WIRTGEN GROUP

Wirtgen TECHNOLOGY

Spring/Summer 2008

Quartet Of W 2100s Mill Rochester's I-490

Kleemann Introduces German Style To American Aggregates Industry

Wirtgen VÖGELE HAMM Kleemann

Published by Wirtgen America, Inc.

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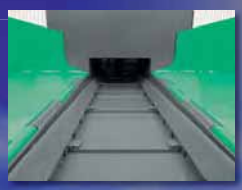
The SUPER 700 handles paving widths from 20 in. up to 10 ft. 6 in.



Automatic feed control with constant monitoring provides for an optimal head of material in front of the screed.

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On the Cover: *W 2100 of Villager Construction, Inc. passes under floodlights at dusk on I-490 milling for NYS DOT; see pp 6-9.*

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As I see it...

New Campus Will Be Place To Learn

Barely seven years after the ribbon cutting for our existing Nashville headquarters building, Wirtgen America, Inc. is expanding into a campus setting there that will house a new, separate, state-of-the-art training facility with outdoor demonstration tracks, an expanded equipment yard, and plenty of additional new acreage to accommodate future growth.

Our existing headquarters, just minutes from Nashville International Airport, originally was built on 8.5 acres of land in suburban Nashville. But our new headquarters expanded campus will accommodate multiple buildings in an over-33-acre park-like setting that will provide ample room to provide the training that our growth in sales requires now and in the future.

New Training Facility

Our new 21,000-sq. ft. training facility is needed because unprecedented demand from our customers has totally outstripped the capacity of the existing classrooms built into our headquarters building seven years ago.

Now the new building will provide two lecture class rooms with 50-person capacity each, and two laboratory classrooms of 50-person capacity each, these for electronics and hydraulics system training. We'll even be able to teach mix designs such as foamed asphalt Green Mixes – which must be tailored according to the existing materials at each site – using the Wirtgen WLB 10 mobile lab.

A show room will permit display of our largest machines, such as the 10-ft. Vision Series pavers from Vögele America Inc.; our largest double-drum rollers from Hamm Compaction Division; and large cold mills and reclaimer/stabilizers from Wirtgen America.

A shop area with four large, fully equipped training bays will provide hands-on experience to Wirtgen Group contractor and dealer/distributor personnel. A dining area will accommodate 80 patrons. There will be offices for training personnel. We'll even have a company store where visitors may purchase official Wirtgen Group logo merchandise.

Outside, a seven-acre site will permit cold milling, soil stabilization, paving and compaction demonstrations, plus demos of Wirtgen Mineral Technologies crushing and screening plants from Kleemann Inc. USA, or our very low-emission KMA 200 portable cold mix/Green Mix plant from Wirtgen.

Following extensive grading on our hilly, wooded site, construction is now under way, with slab-on-grade foundation and poured concrete tilt-up walls speeding toward a December 2008 opening.

Having our new learning center located near our existing headquarters building led us to acquire additional parcels around each structure, so future expansion will be much easier. For example, we anticipate that the existing building will require expansion in the warehouse and service areas, at a later date. Just recently we "built out" our product support and parts department offices, expanding into an interior mezzanine level of our warehouse. We are "clearing the decks", so to speak, as we plan our company's growth in the coming years.

New learning center will open in late 2008

It's All For You, The Customer

The learning center is required because Wirtgen Group's Wirtgen Road Technologies and Wirtgen Mineral Technologies divisions sell unique construction, maintenance, recycling and materials processing products that are very much technically advanced. They are the industry-leading products in terms of their technology and innovation, but for the customer to get maximum value, he or she must know how to utilize the products in an optimal way.

That's done by educating the people who operate the machines, and service them, whether they are on a contractor's staff, or that of an equipment distributor. Our machines, despite utilizing a high degree of computer control and integration, can be challenging to operate and service, at least in the beginning. We show them how.

Also, contractor needs are evolving, as they are pressed to provide a higher and higher quality product in shorter amounts of time, often under increasingly difficult conditions, such as night work for milling and paving, or the need to recycle materials that may be uneven in quality or distribution. We want to make sure their personnel are able to utilize or service their products to the best of their ability.

Wirtgen America On Growth Track

Wirtgen America is on a growth track in North America, and we intend to keep it there. We've experienced many years of continuous growth, and we anticipate that we will be able to sustain it even as markets slow. And as markets turn around, we will participate at a much greater level.

Our expansion represents a commitment to the future, and to future growth in the key areas of product support and training. This commitment is being fulfilled by the land acquisition and physical infrastructure expansion.

We're not adding administrative headquarters. We're not adding room for more sales, accounting or executive staff. Instead we're adding square footage specifically for the product support side, that is, service departments, parts department and warehouse, and training.

With rising energy costs we're seeing the growth of recycling rise to astronomical levels. At the same time Wirtgen is refining all its products to use less energy at every point of operation. In the meantime our other product lines are producing new models with exciting, exclusive technologies such as Oscillation compaction in Hamm rollers or advanced smoothness capabilities in the new Vögele Vision Series pavers. It all amounts to the need for more service space, more parts facilities, and enhanced training capabilities.

When the increase in product features and numbers of models is combined with the huge increase in our customer and distributor base, our need for a new training facility and expanded headquarters campus is obvious. We hope they will comprise a resource that you will take advantage of in the coming years.

Jim McEvoy
President
Wirtgen America Inc.

On a single afternoon in July, high-speed concrete tilt-up wall construction permits quick erection of Learning Center shell. Photos by Tony Kennedy, Technical Trainer, Wirtgen America, Inc.

Under the Lights, Quartet Of W 2100s Mill Rochester's I-490

Villager Construction, Inc., Fairport, N.Y., swears by its fleet of 16 Wirtgen mills. But in the same breath company supervisors say that it's Villager's people that make the difference in the company's success.

And when you combine a high-performance staff with the world's most productive cold milling machines, the result is a prosperous, motivated road building company that is making waves from the Deep South to New England.

In early June, using four Wirtgen W 2100s, Villager was cold milling and paving lanes of I-490 in Rochester, N.Y., a total of about 200,000 sq. yd. of asphalt counting both directions.

On the evening that Villager was visited, the firm was milling three miles of two main lanes — about 80,000 sq. yd. — on a Friday night, and paving the milled surface the same night. In addition to the four W 2100s, among the units of its paving train was a Hamm HD O90V Oscillation roller.

The DOT requires paving soon after milling, but in this instance — with the contractor working evenings from Friday at 6 p.m. to Monday at 6 a.m. — Villager was allowed to maintain traffic on milled lanes, so long as it was all paved by Monday morning. Villager would return to the project location the next weekend and mill-and-fill the lanes in the opposite direction.

The four W 2100s were milling 1.25 in. in echelon, and Villager would return with 1.25 in. of 1.25 mm NMAS Superpave.

"Two of the mills we are using here are brand new, and the other two are less than a year old," said Craig Smith, operations superintendent for Villager. "So we have four machines here that are relatively new." The operations would transpire under 150 light plants that had been set up along the three-mile length of the project, typically spaced 150 ft. apart. "That's typical of New York State DOT; they're very safety-conscious when it comes to night work."

Settling On Wirtgen And The W 2100

Villager is a relative newcomer to Wirtgen mills, having bought its first in 2003.

After having used various makes of cold mills for five previous years, Villager settled on the Wirtgen platform, and specifically, the model W 2100. The firm has 12 W 2100s, in addition to a W 600 DC for cutting 2-ft. widths, with Rumbler III attachment for cutting rumble strips in conjunction with its paving projects; and three W 1200s, predecessor to the new W 120 F.

"We pay our people very good wages, wherever we are in the country," Smith said. "If we don't perform, we are not going to be there. We must be on top of our game all the time, and the way to do that is with better employees and better equipment. We've figured out how to do it. It's a matter of working hard, paying well, and having good equipment. And the Wirtgens allow us to do that."

"With the W 2100s, the horsepower-to-foot [drum width] ratio is great, with the 700 hp engine matched with

In Georgia, Villager trims base course of I-95 ahead of widening

One of four W 2100s cold mills Rochester's I-490 in early June

the 2200 mm drum," Smith said. "It gives us great production. Other mills don't even come up to the standard."

The quality of surface remaining from a cold milling is critical to the ultimate smoothness of the repaved surface, and Smith feels the Wirtgens are far superior there. "The resulting surface is far superior to most of the other milling machine brands we tried," Smith said. "The pattern is superior and the grade controls are one of the most compelling things about the machines. Nobody has a grade control/depth slope like these Wirtgen mills do. We can put a 30-ft. averaging ski, just like a paver, on each side of the machine to control each side of the drum separately. We are ecstatic about the grade system, and now it's even easier with the new [Level-Pro] system on the W 120 F and newer mills."

But operating costs figure into the equation as well, Smith said. "We bought a new W 2100 and a same-size category competing machine the same year, 2003, within weeks of each other," he said. "At the end of the first year we did a cost comparison. It cost us approximately $50,000 less to maintain the Wirtgen that year than it did Brand X, in terms of fuel, parts and wear-and-tear. The first night we did the side-by-side comparison we burned about 225 gal of fuel with Brand X — I remember the number vividly — while the Wirtgen burned less than 175 gal. It was a huge difference then, and in today's world, every day it's a lot of money. We've bought 16 Wirtgens in less than five years," Smith said. "We don't ever see going back.

"Our company is very strong on quality and performance," Smith said. "We don't keep our mills a long time beyond a certain point, because it's important to us, as a subcontractor, not to fail. We have seen so many times where subs have started out with a milling machine or paver, and it breaks down again and again. We feel that our breakdowns on a job are nonexistent, and we will go to any extent to bring one in as quickly as possible if one is needed. But because of our maintenance, and Wirtgen's quality, our dependability is better than any other contractor I've ever met."

Decade Of Cold Milling

While Villager has owned Wirtgen mills since 2003, it has been in the milling business for a full decade, since 1998. "We were very pleased with our first W 2100," said Todd Hartman, operations manager, milling division, for Villager. "It was more cost efficient by far to run than the brand we had. We monitored expenses very closely, and we found that the existing machine used five more gallons of fuel per hour than the 2100.

"The conveyor belts lasted longer, and the rollers are stronger," Hartman said. "Now we have 12 2100s, three 1200s and a W 600 with rumble strip attachment. We got rid of our other brand models but we still have our first W 2100, with 6,500 hours, and we plan to run it out to about 8,000 hours. Not that it won't go longer, but we have a commitment that when we buy something, we know how long we're going to keep it, and when we're going to sell it. That it's still a useful machine, but not a front-line machine."

In the meantime, Villager puts about 1,700 hours each year on its W 2100s. In 2007 the firm milled over 25 million sq. yd. of asphalt. "That's a significant number of hours," Hartman said. But Villager is a wide-ranging firm, with operations in the nine states of North and South Carolina, Georgia, Florida, Alabama, New York, Pennsylvania, Massachusetts and Vermont, so there is much work to be had for the machines.

For example, while its four W 2100s were working on I-490, another was milling and trimming base course for the Georgia DOT for the widening of I-95 north of Brunswick, Ga., in the state's southeastern corner. There a single 2100 was doing all cold milling 28-in. in three passes to subgrade, for two prime contractors, for 44 miles of Interstate; then "boxing-out" the total of 176 lane miles of subgrade 28 to 32-ft. wide. In the parlance boxing-out refers to trimming of base course to correct slope using a milling machine instead of an excavator, dozer and grader. One machine — the W 2100 — replaces multiple machines, dramatically reducing diesel fuel consumption and exhaust emissions.

"We are able to box-out far more in a day than they can put back in stone," Hartman said. "We have to pace ourselves so we don't get too far ahead of the stone operation. What I like about the W 2100 is that we can do anything with it. It's not too big, or too small, but has more horsepower per foot of drum than any other machine on the market. It's ideal for all the uses we have, from city streets, to Interstate milling, to deep box-outs like we are doing in Georgia.

"Probably the best decision we ever made was switching to the Wirtgens," Hartman said. "Without a doubt, when you look back in time, and see how we have grown into the size and volume we are today, with the quality we have, I believe in my heart it's because of Wirtgen. The flexibility and serviceability of these machines, with the right horsepower, cut and drum configuration, is unmatched. And they are very predictable regarding service times. Because we have so many 2100s we can predict when we will have to do, for example, an undercarriage. And we've never had to replace a drum or a cutter housing. We've replaced cutting tools but not the drums themselves. We've never replaced a planetary drive. With all of the models of the the old brand we had, we wound up putting new drums on them after three years."

While the 2100s always will need a weight permit, its folding conveyor means the low-boy will not need an escort. In some parts of New York State it will save Villager $100 an hour in escort car charges. "We projected the difference between the old machines we were using, which did not have the folding conveyor, and we found that they were costing us $16,000 per year in escort fees, because we always are on the move," Hartman said. "Those are fees we don't have to pay with the 2100s."

The 2100s are versatile for big highway projects like I-490 in Rochester, but also for city streets, Hartman said. "We do a ton of city streets with the same machines," he said. "We do milling, chipping [milling around structures like manholes] and sweeping, and giving the customer 100 percent. We like to give the contractor the whole package, so all he has to do is tack coat and pave. By offering such worry-free service we find the contractors like using us."

Sometimes the equipment is utilized on a 24-hour basis, with 2100s being used for night milling, then day work on city streets, then back on the Interstate at night. "If you just pay attention to the machines, and what their needs are, they will perform for you," Hartman said. "Our product support man, Ted Strang, is brilliant, and brings to us a huge product knowledge base following his work at Monroe Tractor, our Wirtgen distributor."

Villager's W 2100 "boxes out" base course to correct slope while building up foundation for shoulder

Villager found "boxing-out" base course via cold mill eliminated several machines

Top-Flight Work Force

Neither Hartman nor Smith attribute all or even most of Villager's performance to Wirtgen machines, though; instead, they place most of the credit on its motivated work force, which works at high speed, independently solving problems and keeping the project going as though it were their personal responsibility, not that of a big corporation.

"We pay very well," Hartman said. "When you pay well, you can demand more. We will go through a lot of people to find the right people. And we will not accept mediocre, because that's the path to failure. If we can't 'Villager-ize' an employee after a time – that is, bring him up to speed to the kind of professionalism that we want – then we have to get rid of him. And the better our employees are, the more work we find, and the more able we are to bring new, better employees into the company. We find we are on an upward spiral in finding good, motivated individuals we treat fairly; the more we find, the better we do."

The result is a depth of resources at Villager that enables it to tackle many jobs and do them faster and smarter. The I-490 job at Rochester originally was slated for 24 nights, but instead was being done in two weekends.

"Instead of 24 nights of lane closures, we're inconveniencing them for just two weekends," Hartman said. "There are 192 employees at Villager; for them to come out for a three-mile lane closure, set up 150 light plants, umpteen arrow boards, mill it, clean it, tack it and pave it, and still know that we will be done by Saturday night on this side, is an outstanding accomplishment. There are very few companies that can pull that off. But we can with our employees and our Wirtgens."

Hamm HD 120 HV compacts gore of exit ramp

About the W 2100

The Wirtgen W 2100 surpasses its predecessor, the 2100 DC, in performance and profitability. The powerful Tier III 6-cylinder diesel engine with its impressive output of 700 hp allows the operator to perform a number of tasks effortlessly. The W 2100 uses joysticks which are identical in design to the W 2000 and W 2200 machine models.

The maximum milling depth of up to 32 cm (12.6 inches) and a milling width of 2.2 meters (7 feet, 2 inches) makes high production milling possible in only one pass. Cutter width options of 8 feet or 9 feet are available.

New 8-ft. Vision Pavers Expand Contractor, Agency Options

Late last year the Vision Series pavers from Vögele America Inc. were introduced via the 10-ft. tracked Vision 5200-2, and the 10-ft. wheeled Vision 5203-2 (see New Vision Series Offers Next Generation Pavers to North America, *and* Vision Series Pavers Set New Industry Standard, *pp 6-9, Fall/Winter 2007). This year, at Conexpo-Con/Agg 2008, two new Vision pavers were introduced, the 8-ft. tracked Vision 5100-2, and the 8-ft. wheeled Vision 5103-2. They offer new capabilities and opportunities for profitable paving in a variety of applications. Brodie Hutchins, general manager of Vögele America Inc., explains how in this interview.*

Tracked Vision 5100-2 (here) and wheeled Vision 5102-2 8-ft. pavers were introduced at Conexpo-Con/Agg 2008 in Las Vegas

Wirtgen Technology: ***What is different about the 5100-2 Vision Series models from the 5200-2 models?***

Brodie Hutchins: The 5100-2 models are 8-ft. machines in width, versus 10-ft. width for the 5200-2 models. We've gone with a "less is more" strategy on the 8-ft. machines, in terms of size. The benefits of an 8-ft. machine should be its maneuverability and compactness, but also be powerful, quiet and comfortable.

"Quiet, cool and full of fuel" was our operating mantra in designing the 5100-2 and 5103-2. It sums up what the 8-ft. machines needed to be. We kept them quiet, with cooler operating temperatures, but with a large fuel capacity, because most 8-ft. machines don't carry enough fuel to go through an entire day of paving.

"Bigger is better" was not the case here. Our objective was to figure out how to put all the technology improvements of the 10-ft. machine into an 8-ft., smaller package for the customer.

What are the fuel capacities of these machines?

For the 10-ft. machines, it's 106 gallons, and for the 8-ft. machines it's 70 gallons. That will be enough to take a customer through a 10-hour shift. For example, the former 8-ft. market leader has only a 38-gallon fuel tank. Noise level, operating temperatures and fuel capacity all are major issues for the 8-ft. paver market and we've solved those problems.

How have the controls of the 5100-2 machines been improved?

As with the 10-ft. machines, we designed in ErgoPlus technology, with its ease of operation and integrated leveling system. It's exactly the same system as with the 10-ft. pavers. Many of the maintenance-free features of the 10-ft. machine have been brought over. Most important, we kept all of the operator comfort features. For example, the operator's station can extend out beyond the edge of the machine, so they get the same visibility they do on the 10-ft. machines.

Why were you not able to carry the stylish, raked-back exhaust pipes seen on the 10-ft. 5200-2 models into the 8-ft. 5100-2 models?

It came down to a limitation of space. To keep the 8-ft. machine the size it needed to be, we simply did not have the same

opportunity to place the fan for exhaust or fumes extraction as we did for the 5200-2 models.

The exhaust stack is angled forward for operator comfort, keeping the noise, soot and fumes up and away from him. We studied competing machines and it's the best of any design.

What are some of the other differences between the 10-ft. and 8-ft. machines?

Other than size and the exhaust system, the generator is driven differently. Instead of it being belt-driven from the engine on the 10-ft. machines, it's direct-driven from the pump drive. We tried our best to reduce the systems on the larger machines into the smaller. There are different schematics and some nuts-and-bolts differences, but from the operator's standpoint, they will quickly forget which machine they are running.

Also, unlike the 10-ft. 5200-2 pavers, with their self-tensioning conveyors, the 8-ft. Vision pavers utilize conventional manually tensioned conveyors.

Do the 5100-2 pavers employ the tool holders and other crew amenities as on the 5200-2 pavers?

Yes, except the tool shelves slide out instead of folding down. On the 10-ft. machine we had enough distance for it to actually fold over, but for the 8-ft. design, to make it possible to include the cooler and tools we designed it somewhat differently. Nonetheless everything necessary for operator comfort and crew productivity was retained.

What are the differences between the power plants used in the models?

All four pavers utilize a Tier III QSB 6.7 six-cylinder Cummins engine. There are some differences between the engine designs. The 8-ft. machine is 170 hp and the 10-ft. is 240 hp. We wanted to maintain our best-in-class weight-to-horsepower ratio and were able to do so. Within the two sizes of pavers, whether tracked or wheeled, the same engine is used.

Both 8-ft. pavers take the same screeds. We offer a Carlson E-Z III and E-Z IV screed for the 5100-2 and 5103-2. Carlson is so well accepted that we decided to put our efforts into the tractor and make sure it integrated with the screed that the contractor prefers.

Is the Vision Series being sold in Europe or elsewhere, or is it exclusive to North America?

Initially, it was exclusive to North America but now that it's out there, interest is building in other parts of the world. For example, we've sold the Vision Series pavers into markets where U.S. paving practices are well-accepted, like Australia. And there will be other territories as well. But it was designed using engineers from the United States, for the United States.

That being said, it's truly a North American machine, with potential for Canada and Mexico as well. Wherever U.S. paving practices are accepted, the Vision Series will offer the best paver.

What are the applications of the 8-ft. machines versus the 10-ft.?

Wherever the 10-ft. machine can be used — heavy highway paving, heavy commercial work, residential streets, utility paving — the 8-ft. machines can be used as well. But the 10-ft. machine sometimes can be too big for confined areas, often utility work where the patching is just 8 or 9 ft. wide, the 8-ft. will be preferred. This can include parking lots and cul de sacs, where maneuverability is key. But even though the 8-ft. paver is not a driveway machine, some contractors will use it for that.

There always will be a role for the smaller commercial paver. But I see a shift in that market to where manufacturers exclusive to that market are making bigger machines. They are trying to get into the 8-ft. class. There is an attempt to be more inclusive beyond what used to be called a driveway paver. They're making pavers in the same class as a 30,000-lb. 8-ft. machine.

Most of the driveway pavers are indeed 8-ft. wide, but they are not as robust. They do not have the power inside to run like a highway-class machine. They're affectionately dubbed "throw-away pavers" because after two or three years the paver is bent and beaten, but is not worth rebuilding and used for eight or nine years. They're used until they fall apart.

Will these 8-ft. machines move into this market, or are they in a class by themselves?

They're in a class by themselves. I see some of those contractors stepping up into a little bigger machine once they get their base established and grow into bigger types of jobs. But we are not going to target those contractors, because they have a whole different mindset and customer focus than heavy-highway and municipal work.

When those contractors get work and want bigger machines, and come to us, it's not because they're using our machines; it's because they are getting into different types of work.

What was the reaction to the Vision Series at Conexpo-Con/Agg 2008?

For me, the most commonly overheard word was "WOW"! These potential customers stopped at our stand like deer in the headlights. They said they were tired of "who can build a better mousetrap" for the American market. They also said they were tired of being gouged by the big paver manufacturers. They said they were dying for the solution of a superior product marketed by people with our kind of dedication.

Also, they were impressed by Vögele America being a part of the overall Wirtgen Group.

They love the Wirtgen cold mills, and the Hamm compactors have achieved great success in recent years. So the Wirtgen name has attained a high level of credibility. And when they see a paver like the Vision Series, they learn that the parent operating company Vögele AG is the dominant worldwide market leader in paving equipment.

Nowhere else in the world but Vögele AG do they build 10-ft. and 8-ft. machines in a package that is low to the ground, with tremendous operator comfort, and most of the routine daily maintenance taken away from them. We looked very closely at the paving crew and what these people do for a living and designed the Vision Series for them. No wonder they go "WOW" when they see the Vision Series of pavers.

Vision Pavers Help Contractor Achieve A Perfect 'Zero'

After the movie of the same name, the number "10" has come to signify perfection. But to paving contractor Walsh & Kelly, Inc., Griffith, Ind., "zero" has come to mean perfection in paving, as in zero pavement surface fluctuations of 3/10-in. or higher as measured by the profilograph. And they got it earlier this year with the help of their new Vision 5200-2 paver from Vögele America Inc.

The Vision 5200-2, introduced in late 2007, is a 10-ft. tracked paver that represents the highest evolution of asphalt paver design to-date. Including the 10-ft. wheeled Vision 5203-2, and the brand-new 8-ft. tracked Vision 5100-2 and 8-ft. wheeled Vision 5103-2, the Vision Series is the most practical and productive line of pavers on the market today. They are quieter, cooler and more productive than either competing pavers, or Vögele America predecessor models.

But that was not what was on the minds of the Walsh & Kelly staff in spring 2008 as they undertook the paving of six miles of dual-lane U.S. 30 in Lake County, Ind., in the far southeast corner of the Chicago metro area.

Perfect Smoothness Despite Imperfections

"We attained a smoothness rating of zero on all four lanes of the six-mile project," said John Howard, project supervisor with Walsh & Kelly. "The crew did a good job even though the road was in such bad shape, with minimal patch repairs. We did it despite heavy traffic."

The pavement was milled ahead of the paving crew by long-time Wirtgen customer Mid America Milling Co., Jeffersonville, Ind., better known as MAMCO.

"We did a 1.5-in. overlay over a 1-in. mill," said Ed Kammrath, paving foreman for Walsh & Kelly on the job. "The plant ran consistently without running out of spec. Everyone involved — from the truck drivers to the roller operators — did their best to keep the project moving without stops."

In addition to the skill of the crew, and plant productivity, Kammrath attributed the job's extraordinary smoothness to Walsh & Kelly's new Vision 5200-2 paver. "The paver made a big, big improvement," Kammrath said. "For all the years I've been with Walsh & Kelly, I believe it's the best paver we've ever had."

The Vision 5200-2's hydraulic *Screed Hold* feature prevents the screed from sinking after stopping, while its *Screed Freeze* prevents humps when resuming paving. Both functions are provided as standard, and Kammrath credits much of the extreme smoothness of the project to those features.

"The hydraulic system is 10 times better than anything else we've had before," Kammrath said. "You can come to a rest and the screed does not settle. And when you take off it shears off the pile, instead of the screed floating. When the pile becomes active again the screed returns to the floating motion.

"That led to a lot of the success," he said. "As hard as you try to pave nonstop, you will have to stop eventually, especially on mill-and-fills, when you catch up with the mill if it's playing the waiting game for a truck. The function lets you shave off the top of, or get into the pile without moving the screed, and it's one of the reasons for our success. Any time that material gets a little hard, or packed down, the screed goes into a shear mode. When the augers start up, and the pile becomes fluid again, you return to a floating screed. The result is no bumps."

Walsh & Kelley's new Vision 5200-2 paves U.S. 30 in Lake County, Ind.

Hamm HD 120 helped contractor achieve perfect smoothness on project and was one of three Hamm rollers used

"When you come to a stop, the screen holds," said Brodie Hutchins, general manager, Vögele America Inc. "A function prevents the screed from sinking into the mat. When you shift into neutral from paving, the automation shuts off and without this function, the screed would simply drop into the mat. When you recommence paving you will have material in front of the screed, and the screed will have a tendency to rise up over the mix that is not flowing. When the Vision paver is put in gear again, the system holds the screed for a few seconds, making the screed work like a plow through the hump, instead of floating over the hump."

To also fight bumps, a material transfer vehicle was used, which helps keep the paver moving and free of dump truck bumps, while fighting mix thermal segregation. Compaction was provided by three Hamm rollers, an HD O90V Oscillation roller, used for finish rolling, an HD O120V Oscillation roller, and an HD 120 roller. A Carlson E-Z III screed was mounted on the paver.

Kudos For Crew, Management

The new Vision 5200-2 notwithstanding, Kammrath gave the crew much credit for the success of the project. "The crew cooperated a lot," he said. "They cleaned a lot between the shuttle buggy [MTV] because we need to keep that area as spotless as we can. I had guys who pay attention, and really believe in doing a good job. They're proud of their work, and proud of their job, and that helps big-time."

The state was pleased with the results as well, Kammrath said. "They were very happy," he said. "At first they couldn't believe it because of the existing look of the road we were paving. The road was in bad shape after this winter, and taking off an inch didn't help much. The Vision paver did a fabulous job."

And Kammrath lauds management for taking the potential risk of being among the first to buy a new paver model. "When Wirtgen got into the paver side I took a close look at what they offered," he said. "Our bosses have been flexible and understanding enough to let us stay current with what is in the market. For them to take a big leap and buy one of the first of these models made this project happen the way it did. I want to thank them for their flexibility and willingness to try. But it is paying off due to the smoothness resulting from the Vision paver and Hamm rollers. Every day was a zero-bump day. They really came up with a winner."

On U.S. 30, Vision paver's 'Screed Hold' and 'Screed Freeze' features suppressed stop-related mat discontinuities

Tight Schedule For Vision Pavers At Lime Rock Track

Twin Vision 5203-2 pavers work grade at Lime Rock Park race track. Photo courtesy Lime Rock Park

A pair of new Vision 5203-2 pavers — abetted by three Hamm oscillation compactors — worked to a tight schedule in June as they reconstructed the pavement of Lime Rock Park race track near Lakeville, Conn.

The track's $5 million project is very ambitious, attempting to do, in the words of its publicity department, 90 days of work in 31 days. O&G Industries, Inc., Torrington, Conn., was paving the 1.53-mile track as part of an overall upgrade which includes capital improvements to structures.

"We're doing two things: we are repaving and surfacing the 'Classic Lime Rock' track, which is the original mile-and-a-half track; and we are adding two optional, 40-ft.-wide, more technically difficult sections of track that are slated for faster prototype cars that can go too fast on the classic track," said Joe Sauer, director of operations and technology, Lime Rock Park.

The "classic" track includes seven turns in a park-like setting free of grandstands and bleachers; instead, patrons may wander around the grounds, change their vantage point, get close to the drivers, or relax in the shade. Since 1957 Lime Rock Park has hosted almost every form of motorsport, including Trans-Am, formula racing, Grand-Am Rolex Sports Car Series events, SCCA regional races, NASCAR Busch East Series, American Le Mans Series, the annual Rolex Vintage Festival every Labor Day, and the annual Ferrari Racing Days every July. It also hosts the Skip Barber Driving School for future and "wanna-be" race car drivers.

O&G's project experience includes buildings as well as highways and bridges. Its roots in road-building date to its founding in 1923, but in 1960, O&G completed its first structural project, and now is very active in building construction as well as that of pavements.

Project Began With Milling

The track was milled by Costello Industries, Inc., using one of its Wirtgen W 2100s. Asphalt millings were kept on site and placed on unpaved roads throughout the park, where they will knit together in the summer sun, creating a usable, stable driving surface.

On the Lime Rock Park project, two Vision 5203-2 pavers were used in tandem, to provide consistency of pavement side-to-side, and ensure a hot longitudinal joint between passes. The track left most of the decisions up to the contractor, but stipulated that the two pavers used in echelon had to be similar machines, with the same tractor and same screed. O&G was renting the second paver.

Compaction was being performed by two Hamm HD O90Vs and a rented

"We're very impressed with the new Vision pavers. The paver/screed combination leaves a great mat. The technology of the Vision pavers is far superior to any of its competitors."

HD O90V.

Breakdown behind the paver was being done with vibratory action, followed by Oscillation after the mat cools down, and along the joints.

"The mix falls within the specifications we've developed for race tracks," said Brian Prowell, P.E., principal engineer, Advanced Materials Services LLC, Auburn, Ala., designers of the mix and quality assurance/quality control managers. AMS was performing QA testing on the mix and density, as well as developing specifications and overseeing the work.

Paving in echelon was required to eliminate cold longitudinal joint and maintain mat consistency. Photo courtesy Lime Rock Park

"It's a 12.5 MM, 75-blow Marshall mix," he said. "We tend to use Marshall mixes on race tracks, because they have a little higher asphalt content and we need that adhesion to resist the lateral forces and raveling that we get under race cars. We milled 1.75 in. over most of the track, going deeper in some areas, and are placing this mix 1.75 in. compacted to 94 percent density." Two material transfer vehicles were being used to separate the pavers from the trucks, and to preclude thermal segregation.

Paving In Echelon

Paving in echelon is ideal for eliminating the longitudinal joint, created down the middle of the mat when a hot lift of asphalt is placed adjoining one that was placed earlier and has become cold. "Paving in echelon eliminates the longitudinal joints," Prowell said, "and the Vögele pavers are doing a very good job of putting out a nice mat. I like the quality of the mat; it's uniform, and even with the screed extensions out, it's putting down a uniform texture mat, which is what we want."

And Prowell said the Oscillation rollers came in handy in some difficult areas of the track. "On this project I've been really impressed with their performance on some areas where we had some lower initial densities," he said. "We were able to come back and using the Oscillation roller, bring them up, even when the mat was cooler."

O&G's actual paving crew gave the Vision 5203-2 a "thumbs up" in getting the work done under deadline. "A lot of thought went into how the machines were designed and built, especially convenience for the operator, and for the screed guys," said Robert Riggi, paving foreman, O&G Industries, Inc., Torrington, Conn., the prime contractor. "The tool racks, the visibility for the driver, and his swing-out chair all work for us. The exhaust system is definitely superior to other pavers. And the Ergo-Plus control system is very nice, easy to set up and easy to use. It lays a nice, even mat."

O&G Industries operator uses ErgoPlus system to achieve optimum smoothness. Photo courtesy Lime Rock Park

"O&G Industries has been a valued customer of ours for decades," said Stuart Clark, sales representative, W.I. Clark Company, Wallingford, Conn., the equipment distributor. "It's a very large, multifaceted construction and materials supplier."

In the meantime Clark began distributing Wirtgen Group products just this year. "We're very impressed with the new Vision pavers, having been a distributor of a competitor for over 50 years," Clark said. "The paver/screed combination leaves a great mat. The technology of the Vision pavers is far superior to any of its competitors."

O&G's acquisition of a Hamm Oscillation roller two years ago paved the way, so to speak for its purchase of its first Vision 5203-2 early this year, Clark said. "O&G already was aware of the quality of Wirtgen products," he said. "Now we are selling Hamm and just sold them their second HD O90V."

Work began when Costello Industries, Inc., used W 2100 to cold mill track ahead of paving. Photo courtesy Lime Rock Park

Oscillation Compaction Right For Longitudinal Joints, SMA

Lafarge's new HD O90V compacts cul de sac in Aurora, Colo.

A major asphalt paving contractor in the west has acquired a Hamm HD O90V roller with exclusive Oscillation technology to help it meet Colorado's explicit longitudinal joint density spec, in addition to stone matrix asphalt (SMA) compaction.

And while the longitudinal specification — a target 92 percent of theoretical maximum density, with a range of +/- 4 percent — originated with the Colorado DOT and was promulgated in 2004, now Colorado municipalities are adopting the spec as well, putting more pressure on contractors to make the grade. In the meantime, the DOT is specifying SMA on its high-level pavements as a matter of course.

"We started using the Hamm roller in May 2008 after acquiring it in April," said Doug Roma, paving superintendent, Lafarge North America Denver Metro West division. "We demo'ed the roller on stone matrix asphalt with another make roller, and I was really pleased with the performance of the HD O90V."

What Is SMA?

Stone matrix asphalt (SMA) is a gap-graded mix, a German import which brings together coarse, durable, premium aggregate with as much as 6 to 8 percent performance-graded liquid asphalt. This high asphalt content contributes to a durable HMA mix with a stone-on-stone structure which readily fights rutting. The stone-on-stone contact develops internal friction and opposition to shear. SMA's gap-grading also results in a surface that provides more pavement friction and less noise created at the tire/pavement interface.

The voids in SMA's coarse aggregate skeleton are filled with fibers, and a mineral filler, and in some states, a relatively high amount (6 percent minimum) of polymer modified asphalt binder. The fiber or mineral filler keeps the high percentage of binder from draining down and out of the gap-graded stone structure.

This design creates a rich mix that is resistant to cracking, while at the same time being highly resistant to rutting. But rich SMA, a "sticky" mix, can be tough to place, with high levels of compaction demanded. Initial compaction of stiff mixes like SMA by high-density screeds mounted on pavers like the Super 2100-2 from Vögele America Inc. helps contractors achieve SMA density and rideability much more easily than they could with conventional pavers.

But when no such paver is available, a new Hamm Oscillation compactor can get the needed numbers quickly and in virtually any situation.

"We had really good success with the HD O90V, getting better compaction than we did with the competing roller. In fact, there was no comparison with the other roller we tested, nor our existing rollers."

Tough Getting Densities

"We were placing the SMA but were having a hard time getting densities," Roma said. "But we brought the HD O90V out, and used it on different rolling patterns and used it in different ways. We had really good success with it, getting better compaction than we did with the competing roller. In fact, there was no comparison with the other roller we tested, nor our existing rollers. I was hoping to get the compaction we needed for SMA, and the Hamm really fit the bill."

In Aurora, Lafarge compacts longitudinal joint using Hamm's exclusive Oscillation compaction

It's Colorado DOT policy to utilize SMA on high-volume roads as much as possible. "SMA pretty much is the mix of the future in Colorado," Roma said. "The Europeans have been using it for a while, and perfected it. And it's more than just the state DOT; here the City of Aurora [Colo.] is going to use 60,000 tons of SMA this summer, for all its arterials."

And even when SMA is not going down, such as in an Aurora subdivision in June, the Hamm Oscillation roller will come in handy meeting the city's longitudinal joint spec. "In the subdivision we are placing a PG 58-28 Superpave mix with 20 percent reclaimed aggregate pavement," Roma said. "Here we have 19 cul de sacs and 16 streets just in one neighborhood."

There Alpha Milling Company was using a Wirtgen W 2000 to mill our an average 1.5 in., followed by Lafarge placing a 2 in. lift at the curb, with 2.5 in. at the crown. A total of 7,000 tons would be placed in that neighborhood.

"With the Hamm HD O90V I have noticed that when we have to roll a tight radius, or a tender mix, there tends to be less tearing in the mat, because the mat heals itself with the roller's rear [oscillation] drum," Roma said. "And it helps meeting Aurora's longitudinal joint spec, which is the same as the state's. We do what we need to do to meet or exceed their spec. For longitudinal joints we try to get to 94 percent, the same as curb to curb."

And Lafarge is benefiting from the HD O90V's high level of productivity as well. "With the Hamm we're having to 'hit' the mat less," Roma said. "I'm finding that we are getting better compaction with fewer passes. In the Aurora subdivision we are placing a relatively thin lift compared to some of the thicker bottom lifts we do, and the Hamm is keeping right up with the paver. And with SMA, we go hard and heavy on the arterials, and we have had two other make vibe rollers that could not keep up, plus a finish roller. But the Hamm did real well on SMA and I'm hoping we'll be able to increase our production rate with the increased capacity of this roller."

In cul de sac, Oscillation compacts mat without fracturing concrete gutter

Kleemann Introduces German Style To American Aggregates Industry

In 2006, Wirtgen Group of Germany acquired a majority interest in Kleemann GmbH, an international manufacturer of track mobile and stationary aggregate processing equipment. Internationally, Kleemann manufactures and markets a broad range of mobile and stationary processing technology for crushed stone, demolition waste and mixed construction waste. In 2007, under the direction of Evan Clarke, vice president, Kleemann Inc. USA, began expanding its presence in North America. In this interview, Clarke describes Kleemann's position in the North American aggregate processing market and its plans for growth here.

Evan Clarke, vice president, Kleemann Inc. USA

Wirtgen Technology: ***Internationally, Kleemann has a broad product offering. How is Kleemann positioned internationally and how is it expanding in North America?***

Clarke: Kleemann began 150 years ago in the manufacturing business in Stuttgart, Germany. Over the decades it evolved into the manufacturer of crushing and screening business that it is today. For the longest time it was run as a privately owned, engineering-driven company, and engineering is what Kleemann is all about. It's an engineering-driven company that is strongly into the design and improvement of mobile and static crushing. They've developed a broad line, including jaw crushers, impact crushers, and improved the mobile crusher concept as they've developed it over the last 40 years.

Why North America, now?

Europe is our biggest market, but we are sold in the Middle East, Asia and Africa as well. We did not enter the North American market earlier because we simply could not meet the demand. We are anticipating production capacity improvements that will permit us to expand our markets worldwide.

We always knew we would get into the American market; that was one of our plans. But we figured we would wait until the right time. With the acquisition of Kleemann in August 2006 by Wirtgen Group, this right time had come.

That's because we can leverage the existing Wirtgen America infrastructure in the United States, and have co-located our offices with Wirtgen America in Nashville, Tenn. Eventually, from Nashville, we will market equipment to both North and South America.

How will Kleemann expand?

The way to establish ourselves into this market is to get the right products into the American market to meet the demand of the customers. We have a unique brand with a lot of unique features, and we need to get it settled in this market while resolving issues of transport and legislation. Later we can expand our dealer network to better reach potential customers.

MOBICAT MC 120 track-mounted jaw crusher

Right now we have three dealer/distributors. Columbia Crushing & Screening, Portland, Ore., is handling California, Oregon and Washington State. Columbia was our first dealer in the country.

The second dealer/distributor is McHale, Inc., Windsor Locks, Ct., serving Connecticut, Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, New York and Pennsylvania.

Our third dealer/distributor is D&L Equipment, Jackson, Mich., which serves Michigan, Ohio, Arizona, Nevada and New Mexico.

Which products are you stressing in America?

We are concentrating on the mobile business. Kleemann's overall business is half mobile, half static/stationary. We are well known in Europe and the rest of the world as manufacturers of complete turnkey stationary plants. But our key focus in America will be to sell and support mobile equipment, including contractor equipment which can shift from site to site, and mobile equipment for in-pit use.

These product brand names are the MOBIREX mobile primary impactor on crawler chassis with feeding unit, pre-screen and conveyors built in various sizes ranging from 100 to 1,000 tph capacity: the MOBICAT mobile primary jaw on crawler chassis with feeding unit, pre-screen and conveyors built in various sizes ranging from 100-1,000 tph capacity: the MOBIFOX mobile secondary crushing machines with feeding unit, impact crusher and a screen producing up to 3 grain sizes, the MOBICONE mobile secondary crushing machines with feeding unit, cone crusher and a screen to produce up to 3 grain sizes, and MOBISCREEN mobile screening machines, producing up to 4 grain sizes with fixed or swiveling discharge belts, with a screening surface dependent on ultimate use.

What's special about these products that will help Kleemann compete in the market?

Kleemann's mobile equipment range has unique features that can't be found on our North American competitors. We build our machines to the concept of the "static plant", that is, they may be mobile, but they are built to static plant standards. That is you will have a feeder, and a fully independent pre-screen. Not all of our competitors offer this. This fully independent pre-screen offers a vast improvement in how efficiently the equipment can process and remove fines and scalps on-site, and also allow material that doesn't need to be crushed to bypass the crusher.

We design our own impactors and jaw crushers, which are fairly well-advanced in terms of features, adjustments and settings. We also offer feeders underneath the crushers, which eliminates belt damage, especially when crushing hard rock or material with rebar in it.

We also offer an all-electric machine. The all-electric, diesel-electric machine offers the client a more cost-effective way of operating, because it's cheaper in terms of operating costs of gasoline, compared to a diesel/hydraulic system. And it's a lot cleaner and more efficient.

How is the pre-screen independent when the equipment is all on one chassis?

Most other manufacturers build their machines to suit the market, keeping the weight down to make them more transportable. Kleemann has never compromised the machine's process to make it look good, or fit certain regulations. Instead, they've designed and built the machine to do what it's supposed to do.

Thus our competitors will have a hopper with an integrated grizzly system with the hopper. This reduces the cost and weight and also when you load the system up, it lacks an effective way to pre-screen prior to the crusher on the same chassis. We will offer that setup for smaller machines if necessary, but most of our machines come with a fully independent pre-screen as a key element to the Kleemann design, that is, a double-deck, buffered grizzly on the top section, and the mesh underneath, which allows you to fully pre-screen prior to the crusher on the mobile chassis, removing fines, clay, dirt, and actually size it prior to the crusher, putting correctly sized product on the side, or bypassing the crusher altogether.

This concept has been accepted for static plants for many years. Anyone putting a static plant in will have a hopper, a feeder, a pre-screen and a crusher. The whole system will be improved by how effectively you can optimize the process prior to the crusher, and the length of the feed prior to the crusher.

If your crusher is very close to the back end of the hopper, and the material does not have enough time to spread out into an even flow into the crusher, the crusher doesn't work as effectively as it could.

With our system, it doesn't matter how much material you have in the hopper, because it doesn't decrease the vibration, nor the effectiveness of the scalping system. It then feeds onto a pre-screen which runs at 1,000 rpm, which effectively scalps and allows the material to spread evenly out prior to going into the crusher

This isn't unique to static equipment, but there are very, very few manufacturers in the market that offer this on all the product range like Kleemann does.

Will Kleemann product also be more massively sized and heavily built than other makes?

Yes, we do not sacrifice weight or mass. Kleemann is an engineering-driven company, we don't make product to

MOBISCREEN MS 19 is a mobile tracked screen

look good or be pretty. We don't compromise on weight or metal in a machine. We build them the traditional way. All of the components that we put on a machine are of the highest standard, and we don't compromise with cheap components or metals or belts, nor the weight of the liner plates or durability of the track systems. Kleemann maintains its reputation by not selecting components to meet a price point or lighter weight.

At what point will the size or weight of Kleemann products impact a customer's ability to move a product from one site to another?

We do build smaller and lighter-weight machines. Our main focus is on the quarry and contractor business. We build the quarry machines, that are the heavy-duty machines with heavier tracks and liner plates. But we do offer a lighter-built machine for the contractor. However, what we regard as lighter-built is still heavier than our competitors. We are still working to engineer a machine that will be allowed to transport all the time, while not compromising its life span.

Today, we live in a disposable world, including everything from washing machines and cars, and yes, crushers and screens. People finance them for a period of years, use them hard and then get rid of them. Some competitors produce aggregate processing machines to fit a time span. But Kleemann still focuses on building machines to last a long time. We build to last.

Does that mean that Kleemann products will come in at a higher price point than perhaps Brands X or Y?

Yes. On close inspection, for most applications, the client will be able to see that it's better for him or her to invest that extra money in a machine that will give him better throughput, better returns, and better residual value than other machines. With Kleemann's productivity, reliability and capabilities it will withstand the tests of time and still be able to fetch money at the end of its use.

The decline of the dollar versus the euro is in the news these days. Does this pose a challenge to Kleemann in its introduction here?

We are focused on the fact that for now the exchange rate will be a problem, but we are prepared to invest in it. With the Wirtgen influence and experience, we are benefiting from their perspective in how we will deal with this. The American market is one we can't afford to not be in, and the investments and financial resources will be there to make it work.

In the U.S., as in Europe, there is a lot of interest in use of Recycled Concrete Aggregate (RCA) and Reclaimed Asphalt Pavement (RAP). Which Kleemann products are specially suited for recycling and reclamation of these recovered materials?

In Europe, the MOBICAT and MOBIREX are used for this material recycling. In Europe the tendency is to use the impactor more for recycled concrete and asphalt, and this is Kleemann's experience. For many years jaw crushers had been used because operators were afraid of getting metal damage in impactors. Kleemann's primary impactors have been uniquely developed for many years with heavy duty belts, a very strong drive, fully hydraulically adjustable, and designed to allow rebar or metal to go through the crusher.

Today Kleemann impactors are providing higher tonnages of reclaimed material than available through a jaw crusher, with better shaped material with less flats. They will clean the concrete off the rebar a lot more effectively than will a jaw crusher.

Yet another advantage is that we offer machines with the feeder underneath the crusher. If you operate a crusher with no feeder underneath, just feeding directly onto the belt, the belt will become damaged, metal will stick into the belt, stop the crusher, or otherwise cause problems. But a lined steel-pan feeder underneath the crusher, with high clearance, will eliminate most belt damage.

With Kleemann's many years of experience on the market, the MOBIREX has become one of the key machines used for the processing of RCA or RAP.

What did Kleemann bring to Conexpo-Con/Agg '08?

This year was our first exhibition at Conexpo-Con/Agg. We displayed two machines on a 4,800 sq. ft. exhibit, the MOBICAT MC 120-Z, and the MOBIREX MR 130-Z. The MC 120 Z has a 1200 by 800 jaw crusher, which is 48 by 32 inches. It has a fully independent pre-screen with feeder under the crusher as well. It's one of our largest machines and comes in at the 70-ton mark, about 145,000 lb. It has a unique jaw crusher we use quite a lot in the quarry work.

The MOBIREX MR 130-Z has a fully independent pre-screen with impact crusher box, with a closed circuit. It is two machines in one: a crusher and a screen box all on one chassis.

Side discharge of the MOBICAT MC 110

The MOBIREX 130-Z

Mobile Crusher, Screen Integral To Quarry Development Plan

Kleemann MOBICAT MC 120-Z gives TechniVate flexibility it needs

A forward-looking site development company is preparing a future commercial site in a rugged corner of Pennsylvania by mining and selling its aggregate, moving a mobile crusher within the quarry to facilitate the development plan.

The Avondale Quarry managed by TechniVate, Inc., is located in Avondale, Pa., on a site planned for future commercial space, single family homes and townhouses. But a considerable amount of earth and stone has to be moved to get the site to the proposed building elevations.

TechniVate found that an aggregate processing plant utilizing a new MOBICAT MC 120-Z mobile jaw crusher from Kleemann Inc. USA is giving it optimum flexibility in configuring the site for future construction, even as it mines and sells the aggregate.

"Our property is backed right up to an airport, and our goal is to move this mountain down to the road elevation in the front," said Will Mains, quarry manager, Avondale Quarry of TechniVate, Inc., Landenberg, Pa. "We have a three-to-five year supply of stone here. The property then will be developed with townhouses in the back and commercial property along the road in the front."

Sandstone And Bluestone

Avondale is mining mostly sandstone from a complex deposit which can change every few yards. In addition to the sandstone, pure white and rose quartz and mica is present, along with the native Pennsylvania Bluestone highly prized for architectural and landscaping applications.

The site development notwithstanding, the 14-acre quarry has existed on this 20-acre site for many years, with Bluestone veneer panels extracted from it and utilized by dimension stone providers in the vicinity. "It was old-school extraction, with jackhammers chipping away at the face," Mains said. "Another operator pushed all the overburden over the face and crushed and screened the overburden. But we are the first to take a really big dent out of it."

The quality of the stone varies tremendously from hardness to softness across the quarry, Mains said. "The back side of the quarry is mostly sand, but as you get toward the face, it's a harder stone," he said. "And the top layer was 'soft' stone, more overburden than anything else." Some of the stone can be used in concrete or asphalt, some can't.

Because the deposit varies so much, TechniVate will mine selectively when given the chance. "If we get into a very good vein we will follow it so we can have a certain type of stone," Mains said. "But for right now, the top layer being really soft, we took the whole lift off

"The MC 120-Z is very good on fuel. We're getting 6 gallons per hour, compared to 10 to 16 gallons per hour for a hydraulic-run jaw. And if we can power the crusher cheaper, we can crush product cheaper, and make more money."

and sold it for structural fill. Then we flattened it out. We're now working on our second lift."

Working Down In Quarry

In late November 2007 the quarry was working on a 20-ft. bench near a 40-ft. face. A Volvo EC460BLC trackhoe was feeding a Volvo A30C 30-ton haul truck, which was making an approximately 400-ft. drive up a muddy incline to the processing and stockpile yard above. Production varied from 4,000 to 4,500 tons per day, depending on weather and demand. The quarry also has a 25-ton Cat haul truck.

Above, a Volvo EC360BLC excavator loaded the Kleemann MOBICAT MC 120-Z jaw crusher in primary configuration. The 120-Z, with its large 48 by 32-in. jaw, has a fully independent double-deck pre-screen with a feeder under the crusher. The machine is powered by an onboard fuel-efficient diesel electric generator, and the complete machine weighs in at 72.5 tons, or 145,000 lb.

While only one plant was configured when visited, typically TechniVate runs two aggregate plants, one based on the newer Kleemann MC 120-Z. "We will have two spreads running, and a single trackhoe feeding both plants," Mains said. "Both setups will be doing the same thing."

Shots are undertaken depending on the supply and demand of what's stockpiled at the processing yard. "It depends on the orders and what's sitting here, and what is needed quantity-wise," Mains said. "About every two months we will get through three weeks of blasting."

But in November the quarry was gaining room for the plants down below. "We're gaining space right now," Mains said. "We are getting enough space opened up so we can get our plants down in the bottom, and as they blast in one direction, we will keep tracking the equipment to follow. The haul trucks will go away. We will feed the plants with one track 'hoe, and have a hammer on the other track 'hoe. We'll load the triaxles down at the plants and they will leave directly from there. We're in a transition phase that will take us to the end of the year to get everything moved."

Accommodating Growth

TechniVate acquired the Kleemann unit to accommodate its growth. "We needed to make more product," Mains said. "We tried several different manufacturers and called Kleemann. They brought it down, we used it, we liked it, and we think it's going to be a reliable machine, with less downtime."

The new Kleemann complements existing jaw and cone crushers at the quarry. "We wanted to go with something bigger, and the Kleemann has let us increase from 300 tph back of our other spread, to an additional 450 to 500 tph with the new spread. It's let us push production up to 6,000 to 8,000 tons per day."

The versatility of the mobile plants allows TechniVate to run them as independent plants, or as a single spread. In November, the Kleemann jaw served as the primary crusher, the throughput of which was sent into a screen plant, which was taking out a 2 in. product and sand in back of the screen. The 2-in. plus was going directly to a secondary cone crusher, which was recrushing it and dumping back into the screen plant.

On the average, the primary jaw will receive 33 x 33-in.-size shot rock. The Kleemann jaw takes that down to a 6-in. stone, up to 7-in. size for slabby pieces, which is fed to the screen and secondary cone crusher.

"The screen plant is taking both crushers at once, and making a 2-in.-minus product, three separate units working together," Mains said. "The cone crusher is set up as a closed-circuit. Anything 2-in.-plus is going to go into the secondary cone, which is set to 1 3/4 inch, which dumps directly back to the screen plant. In essence we have a jaw crusher and a cone crusher dumping directly into the screen plant, and only two products are coming out: sand and 2-in.-minus. Nothing can leave the screen plant unless it's 2-in.-minus."

This configuration has well-served the quarry, whose current customer needed a cleaner stone at the time, but also later would have need for a stone-sand mix right out the back of the screen. "Right now our sand is our byproduct, and we're selling the 2-in.-minus to a landfill, for a 60-ft. high, mile-long dike along a river to enable the landfill to expand capacity."

The sand was being used for fill, but sometimes Avondale's aggregates and sand can be used for DOT work, Mains said. "The first layer of the quarry was not certified for

New MOBICAT MC 120-Z lets quarry push production to as much as 8,000 tpd

Mobile MC 120-Z tracks faster than other crushers in operation

TechniVate's Avondale Quarry gets substantially better fuel consumption than other mobile plants there, operator says

DOT work," he said. "About a third that we've shot of the second layer has been approved for DOT work, passing L.A. abrasion tests. Even our sand passes for Type B sand, which is septic asphalt. In the beginning it didn't — it was too soft — but the deeper we go, the harder it seems to get."

When visited in November, Avondale Quarry was not employing the screening capability built into the Kleemann MC 120-Z. "Right now, we're not using it," Mains said. "We're sending 100 percent of its output to the screen plant and the Kleemann screen is matted off. But we did use it with a 1/4-in. square screen when we first acquired it, pulling 1/4-in.-minus sand right off the feed, taking some of the pressure off the screen plant."

Heavy, Durable Construction

The massive Kleemann mobile plant is at home in the quarry, but had to be delivered on three trucks brought over narrow country roads through rural Pennsylvania mushroom country.

"The crusher came on one truck, the conveyor on another, and the hopper, screen and second conveyor came on the third," Mains said. "Kleemann assembled and fine-tuned it. They stayed with us for over a week to make sure we knew how to use it. It's been crushing well and we like what we're getting out of it."

Part of that satisfaction comes from its durable construction, Mains said. "It's built very strong," he said. "Everything on it is heavy. If we keep up on its everyday maintenance, making sure the belts are clean, we are good to go."

The MC 120-Z's mobility already has come in handy, even in the limited amount of time the quarry has had the machine. "For tracking around in the quarry, it moves fast," Mains said. "It tracks faster than our other crushers. They're pretty much like snails compared to this one. If you're moving it to clean out around it, you can quickly track it back into place. To track it down into our quarry it wouldn't take more than five minutes, compared to over a half-hour for the others."

Avondale also has seen substantial savings on fuel consumption with the Kleemann, which is electric-powered and supplied by a Cat generator, which eliminates warm-up time in cold weather. "It's very good on fuel," Mains said. "We're getting 6 gallons per hour, compared to 10 to 16 gallons per hour for a hydraulic-run jaw. And if we can power the crusher cheaper, we can crush product cheaper, and make more money."

In the meantime, Avondale's new Kleemann jaw crusher it taking whatever the quarry can throw at it.

"Our other primary crusher is smaller. so it won't handle as big a stone as the Kleemann," Mains said. "As a result we get fewer blockages that have to be dug out. We want to put as big a rock as we can into the crusher." Mains said. "And if it doesn't fit, we push it. We get carried away most of the time, so the Kleemann is saving us from having to dig the old primary out, and that's a plus."

Teeth, Men And Mill Remove PCC Pavement From Maine Interstate

W 2200 cuts concrete in Maine

Dedicated crews and three Wirtgen mills of Swank Associated Companies, Inc. worked 18-hour days for Three weeks to grind three inches of tough portland cement concrete from I-295 north of Portland, Maine, as part of a complete reconstruction of the pavement.

The work necessitated the complete closing of all I-295 southbound lanes — two 18-mile lanes, a total of 36 lane miles — from Gardiner to Topsham and was necessitated because its 1970s-era concrete slabs were deteriorating from alkali/silica reactivity (ASR).

ASR is a chemical reaction that occurs between alkalis contributed primarily by cement, and a reactive form of silica from reactive aggregate, which together yield an alkali/silica gel. Under the right conditions — particularly enough available moisture — the gel will expand and produce stresses, damaging the concrete. Over time, this expanding ASR gel exerts internal pressure that can lead to cracking of the concrete. ASR doesn't destroy concrete per se. Rather, ASR-compromised concrete is weakened so that day-in, day-out wear-and-tear becomes prematurely destructive.

The $28.5 million project required the milling of concrete and a half-inch asphalt surface treatment, followed by the breaking and seating of the remaining slabs, then asphalt paving over the stabilized base of former pavement. Pike Industries, Lewiston, Maine, was the general contractor.

Aggregate Tough On Teeth

Swank used three mills — a W 2200, and two W 2100s — to cut the concrete and the thin asphalt overlay. While there's nothing new about using Wirtgen mills to mill concrete, the extremely hard aggregate on this project made it slow going.

"We have a very hard granite aggregate, and there are very large gradations of it in the material," said Mark Yeager, Swank's lead milling foreman. "It's really abrasive and hard to cut. It's hard on teeth, hard on the machines, and hard on the men. We're working 18 hours a day, one shift. It's a battle." The job is on such a time frame that work must progress seven days per week to stay ahead of the other contractors.

"This is one of the toughest jobs I've ever been on. It's taken a lot of experimentation to get the machines to work just the way we want. We're happy with the Wirtgens in regard to their durability, and fuel economy, which today is a big thing."

One of two W 2100s cuts 3 in. of concrete on Maine I-295 in late June

Given the tight time frame, Swank was running all three mills at the same time. The W 2200 was cutting the full 3.5 in. deep — 3 in. of concrete topped by 0.5 in. of asphalt surface treatment — at a 2 percent cross-slope.

The resulting 5-ft. edge piece left was, many times, in excess of 4.5 in. deep, and at times was striking the pavement dowel pins. There were times the concrete got so hard that the better production was to take the concrete in two lifts to get to the required depth.

On the plus side, all construction was taking place without work zone traffic. All traffic was being diverted down a parallel blacktop road. Cut concrete aggregate was being conveyed onto the shoulders under construction. "They will grade it, roll it and pave right over it," Yeager said.

"This is one of the toughest jobs I've ever been on," he added. "It's taken a lot of experimentation to get the machines to work just the way we want, but they're holding up real good. We're happy with the Wirtgens in regard to their durability, and fuel economy, which today is a big thing."

"We are happy to have gotten done in the time allotted," said George Fischer, Swank chief operating officer. "When removing 36,000 tons of concrete, you want the best tools and the best equipment. Rhino and Wirtgen came through on both fronts."

Swank's big W 2200 gets water refill on the fly

Lift was 3 in. of concrete topped by 1/2 in. of bituminous surface treatment

Turnpike Proscribes Vibratory, Allows Oscillation Compaction

Oscillation compaction allowed on all asphalt courses for Pennsylvania Turnpike Commission

After decades of not allowing vibratory compaction on its asphalt wearing courses, the Pennsylvania Turnpike Commission now allows Oscillation compaction to be used on all courses, as an option, in addition to static rolling.

The turnpike's proscription of vibratory compaction from wearing, surface or friction courses dates to the introduction of vibratory rollers. However they are allowed on lower lifts that are 3 in. or greater.

The commission specifies three-wheel static rollers for breakdown, followed by compaction with static or Oscillation rollers. The spec states that Oscillation compactors may be used as an intermediate or finish roller, but no vibratory compaction permitted.

Oscillation compaction is non-aggressive compared to vibratory compaction, because it compacts with a gentle rocking drum motion, not a vertical pounding. Oscillation compaction for asphalt is available exclusively from Hamm, along with vibration, via its 8-ton HD O70V, 10-ton HD O90V, 13-ton HD O120V, and the new 14.5-ton HD O130V. It's also available for soil compaction via the 66-in.-wide 3307 VIO and 84-in.-wide 3412 VIO.

No Vibratory On Wearing Courses

"We have not used the vibratory rollers on wearing courses for over 35 years, because they can be hard to control," said Terry Dreher, materials management supervisor, Pennsylvania Turnpike Commission. "The roller operator may be inexperienced, going too fast to keep pace with the paver and not have the amplitude, frequency and speed matching which can cause the bumpy pavements."

Dreher said the turnpike specs a material transfer vehicle, which allows the storage of up to 25 tons of material in advance of the paver, and helps with both aggregate and thermal segregation of the entire load.

"The MTV storage capacity allows the paver to continue placement while trucks are leaving the paving train to return to the plant. Next comes the paver, and then we typically have a three-wheel static breakdown roller," Dreher said. "We will have a dual-drum intermediate roller, and a dual-drum finish roller, all in the static mode of course."

"When vibratory rollers first came out, we had some projects such as patches for which they worked very well, with good numbers throughout," said Gene Mattson, ACA Engineering, Inc., Mechanicsburg, and for 37 years the turnpike materials engineer. "But then we tried a wearing course project on which we got a washboard-like finish, so

From what I saw, the Oscillation rollers gave us the compaction we needed without the extra rollers, more passes, and washboard effect of the vibratory rollers."

we tabled use of vibratory rollers. Since that time there have been attempts by industry to get us to use vibratory compaction, but given the chance, they go for quantity rather than quality, and they race the paver down the road with the vibratory roller trying to keep up. We get impacts spaced in such a way in which we get a washboard effect. As a result the commission still does not include vibratory compaction in its spec."

HD O120V Oscillation provides superior compaction to vibratory on Pennsylvania Turnpike

Oscillation Replaces Rubber-Tired Rollers

"Oscillation came to the attention of the commission through the efforts of Matt Wilson at Groff Tractor & Equipment," said Pete Broeren, P.E., president, Norwin Construction, owner of an HD O120V now used on the turnpike. "Matt saw a need and made the contact with Gene Mattson who was then with the turnpike. He made him aware of the benefits of Oscillation compaction."

"On our PG 64-22 binder we require a rubber-tired roller," Dreher said, "but typically we have not used that for quite a while because the main line or wearing surface has gone to a PG 76-22 binder, and we were having trouble with it picking up on the rubber tires. So when the Oscillatory roller came about, we were eager to see it. We used it on a project at Somerset and it worked really well, especially since it's one of the highest points on the turnpike system, and with cooler nights, the mat was cooling down very quickly. We got a nice feel for where it would work; it gave us the kneading action of the rubber-tired roller without picking up the mat, and the densities were very good on the project."

"We lost the pneumatic-tired rollers to the problem of pickup with modified asphalt mixes," Mattson said, "Oscillation rollers' claims of being able to reorient the aggregate particles to achieve better compaction was similar to how the rubber-tired rollers had done, so we wanted to try the Oscillation roller. From what I saw, the Oscillation rollers did just that, giving us the compaction we needed without the extra rollers, more passes, and washboard effect of the vibratory rollers."

Now, with Oscillation compaction, the Pennsylvania Turnpike Commission can obtain superior compaction without risking the shattering of aggregate often seen when a vibratory roller overcompacts.

"Shattering of surface aggregate is one of the traits of a vibratory roller," Mattson said. "We had shattering of aggregate even with the binder courses. With the Oscillation roller, it does not happen, because there is no impact. That the Oscillation roller can get very good compaction at lower temperatures is very advantageous for the turnpike, because most of the paving – especially the mill-and-fill paving – is at night, when the temperatures are lower. It's a very big advantage to the turnpike commission and the contractor to use Oscillation."

Oscillation compaction was achieving 94.7 percent density with no shattering of aggregate and many other benefits

And since so much paving is done at night, Mattson said the quiet of the Oscillation rollers is a big plus. "The commission will be paving in residential areas where they have to be very careful with the neighbors," Mattson said. "A vibratory roller would be a noisy roller, with vibrations perpetuated, where the Oscillation roller is quieter."

And Norwin, the contractor, is using Oscillation compaction well beyond the wearing course. "We are using it on all courses, including the permeable base," Norwin's Broeren said. "We are consistently getting high-density mats, that reach the specification sooner. We don't want to be at the low end of the density result, we want to be mid-range to high-range, to ensure there never is a question about the quality of the work that we're giving the client."

Wirtgen Mills Meet New Surface Spec In Colorado

Colorado DOT has followed its trend-setting longitudinal joint density specification of 2004 with a stringent, new spec mandating maximum allowable roughness of a milled asphalt surface.

The spec determines the roughness of a milled pavement by placement of glass beads on a surface, which are then carefully spread out using a clear plastic disk. By the time the disk comes to rest on the peaks of the milled surface, the bead pile must have spread at least 9.5 in. in diameter, indicating a fine pattern; if they spill too quickly, not achieving the required diameter, the pavement is too rough and must be re-milled.

Night Milling Denver's I-25

The new milling spec was demonstrated in early June on a night job on Denver's I-25 expressway. There, in advance of a stone matrix asphalt (SMA) overlay being placed by prime contractor Brannan Sand and Gravel Co., subcontractor Alpha Milling Company, Denver, was cold-milling I-25 from just south of I-70 to the 23rd Street exit just north of downtown Denver.

At night, Alpha was milling four lanes of expressway both north- and southbound, while Brannan compacted the asphalt overlay using a Hamm HD O120V roller incorporating exclusive Hamm Oscillation compaction.

Alpha Milling's fleet consists of nine Wirtgen mills. "We're using one W 2200, three W 2000s and a W 2100," said Larry Ware, president, Alpha Milling Company, Denver. "The 2200 has a 12.5-ft. drum while the 2000 has the standard 7 ft., 3-in. drums." In total the project involved 265,000 sq. yd. of 2-in. milling, followed by placement of a 2.5-in. SMA overlay.

"At 8 p.m. they give us one lane, at 10 p.m. they give us a second lane, and at 11 p.m. we get a third lane closure," said Doug Jones, Alpha general manager. When visited, Alpha began work with multiple machines on a northbound ramp onto I-25. "They begin close together, but as the night goes on, they get as far as a quarter-mile apart, depending on who's taking an off-ramp, and who's taking a travel lane, for example."

Big W 2200 mills Colorado's I-25 at dusk just north of downtown Denver

Placing SMA Overlay

"We're putting down a 2.5-in. SMA overlay in a 2-in. milled surface," said Brian Knapp, project superintendent for Brannan. "Our hot mix plant for this project is only minutes away, right at the very next exit. We're very fortunate in that respect."

Early on, Brannan determined that Oscillation compaction was the simple way to meet Colorado's longitudinal

W 2200 with 12.5-ft drum is one of four Wirtgen mills on project

joint density spec, to be verified by cores (see *Hamm Oscillation Compaction Solves Longitudinal Joint Woes*, Fall/Winter 2004, p 27; download back issues of Wirtgen Technology at www.wirtgenamerica.com).

Attaining adequate longitudinal joint compaction can be problematic anywhere because it usually involves placement of a lift of fresh, hot mix asphalt against a new but cold mat. Because bonding between the longitudinal mat edges does not take place under those conditions, the longitudinal joint between the lanes becomes a focus for pavement deterioration. For that reason, Brannan was using its HD O120V for longitudinal joint compaction on I-25.

Colorado's longitudinal joint spec has a target 92 percent of theoretical maximum density, with a range of +/- 4 percent. "We put the HD O120V in the middle of the paving train for our joint densities, because there are a lot of incentives to do so" Knapp said. "With SMA it's minimum 90 percent density on the joints, and we're getting 91 percent. The Hamm's main focus is the longitudinal joint. For the mat, 93 to 97 percent is required. Right now we're doing very well on all counts."

Wirtgens Ensure Surface Spec

Brannan knows the value of a good milled surface to attaining a pavement that meets smoothness specs — winning the maximum incentive payments allowed for superior smoothness on a project — and knows that Alpha's Wirtgen mills will give him that surface.

"We like the Wirtgen mills a lot," Knapp said. "We follow Larry [Ware] and his mills all the time, and they give us a start for a smooth ride. Wirtgen is the best of all mills, by far."

The ability of the Wirtgen mills to provide a perfect planed surface for asphalt overlays is proven by their performance in meeting Colorado's new milled surface macrotexture spec. "The macrotexture test is *Colorado Procedure 77, Standard Procedure for Determination of Macrotexture of Planed Hot Mix Asphalt Pavement*," Jones recited. "In layman's terms, it measures the roughness of the milled pattern. It's a CDOT spec, for the first time mandated for all federally funded CDOT projects in 2007."

For the test, from a maximum 4-in. height, 200 ml of glass beads used for retroreflectivity of lane striping are poured onto the milled surface, then distributed evenly on the surface using a slow rotating motion with a plastic disk, until the disk rests on the points of the milled surface.

"We measure how far that 200 ml of beads spreads out," Jones said. "It has to be within a certain range, over 9.5 in., which is less than 0.17 macrotexture, thickness of the glass beads displaced. Anything less than 9.5 in. indicates the pavement is too rough and requires a re-mill."

From the contractor's point of view, for the smoothest pattern possible, he or she has to make sure he has a quality mill, in good working order, and make sure he is not going too fast, Jones said. "With our Wirtgens we have not yet failed a test," he added. "We did a lot of practice tests leading up to the spec implementation so we know how they perform."

A copy of the spec is available from the Colorado Asphalt Pavement Association at http://www.co-asphalt.com/documents/CM-MacrotextureMilledPavement-7-2005.doc.

One of Alpha Milling's many W 2000 at work on I-25

New Colorado milled surface roughness test involves spreading of glass beads using a clear plastic disk

Foamed 'Green Mix' Right Choice For Mesa Verde

Foamed asphalt 'Green Mix' – made in-situ by a Wirtgen WR 2500 S – was the right choice for reconstructing a road in environmentally sensitive Mesa Verde National Park, Colorado.

Mesa Verde, Spanish for green table, offers a spectacular look into the lives of the ancestral Pueblo people who made it their home for over 700 years, from 600 to 1300 A.D., according to the National Park Service. Today, the park protects over 4,000 known archeological sites, including 600 cliff dwellings. These sites are some of the most notable and best preserved in the United States.

The National Park Service — and the Federal Lands Central Division of the Federal Highway Administration (FHWA), which is responsible for roads on federal lands — is determined to minimize the ecological impact of road reconstruction within the borders of Mesa Verde, including reduction of truck movements, use of nonrenewable resources such as virgin aggregates and liquid asphalt, and time spent in construction. For this, in-place Green Mix recycling with the WR 2500 S was ideal.

Wirtgen Green Mix technology incorporates liquid "foamed" asphalt, in which performance-grade asphalt is foamed with water and air, and is injected into reclaimed materials and aggregate in a mixing chamber in the WR 2500 S. This Green Mix is left in-place and, once graded and compacted, can accommodate traffic – including heavy trucks – almost immediately.

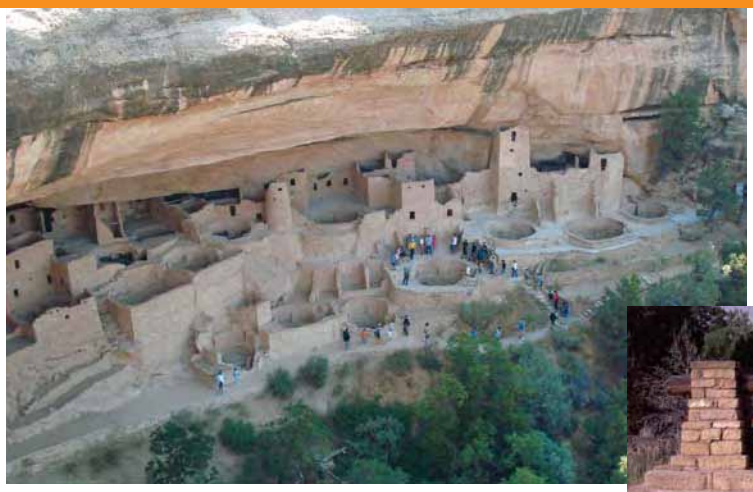
Foamed 'Green Mix' is formed in situ in Mesa Verde National Park

Not only did use of the big recycler/reclaimer minimize the time and "footprint" of reconstruction, it eliminated the very long truck hauls of demolition material, and virgin base materials, that would have been required of conventional reconstruction. It also minimized the impact of reconstruction for park visitors.

That's possible because the WR 2500 S — as utilized by the recycling and paving contractor, Kirkland Construction Inc., ground up the weathered, deteriorated asphalt pavement in-place and incorporated foamed liquid asphalt into the mix inside the machine "on the fly", eliminating endless truck trips, fugitive dust and the disruption of road demolition and construction. The ecological benefits of foamed asphalt Green Mix produced in-situ are such that it's become a preferred means of rebuilding roads in ecologically sensitive areas such as Zion National Park, Utah, Canyon de Chelly National Monument, Arizona, I-80 through California's High Sierras, and now Mesa Verde National Park.

"The recycling took place in August 2007 and the paving was completed in September," said Tim Kowalski, manager, Wirtgen Pavement Engineering Services. Kowalski and Wirtgen recycling specialist Mike Marshall worked to familiarize the contractor with foamed asphalt Green Mix construction, and make sure the process went smoothly.

"It was the contractor's first attempt at doing foamed asphalt, and they were able to get production of over two miles a day," Kowalski said. "That's pretty good, given the conditions of traffic restraints, and being so far away from our suppliers. Coordinating the delivery of the oil, and the timing of the project was a learning curve, but they figured it out pretty fast. We went through the process from start to finish, and worked with them to make sure the original mix design was



modified correctly to work with changes in the profile of the road," Kowalski said. "We did presampling, running of the samples through the WLB 10 portable lab, and once we got the approval to go ahead, worked with them on the reconstruction procedures. This was essential because it was the first such placement they had done."

The project was 9.5 lane miles of a two-lane road, consisting of steep roads and winding corners. The existing pavement varied from 2 to 5 inches in depth, and recycling was going down 8 inches. A total of 134,000 sq. yd. of road surface was recycled using the Wirtgen Green Mix process.

"Kirkland had to leave one lane of traffic open, and they could not delay traffic for more than 15 minutes at a time. It created some challenges for the process. But we worked with them on how to do it correctly, and make sure they understood what needed to be done."

Because of the national park's location high on the arid Colorado Plateau, keeping the moisture level correct on the top of the material was a challenge. "We just kept stressing water, water, water," Kowalski said. "We had to feed the WR 2500 S with water as well. There were only two water trucks, with a long haul. By the time they navigated the winding roads with a fresh tank, the surface might not have been at optimum moisture. But after a while they did a good job of keeping up with it."

Also, once underway, in some sections the recycling train encountered lesser depths of existing asphalt than were anticipated. "We had to bring in some external materials so we did not have to dig down into the undesirable clays below," Kowalski said. "We had to use virgin materials because asphalt millings from the project already had been claimed for another use in the park."

With foamed asphalt Green Mix, cement or other fine material is added to help distribute the foamed bitumen throughout the mix. In this project reclaimed fly ash was specified, but Wirtgen techs specified a different amount. "Originally the federal spec was 3 percent foamed asphalt, and 5 percent Class C fly ash," Kowalski said. "We thought the fly ash was a little too much, so we redesigned the mix with 2.5 percent foamed asphalt and 2 percent fly ash. Later the fly ash content was upped to 3 percent."

About the WR 2500 S

The "S" in the WR 2500 S stands for "Super", because the WR 2500 S reclaimer and soil stabilizer is a beefed-up, higher performing version of the predecessor WR 2500.

In addition to its high performance as a full-depth base recycler of failed road pavements, and as a soil and base stabilizer, the WR 2500 S when equipped can be used to make a foamed asphalt-stabilized base, with significant savings and base performance improvements for the owner and contractor. It also can be equipped with emulsion and/or high volume water stabilization.

Its cutting width is 8 or 10 feet, with a maximum cutting depth of 20 inches. It boasts a hydraulic, all-wheel drive and its power plant is rated at 670 hp. A redesigned, reinforced cutter drum housing includes multiple wear plate inserts to minimize wear.

The cutter drum has been redesigned to include bolt-on end rings, which are easier to service. Cooling air routing has been reversed, improving cooling performance, operator comfort, and ambient particulate levels. The engine now rests in a newly enclosed compartment. And a new dual-cyclonic air precleaner will result in an extended service life for the air filtration system.

Exhaust emissions are redirected toward the rear of the machine and away from groundsmen. And the operator's compartment has a larger air conditioning capacity, with increased visibility despite a reduced glass surface area.

At rear of WR 2500 S, freshly foamed asphalt awaits compaction at Mesa Verde

Use of Green Mix via WR 2500 S eliminated dust, carbon footprint of hundreds of round-trip truck trips

Wirtgen News

Vögele Vision Series Pavers, Largest Oscillation Roller Debut At Conexpo-Con/Agg

For the first time at a major exhibition, the three Wirtgen Road Technologies divisions of Wirtgen recycling, Hamm compaction, and Vögele America asphalt pavers were joined by the new Wirtgen Mineral Technologies unit of Kleemann Inc. USA, at Conexpo-Con/Agg 2008 in March in Las Vegas.

Thousands of long-time friends, plus new and potential customers, visited the advanced equipment and viewed new roadbuilding and mineral processing technologies in-person and "hands-on".

The Road Technologies' 25,200 sq. ft. exhibit introduced the new line of Vögele Vision pavers, including the new Vision 5200-2 10-ft. tracked, and 5203-2 10-ft. wheeled pavers. But a major surprise at Conexpo-Con/Agg was the brand-new Vision 5100-2 8-ft. tracked paver, and the Vision 5103-2 8-ft. wheeled paver. Also new was the largest Oscillation roller in the Hamm lineup, the massive HD O130V, the new Compact Line of smaller Hamm rollers, and two new Wirtgen cold mills.

Eight-ft. Visions Surprise At Conexpo

A surprise at Conexpo was the display of the two new 8-ft. Vision Series pavers from Vögele America Inc. Never before displayed anywhere, the Vision 5100-2 8-ft. rubber tracked paver provides contractors a powerful, compact and maneuverable machine. The Vision 5100-2 is designed for commercial and highway class applications and provides operators with unsurpassed comfort, visibility and ease of operation. Also, it's the quietest and coolest machine in its class.

Also displayed for the first time anywhere, the Vision 5103-2 8-ft. wheeled paver provides contractors an extremely versatile machine in a powerful, compact and maneuverable package. It is designed for commercial and highway class applications. The Vision 5103-2 is the most maintenance free paver in its class.

Introduced in 2007, but at Conexpo-Con/Agg for the first time, the super-quiet Vision 5200-2 is a 10-ft. tracked paver that's extremely cool and quiet during operation. Fumes are expelled above and behind the screed personnel, as well as the operator, for comfort and visibility. Its powerful Tier III Cummins engine provides an excellent horsepower-to-weight ratio, and highly efficient cooling of all paver components prolongs equipment life.

Also at Conexpo-Con/Agg for the first time, the advanced-design Vision 5203-2 is a 10-ft. wheeled paver. A number of screed options are available for Vision 5203-2 allowing the paver to reach great versatility with front-mounted or rear-mounted extensions.

Read more about these remarkable machines in an interview with Vögele America general manager Brodie Hutchins elsewhere in this issue.

Brodie Hutchins, general manager, Vögele America Inc., explains highlights of new Vision Series pavers to international trade press

New W 120 F Cold Mill

Alongside its comprehensive line of asphalt milling machines, Wirtgen America Inc. debuted the new W 120 F and W 150 mills at Conexpo-Con/Agg 2008.

Part of a new line of midsized mills, the W 120 F is a high-performance cold milling machine with a drum width of 48 inches (120 cm), ideal for removing complete asphalt courses with a milling depth of 0 to 12.6 inches (0 to 320 mm). Its engine output is 304 hp, and it replaces the W 1200 F/T in the product line.

The W 120 F has a hydraulic swinging track for flush cutting, and features front-end loading of reclaimed asphalt pavement (RAP) via a two-part conveyor system. The machine is available in a tracked version but can be ordered in a wheeled version.

The optional Flexible Cutter System (FCS) permits the use of different milling drums with working widths of up to 48 in. and a variety of line spacings. And the W 120 F can be equipped with the new Wirtgen Level Pro® leveling system.

W 150 Shown For First Time

The Wirtgen W 150, never before seen ahead of Conexpo-Con/Agg, is a large but compact milling machine that can optionally be fitted with milling drums of 4 ft. (1.20 m), 4 ft. 3 in. (1.30 m) or 5 ft. (1.50 m) working width, letting the W 150 be used for a variety of different applications such as milling large surfaces, removing pavement layers at full depth, or leveling. The W 150 cutting depth is zero to 13 in. and the machine accepts the Level Pro, FCS and Flexible Cutter System Light (FCS L) systems.

The W 150 has replaced the W 1500 in the broad product range of Wirtgen Group, which markets the world's largest line of cold milling machine models in all performance classes, and for all types of applications.

The W 150 houses a powerful 6-cylinder Cummins turbo diesel engine with an output of 350 HP, which complies with the stringent exhaust emission standards stipulated by the US EPA (Tier III) and the EU (Stage III a).

The W 150 is equipped with the world's first four-fold full-floating and height adjustment system as a standard machine feature. The system ensures that the machine aligns parallel to the road pavement automatically both during the milling operation and in transport mode. It also guarantees reliable traction of the W 150's four crawler track units.

WR 2000 XL Recycler/Stabilizer

The Wirtgen WR 2000 XL stabilizer/recycler — shown for the first time at Conexpo-Con/Agg — is an updated model of the WR 2000. The WR 2000 XL adapts to North American requirements with an industry standard 8-ft.-wide drum (instead of 6-ft., 7-in. on the WR 2000), and cuts up to 20 in. deep with its heavy duty 25MM cutter teeth. This unit also eliminates the cab found on the existing WR 2000.

The all-new WR 2000 XL is a state-of-the-art, 400 hp-class stabilizer/reclaimer which gives heavy contractors and roadbuilders a high-performance alternative to the larger, WR 2400 at 563 hp, and the industry-standard, 670-hp WR 2500 S from Wirtgen.

In addition to dry stabilization, it stabilizes with emulsions, and can be equipped with a high capacity water pump for dry soil conditions, or cement or lime stabilization projects. These proven systems have been used on the larger WR 2500/WR 2500 S stabilizer/recyclers for years, and the WR 2000 XL incorporates 40 percent parts in common with its "big brothers".

Hamm's New HD O130V

The massive new HD O130V was introduced to North America at Conexpo in March. With an operating weight of 29,277 lb., this 84-inch-wide double-drum, articulated machine is the largest Hamm asphalt Oscillation compactor sold in the United States. It's built on the platform of the existing HD 130 HV and boasts a top speed of 7.5 mph. With the HD O130V, front has a conventional vibratory drum, and the rear incorporates the revolutionary Hamm Oscillation compaction technology. Both drums are manually and automatically switchable.

This tandem roller with oscillation and vibration shares with the HD 130 HV ergonomic operator's compartment with access from either the left or right side, a full 180 deg rotating operator's station with swiveling seat and tilt steering wheel, excellent visibility to the drum surfaces, drum edges and work areas, a 3.9-in. drum offset to either left or right side, hydrostatic dual drum drive, infinitely variable, a high performance, turbo-charged diesel engine that meets all current EPA emission requirements, and a dual pump water system with all spray nozzles clearly visible from the operator's seat.

Hamm Compact Line Displayed

Hamm also featured its new Compact Line of asphalt rollers at Conexpo-Con/Agg.

These new articulated tandem rollers offer big-time compactive effort in a small package equally at home for commercial or roadbuilding applications, and are a new line of models in the 30 to 54-inch-wide drum size.

Featured were the HD 8 VV, with a drum width of 31.5 inches; the 39-inch HD 10 VV and the slightly smaller HD 10 C VV; the 47-inch HD 12 VV; the 51-inch HD 13 VV; and the 54-inch HD 14 VV. Each offers a wider compaction width when operated in offset mode.

VV stands for "Vibration Front, Vibration Rear", in which both drums offer vibration, with the capability of vibration running in the front drum only, in the rear drum only, in both drums, or no vibration.

Also of note, the Hamm 3412 VIO was shown. It's a single-drum soil compactor that features exclusive Oscillation compaction — as well as conventional vibratory compaction — in a single 84-inch-wide drum.

Kleemann At First Conexpo-Con/Agg

Representing Wirtgen Mineral Technologies was Kleemann Inc. USA, at its first ever Conexpo-Con/Agg. Kleemann exhibited two large but versatile mobile aggregate processing plants, one based around a primary impact crusher, and one around a primary jaw crusher.

The impactor-based MOBIREX MR 130-Z is a closed-circuit machine that has a fully independent two-deck pre-screen before the primary impact crusher box. Material is dropped onto a feeder, scalped over the independent pre-screen and through an onboard screen after the crusher, from which oversize is recirculated back into the crusher. It is two machines in one: a crusher and a screen box all on one chassis.

Kleemann also exhibited the MOBICAT MC 120-Z. The 120-Z, with its large 48 by 32-in. jaw crusher, has a fully independent double-deck pre-screen with a feeder under the crusher. The machine is powered by an onboard fuel-efficient diesel electric generator, and the complete machine weighs in at 72.5 tons, or 145,000 lb.

For more on Kleemann, read the interview with Kleemann general manager Evan Clarke on pp 18-20 in this issue.

Customers climb up for better look at Kleemann Inc. USA's MOBICAT MC 120-Z tracked jaw crusher

Gallagher Asphalt Celebrates 80th Anniversary In Illinois

Gallagher Asphalt celebrated 80 years with an anniversary party June 5 at the company's Thornton, Ill., facility.

James F. Gallagher Sr. put a second mortgage on his family's home at the age of 30, to found Gallagher Asphalt Corporation (originally as J.F. Gallagher Co.) on June 5, 1928.

Gallagher was instrumental in the founding of many of the present contractor associations, such as the Illinois Asphalt Pavement Association, Illinois Road and Transportation Builders Association, the Associated General Contractors of Illinois and the National Asphalt Pavement Association.

After earning their college degrees and serving their country, Gallagher's three sons — Jack, Jim and Don — joined the business during the late 1940s through the late 1950s and succeeded ownership from their father in the late 1960s. The company experienced tremendous growth throughout the 1950s, 1960s and 1970s with the south suburbs booming.

With three large-capacity plants located in Thornton, Joliet and Bourbonnais, Gallagher Asphalt has paved literally thousand of miles of asphalt throughout the Greater Chicago Southland; including over the years such high-profile projects as the Dan Ryan Expressway reconstruction, the Kingery Expressway reconstruction, I-355, and currently the I-55 widening in Will County. The Chicagoland Speedway and Route 66 Dragstrip in Joliet and BNSF Logistics Park (a.k.a. the Joliet Arsenal Redevelopment) in Elwood — not to mention thousands of resurfacing projects with virtually every municipality in the South Cook and Will County area.

In front of Gallagher's new Vögele Vision 5200-2 paver are Matt Roland, sales manager, Roland Machinery; Charlie Gallagher, president, Gallagher Asphalt; Patrick Gallagher, vice president; Dave Cruz, Roland Machinery; Dan Gallagher, vice president; Ray Roland, president, Roland Machinery; Mike Brunson, Roland Machinery; Wayne Evans, Wirtgen vice president-business development/ pavement technology; and Jimmy Slavens, Chicago division general manager, Roland Machinery. Photo by Joe McKeon, Construction Equipment Guide magazine.

Kearney Honored By ARRA With Its Highest Award

At its February meeting, the Asphalt Recycling & Reclaiming Association (ARRA) honored retired Wirtgen America Inc.'s director of engineering/ technical services Ed Kearney, P.E. with its highest award, the Richard E. Lowell President's Award.

ARRA's immediate past president Greg Brown presents association's highest honor to Ed Kearney, retired Wirtgen director of engineering/technical services

The Lowell award is presented at the discretion of the ARRA president, and was presented to Kearney by ARRA's immediate past president, Greg Brown, Brown and Brown, Inc., Salina, Kan. Kearney was honored for his long-term involvement and work to advancing the goals of the association and the growth and technological advances of the industry. He recently retired after 44 years in the highway industry, the most recent 20 years involved with recycling of asphalt pavements.

Kearney worked for the New York State DOT for 15 years, eight of them in its Engineering Research and Development Bureau, and seven with the office of chief engineer. His work experience includes nine years with The Asphalt Institute as senior district engineer. He developed cold in-place recycling, NovaChip paving, micropaving and slurry seal processes for Gorman Brothers Inc., a major contractor in the Northeast. He wrapped up his career at Wirtgen.

Road Machinery LLC Now Offers Wirtgen Equipment

Road Machinery LLC now offers Wirtgen Group's complete line of road construction equipment in northern New Mexico, and at its three Arizona locations.

"We are proud to be a distributor for the Wirtgen Group," said Dennis Romanson, president of Road Machinery. "Its road maintenance equipment is known for its reliability. These machines join our line-up of top quality brands in the heavy machinery field that includes Komatsu and Metso Minerals."

Road Machinery LLC has been selling and servicing heavy machinery since 1955. The company has nine locations throughout the area, in Arizona, New Mexico, Texas, California and Mexico.

During the Shippensburg, Pa., Christian Co-Op School grade school class visit to the Chambersburg, Pa., plant of Vögele America Inc., general manager Brodie Hutchins (right) helps students get a good look at the business end of paver

During the school visit to Vögele America May 2, students toured factory, office and climbed on machines. Seventeen students and five teachers visited each department, including engineering, marketing, sales, product support, finance and HR

Wirtgen

Under the Lights, Quartet Of W 2100s Mill Rochester's I-490

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