

# ATLAS COPCO ROAD CONSTRUCTION



**A TOUGH CHOICE** *PAGE 4*

**DOCUMENTED COMPACTION** *PAGE 3*  
**TWENTY FEET TO SAFETY** *PAGE 6*  
**PAVING AND SAVING** *PAGE 7*  
**INTELLIGENT COMPACTION** *PAGE 8*

**#02**

A MAGAZINE FROM  
ATLAS COPCO  
ROAD CONSTRUCTION  
NO. 2 / 2016

**Atlas Copco**

## SUMMARIZING AND LOOKING AHEAD

Another Road Construction Year is reaching the end. Time to reflect a bit on 2016, but even more to look ahead to 2017.

The current year showed a mixed picture with some construction markets returning to growth, whereas some others have still been suffering from a low business cycle or political disorder which impacted business development.

2016 has really started for the Road Construction Equipment Division with a successful Construction Technique Event in Antwerp - Belgium, where the major product innovations for the year were presented. And this well in advance of Bauma 2016 in Munich.

A new CA1400 soil roller, the new SD1800 paver and the next version of Dyna@Lyzer were presented, as well as a 5 meter long offset belt for the unique MF2500 material feeder. Most of these innovations have already proven their effectiveness on various jobsites. Continued product innovation and widening of customer benefits will remain key in our product development strategy.

The deployment of this RCE strategy will also continue in 2017. Our product innovation efforts will not stop. The production start of the new large CC tandem roller will take place in the first quarter of 2017, followed later in the year by the production start of the new small tandems

CC1100-1200. In addition, one can expect further innovations on the material feeder and some of the paver products.

We will also continue the focus on the milling segment, with the selective launch of the first new planer models and extended market actions to cover the global market with our high quality milling tools.

In the Aftermarket department, the main focus remains on assuring excellent parts availability, effective product support, proper product quality management and extensive technical training.

2017 is also a Conexpo year. Product innovation and increased customer benefits will again be the key elements on display at our booth in Las Vegas. Obviously, the main product focus will be on our local American portfolio with a selection of pavers, rollers and Aftermarket products.

We would like to thank you all for your continued efforts to sell and to support our Road Construction products, and we look forward to serving you again in 2017.

We wish you all a Merry Christmas and a Happy New Year.

*With our best regards  
The RCE Management Team*

# ROAD CONSTRUCTION

PUBLISHER Anna Stenlund  
anna.stenlund@se.atlascopco.com  
PRODUCTION Communication, Road Construction

COPYRIGHT 2016, Atlas Copco AB, Stockholm  
WEB [www.atlascopco.com](http://www.atlascopco.com), [www.dynapac.com](http://www.dynapac.com)

*The YME platform on location at Lutelandet ready for decommissioning. Image courtesy of Lutelandet Offshore AS*

*Decommissioning requires*

## Documented Compaction

LUTELANDET OFFSHORE IS DEVELOPING A SITE FOR DECOMMISSIONING OF OFFSHORE EQUIPMENT SUCH AS OIL AND GAS PLATFORMS, ETC. THE SITE IS LOCATED SOME THREE HOURS NORTH OF THE CITY OF BERGEN ON THE NORWEGIAN WEST COAST. PLANS INCLUDE ONE OF THE LARGEST DRY DOCKS IN THE WORLD AS WELL AS HUGE ON-SHORE AREAS (1,400,000 M<sup>2</sup>) FOR DISMANTLING THE PLATFORMS UNDER ENVIRONMENTALLY SOUND CONDITIONS.

The Norwegian contractor Helldal A/S was selected to manage the earthworks including blasting, filling and compaction of huge amounts of rock fill material. Compaction requirements were extreme and this called for the use of a Continuous Compaction Control system. A Dynapac CA6000 was selected for the job. Equipped with the DCA-S system and a centimeter accurate GPS receiver, it is capable of compacting rock fill in layers of up to two meters while at the same time creating an accurate map of the number of passes performed by the roller as well as the Compaction Meter Values (CMV) achieved.

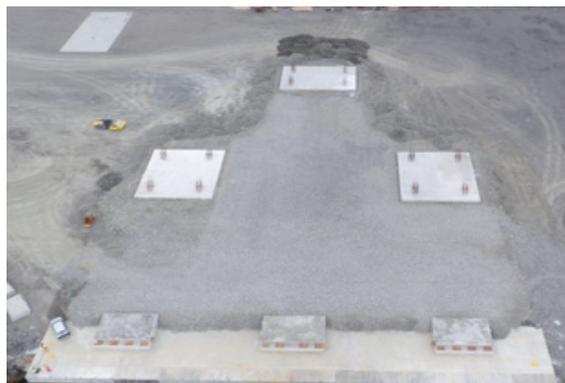
The pass count map is an excellent tool to help the operator achieve the right number of passes and make sure the entire area is compacted evenly with high productivity. The CMV map is used to locate any weak areas with lower strength. These areas, if found, are then targeted with corrective actions such as additional passes in order to increase the strength. Replacing material in certain areas may also be required to reach the required quality.

August 23, 2016 saw the first platform landed on site at Lutelandet. The three-legged YME, 72 m long and 87 m high, and weighing 14,000 tons, was transferred in a spectacular move from the transportation barge to the dismantling site on shore. The base consists of compacted rock fill on which concrete foundations have been constructed to support the immense weight of the platform.

Prior to this move, the platform was lifted from its offshore position by the custom-built heavy lift ship Pioneering Spirit (which belongs to Allseas, a Dutch company specializing in offshore operations).



*CMV map showing the stiffness of the compacted material overlaid on the design drawing. Reporting compaction data in a clear and precise manner. Image created by contractor Helldal AS.*



# A TOUGH CHOICE - RICHLY REWARDED

THE STRADE & AUTOSTRADA EDITORIAL STAFF VISITED THE TREVISO BYPASS SITE ON HIGHWAY SR 53, WHERE A.E.B. COSTRUZIONI GENERALI IS LAYING NEW ASPHALT PAVING USING ATLAS COPCO EQUIPMENT

ACCOMPANIED BY MR. LUCA ALBERIGHI, VENETO AREA AGENT FOR ATLAS COPCO ITALY, ROAD CONSTRUCTION EQUIPMENT DIVISION, THE ITALIAN MAGAZINE STRADE & AUTOSTRADA MET SURVEYOR SEBASTIANO PASTORELLI, SITE MANAGER FOR A.E.B. COSTRUZIONI GENERALI SRL.

## THE SITE

The work consists of routine maintenance at the Treviso Bypass. The client is Veneto Strade SpA. Work began on September 26 and ended on October 7, and is part of a framework agreement with the contracting authority, Veneto Strade SpA, for a period of 18 months from the delivery date. This has kept A.E.B. Costruzioni Generali busy with routine maintenance of road surfaces under the customer's supervision.

It was a glorious day in early autumn. Work had been under way for a few days at the site, which already had a completed stretch of 4.5 km on the Treviso Bypass, on the section leading to Silea. Three Dynapac machines were working on re-paving and compaction on a mat width of 4.8 to 6 meters. The equipment was operating at a brisk pace and in a well-organized manner. The new six-wheel-drive SD2500WS finisher was being regularly fed by 35-ton trucks and was spreading a uniform 3 cm layer of Split Mastix Asphalt at a temperature of around 175 °C. The high modulus asphalt came from a plant located about 20 km away.

Afterwards, one of the latest generation Dynapac CC2300 rollers was used, and with the help of a CC222HF compacted the mat evenly in just a few passes, with high frequency and low amplitude.



The CC2300 asphalt rollers were used to compact the mat with high frequency and low amplitude.



#### COMPANY HISTORY

A.E.B. Costruzioni Generali Srl operates in the field of road work, both public and private, with an efficient network of equipment, vehicles and staff. Having distinguished itself through various achievements, the company has always considered its mission to be the quality of the services and processes it offers to every customer.

The company has a large fleet of construction machinery equipped with modern technology, as well as highly specialized and extremely motivated personnel, both of which enable maximum efficiency in a short time period.

#### AN INTERESTING COMBINATION

We asked surveyor Sebastiano Pastorelli, an experienced technician on road work sites, for his impressions of the new Dynapac SD2500WS paver. "The machine has two great features," Pastorelli began. "It is very easy to use, despite being very advanced technologically; and above all, it is quiet. These qualities are appreciated by our operators, who also know that they can count on the supplier to provide help at any time, with the right advice for improving productivity and increasing work quality."

#### QUIETNESS, A NOTICEABLE FEATURE

Actually, we can also confirm the operating noise level has been reduced to a minimum. Mr. Alberighi confirms that the low noise level was achieved by means of three particular changes to the paver: 1) The engine cooling fan is no longer mounted directly onto the same axis, but can increase or decrease RPMs independently because it is driven by a hydraulic, thermostatically controlled motor. 2) The Dynapac EcoMode allows the machine to operate at 1,600 rpm without sacrificing productivity, while ensuring low noise levels, fuel savings and excellent engine compartment and cab insulation. 3) Special rubber insulators are mounted, further increasing operator comfort.

#### EASY OPERABILITY

We asked site manager Pastorelli why the SD2500WS paver is so easy to use. He commented enthusiastically that the machine has very intuitive controls. "Our operating personnel assigned to work with the machine were instructed and trained directly by Atlas Copco technicians. The menu and selection of individual operations enables them to easily access the preselected program. By using the appropriate codes, the paver can perform an auto-diagnosis, highlighting any problems that may arise. The new PaveManager 2.0 software includes advanced features such as mat parameters. It also enables efficient monitoring of the entire process, thus ensuring constant, precise workmanship."



# Twenty Feet to Safety

Cummins Construction widens Highway 64, increasing safety for drivers

TWENTY FEET. IT'S THE LENGTH OF A PICKUP TRUCK, THE WIDTH OF A POOL AND THE AVERAGE HEIGHT OF AN APPLE TREE. IT'S JUST A TINY SPECK ON OUR PLANET, YET IT CAN MAKE ALL THE DIFFERENCE WHEN IT COMES TO SAFETY ON ROADWAYS. FOR U.S. HIGHWAY 64 NEAR ENID, OKLAHOMA, 20 FEET WAS JUST THAT.

Highway 64 is one of many highways with bridges that are part of the state's restoration program. The Oklahoma Department of Transportation started the program and began special funding for the restoration or replacement of the state's bridges in 2003 when as many as 1,168 – or 17 percent – were too narrow or deficient. This is why ODOT dedicates as much as \$40 million per year for bridge rehab alone.

Replacing the state's bridges hasn't come without challenges, and Highway 64 was no exception. Five bridges on the highway were both deficient and too narrow at 20 feet, which created a high risk for accidents and injuries. But two miles of fresh asphalt and five new bridges later, Highway 64 is safer thanks to Cummins Construction.

## The Contractor & the Mission

Cummins Construction, Enid, Oklahoma, builds and repairs roads and highways across Oklahoma. The more than 60-year-old company also includes Cummins Equipment, which rents,

sells and services construction and road-building equipment. Cummins' dedication to productivity, quality and safety fuels its success in the industry and landed it as many as 15 awards for mat quality from the Oklahoma Asphalt Pavement Association. That commitment proved successful in the past and most recently, while reconstructing a section of Highway 64.

"The main goal for the job was safety," said Mike Beier, Enid-area manager for Cummins Construction. "Not only for drivers, but also our crews."

The road and bridges dated to 1960 and likely saw a repaving job here and there, but never much in the way of shoulder expansions. The 20-foot-wide road included two lanes and little to no paved shoulders, leaving little room for error if a motorist had to swerve. Not only did it increase the risk of accidents, it also didn't leave room for vehicles to pull over or for pedestrians to safely walk. This was hazardous along the entire highway and even more so on the

bridges, where a concrete barrier was just inches from the roadway. Because this left no wiggle room to pull over or swerve if necessary, the risk for serious accidents and injuries on the bridges was even greater. In addition to that, several years of rain, wind and traffic deteriorated the five bridges, causing them to fail safety code standards.

## The Project

The project involved replacing and widening a two-mile stretch of asphalt on Highway 64 and the five bridges within that expanse. Cummins Construction won the project and began in June 2014 about 1 1/2 miles east of Nash, Oklahoma. It wasn't your typical "close part of the road and leave the other half open to traffic" type of approach. In fact, the entire two-mile stretch of existing roadway remained open during construction.

"We built the new road as far as 175 feet south of the old highway and merged the two," Beier said. "Moving the road entirely gave us ample room to

work safely and maneuver equipment as well as ensure the safety of drivers.”

He added that one of the biggest challenges was keeping the crews safe. “As we built road sections that connected to the existing highway, it was a tight squeeze for both traffic and our crew. Not only that, there just was a lot going on, which could easily confuse drivers.”

Cummins decided the best approach for guiding traffic safely through the zones was with a pilot car. It was a necessary step to eliminate the risk of accidents and injuries.

Cummins coordinated and performed the road prep and asphalt work, as well as arranged for subcontractors to construct the bridges, do the earthwork and manage traffic.. Cummins had as many as 12 asphalt trucks making the 22-mile trip from its asphalt plant to the jobsite each day. They also had as many as 12 crewmembers as well as several other pieces of equipment on the jobsite that were just as integral in the construction process. These included two rollers – the Atlas Copco Dynapac CC722 – working behind Cummins’ new Atlas Copco F1000T paver.

Because there were several bridges, Cummins contended with numerous tie-ins in a relatively short distance, which could have impacted the quality and smoothness of the mat.

“We never had a project with that many bridges in such a short distance,” Beier said. “Fortunately our crewmembers have a lot of experience under their belt and dedication to high-quality jobs. It also helped to have equipment that’s easy to operate and maneuver.”

### The Success in Safety

Sometimes the difference in safety is a matter of distance. Although it was just 20 feet on the Highway 64 project, Cummins’ commitment to quality and its support network took them miles. It’s another example of good planning: a good contractor, the right equipment and good support that paved the way for a successful project.



## Paving & saving

WITH THE NEW DYNAPAC CITYPAVER SD1800, ATLAS COPCO DELIVERS A VERY EFFICIENT PAVER. WITH A GREAT RELATIONSHIP BETWEEN ENGINE POWER AND LAYDOWN RATE, THE CITYPAVER DEMONSTRATES IT CAN PROVIDE UP TO 7% SAVINGS ON FUEL CONSUMPTION. AT THE HEART OF IT ALL IS A HYDROSTATIC DRIVE SOLUTION WITH STATE-OF-THE-ART MOBILE ELECTRONICS.

Road Construction is a high priority in emerging economies as well as in industrialized countries. This includes highways and rural roads, but also increasingly includes inner-city roads. With this in mind, Atlas Copco has completely redeveloped the Dynapac Citypaver SD1800. It is just 5 meters long and 1,800 mm wide. and has a laydown rate of 350 tons/hr and paves widths from 0.70 to 4.70 m.

### Efficient hydraulics reduce diesel consumption

The new paver uses 54 kW diesel engines, which comply with the emissions limits for Stage IIIA (TIER 3) and Stage IV (TIER 4 final). Engine performance is intelligently distributed across the paver’s functions, which in turn reduces power loss to a minimum. The highly efficient hydrostatic drive concept also plays a part in this, as well as the thermostatically controlled fan and the load-dependent hydraulic pumps. Instead of power-hungry, fixed pumps, Atlas Copco incorporates, for example, cost-efficient axial piston variable pumps. Energy savings of up to 7% thanks to the efficient hydraulics, have already been demonstrated in numerous applications.

The Citypaver achieves a further increase in energy efficiency by means of load pressure-independent flow distribution. If the flow is insufficient to supply all consumers with the desired amount, the driving speed and the screed vibration and tamper frequency are prioritized. All additional movements slow down at the same pace - but no consumer stops. This is achieved through a flow sharing control block, with a sandwich plate design, combined with cartridge valves.



# Intelligent compaction

DYNAPAC'S EXPERIENCE IN CONTINUOUS COMPACTION CONTROL (CCC) OR INTELLIGENT COMPACTION (IC) DATES BACK TO THE LATE 70s. SINCE THEN WE HAVE BEEN ABLE TO OFFER OUR CUSTOMERS THE OPPORTUNITY TO CONTROL THE COMPACTION WORK IN REAL TIME AND TO DOCUMENT THE COMPLETED WORK FOR IMPROVED QUALITY CONTROL.

## TWO-LEVEL SYSTEM

The Dyn@Lyzer system is built up in two levels. The first level is the Compaction Meter, now using EVIB readings for both soil and asphalt:

On asphalt rollers this is supplemented by the Asphalt Temperature Meter. It utilizes two temperature sensors, one at each end of the roller, to register the surface temperature of the asphalt. The temperature is measured by the sensor that is currently at the front depending on the driving direction. This minimizes the influence of surface water from the drum sprinklers.

The second level of the system is the Evib Compaction Meter plus the Dyn@lyzer with GNSS (Global Navigation Satellite System):

This registers all the Compaction Meter data and continuously displays the compaction results to the operator on the computer screen. The data is, at the same time, recorded and saved allowing full traceability and quality assurance. The GNSS receiver (such as GPS, GLONASS, Galileo, etc.) gives the precise position of the roller on the job site at all times. The level of accuracy depends on site requirements.

## DYN@LYZER

Dynapac's documentation system records and maps stiffness and stiffness progress of the compacted layer in real-time as well as temperature and number of passes. A GNSS receiver is used for positioning. Positioning accuracy may be selected between Differential-GNSS (decimeter accuracy) or RTK-GNSS (cm accuracy) depending on site requirements.

The Compaction Analyzer can be used as a quality control and assurance tool as well as a production tool to optimize the compaction effort.

Compaction Analyzer Multi is used when two or more rollers are working together in the same layer. All machines that are connected get real-time updates on the total number of passes that were made, etc. Connection is made over short-range wireless communication.

## BENEFITS WHEN USING DYN@LYZER:

- The compaction work can be focused on specific areas that require additional compaction.
- No unnecessary compaction of already compacted areas. On average, this results in considerable time and fuel savings as blind tests revealed that 30% (and up to 50%) fewer passes are needed.
- The risk of under or over compaction is eliminated
- Each stage of the compaction work is documented and presented to the operator in real-time.
- 100% accurate area coverage compared to only a fraction of a percent with traditional compaction control methods.

## Much improved opportunity to achieve:

- First-rate compaction results with maximum uniformity in terms of the bearing strength of each layer.
- Simplified and documented quality assurance.
- Most efficient compaction.
- The best possible savings for both contractors and clients.