Smartphone solutions assure paving quality way up high

Road construction project with digital documentation and temperature monitoring from Vögele

On the almost 230 ft high Aftetal bridge west of Bad Wünnenberg, contractor Franz Trippe GmbH faced challenging weather conditions and had to meet stringent quality requirements. That's why it opted for machine technology and digital solutions from Vögele. Using WITOS Paving Docu, including RoadScan and Jobsite Temp, the on-site team was able to record paver, job and temperature data on a smartphone, and monitor it in real time.

A new bypass is being built to ease traffic congestion around Bad Wünnenberg in the Westphalia region of western Germany. Scheduled for completion by spring 2022, the new B480 will form part of an extensive traffic axis intended to open up the Hochsauerland area. The most demanding section of the large-scale project, the nearly 230 ft high and 860 yard long Aftetal valley bridge, also posed a number of challenges to the road construction contractor. Due to the height and the exposed location, there was a constant wind blowing, even in good weather, which caused the paving material to cool rapidly. Moreover, the client, "Straßen.NRW", the highways agency of the state of North Rhine-Westphalia, had set the highest quality standards for all aspects of the paving project.

Applications from the machine manufacturer

So contractor Franz Trippe GmbH, based in Schmallenberg in the Sauerland area, decided to handle the project with digital assistance. "We have been prioritizing digital processes for years," says CEO Stefan Trippe. "For example, we work with our own cloud solutions, and use 3D technology for many of our machines to improve their efficiency and precision, as well as to meet the increasing quality and cost demands." In order to continuously monitor temperatures during paving of the B480, and to document job site processes accurately, the company opted for matching solutions from paver manufacturer Vögele: WITOS Paving Docu, including the RoadScan contactless temperature measurement system, together with the new Jobsite Temp app. WITOS Paving Docu enables job and machine data to be recorded on a smartphone and evaluated at the end of the day. In combination with RoadScan, contractors can additionally document and evaluate paving temperatures. Current temperature data is displayed on the operator's control console while working. The new Jobsite Temp app also gives foremen and other users real-time access to temperature data and additional information on a smartphone. It includes the current pave speeds, the screed width, the paver's positioning, and the location of the mix transfer, as well as delivery note information.

All data available at a glance on the phone

"With WITOS Paving Docu in combination with RoadScan, we were able to continuously monitor the paving temperature while meeting all the quality and documentation requirements, despite the harsh weather conditions," says Trippe. The project included paving a 1.4 in thick and up to 39.4 ft wide surface course on two approximately 1.25 mile long sections before and on the Aftetal valley bridge. The team also utilized machine technology from Vögele: a SUPER 1800-3i paver working on two lines in combination with the AB 500 TP1 extending screed. In the high compaction version featuring tamper and pressure bars, the paving screed ensured a high degree of precompaction, so reducing the number of rolling passes needed subsequently. To avoid paver stoppages, and to transfer the material quickly and smoothly, the contractor also deployed the latest-generation MT 3000-3i Offset PowerFeeder. "The machine technology enabled us to streamline our processes, prevent the material from cooling down, and meet all the preconditions for achieving high paving quality," Trippe adds. "In combination with WITOS Paving Docu and Jobsite Temp, we also had all the relevant data constantly to hand on a phone. This meant we could identify the ideal compaction window, take corrective action as and when necessary, and document all the paving-related processes quickly and precisely in paperless form."

Easy to use, reliably monitored

WITOS Paving Docu requires a telematics module installed in the paver, while Jobsite Temp needs the addition of the RoadScan contactless temperature measurement system. The core of that system is the infrared camera, incorporating a GPS receiver, mounted on the paver's roof. On the job site, paving foreman Dennis Voss was then able to launch both applications on his smartphone and connect to the paver using a QR code. The app and the paver are connected over a WLAN network, so information can be exchanged between the RoadScan temperature measurement system and a smartphone even where there is no cell signal. "That's especially useful on remote sites like this one, where there's no network coverage," says Voss. He used WITOS Paving Docu to record all paver and job data, including working widths, pave speeds, and effective paving times. The application also continuously calculated the paved surface areas, material quantities, and surface densities. Voss and his team were able to easily scan and view delivery notes at any time using a QR code. "That obviously saved us a lot of time compared to manual data input, and also meant we had a constant overview of all the delivery notes and tonnages," Voss comments. Voss and his team also monitored paving temperatures in real time using Jobsite Temp. "Because of the wind, we had to continuously monitor the temperatures. The app helped to sharpen awareness among all the staff, including the roller operators, and allowed us to identify the ideal paving and compaction windows." The roller operators could also view their own position and distance from the paver, and define exclusion zones, on the app.

Ideally equipped – including for low-temperature asphalt

This meant the team could optimally coordinate the paving and compaction, and achieve a high standard of paving quality. WITOS Paving Docu enabled foreman Voss to document all the job site data transparently and in full, without having to use labor-intensive Excel worksheets or tablet solutions as was previously the case. He was impressed by the combination of easy use, reliability, and comprehensive information. "WITOS Paving Docu and Jobsite Temp are highly intuitive in design, focused on the relevant data, and need virtually no prior knowledge." The company is planning to use both applications on almost all its jobs in future, particularly where quality demands are specially high, such as when building highways and rural roads, or on industrial sites. "Another increasingly key aspect is low-temperature asphalt, which involves even narrower paving and compaction windows than conventional hot asphalt," Trippe adds. He concludes: "With WITOS Paving Docu, RoadScan and the new Jobsite Temp app, we are ideally set to meet those demands."

Photos:



V\_1344\_058

Working almost 230 feet up: The contractor deployed machinery and digital solutions from Vögele to lay the surface course on the Aftetal bridge.



V\_1344\_353

All temperature and paving data at a glance: With the WITOS Paving Docu and Jobsite Temp applications from Vögele, foreman Dennis Voss was able to coordinate all the workflows perfectly, so assuring high paving quality.



V\_1344\_064

Latest-generation Vögele machines: The SUPER 1800-3i paver and MT 3000-3i Offset mobile feeder enabled the paving team to lay the surface course efficiently and to a high quality standard.

Note: These photos are for preview purposes only. For reproduction in publications, please use the 300 dpi resolution photos available to download from the Wirtgen Group website.

For further information please contact:

WIRTGEN GROUP

Public Relations

Reinhard-Wirtgen-Straße 2

53578 Windhagen

Germany

Phone: +49 (0) 2645 131 – 1966

Fax: +49 (0) 2645 131 – 499

E-mail: PR@wirtgen-group.comPR@wirtgen-group.com

www.wirtgen-group.com