Fuji Electric

Innovating Energy Technology

How can the quality of automotive materials in testing laboratories be guaranteed?

Laboratory testing

key words

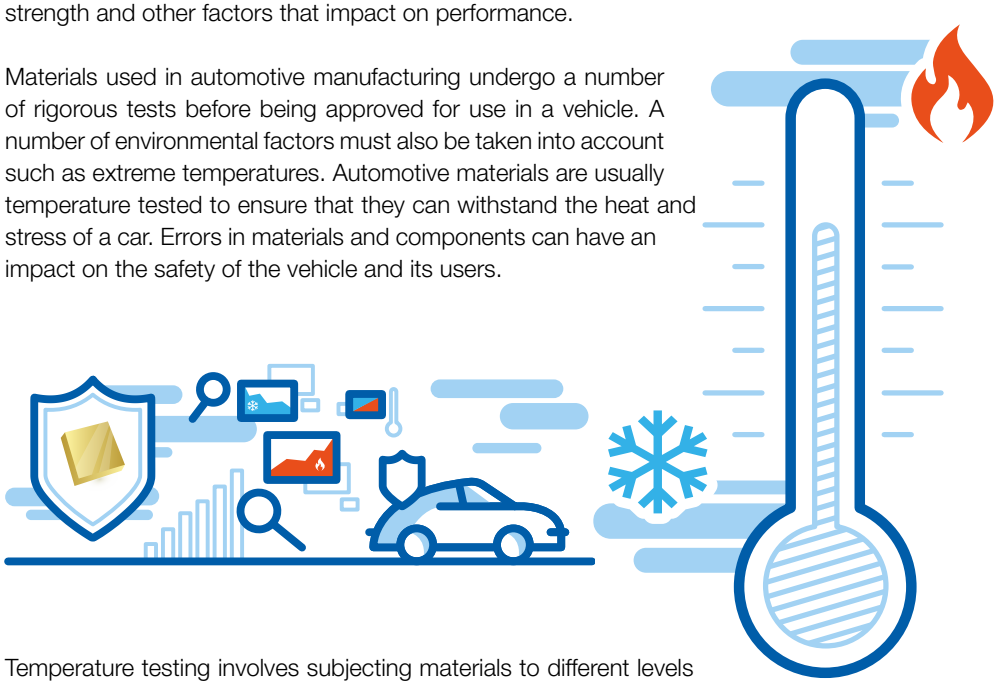
- Test bench
- Test lab
- Temperature control
- Material testing
- Automotive
- Test bed

Car manufacturers have very strict standards for material quality and impact resistance.

Achieving the desired quality of automotive materials is essential in the test lab.

A wide variety of tests must be performed to ensure that the material will meet manufacturing and regulatory requirements. Materials can vary in chemical composition, thickness, strength and other factors that impact on performance.

Materials used in automotive manufacturing undergo a number of rigorous tests before being approved for use in a vehicle. A number of environmental factors must also be taken into account such as extreme temperatures. Automotive materials are usually temperature tested to ensure that they can withstand the heat and stress of a car. Errors in materials and components can have an impact on the safety of the vehicle and its users.



Temperature testing involves subjecting materials to different levels of heat to see how they react. This can be done in a controlled environment or in an uncontrolled environment.

In testing laboratories, temperature control is therefore an essential part of the process. A number of automotive materials have to withstand high temperatures. One way to test their ability to do so is to use a temperature chamber or to immerse them in baths. In this type of facility, the temperature can be controlled and varied to simulate different environments. This allows a more accurate assessment of how the material will react to the heat.

Perfect temperature control is essential for reliable and accurate testing to ensure the robustness of vehicle components.

A temperature control system from Fuji Electric was used to ensure the quality of automotive parts in an automotive testing laboratory.

The system was installed as part of a review of the laboratory's testing processes. The laboratory is responsible for ensuring that materials comply with international standards. The laboratory's requirements called for a versatile temperature control system that could be easily integrated with the laboratory's existing systems and reduce testing time.

Fuji Electric has developed bespoke temperature control systems to facilitate and allow more flexibility for the engineers.

They control boxes allow the temperature of a fluid-filled heating block to be regulated. The temperature of the heating block with cartridge heaters immersed in the oil bath as well as outside of it. The oil is heated to the required temperature in a progressive manner. The controller has ramps to ensure that the oil is gradually heated up to the required temperature. This prevents overshoot and ensures process stability. Overtemperature alarms ensure safe testing.

The control systems offered consist of a rack-mounted enclosure with temperature controllers on the front panel. Thermocouple temperature sensors and PT100 sensors can be connected depending on the test temperatures to be achieved. Solid state relays are incorporated for accuracy, response time and reliability. Quick electrical connectors make testing fast and easy.

A version with a touchscreen and modular multi-loop controllers was also provided to record temperature data and ensure test traceability. The Fuji Electric system ensured reliable and accurate testing and saved time for the laboratory engineers.

Temperature testing with this system ensures that automotive materials comply with international standards.

The Fuji Electric team is committed to providing world-class customer service

We provide support to our customers from the drawing up of the specifications to the integration of the control solution:

Functional analysis, supply of electrical drawings,
user manual and the series of tests to obtain the CE certificate of conformity.

Your benefits

- **Optimise the accuracy and reliability of your temperature tests**
- **Save time in testing with a flexible control system**
- **Ensure compliance with standards through traceability of tests**
- **Reassure your customers about the quality of their materials**

Temperature control solutions

Temperature control box

Solid state relays

PUMA I/O and multi-loop control modules

PXF series temperature controllers

- **Fast integration**
  19” rack mount and universal inputs
- **Plug and play connections**
  Pluggable industrial electrical connectors
- **Simple operation and configuration**
  Compact or modular controller with touch screen
- **Ergonomic interface**
  Visualisation of temperature curves
- **Enhanced safety**
  High and low temperature alarms
- **Traceability of measurements**
  Your data is recorded and saved
- **Documentation included**
  Functional analysis, CE certificate, user manual
- **Temperature accuracy**
  PID control and short response time

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