

### Revolution in the electrification of industrial furnaces with Fuji Electric power controllers

Metallurgy  
Industrial furnaces

#### Mots clés

- Power optimization
- Temperature control
- Energy efficiency
- Electrification
- Industrial furnaces
- Heating

### Industrial furnace manufacturers turn to electrification amidst energy, economic, and environmental challenges

**Industrial furnace manufacturers, particularly in the metallurgy, glass, food processing, and chemical sectors, are facing increasing energy challenges.**

Historically, these furnaces have relied on natural gas, coke, or fuel oil-non-renewable energy sources whose combustion emits CO<sup>2</sup>, the primary greenhouse gas contributing to global warming. Consequently, the European Union has implemented numerous directives to reduce the environmental impact of businesses, aiming for carbon neutrality by 2050 and encouraging the implementation of energy audits.

Decarbonizing industrial furnaces has become a major ecological priority, given that these machines consume up to 60% of the energy used for heating in the industrial sector. With 90% of this energy coming from fossil fuels, transforming their operating methods is crucial in the fight against climate change.

Furthermore, the rising cost of energy in Europe also motivates companies to reduce their consumption to cut associated costs. This expense increase pushes many companies to adopt more sustainable and cost-effective electric solutions in the long term.



### Moving towards sustainable and efficient manufacturing

### In the constantly evolving industrial manufacturing sector, energy efficiency, environmental sustainability, and technological innovation are essential for maintaining a competitive edge.

At Fuji Electric France, we have played a pivotal role in transforming the metallurgical industry by providing power controllers to a renowned manufacturer of electric industrial furnaces. This collaboration significantly reduced the carbon footprint, achieved energy savings, improved furnace quality, increased sales, and enhanced customer satisfaction.

Our journey began when the industrial furnace manufacturer identified a significant challenge: transitioning from traditional gas-fired furnaces to electric heating systems. Natural gas, while offering immense power, also significantly contributes to carbon emissions and rising energy costs.

The transition to electric heating posed numerous challenges, including managing the complexities of electricity while ensuring the new systems could match or even surpass the performance and reliability of their gas counterparts.



**Fuji Electric then intervened with a solution that directly addressed these challenges.**

## Fuji Electric power controllers for accurate and eco-friendly heating power control for industrial furnace electrification

By providing our power controllers, we enabled the furnace manufacturer to revolutionize their approach to industrial heating. These power controllers provide accurate heating power control, ensuring optimal temperature control. In return, this guarantees consistent and high-quality production. This performance is essential for applications involving light alloys, such as aluminum. With quality and reliability paramount in industrial manufacturing, Fuji Electric's power controllers perfectly met these requirements.

The impact of integrating Fuji Electric's power controllers was immediate and significant. The switch from gas to electric heating greatly reduced the carbon footprint of furnace use. Our power controllers optimized energy consumption, ensuring that every watt of electricity was used efficiently. This optimization led to substantial reductions in energy costs, making alloy production more profitable.



### Fuji Electric's power controllers stand out for their ability to adapt to the manufacturer's various types of furnaces.

The advanced features of these power controllers meet the specific requirements of each load and heating element, offering exceptional flexibility. They enable accurate temperature control, essential for processes requiring strict thermal conditions.

This precision is made possible by the power controllers' functions, continuously adjusting the power supplied based on operational condition variations. The soft start features protect heating elements by gradually increasing power, thus avoiding thermal shocks and significantly prolonging the elements' lifespan.



This not only minimizes downtime and maintenance costs but also improves overall productivity.

Furthermore, with advanced communication technologies, the power controllers can also be remotely controlled via intuitive user interfaces. This allows operators to optimize processes without the need for constant physical intervention.

Lastly, Fuji Electric's power controllers are equipped with real-time monitoring features, allowing immediate detection and correction of any deviation from optimal parameters. This ensures that the heating power always remains close to the set point and within defined limits, improving the quality and uniformity of the properties of the alloys produced.

Continuous monitoring of the heating elements' condition also allows for the anticipation of maintenance needs before they affect the final product quality, thus avoiding manufacturing defects and production delays. Fuji Electric's power controllers have therefore improved operational safety by providing continuous, real-time monitoring of critical parameters, enabling quick intervention when necessary.

### This real-time monitoring feature has further strengthened customers' confidence in our solutions.

The results of this electrification using Fuji Electric's power controllers have been impressive. A 20% reduction in energy costs was observed, resulting in substantial savings for the furnace manufacturer and their customers. The innovative control features of the power controllers extended the heating elements' lifespan, reducing maintenance costs and downtime. The furnace manufacturer's reputation for high-quality, efficient, and durable solutions led to significant customer growth and solidified its position as an industry leader.



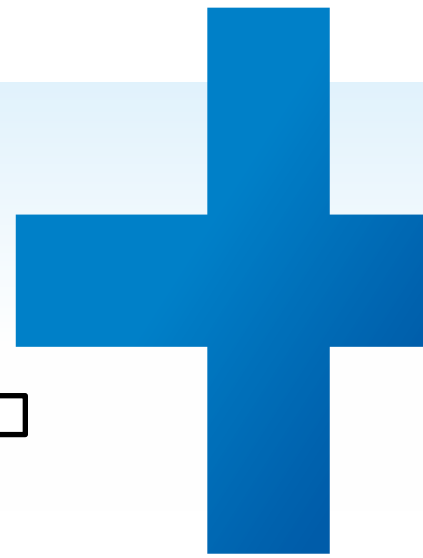
**An engineer from the industrial furnace manufacturer expressed their enthusiasm about the collaboration:**

Working with Fuji Electric's power controllers has been a real game-changer for us. The quality of the power controllers and the level of service provided are exceptional. We have seen remarkable improvements in our furnaces' performance and efficiency. Fuji Electric's commitment to innovation and support has been crucial to our success.



## Your benefits:

- + Improved temperature control accuracy
- + Longer furnace lifespan
- + Significant energy savings
- + Compatibility with various types of loads
- + Reduced maintenance costs



## Our range of power controllers: APRs

### APR-D

Compact solution for industrial applications:



- Accurate phase control
- Multi-load compatibility
- Rapid response to fluctuations
- Easy installation
- Reduced maintenance

### PWM-APR

Energy performance and equipment protection:



- Power factor preservation
- Harmonic elimination
- Overload and short-circuit protection
- Enhanced component lifespan
- Stable output voltage

### APR-V

Advanced versatility for demanding environments:



- Advanced adaptive regulation
- Precise control with a soft start
- Phase imbalance correction
- Multiple feedback functions
- Real-time monitoring and diagnostics



### FUJI ELECTRIC FRANCE S.A.S.

46, rue Georges Besse - ZI du Brézet - 63 039 Clermont-Ferrand Cedex 2 - France  
Phone: +33 (0)4 73 98 26 98  
Email: [sales.dpt@fujielectric.fr](mailto:sales.dpt@fujielectric.fr)  
Web site: [www.fujielectric.fr](http://www.fujielectric.fr)

Fuji Electric cannot be held responsible for any errors in our catalogues, brochures or other printed media. Fuji Electric reserves the right to modify its products without notice. This also applies to the products ordered, if the modifications do not alter the specifications substantially. The registered marks and names which appear in this document are the property of their respective depositors. All rights reserved.