



Better mill performance starts with smarter influent management.



Rely on AckumenTM MCA-iTM, the monochloramine solution informed by artificial intelligence with automated insights.

Seasonal changes, heavy rainfall, drought and other factors can make maintaining consistent influent quality challenging. If poor quality freshwater doesn't undermine your processes and equipment, overfeeding oxidizing chemistry will. And the resulting environmental impact can be significant. That's why Buckman has developed Ackumen MCA-i for influent treatment, a revolutionary chemical/digital

system that uses artificial intelligence with automated insights to monitor freshwater microbial quality, anticipate changes and adjust monochloramine dosage accordingly. The result is consistently high-quality influent using less chemistry. And that's good for your equipment and processes, environmental compliance and the bottom line.



A superior microbicide. The ultimate way to manage it.

Ackumen MCA-i combines our best-in-class monochloramine chemistries with state-of-the-art sensing technology, cloud-based data analytics, 24/7 expert

monitoring and analysis, and accurate predictive modeling to take the work—and the guesswork—out of managing your influent.

It's not about data. It's about actionable insights.

With conventional sensors and digital applications, you can get too much data and not enough meaningful insight. But what if you had the power to see all and the acumen to make every decision easy?

Ackumen™ MCA-i™ collects data and lots of it. Its state-of-the-art IoT hardware and software includes an advanced system of wireless sensors

along with cloud-based data you can trust. But it doesn't stop there. It takes system monitoring and management beyond the data dump to the insights you care about most and delivers them to you in simple, easy-to-read, actionable system visualization graphics, alarms and notifications via the Ackumen Platform's remote process monitoring system.

What's an insight?

An insight is the detection of a pattern of anomalous behavior; the analysis of its root cause in measurable, rational terms; and finally, a recommended course of action to resolve the issue. Ackumen MCA-i gives you the power to see fouling patterns and corrosion, identify changes in product or water usage, detect process changes, and much more.

Whether at your desktop or on your mobile device, you'll know in real time the status of your system. You'll clearly see how your KPIs are tracking. You'll know at a glance whether an action is needed now or in five days.



Ackumen MCA-i protects your processes and equipment with precise dosing.

Buckman's MCA uses significantly less bleach than a traditional bleach program and doesn't impact your systems the way traditional halogens can. In addition, our accurate feed equipment ensures the correct amount of chemistry is being fed at all times using data from a variety of sensors as well as manually

entered data. So water variability is reduced. And so are the negative consequences on the powerhouse, cooling towers and paper machine chemistries when oxidizers are overfed. With better efficiency and fewer process upsets, your mill can boost production and product quality.

Ackumen MCA-i protects people and planet with advanced safety features.

The MCA-i system comes with feed equipment designed for consistent, accurate delivery with a wide application range and flexible dosing options. Even more important, it offers industry-leading safety. All unit alarms come to your phone. And our feed equipment is the only technology on the market with all these advanced safety features:

- Leak detection
- A built-in separator to keep neat chemicals apart in the case of a line break or other issue

- Automatic flushing of all application lines in case power is lost
- Remote shut-down capabilities
- Regular inspection by Buckman personnel to ensure efficient, safe operation

With MCA-i, you can avoid spills and compliance violations and greatly reduce the potential for human-chemical contact. Buckman's MCA chemistry produces little to no AOX or THMs and is environmentally friendly, reducing the potential toxicity of your mill's effluent. Chemical discharge to lakes and rivers can be significantly reduced.

Ackumen MCA-i protects your peace of mind with expert monitoring, benchmarking and predictive modeling.

MCA-i is backed by 24/7 monitoring and analysis performed by data scientists and engineers in our Insights Lab. The Lab deals with events as they happen, assessing every alarm and

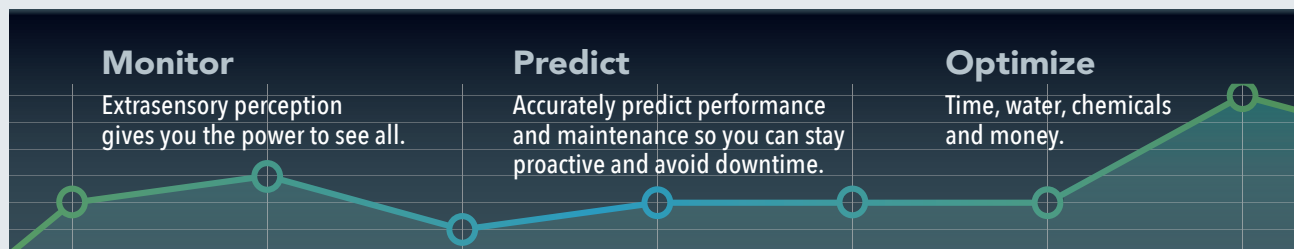
eliminating false ones. Chemical engineers working closely with data science experts enable us to see around the bend and analyze patterns that are not visible to the naked eye.



Rely on Ackumen™ MCA-i™ to protect your budget with smart maintenance.

Buckman owns and maintains all equipment, so you can get optimal oxidant control without capital expenses. In addition, MCA-i probes and sensors are equipped to indicate when they were made and put into service. This enables the Insights Lab to track

calibrations and overall health and create a service calendar for components to be cleaned, calibrated or replaced. So there's no unnecessary downtime due to equipment breakdown or extended maintenance.



See. Understand. Solve.

Globally, more than 300 customers have switched to Buckman MCA. Now, with Ackumen MCA-i for influent, mills can use the power of artificial intelligence with automated insights to enhance performance even more. Ackumen MCA-i gives you complete control of your

influent microbial quality while eliminating the worry over chlorine gas, leaky bleach pumps, compliance violations and damage to processes and equipment downstream. It can help you reduce chemistry use, lower costs, protect employees and improve production.

Gain the acumen you need to manage MCA better.

Connect with your Buckman representative or visit buckman.com to learn more about Ackumen MCA-i.



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