WATLOW®
Powered by Possibility

Your Partner for Decarbonization and Electrification

Wherever **Thermal** is Critical

100 years of Solving the World's Most Demanding Thermal Problems

watlow.com

Watlow continues to grow, while the commitment remains the same:

Pioneering Thermal Solutions that Empower a Thriving Future.

Watlow is committed to advancing sustainability through comprehensive thermal loop solutions that support decarbonization and electrification efforts worldwide.

With over 100 years of industry experience, we have established a global presence with manufacturing centers of excellence, technology and development centers, and sales offices strategically located to serve customers. Our global footprint ensures that we can deliver innovative, efficient, and sustainable solutions tailored to the specific needs of each region.

The integration of Eurotherm, a leader in process control, measurement, and optimization, has further enhanced our ability to offer cutting-edge solutions that improve energy efficiency and reduce carbon footprints.

We are empowering industries to meet their sustainability goals while driving performance and reliability in thermal systems worldwide.

Content

Electrification in Industry: Efficient Electric Process Heat

The industrial sector is undergoing a significant shift towards electrification for heating, driven by the need to reduce carbon emissions and align with decarbonization targets. This shift, particularly in the next 10 years, will see increasing adoption of electric heating technologies to replace fossil fuel-based systems. There are surprising converts, including oil, gas, petrochemical and power generation.

The world's largest asset management firm, BlackRock, joined Climate Action 100+ in 2020, after losing $90 billion on fossil fuel investments in the past decade., CEO Larry Fink wrote that **"Climate change has become a defining factor in companies' long-term prospects."**

Source: BlackRock joins Climate Action 100+ January 2020

More recently, McKinsey stated in their feasibility insights on net-zero electrical heat that ***"Industrial heat is responsible for about fifth of global energy demand and perceived as hard to electrify".***

McKinsey go on to say that ***"Electrification of industrial heat production is increasingly within reach, offering new possibilities for the global energy transition."***

Source: McKinsey Sustainability/Our Insights July 2024

A Deloitte report states ***"Electrification continues to expand across transportation, industrial processes, buildings and homes."***

Source: Deloitte 2025 power and utilities industry outlook December 2024

Agora's June 2024 assessment of technologies, potentials and future prospects for the EU shows that ***"by 2035, direct electrification could also replace the vast majority of fossil fuels used to provide process heat for the production of industrial goods"***

Source: Agora Industry June 2024

There is no doubt that there is considerable financial risk involved for energy companies and manufacturers - risks that go beyond mere failure to comply with environmental regulations. However, the pressure to meet decarbonization targets through a wider range of electrification technologies commercially available today, has galvanized these industries and they are now tackling carbon emissions through electrification, converting key industrial processes such as process heating from fossil fuel-based systems to electric equipment. The future is right now.

Dennis Long is an expert on energy and environmental technologies at Watlow. Read the whitepaper on decarbonization, electrification and the case for modern electric process heaters.

Watlow whitepaper

Choose a Partner Who Understands the Thermal Process and Plant Efficiency Needs

Watlow works with industry-leading companies, providing electric heating, sensing, control, and data management solutions as a complete package. Our teams will work alongside you to support the replacement of your fossil-fuel based applications. The following applications are typically where our technology is particularly impactful:

- **Steam Generation: Boiling / Reboiling**
- **Oil Heating**
- **Air Drying**
- **Water Treatment**
- **Catalyst Regeneration**
- **Glass, Steel, and Cement Processing**
- **Vaporization**
- **Power Generation**
- **Oil and Gas**
- **Petrochemical**
- **Diesel Emissions Control**
- **Industrial Materials Processing**

Full thermal solutions within the process and around the plant

A Path to Net Zero...
Getting Started with Electrification

Many industries are challenged with reducing their carbon footprint and at the same time reducing their overall energy consumption. Working within various industries with intensive energy consumption and thermal demand, our engineers frequently encounter the same questions:

- **How can we make electrification work for us?**
- **How do we get started?**
- **What challenges should we anticipate?**
- **What is the next step?**

While many of these questions need to be answered on a plant-by-plant basis (reflecting the unique needs of the processes involved, the capacity of the local utility grid and so on), there are approaches that can help decision-makers get started, regardless of their industry. Watlow can help.

As any engineer will understand, getting started with an electrification project is not as simple as swapping out a gas-fired process for an electric one.

This whitepaper, written by Watlow expert, Chris Mooney, will help you get started.

Watlow whitepaper

One Source... Within the Process and Around the Plant

- **Field Service and Commissioning**
- **Trouble Shooting**
- **Data Services**
- **Engineering Design**
- **Process Simulation**

Versatile engineering tools, services and data insights designed to connect with the entire enterprise and help protect and maximize assets.

Engineering Services

Sensing

- **RTD Sensors**
- **Thermocouples**

An extensive range of thermocouples to meet a broad range of sensing needs.

- **OPTIMAX**
- **Flange Immersion Heaters**
- **Duct Heaters**

Higher and safer watt densities along with advanced features contribute to process heaters with a smaller footprint, less fouling and improved safety features.

Heating

Configuration, Visualization and Reporting Tools

- **SpecView SCADA**
- **WATVIEW HMI**
- **Data Reviewer**

Powerful and flexible interfaces to automation equipment. Remote monitoring allows users to browse and analyze process data at any time. Essential for plant agility and continuous improvement.

Software

For Watlow, the underlying concept behind everything we do is the integrated thermal system. Every solution we offer focuses on the delivery and control of thermal energy, and the collection and management of data that supports process and plant efficiency.

Process Control

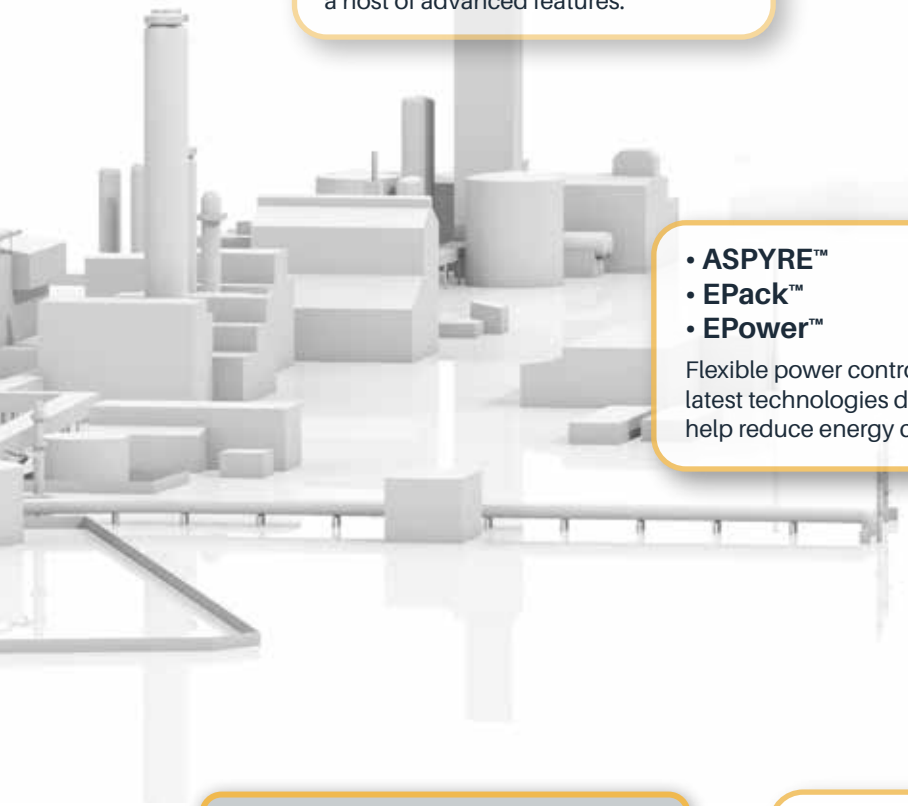
- **WATCONNECT™**
- **F4T™**
- **Mini8™**
- **EPC3000 Series**
- **EZ-ZONE™**

Precision control of temperature and other process variables together with a host of advanced features.

Power Control

- **ASPYRE™**
- **EPack™**
- **EPower™**

Flexible power control with the latest technologies designed to help reduce energy costs.



Data Management

- **versadac™**
- **nanodac™**
- **6000 Series**

Powerful and comprehensive data integrity and security features, ideal for use in regulated industries. Help optimize any industrial application with data insights that pinpoint where efficiency improvements can be made throughout the plant.

Our Success is Your Success Across

Hydrogen Production: Technology Provider of Solid Oxide Electrolyser Cells

Customer challenge: This challenge required optimizing high power density within a compact heater design while ensuring desired efficiency and cost-effectiveness. A power purchase agreement necessitated maximum uptime, compounded by complex design geometric constraints.

Watlow solution: Watlow delivered a reliable, performance-enhanced system that met all their needs: A clean and efficient electric heating solution comprising of vaporizer, air, stack and steam heater, leveraging FIREROD™ heating technology.

Watlow addressed the challenges with a specialized heater design tailored to the customer's specifications for temperature in a compact footprint. Choosing Watlow gave them access to deep thermal expertise and understanding of complex design geometry.

Hydrogen Fuel Cells: Top Provider of Fuel Cells

Customer challenge: A new power plant required that the thermal system would be designed to a relatively small footprint but the thermal management system required lots of heat.

Watlow solution: Customized solution using 300 WSI FIREROD™ immersion heater.135kW, 480V, 3-phase, divided into 4 zones. Designed to ASME section VIII, Div I plus terminal box NEMA type 4.

This was a complex application of nucleate and film boiling for this heater and a two-day cycle to replace.

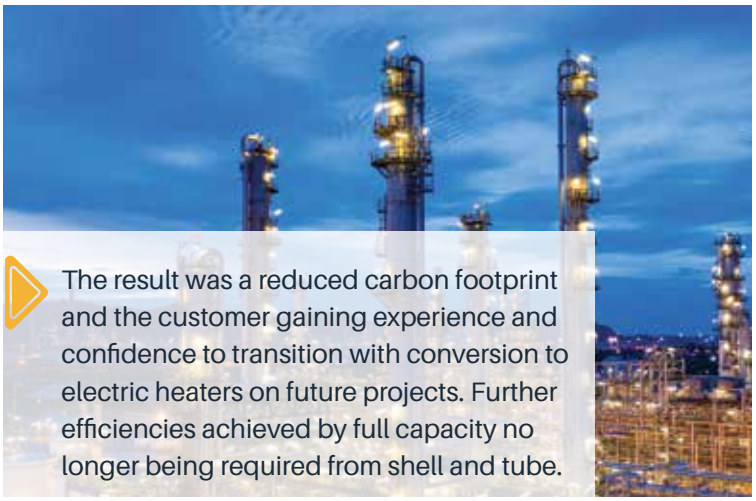
The solution gained higher energy efficiency by enabling substantial heat output in a compact design, achieving the goal for clean H2 power and leveraging Watlow's application knowledge coupled with deep thermal expertise.

Multiple Industries and Applications

Oil and Gas: TEG (Triethylene Glycol) Reboiler Electrification Upgrade

Customer challenge: Required a TEG Reboiler upgrade including shell and tube as part of the conversion to electrification to meet lower $C0_2$ emission targets.

Watlow solution: Full thermal solution with pre-designed, standard products that fit the application and requirements –100kW, 480V electric immersion heater with WATCONNECT™ control panel.



The result was a reduced carbon footprint and the customer gaining experience and confidence to transition with conversion to electric heaters on future projects. Further efficiencies achieved by full capacity no longer being required from shell and tube.

Oil & Gas: Refinery Upgrade

Customer challenge: To convert the current fossil-fuelled equipment to an electric hot oil steam system for bitumen processing at their brownfield plant.

Watlow solution: POWERSAFE™ Medium Voltage Thermal System. The bitumen logistics hot oil circuit is heated by 3 HP steam exchangers. The fossil-fuel system was replaced by electrical heaters with a power of 4.8MW.

They valued our technical capability to provide our medium voltage solution and application expertise. The result is yearly savings of 13.5kT CO_2 and 4.9 kta Natural Gas. This represents around 1% of the refinery's CO_2 emissions and 19% of CO_2 reductions plan.

Wood Paper Pulp: Electric Lumber Kiln

Customer challenge: Customer needed an electric heater solution to convert from the current fossil fuelled equipment for drying the softwood lumber at a brownfield site.

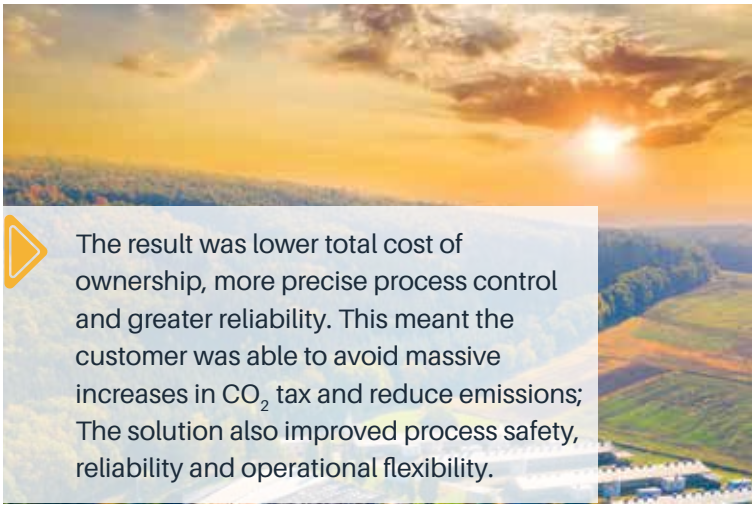
Watlow Solution: 600VAC electric duct heaters (20) and WATCONNECT™ XL Control Panels (4).

Full electric solution was designed to meet the customer's corporate sustainability goals converting from fossil fuel to low-cost electricity enabled by hydro power.

Renewable Fuels Production: Reactor Charge Heating

Customer challenge: Customer required an electric hot oil system upgrade for renewable diesel fuel production from the 2MW Gas-fired Heat Exchanger. Challenge was finding an electric heater solution to meet the power requirements of 2MW and medium voltage in order to reduce the yearly carbon tax.

Watlow Solution: POWERSAFE™ Medium Voltage Thermal System, including vessel directly heating reactor feedstock.



The result was lower total cost of ownership, more precise process control and greater reliability. This meant the customer was able to avoid massive increases in CO_2 tax and reduce emissions; The solution also improved process safety, reliability and operational flexibility.

This is how we build a cleaner future, and we're just getting started.....

Driving Real Impact: Watlow's Commitment to the Environment

At Watlow, sustainability isn't a slogan—it's a standard. Every innovation we engineer, every product we build, and every process we refine is designed to reduce environmental harm and accelerate the global transition to cleaner energy.

We don't just talk about minimizing impact—we prove it:

- Since 1988, our thermal solutions have helped our customers reduce harmful emissions from diesel trucks by 65 times.
- We design electrification and decarbonization technologies that **cut NO_x and CO_2**, improve fuel economy, and **eliminate the need for gas-fired burners.**
- We support the production of renewable **fuels** and **safe, reliable nuclear power,** helping customers worldwide shrink their carbon footprint.

Inside our operations, we lead by example:

- We meet **ISO 14001 environmental standards** and perform rigorous site assessments.
- Our **closed-loop systems** conserve water across facilities.
- We recycle metals, lead scrap, aluminum cans, and circuit boards to keep waste out of landfills.
- We eliminate the need for CO_2-emitting gas-fired burners
- Many Watlow sites have **achieved net zero** status for some years, including Guanzate, Italy, Worthing, UK and Dardilly, France.

We partner with the world's top companies to achieve net-zero emissions – making energy more affordable, available and green.

WATLOW®

Powered by Possibility

watlow.com/contact-us

Document number HA033923 - Issue 1
DECARB-BRO-0825

Published August 2025