Graniterock's Bruce Woolpert discusses the leadership skills that can take your company to the next level.

Graniterock has experienced more than a century of success as a family-owned corporation. Today, the California-based company boasts nearly 800 employees, a repeated ranking on Fortune Magazine's "top 100 places to work," and is the 1992 winner of the Malcolm Baldridge National Quality Award. The company's continued success is based upon philosophies formed by its founders Arthur and Anna Wilson. In 1929, Anna Wilson had taken over the reins of the company when her husband passed away. Grandson, and current President and CEO Bruce W. Woolpert believes Graniterock's history of female leadership serves it today. He carries on his grandmother's ingredients for success. Anna Wilson believed a company had to respect its customers, continue to improve its product and treat its employees like friends and family, but make them responsible for their own success. Recently, we had the opportunity to talk with Bruce Woolpert to find out how he has taken leadership and management skills into a new millennium.

AMJ: In an article we feature in this issue, on one of your operations, we mention your "rubber band theory of leadership." Can you elaborate on that?

Woolpert: I came up with the "rubber band theory" because there's a little people stretching that takes place. In other words, an hour's worth of my attention on the best performer is going to get more results, more bang for the buck than an hour's worth of attention on a lower performer. When the upper group pulls forward, the lower performers don't pull forward immediately, but there's tension on the rubber band and eventually they come up. The range of performance that you see in employees is always relative to other employees. The opposite of that is to believe you can push the company forward from below. That's the belief that a company's performance can be improved by eliminating the low performers. That's never been shown to be the case. Yes, companies are led forward by the top performers; however, we have found that just in the interest of people wanting to be a part of something, lower level performers will not allow themselves to get too far behind. So, by pulling the top up, you pull the bottom up, and you pull the whole company up.

Bruce W. Woolpert, Graniterock's President and CEO.

AMJ: With that in mind, how do you further motivate a top performer?

Woolpert: Top performers are eager to learn, eager to have new responsibility. So if you are a manager that is willing to delegate and not fearful of giving up some of your own responsibilities, you can really start to shift more responsibility to these folks. As that happens, their job performance can improve because now they have a bigger span of understanding and control over the whole picture - including budgetary responsibilities. That's important. You can't give a manager greater control, yet not allow them to handle their own budget. As responsibilities grow, and as top performers have more control over key areas, the results grow. Unfortunately, some middle managers have problems with delegating because middle management has not been well defined in America. Middle management has often felt that it is a policing agency with a role in uncovering just who is not doing their job. There is no value-added in that. Good leadership is challenging. How do you put all of the pieces together so that the smallest number of people can control and make progress as opposed to putting yourself in the middle of each project? I think there are big training, support and leading jobs that middle managers need to be doing as opposed to the policing role that is often built into our minds.

AMJ: So the big issue is autonomy, right?
Woolpert: Autonomy is such a big issue. What correlates highest with Graniterock being a great place to work is not that the company has a great pay and benefits system, although I think we've got a good one, but that at this company people feel that no one looks over their shoulder. They get to run their own job. Information in this company is shared. How we hire, how our pay system works, all the details of how our company works is consistent with the idea that people want to make a difference, make the company better, and make their own lives better.

AMJ: How do you train managers to know their costs and to adequately handle budgetary responsibilities?
Woolpert: Most standard accounting software packages don't do a good job of looking at the cost of production. I see this with a lot of our customers in contracting where they have an accounting package that gives them an accurate assessment of how they did all year but no feedback whatsoever on how a particular job went or what their costs were on a given day or week. I think step number one is companies have to really encourage their accounting function to be a management tool and not just a recording tool to the public. If you hire a young CPA, they typically are well versed on the necessary reporting requirements, but don't have the slightest idea what the manager of a quarry or asphalt plant needs. You need to provide training for people in accounting as to what that information is, because today, many managers really don't have the information available to them. Yes, they can calculate it themselves. They know the tons they produce. They can do a spreadsheet. There is a way to calculate "long hand" so to speak, but a lot of accounting software doesn't support the needed information. And, once a manager has the required figures, I think the key thing is that they develop their own budget and that they view the budget as a promise. A promise means that you put every single possible bit of effort into being as accurate as you can, and throughout the year as conditions change, a manager and his or her team should be looking for ways to maintain or exceed that budget as a promise. All our budgets are done online. Managers can line item everything. They receivecustomized training on the most up to date methods.

President George Bush Sr. presenting the 1992 Malcolm Baldrige National Quality Award to Bruce W. Woolpert, President and CEO of Graniterock.

AMJ: Lastly, what do you see as one of our industry's greatest challenges?
Woolpert: One of our major industry issues is how do we make this industry more attractive to our young people? They often see us as a low class industry that uses only its hands and muscles. If you can get your hands on these people when they are freshmen and you can bring them in, they may find out that what we have to offer is really quite good. You can't wait until they are seniors. By that time they have already made their decisions. Their bias against the industry is already very strong and it's going to take a long long time for us to change the image of the industry so that a senior would believe that this is an attractive place to go. So it's got to be done starting early. Those top students will go back to their campuses and help change our image so that maybe in 5 or 10 years, our image will get turned around. And, we will have more top performers who are ready to make a difference.
AMJ

RECORD BREAKING EFFICIENCY

A metro recycle crushing operation cuts material pre-treatment time by 50% with a power-packed pulverizer & a time-is-money mindset.

Rock price and transportation - these are the hot buttons that cause contractors to buy aggregate products from a growing number of construction and demolition (C & D) debris recycle crushing operations. Few contractors want to haul rubble to landfills with each truck returning empty. Additionally, most contractors seek lower-cost, geographically desirable sources for fill and base products. And, urban development trends have caused new virgin material sites to permit far beyond county lines. No one disputes the need to be close to the market. Enter the urban quarries - permanent or temporary recycle crushing sites, which through savvy management, can rack up healthy profits.

Rick Andrews is vice president of operations for Specialty Crushing, a San Francisco Bay-area recycle crushing company with six permanent locations and 17 satellite sites. Specialty Crushing also offers onsite contract crushing services. "Most often," says Andrews, "the contractor that hauls the rubble in buys more than 50% of the processed material back for use as base and drain rock. The rest of the material we retail to other area contractors with jobs nearby."

With an eye peeled on solid processing methods and high quality end-products, Andrews oversees each Specialty Crushing location with a calculated time-is-money strategy that results in overall cost-efficiency, less downtime and greater production capacity. "It's a very competitive market," stresses Andrews. "You have to pay attention to every detail to keep your operations running profitably."

Arguably, one of the most important aspects in C & D debris recycling is the cost-effective pre-treatment of the rubble. Andrews explains that his company operates two jaw crushers and six impactors. "To safely feed the impactors, we like to pre-treat feed material to weights under 300 pounds and diameters less than 24" x 24" x 12". Any steel reinforcing or rebar should be less than 6-feet in length and under 1-inch in diameter," says Andrews. To accomplish this, Specialty Crushing uses excavators equipped with either a mechanical or hydraulic pulverizer/breaker attachment, each manufactured by Breaker Technology, Inc. (BTI), an Astec company. Specialty Crushing can easily rotate either pulverizer for use at any one of its jobsites.

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"Our pulverizers are involved in both separating and breaking," remarks Andrews. First, he says, the pulverizer rakes piles to separate out any deleterious materials - wood, paper, rebar, plastic, slag and other materials that cannot end up in the final product. The operator also separates out the oversize before breaking it. "The customer does not want material full of weeds, paper or plastic," adds Andrews. "It's an aggregate product and is supposed to be free of those materials. You're allowed by California law to have up to 5% by weight of deleterious materials, but we certainly try to do much better than that."

Hydraulic operation

Andrews points out that either the mechanical or the hydraulic pulverizer is capable of effective raking and breaking, but that he prefers the hydraulic unit. "When we purchased the hydraulic unit (a BTI MCP900 hydraulic pulverizer), we discovered our full potential in the ability to prepare material for crushing," he says. Accessed at its main permanent facility, Specialty Crushing uses the MCP900 hydraulic pulverizer mounted on either a Volvo or Samsung SE 280 excavator. Andrews prefers the hydraulic unit for its quick positioning and a higher crushing force that leads to increased production. "As to breaking, its articulation, where the operator can get over the top of the piece and quickly set it up to break; that has cut our preparation time in half," says Andrews. "The articulation coupled with the higher PSI makes all the difference in the world,"

BTI's MCP900 Hydraulic Pulverizer features low noise, low vibration, and greater versatility.

he says adding that he doubles his tons per hour (from 150 to 300 TPH) by going hydraulic over mechanical. Providing the benefit of low-noise, low vibration performance, MCP Series hydraulic pulverizers are engineered with improved features that include an oversized tooth at the tip of the moving jaw for better penetration, cutter blade repositioning for increased versatility and higher working pressure limits for additional force. BTI offers hydraulic pulverizers in three models for excavators ranging from 40,000 to 100,000 lbs.

For Andrews, maintenance on the hydraulic unit involves greasing the pin connections, and completing an average of four hours of hard facing every two weeks, a maintenance task that is not required in less abrasive applications. Hard facing, he says, is an alloy welding process where an abrasion-resistant hard surface coating is welded to the teeth in order to build up any worn areas. "Iron against concrete eventually causes wear. We're in the business of crushing concrete, so maintenance is a key part of what we do," he states. BTI's new generation of MCP Pulverizers will have replaceable teeth, which will reduce the hard facing requirements to the remaining wear areas.

Mechanical operation

In certain Specialty Crushing locations, a BTI CCP900 mechanical pulverizer mounted on a PC300 Komatsu excavator prepares material. Andrews feels that the mechanical unit, with its individual replaceable teeth, can be configured to efficiently break a variety of materials while incurring less wear. He reports that they occasionally receive pilings in the yard or rectangular concrete pieces that can be 20-feet long and 2-feet square. For this material challenge, the teeth configuration can be easily altered. "We can set it up with a repetitive pattern of teeth and blank spaces," he explains. "This allows us to put more pressure on the concrete for quicker breaking. All in all, replaceable teeth involve less maintenance as you can exchange individual teeth out as they wear. We don't have to hard face in this instance, but rather remove a bolt and install a replaceable tooth." Additionally, the BTI CCP900 has its own separate pivot bearing which relieves the excavator's dipper-stick pin from additional stress. Andrews says that with a competitive model they've operated, the crew could get only 100 hours of processing time before experiencing pin problems. He explains that the pin can bend to the point where the jaws will not open and close, or that the pin will simply shear off. "It costs about $1,800 per pin and two weeks of downtime if the part is not in stock. With the BTI mechanical pulverizer, we've operated for more than 4 months now with no pin problems whatsoever."

Hydraulic vs. mechanical

Bottomline, the choice depends upon the application. But for Specialty Crushing and its highly abrasive materials, the hydraulic pulverizer is the preferred investment. Andrews easily justifies its higher price tag. "With the hydraulically-articulated unit, we can get on top of that piece of concrete instantaneously and start breaking it. If we can double our tons per hour without increasing operating time, add it up. It takes less than a year to pay back on the additional investment," he claims. Specialty Crushing processes more than one million tons of concrete and asphalt per year. For this recycler, time is money. **AMJ**

FOR INFORMATION

Contact Terry McKague at
BTI
(800) 567-8267
E-mail: tmckague@rockbreaker.com

PRODUCER CASE STUDY

ROCK ON

Innovation, empowerment & equipment efficiency moves Graniterock into the new millennium.

For companies like Watsonville, California-based Graniterock, change is good. This century-plus-old industry leader has adapted with new management styles and new technologies, while offering more to its customers than rock itself. A 1992 recipient of the Malcolm Baldrige National Quality Award, Graniterock's competitive advantage is cost-cutting, customized customer service delivered onsite and with speed. Additionally, the year 1999 marked the third straight year that Graniterock was named by Fortune magazine as one of the top 100 places to work in America.

Bruce Woolpert, grandson of the founder, is CEO of Graniterock. He expresses that the company's whole approach to dealing with change is to examine it thoughtfully before taking any action. He cites the "rubber band theory of leadership" as he loops a rubber band around his index fingers. As he pulls one hand forward, the elastic prevents the other hand from falling too far behind. "When it comes to changing something," he is quoted as saying, "always concentrate on the people who'll advance. Don't waste your energy on the ones who don't buy in, because they'll only move forward when the front-runners do. Coach the top and the bottom will spring up."

Its recycling operation, a part of its 1980s-established Pavex Construction Division, is perhaps one of the best examples of its mission to pass outstanding value on to the customer as well as offering its employees the opportunity to grow a business segment in the best way possible. The division offers portable crushing services for recycled asphalt and concrete pavement, as well as native rock; and provides recycled demolition disposal sites and recycled base material sales in both Redwood City and San Jose. Graniterock's experience in placing portable crushing plants at job sites exemplifies the benefits of recycling onsite. Results include saving trucking costs, conserving virgin material, eliminating tipping fees, and cutting the costs of new road construction. Broken material can be dumped at job or disposal sites, while processed material can be hauled out on the same trip and taken to the job for use as road base.

Telsmith's highly mobile, low-profile 3055 Jaw Crusher in the primary position.

Graniterock maintains two high-capacity portable plants. The company purchased the second plant of the two over a year ago - a unique, customized, fully automated, portable jaw/cone plant manufactured by Mequon, Wisconsin-based Telsmith, Inc. It is equipped with a highly mobile, low-profile 3055 Jaw Crusher in the primary position and a 52 SBS (Silver Bullet Series) Cone Crusher in the secondary position. The Telsmith 52 SBS is engineered with a superior hydraulic relief and chamber clearing system that holds the setting while providing maximum crusher action. The plant also features a Telsmith 7' x 20' horizontal screen, one of the largest road-portable screens available on the market. With the addition of the second plant, Graniterock was able to fine tune its operating

strategies and boost current profitability far beyond where it had stood just several years before.

The decision-making involving the purchase of the plant was ultimately left to Michael Zirpolo, a branch manager who stepped up to plate in an effort to increase the profitability and efficiency of the recycling division. "With the purchase of the second plant, we have more than tripled our crushing capacity," says Zirpolo. "When we had only one plant, we had to turn down quite a bit of work, both internally and externally. With a second plant, we can allow one to process at the yard and move the other to a new job." Graniterock has been known to move either of its plants up to six times per year.

In recycle, Graniterock Pavex concentrates on the larger jobs, those from 40,000 to 200,000 tons. "On jobs in that size range," says Zirpolo, "that's where the customer can actually put bucks back in their pockets." He adds that the competition is focusing on the smaller jobs with smaller plants. "A lot of contractors got into that market, invested sizeable monies in plants and got in way over their heads because the small job market is very competitive," he remarks. "Our objective was to get the biggest road portable plant available, because then we could crush anything from a 20,000-ton job on up. We wouldn't be limited by the size of the job and we could get in, produce as quickly as possible and get on to the next job."

Regardless of the fact that the plant is one of the largest road portable systems, Graniterock has the ability to teardown, transport, setup and begin processing at a new site in less than four days - a timeframe that works excellently within their project docket.

"This plant has the cutting edge technology that we like," comments Zirpolo. "Telsmith has a lot of very strong manufacturing processes, and that's good because these machines are put through the test. There is a tremendous amount of variable feed in recycle.

Secondary system consists of a 7' x 20' horizontal screen, and a Telsmith 57 SBS (Silver Bullet Series) cone crusher.

You can have some very hard material and some fairly soft material. It's not a homogenous mix. So when you have a situation like that, you really want a plant that is going to handle that."

Automated, high-capacity processing

The Telsmith plant is PLC-controlled and features an on-the-fly adjustment. "With older crushers, you have to stop the crusher to complete adjustments. With this plant, we can adjust while it is running," says Zirpolo. This "dynamic adjust" with its digital setting readout interfaces with the plant automation systems and makes liner changes fast and easy. And as to the startup of the plant, Zirpolo explains, "It has an automated sequence. It takes the human factor out of it. You don't have to worry about starting up the wrong belts at the wrong time."

The Graniterock Pavex recycling division produces a variety of saleable products including: ¾" Caltrans Class 2 & 4 baserock, ¾" drain rock, 1 ½" drain rock, grindings, and 2" minus engineered fill material. "We get anywhere from 400 to 650 tons per hour," states Zirpolo. "The plant is rated at 700 tons per hour. We're getting close to that but our feed material varies so much from bucketload to bucketload that we like to run at a median speed. If we know that the material has a lot of rebar in it, then obviously we are going to slow the plant down." Zirpolo explains that one of the secrets to the plant's efficiency is its configuration. The plant is not set up in an inline format where the secondary part of the plant is backed up against the chassis holding the primary crusher. "Dealing with the rebar in an inline plant is usually a very tough thing," says Zirpolo. "In an inline plant, rebar and reinforcing wire can get tangled and can stop production. What we decided to do is run the secondary cone crusher at a right angle off the primary crusher, and then mount the magnet on the top end of the pulley so that all the ferrous metal would get picked up by this oversize magnet, and would be put right into a rebar bin."

"This new plant is an addition to our capabilities and has helped us immensely," stresses Zirpolo. "Primarily, we are able to make a variety of products now and we did not have that luxury before. In the past, we were barely keeping up with the base rock operations. Now, we can truly be proud of our efficiency." **AMJ**

FOR INFORMATION

Contact Bob Meyers at
Telsmith
(800) 765-6601
E-mail: bmeyers@telsmith.com

8 COMPANIES

Astec Systems

Breaker Technology, Inc.

Johnson Crushers International

Kolberg-Pioneer, Inc.

Osborn Engineered Products SA (Pty.), Ltd.

Production Engineered Products

Superior Industries, Inc.

Telsmith, Inc.

ASTEC SYSTEMS
an Astec company

(800) 468-5938
www.astecsystemsinc.com

BTI
BREAKER TECHNOLOGY, INC.
an Astec company

(800) 567-8267
www.rockbreaker.com

JCI
an Astec company

(800) 314-4656
www.jcieug.com

KP
KOLBERG-PIONEER, INC.
an Astec company

(800) 542-9311
www.kolbergpioneer.com

OSBORN
an Astec company

+27-11-820-7600
www.osborn.co.za

PEP
an Astec company

(800) 545-2125
www.pepscreen.com

SUPERIOR INDUSTRIES
an Astec company

(800) 321-1558
www.superior-ind.com

TELSMITH
an Astec company

(800) 765-6601
www.telsmith.com

1 MISSION

Providing our customers with **COMPLETE** aggregate plants and equipment that are the most technologically **ADVANCED** in the **WORLD**

The location: a mountainous region outside the city of Ho in Ghana, Africa. The objective: from delivery to setup to processing to operational training - get the new owner of a Pioneer 3042 portable hydraulic jaw crusher into an efficient production mode. And, the main character: Kolberg-Pioneer, Inc. Service Engineer Terry Haas, a Yankton, South Dakota-based, ten-year-factory-trained veteran and former underwater welder for the U.S. Navy. Haas is part risk taker, part explorer and fully customer-focused.

The Pioneer 3042 is crushing material from a natural deposit of granite, solid straight to its core, a literal mountain of rock that originates nearly 300 feet below ground level. The new jaw is the primary ahead of an older Italian-made crushing spread. "We crushed with the new jaw for just two days," says Haas, "and with minimal production capacity, we created a stockpile that could feed the older plant for almost three months." As such, father and son owners Timothy and Ramsey Fiattor of Defiat Development Company, Ltd., are considering further plant upgrades; including a new 1400 LS cone crusher manufactured by Eugene, Oregon-based Johnson Crushers International (JCI).

In the past, much-needed aggregate had to be hauled to the area from an operation two hours away. Truckers offloaded at the jobsite and returned empty, a method that resulted in lost time and revenue. Currently, the new plant allows this producer to cost-competitively capture the entire market for materials used in building the region's infrastructure. "In large part," says Haas, "their processed material is used in asphalt production and road base. Most of the underdeveloped roads are merely clay. With heavy rains, the clay will wash away leaving rut-laden, impassable roads. There are many miles of roads to pave."

The Pioneer 3042 portable hydraulic jaw crusher and the crew in Ghana, Africa.

In high heat and humidity, Haas worked side-by-side with the owners and their crew for a two-week period. His room and board was at the customer's home, some 45 minutes away from the site, where he was treated nightly to native dishes and an occasional, much-appreciated plate of spaghetti. "They took great care of me," he adds.

And likewise, Haas took care of the customer. He explains that the plant was shipped in two loads. "One was a separate hopper and the other was the portable plant itself on a wheeled chassis. The first week was setup and the second was training. We covered grease and lubrication specs, setup and teardown, transport, and all maintenance, repair and trouble shooting guidelines. The customer benefits from first-hand factory rep experience. As questions or possible problems arise, we can handle each issue right then and there," Haas stresses, adding that the producer also purchased a well-organized stock of replacement parts.

"This was our first setup in Africa, with another soon to follow," says Haas, "and we have or will conduct initial setup and training sessions in China, Russia, India, Australia, Latin America and Canada. Being a part of the Astec family of companies with its international sales group, we have become players in the international market."

Astec Aggregate and Mining Group Vice President-International, Eduardo Barrera, defines a strengthened international mission. He says, "By combining the resources of each company within the Astec Aggregate and Mining Group, Astec International Sales can attain higher leverage in partnering with competent, strong distributors worldwide, while offering customers integral solutions, one-stop purchasing alternatives and stronger service, training and parts support." **AMJ**

Astec Aggregate & Mining Group
International Sales

FOR INFORMATION

Contact Eduardo Barrera at
Astec International Sales
(866) 376-1331
E-mail: ebarrera@astecindustries.com

A SUPERIOR STATE OF MIND

Superior Industries' President Neil Schmidgall talks about tackling rising costs with effective material handling.

AMJ: What keeps certain producers from upgrading material handling systems?
Schmidgall: There are two key issues - certainly the cost of capital equipment investments, but more importantly, a lack of knowledge as to the potential savings gained through efficient material handling. Effective conveyor systems can increase stockpile volumes, while eliminating the costs associated with stockpile segregation. Also, one can minimize space constraint challenges and decrease the need for additional loaders, trucks, crawlers and qualified operators. In other words, how can a producer cut costs by eliminating waste? How can he avoid having additional monies tied up in rolling stock and labor?

AMJ: How do you share these messages with the marketplace?
Schmidgall: We write and distribute technical papers on issues such as preventing stockpile segregation, for example. We conduct seminars for key state and national associations that are interested in addressing the savings gained by utilizing new automated conveyor technology versus conventional ways of stockpiling. We need to change the mindset at the state level. Until our fully automated radial telestacking conveyors came on the market, many state DOT officials believed you could not build a completely segregated stockpile, load it back into a truck, and maintain consistent material gradation. The traditional truck hauling method combined with pushing material with a dozer or loader is still prevalent. Now, we are recognized in many states for the advantages our equipment brings to the table. Georgia and Texas are ahead of the pack in realizing the efficiency of automated conveyor technology.

AMJ: Other than automated telescoping radial stacking conveyors for fully desegregated stockpiling, what other equipment innovations does Superior Industries offer?
Schmidgall: We now offer an automated belt sampling system or a belt sweep. This system allows a producer to take a sample from a moving belt. There is no need to stop the conveyor and incur downtime. There is no need to catch samples off the end of a conveyor by passing a bucket through the material stream, as is done by some. You can even tie the system into an automated readout in the control shack. The point that people must recognize is that if plants are getting up to 1200 tons per hour, and material is tested only once a day, producers can output up to 12,000 tons of material per day, put it in a stockpile and then find out at the end of the day that the material doesn't meet specs. It only takes one of those kinds of errors to justify the cost of an automated belt sampler.

Superior Industries President Neil Schmidgall

AMJ: Ultimately, what sets Superior Industries apart from its competition?
Schmidgall: I think that it's our versatility and our complete line of products. Certainly some conveyor manufacturers only build one type of conveyor. They may not build conveyors for feeding and unloading. They may purchase their idlers, forcing the producer to buy special idlers that can only be purchased from them. As a single source, we build our own idlers and pulleys to CEMA standards. They are interchangeable on any equipment. I think we have designed our equipment to meet certain challenges. We use the latest technology for our automation packages. And then, there are features like our FD Series Axle on our portable units. This feature allows our systems to be highly portable, moving from the road to in-pit stacking positions in mere minutes. These are the innovations that set us apart, and more and more producers are realizing that these new technologies can bring them advantages that were once out of reach. **AMJ**

FOR INFORMATION
Contact Mary Erholtz at
Superior Industries
(800) 321-1558
E-mail: marye@superior-ind.com

THE ULTIMATE CASH BOX

Often it's the all-too-forgotten screen that keeps you in spec and in the black

While many are scrambling to meet Superpave specs by upgrading and tweaking their crushing operations, the key element of screening may often be left as something to "get around to." Quite simply, crushing and screening go together, with crushing providing the gradation, and screening delivering the separation and specification results, while maximizing the number of saleable products. Certainly, investments of time and money into the crushing function may be well warranted, but consider that ultimately, the cash box is at the screen. After all, screening is more likely to be the bottleneck in any operation - you can choke feed a crusher, but with screening you must allow for proper stratification of materials. So, don't increase crushing capacity without considering screening capacity. While this may also involve reconfigurations in screen cloth, decks, chutes and conveyors; paying attention to the screening side of the coin may be the task that keeps you in the black.

How do you maximize your screening potential?

The answer to this question can best be found in the field. Consider that over the last ten years, Wisconsin-based Franklin Aggregates has boosted its quality, product capacity and profit potential by putting an emphasis on effective screening. Franklin Aggregates is an aggregate production arm for its parent company, Payne and Dolan, Inc., a corporation that proclaims its leadership in the State of Wisconsin by leveraging its new products and services, its equipment improvements, and its ability to turn waste products into additional profit. These very issues are ones that the Franklin Aggregates crew has applied to its overall operation, and in great extent to its finishing screening segment.

PEP Super Series III plant feeding a PEP PTSC plant at Franklin Aggregates.

They began this process with the purchase of a Super Series III Screening Plant manufactured by Production Engineered Products (PEP) of Sterling, Illinois. The plant has been operating at the site for more than ten years with an average of one million tons of material being processed per year. It is one of three Super Series III plants owned and operated by Franklin Aggregates. The screening plant features a high-frequency PEP screen (a 2-deck, 6' x 12' DV 1612S) in combination with a horizontal conventional screen (in this case, a 3-deck, 6' x 20' horizontal screen).

With the PEP Super Series III screening plant, crushed material hits the high frequency screen first where fines are removed before the material is conveyed to the conventional screen for separation. The DV 1612S high frequency screen is separating 5/8" material on the top deck and 1/8" material on the bottom deck. The majority of the 1/8" minus material is removed from the aggregate material being processed, thus increasing the productivity and efficiency of the horizontal conventional screen. Both the oversize material (5/8"+) and the intermediate material (5/8" x 1/8") are passed onto the horizontal conventional screen. Franklin Aggregates is then able to produce 3 asphalt chip products: a 1" chip, a ½" chip, a 3/8" chip with the horizontal conventional screen.

This finishing screen plant follows a primary and secondary crushing and screening operation that employs a primary horizontal shaft impactor and a

secondary cone crusher, both in combination with conventional screens. This segment of the operation processes and separates #2 and #3 stone and various 2" minus products.

Occasionally, the 1/8" minus material processed from the PEP Super Series III screening plant feeds a PEP PTSC VV 2618M screening plant. The PTSC screening plant features a 2-deck, modified 6' x 18' high frequency screen with a portable tower structure and feed conveyor. This plant is ideal for separations ranging from ¾" to 30 mesh and can process up to 4 products. In the Franklin Aggregates application, they use the PTSC screening plant to separate the 1/8" minus material processed from the Super Series III screening plant over a 1/4” on the top deck and a 20M on the bottom deck. This allows them to make an agricultural lime product (20M minus), along with a manufactured sand (1/4" x 20M) for asphalt production.

"Because our plant had been designed as a portable operation (however, it had not moved for ten years)," says Franklin Aggregates Plant Manager Rick Nelson, "we had always been limited on screen capacity." He explains how the new screening plant helped them meet certain challenges: "What we were doing before is taking the 1" minus and dumping it directly onto the conventional screen. If we were running at an average of 450 tons per hour, the fines weren't getting out of the products. Our chips had a 200-mesh content in them. Now, with the PEP DV screen, everything that's a 5/8" minus goes down to the second deck of the PEP screen. That helps us to get the 200-mesh down to the bottom deck so that it can get screened out earlier. This helps us to clean up our chips."

Without the high-frequency PEP screen, Nelson explains, the bed depth would be so thick that the conventional screen would blind over. Fines would not be separated out early enough in the process, allowing a carry over of 200-mesh into all the final products. "The asphalt plants don't want any 200-mesh in their aggregates due to the tighter Superpave specs," says Nelson. "If you cannot get that 200-mesh out, the material looks like a traffic bond or a coarse base material product rather than a chip product."

In existing circuits that need higher production rates in chip sizing and fines removal, the Super Series III is ideal. With its high frequency screen action of 3,000 to 5,000 RPM, the plant allows chip cleaning without water, avoiding the cost and labor associated with sludge ponds. It is also equipped with three 24" side discharge conveyors, and a 36" main belt and 42" fines discharge conveyor attached to the conventional 6' x 20' screen.

Most importantly, the screening plant is designed to maximize the number of saleable products from fines that, in part, had only been designated as waste products.

For Franklin Aggregates, the plant is customized with a sand discharge conveyor and a finger gate that allows the producer to split its fines for additional products. The 200-mesh is used as manufactured sand for asphalt production and the fine powder is sold into the agricultural market for bag lime.

And, says Nelson, "There's not a lot of maintenance on this screening plant. PEP has really improved the plant's vibrators." Note that PEP has designed its plants with new self-lubricating vibrators that allow for minimal maintenance and increased durability. PEP offers electric vibrators with the Super Series III screening plant as well.

Finally, it should be stressed that producers need to continually find ways to produce more and waste less. In that regard, take your first look at the screens, an approach that is bound to yield the optimal results. **AMJ**

FOR INFORMATION

Contact Ron Earl at
PEP
(800) 545-2125
E-mail: rearl@pepscreen.com

PEP's Super Series III high frequency screening plant hard at work at Franklin Aggregates.