



Eurotherm®

Energy efficiency for electric heat treatment furnaces

Standardized digital thyristor (SCR) power supply cabinet solutions, designed to replace VRT and analog thyristor power supplies

Benefits

Installing an EPower™ advanced thyristor (SCR – silicon controlled rectifier) power supply cabinet 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 analog power supply

Key features

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

eurotherm.com/heattreat

 **WATLOW**
Powered by Possibility

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 thyristor power controller with predictive load management offers a variety of efficiency benefits, compared to legacy analog thyristor 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 $\approx 10\%$
- Typical ROI < 2 years ^[1]

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

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

CapEx savings

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

- Expensive additional power factor correction systems are not required. Transformers can be air cooled, or water cooled using the furnace cooling system
- Digital thyristor 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
energy
saving
 $\approx 10\%$



Typical
ROI < 2
years ^[1]

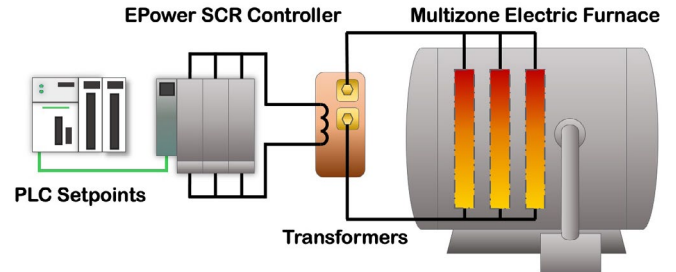
^[1] Return on investment is dependent upon local energy rates

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.

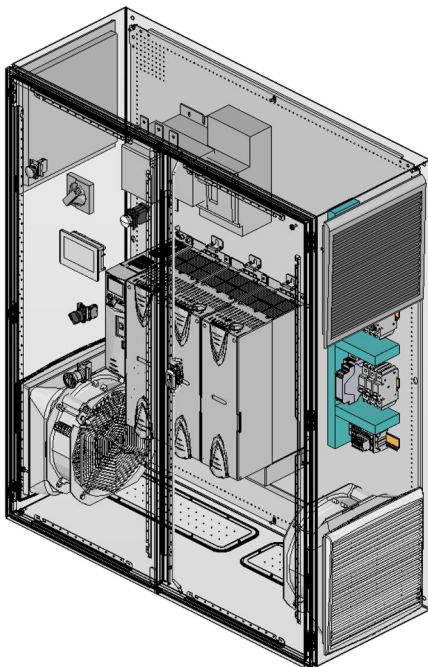
- Easily connects with power monitoring software for an insight into electrical system health and energy efficiency



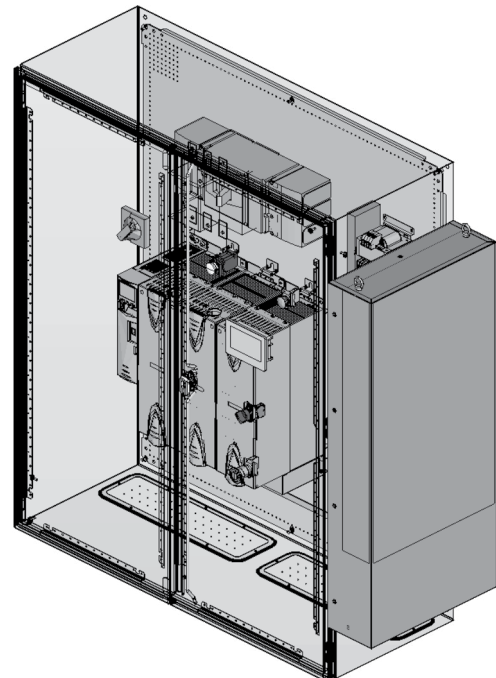
A pre-designed packaged solution

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

- Turnkey engineered cabinet solution, including transformers if required
- Available for single phase, or three phase 2-leg or 3-leg power control
- Cabinets are CE Marked and built with UL Listed products and UL Recognized components. UL Listing of the solution is available on request
- Supported by Eurotherm services and Authorized Solution Provider Network
- Eurotherm services, support, and service level agreements (SLAs) available



400A air cooled cabinet example with 3-leg three phase control



400A water cooled cabinet example with 3-leg three phase control

Specifications

Standard cabinets

Air cooled cabinets (IP31) for single phase and three phase applications ^[2]						
Power supply		Power control	Height	Width	Depth	Weight
160A cubicle	Single phase	55kW 400V	1,000mm/39.4in.	800mm/31.5in.	400mm/15.8in.	75kg/165lb
	2-leg three phase	95kW 400V				80kg/176lb
	3-leg three phase	95kW 400V				85kg/187lb
250A cubicle	Single phase	85kW 400V	1,000mm/39.4in.	800mm/31.5in.	400mm/15.8in.	80kg/176lb
	2-leg three phase	150kW 400V				85kg/187lb
	3-leg three phase	150kW 400V				90kg/198lb
400A cubicle	Single phase	140kW 400V	1,200mm/47.3in.	800mm/31.5in.	400mm/15.8in.	90kg/198lb
	2-leg three phase	240kW 400V		1,000mm/39.4in.		100kg/220lb
	3-leg three phase	240kW 400V				120kg/265lb

Water cooled cabinets (IP31) for single phase and three phase applications ^[2]						
Power supply		Power control	Height	Width	Depth	Weight
160A cubicle	Single phase	55kW 400V	800mm/31.5in.	750mm/29.6in.	400mm/15.8in.	80kg/176lb
	2-leg three phase	95kW 400V				85kg/187lb
	3-leg three phase	95kW 400V				90kg/198lb
250A cubicle	Single phase	85kW 400V	800mm/31.5in.	750mm/29.6in.	400mm/15.8in.	80kg/176lb
	2-leg three phase	150kW 400V				90kg/198lb
	3-leg three phase	150kW 400V				95kg/209lb
400A cubicle	Single phase	140kW 400V	1,200mm/47.3in.	950mm/37.5in.	400mm/15.8in.	105kg/231lb
	2-leg three phase	240kW 400V		1,150mm/45.3in.		115kg/254lb
	3-leg three phase	240kW 400V				135kg/298lb

Contact your local sales representative for customized sizes. IP53 rating is available for the water cooled version on request.

Water cooled transformers (air cooled transformers also available on request)

Single-phase applications ^[2]						
Power supply	Power transformer	Voltage	Height	Width	Depth	Weight
160A	55kVA	400V	400mm/15.8in.	280mm/11.1in.	650mm/25.6in.	290kg/640lb
250A	85kVA	400V	420mm/16.6in.	280mm/11.1in.	700mm/27.6in.	350kg/772lb
400A	140kVA	400V	450mm/17.8in.	320mm/12.6in.	750mm/29.6in.	410kg/905lb

Three-phase for 2-leg and 3-leg applications ^[2]						
Power supply	Power transformer	Voltage	Height	Width	Depth	Weight
160A	95kVA	400V	1,450mm/57.1in.	1,000mm/39.4in.	900mm/35.5in.	550kg/1,213lb
250A	150kVA	400V	1,450mm/57.1in.	1,000mm/39.4in.	900mm/35.5in.	730kg/1,610lb
400A	240kVA	400V	1,450mm/57.1in.	1,000mm/39.4in.	900mm/35.5in.	1,080kg/2,382lb

^[2] Dimensions +/-3%. Weights +/-5kg (+/-11lb).

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Contact your local sales representative

