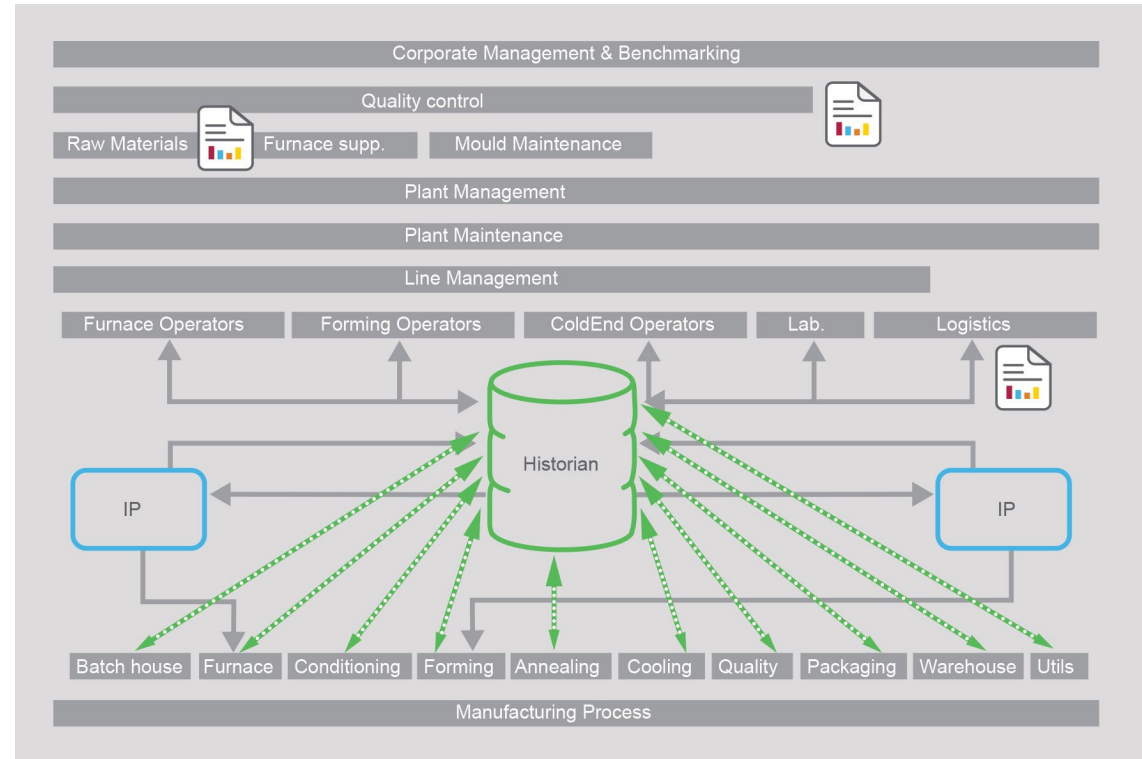
Ready for IIoT?

Whether you call it Industry 4.0 or the Industrial Internet of Things, the next industrial revolution is already here enabling smarter machines. However, in the glass industry, benefiting from this kind of technology often means taking some evolutionary steps.

Older plants were not designed with modern communications, data acquisition and analytical tools in mind so it can be a struggle to collect and collate information. Many of today's plant information systems still suffer from multiple automation and data systems that are not easily connected into a single data server, requiring unnecessary human resource to extract meaningful results. If you are responsible for improvement projects and the reporting of KPIs how can you get useful data out of these systems and utilise it in the best way?

Connectivity for a smarter future

Eurotherm solutions offer a range of industrial communication protocols to transfer data from different systems to one place, and connect with IIoT technologies. From raw materials to the warehouse and beyond, historical and real-time process data can be brought together in a single historian. It is then easily accessed, retrieved and analysed using accompanying tools by everyone from plant personnel to corporate management.

Collecting digital, analogue and 3rd party format plant data in a single historian server simplifies analysis and reporting at every level

Seamless data acquisition

If you want to utilise your data historically it needs to be aquired reliably. A common practise is to record process data using a PC based system. The problem with this is, if communication is lost, so is the data. Information gaps can make analysis, benchmarking and reporting impossible especially when they go unnoticed for long periods of time.

Eurotherm's recording strategy does not suffer from this issue as the data is continuously recorded in the internal memory. Our specialist store-and-forward technology seamlessly backfills data to the historian when communications are restored.

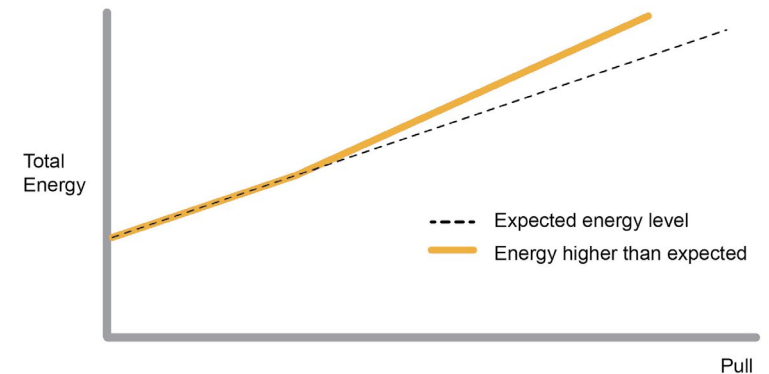# Improve and benchmark the process with data analytics

Once you've got measuring, recording and archiving sorted you can start analysing and comparing energy usage, productivity and quality data, both in real time and historically.

After you have made improvements, benchmarking your process will enable you to spot previously unforeseen issues caused by ageing equipment, different batches of raw materials and different machine operations.

What can you do with data analytics?

Comparing live process data with historical benchmark data allows you to:

- Prevent process deviation and waste caused by different batches of raw materials
- Get notified when energy usage is escalating due to worn out components and equipment
- Calculate, predict and control emissions
- Plan ahead for maintenance to optimise OEE

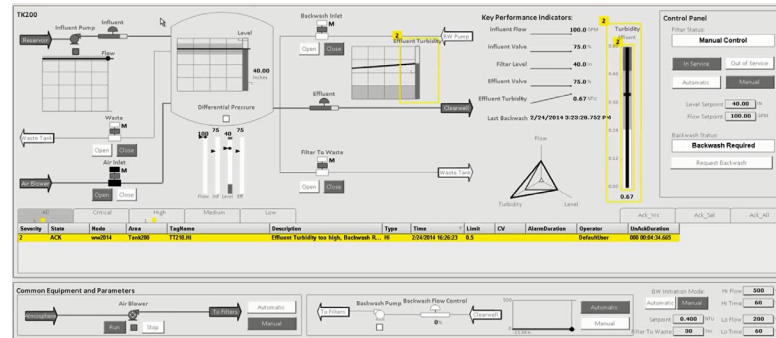Find white papers, success stories and published articles here

eurotherm.com/glass

Smarter visualisation for better operational efficiency

Improvements to HMIs over the last few years have brought enhanced graphics to the process, but this sometimes results in information overload for the user.

Eurotherm engineers work with you to design meaningful visualisation that gives users better situational awareness. Careful consideration is given to graphical representation of data so it is immediately obvious even to an inexperienced operator when they need to take action.
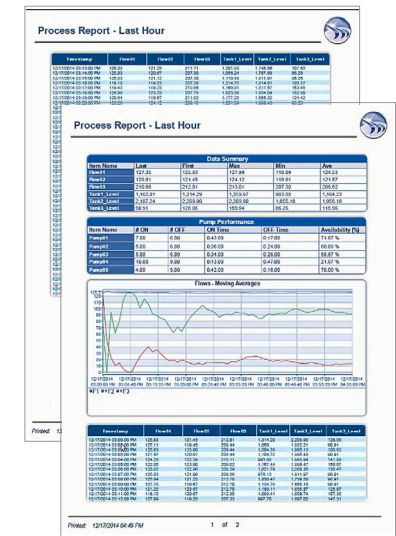

Simplified view

The operator is only shown what is needed:

- Only important system parameters are shown and represented using simplified visual methods
- Simple colours and shapes are used to highlight issues and instruct the user

Demonstrate improvements and report KPIs

How many of your personnel are wasting time generating reports by hand?

To demonstrate energy and process improvements are working, pass useful detail to maintenance engineers and visualise your KPIs, our industrial reporting package enables you to generate reports and dashboards either on the fly, or automatically from a template directly from the historian. Whether triggered on an alarm or event, it can then be automatically pushed to the person who needs it.

Choose the right supplier

When you're selecting a system supplier, don't forget the value provided by a knowledgeable engineering team. How well will they understand your particular process, application and the goals you want to achieve?

Choosing Eurotherm gets you an international team of longstanding dedicated sales, project and service engineers with vast experience in the glass industry. A full range of project services are offered to deliver the best process consistency across all your plants.

Project management

- Design, test, installation and commissioning
- Small R&D to full scale projects
- Engineered to quality management standard ISO 9001

Engineering expertise

- Glass application knowledge
- High efficiency process control
- Energy saving power and combustion control

Services

- Training
- Technical Support
- Engineering support
- Calibration
- Energy surveys
- Global Alliance Agreements
- Spares Management
- Service Level Agreements (SLAs)

Contact an expert

High temperature sensors

- Robust S/R & B thermocouples and level sensors for glass applications
- Single, double & triple level thermocouples for melt temperature measurement at different immersion depths
- Custom made to your material and size specification

eurotherm.com/glassexperts

Eurotherm T2750 PAC

- Redundant processors for high availability of the control system
- Accurate, hot swappable I/O for better control and easier maintenance
- Precision control strategies for operational efficiency

EPower Power Controller

- Variety of firing modes to reduce electrical noise in electric heating applications
- Predictive load management and energy saving strategies to prevent unnecessary electricity charges

Ready for the next generation?

Find out how we're redefining the way power and process control are applied in your glass industry

eurotherm.com/glass

Contact your local sales representative

Published April 2023

Document Number HA032847 Issue 2

WATLOW®
Powered by Possibility