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FF Journal

The magazine for today's metal fabricating & forming technologies

A TREND Publication

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EXTREME FABRICATING

Maneuvering and manipulating
metal into colossal works of art

SOFTWARE SOLUTIONS/ERP

Thorough inspection prepares
rockets for flight

TOOL & DIE

"Square" deal secured with the
right process, partner



Fike's large pressure relief and explosion products are built to eliminate loss of life and assets.

[COMBUSTIBLE DUST]

IDENTIFYING POTENTIAL DANGER ZONES

- Combustible dust in high concentrations
- Ignition source
- Oxygen is present
- Dust cloud is contained

a preliminary draft of NFPA 652, a standard on combustible dusts.

The checklist for identifying potential danger zones is short. If combustible dust exists in high enough concentrations, if there is an ignition source, if oxygen is present, and the dust cloud is contained —then a company's risk for fire and explosion is high. These are stories that Fike Corp. is all too familiar with. The Blue Springs, Missouri-based company has designed and built explosion protection, pressure activation, pressure relief and fire protection products since 1945. Fike also operates a world class test facility where experts study the physics behind dust explosions to develop effective prevention and suppression systems.

A broad playing field

In the last decade, digital technology and equipment, like Beckwood Press Co.'s custom hydraulic presses, have helped Fike shape and support its manufacturing strategies. The ability to scale capacity is another objective. The company is looking to reach beyond traditional markets to gain shares in new industrial and commercial spaces.

"We're actively looking at a much broader playing field to identify where fire suppression and protection might be needed," says Bill Schwagerman, senior project manager-engineering for Fike. The search for new territory has also uncovered some trends.

Although the Occupational Safety and Health Administration began the rule-making process regarding combustible dust hazards for general industry in 2009, OSHA remains hampered by the fact that there is no comprehensive regulatory stan-

The big HEAT

Manufacturer uses custom technology to produce pressure relief and fire protection products

A dust explosion and fire ripped through AL Solutions Inc.'s New Cumberland, West Virginia, titanium recycling plant in December 2010, killing three employees and one contractor. The U.S. Chemical Safety and Hazard Investigation Board (CSB) reported that a "spark or hot spot from a metal processing blender likely ignited the zirconium powder inside the machine, creating a flash fire that lofted the particles and formed a

burning metal dust cloud."

At an Omaha, Nebraska, animal feed plant, grain dust was the culprit behind the January 2014 industrial accident that claimed the lives of two employees and injured 10 others. The CSB cited 50 combustible dust accidents in the U.S. between 2008 and 2012, prompting it to issue a voluntary standard in 2015 about the hidden hazards of combustible dust. The same year the National Fire Protection Association (NFPA) also introduced

Stamping/Presses

dard on the books, according to the CSB. Yet a growing list of government regulations and codes for new plant construction is spawning stricter specifications for Fike. “We’ve seen an ever-increasing trend in precision requirements,” confirms Schwagerman, adding that performance characteristics are critical because Fike products are being built to “eliminate loss of life and assets.”

Demands for greater accuracy meant the company needed manufacturing equipment whose precision matched that of its own patented technology developments. The supplier found its counterpart in St. Louis-based Beckwood Press Co. when it bought a 1,400-ton hydraulic press in 2005. That purchase was followed by a Beckwood 125/250-ton tandem press in 2010, a 30-ton press in 2013, and a 470-ton press in 2014.

“I started working with Charlie Becker [who founded Beckwood in 1976] in 2004 and later with Jeff Debus [Beckwood’s president],” says Schwagerman. “Just three hours away, the company was a lot like ours: Very grass-roots, easy to work with and committed to servicing the customer.”

Pinpoint precision

Fike turned to Beckwood once again when it needed to build large pressure relief and explosion protection products. In April 2016, Fike installed a new Beckwood 2,500-ton bulge forming press featuring an 8-point gib guidance system and a large bed. Today, Fike uses its array of Beckwood presses to produce medium-sized to massive pressure relief and explosion protection units. It holds an American Society of Mechanical Engineers third-party test lab certification and is authorized to use the U and UD stamps in accordance with ASME’s Boiler and Pressure Vessel Code. Stainless steel is the standard material used for these products, but Fike also uses other high-performance alloys based on performance needs such as corrosion resistance, cycle life and temperature.

In addition to its comprehensive line of standard rupture and bursting discs, Fike custom builds products for sealing, venting, small space, pressure relief valve protection and other specialty applications. Intelligence gathering regarding a project’s



With precision requirements on the rise, Beckwood’s 2,500-ton bulge forming press controls pressure and force accuracy with +/-1 percent.

“We’ve seen an ever-increasing trend in precision requirements.”

Bill Schwagerman, Fike Corp.

performance factors, such as operating conditions, inlet/outlet configurations, rupture disc specifications and burst pressures, response time and leakage requirements, assists Fike with the design/build process.

Beckwood approaches its press projects in much the same way. Efficient large product tool handling, better part quality, repeatability and an advanced control system were some of the challenges Beckwood had to address to meet Fike’s exacting prerequisites for its newest equipment purchase.

“With any project, especially a complex job with precise requirements, we include our engineering and sales staff up front to explore and evaluate a customer’s press concerns; the types of parts they want to make; and the features that are important to [provide] efficient, accurate processing of those parts,” says Josh Dixon, director of

sales and marketing for Beckwood. “We’re then able to recommend the right machine features and point out new technologies that can support forming and help revolutionize the way a customer does business.”

Following the analysis, Beckwood’s engineering phase includes milestones for structural, hydraulic, electrical and control designs. “Once we solidify the large details, we’re able to move to the smaller details,” says Dixon. “We also have the flexibility to modify the layout of the press at that point, like the location of the hydraulic power unit or the electrical control panels, to meet aesthetic goals or better suit a customer’s floor plan.”

A single point of contact makes it easy for customers like Fike to communicate with the company throughout the process. Beckwood then sends technicians with



Fike uses stainless steel and other high-performance alloys to create pressure relief and explosion protection units.

each new machine shipment to support on-site assembly. “We want to hit the ‘go’ button the first time around so that we know the press is working the way it was intended to,” Dixon adds.

It took six months to build Fike’s newest press and 10 days to install it. Beckwood trains maintenance personnel, machine operators and engineers on the functionality of the press, he says. “We also create the first job recipe and monitor production of the first parts to ensure the press meets the customer’s requirements and answer any questions that may arise.”

Beckwood’s programmable controls pro-

vide precise pressure and positional accuracy and repeatability over ram position movement and ram force. “We control pressure and force accuracy within +/- 1 percent,” Dixon explains. “In position mode, we can provide control within +/- 0.002 in.”

For both companies, precision and quality are the gold standards for performance. But it’s also about teamwork. “We’ve transitioned from a company that just makes equipment to one that works to create a partnership for success with each customer,” observes Dixon.

“It’s a top-down organization,” Schwagerman says of the press builder, which

has matured since Fike’s project manager first worked with Beckwood. “We’re now engaging with a younger generation at the company. It not only feels like the work ethic and quality of technology has been passed down, but we also see them pushing the technology into new territory. As a result, their equipment continues to align with our needs.”

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