Eurotherm®

Energy Efficiency for Electric Heat Treatment Furnaces

VRT and Analog SCR Power Supply Upgrade Solution

Benefits

Installing an EPower™ advanced SCR power supply solution offers significant CAPEX and OPEX efficiency improvements, compared to legacy analog designs:

- Typical power factor > 0.9, helps to meet utility suppliers' power factor limits
- Patented 'Predictive Load Management', helps to reduce demand charge penalties
- Typical energy savings ≈10%, with typical ROI < 2 years
- Helps to achieve a repeatable high performance process
- Condition monitoring for reducing maintenance time and cost
- IIoT ready thanks to multiple communication protocols
- Smaller footprint than a typical VRT

Key Features

- Standardized turnkey solution
- Predictive load management strategies
- Hybrid firing modes
- Load monitoring
- Industrial communication protocols
- High efficiency power transformers
- Customization available
- Supported by Eurotherm engineering service teams and Authorized Solution Provider Network

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Cost Efficiency for Electric Furnaces

The rise in power factor and peak demand charge penalties is driving the need for better energy efficiency in electric heat treatment furnaces. Installing an EPower advanced SCR power controller with predictive load management offers a variety of efficiency benefits, compared to legacy analog SCR and variable reactance transformer (VRT) controlled designs.

Lower Energy Costs

Hybrid firing modes and predictive load management strategies offer energy saving efficiency improvements:

- Typical power factor (PF) better than 0.9 helps to meet the PF limits set by utility suppliers, reducing the risk of PF penalty charges
- Predictive load management can stabilize power demand, helping to reduce peak demand charge penalties
- Typical energy savings ≈10%
- Typical ROI < 2 years [1]

Improve Furnace Performance

High accuracy temperature measurement and precision power control help to improve workpiece throughput and quality:

- High quality heat treatment
- Repeatable performance throughout the furnace temperature range
- Achieve higher Nadcap furnace class temperature uniformity

Typical Energy Saving ≈10%

Reduce Unplanned Downtime

Improved power efficiency combined with diagnostics and health condition monitoring, help to improve overall system robustness:

- Less equipment to maintain - no need for power filters, power factor correction devices or extra water cooling systems
- Monitoring and notification of key parameters provide simplified diagnostics of process fault conditions, for faster maintenance
- Advanced notification of heater deterioration enables pre-ordering and scheduling of replacement parts
- Predictive load management can keep the power demand within the capability of the power line, helping to reduce the risk of power outages

CAPEX Savings

An EPower controller based power supply solution often costs less than an analog SCR or VRT design:

- Expensive additional water cooling and power factor correction systems are not required. Transformers can be air cooled, or water cooled using the furnace cooling system.
- Digital SCR control allows space saving, due to a typically smaller footprint than analog designs
- Ethernet connectivity enables communication with other instruments and platforms, reducing wiring costs and allowing access to key parameters
- Greenfield electrical distribution systems can be a smaller size due to load sharing and shedding, which balances and limits the power demand on the supply

Typical ROI < 2 years [1]

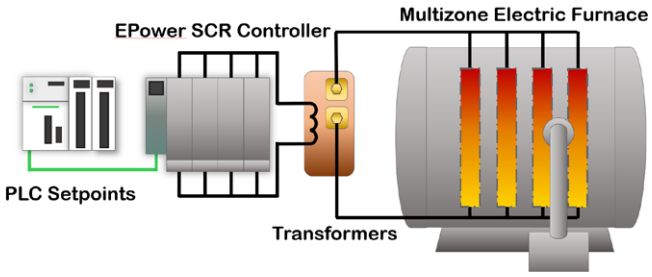
[1] Return on investment is dependent upon local energy rates

A Standardized Upgrade Solution

Data Driven Performance

Support for popular industrial protocols including EtherNet/IP and PROFINET allows easy integration into both new and existing applications, enabling valuable insights into your process, such as energy consumption, measurement tracking, fault detections, and more.

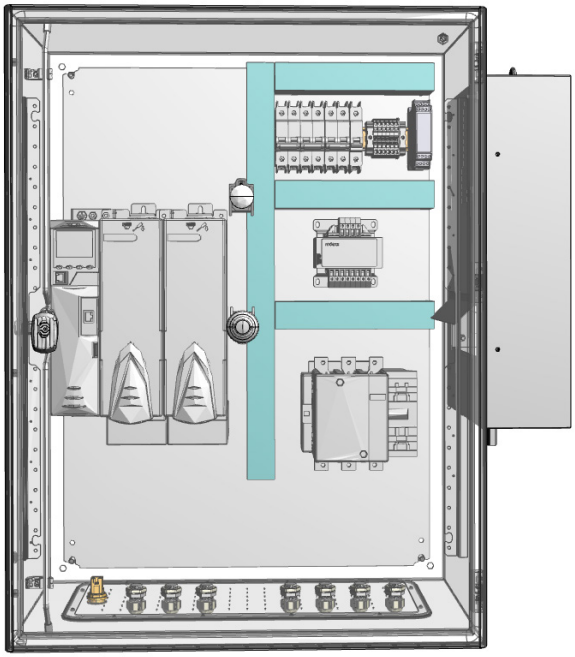
- Easily connects with optional EcoStruxure™ Power Monitoring Expert for an insight into electrical system health and energy efficiency, presented as meaningful actionable information via an intuitive web-interface. EcoStruxure™ is Schneider Electric's IoT enabled system architecture and platform.



A Pre-designed Packaged Solution

The EPower SCR controlled power supply solution is available in three standard sizes to cover a wide range of furnaces, with customization available on request.

- Turnkey engineered solution, including transformer if required
- Available for single phase, or three phase 2-leg or 3-leg power control
- Engineered and supported by Eurotherm engineering teams and Authorized Solution Provider Network
- Customer FIRST service level agreements (SLAs) available



160A cabinet example with 2-leg three phase control

Specifications

Standard power supply cabinet enclosures are built to IP31 rating. IP53 rating is available as an option on request.

Standard Cabinet Dimensions (contact your local sales representative for customized sizes)							
Power Supply	Power Control	Height	Width	Depth	Weight		
					Single phase	2-leg three phase	3-leg three phase
160A Cubicle	120kW/480V [2]	800mm 31.5in	750mm 29.53in	400mm 15.75in	65.1kg 143.53lb	70kg 154.33lb	74.9kg 165.13lb
250A Cubicle	185kW/480V [2]	800mm 31.5in	750mm 29.53in	400mm 15.75in	69.2kg 152.56lb	75kg 165.35lb	80.8kg 178.14lb
400A Cubicle	300kW/480V [2]	1000mm 39.38in	950mm 37.41in	400mm 15.75in	99.2kg 218.7lb	109kg 240.31lb	118.8kg 261.91lb

[2] Power control shown is for a three phase configuration

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