



The logo for Vögele, consisting of the word "VÖGELE" in a bold, white, sans-serif font on a solid green rectangular background.

PRESSE-INFORMATION PRESS RELEASE

Rehabilitation of the runway at Zweibrücken Airport, Germany, with high-tech from VÖGELE.

70% Higher Laydown Rate Thanks to NAVITRONIC Plus[®]

Above all on airport sites, time is a critical factor: the faster a job needs to be completed, the smoother aviation operations can proceed. The time saved on reconstruction of the runway at Zweibrücken Airport was particularly impressive. The contracted company, Heitkamp Erd- und Straßenbau GmbH, rehabilitated the 3km runway in just 31 nights instead of the 50 nights originally estimated. This involved the paving of a 13,500m² section in each shift, although only 8,100m² had been stipulated – achieving a laydown rate that was some 70% higher than required. Along with Heitkamp's excellent planning and implementation, it was VÖGELE's innovative 3D machine control system NAVITRONIC PLUS[®], which made all this possible.

Greatly increased economic efficiency with NAVITRONIC Plus[®]

As early as during the site planning, it became clear that it would not be possible to keep to the tight schedule with conventional grade and slope control using tensioned wires. Even just the laborious task of installing the wires would have drastically reduced the time available for asphalt paving. And so contractor Heitkamp brought NAVITRONIC Plus[®] into play, VÖGELE's unique non-contacting 3D machine control system. It was remarkable that this technology not only made it easy for the contractor to keep to the schedule, but even enabled the paving team to far surpass the requirements. Finishing the job in 31 instead of 50 night shifts – that means 19 less than originally scheduled – brought an immense economic advantage.

Combination of GPS and zone laser supplies precise data

In Zweibrücken, a satellite-based GPS and a zone laser from Topcon picked up the data for the VÖGELE 3D control system. Before construction work got under way, the lasers only had to be set up at a fixed point. This minimal preliminary work, which could be carried out simultaneously with the preparation of the surfaces for paving, greatly increased the time available for paving. As a result of this time saving, it was possible to pave a section measuring 300m x 45m, corresponding to 13,500m², in each night shift. In the planning, an area of only 180m had been assumed. In other words, during each night shift, a 5,400m² larger area was paved on the average compared to the quantity calculated.

NAVITRONIC Plus® – the innovation from VÖGELE

VÖGELE's 3D system not only carries out grade and slope control but also controls fully automatically and with a high degree of precision the screed's position and the paver's direction of motion. It makes no difference whether the values are picked up by optical systems with total station and prism or a satellite-based system with GPS receiver combined with a laser receiver. The innovative 3D control system could really play out its strengths over grade and slope control with tensioned wires. Once NAVITRONIC Plus® had been installed on the SUPER pavers and the data of the project had been transmitted, the system was ready for operation immediately without major preparation. On the Zweibrücken Airport site, it was this fact that enabled the job to be completed on schedule with the specified precision. This was also confirmed by the paving team of contractor Heitkamp which, on previous projects, had already managed very well with this technology.

Reliability of SUPER pavers was a contributing factor

The performance was due to the excellent work by the HEITKAMP team but also, of course, to the great economic efficiency of NAVITRONIC Plus® and the VÖGELE pavers. Two SUPER 1800-2 and one SUPER 2100-2 were on the scene in Zweibrücken, equipped with AB 600-2 Extending Screeds in TP1 version. During

paving, all three machines demonstrated their reliability – a crucial factor in view of the tight schedule.

Paving at night

But the challenge involved in reconstruction of the runway was not just the tight schedule. Air traffic had to be maintained during the job, so that the work could only be carried out at night. All three pavement courses for the 2,950m long and 45m wide runway had to be replaced under floodlights. Each night, just after the last plane had landed, the team of contractor Heitkamp got to work at 10 pm sharp. From then on, they had exactly 8.5 hours until the runway had to be handed back to air traffic at 6.30 am, clean and cleared of all objects. Asphalt paving itself had to be finished at 5.30 am already. This was necessary to allow sufficient cooling of the fresh pavement in order to make sure that it was firm enough when the first plane touched down.

New profile produced fully automatically

Asphalt work kicked off with the paving of base course. As the reconstructed runway was also to be given a new profile, the layer thickness varied. Measuring just 8cm towards the centre, the thickness in the lateral areas of the runway was up to 14cm. The runway's precise geometry was stored as a digital specification in the 3D control system. Based on this data, the parameters for the machines equipped with Navitronic Plus® were set fully automatically. When it came to paving 8cm binder course, the team wanted to be on the safe side, too, for adherence to the specified grade. So they opted to also rely on their VÖGELE "autopilot". Already at the stage of these two lower courses, which had to level out a number of irregularities in the sub-base, the specified profile was built with high precision.

Perfect match for NAVITRONIC Plus® when paving wearing course: the Big MultiPlex Ski

When paving wearing course of just 4cm, the focus was rather on evenness in a longitudinal direction than on the absolute grade. Therefore, grade control by NAVITRONIC Plus® was switched off. NAVITRONIC Plus® continued controlling the screed's position and

the paver's direction of motion, but grade control for the two SUPER 1800-2 pavers was carried out by VÖGELE Big MultiPlex Skis. These multi-cell sonic sensor systems are capable of precisely levelling out even the smallest irregularities. In other words, NAVITRONIC Plus® and the Big MultiPlex Ski are a perfect match.

Three VÖGELE pavers working side by side

The 45m wide runway was paved in six strips of 7.5m each. Three of the strips were paved "hot to hot", with the first and third strip laid by two VÖGELE SUPER 1800-2 pavers. For the central strip, a SUPER 2100-2 was used. All three machines came with AB 600-2 High Compaction Screeds in TP1 version. NAVITRONIC Plus® undertook full control of the two SUPER 1800-2 pavers for the outer strips. SUPER 2100-2, which followed in between, did not need 3D control as it used the freshly paved adjacent strips as a reference and scanned them with two multi-cell sonic sensors.

High demands on logistics

Crucial for a successful execution of the project was not only selection of the right technology but also smooth progression of paving. Therefore, the complex job site logistics had been elaborated down to the last detail. From the project manager through to machine operators, the team worked hand in hand. This was the only way to ensure that up to 3,500 tonnes of asphalt could be supplied and paved in a single night shift. Mix for some 30 feed cycles was stored in a specially prepared hangar on the airport grounds. This mix served as buffer just in case supply from the five asphalt plants might stagnate.

WIRTGEN milling machine removes asphalt pavement

Before the VÖGELE machines began paving, a large WIRTGEN W 2200 milling machine arrived each night. A few minutes after the job site had been illuminated and secured, it got to work and milled off the transition area between the old runway and the freshly paved section. This was necessary as the new pavement was laid directly onto the old one. In order to ensure that planes can safely take off and land during the day, the level of the new pavement had to be adapted to the old one at the end of each night shift. After milling, the

team cleaned the section to be reconstructed next and sprayed tack coat. Then the SUPER pavers took over.

Renewal of drainage system and air beacon

While reconstruction of the runway was under way, the foundations of the boundary lights and the drainage slits were replaced. The overall project also included rehabilitation of all connecting taxiways and aprons, pavement markings and the laying of cable ducts for subsurface and centreline lights. During construction, the lighting systems had to be activated and markings applied every morning before handing the runway back to air traffic – and before the first plane from Berlin arrived, bringing passengers who had not the faintest idea of what was going on the night before.

**** End of Press Release ****

Characters (with spaces): 8,802
Text and photos for download:

www.prewe.com/voegele19.zip

Mannheim / December 2009





Press contact and product information:

JOSEPH VÖGELE AG
Press and Public Relations
Neckarauer Str. 168 - 228
68146 Mannheim
Germany
Tel.: +49 (0) 621 8105 392
Fax: +49 (0) 621 8105 469
✉ presse@voegele.info
www.voegele.info

Please send sample copy to:

PREWE
Michael Endulat
Torfbruchstr. 1
40625 Düsseldorf
Germany
Tel.: + 49 (0) 211 641 22 11
Fax: + 49 (0) 211 641 22 97
✉ michael.endulat@prewe.com
www.prewe.com

Photos:

	<p><i>Voegele_12_1_09_Flughafen Zweibrücken Navitronic_Fig.1.jpg</i></p>
	<p><i>Voegele_12_1_09_Flughafen Zweibrücken Navitronic_Fig.2.jpg</i></p> <p>"Hot to hot" paving: three SUPER pavers working in a team to reconstruct the runway.</p>
	<p><i>Voegele_12_1_09_Flughafen Zweibrücken Navitronic_Fig.3.jpg</i></p> <p>Reliability was crucial: one feed lorry after the other handed over its load to the SUPER pavers operating without any downtime night after night.</p>
	<p><i>Voegele_12_1_09_Flughafen Zweibrücken Navitronic_Fig.4.jpg</i></p> <p>Paving with NAVITRONIC Plus[®] and VÖGELE Big MultiPlex Ski: when paving wearing course, the multi-cell sonic sensor system was used for grade control. The system levels out even small irregularities with high precision, thus providing perfect evenness in a longitudinal direction.</p>