

Onsite at Ashfield Stone

SRG Visits a Family-Owned Schist Quarry in Massachusetts

Tucked in the Berkshire Mountains of northern Massachusetts lies the town of Shelburne Falls. This gem along the highway is the quintessential New England town abundant with shops, galleries and local color. Adding to its picture-perfect charm is the extensive use of local stone called schist.

This story is about the vast reserves of this stone, its history and the many lives it has shaped. As told by Jerry and Johanna Pratt, co-owners of Ashfield Stone, it all began with the couple's desire to go back to the land and live a wholesome life of farming. What they eventually got, however, was more than they ever thought possible.

"I graduated from the University of Massachusetts in the early 1970s with a Bachelors Degree in Fine Arts," recalls Johanna. "After that, my first job was milking cows for a local farmer here in Ashfield. His name was Ted Howes, and his family had been there for generations, just like every other family in the area. He was a wonderful man and a local historian, and I'd listen intently to his stories. I then met Jerry.

"Jerry had grown up around here and had done a lot of masonry work as a contractor. Both of us wanted to go back to the land and use our own materials as much as we could, as well as do some form of farming. The land we bought was a woodlot that had a dilapidated camp on it. We bought it in 1984 from a couple that hadn't used it in 16 years, however, the porcupines had. There was something like six dump truck loads of porcupine manure that had come out of it. They had chewed everything to pieces, but we managed to

Peter Marcucci

Photos by Peter Marcucci

keep the shell and began planning what to do. Soon after, with the help of Ted Howes helping Jerry log our own spruce and hemlock, and a friend's portable saw mill, we started ripping our lumber."

Don't Take Their Schist for Granite

In the process of logging, Jerry and Johanna often wound up unearthing stone. They didn't know what type it was, but Jerry had recognized it from the foundation work he had done, continued Johanna. "Jerry's father was a mason and told Jerry that this stone had been used for over 300 years for everything we now use cement for. In those days the local Yankees said, 'Flat rock! I know what we can do with flat rock,' and would go out and split it in layers for construction, mostly for door steps, foundation basing, well covers and floors. So it was intriguing to us that we had found one more natural material we could use for our purposes."

By the late 1980s, Johanna had traded milking cows for raising them, while Jerry began finding commercial uses for the buried treasure. They were also gifted with their daughter, Mary May.

"We were living in that old cabin and just building around ourselves," continued Johanna. "I was now teaching school and Jerry was specializing in jacking-up and shoring-up the old cape style homes in the area. At some point while working, Jerry saw a hollow in the woods with a great big slab of stone with drill marks and a hand-hewn beam propping it up."

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Jerry Pratt sizes up schist for an upcoming job. Pratt says that he had no idea what was to come when he first discovered the flat schist stones on their woodlot. The area is known for its vast deposits of both soft and hard schist. Ashfield schist happens to be the harder variety.



Buying a Waterjet: A Personal Journey

Are you considering buying a waterjet for your shop? If so, you will be inundated with all kinds of information regarding psi, inches per minute, hydraulics, software, service support and a myriad of other things that are all very relevant to making your decision. The time it takes to understand all of these things and to make educated comparisons between vendors is almost enough to make a person forget about the purchase and just continue to do the work by hand.

Today, though, it is becoming increasingly apparent that if you

Mark McMunn

want to grow your stone business you will have to improve productivity to remain profitable. The stone industry, in case you have not noticed, has been going through a rapid consolidation that began with the recession of 2008 which decimated the number of operating shops in the United States. The recession also took away the very fat profit margins that existed prior to 2008, and now the stone industry profit margin is moving down to margins in line with other manufacturing industries, which are often below 10 percent. At that



level of profit margin you need to have a streamlined manufacturing process with the flexibility to adapt to fluctuating levels of demand, while still maintaining consistency in product quality and delivery time. For many shops stepping up to a stand-alone waterjet, it will make it possible to achieve the manufacturing efficiency needed to remain competitive and profitable, and most importantly, stay in business.

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Buying a Waterjet: A Personal Journey

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Please follow along as I share our company's journey through the selection process.

Contacting Vendors

When we began our search for a waterjet, we knew we would have to be careful during the selection process. We did not want to wind up buying a machine with a price tag well north of 100K that would turn out to be a "lemon" or a "white elephant." To us, a "lemon" would be a machine that would get the job done. While parts and maintenance might not be expensive or difficult, constant breakdowns, be it mechanical or software, would be a nightmare while trying to timely deliver jobs to customers.

A "white elephant" would be a machine that while it would work reliably well, would have such a high price tag that the payback period would be so long as to negate the manufacturing productivity increase. In other words, we would be saving our backs but not making any more money. Both maintenance and price tag were the main deterrents preventing waterjets from breaking into the stone industry here in the United States through the mid-decade of 2000, but advances in waterjet technology that came online before the decade's end made waterjets more accessible.

From the get-go we eliminated all foreign vendors, not because of any prejudice, but rather to never have to deal with a language or time barrier that would hinder our ability to get back up to speed if the waterjet were to go down for any reason.

Fortunately, we have several American manufacturers who make very good waterjets and also have

excellent software. The problem now was to decide which waterjet vendor would be our final choice. I will not mention the names of the vendors we did not choose in this story, and only speak broadly of the reasons we did not choose them.

One common drawback with most vendors was the price tag, but that does not mean that the machine was overpriced for the work it would do, it was just too large a price for the typical stone shop. Today, the majority of waterjets are sold to the metal parts manufacturing industry, which is very large, with capital spending schedules that budget for replacement of expensive equipment on a regular basis. The stone



industry (although heading in that direction, with some shops already there), for the most part is still populated with shops that do not need the waterjet every day. In our own shop we have many times gone several weeks without using the waterjet. In the metal industry that would be unheard of. In the metal industry, and especially in the steel industry, equipment has to be in almost perpetual use to reach the production and sales levels required to pay for the equipment, maintain it and then replace it. Downtime in a mature industry like steel is a profit killer. In the stone industry we can still

get away with downtime on our equipment, but that will change in the coming years.

Vendor 1

We found the price tag to be the main barrier to buying from any vendor, but there were other negative factors that showed up in the selection process. One vendor had a good product but they relied on outside suppliers for their parts, and were simply assembling parts that came from elsewhere. Although this method of manufacturing did keep costs down, we felt that the owners of this company were not in it for the long haul, and that they could be crippled if they were suddenly cut off from their parts vendors — meaning we would be cut off, as well. This company was in fact later sold, but to be fair, I have never heard

anything negative about that company regarding their machines or service.

Vendor 2

A second vendor was also simply overpriced for us. They were a major leader in the industry, but the only machine they had that was even close to our needs and price level seemed obsolescent: a flying bridge. While the "flying bridge" waterjet version was the prevalent design for many years, and it was a good design, it was bulky and required a bigger footprint on the shop floor than the modern bridge models available today.

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Item #	Description	OUR Price
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55147	Scorpion™ Brazed Sink Wheel, 1/2" x 2", 100 Grit	\$64.95
55148	Scorpion™ Brazed Sink Wheel, 1/2" x 2", 200 Grit	\$64.95
55149	Scorpion™ Brazed Sink Wheel, 1/2" x 2", 400 Grit	\$53.95
10431	Scorpion™ Brazed Sink Wheel, 1" x 2", 50 Grit	\$89.95
10432	Scorpion™ Brazed Sink Wheel, 1" x 2", 100 Grit	\$89.95
10433	Scorpion™ Brazed Sink Wheel, 1" x 2", 200 Grit	\$89.95
10434	Scorpion™ Brazed Sink Wheel, 2" x 2", 50 Grit	\$99.95
10435	Scorpion™ Brazed Sink Wheel, 2" x 2", 100 Grit	\$99.95
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Bluestone: Rivers and Deltas Create a Versatile American Sandstone

Bluestone. It's blue. It's a stone. End of story, right? Oh no, dear reader, you won't get off the hook that easily. There's a lot more to bluestone than its refined good looks. Did you know that bluestone only comes from one region? And that it's the remnants of a mountain range that doesn't even exist anymore? And that it can be all kinds of colors? If there's one thing that's always true with natural stone, it's that there's more to these rocks than meets the eye. Read on to learn why bluestone is a unique American stone that's as useful as it is beautiful.

Bluestone is Not Just Blue

Bluestone is a fine-grained sandstone from Pennsylvania and New York, characterized by its grey-blue color—but it's not always blue. "There are so many color variations," explained Bill Mirch, Vice President of

Karin Kirk

usenaturalstone.com

Photos by John Malyshko, Courtesy Natural Stone Resources, Inc.

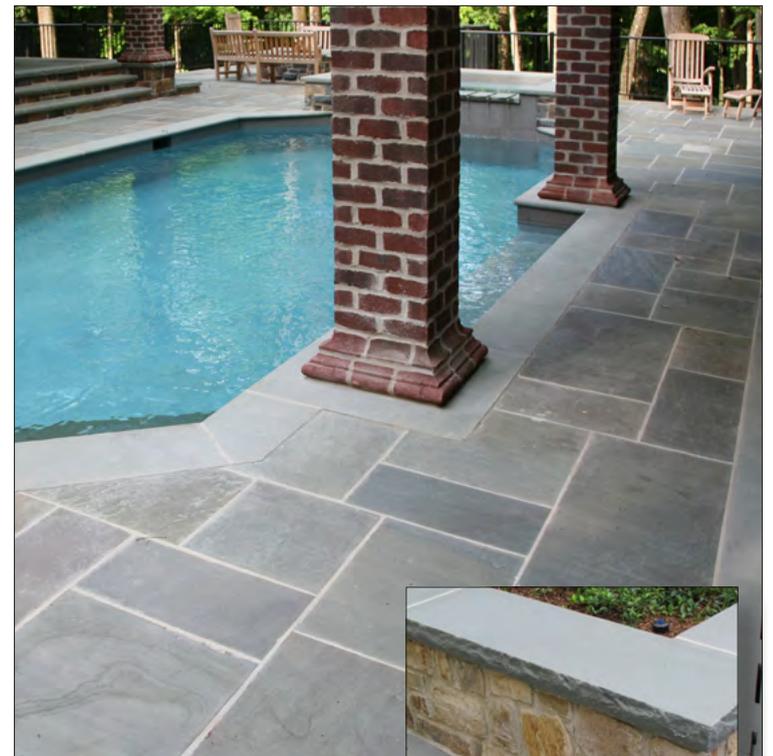
Tompkins Bluestone. "Light blue, grey, green, brown, lilac..." Mirch ticked down the list of colors expressed in bluestone. "There are a lot of nice choices."

Ancient rivers gave birth to bluestone, and this sandstone is the result of a region-wide river system. As with all sedimentary rocks, the particulars of the stone reveal details about its formation. For example, the different colors tell us if the stone was exposed to oxygen during or after its formation. Orange, red, or brown colors are caused by an oxygen-rich environment. Green, turquoise, or blue tones are a result of oxygen-poor conditions, which can occur when decaying organic matter in the sediment uses up all of the available oxygen.



A variety of different ingredients make up bluestone: feldspar, quartz, mica, clays, and rock fragments. In geologic terms, this stone is called a greywacke (pronounced "gray whacky"), which is a sandstone made of a mixture of different particles. Furthermore, 'greywacke' is yet another example of how geology is rich with unusual/ridiculous vocabulary terms!

But this jumble of ingredients tells us something about bluestone. As sediments are transported farther from their source, they sort themselves out into similar minerals of similar sizes. But bluestone, being made of a diverse mix of ingredients, is made up of sediment that traveled a relatively short distance down a river. It also hints at the fact that all bluestones are not identical. The range in colors, layering, and texture is one of bluestone's best assets.



Bluestones are the Remnants of an Ancient Mountain Range

Let's do a little time travel back to the Devonian Period, nearly 400 million years ago. A mountain range, called the Acadian Mountains, was being uplifted along the east coast of North America. As a tectonic collision



cranked the mountains upward, erosion sought to wear them back down. Rivers carved out valleys and carried away the sediment.

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Buying a Waterjet

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At the time we were shopping, this vendor only had a "flying bridge" model to offer us, and we decided to pass. Again, though, I want to point out that their machines were good quality machines; they were just not a good match for us.

Hydraulic Pumps

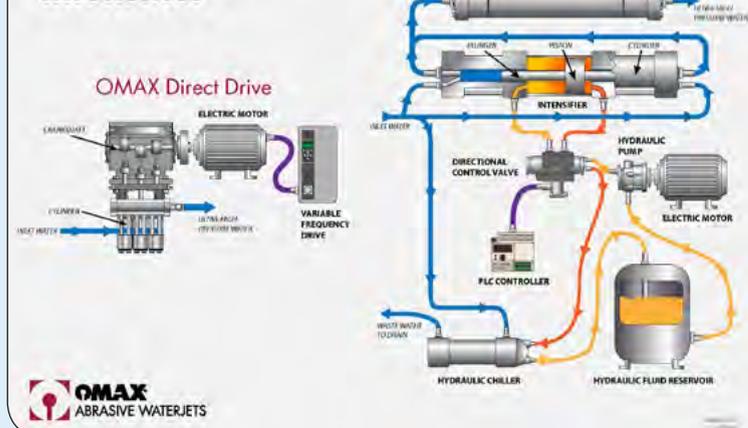
The scariest thing we came up against was the hydraulic intensifier pump. Each vendor we spoke with explained that the one thing that would require more than a casual amount of maintenance was the hydraulic drive pump. When I was finally shown a hydraulic pump in action, I was blown away by the technology. Having more than an average mechanical background, I was impressed with the simplicity of the concept behind the design, and immediately realized that only a hydraulic system could do the impossible job of creating a waterjet stream of 50,000 psi and higher. I realized

then that the intensifier pump IS the waterjet, and that the available machines in the market were really just different vendors' versions of a machine with three axis, made with different levels of quality of ballscrews, bearings, stepper motors, software and paint jobs. This meant that everyone was making their own version of a three-axis machine, but they were all buying the pump from the same pump builder.

I am very averse to manufacturers who rely on third parties for a majority of their parts,— especially the main part — in this case, the intensifier pump. It appeared, though, that this was the way waterjets were built in this country, and we accepted this as the norm. Still, I did notice that the several intensifier pumps I saw operate leaked hydraulic fluid. I was told that this was to be expected, and the cleanup of a little hydraulic fluid was a small price to pay for the miracle created by a hydraulic intensifier pump.

The maintenance did seem intimidating at first glance, but after studying what was involved in

Waterjet Pumps: Direct Drive vs Intensifier



maintaining the pump, I began to appreciate the simplicity of the maintenance, and was pretty convinced that this was as simple as it could get, and that we could handle the maintenance with no problem.

Enter OMAX Vendor 3 and the "Direct Drive Pump"

Just when we were about to make a decision, we received an email from OMAX waterjets describing their new line of waterjets known as the MAXIEM. I

was expecting to read the typical descriptions about the quality of the ballscrews, the precision and accuracy of the cuts, and of course the reliable and consistently high psi achieved by the hydraulic drive pump, but to my surprise, the MAXIEM line of waterjets use neither ballscrews nor a hydraulic intensifier pump—they use a direct drive pump. We stopped in our tracks and decided to call OMAX and have them send out a rep to meet with us, because the price of these new MAXIEM

machines were significantly less expensive — not cheap — but less expensive than any other competing American brand. We wanted to get the whole story.

I asked why I had not ever heard about the MAXIEM line or "direct drive" pumps. The OMAX sales rep explained that this line of waterjets had been in the works for quite some time. OMAX had just finished beta testing them in the field, and were now ready to introduce them to the market.

Next, I asked about the significant difference in price between the MAXIEM line and other brands. The answer was that by eliminating the ball screw system and using a "direct drive pump" versus a hydraulic intensifier pump, OMAX was able to produce a line of machines at a price point that mid-level shops in all industries hungry for waterjet capability could reach. Also, direct drive pumps did not use any hydraulic fluid, eliminating the need to deal with leaks and the associated costs.

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Buying a Waterjet: A Personal Journey

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I must say that I was very skeptical before we spoke with the rep, because after seeing the power generated by hydraulic intensifier pumps, there was surely going to be a catch to these direct drive pumps that would show up either in lesser power delivered to the cutting nozzle, or difficult pump maintenance.

Neither of these concerns turned out to be true. Hydraulic intensifier pumps are a marvel to see, and I am still impressed with the power that they can generate. The hydraulic intensifier pump will always have a place in industrial cutting, but the direct drive pump can do anything an intensifier pump can do, without the collateral maintenance required for the hydraulic fluid.

The final thing that closed the deal for us was the difference in how the two different pumps run. As best as I can understand, when you are between cut jobs and the cutting nozzle is shut off while waiting to cut the next job, the pressure from the hydraulic intensifier pump keeps the pressure applied to the entire plumbing system, which includes the lines and swivel joints.

While that is not a bad thing per se, it does mean that constant pressure is being applied to the plumbing system, shortening the life of the system parts, while not making any money. Now, you can turn the pump off in between cut jobs, but then it takes about a minute or so for the pump to get back up to pressure. To us, it just seemed to be very inconvenient and a pause in production — we would probably just leave the pressure on all the time — but that would increase our electric bill. On the other hand, the direct drive pump, in between cut jobs, automatically shuts off and releases the pressure of the whole plumbing system, thus extending the life of the plumbing system parts. With the direct drive pump, pressure is only being applied to the system when the machine is actually cutting and making money.

Lastly, direct drive pumps are driven by three phase motors, which use electricity very

efficiently, and only add to the pump's overall efficiency, with no worries about hydraulic fluid leaks. Perhaps I am splitting hairs here, but these finer points of mechanical operation can make the difference between a machine being an asset or a liability to any stone shop.

Easy To Fix!

The direct drive pump, like any other pump or motor, does require regular maintenance and rebuilding after so many hours of use. I was amazed at the simplicity of the required maintenance of an intensifier pump, but it



OMEX Maxiém waterjet on the production line.

would require the use of hyperbole to express my impression of OMAX's simplicity of maintenance. Suffice it to say that if you can turn a wrench, you can maintain and rebuild an OMAX direct drive pump. The first time will make you a little nervous, but after your first seal replacement and pump rebuild, you will begin to appreciate the engineering that went into making the pump so very easy to fix and maintain. This is a very good thing, because in the many years we have operated our waterjet, there has been nothing that we were not able to quickly fix ourselves. That is not often possible when you have a machine that was built on another continent. Simply put, the reason

the direct drive pump is so easy to fix is because it was clearly engineered with the end user in mind.

Our Final Decision

We spent four months speaking with several vendors and educating ourselves about all things relevant to waterjets, but in the end it was the direct drive pump that sold us on OMAX. OMAX has no Achilles' heel when it comes to the pump, or any other critical part, because OMAX builds their pumps in-house along with all other critical parts. That and the elimination of the ball screw drive system has created a new level of waterjet that is much more accessible to any size shop, especially the middle and lower tier shops. Before this more affordable option came along, waterjet technology was priced out of the reach of most middle and lower tier shops that were and are still very much in need of a waterjet.

Sadly, though, in my talks with other shop owners throughout the country over the years, no one has heard of direct drive pumps and their benefits. Also, I have spoken more than once to a major American stone equipment maker explaining the benefit of direct drive pumps and that they should consider switching to direct drive pumps versus intensifier pumps, if only to bring down the price of the equipment, but it appears my words have fallen on deaf ears. It truly pains me to see our industry using sawjets with the waterjet part merely squaring out corners, where the circular diamond blade could not cut. The cost per squared out corner using an intensifier pump must just be enormous, when you think about it.

Next month I will present a discussion about who should and who should not own a waterjet, and what it takes to make a waterjet useful and profitable for your shop.



Stone Cladding in Half the Time

Back in 2014 Hugo Vega, vice president of sales North America at Polycor, noticed that the architects he was calling on were lacking a thin stone veneer that was light enough and strong enough for cladding large scale architectural projects. After some R&D within the company, Polycor went on to release its 1 cm reinforced slabs and Vega returned to his architects in triumph. Only their response was, "That's great, but we need a way to hang it."

"The 1 cm product was a great innovation, but there was no way to apply it quickly and easily on large scale projects," Vega said.

So the Polycor team dove back into development.

Meanwhile another response began to percolate in the A&D world. In a bit of a surprise to Vega, the 1 cm slabs sales took off in the residential market where designers and their clients jumped at the chance to do feature walls in showers, full slab backsplashes and seamless vertical fireplaces.

At a third of the weight of the usual 3 cm material they were dealing with, fabricators were no longer breaking their backs to muscle a full slab up over a counter to install a backsplash. At 10 times the flexural strength, (thanks to its polycarbonate composite backing) gone was worry

Steven Schrenk
Polycor

Polycor's architect Étienne Bernier of Hatem + D mounted American Black granite slabs with the Eclad I to create an interior feature wall that shows off the unique linear veining of the stone. Mitered corners give the appearance of weight but the slabs are actually only 3/8 inch thick.

exteriors of architectural projects. From time to time he would bump into the team from eclad at job sites where thicker panels of Polycor marble and granite were being installed with existing eclad systems, structural supports laid over existing facades in a modular fashion. A world leader in stone cladding systems, eclad has been creating and refining cladding

This backsplash was fabricated from a continuous slab of ultra-thin White Cherokee American marble.



that the vertically oriented slab on the fireplace would crack on install.

The residential market was onboard for thin stone.

That was great news, but Vega's customers are in commercial, not residential. So he continued to mull over this problem of adhering thin stone cladding to the

systems since the 1990s. They, too, were seeing the same need in the market as the Polycor team - a fast and efficient way to clad with ultra-thin slabs. And so together the companies decided it was time to team up to bring a comprehensive thin stone cladding system to market.

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