

# Huntsman reduces costs with process optimization software

*EP Monitoring Inc.*

As energy prices fluctuate, business managers at industrial corporations continually seek ways to operate plants more efficiently. One area that often demands this kind of attention, in both chemical plants and refineries, is the operation of distillation towers. Energy used in the distillation process can account for up to 70 percent of a site's total energy usage. Plant managers may be aware that there is cash "hidden" in almost every distillation tower, but the means with which to withdraw it can be less clear.

According to Carl Bowman, founder of EP Monitoring and a veteran of the chemical industry, there is a common chain of events that contributes to distillation inefficiencies. As Bowman describes it, human nature leads many to increase reflux when an overhead specification isn't met, even though a decrease in reboil may be a more energy-efficient move. The increased reflux can cause lights to drift up in the composition at the bottom of the tower, which may cause many to increase reboil when a decrease in reflux may be the more energy-efficient move. This causes heavies in the overhead to drift up again. Result — one shift adds reflux, another adds reboil, and the cycle continues until the tower gets "wound up."

The same chain of events can also start at the bottom of the tower when lights in the base trend higher and reboil is added instead of cutting reflux. Other ways that this suboptimum energy point is reached include failure to make a tower adjustment when feed flow or composition shifts, or if ambient temperatures swing night-to-day or season-to-season.

"I've seen this happen for 28 years," Bowman said. "Each day the process is repeated, until the tower's very tightly wound up, and you're wasting energy to an extraordinary degree. The products are ultra pure and everybody's happy — except for the owner of the company."

To address this problem, Bowman combined his two decades of experience as a distillation tower operator and his expertise in using Microsoft® Excel to create a software solution that addresses this type of overdistilling, and serves as a great support to operators and engineers.

DistillationMizer™ allows for an empirically-based approach to process optimization that is easy to understand and quick to configure and implement, and performs throughout the process life cycle. It automates process monitoring, gives (your) expert advice to board operators, links automatically with your DCS data historian and is configurable and usable within days instead of months. The program helps realize immediate energy cost savings, improves shift-to-shift consistency and operating excellence and reduces NO<sub>x</sub> emissions as energy usage diminishes, among other benefits.

If desired, the system can automatically adjust operating limits based on commodity or product prices, fuel prices, feed rates, feed compositions, plant steam balance or just about anything else desired. Engineering is able to enter "trigger" points as well as desired percentage change in targets as each trigger point is met. Alternatively, your equation (if you have completed a process optimization study) can be used by DistillationMizer as well.

Installation time is amazingly brief. In most applications total time investment on your part can be as little as 30 minutes to an hour per distillation tower. Expensive and time-consuming advanced control modeling, which can take 1 to 2 years to build and validate, can be avoided. When DistillationMizer first opens, an Installation Wizard appears and guides you through answering 25 to 30 questions per distillation tower. After answering these questions an installation button is pressed, which then closes the Wizard, customizes all the formulas and displays, and builds all the links to your data historian. You immediately begin receiving recommendations for operational moves to make to approach optimum performance. DistillationMizer can be used in conjunction with advanced process control to validate model accuracy as well.

EnergyWarden™ automates energy monitoring for up to seven towers, heaters and/or boilers, alerts if energy costs exceed historical values at similar feed rates and continually lowers energy targets as improvements occur. It is useful at all operating rates since it compares costs to historical values at comparable feed rates.

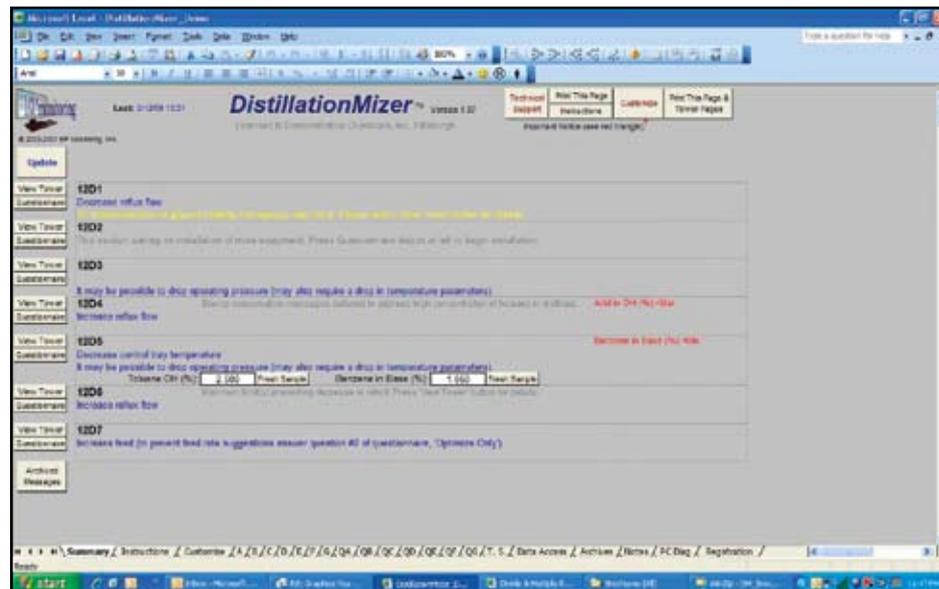
Both programs run in Excel, can be set to auto-start with Windows® Task Scheduler, at user log-in or at timed intervals with Excel, and link to your distributed control system data historian, eliminating manual data entry.

## A success story in the making

Over the course of his career, Bowman produced a number of similar problem-solving innovations, but the founding of EP Monitoring marked the first occasion in which he owned a product he created outright. His first customer was the company he worked for just before striking out on his own, and the software has saved energy costs for various companies in the Gulf Coast region.

Bowman has carved out a niche with EP Monitoring. While many companies utilize advanced process control to optimize large towers, smaller units do not justify its use since it is costly and its operation requires the dedication of engineering resources.

"A large percentage of the towers in a plant or refinery will not be big enough to justify advanced process control — they



EP Monitoring's software examines composition requirements and current performance, and then makes suggestions for decreases in reflux, reboil or operating pressure. The system continues to unload the column until either lights in the base and heavies in the distillate approach maximum or column loading reaches minimum. Minimum energy state is attained.

just don't use enough energy," Bowman said. "I built this system to fill that void. We recently installed a system for six towers in three hours.

"By the time it was installed, it was already giving the plant personnel information and telling them what to do to cut energy. One company told us that our system gives them 80 percent of what advanced process control can do for pennies on the dollar."

EP Monitoring's adoption by major energy companies has been a result of the combined experience and familiarity within industry of the EP Monitoring team, which includes industry veteran Bill Bispeck and other subject matter experts. Steve Barre, director of energy optimization for Huntsman's Performance Products Division, decided to implement the system at the Port Neches site after a meeting with Bispeck, whom he had known and worked with on various projects in the past.

"We are using EP Monitoring's system on three of our operating units at the Port Neches site," Barre said. "We have realized a step change in performance that will provide monetary savings approaching seven figures with more opportunity still to be had. We are starting to see quantifiable and verifiable savings that we can take to our business managers and let them know that we're experiencing success."

Ease of use helps make the transition to EP Monitoring's system smooth.

"It's an Excel spreadsheet, so that made it simple to install," Barre said. "Everything is well-labeled and highlighted, and there are instructional notes everywhere. It's very self-explanatory — if you're not sure what to do in any given situation, you can scroll through menus and figure things out on your own."

If a customer does need technical support, Bowman travels to the site to guide management and operators through the process. According to Barre, he has displayed a willingness to customize the program to the specific needs of the Port Neches facility.

"Carl has been very responsive and willing to work on things to help us solve our local problems," Barre said. "He recently added some new features to the program that help us to better quantify the actual improvement and results. The EP Monitoring team is energetic, outgoing, accommodating and flexible. Some folks have good products but are difficult to work with — these guys are not."

What has impressed Barre the most is the program's ability to find energy savings in areas where more complicated methods like advanced process control are not feasible or are cost-prohibitive.

"There are a number of very sophisticated control methods that you can put into place, but they require a great deal of technical knowledge and support," Barre said. "You're not going to do that just anywhere — only in singular locations where you have the greatest potential for savings. The upside to EP Monitoring's system is that it can be applied almost everywhere and it's much more simple. You don't need a PhD in process control to operate it. Plant engineers, operators and others with operating knowledge can run it and realize benefits in many places where you wouldn't use advanced process control. It's much more broadly applicable — you get 10 \$50 bills instead of one \$500 bill."

For more information, visit [www.epmonitoring.com](http://www.epmonitoring.com) or call Carl Bowman or Bill Bispeck at (281) 585-8724. □

# If we found a pile of cash under your distillation tower, how would you invest it?

## EP Monitoring

EP Monitoring delivers such high value that when you don't have money to make improvements, we can give you what you're currently losing out of your energy pool.

*"...monetary savings approaching seven figures with more opportunity still to be had."*

—Director of Energy Optimization,  
Huntsman

- ✓ Reduce Energy
- ✓ Improve Product Consistency
- ✓ Support Engineers
- ✓ Support Operators
- ✓ Reduce Emissions
- ✓ Increase Yields

Check out *DistillationMizer™*, a quick-to-implement, rules-based software product that squeezes cash out of every distillation tower you own.

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