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Innovations in concrete paving with new technology

The start of 2016 has seen major developments in the concrete paving sector - Mike Woof writes So far in 2016 there have been several major developments in the concrete paving equipment market. Many of the key players have introduced new models, broadening their ranges of machines on offer. US firms continue to dominate this niche area of the construction equipment market, with one European company being the only other major international player. At least two Chinese manufacturers have unveiled concrete

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Designed to be versatile, GOMACO's GT-3300 now has extra capabilities

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US firms continue to dominate this niche area of the construction equipment market, with one European company being the only other major international player.

At least two Chinese manufacturers have unveiled concrete pavers in the last few years. But these have not been proven on the international market and the designs may not suit global requirements, as well as having fewer capabilities and options than western models. The proven players from the US and Europe have all embraced 3D machine control technology for their machines, allowing these units to deliver high efficiency onsite but it is not clear if the Chinese machines are able to use these systems. For some time to come, the US and European firms will continue to lead this market.

GOMACO has a particularly strong presence in the concrete paving market and is looking to retain that position with the unveiling of two new slipformers, the GP3 and the latest version of its GT-3300.

The firm claims that the GP3 features a wide array of high performance capabilities, making it the most intelligent paver on the market. This paver can handle large road and runway jobs and offers a maximum paving width of 9.14m, achieved through the development of a novel dual-telescoping system. The firm has designed the frame widening system so that it is capable of multiple width changes, boosting its adaptability for a wide range of operations.

The multiple width changes are achieved by the machine having a roller frame, which offers dual telescoping capabilities of up to 2.13m on each side. The design allows for 4.26m of frame widening, controlled by the double parallel, hydraulic telescoping frame members at the front and rear of the mainframe. Smart cylinders in the roller frame provide the telescoping action. The machine also has a T-beam mounting rail integral with its telescoping frame.

Sophisticated smart leg positioning and smart steering capabilities mean that the machine can be guided more accurately due to its full-steer tracks. And an automatic width reference helps with steering setup. Key operating features of the smart leg positioning system are the sensors incorporated into the hydraulic rotational drives, mounted on the pivot arms of each of the four legs.

The units on the legs feed data about track angles to the G+ control system. With the machine functions controlled by the firm's latest G+ digital control system, the tracks either round a curve or maintain a straight line as required. This allows the GP3 paver to turn tightly and the various features also work with the G+ control system to provide accurate control of direction and speed of track travel through a radius.

As well as offering a wider range of capabilities onsite, the new telescoping and steering systems help when it comes to transporting the machine from one location to another. A steering mode switches the legs to the transport position, while full retraction of the frame brings machine length down to 10.15m for transportation.

The sophisticated G+ Connect package means that the sophisticated accessories and guidance package for the GOMACO paver can be linked to the latest 3D stringless guidance technology. The G+ Connect system can also work with other systems such as an IDBI, tie bar inserter (TBI), power transition adjustor (PTA) and GOMACO Smoothness Indicator (GSI).

And the GP3 machine the firm exhibited at the bauma 2016 exhibition in Munich is now being used at a site just over the border in Switzerland. This is paving a slab 5m wide by 250mm deep at a site in Rothrist. The machine is fitted with the GOMACO Remote Diagnostics (GRD) package and with this, the software for the G+ controller was updated recently from the factory in Ida Grove, Iowa.

GOMACO's GT-3300 paver meanwhile has long been one of the most versatile units in the firm's range. With the latest modifications to the GT-3300, GOMACO says the machine is more versatile still, while also benefiting from developments in technology, such as the new version of the G+ control system that can interface with either a conventional stringline or 3D guidance package. As with the GP3, the revised GT-3300 now has smart leg and track positioning for tighter turning. Another new feature is the smart telescoping mold mounting system, which allows both right side

and left side paving. It has a symmetrical design to permit paving on either side, while the control console can slide from side-to-side to suit pour direction.

To allow paving on either side, the machine has a 6.1m conveyor with four-way hydraulic positioning for accurate concrete placement into the hopper. The positioning function includes pivoting tilt, pivoting swing, longitudinal slide, and side-shifting.

Tight steering is achieved by hydraulic rotational drives fitted to the tracks and G+ controls. The two front legs are mounted on parallelogram-style pivot arms while the rear leg has a power slide for positioning.

Another feature is the smart telescoping mold mounting system. And the machine is equipped with GOMACO's Hook-and-Go mold mounting system to change from one mold to another, while the trimmerhead and mold side-shift and vertically adjust to clear obstacles so that the GT-3300 can pave next to obstacles.

A new and more compact slipform paver is being introduced by Guntert & Zimmerman (G&Z) in the shape of its new S400 model. G&Z has specialised previously in building large slipform pavers, for use in major road, airport and canal construction. However the new S400 is the latest in a series of smaller and more compact machines, following on from the S600 launched previously. According to G&Z, the S400 meets customer needs for both versatility and productivity and targets a market with contractors looking for a more compact slipform paver or wanting to expand existing fleets. The firm says that the S400 is basically a smaller version of the larger S600 that can be used for single lane paving duties or handling tasks such as New Jersey barrier slipforming using an offset mold.

As such, the new S400 retains proven design features from the existing S600 and has been developed to offer an even wider range of capabilities, suiting this smaller and more compact class of slipformer. However the company says that ensuring the new machine delivers high productivity has also been a key parameter during its development.

The new S400 is equipped with G&Z's highly sophisticated EGON operation and guidance system. Key features of this package include remote diagnostics as well as the firm's NoLine stringless integration technology. The firm says that the S400 can be used in conjunction with different 3D machine control technologies, allowing the customer to choose which system best fits the needs of the job.

The firm has opted to retain the proven SmartLeg turnbuckle system on the S400 as this design allows faster width changes, a key issue for a smaller slipformer intended for handling a wide range of duties. Rapid width changes can also be made using G&Z's proven TeleEnd system.

The machine is also equipped with G&Z's proven AccuSteer system, which allows it to handle slipforming work on tight radius curves, such as kerbs in parking areas, low speed roads for new housing construction or roundabouts.

The machine's novel telescopic tractor frame design allows for a wider array of paving widths than earlier machines in this class, from 2-5.3m and up to 7.5m if using extensions. Versatility is further ensured by the availability of a DBI option if required, while customers can select from a wide array of mold types. A wide range of options is available including a trailing finishing pan, an oscillating correcting beam, a concrete tamper bar, a water spray bar and split guillotine sideforms. Customers can also select computer-controlled vibration monitoring, a computer-controlled crown/transition system, a narrow profile paving kit and a final finisher.

The firm says that the machine can be used in zero clearance applications, while offering good all-round visibility is claimed from the operator platform.

Customers can choose from either a Tier 4 Interim engine or a Tier 3 diesel to suit local market needs as well as the availability of low sulphur diesel. Both of these Cummins diesels are rated at 125kW and are said to be fuelefficient, with low operating noise.

German firm Wirtgen continues to develop its slipform paver line-up with the addition of the SP 60i series and SP 90i series machines. In addition, the company is introducing its TC180i texture cure machine for finishing work.

The firm says that the SP 60i models are designed to be versatile and able to handle a range of applications. Meanwhile the larger SP 90i series can be used for duties such as highway or runway construction. Both the SP 60i and SP90i models are said to benefit from the firm's new Eco Mode engine management system, which suits power output to the job, as well as a 3D interface Easy Connect package.

The SP 60i range replaces the earlier SP 500 with a choice of the SP 61i, SP 62i and SP 64i. These variants are driven by either a 180kW Tier 4 Final/Stage IV diesel or a 155kW engine for Tier 3/Stage IIIA emissions ratings.

The SP 60i models can be used for inset and offset paving to thicknesses of 350mm. The machines can handle maximum widths of up to 6m when using a dowel bar inserter (DBI) or 7.5m without.

The three- or four-crawler versions of the SP 61i can be used to slipform large or small concrete profiles to its left or right for offset duties. The SP 64i can have four hydraulically moved swivel arms, allowing it to switch quickly from transport mode to working mode. When using the firm's optional Paving Plus package, the machine can be driven around obstacles during paving jobs.

A key feature is the sophisticated operating concept, which the firm claims optimises control and provides a more consistent paving quality. The machines are equipped with a central control system and four local control systems. These remote controls can interface with the crawler tracks to reduce set-up times. Meanwhile standardised interfaces and a BUS system are said to ensure a high degree of versatility as they allow further upgrades to the machine.

Built along modular lines, the machines can also be fitted with further components to broaden their capabilities, such as a wide array of molds. Customers can select different slipform systems for inset

or offset paving. The latter are supplied with various options, such as trimmers, different conveyor belts or augers to feed the offset slipform.

Moving up in scale, the SP 90 series includes the modular and versatile SP 92i and SP 94i models. The modular SP 94i inset version has four steered and pivotable crawler tracks and can produce concrete pavements 3.5-9.5m wide, with thicknesses of 450mm.

Options for this machine include a DBI, tie bar and side tie bar inserter, as well as different slipform systems and the SP 94i can be modified to handle a wide array of duties. According to Wirtgen, both the SP 92i and SP 94i offer high accuracy paving, while being easy and comfortable to operate through a working shift.

Meanwhile the new TCM 180i is a selfpropelled texture cure machine, which can provide a high-quality finish and help to cure concrete pavements. Features include automatic spraying and brooming while the machine suits working widths from 4-18m.

Power comes from a Tier 4 Final/Stage IV engine, which can also be equipped with an additional diesel particulate filter (DPF) if required for ultra-low emissions performance.

The new control system uses the same inhouse technology as the SP 90i and SP 60i pavers. The machine has a console with new service and control functions, optimising work processes. Meanwhile the advanced hydraulic drive means that the traction system can be switched between working and transport mode speeds. It also has proportional control for accurate height adjustment.

The machine is able to handle transverse brooming and spraying applications.

However updates due shortly will also allow longitudinal brooming and spraying as well as the application of a diagonal finish. Users can also fit the machine with mounts for a burlap or synthetic turf for different finish requirements.

A film unwinding device is fitted that can protect the concrete surface from rain. By switching the machine into reverse gear directly behind the slipform paver, it can be used to spread plastic sheeting.

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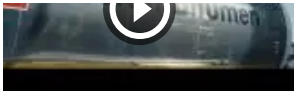


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