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**Compact, High Flow Safety
Relief Valve Design**

SEE PAGE 3



**Compact, High Flow Safety
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SEE PAGE 11

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CONTENTS

FEBRUARY 2023 | ISSUE 284

INDUSTRY INSIGHTS

03 Where Scrap Recycling Technology Is Expected To Go In 2023 And Beyond

11 Compact, High Flow Safety Relief Valve Design

INDUSTRY NEWS

21 Regional Press

We've said it before, and we'll likely say it again (like, right now): February. The month for lovers.

We're not sure how that relates, but it's the first thing that popped into our minds when brainstorming began for the introductory blurb for this particular issue. That said, maybe it's a good time to tell your employees, vendors, and partners how much you appreciate their hard work. It's cold here in the northeast – this is opportunity to warm up the floor, which, who knows, may increase productivity! Go ahead, spread some love. Tell the folks making your job a little bit easier how much you appreciate them.

We're a month in to 2023. We're still getting used to writing that out. Heck, we barely had a handle on writing 2022. Time is a wild ride.

Anyhow, we've got two features this month that came to us from outside sources. The first is about scrap metal recycling technology and what the landscape of this area of focus is in 2023. It's an interesting conversation to have given our continued quest to become more efficient, sustainable, and, eco-friendly. Take a look. We found it interesting and would love to hear what you think.

The second feature came to us from BS&B Safety Systems who are spreading the word about their new safety relief valve and the story about how they designed, manufactured, and brought it to market. Check it out!

All our best,



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1



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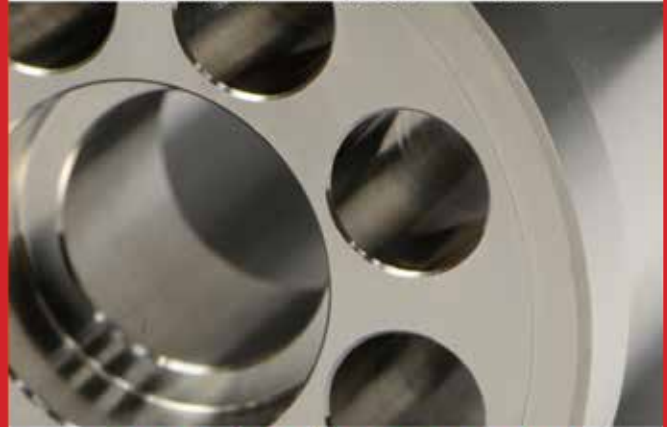
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WHERE SCRAP RECYCLING TECHNOLOGY IS EXPECTED TO GO IN 2023 AND BEYOND



**Written by: Adam Parr, Director of
Communications & Public Affairs — Gerdau**

The Covid-19 pandemic forced a wide range of industries to increase their reliance on technology, and the recycling industry was no exception. Recycling businesses were forced to employ technology to stay afloat when the pandemic forced recycling laborers to shelter in place. By the time pandemic-related restrictions were lifted, many tech innovations had come to play a central role in recycling operations.

Looking to 2023 and beyond, tech innovations promise to play an even more important role in the recycling industry. The world of scrap metal is evolving. Today's recycling operations must process a wider range of materials, many of which are alloys made up of a complex mix of materials. Sorting them effectively and efficiently requires a new generation of tools.

In addition, the demand for recycling is growing. The increased interest in sustainability is making the green metals that flow from recycling more valuable than ever. Opportunities abound for recycling facilities that can improve their output by improving their efficiency, and technology provides the tools to accomplish that.

While the speed at which technology is developing makes it difficult to predict all of the innovations that may come to play a role in the future of recycling, the following examples include many that have already proven to be viable. They represent some of the key tools that recycling operations should be exploring as they seek greater levels of efficiency.



New technology for improved scrap sorting

Sorting is a critical step in the recycling process. Sorting effectively in 2023 involves the handling of multiple streams of materials and handling a volume that is expected to continue to increase in coming years. Operations that can leverage technology to improve efficiencies in this area can also improve their profitability.

One of the factors at play for today's metal recycling industry is the complexity of scrap materials. As the range of alloys in use in manufacturing grows, the burden related to identifying and properly processing these alloys also grows. Technology that is helping to increase the efficiency and accuracy of efforts to properly identify metals in the early phases of recycling has become an invaluable tool for recycling efforts.

Applying tech for more efficient identification

Laser Object Detection (LOD) is one form of technology that is being used early in the recycling process. This technology categorizes materials based on their spectral and spatial characteristics, allowing it to identify items such as rubber, glass, and other non-metal materials that are commonly grouped with

scrap metal. LOD is becoming especially valuable as manufacturing relies more on the mixing of a wide variety of materials, such as is seen increasingly in the auto industry. Integrating this technology with automated sorting systems promises to dramatically improve on the purity of materials that are processed.

X-Ray Fluorescence (XRF) is another form of technology that has emerged as a powerful tool in the recycling industry. XRF uses a non-destructive process to determine the elemental composition of materials. The technology can be deployed from handheld units that rapidly identify metals collected for recycling, determining their alloy grade and the presence of any contaminants.

XRF is especially valuable to recycling for its ability to separate alloys by grade. For example, there are a variety of different types of stainless-steel alloys, but properly identifying them is challenging without determining their elemental makeup. The speed and accuracy that XRF delivers in this process plays a key role in allowing recycling operations to avoid bottlenecks in their processing, as well as pricing errors when purchasing metal scrap.



Automating sorting with AI

Artificial intelligence (AI) is empowering a range of innovations when it comes to sorting scrap metal. AI-empowered robotic sorting systems do not suffer from the boredom and fatigue that can cause a lack of efficiency with manual sorting. In addition, robotic systems that utilize machine learning can be constantly improving on their ability to identify and process scrap metal, ultimately resulting in systems that process scrap automatically and run around the clock.

Addressing e-waste recycling challenges

The growth of e-waste, which comes from discarded electronics, is providing a new sorting challenge for the recycling sector. E-waste often contains small amounts of valuable metals, including gold, silver, copper, and platinum, but can also include harmful toxins — some of which are produced when e-waste is incinerated.

Recycling-friendly design is a trend that promises to improve the efficiency of recycling e-waste. This involves designing devices to allow for the easy identification and removal of key recyclables, such as printed circuit boards. As this type of design becomes more popular, it will ease the burden on recycling processes.

In the interim, identifying efficient ways to sort and process e-waste is a challenge the recycling industry must address. Effective systems are needed not only to secure metals from e-waste, but also to protect humans and the environment from the dangerous side effects that have been identified as resulting from the improper disposal of electronics.

New technology for improved process management

While sorting recyclables is central to the recycling process, it is not the only business aspect that must be managed. Moving into 2023 and beyond, the recycling industry promises to be dramatically affected by new technologies aimed at enhancing the entire recycling process. From public engagement to vehicle route planning, every aspect of the recycling business stands to benefit from the application of new technology.

Effectively managing inventory will only become more important as the volume of recycling continues to increase. By leveraging application programming interfaces (APIs), systems can be built that allow identification tools, such as systems utilizing XRF, to pass data on incoming materials directly and immediately to inventory databases. In addition, inventory systems can





be linked to pricing databases, allowing for pricing to be automatically updated in real time.

Advancements in technology can also allow for the various transportation needs associated with recycling to be streamlined. AI-driven route planning and optimization tools allow haulers to spend less time on the road, consequently using less fuel. In addition, the up-to-date information route software can provide on arrival times allows processing facilities to develop more efficient systems for receiving shipments.

Overall, these innovations in software technology allow for a much higher degree of transparency in the entire recycling supply chain. Supply chain disruptions that were kicked off by the Covid-19 pandemic have become the new normal, wreaking havoc throughout the entire manufacturing sector. Knowing when disruptions are happening in real time is essential for mitigating their impact.

By digitalizing as many systems as possible and connecting them in cloud-based networks, businesses gain a complete picture of the entire recycling process. They gain data that allows them to identify weaknesses in systems and business models, predict trends in supply and demand, and identify potential growth areas. The overall result is an industry that is data driven, which provides the fuel for even further technological advancement.

Pursuing innovations that improve efficiency

The future of manufacturing in virtually every industry will be heavily reliant on recycled materials. Success for the recycling industry moving into 2023 and beyond is closely tied to its ability to achieve higher levels of efficiency in processing and providing these materials. Identifying and employing the technological advances that will best empower efficiency in all areas of operations, from sourcing to sorting to supplying, is an essential and ongoing task in which the recycling industry will be engaged.

About Adam Parr

Adam Parr, Director of Communications and Public Affairs of Gerdau, is a sustainability and manufacturing expert. Gerdau's North American business divisions manufacture long and special steel products for the agricultural, automotive, construction, distribution, energy, industrial, and mining markets.

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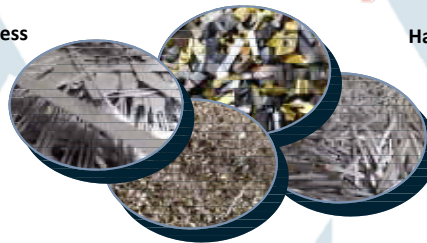
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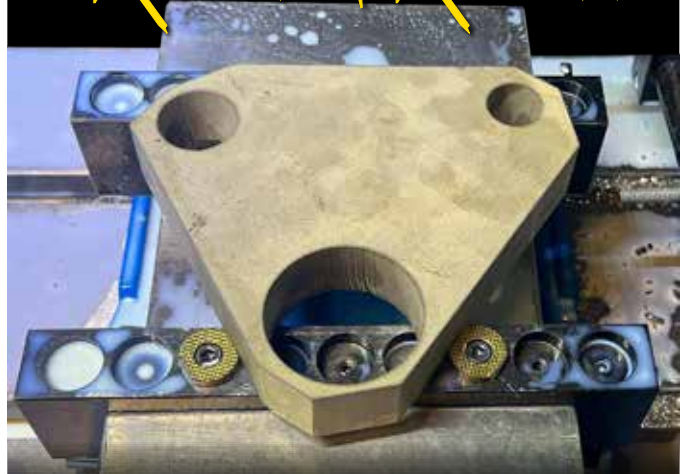
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INSIDE MY EMPTY I WAS CONSTRUCTING A LIGHTHOUSE WHILE ALL THE OTHERS WERE MAKING SHIPS."
- CHARLES SIMIC

COMPACT, HIGH FLOW SAFETY RELIEF VALVE DESIGN

The following article was submitted by BS&B in support of their new safety relief valve solution which has been installed and initiated in over 10,000 applications around the globe.

BS&B's latest addition to its relief valve arsenal offers easy installation, increased capacity, and consumer cost savings.

For centuries, safety relief valves have served as a vital line of protection against excessive overpressure that – left unaddressed – can cause considerable damage to industrial processes including equipment failure and process upset, along with secondary hazards arising from an uncontrolled release of pressurized fluid. These essential safety devices are designed to automatically open when the force exerted by the pressure reaches a setpoint to rapidly discharge the fluids. Once the over pressurization has dissipated, the valve recloses, conserving the remaining fluid.

In developing codes and standards, the industry has largely standardized around the 90-degree flow path design outlined by the American Petroleum Institute (API). This standardized approach requires a drop in pressure inside the valve before it discharges fluid from the exit nozzle. To ensure proper performance, the orifice diameter at the inlet side is smaller than the nominal valve size, with an outlet diameter that is larger than both. A two by three-inch traditional API configuration safety relief valve will be designed with either a 0.785" diameter H orifice or a 1.287" diameter J orifice at its inlet and a three-inch outlet, for example.



While it may be convenient for the purposes of standardization, other approaches to safety relief valve design are possible while meeting industry codes and standards such as those published by The American Society Of Mechanical Engineers (ASME), says Geof Brazier, Managing Director, BS&B Safety Systems, Custom Engineered Products Division.

“The traditional 90-degree standardized configuration has the unintended consequence of limiting the amount of flow that is possible,” adds Brazier.

So, BS&B had a novel idea: what if the safety relief valve was an inline device, with outlet and inlet connections that were the same size and an inlet orifice diameter to match the inlet connection?

“With an inline design, the flow moves in a straight line and doesn’t have to change direction,” says Brazier. “The design allows for a certain amount of flow expansion, but we don’t have nearly the same level of turbulence inside the valve, which increases the capacity of the device,” says Brazier.

By having the inlet diameter match the nominal size of the valve, there is more flow [capacity]. The valve can also be more compact, lighter in weight, and requires smaller size and therefore less expensive piping. The result is simplified installation and a lower total cost of investment.

To address the need for increased flow, BS&B has introduced the IDV Safety Valve, a self-reclosing safety pressure relief valve that functions the same as a traditional safety relief valve but with an inline configuration rather than the traditional angle body configuration.

The inline configuration allows for up to three times the capacity of a conventional valve. The smaller the nominal size, the greater the capacity benefit from the IDV Safety Valve. This new technology enables customers to achieve the same overall outcome as a traditional valve. The increased capacity allows engineers and operators to optimize their pressure safety systems and, in many applications, reduce the piping configuration (line size) by one or more nominal sizes.

The IDV Safety Valve is compact and lightweight and can be installed using ANSI/ASME B 16.5 and international flange connections. Mounting can be either horizontal or vertical, adding to the flexibility of application for this design. The set pressure levels are independent of backpressure, meaning the valve is suitable for variable backpressure applications.

The valve can be combined with an optional integrated rupture disk at the inlet and/or outlet. The combination of a rupture disk device with a safety



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relief valve has many benefits arising from valve isolation to the normal process conditions including optimal leak tightness, increased operating pressure, extended valve life, and reduced valve maintenance.

The IDV has already been installed in over 10,000 processes worldwide, making it an established alternative to the safety relief valve that meets the same codes and standards.

About BS&B

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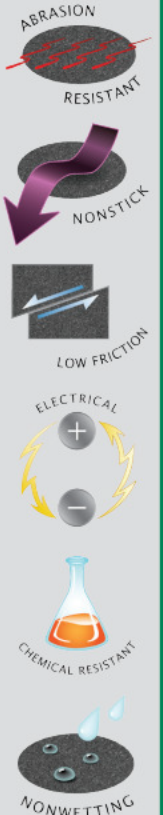
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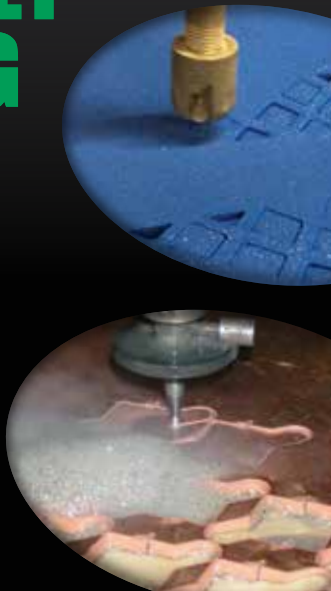
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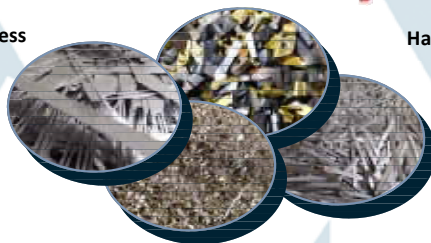
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DATANOMIX AND HEXAGON ANNOUNCE AGREEMENT TO BRING REAL-TIME FACTORY ANALYTICS TO INDUSTRIAL MANUFACTURERS WORLDWIDE

NASHUA, N.H. - Datanomix, maker of the industry's only Automated Production Intelligence™ software platform, announced a partnership with Hexagon to offer the Datanomix software solution to its global manufacturing customers. Datanomix is well known for its industry-changing No Operator Input™ approach to production monitoring, which removes the common challenges and complexities companies face when deploying production monitoring solutions. Precision manufacturers looking to improve production efficiency, increase utilization, optimize cycle times and increase part margins will benefit from the automated reports and insights that Datanomix provides.

The Datanomix platform delivers industry-leading innovation for manufacturers who have been let down by the complexity and lack of insight from prior generation monitoring systems. Simply by connecting directly to manufacturing equipment, Datanomix provides automated benchmarks and scores of production performance, and delivers real-time and over-time insights that drive morning Gemba walks, shop floor problem solving, and continuous improvement initiatives. All of this is done through its unique No Operator Input™ approach, which eliminates the need for data entry or data crunching of any kind.

Through the new partnership, Hexagon's customers will be able to access the Datanomix solution more easily. The two companies will also begin a journey of joint development and integration of new data sources that visualize larger and larger segments of manufacturing processes, enabling business leaders to zero in on untapped layers of efficiency in their operations.

"It is an honor to be selected by a manufacturing technology powerhouse to offer its customers our production monitoring software," said John Joseph, Co-Founder and CEO of Datanomix. "The highly respected Hexagon brand is present in nearly every manufacturing facility we visit and represented by a salesforce that has decades of trusted technology deployment experience. Equally important is the adjacency of various Hexagon data sources that will provide new digital fuel to build a larger picture

of real-time production KPI's for our customers. Automating production intelligence is a comprehensive vision we have that starts with productivity, and expands to other critical dimensions around the machine, parts, tools, and quality, among others."

As part of its reseller enablement program, Datanomix will train Hexagon's customer-facing teams on selling, installing, and supporting its offerings. Hexagon will offer the Datanomix solution directly to its customers as an integrated component of its Production Software portfolio.

"After evaluating a cross section of machine monitoring products on the market and then seeing the Datanomix software in action, we quickly realized that their approach to automated production intelligence— benchmarking of production KPI's, autonomous reporting and continuous improvement guidance - clearly sets them apart from simple monitoring products," said Chuck Mathews, General Manager of Production Software for Hexagon's Manufacturing Intelligence division. "The no operator input approach they've taken is what the industry has been waiting for in this space. Our salesforce is excited to bring this new technology to our customers, and the Datanomix platform is a natural fit for Hexagon's data integration strategy."

"The alignment between Hexagon's vision for autonomous manufacturing and the Datanomix vision for simple, automated production insights made this partnership very compelling for us," said Greg McHale, Co-Founder and CTO of Datanomix. "Manufacturers are looking for digital leverage in everything they do— more insight, more value, and more productivity without the headaches of data crunching and complicated workflows. This relationship allows us to bring that capability to broader audiences that are hungry for insights and tired of the old way of doing things."

Hexagon will offer the Datanomix solution to its North American and European customers as part of its comprehensive solutions for machine shops in the coming months. The companies plan to make announcements about additional technology integrations subsequent to their launch.



About Datanomix

Datanomix delivers Automated Production Intelligence™ for discrete manufacturers with No Operator Input™ required. Its core product set includes its flagship Production Monitoring system, along with Digital GEMBA Boards, and Condition Monitoring systems. Based in New Hampshire, Datanomix exists to provide manufacturers with out-of-the-box reports and workflows that align with the way manufacturing people already work without the need for manual data crunching or workflow disruption. Learn more at www.datanomix.io and follow us @DatanomixInc

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CHRISTOPHER LOCKERY BECOMES PRESIDENT AND GEORGIA SAPPLETON BECOMES PARTNER AT ABLE MACHINE TOOL SALES

AGAWAM, MA. - Since January 1987 the president's position at ABLE Machine Tool Sales' has been filled by one of its three founders. The first was Alfred Barile, the second was Lynne Anderson, and for the last 14 years the president has been Alan Lockery. Each contributed to ABLE's growth and helped it become the Northeast industry leader and award-winning distributorship it is today. As of January 3, Alan assumed the CEO role, his business partner and son Christopher Lockery became ABLE's fourth president, and Vice President of Human Resources Georgia Sappleton became partner, replacing Joseph Halik who retired in December.

Alan decided to take the CEO role where he can expand his reach and be more involved in the field with ABLE's sale and service departments and its customers. He has always had a passion for technical education as well and wanted to be more active in promoting the benefits of careers in manufacturing today and help inspire and train ABLE's interns and entry-level service technicians.

Having started very young helping his dad at ABLE, Christopher has about 25 years of technical and management experience. He worked several years for manufacturers before joining ABLE full time in 2007. Georgia has over 20 years of business administration and human resources experience. She has been with the company since 2012. Both are exceptional managers who will bring renewed energy and a continuation of the stable leadership ABLE has had since it began in 1987.

ABLE Machine Tool Sales sells nine top OEM machine brands and distributes machine tools to customers throughout the Northeast. For 36 years, ABLE has provided customers with sales, training, technical support, service, parts, and turnkey solutions. ABLE's mission is to help customers modernize operations and integrate the right machine tools and accessories into their system to streamline their manufacturing process, find new efficiencies, create improvements, and increase profitability. ABLE has earned close to 80 awards for sales and service excellence.

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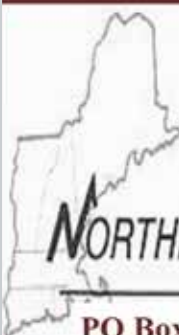
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