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- **Infrastructure** ASSA's Task Force on the Caribbean Route
- **Market** Contractor Luensa leading projects in Mexico

SPECIAL

Paragominas: a new concept in mining

KOMPAKT SERIES PLANTS: VERSATILITY IN STATE-OF-THE-ART EQUIPMENT.

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ROAD AND MINERAL TECHNOLOGIES

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Editorial Staff

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Rua Senhor do Bom Fim, 177
CEP 91140-380
Porto Alegre - RS - Brazil
Phone: (5551) 3364-9200
Fax: (5551) 3364-9228
ciber@ciber.com.br
www.ciber.com.br

General Coordination:
Luiz Marcelo Tegon
(Vice President)

Monique Steffen
(Marketing Analyst)

Production and execution:
temática PUBLICAÇÕES

Phone: (5551) 3346-1194
www.tematica-rs.com.br

Publication:
Fernanda Reche (MTb 9474)

Reports:
Patricia Campello
Luísa Kalil

Collaboration:
Caroline Corso

Revision:
www.pos-texto.com.br

Translation:
www.traduzca.com.br

Artwork:
Eduardo Mello

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Pará mine adopts surface mining

Paragominas brought an innovative method to bauxite mining by applying the SM 2500 Surface Miner technology from the Wirtgen Group. Less equipment on site, more productivity.

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OPINION

Mining takes large strides

Luiz Marcelo Tegon
Vice President

By the end of the last decade, Brazilian mining was ranked number 4 worldwide, worth R$ 55 billion, leaving behind the US, Russia, and South Africa who are benchmarks in this type of industry. Today, there are approximately 1,400 mining companies that extract around 80 different minerals from more than 5,000 mines scattered throughout the country. It is still the private sector that invests the most in Brazil, whose volume is expected to reach US$ 62 billion in the period 2010-2014, according to estimates from the Brazilian Mining Institute (IBRAM).

Such vigor and growth potential gives us the conviction that we are making the right choices in the Wirtgen Group by continually making more effort and giving greater attention to the mining market. After a long period involving a number of in-depth technical discussions, feasibility studies, and many negotiations, a Wirtgen SM2500 surface miner is now producing at Paragominas (PA). The technology that we offer makes it possible to operate according to a unique extraction process that is faster and consumes fewer resources.

Ever since Kleemann, the newest Wirtgen Group brand, arrived in Brazil, our market position has become even stronger as a provider of complete solutions. These are mobile crushers that deliver high productivity rates, state-of-the-art technology, and multiple drive options. In a country that is experiencing a period of growing demand for infrastructure building projects, the option for recycling civil construction debris or milling material is an excellent one, with several units sold in these applications.

These are just some examples of how we are helping to keep this market in full expansion, by providing Brazil with cutting-edge mining technology.

Because of this we have decided to publish this edition of our magazine with a special content, dividing our experiences related to the production of minerals and aggregates. This is our expertise once again bringing us closer to our customers.

Ciber AF5000 Plus asphalt paver on a UN mission

Ciber Equipamentos Rodoviários closed a contract with the Brazilian government for an AF 5000 Plus asphalt paver to be used on a United Nations (UN) Peace Mission in Haiti.

The model was acquired by the Brazilian Army Corps of Engineers located in Brasilia and specially painted white as a way to symbolize its application in the special program for rebuilding this country that was devastated in January 2010 by several earthquakes. The paver was sent to the Brazilian unit located in the capital city Port-au-Prince to take part in road recovery projects. "The AF 5000 Plus renews the fleet of this military engineering unit. The equipment will take part in paving missions across different Haitian regions", explained Major Andreos Souza of the department of Engineering and Construction of the Army's Headquarters.

Since 2004, Brazilian soldiers have been working for the security and development of Haiti through engineering projects such as vertical constructions, earthwork, paving, and well drilling. Ciber has sent other equipment used on similar missions. These machines are usually bought and used by the Brazilian army itself, remaining in the country for four years, as will be the case with the piece of equipment recently purchased.

Ciber implements ISO 9001

As a response to the need to promote continuous improvements and to provide its processes with excellence, Ciber Equipamentos Rodoviários has implemented the Quality Management System audited in accordance with the standard ISO 9001:2000. The certification was obtained in early July and covered different areas of application in the industry such as designing, developing, and assembling asphalt plants and compactors, selling and reselling parts, as well as after-sales services.

Brazilian companies invest in a proven milling solution

Across Brazil, organizations in the infrastructure segment have reached a consensus: technology makes a difference in the final result. For this reason, market trends are part of the machinery of the companies that stand out nationally. This is the case of Vale do Rio Novo and the ANE Group, who have opted for constant technological updates. Recently, these companies, which are both based in the Brazilian state of São Paulo, acquired W200 milling machines. The equipment will be used in milling and paving projects with the expectation of adding value to the projects and implementing proven solutions in the field. According to Nelson Sampaio Pereira, the president of ANE, the decision to purchase this model was based on its innovative and effective technical characteristics. "Our goal is to use the new machine on jobs that demand superior execution quality such as micro milling with a 672-bit drum. So far, the machine's performance has exceeded expectations, resulting in operational excellence", stated the executive.

Vale do Rio Novo also sought an alternative to make its processes faster and more efficient. "In May, during a trip to Germany, I had the chance to see a W200 working. I had no question that the W200 was the ideal machine to meet our needs and demands," stressed businessman Ademar Belinato. Today, the machine operates as part of a project to provide services for Ecopistas, the concession company responsible for the Ayrton Senna-Carvalho Pinto road system in São Paulo. The contract covers the milling of 43,000 cubic meters. The W200 is part of Wirtgen Group's new generation of milling machines. The model can be equipped with milling drums of three working widths (1.50 m, 2.0 m or 2.20 m) for a wide range of applications, such as repairing large scale surface areas, complete removal of pavement at total depth, fine milling, among other operations.

Wirtgen Group specialists participate in workshop in Brazil

On November 10, Reciclotec held a Workshop on the Wirtgen W200 Milling Machine: the new generation of Wirtgen milling machines in the 2m class – 560 HP. The event was held in the state of São Paulo, bringing together specialists from the Wirtgen Group. In addition to lectures with the German experts Rudi Melles and Bernd Holl, the program also included a live demonstration of the new machine. Several Brazilian companies attended the event, including Andrade Gutierrez, Serveng – Nova Dutra, Constroeste Construtora, Jofegê, Terrapac, Odebrecht, Esur, M&F, Encalso Construções, Ellenco, MW Pavimentação, Sincecesp, CN Treinamentos e Consultorias, Serveng, Tecnopav, ANE Group, Construcap, Etec e Pavia, as well as representatives from the city halls of Piracicaba and São Paulo.

Contractor **ASSA** working on a **project considered** one of the most **important** for **Colombia's highway** improvements

Caribbean Route Project at fast pace

More than 700 employees are working on the Caribbean Route project that crosses the regions of the Atlantic, and the state of Bolivar in Colombia. The ASSA consortium, based in Bogotá, leads the project with state-of-the-art technology and operational efficiency to develop the initiative that received investments of around 860 million Colombian pesos.

The advanced status of the project stands out and may lead to an early delivery by the contractor. According to a news story broadcast by TV Caracol, one of the most important TV Stations in Colombia, the project is at an advanced stage and it is likely to be finished ahead of schedule, before 2015, the contractual term. The project, which includes a concession of 21 years, including repairing 237 kilometers, the duplication of 106 kilometers, and the construction of a doubled stretch 36 kilometers long. The location is considered of extreme logistics relevance for the transport of cargo between ports in the Caribbean, and to expedite the flow of passengers and tourists.

Large concessions

The construction of this highway system will have a positive impact on the country, causing an increase in tourism and on the region's economy. This is a significant structural operation that required from ASSA a full-scale task force. In addition to professionals trained to meet this demand, the contractor brought to the job site equipment with the potential to add value and make a difference in the final result. To do this, it operates with two UAB 18 E Advanced Batch Asphalt Plants, and one of them with a special configuration for the production of black mixes, an ACPM *dual hauck* gas burner, and stirrers in the modified asphalt mix tank.

The Caribbean Route is currently one of the most important concessions given to ASSA. The company also operates on Autopistas de La Sabana S.A. with the prospect of developing about 300 kilometers of roads connecting the states of Antioquia, Córdoba, Sucre, and Bolivar. Both concession projects aim at improving the road system of the country by building new roads and repairing older ones.

Improvement Methods

These projects are part of a master plan drawn up by the Ministry of Transportation and the national government to upgrade and improve the country's infrastructure. The country plans on making progressive investments until it reaches 8% of its GDP. The machines are used to produce dense and hot mixes of the MDC2 type. This pavement covered approximately 50 km of new roads and more than 100 km of already existing roads in the states of Córdoba, Sucre, Bolivar, and Atlântico. The repairing and maintenance of the pavement structure were designed to deliver a 22-year lifetime. The building method of these new roads complies with the standards of the National Institute of Roads.

Technical characteristics of the UAB 18 E Advanced

The equipment presents high production in a batch system with precise metering of aggregates and asphalt, thus improving the end result of the mix.

Bin capacity:	7.3 m³ standard / 10 m³ optional
Type of mixer:	Twin-axle pugmill
Number of bins:	4
Production capacity:	100 – 140 t/h

MINING

Mineração Paragominas increases operations

The **company**, controlled by the company **Norsk Hydro**, adopted the most productive **methods** for **mining** bauxite by using **Wirtgen Group technology**

Pioneering, high productivity, and sustainability. These three principles support the operations of Mineração Paragominas S.A., a company located in the state of Pará, in the far North of Brazil, controlled by the Norwegian company Norsk Hydro ASA and by Vale S.A. This is an innovative project based on cutting-edge technology for the extraction of bauxite. Ore, used almost exclusively for the production of alumina, is a raw material for the transformation/upstream industry with increasing market opportunities due to the growth potential of this sector in the coming years. In other words, this is a niche in full bloom.

Figures and estimates confirm the weight of this business to the national economy. According to the Ministry of Mines and Energy (MME), the estimates of investments for mineral research, expansion and discovery of deposits should reach US$ 350 billion by 2030, and a large part of these funds will come from private initiatives according to this organ's recent survey. This industry, which comprises the stages of geology, mining and mineral transformation, is the key player as the foundation for a number of production chains. "It represents 4.2% of the Brazilian GDP (US$ 17 billion) and 20% of Brazilian exports, creating one million direct jobs, equivalent to 8% of employment in the industrial sector. Brazil is internationally renowned as the producer of niobium, iron ore, bauxite, manganese, and a number of other mineral goods," states the study, issued by the MME.

Mineração Paragominas Innovation

Knowledge translates into good and strategic practices to benefit from the good winds blowing in favor of this industry, and Mineração Paragominas S.A has a lot to teach. The new concept adopted in the Pará deposit is supported by the investment in technological solutions. In order to achieve a competitive advantage and to meet the market needs, the company promoted a true revolution in its procedures in bauxite mining. One of the solutions is a 100 ton, 2500 SM Wirtgen Group Surface Miner. It is the first machine in this range to operate in the country. One of the advantages of this machine is that its operation is similar to that of a milling machine, thus removing the minerals at depths of up to 650 millimeters. The surface

miner also eliminates the need for excavators or loaders by conveying the crushed material directly to the transportation vehicle. This way the company is able to achieve economic benefits that are actually two-fold: cost reduction related to tires and fuel consumed by the specific machinery involved in this business.

Mr. Cláudio Morgado, Mineração Paragominas S.A. manager, points out that there are many benefits generated by the optimization of processes and the increase of the production capacity of the mine. It is a straightforward mathematical equation: less machinery, more results. "We were able to reduce the amount of equipment traditionally used in the execution of this work. The 2500 SM will enable us to produce the equivalent of two or three mining sets (tractor, excavator and miner) used in conventional methods," he said. According to Mr. Morgado, the equipment works 24 hours a day and is expected to reach 800 tons per hour.

From tradition to innovation

Considered a milestone in mining history, the Wirtgen technology adopted by Paragominas has introduced unique principles, leaving behind tools and methods that permeated traditional extraction practices. The use of explosives was eliminated in the exploration of mines. The reason for that is that the layers are removed by a milling drum. By eliminating dynamite from the process, the noise levels and vibrations resulting from the breaking of rocks were also reduced. "The surface miner also eliminates the stage of scarification with a bulldozer and the primary crusher. In addition, the equipment has a system with a rotor that cuts and crushes, and a conveyor belt of its own to convey the ore to the truck," explains Mário Nobrega, managing director at Deltamaq, a Ciber regional dealer based in the city of Ananindeua (Pará). The displacement of material via conveyor enables clean surfaces and stable layers without water accumulation. The excellent quality level of the bauxite extracted is another advantage pointed out by Mr. Nobrega: "We are able to achieve better ore selection and greater particle size quality, leading to crushing and processing cost reduction."

Deltamaq has an onsite branch to provide technical assistance and services in the areas of maintenance and operation. At the mine, a true task force was created, bringing together technicians, engineers and a German expert appointed by the Wirtgen Group. The after-sales support played a key role to ensure the success of the project according to Mr. Claudio Morgado from Mineração Paragominas S.A. "We invested in the training of our staff at the actual job site. The team should be prepared and skilled to operate the equipment in order to achieve the successful results expected. That's why we invested in practical trainings," he added.

Sustainable exploration

Our goals, however, are not limited to reaching high productivity rates. The development of our business, based on the conservation of natural resources and respect for the quality of life of the communities surrounding the deposits, guides the project scope of Mineração Paragominas. "It brings together economic dynamics and

What changes with the application of the 2500 SM model

- Surface mining excludes scarification and the use of excavators that were necessary in the traditional processes for loading ore.
- The equipment has a diesel engine that transfers power efficiently to the milling drum through a belt.
- The drum is located in the center of the machine to make sure that all of its weight and installed power can be converted into cutting energy.
- Only one machine is needed for the various work stages. This process simplifies the coordination and planning of the mining process and reduces operational costs on equipment.
- Since there is no need to use explosives, there is less noise and dust. This is another advantage for the mines close to urban areas.
- Due to the size of the mineral grain extracted, it can be loaded onto trucks by means of adjustable height and swivel conveyors.
- The material can be transported by conveyor belts, thus eliminating the primary crusher.
- The quality of the material is improved due to selective mining.
- Surface mining makes it possible to better explore the mineral deposit.
- It is a more sustainable process both economically and environmentally.

ASPHALT COMPACTION: PRECAUTIONS IN THE PROCESS

Several factors are involved for the paving process to be carried out efficiently and which influence the final result, such as the type of asphalt mix, the distribution curve of the aggregates, the environmental conditions during paving (temperature, wind, and rain), the layer thickness, among others.

One of the most important stages and most susceptible to errors is the compaction process. This stage can compromise the final quality of the job even though all the other influencing factors are met. Small precautions must be taken during the application in order for it to be carried out correctly.

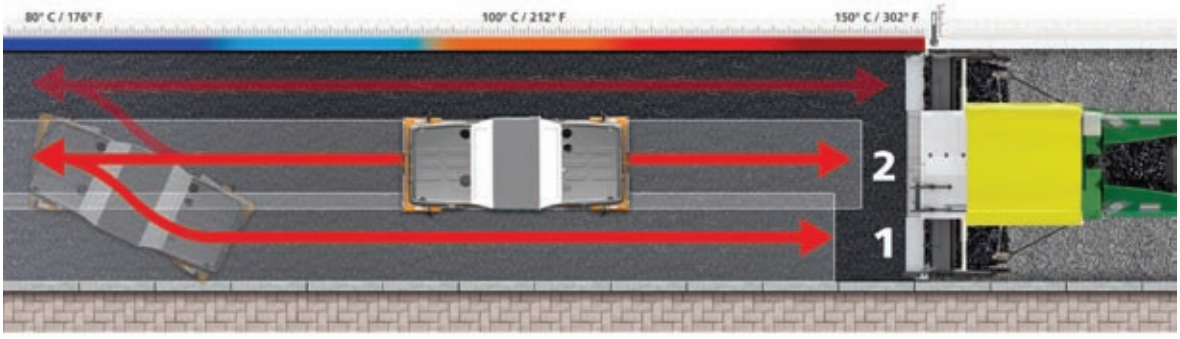
Some execution recommendations are given in this chapter depending on the type of application:

1) CHANGING STRIPS ON THE HOT ASPHALT MIXTURE

Since the width of the compactor cylinder is less than the paving width of the asphalt paver, the compaction must always be done in different strips. The repositioning of the roll on the hot asphalt layer when changing strips involves special care.

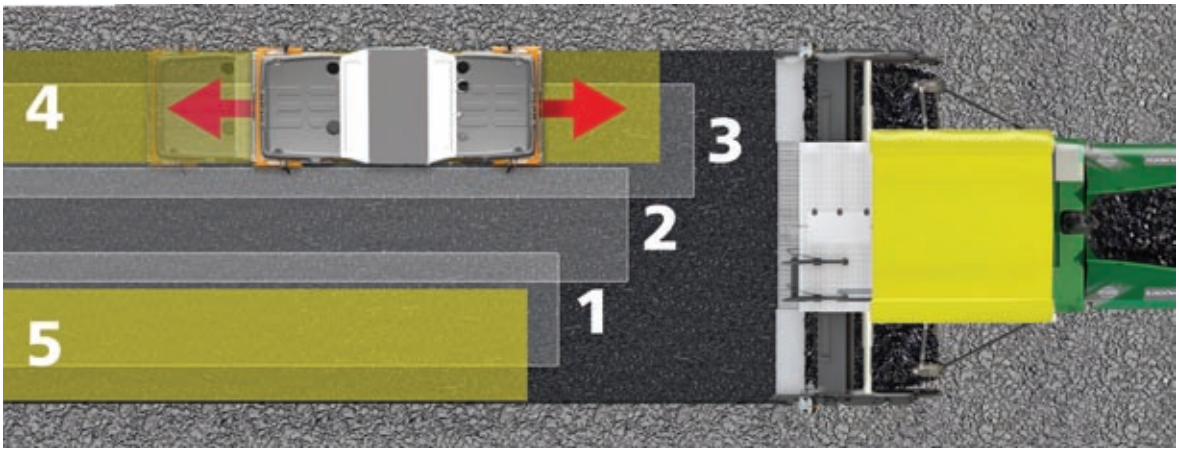
Because of this, the application must occur in the following way:

- Before changing direction, the cylinder must be slightly tilted in relation to the compacted strip.
- The compaction strips must be overlapped on the sides (approximately 10 cm), thus avoiding small un-compacted strips.
- The changing of strips should be done in areas where the asphalt has already cooled in order to avoid marks and the displacement of material on the hot part of the asphalt.



2) PAVEMENT WITHOUT SIDE REINFORCEMENTS

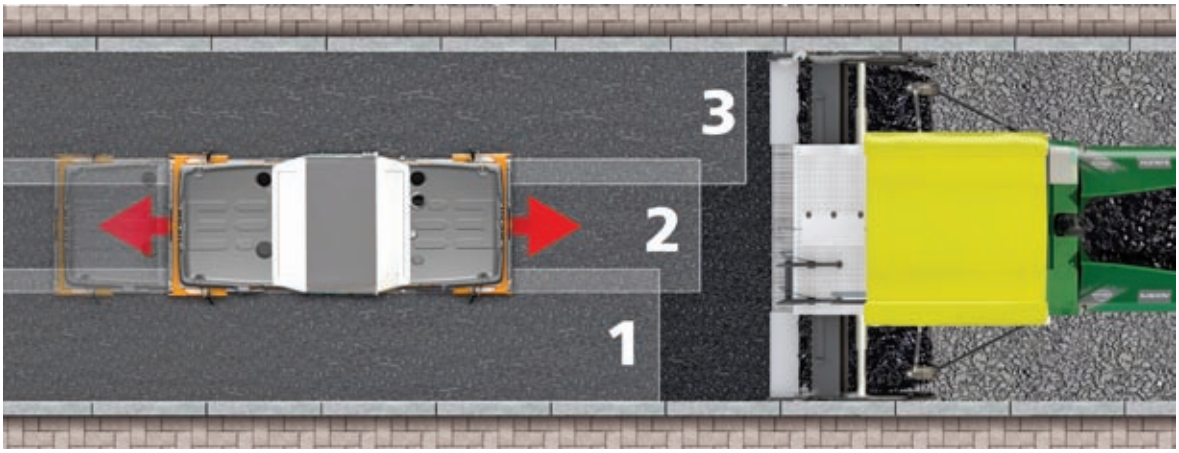
The compacting process of the asphalt layer should be carried out in the following manner when there are no side holders at the two ends of the asphalted strip:



- The first compacting strip (number 1) should be started at a distance of approximately 20 cm from the side. If the compacting process begins with the cylinder too close to the edge, it pushes the material out and makes the edge misaligned.
- On strips 2 and 3 the compaction is done in a way that each compacted strip overlaps the other one.
- Finally, the two small strips at the ends are compacted (numbers 4 and 5) so that the roller does the compaction in a stable manner, because a good portion of the width of the cylinder can be supported due to the strips previously compacted.

3) PAVEMENT WITH SIDE REINFORCEMENTS

Occurs when the asphalt layer is paved between curbs and other side contention forms.



The first strip (number 1) can be started directly on the borders along the side limiters. The remaining area is compacted simply from the middle to the opposite edge (strips 2 and 3).

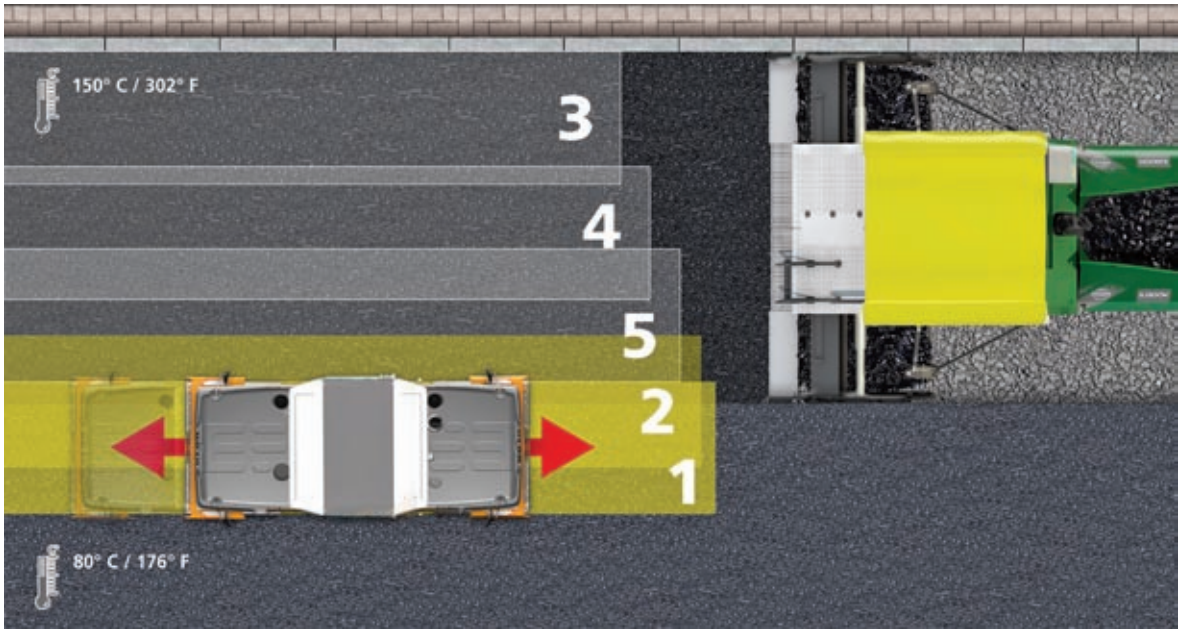
If when passing the compactor over strips 2 and 3 the cylinder's vibration is activated, the aggregates in the cold part may break up. Due to the rigidity of the asphalt mixture that is already cooled, the aggregates cannot be relocated in the same way as when the asphalt material is hot (above 100 °C).

Using oscillatory Hamm rollers, it is possible to compact with the asphalt mixture temperatures of up to 80 °C, and there is no breaking of aggregates when the cold layer is at even lower temperatures. This happens because this technology uses two axles with turning eccentric weights, which generate oscillating movements with permanent contact with the material, distributing the force applied. In the vibratory mode, however, there is an impact on the asphalt layer at great speeds of ups and downs of the cylinder.

4) PAVING IN TWO PASSES

In some applications, due to the broad width of the road, the paver does the paving in two or more passes. The temperature of the first paved strip is already cooled when the second strip is laid. When there are side retentions, the compaction process should be carried out as follows:

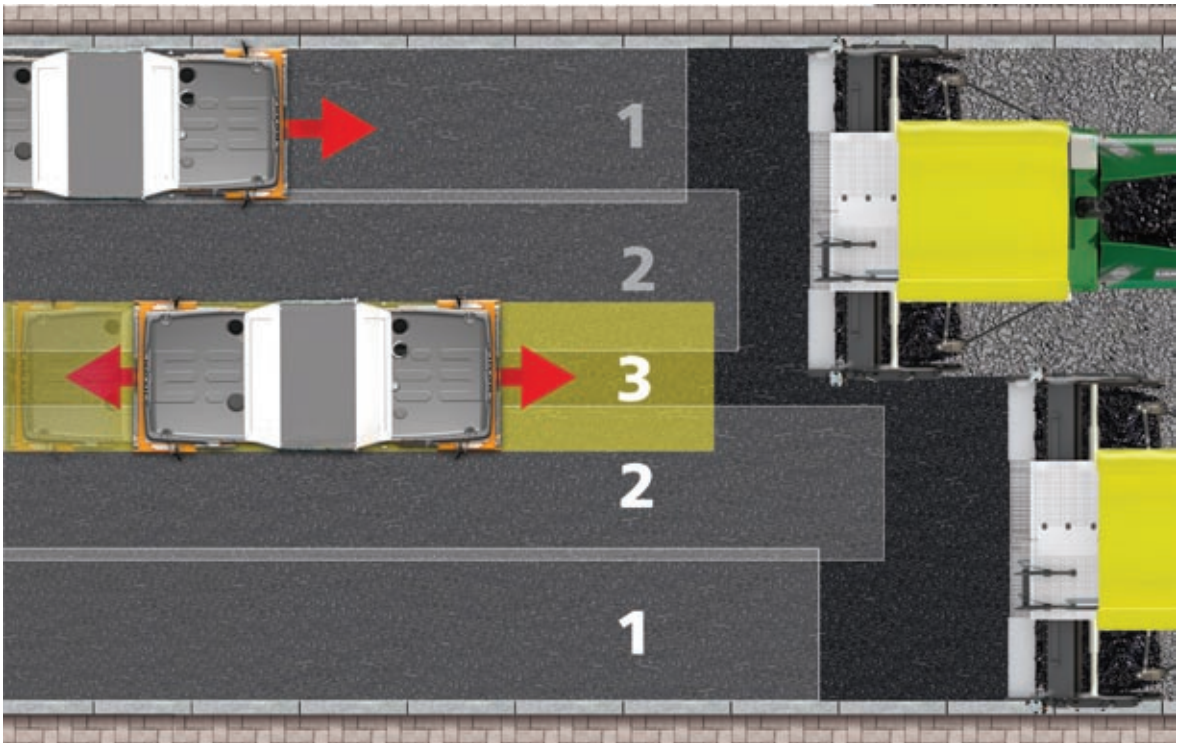
- The first pass (strip 1) must be done with a good part of the width of the cylinder over the cold layer and only about 20 cm on the hot layer.
- The second pass (strip 2) must be done with half of the width of the cylinder over the cold layer and the other half on the hot layer.
- Do not use the vibration mode when the cylinder is passing over the cold layer. The cylinder must be in static or oscillatory mode (depending if the compactor has this technology), because the vibratory movement of the cylinder damages the cooled layer and even the roller itself.
- The roller should be positioned at the other end, starting the pass along the edge (strip 3) and respectively move in the direction of half the width (strips 4 and 5).



5) PAVING IN TWO SIMULTANEOUS PASSES

This occurs when there are two pavers working side by side to pave the road. This process is not very common in Brazil, but is widely used in European countries.
Also, when there are side retentions, the compaction process should be carried out as follows:

- The passes of the rollers must begin at the edges near the side retentions (strips 1).
- Next, the position of the rollers is moved toward the center (strips 2) with an overlap of approximately 15cm in width between the new pass and the previous pass.
- Finally, the last strip (number 3) is compacted at the central point of the road's width.



In addition to the recommendations shown here, other cares should be taken for optimal asphalt compaction:

- Compact as close to the paver as possible
- Turn off the vibration or oscillation before changing directions
- Always maneuver the roller with gentle movements
- Always come and go along the same strip
- Change strips on the coldest side, which means the farthest away from the paver
- Use water to avoid adhesion of asphalt material to the cylinder
- Never leave the cylinder stopped on hot asphalt

The mining company has a conveyor belt to carry the ore to the truck

environmentally friendly practices. This is one of the main challenges faced by the company, and constitutes a landmark of its management," stresses Mr. Agnus Delgado, General Manager of Mining at Mineração Paragominas and the professional who envisioned and designed the SM project. For Jean Pierre Verneuil, Director of Nicamaqui Equipamentos located in Belo Horizonte (Minas Gerais), "The decision made by the company to use surface mining reveals the organization's cutting-edge and leading vision supported by economic sustainability principles. A Wirtgen Group Dealer in the region, the company supported the implementation of this innovative methodology at Paragominas as an active player in a number of meetings during the decision-making process.

Global leader

Holding 60% of the mining company's assets, Hydro is Top 3 in the global ranking in the supply of aluminum. With its head office in Oslo (Norway), the company has an international operation present in 40 countries on the five continents. It produces aluminum in Brazil and Jamaica and is a world leader in the segment of recycling metals and second in hydroelectric power generation with 17 plants in Norwegian territory. Mining operations started in 2007 at Paragominas. The annual extraction capacity (ROM) is approximately 14 million metric tons. Bauxite, once it is crushed, is conveyed by the first mining pipe of its kind in the world, 244 km long, to the municipality of Barcarena, where refining is performed by Alunorte (the largest refinery of aluminum oxide worldwide with a production potential of 6.3 million per year). After that, the material is supplied to aluminum producers in the country and around the world. Hydro employs approximately 1,300 permanent employees at this mine as well as 350 on long-term contractual terms.

"Growth expectation is high, especially to meet the demands of the domestic market. We will have important events in the near future such as the Soccer World Cup in 2014, which will have a positive impact on the economy. We need to be ready to supply the demand by adopting smart ways and technologies for sustainable management," added Mr. Cláudio Morgado.

The **Brazilian companies Soebe** and **ANE** bought the first **Kleemann mobile crusher** in **partnership** to meet the needs of the city of **São Paulo**

Public Sector invests in recycling waste

The recycling of materials from building projects has great market potential. Because of recent waste management legislation, the states and municipalities in Brazil are increasing their initiatives directed at complying with the law and to reuse this debris. The city of São Paulo, the largest in the country and located in Southeastern Brazil, has been making intensive use of recycled material with the application of modern solutions for its operational execution. This is a trend that is gradually growing stronger in the region and shows a concern to give a sustainable disposal to liabilities generated by the activities of civil construction.

Some governmental initiatives in Brazil have the purpose of optimizing the use of inert materials from the infrastructure segment. One of them is the resolution of the National Council on the Environment (Conama), in 2002, that established guidelines, criteria, and procedures for managing waste from the sector. The intention of the law is to regulate the actions necessary to minimize environmental impact, demanding from the productive chain a proactive and caring attitude in the preservation of natural resources. The legislation also provides for the Integrated Plan for Managing

Civil Construction Waste as an instrument to be drafted by the municipalities and the Federal District.

Expanding Market

Cutting-edge equipment emerges to support the reuse strategies and keep up with market demands. Soebe and the ANE Group, both headquartered in the state of São Paulo, invested in impact technology to provide the services contracted by city hall regarding the operation of Urban Building Waste (UBW) crushing. The debris recycled will be used later in municipal paving projects.

The companies bought jointly the Kleemann equipment model Mobirex MR110 Z EVO. This is the brand's first mobile crusher sold in Brazil. "It is a machine with features that meet the needs of the current stage of our business," says Nelson Sampaio Pereira, the CEO of ANE.

According to Marcos Antônio Beyrute, a director at Soebe, the solution has been gaining followers regionally and in different states of the country. However, it is clear that the basis for its consolidation is knowledge. "We can see every day the decision to use UBW and RAP in other states. We believe that the waste recycling process still very much depends on the desire of the public and private investor. Today we are able to give them precise technical information about this option. But we still have a long way to go", he observes.

Waste Classification

According to Conama, civil construction waste is classified as follows:

Class A: These are reusable or recyclable wastes such as aggregates from building, demolition, remodeling, paving repairs, and other infrastructure projects including soils from earthwork.

Class B: These are recyclable wastes for other destinations such as plastic, paper, cardboard, metal, glass, wood, and others.

Class C: These are wastes for which technologies or economically feasible applications have not yet been developed to allow their recycling and restoration such as products made of plaster.

Class D: These are dangerous wastes resulting from the building process such as paints, solvents, oils and others, or those contaminated resulting from demolishing, remodeling, and repairing radiology clinics, industrial installations, and others.

Nelson Sampaio (ANE) and Marco Antonio Beyrute (Soebe) next to the new purchase: the Mobirex MR 110 Z EVO Crusher

Luensa in operation in Mexico

The **contractor** is working on **projects** for the **modernization** of **federal highways** in **several regions** of the country

The public and private sectors have invested strongly in the actions with a focus on developing Mexico's infrastructure, which is a country with nearly 2 million square kilometers, 31 states, and one Federal District. It is in this scenario that the contractor Luensa takes up major contracts for urbanism and paving in different regions of Mexico.

Considered an emerging power, the country has been focusing projects for structural improvements such as increasing the road network. The movement has fostered the business of civil construction. The numbers on Luensa's balance sheet show that 80% of the work done by the contractor is from public bodies. According to Luis Miguel Sánchez Cerna, the company's director, the current situation has opened up many opportunities and at the same time began to demand more operational efficiency through new technology and qualified teams to meet the needs and peculiarities of the projects. "The Mexican market is quite competitive. Each year the government performs several call for bids, mainly by the virtual system Compranet", observes the businessman.

Sections under construction

Luensa, with headquarters in the town of Saltillo, works with expanding and repairing several federal and municipal roads. It recently completed the construction of micro top on the Puerto México-Carbonera Highway. In all, 82 kilometers of the highway was paved. "We are carrying out the restructuring with Portland cement on 16 kilometers of the stretch between Guadalajara and Colima in addition to applying the black top on roads in the city of Muzquiz Coahuila."

Luensa uses technology offered by UACF 17P-1 for producing its asphalt mixture. According to Cerna, the plant was purchased last year with the objective of improving the final product quality. "The goal is always to achieve a better yield and the excellence of our building projects", he emphasizes.

Paving recycling technique in debate

Workshops held by **Ciber** with the **support** of the **Brazilian company Paulifresa** spread the **method** in different **regions** of **Brazil**

The event promotes an exchange of ideas and discussion of recycling techniques

Specialists in pavement recycling gathered for a workshop promoted by Ciber in partnership with the company Paulifresa in the city of Porto Alegre (Brazil). The initiative presented the technique to the market, which is a trend established worldwide.

The event, which was also previously held in the Brazilian state of Minas Gerais allowed for a discussion on the interventions of pavement repair, technological control of asphalt mixtures, and the solutions available for these operations.

The project will travel to other regions of Brazil. According to Clauci Mortari, Ciber's commercial director, the proposal is to spread this information and the importance of the method because of its sustainability and economic advantages. "This is an alternative that fits our day and age of a global debate on the scarcity of resources. This type of application is increasing in civil construction in emerging countries," he says.

Market Potential

According to Paulifresa's executive director, Julio Cesar Lima e Arantes, recycling of pavements offers great market potential, but investment still needs to be made in promoting the technique. "It is a niche that is still beginning in several states of the country, especially when compared to the Southeast, but with opportunities to grow and become a part of the scope of engineering projects all over the country," endorses the businessman. In addition to Ciber's team and the Wirtgen Group, the program included the engineer Marcilio Augusto Neves, an international consultant in paving, Gilmar Scarponne Salem, Pavement Manager of the Department of Roads and Highways of Minas Gerais (DER-MG), and Maria Cristina Ferreira Passos, superintendent of the Highway Research Center of DAER-RS.

Wirtgen Group promotes Technology Days

Ciber took a group of **90 people** to participate in this **event** in **Germany**, bringing the **Brazilian infrastructure** sector closer to the most modern **technologies** of the **world**

The Wirtgen Group opened its doors to present to the market the most modern equipment designed for the development of infrastructure building projects. In the month of September, the company promoted the fifth edition of Technology Days in Germany. The event brought together approximately 3,600 guests. Companies and people of various nationalities representing more than 80 countries participated.

Ciber was present, leading a group of 90 people made up of directors, dealers, and customers. The guests were able to accompany the special schedule organized for bringing them closer to advanced technologies and trends emerging to make their projects more competitive.

In 2011, the meeting was held at the Vögele factory. The company tour provided the participants with a visit to the different areas of the plant, as well as to see the machines in full operation. The latest mining and road construction lines were shown along the so-called "Wirtgen Group Avenue" including the W 210i Cold Milling Machine, Wirtgen's Concrete Paver with Automatic Pilot, Vögele's MT 3000-2 Offset Feeder, Hamm's new Compactors H 20i and H18i, and Kleemann's Crushers with EVO technology.

The public could see a selection of the company's wide product line on the "Wirtgen Group Avenue"

Ciber's group gathering in front of Wirtgen's entrance during the visit to the factory

Positive prospects

The partners and presidents of the Wirtgen Group, Jürgen Wirtgen and Stefan Wirtgen took advantage of the meeting to make a short analysis of the year. According to the executives, the prospects for closing 2011 are the best. "Everything indicates that it will be the most successful year in the company's history. We are expecting double digit growth rates," they announced.

Exposibram 2011 surpasses the sector's expectations

The city of Belo Horizonte, located in the state of Minas Gerais, hosted the 14th International Mining Exhibition - Exposibram 2011. The event took place from September 26 to 29 and exceeded the expectations of exhibitors, supporting the production chain and offering new business. Some of the people present were the chairman of the Brazilian Mining Institute (Ibram), Paulo Camilo Vargas Pena, and representatives from companies such as Vale, Construtora Barbosa Mello, Votorantim, U&M, Cimcop, Embraurb, Alcoa, Construtora Aterpa, among others. Ciber participated in the trade show and took to its booth two compactor models from Hamm's line: the 3414VIO with a cabin and the pad-foot model 3411 with a cabin.

Technology for slipform production at concrete trade show

The Concrete Show South America brought together 500 exhibitors from more than 30 countries from August 31 to September 2 in the city of São Paulo. Among the visitors were Brazilian companies such as ANE Group, Camargo Corrêa, Discontec, Camper, Construtora Leão & Leão, Conpasul, CNO, as well as leaders of the Brazilian Association of Portland Cement (Abcp). At Ciber's booth, the public got a firsthand look at technologies such as the SP 15, the smallest concrete paver developed by Wirtgen. "The trade show was an excellent opportunity to showcase the technological advancement of the Wirtgen Group products in terms of continuous concrete paving," says Ciber's commercial director Clauci Mortari.

Rio Infra 2011 brings innovations to the sector

Ciber Equipamentos Rodoviários participated for the first time in Rio Infra 2011 - Exhibition of Products and Services for Infrastructure Building Projects. The event took place from November 16-18 in the state of Rio de Janeiro (Brazil). Those visiting the exhibit were Craft Engenharia, Oriente Construções, HJ Rodrigues, Construtora Colares e Linhares, LCK Locação, Almeida e Filho Terraplanagem, ASM, Andrade Gutierrez, Erwil, Comter, Pavirio, and representatives of the city of Belford Roxo.

Consortium Anhanguera uses an Advanced 300 Plant in Goiás

The **Consortium Anhanguera** is the **client number 300** to invest in **plants** model **UACF 170** of **Ciber's Advanced** series – **equipment** that is capable of adapting to projects that **require technologies with high productive capacity** and operations that do not damage the **environment**

The Consortium Anhanguera, located in the midwest of Brazil and composed of the merger of Brazilian contractors Delta Construções S.A. and JM Terraplenagem e Construções Ltda., is part of the group of companies operating in one of the most important highway building projects being done in the country—the duplication and repair of highway BR-060 between Goiânia and Jataí in the state of Goiás, totaling 320 kilometers. A UACF170-2 Advanced was purchased for the production of 278,000 of asphalt mixture. The plant is a part of the group of 300 units sold of the respective Advanced series model.

The consortium is responsible for section 3 of the undertaking, totaling 49.5 kilometers situated on the stretch that connects the cities of Jandaia and Acreúna. Initiated in April 2011, the work must be completed in the year 2013. According to the National Department of Transportation Infrastructure (Dnit), the project brought together a total investment of nearly R$ 1.5 billion. The highway represents a vital link for logistics and the shipping of the harvests in the region.

In addition to skilled professionals, the contractors also took cutting-edge technology to the job site. For Álvaro Torres Filho, the Operational Manager in Goiás for Delta Construções S.A., it is clear that the Advanced line presents operational capacity for demands as those required by the contract for BR-060. "It is producing 120 tons per hour and fully meeting our expectations. The decision for the plant also considered the opinion of the operators themselves as it does not give maintenance problems and because of how easy it is to clean," explains the executive.

Sustainable solution

Concern for the environment is also a consideration in the processes developed by infrastructure companies. Something that meets the characteristics of the model are the burners that are capable of operating with different types of fuel, making the drying of additional material more efficient, thus consuming less quantity of fuel per ton produced. The UACF Advanced line also comes with a modern filter that retains the solid particles from the drying process and then reincorporates them into the asphalt mix, ensuring lower rates of emissions into the atmosphere and making the decanting tanks unnecessary, which are banned in countries with stricter environmental legislation. "This is an essential attribute: to unite economic viability and environmental sustainability," adds Torres Filho.

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