

AIRFIELDS

How Amsterdam's Schiphol Airport prepared for the Airbus A380



Wirtgen's slipform paver SP 1600 easily met the high quality demands at Amsterdam Airport, which specified a maximum tolerance of 5 mm over a length of 3 m in both longitudinal and transverse direction.



Reef Infra's engineers Willem Verstraaten (left), Product Manager Concrete Paving, and Site Manager Tom Steenhagen.



Dowel bars are inserted to ensure the bond between the 10m wide concrete slabs.



Verification measurements during the paving operation showed that the SP 160 worked with maximum precision: level and slope of the concrete surface precisely matched the specified requirements.

In 2006 Amsterdam's Schiphol Airport was ranked Europe's 4th busiest airport having a total of 46 million passengers and 1.5 million tons of airfreight. To retain this top ranking, preparations had to be made to enable the giant Airbus A380 to land, taxi and park at Schiphol.

The suitably large and stable parking and traffic areas were built in front of the terminal between the summer of 2006 and spring 2007, by Dutch contractor Reef Infra B.V., using a Wirtgen slipform paver SP 1600. A special characteristic of this pavement build was the use of wireless control, avoiding the need for stringlines.

The XXL-size aircraft has a maximum takeoff weight of 560 tons, which is higher than that of any other civil aircraft. To accommodate these high loads, the SP 1600 was equipped with a dowel bar inserter (DBI) which reinforced the concrete by inserting dowel bars with a diameter of 45 mm at 5 m intervals. The paver's central tie bar inserter (TBI) inserted longitudinal tie bars to reinforce the concrete across the paving direction. The slipform paver was additionally equipped with a heavy-duty oscillating beam and super smoother to ensure good surface evenness. A well-rehearsed team followed behind the slipform paver, applying a special manual broom finish and spraying a dispersion to prevent the concrete from drying out.

Less personnel + less time = cost savings

A surprisingly small number of personnel were required to carry out this pavement job. In addition to the site manager and truck drivers responsible for transporting the concrete, no more than 2 machine operators, 6 concrete workers and 2 crew members taking care of the wireless control system worked in the immediate vicinity of the Wirtgen slipform paver.

Wireless control produces perfect concrete surfaces

Using proven paving machines combined with a highly mature machine control

system, which furnishes all signals for steering and height adjustment, enables the slipform paver to achieve a high degree of precision. In this project, the specifications for cross-section, line and level of the concrete pavement were not fed into the machine's control system by scanning a stringline, but via the computer of the wireless 3D levelling system. This 3D controller made by Leica Geosystems uses a special interface to communicate with the SP 1600's standard levelling and steering controller. This system has been used in other applications, such as rail slabtrack.

Concrete paving without using stringlines saves a lot of time: costs are incurred neither for surveying and installing the stringlines nor for their subsequent removal.

Work becomes easier also for the drivers of transport trucks and mixer trucks, since they need not pay attention to tensioned stringlines and can drive directly up to the paver. This saves both fuel and time, thus increasing the overall profitability. The system also provides increased safety for the crew working on site, as the wireless system eliminates the hazard of stumbling over the stringlines.

The system also offers a higher degree of operational safety: touching the stringlines may alter their surveyed position, resulting in an incorrect position of the paved concrete layer. This is particularly critical, because damages to the stringlines or an alteration of their position are not necessarily visible to the naked eye. This cause of sometimes serious mistakes is eliminated completely when using the wireless control system.

A positive side effect: reducing costs! All the contractor has to do is engage a surveyor to establish the digital data model. And that service is much less expensive than the time-consuming installation of stringlines. Taking care of the wireless control system on site does not necessarily require a surveyor or an engineer but can also be easily performed by appropriately trained technicians.