

UT Tire Recycling Makes the Move to Crumb Rubber

*Changing market conditions, new technology
prompt change in business direction*

When Rob Jahries started Utah Tire Recycling almost a decade ago, his goal was fairly simple: to primary shred whole tires for disposal in area landfills. That goal — as well as the markets his company serves — has changed dramatically since then. Not surprisingly, so have his processing needs and the equipment relied upon to meet those needs. Through it all, Granutech-Saturn Systems has played an integral role.

A Change in Plans

By 1993, Utah Tire had carved a nice niche for itself, first by shredding tires for disposal, then later by creating chips for use as TDF in a local cement plant. Just when it seemed everything was moving along smoothly, in 1997, a major tire manufacturer with whom Jahries had been working, merged with another tire company and relocated out of state. Des Moines, Iowa-based UT Tire Recycling, established by Jahries to meet that customer's needs, was quickly removed from the picture. To Jahries it looked like the single most disastrous



event that could possibly have befallen the two companies. He sees it much differently today.

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Grizzly is a Liberating Experience for Rubberecycle *New Jersey firm creates product for use in broad range of applications.*

Granutech-Saturn Systems' Grizzly has repeatedly proven itself worldwide as a valuable, productive tool for secondary scrap tire processing. One of the key benefits most often cited, however, is the Grizzly's ability to liberate steel from rubber. The company claims a 95% steel-free product after post-Grizzly magnetic separation — and customers regularly back up that claim. For Lakewood, NJ-based Rubberecycle, Inc., that ability to create steel-free product has

allowed them to improve efficiencies of a downstream cryogenic process and provide extremely fine crumb to its customers. According to company CEO, Morris Hassan, it is a process that has proven very successful.

"Ours is a somewhat unique situation in that we don't actively go out to get scrap tires. Customers — mostly garages and other retailers — bring

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Grizzly Takes Salt Lake City Recycler's Operation to the Next Level

To the old adage: "the only things certain in life are death and taxes," Fred Bonney says one should add: "and change within the scrap tire market." The Salt Lake City-based tire processing veteran saw his business, Tire Disposal & Recycling (TDR), go from a steady supplier of chips to a dedicated customer to a company searching for an alternative market just to survive. It was a scenario that is, he says, only too typical in the industry today.

"My longtime business partner Wayne Christensen and I got into this business when we found a person who owned a tire recycling business here in town but was also having problems. They already had a good solid market in place for their chips — a cement plant owned by one of the world's largest producers of rock products and cement powder — but they were having trouble getting them the material they needed on a consistent basis. In a sense, you could say we got into this business to buy that existing market."

The business Bonney purchased consisted of two older shredders, a trommel, several worn out conveyors and the cement plant as a customer. Hardly a state-of-the-art facility, but enough to pique the interest of Bonney and Christensen.

Market Fluctuations

At the outset, TDR's markets consisted of the cement plant, which was accepting 2-inch nominal chips, and an area landfill, which was using chips for daily landfill cover. Bonney says politics and progress collided in July of 1998 and almost cost him his business.

"A group connected with the Utah Department of Environmental Quality handed down a decision that taking material to the landfill for use as daily cover did not qualify as recycling. At about the same time, the cement company had built a completely new facility which burned chips in 5-7 seconds versus the 20 minutes the previous process demanded. As a result the plant needed a much cleaner product than we were able to provide at the time and told us they could no longer accept our chips. Feeling we had nothing to lose, we hired an attorney to plead our case against the State of Utah's decision to refuse our landfill cover. We threatened to sue and thankfully, they backed off. We were still in business but knew we needed to find a new market — and fast."

Smaller is Better

Crumb rubber looked to Bonney to be the area in which TDR needed to focus. Fortunately for them, the State of Utah was offering low rate loans for situations such as new equipment purchases and they chose to take advantage of that program to purchase a granulator.



"At first, the granulator we bought didn't meet our expectations. But after some modifications on our part we were able to start making product for several new markets we had cultivated. At the same time, the cement plant had heard that we now had the capability to make cleaner material and expressed an interest in material. Suddenly we were in a situation where volumes came into play: with the processing equipment we had on line, we simply couldn't generate the necessary volumes of clean material to meet all our customers' needs."

Bonney recalled an earlier meeting he had with Michael Elles of Granutech-Saturn Systems. At that

meeting Elles mentioned the availability of a used Granutech Grizzly, a single rotor unit that was proving excellent at generating material in the sizes Bonney needed and at the same time liberating more than 95% of the steel contained within the tires.

"I went out, looked at the unit and made an offer on it. Shortly thereafter, I returned to load it and ship it to Utah."

Some Grizzly Details

Bonney says that, by removing wire from the tires, he was able to significantly increase his system's overall production. TDR's 300 Hp Grizzly can be configured, through adjustment in screen size, to create product in 1/2" minus, 3/4" minus, 1" minus or larger sizes.

"All of a sudden we were able to meet the demands of the cement plant, generate other product and still keep up with the flow coming in. The Grizzly is really the first unit I've found that seems geared specifically toward the tire business. Everyone in the crumb rubber business has trouble with the wire in tires and the Grizzly does an excellent job of liberating that wire for easy removal. Its ability to increase production was also immediately obvious. Volume is everything in this industry and the granulator we had in place for six months was far too slow for our needs. With the blades in excellent shape — and depending upon what screen we are using — our Grizzly will easily produce rates as high as 4 tons an hour. And the material it generates makes a perfect feedstock for a smaller downstream granulator."

Survival of the Cleverest

Bonney feels strongly in applying effort and capital where it will do the most.

"Money at the start should be spent on what counts: what makes production go up; what makes business more efficient. We'd like to think that a combination of creativity and smart equipment purchases — in particular, the Granutech Grizzly — have allowed us to survive and remain competitive. And that's no small feat in this industry." **ESS**

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Texas Company Finds New Use in Septics is No Chip Shot

El Paso firm finds success means combining equal parts legislative savvy and innovative product application.

Everything about Tres Pesetas Inc. seems to defy convention. From the name (Spanish for three-quarters), which co-owner John Waters jokingly says stems from local residents saying the processors are three-quarters crazy; to the company's fairly small operating site, less than two acres in El Paso; to the end use for its chips, as a replacement for aggregate in septic systems;

shredder and are loaded by backhoe into trucks which then take the material to the septic system being installed that particular day.

Waters says they see the use of the tire chips as serving a number of beneficial purposes. "They are effective as a filtering medium, they reduce the need for mining of rock which is, in itself, an environmental plus, and, because we can use chips from as many

were neither prepared for nor capable of effectively running a scrap tire processing operation. "Immediately after announcing their plan, the state had 26 companies ready to shred tires. Two years later, when reviewing the program's progress, the state saw that it now had not only piles of whole tires, but piles of shredded tires as well. Further regulation resulted in a bloodletting of scrap tire processors, reducing their ranks almost overnight from 26 to 17.

Texas-Sized Success

To measure the degree of success Perry and Waters and their companies have had, one need only look at the scrap tire situation in the El Paso area today. "In the first two months we were in operation, every time the TNRCC showed up we had no whole tires and no tire shreds," says Waters. "We had to keep assuring them that we were, in fact, shredding tires. That's not the norm in this industry — usually there are tires everywhere.

"We can't help but think the TNRCC is happy with us," he adds. "Prior to our getting into business, they had established a special storage site to stockpile tires due to the lack of available processors. Within 45 days of our startup they had stopped accepting any new tires into that facility. In fact, since the first week of September, we have taken every scrap



(Left) Tres Pesetas shreds more than 900,000 tires per year through its Saturn Model 62-40HT shredder.

(Below) Tire shreds are an effective replacement for aggregate in septic installations. More than 1000 tires are used for each system.

the company shatters scrap tire processing stereotypes.

"My partner, Delma Perry, had been researching the use of tire chips in the drainfield segment of septic systems for years and became convinced that it was a viable way to provide a good product while helping alleviate the scrap tire problem that existed in West Texas at the time. We've proven that it can be an effective replacement for costly gravel or other aggregate."

The Chips are Down

Perry and Waters own and operate both Tres Pesetas, the scrap tire processing operation, and Country Boy Systems, the septic system installation firm — a definite plus in ensuring the stream of replacement tire chips stays fairly constant. Scrap tires are collected at Tres Pesetas from tire generators in the immediate area and shredded through a Saturn Model 62-40HT shredder with a recirculation system. End product, by virtue of the sizing system, is a uniform 2-inch minus chip. The chips exit the

as 1,000 tires in each household septic system we install, they are helping address the scrap tire problem which had been a serious concern in this area. In fact, as recently as 1994, there was estimated to be over 900 illegal tire dump sites statewide with the largest containing more than 20 million tires. It was a serious situation which appeared to be getting worse almost daily."

Big-Time Intervention

To address the issue, the Texas Natural Resource Conservation Commission (TNRCC) created a scrap tire program that essentially placed Texas state government in charge of overseeing scrap tire disposal and used a \$2 per tire surcharge on new tire sales in the state to help fuel the program and fund the cleanup efforts. It was an idea that, while attractive in theory, actually lured a lot of people into the business who, according to Waters, probably



tire to our shredder — not one tire has gone to that site. We see that as testimony to both the success of our efforts and the performance of the equipment we chose for this operation. Obviously, in a startup situation, any downtime could have killed us, but that was never the case. We are shredding in excess of 900,000 tires a year and the Saturn shredder has been an excellent, reliable workhorse for us." **ESS**

FNRI Closes On With a Look to



*Inside FNRI.
(Left) controls for granulation system allow quick, easy process monitoring and adjustment.*

(Below) A Saturn Model 60-44HT Shredder primary shreds whole tires as the first step in the process.

The dawn of the new Millennium brings with it an unparalleled spirit of optimism, particularly among those who only recently began their foray into the world of scrap tire processing. For no one is that truer than for Indio, Calif.-based First Nation Recovery, Inc. (FNRI), a bold venture being undertaken by the Cabazon Band of Mission Indians, in Indio. Using a Granutech-Saturn Systems crumb rubber processing system and additional processing equipment, FNRI has been successfully generating high-quality crumb rubber — and turning heads in the process.

The system, valued at \$2.2 million, has allowed the new company to effectively reduce whole tires to crumb rubber, then, create a range of products for the marketplace, according to Michael Elles, Granutech-Saturn Systems' Director of Sales.

"This project has been exciting from a number of perspectives," he says. "First Nation has undertaken an ambitious project which creates viable product from a waste material — that, of course is critical from an environmental standpoint. It is also, however, important to note that the nature of the business arrangement is unique and encouraging for the tire recycling and recovery industry itself. And, of course we are in no small measure pleased to be providing the technology to make this all happen."



(Below) A Granutech Grizzly takes primary chips down to 1/2-inch minus and liberates steel prior to granulation



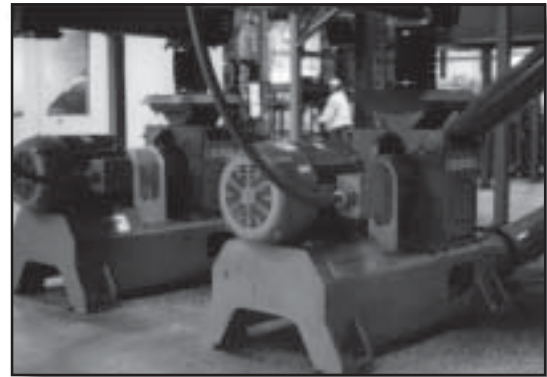
(Above) Material leaves the Grizzly and is routed to a hopper prior to processing.

Out Millennium to the Future.

The system went online at First Nation in the spring of 1999 and features a Saturn Model 60-44HT shredder to create primary shreds from whole tires; a Granutech-Saturn Systems Grizzly to reduce those shreds to 3/4-inch chips; a Granutech-Saturn Systems G-3 granulation system to create 1/4-inch, steel-free product; and two high output powderizers. Material can then be routed to a fine-grind cracker mill to create the minus 30-mesh product needed.

At peak production, the \$6.8 million First Nation Recovery site employs upwards of 30 people and processes more than 20 million pounds of rubber per year, according to Bob Phillips, FNRI's general manager.

"Our goals are fairly simple: to be a quality crumb rubber supplier to a broad range of industries. For us that includes the asphalt market; manufacturers of crack filler and chip seal; and customers involved in compression molding applications. We ship material as far as is feasible, given the cost of transportation," he says. "Going east we sell to customers in Arizona and Nevada; we also go as far north as Sacramento and south to San Diego. When the original proposal for this site was being put together, we wanted the best equipment to meet our needs, both immediate and long-term. We feel that the turnkey system designed and manufactured by Granutech-Saturn Systems will do that and allow for future expansion." **oss**



(Above) High output powderizers take material to below 10 mesh sizes..

(Below) Walking floor bin feeds material to the G-3 for processing.



(Bottom, left) The packaging area at FNRI uses state-of-the-art technology to combine versatility, speed, efficiency and cleanliness.

(Right) Material can be gathered and custom-blended allowing FNRI to best meet the needs of its customers.



Experience Across the Processing Spectrum

Granutech-Saturn Systems' full range of size reduction equipment & expertise makes the difference.

There is something inherently wiser about trusting your size reduction needs to a company that understands — as well as designs and manufactures — the full spectrum of processing equipment. It has become painfully evident to many that multi-sourcing can lead to serious problems ranging from component incompatibility to accountability and response to maintenance needs. By contrast, customers around the globe have found Granutech-Saturn Systems to be an invaluable single-source for taking scrap tires (as well as rubber products — see sidebar at right) and creating the broadest range of valuable, marketable products.

"There is a reason we have established such a presence in the scrap tire market," says Granutech's John Crowley, "and it has far more to do with proven results than it does with self-promotion. We have developed a comfort level with our customers over these past three decades that ensures them their needs will be met in the best manner possible. They know that, while we can certainly address issues as simple as shredding tires for immediate disposal, we have repeatedly proven ourselves as specialists in even the most challenging of applications."

Indeed it is that level of expertise which differentiates Granutech from others in the industry. It is the ability to consult on, then design and manufacture full turnkey systems. It is the expertise to seamlessly integrate ancillary equipment into the processing system. And it is a commitment to the industry that says Granutech will be here far down the road to answer questions and address concerns.

"Our dedication to this industry is real," says Crowley. "We are constantly reviewing and testing new concepts and modifications to existing designs to see what can work better for our customers."

The needs of the scrap tire processor have changed dramatically over the last ten years alone and Granutech's approach to meeting those needs has changed with them. Today the company offers a full line of Saturn Shredders for primary shredding tires, the Grizzly for secondary processing and crumb rubber generation and the G-3 system for creation of high-quality, mesh-grade crumb material.

More than just lip-service, Granutech's ability to anticipate its customers' needs has allowed it to become a source of satisfaction for customers the world over.

Roto-Grind Makes Its Presence Known

Single rotor, ram-fed unit can fill niche in hard-to-process applications.

Though it has established a solid presence in plastics-based recycling and processing applications, Granutech's Roto-Grind traditionally has not been seen as a rubber-processing tool — until now. In recent tests at Granutech-Saturn Systems' Grand Prairie, TX manufacturing and test facility, the Roto-Grind proved extremely impressive at processing a fairly broad range of difficult rubber-based materials, according to Glen Newton, Granutech's president.

"We have been contacted by customers who, as part of their own manufacturing processes, have generated scrap which could not simply be re-granulated onsite. This includes manufacturers of mats, and manufacturers who used squares of tire tread as part of their process, to name just a couple. Unable to reprocess this scrap they are looking for equipment that will handle it and return it to a form in which it can be used. The Roto-Grind, by nature of its power, ram-feed mechanism and one-step shred/sizing capability has proven excellent at doing just that. In tests, material is processed in the Roto-Grind, then passed along for additional downsizing in a high-output powderizer."

Newton says the Roto-Grind/powderizer combination has produced excellent mesh-size product in the two applications mentioned above and others as well.

"We have tested the Roto-Grind in downsizing golf ball cores made of EPDM, grinding tennis balls and other unusual materials. In all of them the product was a good size for subsequent use, either in that same application or others. While this approach is a bit of a departure from the norm, it is yet another example of the breadth of product offering and processing potential which we as a company can bring to bear.

Roto-Grind shredders are available in sizes from 20Hp to 600Hp with a choice of electric or hydraulic drive. **SSS**

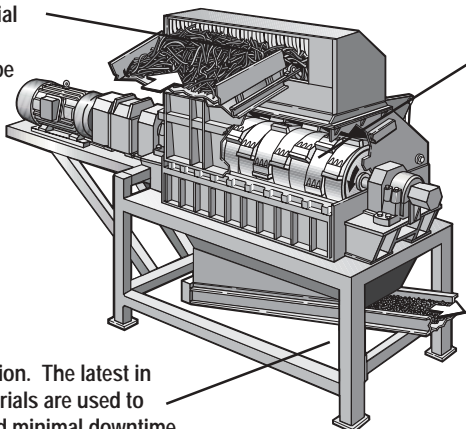
What Makes the Grizzly Growl?

A look "under the hood" of Granutech's powerful secondary grinder.

Superb design affords the widest range material processing of any equipment of its type in operation today.

300-400 hp drive systems available.

Superior construction. The latest in high-strength materials are used to ensure long life and minimal downtime.



Unique rotor construction and proprietary blade material allow greatest size reduction while minimizing blade wear.

Smaller, more uniform material improves performance of downstream equipment or, in many cases, replaces such equipment altogether.

Kentucky Firm's Approach: Basic, Proven and Successful

Shredding for landfill is still a viable option for many.

It's hard to dispute the fact that the scrap tire industry has shifted its focus toward the promotion of steel-free TDF and ultra-fine crumb rubber. In light of that, it is often easy to overlook the fact that there are still a good many scrap tire processors who shred tires solely for the purpose of landfill disposal. Faced with the economics of the situation, these processors cannot justify the efforts needed to identify and develop new markets for their product, nor the capital investment needed to make those efforts a reality. As a result, they dispose of tires in the most basic — yet most

our total cash flow through this operation.”

Porter says his company has trucks that actively go out to bring back scrap tires from existing accounts. Porter Tire currently services customers in a 150-mile radius around the Olive Hill location. That radius takes in the cities of Cincinnati and Dayton, OH; Charleston, West Virginia; and Ashland and Louisville, Kentucky.

“We stay within that radius simply because the competition gets a little stiff past that and we do well with the accounts we have in that area,” says Porter. Right now we are averaging

the smaller Saturn, a Model 62-40HT for all the passenger tires and favor the larger 60-44HT model for the truck tires and other oversized tires. They are both excellent machines and have given us virtually trouble-free operation.”

Because the material exiting the shredders is not being processed for product use, size of the product is not much of an issue. Currently, Porter has the shredder blades for the 62-40 set to a 3-inch cut and the blades for the 60-44 set to a 4-inch cut.

“That is giving us strips that vary in length but are ideal for what the State demands of its material headed for the landfill. Kentucky is looking into the possibility of using some of this material as daily cover. When they finally arrive at a spec for that — undoubtedly a smaller shred — we will make a simple adjustment, bring the 62-40HT's blades down to a two-inch cut and easily meet those specs.” **ESS**



efficient — manner possible: by shredding them for disposal. One Kentucky company, Olive Hill-based Porter Tire, uses a pair of Saturn high torque shredders to bring performance to that process and according to company owner Edd Porter, they have been stalwart performers.

“The Saturn units have served us well since we got into serious tire disposal. We actually started out as a service station in 1960, then we added tire sales two years later. It wasn't until a few years ago that we got into the tire disposal business and that has grown steadily to where it is today: representing about 2/3 of

about five trailer loads a day through here — that's about 5,000 passenger tires or their equivalent in larger tires, per day.”

The disposal process, according to Porter is fairly straightforward. Tires are off-loaded from the truck directly onto a belt which will eventually route them to a shredder. Tires are inspected, usable ones are set aside for resale and the rest are sent to one of two Saturn Shredders.

“We try to minimize handling by taking tires directly from the truck to the conveyor,” says Porter. “We use the shredders independently of each other,” says Porter. “We tend to use

Model 60-44HT Thrives on Truck Tires

The Saturn 300 Hp Model 60-44HT mentioned above is designed specifically for severe-duty applications such as truck tires and OTRs. Changes incorporated into the design have been shown to increase shredding power by 25-30% over previous models. According to Granutech's Mike Hinsey, the shredder has excelled particularly well in truck tire processing applications.

“In both testing and onsite use, the 60-44HT easily processed in excess of 450 truck tires per hour,” he says. “That includes tires up to 11R 24.5s which it processed without the need for a machine reversal. We designed this unit specifically to serve the needs of those customers who process large volumes of truck tires in their operations. It will do that and more.” **ESS**

UT Tire Recycling — Continued from front page

"It's one of those situations that looks bleak at the time but, when looked back upon, seems to have been the right thing to happen. We had been looking into the possibility of expanding the Des Moines operation to do crumb rubber. This was the jolt we needed to get moving on that."

Jahries received help making the move to crumb rubber in the form of a program from the State of Iowa that makes interest-free loans or grants available to individuals and companies that can find ways to keep material out of landfills. "In the eyes of the State of Iowa, the compelling part of our proposal was the fact that by adding the crumb rubber capability to our operation, material would not only be kept out of landfill, it would become new product," says Jahries.

Getting Down in Iowa

UT Tire Recycling takes in whole tires — 90% of them from within the state itself — ranging in size from small wheelbarrow tires up to mining tires that can weigh in excess of 10,000 lbs. "We process the mining tires down to 250 lb. sections using an excavator-mounted

mobile shear. Whole tires (or sections) are routed to one of two processing lines. All of the sectioned OTRs as well as any farm tires are routed to a Saturn 62-40HT shredder, creating a 2-inch wide by 6-1/2-inch long primary shred. These are then passed along to a second shredder with recirculation system for further downsizing. Standard tires are fed directly into another shredder, also equipped with a recirculation system for sizing. Product exiting both machines is in the 3-inch nominal range. It is sent to a vibratory screen where it is separated into 3-inch, 2-inch and 1-inch product. The 3-inch product is used in a leachate application, while the 2-inch product feeds nearby cement kilns. A portion of the remaining 1-inch product is sent to the University of Iowa for use as fuel; the balance is used as feedstock for the final step in the process: granulation in a Granutech-Saturn Systems G-3 granulator.

"We take the 1-inch material and run it through the G-3 to make product ranging from 4-mesh to 15-mesh. By this time, virtually all the steel has been magnetically separated and removed. That material, in turn, is also sized, resulting in a 1/4-inch product for use in

playgrounds and horse arenas, as well a finer material which we sell for use in mat making, railroad crossings, and as feedstock for other processors with cracker mills who will ultimately take it to 40-mesh or smaller. We feel we have really fine-tuned the operation to where we need it to be."

Seeing is Believing

Getting the crumb rubber operation in place was far more difficult than Jahries had ever imagined — not solely because of the finances involved but rather because, prior to making any capital equipment purchases, he found it difficult to see any actual equipment at work.

"In the nearly five years I spent researching processing equipment, I regularly spoke to manufacturers who said they had systems in place with customers but we would not be able to see them. Only Granutech made available full operational systems that allowed me to see the potential that existed by going to crumb. For me, seeing the equipment at work made a world of difference. That, and the comfort level I have from dealing with Granutech for nearly ten years, steered me toward their products and we've never looked back." **ASS**

Rubberecycle — Continued from front page

them directly to us. We are currently doing about 5,000 tires a day but have plans to probably expand that to between 7,000 and 8,000."

The system at Rubberecycle includes a primary shredder with recirculation capability, the Grizzly for secondary processing, a cryogenic system and a hammermill for final granulation to 100-mesh size. Hassan says material enters the plant and is primary shred to produce 2-inch chips which are then routed to the Grizzly. The Grizzly, using a single-rotor configuration, takes the 2-inch material and effectively downsizes it, thereby separating an overwhelming majority of the rubber from the steel. That material is then taken for further processing in the cryogenic area and finished to 100-mesh size using the hammermill.

"We are running about 6,000 pounds of the 2-inch chips through the Grizzly every hour and it is handling it nicely. Like most any piece of granulation equipment it needs to be maintained on a regular basis but we have found that taking care to turn the blades regularly gives us about 150 hours per edge and, because we grind them here in our own machine shop, that works well for us both in terms of performance and cost."

Hassan says they spent a good deal of time on research before deciding upon the Grizzly as their secondary processor.



"I looked at equipment from a number of manufacturers. What sold me on the Grizzly as a good fit for our process was the fact that Granutech-Saturn had machines for us to see working in situations like ours. When making a major equipment purchase decision, it is important for us to be able to see machines in operation and know how they are going to perform. The Grizzlies we saw were doing a good job and the one we have installed here at Rubberecycle has also been a good machine. We are very satisfied with it and are confident that, as we continue to grow, it too will continue to perform." **ASS**