

### Paint booths: How to reduce energy consumption while maintaining optimum quality? | Automotive Paint Booths

Automotive  
Paint Booths

#### Key words

- Automotive
- Bodywork
- Paint booths
- Temperature control
- Quality control
- Energy saving

#### Context

The activity of a car bodywork shop consists of repairing and then painting the bodywork of damaged vehicles. The paint booth is a ventilated, illuminated and heated enclosure for spraying layers of liquid paint and varnish. Its use meets safety standards. It protects against the risks of fire, explosion and even poisoning thanks to its ventilation system. It ensures the quality and speed of painting work. The heating and its temperature control are major components of the booth that ensure that the paint hardens and dries quickly.



#### Challenges

#### The industrial paint booth performs two functions:

The paint is applied by spraying in spray booths (spraying). This stage is carried out at a temperature generally between 20°C and 25°C with a controlled air speed in the booth. For drying, various techniques are used, including the most common one, hot air, which consists of raising the temperature of the booth to 60°C once the application is complete in order to obtain satisfactory results. These two operations are essential for the paint to harden. If these conditions are not met, the paint may flake more easily. Cooling is the phase that ends the painting session. Temperature control is very important for the quality of the work.



The paint booth is the most energy-intensive part of a car bodywork, accounting for about 75% of total energy consumption. The aim is to use the booth as sparingly as possible in terms of heating and duration of use.

The calculations of the dimensions and energy consumption for the heating of a hot-air paint booth are based on the geographical location of the company (minimum outside temperature in winter) and the type of paint used (solvent or waterborne). The use of water-based paints in a hot-air paint booth leads to an oversizing of the thermal power and an energy consumption.

## The Fuji Electric solution

Fuji Electric's PXF high-precision electronic control solution ensures temperature control during the application and drying phases for a perfect paint result.

A two-degree-of-freedom PID control algorithm prevents temperature overshoot. A high-performance microprocessor ensures ultra-fast control to limit temperature variations regardless of the outside temperature and environmental conditions. The temperature is stable and controlled. The Fuji Electric PXF controller reduces the energy consumption of the paint booth air heating.



The 2 temperature set points allow easy change between application and drying temperature. Its large, high visibility display provides improved viewing of the set temperature in all light conditions. Productivity is increased by improving the use of the booth.

The ergonomic and ultra-compact design allows the controller to be easily integrated into new booths or existing systems with minimal cost, space and wiring.

Alarms in the event of overrunning ensure the protection of the booth and the painter. Booth commissioning costs are reduced with the built-in auto-tuning feature that ensures the best accuracy is achieved under the specific conditions. Fuji Electric PXF controllers offer unrivalled uptime and reduce your maintenance and operating costs. They can also be combined with air humidity controllers to match the humidity of the outside air with the required temperature inside the booth.

## Your advantages

- Ensure perfect drying temperatures for your paint
- Guarantee customer satisfaction with unmatched production quality
- Increase your profits by reducing your energy consumption



# Temperature Controller - PXF Series

## Quality improvement and machine optimisation

Highly accurate, stable and ultra-fast 50ms self-adaptive PID control

## Maximum flexibility and wide range of applications

Universal input, hot/cold output, relay, SSR, analogue, servomotor, alarm relay

## Cost-effective integration into your systems

Multi-format, compact with a minimum footprint of 58mm depth

## Ergonomic and easy to use

Large, high visibility colour LCD display with wide reading angle and comfort keys

## Quick and easy installation

Self-tuning, customisable keys and configuration software included

## Designed to last in harsh environments

Waterproof, robust and reliable up to 20 million cycles



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