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INCREASING THE ENERGY EFFICIENCY OF INDUSTRIAL PROCESSES

#energy transition #clean technology #polymer shaping #thermal instruments #thermal simulation

After having acquired new autoclaves, a certain automobile manufacturer requested Capacités's services with a view to diagnosing and optimising the production process of its elastomer parts. More specifically, the equipment manufacturer wished to ensure that the parts it produced were of optimal quality in terms of industry standards. The company hereby demonstrated its continuing trust in Capacités's polymer and elastomer shaping specialists. Their experience proved essential when it came to conducting their thermal instrumentation research directly on site at the manufacturer's production facility.

INSTRUMENTATION AND SIMULATION OF THE ELASTOMER'S CURING AND SHAPING PROCESS

Capacités's role was to diagnose and optimise the production process on a client's industrial site. The company needed to verify that its new autoclaves were functioning correctly in comparison to its older ones. This being a rather rare and unusual project for this sector, Capacités's engineers rose to the challenge by combining their expertise in instrumentation and thermal modelling. They firstly performed a detailed analysis of the functioning of the workshop, machinery and production steps. They then developed and deployed thermal sensors specific to this type of environment (pressurised machines and high-temperature steam) in order to be able to compare the temperatures for all of the autoclaves. Their efforts gave rise to a precise analysis the thermal history of the parts during their production.

The engineers further outdid themselves by predicting the curing temperature of all of the parts, thanks to a numerical model developed specifically for this type of production and for elastomers. Based on the data generated by this model, Capacités's experts were then able to recommend ways to optimise curing. The resulting process improvements not only contributed to enhancing the quality of the equipment manufacturer's parts but also to increasing their energy efficiency.

To successfully complete this project, the Capacités' experts benefited from support and technical equipment from the GEPEA, joint research unit of the Université de Nantes, Oniris, IMT Atlantique and CNRS (The French National Centre for Scientific Research). ■

Expertises:

- Thermal engineering
- Composite materials engineering


CAPACITÉS


Created in 2005, Capacités is the private engineering and research valorisation subsidiary of the University of Nantes. It employs 90 employees, mainly engineers and PhDs, who work directly with scientists in the research laboratories.



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