

By Thais Santi  
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DIVULGAÇÃO BUCKMAN

## BUCKMAN: CHEMISTRY CONNECTED WITH INTELLIGENT TECHNOLOGIES

Industry 4.0 plays an active role in Buckman's strategy, which includes investments in intelligent technologies to adapt its chemical applications to improving processes with cost and environmental impact reductions.

**A**s the company prepares to celebrate its 75<sup>th</sup> anniversary in 2020, Buckman, the American-based specialty chemicals company, has renewed its visual identity, emphasizing in its slogan the company's strategy for a future with more sustainable chemicals and technologies aligned with Industry 4.0 in its product portfolio.

"We have changed the brand because we are evolving in a great way. The slogan, "Chemistry, connected," perfectly demonstrates what we are becoming: we are still a company that is rooted in our deep personal connections with our customers and the expertise we bring to them with our innovative chemicals, but now we are connected through digital enhancements that are becoming increasingly essential for any business to thrive," explained Junai Maharaj, Buckman's CEO.

Maharaj's words translate Buckman's commitment to support its customers in their pursuit of business success regardless of the challenges they face in their industry segments and global location. Buckman is present in more than 90 countries, totaling more than US\$600 million in sales, with 7 manufacturing sites (Memphis (USA), Cadet (USA), Europe, Brazil, South Africa, Singapore and China) and employs 1,700 employees worldwide.

"We understand that today's demands are very different from those dating back to Buckman's foundation. Therefore, to stay competitive, it is vital to connect companies with the latest smart technologies and advanced data analysis," Maharaj said. Buckman's global CEO reinforces that the new organizational brand is just one way of showing the company's adjustment to each of these elements.

Assessing the trends that dictate Buckman's strategy, Maharaj mentions two specific examples for the pulp and paper industry. "The first is that our customers are trying to create more sustainable processes in their operations, which means they require chemicals that allow them to do more with less and more safely. The other trend represents the desire of customers to monitor their chemical applications to improve process control and minimize costs."

In this context, the executive mentions the chemical part of the process as a partial solution. But Buckman goes further. "Whether the solution is chemical, personal, digital or a combination, we want to be the company that provides the best choice for the pulp and paper industry," said Maharaj. In his view, this is the Industry 4.0 Buckman has focused on to develop smart technologies to adapt its chemical applications for maximum process improvement and minimal economic and environmental impact.

"To achieve this, we need a totally different level of chemistry control and vision of impacts in industrial processes. Intelligent technology provides this layer of information about our customers' processes, allowing us to supply the highly customized solutions they need," the CEO said.

The pulp and paper industry has been a core business of Buckman's since its founding and continues to be a focus area of continuous investment in innovation and product expertise. "The supply of innovative chemicals and smart technologies for the pulp and paper market will continue to be a major focus of ours, both in Brazil and around the world. We continue to invest in our manufacturing capabilities in Brazil, expanding our sales force and building new digital and intelligent capabilities for the great talent available in the country," said Maharaj.

Buckman also serves other sectors, such as water and leather treatment and performance chemicals for other industries, including oil and gas, sugar and ethanol, and metallurgy. Buckman's CEO points out that two new technologies were launched in the Brazilian market; Buckman OnSite®, an advanced process monitoring system, and ECHOWISE™, a revolutionary non-invasive technology that ensures accurate measurement of the air contained in the system through the reading of sound waves.

This technology was obtained after acquiring CiDRA Chemical Management Inc. in September 2017, considered the biggest acquisition in Buckman's history. ECHOWISE™ technology, formerly known as SonarTrac®, is a patented solution, explained Maharaj, which helps understand, adapt and respond to chemical and process demands with greater agility and creativity. "This acquisition was a clear indication of how serious we are in becoming a digitally enabled provider," he said.

As a leader in enzyme technology for pulp and paper, Maharaj said that the company holds sustainability as a core value and that Buckman's goal is to provide solutions to help pulp and paper manufacturers meet their sustainability goals. Proactively, the company is already seeking to replace aggressive chemicals with more sustainable chemicals and is assessing the sustainability of raw materials used in final formulations during the product development process.

"From the perspective of process optimization, we are committed to applying intelligent technologies to improve the dosing efficiency of our chemicals and, more importantly, to support and optimize customer processes," said Maharaj. It is worth highlighting the company's know-how in green chemistry, since the enzymes and enzyme combinations used for more sustainable paper & paperboard production are derived from renewable resources and produced by fermentations, rather than typical methods of chemical reaction. "In the future, this technology will be critical to Buckman's future and that of our customers, as it can accelerate the effectiveness of a business process, both financial and environmentally," said the company's global CEO, speaking about the importance of sustainability for the future of business.

### Smart Technologies

Buckman's current ECHOWISE™ technology is a sonar technology with innovative, non-invasive design. It has no moving parts, nor does it come into direct contact with process fluids. It accurately delivers continuous, real-time, integrated air measurements, allowing Buckman experts and customers to gain access and insight into their core processes and greatly reduce the need for trial and error, setting it apart from other monitoring options.

### Junai Maharaj, Buckman's CEO:

"It is vital to connect businesses not only with highly-qualified industry experts and chemicals, but also with the latest smart technologies and advanced data analysis. And our new brand is just a way of showing our suitability to each of these elements"

According to the company, ECHOWISE™ shows it's possible to use a combination of process, technology and data knowledge to anticipate problems before they occur. That is, it is capable of performing predictive maintenance. "We recently introduced a new antifoam for brown stock washing materials at a customer site in North America. By using ECHOWISE, our team was able to demonstrate that our anti-foaming agent improved process performance compared to competing programs. We were also able to show that a drainage problem, which was originally believed to be entrained air, was a hydraulic/mechanical bottleneck. Our team used this knowledge to develop a control system that would compensate for the issue that not only allowed the mill to increase production but also maintain efficiency and use our chemistry more effectively", said Maharaj.

At the moment, Buckman is concentrating most efforts in the dissemination of this technology in the pulp and paper and bioprocessing markets in North America. The company is already working to expand ECHOWISE™ to other regions, such as Latin America.

But innovation does not just come from acquisitions. The company has expertise in enzyme development, such as Maximize® and Optimize®, which won the US Environmental Protection Agency's Presidential Award for Green Chemistry Challenge in 2004 and 2012. The latest addition is the line of enzyme technologies for pulp bleaching call Vybrant®. "These technologies not only bring safer products to the industry but also result in better products and processes with less environmental impact," said Maharaj.

He explains that the development of these innovations is the result of collaboration among the sales team, technical services, R&D experts, the Intelligent Products / Digital Empowerment team, customers and external strategic alliances. Anticipating the future, Maharaj points out that the innovation process happens much more dynamically and the company already has this new format being applied in its operations. "For us, innovation requires collaboration, and what we're doing differently today is focusing our efforts on digital collaboration."

Digital innovation in the pulp and paper industry will lead to greater collaboration between parties. For Buckman's global CEO, digital collaboration means connections between the paper machine and the sensor, data feed and algorithm, and even insights and process controls. "This digital collaboration will include sensor ecosystems, real-time data feeds, cloud-based storage, advanced analysis and live process control." Eventually, Maharaj concluded, innovative predictive solutions will be offered, driven by deep digital insights paired with our industry experts. "Innovation will be accelerated with the number of connections in the customer process."

### The potential of green chemistry

Buckman has been consistently working on improving enzyme technologies to meet the growing demand of the packaging industry, which increasingly needs to consume less fiber and be more resistant, which has been the focus of enzymes research and their effectiveness. "Our Maximize® enzymatic refining technology helps mills improve drainage speed, strength and machine, which leads to returns on investment and for the environment," he said. The Precision™ auxiliary product line was specifically developed for packaging plants that use recycled fibers and are looking for improvements in quality, production efficiency or environmental impact.

Maharaj says that Buckman has also developed a technology that addresses problems resulting from the use of lower-quality recycled fibers. This technology allows factories to maintain their resistance targets, increase production or save money on other processes. "We continue to improve the performance of enzymes, making them more effective and more robust with new patented technologies. Through continuous research in our laboratories and through partnerships and alliances, we continue to discover and develop new enzymes capable of tolerating extreme pH and temperature conditions," said the executive.

Its latest innovation, Vybrant® is a specific product for a type of hemicellulose (xylan). It is unique because it does not contain cellulases. "In the past, there were products on the market containing cellulases that reduced the yield of bleaching fiber, sometimes to unacceptable levels. Vybrant® works in a much wider pH range. The original enzymes required very controlled conditions and temperatures to function. This enzyme will work with pH 10.0 and temperatures of up to 80°C. This makes pre-treatment much easier and in some cases no pre-treatment is necessary," explained the CEO.

Another great advantage of Vybrant® is the reduction of up to 25% in the amount of chlorine dioxide. This, in turn, renders the effluent more benign, since it also reduces the amount of absorbable organic halides (AOX) by similar percentages. This reduces the environmental impact of a plant to a significant degree. Regarding performance, when compared to other products available on the market, last year Vybrant® was accepted and used globally by pulp producers.

"We had customers who reduced their use of chlorine dioxide in the bleaching process by as much as 18% and some reduced their use of sodium hydroxide by 10%. All this without any perceptible negative impact on product performance or quality," concluded Buckman's global CEO who gave an exclusive interview to 'O Papel Magazine' during his recent visit to Brazil. ■