SMOPYC 2008: PREVIEW OF TECHNICAL INNOVATIONS

SMOPYC 2008, the International Show of Public Works, Construction and Mining Machinery, will be held at The Zaragoza Trade Fair Centre from 22 to 26 April., Innovation will once again be the keyword, as can be seen from this first preview of the latest in machinery, equipment and components that will be on view at the contest. In February, the winners of the Technological Innovation Awards will be announced.

Many of the participating companies see SMOPYC 2008 as the ideal platform from which to launch their latest developments. A large number of them also take their new products to the prestigious Technology Innovation Awards, which gives invaluable recognition to award-winning products and the companies that create them. This latest edition of the industry’s most important annual event will see interesting innovations from all sectors and sub-sectors. The spacious demonstration areas will allow visitors to witness the innovatory impetus of a sector whose growth objectives continue to be achieved year after year. Below is a brief outline of some of the main contenders for the SMOPYC 2008 Technological Innovation Awards.

Earth moving machinery tends to amongst the biggest attractions at SMOPYC. On this occasion, one of the highlights promises to be a 35 tonne chain excavator with an innovative control system that makes use of GPS and communication satellites to allow total fleet control. This system provides information on the position of each machine, which machines are in operation and for how long, and different maintenance parameters and safety warnings or alarms. In addition, efficient fuel consumption, low engine emissions and noise levels and excellent ergonomics all add up to greater productivity. Also on view will be a compact and versatile back hoe loader, which can operate as a loader, excavator and compact tractor: three machines in one capable of doing variety of jobs. It has a detachable rear section and an optional three point hitch and rear power take off to which a wide range of accessories can be added.
The **Compaction** sub-sector will showcase a 1,600 Kg vibrating tandem roller for compacting earth and asphalt. It can operate in all terrains and outstanding features include its high-capacity water and fuel tanks, which do not require refilling until the working day has ended, thereby adding to productivity. In addition, it is extremely ergonomic, user-friendly and comfortable. Also on view will be new developments in energy-efficient **mono-cylindrical compactors**, which incorporate electronic control of both the combustion engine and the hydraulic system. These machines improve significantly on other products on the market, with reductions of 25% in fuel consumption and gas emissions. Of great interest too is a new **intelligent compaction** technology, on the market for the first time. This consists of rollers with a vibration controlled exciter system that can be automatically or manually changed from vertical to horizontal. It can, therefore, constantly modify compaction force with its control system based on material rigidity. It boasts a DGPS positioning system and its data control and BCM 05 documentation system provides operators and project personnel with a real time map of completed work. Other advantages of this technology include maximum compaction productivity, lower cost, higher quality and enhanced quality control.

The **Aggregates and Concrete** sub-sector features a **mobile mortar factory truck**. This “mortar factory” is designed for the application of self-levelling mortars and carries out the entire process, from mortar-making to the pumping of the finished product. Filling the truck with sand, cement and water enables a specific mix to be produced for any application and separate stocks of these raw materials result in lower costs. This machine can produce 18 m³ of mortar in a single load, has a pumping capacity of 8m³/h, and a pumping pressure of up to 35 bar. It has a range of over 20 pumping plants in height and 200 metres in length. For aggregate extraction installations, there is an **ecological and universal riser**, a totally innovative system, in that its operation does not require energy resources or water. This makes it ten times more economical than existing systems. It has a high-density polyethylene modular structure and when installed at the unloading end of a conveyer belt, it acts as a riser for material without any dust emission.

As regards components, in the category of **wear materials**, there is a double-reinforced and adaptable loader penetration tooth. This piece is light, compact and resistant. Its innovative design significantly lengthens its useful life and thermal treatment technology makes it highly resistant to abrasion. Another very interesting implement on view will be an **electro-magnet for crusher buckets**. This enables demolition crushing tools to be carried without interruption to the work and without risk for the operator, who can control the process from inside the excavator. The electro-magnet allows the demolition tool to be removed and loaded in its container or directly in the bath. It offers increased operational security and considerable savings in time and money.

The elevation and handling sector will showcase a modern tower crane, with a 52 metre boom, a tip load of 1.15 tonnes and a maximum load of 5 tonnes. It stands out because of its advanced technology (new mechanisms, excellent safety and numerous accessories) and efficient topless design. Its radio remote control features man-machine dialogue, which allows for enhanced safety and productivity by providing information on such parameters as: load weight, wind speed, radius of gyration, height and momentum. This helps to avoid accidents and facilitates faster and improved load manoeuvrability.

Another development comes in the form of a **telescopic boom** with a maximum working height of de 43 m and a maximum reach of 20 m. It has the lowest gyration radius and rear extension on the market, making it extremely precise and manoeuvrable and very useful for working in small spaces. It is a highly productive machine and thanks to its 180º (+90º/-90º) horizontal displacement, its transport length is reduced considerably. It can therefore be transported by standard means, resulting in lower transport costs.
Also on view will be a high-capacity formwork transport platform, with cabin dimensions of 4.1 x 4.5 metres and a single access ramp door. It has a rack and pinion drive hoisting system and a great advantage is that it can be suspended between two slabs. It can also be transported by crane once it has been mounted. There will also be an innovative scaffolding goodslift, designed to be installed on the interior of a classic tubular scaffolding structure, thereby avoiding the need to occupy additional space on public thoroughfares. The layout of the different components: engine, gears, control panel and the size and configuration of the basket mean that it can be comfortably installed in a space of 1.5 by 0.7 metres. Its design makes it ideal for refurbishing or remodelling work, where the structures of the building have already been consolidated or even finished. Another eye-catching machine is an aerial work platform on tracks with a maximum working height of 23 m and a horizontal reach of 20 m. Manufactured from special steel, it is a compact and light machine (3.000 Kg) designed for access to difficult, sandy, muddy or grassy terrains. Other advantages include increased safety due to the kinetic boom mechanism and low gas and noise emissions.

Nor will there be a shortage of innovations in the area of Industrial Vehicles and transport. Of note is a utility maintenance vehicle for mine tunnels and drives. The vehicle has two parts: the front part is a tractor head with a swivel drive front section and at the rear there is a platform with a boom capable of hoisting a basket for an operator or for mounting other equipment such as a hydraulic hammer. Its advantages include dimensions, height and low radius of gyration, which enable it to operate in areas inaccessible to other vehicles. In addition, it can be used for many different tasks and maintenance and repair work is simple.

Another first on the market to be presented at SMOPYC 08 is the Minidumper, on tracks or wheels, with a self-loading, high-discharge bucket. It is battery-run, and therefore has none of the adverse effects of carbon combustion, whilst maintaining capacity, quality and versatility. Amongst the many notable advantages of this machine are the absence of gas emissions, fumes and noise and the fact that it is not inflammatory. It is energy-efficient, comfortable and safe to operate, whilst being extremely versatile and ideal for work in a multitude of enclosed spaces, old city-centre areas, beaches, public parks etc. Also on view will be a new engine for construction transport vehicles. This engine complies with Euro 5 emissions regulations without the need for additives (urea) in exhaust gas treatment. It is the only engine with these characteristics and it eliminates the need for a second tank for the urea solution. The new engine has many advantages. It increases the simplicity of the vehicles. There is no need for a second supply tank. Chemical agents are not handled and useful load capacity is increased through the reduction in dead weight.

Innovations in auxiliary equipment for the construction industry have common objectives such as increased safety and task simplification. One of the innovations in this sector is a rapid discharge strut with a system to separate legs from body, thereby preventing the legs from falling in crane movements. It has a regulator which uses a buffer-screw system. This strut complies with E.U. regulation EN1065 and offers higher productivity, greater safety and high load resistance. Also on display will be a universal autodumper for carrying waste and other materials by remote-controlled crane. This equipment allows loads to be tipped without manual operations. It has a single-arm system with interchangeable vessels which this makes for safer carrying and dumping. It also increases productivity in terms of waste management and internal works logistics.
SMOPYC 2008 will also see a small, practical, portable, independent screw compressor, manufactured at 7.10 or 15 bar, with a flow of 1.2 m$^3$/min. Its main advantages are its size, its lightness (192 Kg) and its design, which allows it to fit in narrow spaces. Another new piece of equipment that will be on display is a compact inverter generator with high quality current and low noise levels. It has an LCD control and self-diagnosis panel. It is much lighter and smaller than traditional generators and can be used with any electrical appliance.

With respect to safety equipment, highlights include new multi-functional anchoring devices designed to secure safety systems to resistant elements on construction sites. As opposed to other rigid and difficult-to-anchor safety systems, these devices can be installed quickly and easily. In addition, they are open, simple, light, ergonomic and adaptable open textile systems that can be used for both collective and individual protection. Also on view in the safety area will be a piece of collective protection equipment composed of a fold-away davit for holding nets and specific fork supports to attach them to the slab. The equipment also closes off the work platform through extensible galvanised sheet metal guardrails. Its main innovative advantage is the fact that it is fold-away. This favours mounting, transport and storage.

Finally, SMOPYC 2008 will also host innovations in components, testing equipment and management software. An example of the latter is a new tool enabling total machinery fleet management for the administration of concrete autopumps. This system has a single satellite control system for all the machines in the fleet and enables them to be viewed individually or collectively. It also allows machine deployment for the construction work to be calculated. This tool helps to optimise the profitability of human resources and machinery fleets and it facilitates equipment registration, management and control processes. Another very useful piece of software is a program to calculate the floor load transmission in the construction of multi-storey buildings. The program is based on matrix calculation that enables more precise results than traditional or simplified methods, and it therefore optimises the construction process as well as safety. One of the highlights in the area of measurement systems is a system that calculates the stability of long-reach demolition excavators. It consists of a visual electronic device that optimises performance and offers greater safety. It can calculate the risk of overturning with great precision due to its large volume of input data. The resulting information is shown both on the device’s display unit and on its warning systems.