BMW GROUP

Corporate Communications

Media Information
05 August 2025

BMW Group Plant Regensburg pilots thermal oil system for heat generation in paint shop

+++ Faster, more efficient transition from gas to alternative energy sources possible +++ Pilot project will save around 480 tons of CO_2e per year +++

Regensburg. As it transitions from natural gas to renewable energy, the BMW Group is gradually electrifying its paint shops as part of its efforts to decarbonise vehicle production. A recently concluded pilot project at Plant Regensburg demonstrates how this transition can be simplified and accelerated. The key lies in the installation of a thermal oil system. Using thermal oil as a heat transfer medium enables heat generation to be decoupled from the rest of the system's components. This allows the energy supply to the coating lines to be adapted flexibly at any time.

"One advantage of switching to thermal oil is the flexibility to choose the energy source for heat generation in our paint shops. For example, thermal oil can be heated using electricity, geothermal energy, solar thermal energy – or even a hydrogen-powered heating system. The ability to change fuels quickly at any time makes our paint shops more resilient. If an energy source becomes scarce or unavailable, we can respond at short notice," explains Samuel Flieger, project manager for technical planning in the Regensburg paint shop.

This means paint shops can already be set up to run on renewable energy – even if gas-free heating is not yet an option. The power grid is not currently equipped at all locations to handle the high energy demands of a fully electrified paint shop, largely due to its extremely energy-intensive drying processes. A thermal oil-based system can also be operated with gas as an interim solution.

Company:
Bayerische Motoren Werke Aktiengesellschaft

Address:
BMW Group
Plant Regensburg
Herbert-Quandt-Allee
93055 Regensburg

Telephone:
0941/770-2012

www.bmw-werk-regensburg.de

Testing successfully concluded in Regensburg

The Regensburg pilot project team took advantage of the production downtime over the New Year period to install the thermal oil technology. Within just a few days, they replaced the gas-powered drying equipment used for one of the three top coat lines with an electrically heated thermal oil system – complete with an innovative electric-powered eRTO exhaust air unit.

The key innovation lies in using the new electric heating unit to transfer heat to the thermal oil, instead of directly heating the air around the car bodies in the drying chamber after paint application. The heated oil circulates in a closed loop and, in a second step, heats the air in the drying chamber via heat exchangers. The circulating thermal oil reaches temperatures of several hundred degrees Celsius. Unlike water, it remains stable even at these high temperatures.

Retrofitting boosts energy efficiency

Wherever waste heat is generated, it is recovered and reused as process heat. This reduces the temperature of the exhaust air released through the hall's roof. As a result of these retrofitting measures, the drying equipment's total energy consumption has been reduced by approximately 40 percent. Switching to thermal oil heating, combined with the system's improved energy efficiency, will reduce the carbon footprint of BMW Group Plant Regensburg's paint shop by approximately 480 tons of CO_2e per year.

If you have any questions, please contact:

Christian Dürrschmidt, Communications Regensburg
Cell phone: +49 151 6060 5194, Email: Christian.Duerrschmidt@bmw.de

Saskia Graser, head of Communications Regensburg and Wackersdorf
Cell phone: +49 151 6060 2014, Email: Saskia.Graser@bmw.de

Media website: www.press.bmwgroup.com
Email: presse@bmw.de

BMW Group Plants Regensburg and Wackersdorf

The BMW Group vehicle plant in Regensburg has been in operation since 1986 and is one of more than 30 BMW Group production locations worldwide. Every workday, around 1,400 vehicles of the BMW X1 and BMW X2 models roll off the production line at Plant Regensburg, destined for customers around the globe. Different types of drive trains are flexibly manufactured on a single production line – ranging from vehicles with internal combustion engines to plug-in hybrids and fully-electric models.

BMW Group Plant Regensburg was recognised as "FACTORY OF THE YEAR" 2024 in the category "excellent large-series assembly" of the prestigious industrial competition. As it implements the so-called BMW iFACTORY, the BMW Group is focused on digitalisation of the Regensburg plant site to create a digital and intelligently connected factory. It is already possible to experience in virtual form what the factory will look like a few years from now. Production of models for the NEUE KLASSE, BMW's next generation of vehicles, will ramp up in Regensburg in the second half of the decade.

The BMW Group plant in Wackersdorf is home to cockpit production and parts supply for overseas plants. With the opening of a new battery testing centre and commissioning of the first phase in autumn 2024, the location also makes a significant contribution to electromobility. An entirely new area of expertise is the door and flap centre for Rolls-Royce.

The BMW Group core staff at the Regensburg and Wackersdorf locations in eastern Bavaria consists of around 9,250 employees, including about 350 apprentices.

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