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Southern State Gary Huddleston (left) and Bill Monroe inside the control room at the Park City, KY, feed mill.

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One of the nation's largest co-ops, Southern States Cooperative, develops an innovative way to improve maintenance tracking across its entire feed division with rugged PDAs.

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# Mobile Mania: New Use for Hand-held Technology

Southern States Cooperative integrates mobile devices with its maintenance program to bring the feed division's logging system into the 21st century.

By Elise Schafer

**S**tart with a decades-long adoption of operations automation, add un-matched dedication to quality control, and sprinkle with a one-of-a-kind mobile maintenance tracking system, and you have a recipe for success. This is the formula at work behind one of the nation's largest co-ops, Richmond, VA-based Southern States Cooperative.

Southern States' Park City, KY, feed mill was built in 1977 with cutting-edge (for the time) automation in its receiving, batching and milling. The facility updated these processes over the years to keep up with increased demand and recently added rugged PDAs to the company's computerized maintenance management system (CMMS) to streamline its record-keeping capabilities.

Their maintenance system recently received accolades from the American Feed Industry Association (AFIA), who along with *Feed & Grain* magazine and AgGateway, honored Southern States with the 2012 IT Innovation Award. In its second year, this prestigious competition honors feed and food companies that exemplify creative application of new technology-driven solutions.

## Ahead of the curve

More than 30 years ago Southern States built two locations with automation technology at Park City and its "sister" plant in Winchester, KY. Bill Monroe, manager of feed operations, says the feed division has always been an early adopter of up-and-coming technology.

"We were way ahead of the curve with plant automation," says Monroe. "When I first started at the Winchester plant, I batched feed from the keyboard, loaded from the keyboard, received from the keyboard, and all the processes in between. I didn't know of any other facilities at the time operating like we were. Although it wasn't always as reliable as it is today, our leadership had the foresight to see what an advantage this technology could be."

The plant underwent an automation face lift in 1996 when the legacy Martin-Decker control system, service and spare parts were no longer available.

The co-op selected Interstates Control Systems (ICSI) of Sioux Center, IA, as its automation provider to upgrade the processes the legacy system handled and expanded into new operations such as pelleting, pressed block and poured block lines, and micro-ingredient weighing.

The PLC- (programmable logic controller) based system allows the automation processes to grow and change with the company, and will last for decades.

"Since 1996 at this location, we've replaced computers, updated our operating system and installed new software, yet we've done very little to the PLC network because it's still supported by the company who owns the hardware platform, Rockwell Automation [Allen Bradley]," Monroe states.

One of the co-op's upgrades was a bar code hand-add system, implemented in 2005 and now employed in all eight feed mills.

"We weigh by hand the medications, premixes and vitamins, and integrate the micro scaling operation with a bar coding feature that ensures the integrity of each batch," says Monroe.

The ICSI hand-add system continues to prove itself as an asset in inventory control, quality assurance and food safety.

## Inventory automation

Hand-add system operators first scan a formula's Stock Keeping Unit (SKU) — a code used to identify unique items — containing information on what quantities of vitamins or medications it requires. Then he scans the SKU on the ingredient container and scoops the medication onto a scale. The system only accepts it if the correct ingredient SKU is scanned and the weight compares within roughly 1/100 pound of the formula's specification.

"Previously, you could read the scale incorrectly and add too much or too little to a formula, but there's no way of doing that now," recalls Gary Huddleston, plant manager. "And the bar code scanning



## COMPANY PROFILE

### SOUTHERN STATES COOPERATIVE

**Established:** 1923

**Farmer owners:** More than 300,000

**Retail:** 1,200 locations in 23 states

**Feed Division:** Established in 1925

**Feed mills:** Eight in five states

**Total feed production:** 910,851 tons for fiscal year 2011

**Awards:** IT Innovation Award, 2012

feature eliminates the risk of adding the wrong ingredient entirely. It won't let you dump the wrong hand-add into a batch."

The elimination of mistakes has vastly improved the company's medications inventory management.

"Since implementation, we've seen a dramatic increase in the accuracy of our monthly inventories, where we count nearly 100 different ingredient SKUs for our fiscal count," says Huddleston.

### Safety in lot numbers

The ICSI hand-add system includes a lot number tracking feature, giving Southern States the ability to fully trace where a product lands downstream.

Automated lot number tracking is not a specific requirement of the FDA's new Food Safety Modernization Act (FSMA), but in the case of a recall, it is required to inform all customers along the supply chain. ICSI's lot number tracking feature would quickly and easily handle this type of situation.

"We're better prepared to manage a recall because of the lot tracking," says Huddleston. "If there's ever a medication recall, our system knows where every pound of that lot number went, what feed it went into, what customers it went to, when they were loaded and what day it went out."

The ability to quickly and effectively handle safety or quality concerns is particularly important for a cooperative because its customers are its owners. That's why all Southern States feed mills have dedicated quality control supervisors, whose sole responsibility is to test and keep records of all incoming ingredients and outgoing products.

### Quality commitment

Larry Rone, Park City's quality control supervisor, has been with Southern States for more than 15 years.

Rone manages everything from incoming grain samples, finished feed records and samples, production records, formula master record files, and the internal QA program and Hazard

Analysis and Critical Control Points (HACCP) systems.

Drug handling record keeping is an enormous responsibility for medicated feed mills and Huddleston acknowledges the vital role Rone plays in day-to-day operations.

"I feel at ease knowing we have a dedicated staff member looking at nothing but quality every day from the time he comes in until he leaves," says Huddleston. "We're owned by our customers and have a vested interest in their satisfaction, so it's important to have someone focused only on quality control."

Monroe adds that customer satisfaction isn't the only driver of Southern States' commitment to quality. All Southern States feed mills are HACCP certified and Safe Feed/Safe Food certified by the AFIA.

The company's existing quality control program helped facilitate the certification with both programs and gives Monroe confidence that his feed division is a step ahead of FSMA regulatory compliance.

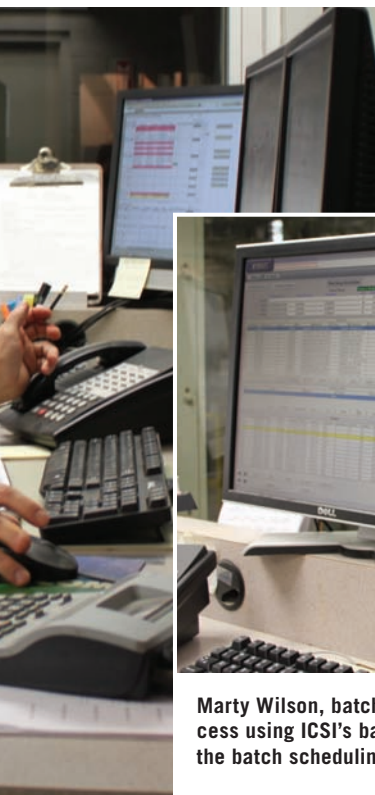
"When you're Safe Feed/Safe Food and HACCP certified, you have to sustain a high level of commitment to quality control," says Monroe. "Those programs require constant vigilance, but they ask even more from the day-to-day controls that prevent serious situations from occurring."

In addition to establishing quality assurance SOPs and documentation, HACCP certification requires facilities to have a written pest control program, defined critical control points, related countermeasures and maintenance tracking records.

In true Southern States form, the co-op relies on cutting-edge mobile technology integrated with its CMMS to track all maintenance activities at each of its eight mills.

### Winning with maintenance

In 2005, Southern States began using an automated CMMS by Coupeville, WA-based Benchmark Systems, Inc. The program stores maintenance logs for all the equipment and components at every mill. Benchmark has sophisticated reporting capabilities that can show what activities were completed and how much time was spent on preventive and emergency maintenance; however, manually inputting the information was time-consuming



Marty Wilson, batch mix operator, mans the formula feed manufacturing process using ICSI's batch mixing operation controller on the right screen and the the batch scheduling/queuing controller on the left.

## AT-A-GLANCE

### PARK CITY, KY, FEED MILL

**Built:** 1977

**Storage capacity:** More than 172,000 cubic feet of ingredients and finished product

**Manufacturing capacity:** More than 100,000 tons/year

**Awards:** Feed Mill of the Year, 2007 and Runner-up, 1991  
Kentucky Governor's Award for Safety, 1996

PHOTOS BY ELISE SCHAFFER

# COVER STORY ■ SOUTHERN STATES COOPERATIVE



and left plenty of room for error.

Maintenance mechanics used to track jobs on paper — often omitting quick fixes that were easily resolved — and it took several days to weeks before the notes were entered into Benchmate.

“There wasn’t enough time in the day for the employees to enter maintenance records in addition to the wrench-pulling and repair work,” explains Monroe.

Southern States’ previous plant engineer, Clint Westergard, worked closely with Benchmate Systems to create a better solution to Southern States’ data-entry dilemma.

In 2010 Benchmate rolled out the option to integrate its CMMS with Janam XM65 rugged hand-held PDAs with bar code scanning capabilities. The feed division selected its Cleveland, NC, facility as a beta site, and Todd Anthony, maintenance supervisor, assisted Westergard in testing and validating the process.

Adding bar-coded maintenance tags to every piece of equipment shifted the logging from an outdated paper procedure to a nearly error-proof electronic one.

Each week, Park City’s maintenance supervisor Robbie Toms loads a work list for his staff onto their dedicated PDAs. Staff members carry the device to every job and scan the part they’re working on, which displays a history of all maintenance activities performed. The mechanic completes the job, and the PDA launches a sequence of data-capturing prompts, automatically recording the date, time and other vital information. At the end of each shift, the PDAs are docked and the day’s logs are seamlessly uploaded to the CMMS.



**Robbie Toms (left to right), maintenance supervisor, Alex Miller, plant engineer, Jeff Hogan, maintenance mechanic, and George Harrelson, maintenance mechanic, track daily activities on PDAs to electronically transfer data to Southern States’ CMMS, Benchmate.**

Southern States eliminated paper logs in favor of Janam XM65 devices that scan equipment and parts SKUs, electronically capture data and easily retrieve maintenance records during agency inspections.


Using the hand-held devices increased recorded maintenance activity by 25% and planned activity to above 80%. The payoff is the assurance that all equipment is maintained per Southern States’ QA and HACCP requirements and is in service when needed to avoid inhibiting production.

Additionally, the integrated PDA-CMMS program can quickly provide government agencies like OSHA, DOT or FDA with maintenance records to confirm regulatory compliance during inspections.

“For example, if EPA is in for an air permit and asks for the last time we serviced our bag filter, Robbie [Toms] can show them not only exactly when it was last serviced, but everything that’s ever been done to that machine,” says Monroe.

Southern States’ IT Innovation Award application for its integrated PDA-CMMS may have earned first prize from AFIA, but the feed division’s entire operation deserves high honors for embracing technology in everything it does from receiving to manufacturing to quality control.

If the past is any indication of the future, continue looking to Southern States Cooperative for new ways to apply the latest technology to feed manufacturing operations. ■





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