JOB SHADOWING THE 920i
With Joe Geisser

All Batch Engines Are Not Created Equal
The shortfall in some batch engines and what you can do about it

CRS Celebrates Five Years
Helping dealers increase profitability
WE BELIEVE BUSINESS SHOULD BE WON OR LOST BASED ON MERIT — not held hostage by long-term parts supply agreements or manufacturer-dictated migration paths. We have chosen to create weighing and measurement products that guarantee operational integrity through user-friendly open architecture that allows for customization at the job site.

Rice Lake programs can be written, altered and fine-tuned 24/7 anywhere in the world. Whether controlling static or dynamic devices, we have a solution that combines speed, accuracy and flexibility to solve just about any weighing or sensing need.

In creating our designs, we focus on proactive diagnostic devices that leverage off-the-shelf components whenever possible. We want our customers to feel comfortable that our products are easy to support and service, even when they are doing complicated networking, integration or providing web-based solutions.

The bottom line: Rice Lake’s open philosophy leads to easier installation and support, and that means better customer service.

Sincerely,

Steven Parkman
Chief Operating Officer
What’s New

ASK THE EXPERT

Smarter HMI’s, Simpler Operation
Jim Daggan

ON LOCATION

Job Shadowing the 920i® with Joe
On the road with Joe Geisser

Graham Stamping — Stamping Out Repetitive Manual Labor

From the Heart of Darkness
The BCi brings energy to light
Guest Writer, Caleb Olson

Have Tools, Will Travel
Joe Heinecke

INDUSTRY INSIDER

All Batch Engines Are Not Created Equal
Terry Lancaster

CRS Celebrates Five Years
Dave Bowers

TECH TALK

Doc’s Column
Truck Scale Spring Maintenance
120 Plus HMI Indicator

The new 120 Plus, Digital Weight Indicator is designed to be a reliable and cost-effective solution for material handling or shipping and receiving applications. The 120 Plus drives up to four 350Ω load cells while three-stage digital filtering provides stable, accurate weight data. The 120 Plus tactile front panel and easy-to-read LCD display help make scale operations effortless. Two independent communication ports provide full EDP and print ticket programmability. The 120 Plus can be purchased alone or combined with Rice Lake’s high-quality bench or floor scales. The 120 Plus with scale makes an economical bundled option. A Summit 3000 floor scale and indicator package are shipped corner trimmed and calibrated for 5000 divisions.

SURVIVOR® LaserLight 4-S/G Remote Display

SURVIVOR LASERLIGHT 4-S/G REMOTE DISPLAY indicates stop/go with a red ball, green ball or green arrow. The control can be set with a serial command or single throw/double pole switches. The new Laser-Light uses a sensing feature that automatically adjusts the display for optimal viewing in any lighting condition from direct sunlight to heavy fog or smoky foundry. The LED display presents sharp, easy-to-read images. Emitted light enhances maximum viewing distance from 70° vertical axis to 140° horizontal axis. Optional time, date and temperature functions are also available. The heat-resistant enclosure is designed with a sloped top to ensure moisture run-off. Installation is made simply with an Auto Learn mode that identifies the communication format and data rate used by any weight indicator. Conveniently located setup and navigation switches make configuration easy.

ES-1 Excavator Scale

The ES-1 is designed to increase excavator efficiency, optimize the amount being weighed and reduce the number of underloads and trips to truck and track scales. The ES-1 allows load accuracy within three percent, effectively eliminating costly overloads that can result in highway fines. Whether used in mining, demolition, brush cutting, river dredging or forestry applications, the ES-1 works reliably and accurately. The ES-1 is compatible with virtually all fixed-load suspension excavators, using clam shells, hooks or grapples.

720i™ Programmable Automation Controller Color Literature

New colorful, information-packed brochure details all the features and functionality of Rice Lake’s new 720i Programmable Automation Controller. The 720i’s built-in software, new batch engine with a “pick & click” setup is fully explained in copy and graphic illustration.
Smarter HMIs, Simpler Operation

IN 1965, INTEL® CO-FOUNDER Gordon E. Moore observed that the number of transistors that can be inexpensively placed on an integrated circuit would increase exponentially approximately every two years. “Moore’s Law” has held fast for almost half a century.

This abundance of computing power has exploded the capabilities of digital electronic devices, and that includes Rice Lake’s family of Human Machine Interface (HMI) indicators. Our 920i® is capable of a myriad of display and memory options. They are literally computing devices in and of themselves; having the power and speed to keep up with the ever-increasing pace of manufacturing and process control in any aspect of industry. Over 100,000 calculations can be done in milliseconds, and the results can be transmitted anywhere in the world almost instantaneously.

As HMI indicators become more powerful, the machines and processes they control can become more complex. So complex that the HMI becomes critical to the usefulness of the machine itself. If the HMI is non-intuitive, the machine will be unused, misused or avoided.

Therefore, the ideal HMI indicator must be like the ultimate assistant who anticipates the need, expresses itself in a familiar manner, and produces the desired results with a minimum of prompting. Or, the duck that slides effortlessly over the water while paddling furiously below. The 920i has the power and flexibility to make nearly any process appear effortless.

Read the following On Location stories and see how Rice Lake distributors find their own level of working with the 920i. Some send us the sequence of events they want followed, and we send them a custom-programmed 920i. Others are virtuoso programmers who use our open architecture to program the 920i to control incredibly complex operations. They become our partners in refining future Rice Lake indicators. All of them are finding new applications — new ways to increase functionality and ease-of-use for their end-users.

More power to ’em!

About the Expert

Jim Daggon, Rice Lake senior product manager, researches emerging technologies in fields such as nanotechnology, materials, RFID, communications, and sensors. He looks for technologies that are being discovered, developed, proposed, and promoted that might have an application to Rice Lake customers. Jim builds audio electronics and computers as a hobby, and reads science fiction. He lives in New Jersey with his wife, Jill, and has three daughters, twins Jamie and Jennifer, and Jessica.

AN EARLY HMI, TYPEWRITER KEYBOARDS (the interface between fingers and typebars) were designed to be used with all eight fingers, with the thumbs dedicated to the lower space bar. Push buttons were used to activate certain functions and were designed to be pressed with the index finger of either hand. Other push buttons, such as doorbells, were also typically pressed by the index finger. As devices became smaller, so did the keyboards. Many of today’s keyboards are meant to be pressed with the thumbs of each hand.

Today the thumb is becoming the digit of choice for pressing all buttons. Have you ever gone to a house, or waited for an elevator, with a younger person who is a “gamer” or “texter”? You instinctively press the doorbell or call button with your index finger. Kids invariably use their thumb — the digit of choice for smaller keyboards.

The evolution of man, machine, and interface never ends.
ON LOCATION

We’re on the road to job-shadow the 920i Programmable HMI Indicator/Controller. We’re here to learn about applications of the 920i from distributors, end-users, engineers, programmers and OEMs. Our host is Joe Geisser, regional director of the Northeast region, which includes six New England states, Eastern New York, Long Island, and New Jersey.

JOB 1 Union Specialties Barrels Forward

DAN BIRON, GLOBAL WEIGHING SOLUTIONS LLC, Manchester, N.H., has designed and built a 920i-controlled portable filling station for Union Specialties, Inc., Newburyport, Mass., that takes the guessing and grunt work out of filling containers with water-based polyurethane. Union Specialties is the world leader in leather processing, coating and re-tanning products used throughout the world in the leather finishing industry.

Dan’s filling station can fill a single 240-gallon container or four 57-gallon drums or five 35-gallon drums at one time. Dan says, “This used to be a two-man job. Now one operator tells the 920i the number and size of the drums and target weight and presses start. The 920i automatically sequences through the drums, filling them consistently and accurately.”

Bret Chansky, assistant plant manager, adds, “Before this system, one man held a hose down in a drum until it was full, shut off the product flow and trimmed the drum manually,
“This was a two-man job. Now one operator tells the 920i the number and size of the drums and target weight and presses start.”

Dan Biron
Global Weighing Solutions LLC

On Location

This was a two-man job. Now one operator tells the 920i the number and size of the drums and target weight and presses start. The time it takes to fill the drums with the new system is about the same. However, the new system is a much more efficient use of time. And since the 920i is a machine dedicated to weight-based filling, cutoff accuracy has improved because the system fills each drum to within one graduation of target.

The system also frees the single operator to do other steps in the process. While the system is filling drums on the scale, the operator can stage the next pallet of drums to be filled and bring filled drums to the storage area.

The filling nozzle withdraws from the drum by weight set points, thereby reducing foaming of the product in the drum. The set point is a predetermined amount of weight. For example, each time 50 pounds is added to the weight, the 920i turns on the air cylinder for a predetermined time, approximately a half second, causing the fill nozzle to rise.

The polyurethane is easily cleaned from the system by flushing with water at the end of the day. The build-up of material on the outside of the nozzle piping is also removed with water. Dan designed the system using commercially available plumbing tubing, so Union Specialties has a trouble-free system with piping that can be replaced quickly and reasonably.

“I specify the Rice Lake 920i because I want the flexibility further down the line. As this application grows, Union Specialties will probably want to add more fill stations, more steps and more analysis.” Dan admits, “And Rice Lake has Marvin Stodola. I send him the sequence I want, Rice Lake writes the program, I sell the 920i system. What could be better?”

According to Marvin, “Dan and I have worked on many projects over the years. He works with the end-user on developing the initial project specifications. This includes the sequence of operation, digital I/O map, database structure and weigh ticket design. I then clarify the specifications based on my experience on past projects and get Dan pricing on the hardware and software.

“Most projects require some modification once they have been installed and the end-user has had a chance to play with the system. Changes usually include modifying the weigh ticket or adjusting the transaction database table. Sometimes additional functionality is added once the end-user finds out what the 920i can really do. Sometimes the actual operator figures out ways the 920i can make his job easier.”

All in a day’s work.
BOB DUMAS, COMMERCIAL SCALE & BALANCE CO., INC., Agawam, Mass., has devised a weight-based time and trouble saver for DRS Power Technologies, a customer sent Bob’s way by Peter Baker, district manager for IDG Northeast Region.

DRS Power Technologies, in Fitchburg, Mass., manufactures portable power units. These aren’t the portable generators we pack in a camper. These are jet engine turbine generators housed inside 10 foot by 44 foot enclosures. A typical unit tips the scales at approximately 100,000 pounds; one recently topped out at 280,000 pounds. We learn that, hidden somewhere in the Nevada desert, 24 of these units stand ready to reboot Las Vegas in the event the famous lights should dim.

The portable power units are built in a vast space once used to build Seawolf attack submarine components; until the Cold War ended and the proposed fleet of 29 was downsized to three. DRS ships these power units to destinations as far as Addis Ababa, a city that rises over 9,800 feet in the Ethiopian mountains. Each of these units has to be weighed to ensure even distribution of the weight before shipping.

Bob designed a custom portable cabinet that stores and transports a 920i® and a set of four RL 9000 TWM low-profile 100,000 pound capacity weigh modules, with 75 foot cables for each module. The cart is rolled out, the power unit is lifted with an overhead traveling crane, and the mounts are positioned under each corner to check the corner load weights as the power unit is being built.

“When the power unit is ready to ship,” claims Fran Aho, supervisor at DRS, “the 920i and load cell system weighs each corner again and accumulates the weight, saving us the time and cost of running to a truck scale.

“The great thing about the 920i is that it can be programmed to do almost anything,” Bob observes. “This isn’t a very complicated application, and there are other brands of controllers that could probably do the job, but their software is clumsy — very cumbersome.”
JOHN RUSSO SR., FOUNDER of Progressive Scale & Software Solutions, Bethel, Conn., has been a scaleman for 37 years. He and his son, John Russo Jr., recognized the capabilities of Rice Lake’s 920i indicator early on. In fact, they now have a staff of programmers and offer programming services to other scale dealers at www.scaleprogrammers.com.

Progressive Scale has developed the “Provision Processing System” using the 920i and a full-service barcode order entry, fulfillment and shipping system that interfaces with an invoicing program and integrated scale system for meat and poultry processing plants.

“Customers love the system,” John Sr. says. “With the 920i in control, it can do anything from data collection, barcode label printing, to full batch controlling and recipe mixing.”

John Sr. is taking us to see the Provision Processing System in action at Murray’s Chicken. We drive west through the Catskills to the rural mountain village of Fallsburg, N.Y., where Murray’s poultry processing plant processes 50,000 organic, humanely handled chickens a day.

“Murray’s system started out basic and grew,” John Sr. says. “Murray’s order entry system was first developed about eight years ago as a small stand-alone system. The system they have now is the third generation. Today, it is three separate scale systems; sorting, pre-pricing and production, all hooked to the 920i. They have seven PC stations controlling order entry and billing, two PC stations in process shipping, and eight 920i stations, with wired Ethernet, which are weighing and labeling. Another 920i controls the pre-pricing labeling system.”

At Murray’s Chicken processing plant we meet Dean Koplik, vice president of operations, and Brian Kessler, director of information technology. Brian issues us sanitary jackets and hair coverings and takes us on the grand tour.

“Our biggest challenge in this facility is water. Everything has to be watertight and foolproof,” Brian says. “When I started working for Murray’s in 2000, the company had two PCs peer-to-peer networked for order entry and shipping, six scales and a Rice Lake IQ plus 710. After Progressive Scale trained me on programming, troubleshooting and repairing the scales, we began upgrading.

“In 2003 we had to meet the newest USDA traceability regulations. Progressive Scale showed us how the 920i could meet and exceed USDA regulations. At first, it was six 920i’s, with stand-alone scales with internal databases,” Brian recalls. “On a weekly basis, I would take a laptop and hook it up to the scale and download all the information; scale ID, product ID, weight that was printed, actual weight (for catch items), lot number and serial number that was assigned to that case.” (Catch weights are when a case needs to have a fixed weight. The weight on the case gets rounded down to that number as long as the actual weight is more than the catch weight.)

“We knew we needed to concentrate on our waste and loss,” Brian explains. “For example, we were selling a 40-pound box catch weight item to a customer, but they were actually getting 42 pounds. We found that the scale operators were giving away two pounds or more with each case. John and I improved the scale software so they had a tolerance of a quarter pound over, and

John Russo Sr., founder of Progressive Scale & Software Solutions, Bethel, Conn., has been a scaleman for 37 years.
never under, a quarter pound. (USDA regulations do not allow for underweight, only overweight.) This change decreased our loss and gave us a dramatic revenue increase.

“The 920i enabled us to zero in on areas where spoilage was being generated — in boxes, bag to line boxes, ice, dry ice, etc. We could find areas where we needed to improve production to decrease man hours,” Brian continues. “We found that one shift was producing more per hour than the other shift. The 920i system also enabled us to do a recall, if needed, because serial and lot numbers were being generated. We were able to generate reports on high selling items and average cases made weekly. This data is indispensible.”

Orders are entered using a PC tied to a SQL server. The orders contain information such as the shipping method, address and date, PO, delivery date and order notes. This information can be printed out for shippers or sent to a portable handheld device. Shippers fulfill the orders by using handheld wireless scanners and a PC or portable wireless device. Fulfillment is done by scanning cases previously labeled by the 920i scale system. Each case has a unique serial number that helps prevent double scans and improves tracking for USDA purposes. Each case is removed from inventory and sent to the invoicing program. Multiple orders can be fulfilled simultaneously, and the system can be interrupted for rush orders, and then returned to the original order. The end result is a shipping manifest with product IDs, individual weights, and order and skid information.

Each 920i is tied back to the SQL server via Ethernet connection. The handler enters a product ID and the SQL server responds with all information about that product. Any catch weights are handled by the scale.

John Jr. adds, “Every half hour the scale automatically creates a new lot number. This prevents the operator from having to remember to change lots. The operator prints a label, but is prevented from double printing or printing additional boxes without removing the previous box. Each case label is sent to the SQL server and recorded as an inventory (IN) transaction. Serial numbering is handled by the SQL server to be sure that there are no duplicates.”

Next we go to the sorting line. Brian recalls, “Before this overhead rail sorting system was installed, we had an electromechanical system that broke frequently. Parts were hard to get, and product was not sorted very accurately, even when the system was working properly. Progressive Scale converted the mechanics to electronic and developed software that accurately weighs the chicken in motion on the rail. The system is much faster and far more accurate.”

The wall-mounted 920i is connected to five separate dual load cell weighing modules, and the Ethernet connection goes back to the SQL server. The operator selects the grade setup from a database in the scale and starts the overhead chain. The chickens are weighed in motion, a relay kicks when the grade is correct and the chicken falls into the appropriate bin. Information on average sizes and counts is displayed on the scale and also sent back every 15 minutes to the SQL server.

In 2005 Murray’s had to meet even stricter USDA regulations and HACCP (Hazard Analysis and Critical Control Points). Progressive Scale completely redesigned and integrated the entire order entry, shipping and scale system.

In addition to traceability, the redesign allowed Murray’s to track current inventory and create reports that drilled down to how many cases, or pounds, were throughput for any specific time of day, in each department, for an entire shift or entire day, plus the number of pounds or cases specific customers receive in any time period. With eight on-board databases and optional memory, the 920i can support a wealth of information.

Brian is very pleased. “All these items are tied together and the majority of the information comes from the 920i. In addition, Progressive Scale designed it so that
we were able to do invoicing straight from order entry, right into QuickBooks®. This saved many man hours on billing. This part has been very valuable.”

Murray’s system still had room to grow. Brian adds, “In 2006, we contacted Progressive Scale again for a pre-pricing system. The system we were using was constantly breaking down due to water and moisture issues. Within 36 hours we had a pre-pricing system that is based on the 920i and to this day we have had no problems with it.”

At the end of our tour, we turn in our very wet gear, and Brian sums it all up. “The conclusion is the 920i is the most universal system I have seen and had the chance to work with. I personally will recommend the 920i, Progressive Scale services and programs to everyone. The 920i has prevented loss and spoilage, and increased our business in sales and customer satisfaction.”

ON THE WAY BACK TO BETHEL, we ask John Sr. to tell us about some of the unusual applications where Progressive Scale has used the 920i. “One was an application where they made manhole covers. They had a fixture that pumped water down a model street and the 920i tracked the amount of water flow into two catch basins over a given time and stored the data in a spreadsheet. Then there was a company that bought and sold elk antlers. They used the 920i to weigh and grade the antlers, and print a barcode label.

“At a Connecticut-based switch manufacturer, the 920i was networked with operations in Hartford, Texas, Mexico and China. The switch manufacturer could support the scales and collect data in China without having to make a phone call. We also did the same for a plastics manufacturer in Erie, PA. They have more than two dozen indicators networked back to an Oracle database.

“We had another interesting application for the 920i in Canada where they were processing herring roe,” John recalls. “They had three production lines with 60 to 70 people cutting fish open and putting the eggs on a conveyor. The 920i weighed and graded the roe into two classes using a colored card with an employee bar code. Then the 920i deducted 10 percent of the weight for water, and gave each person credit for the class and weight of the roe. The weight had to be absolutely accurate because the workers were paid by the pound.

“When these unusual applications come up, we know we can get support from Rice Lake,” John Sr. reports. “Don Fiedler, (Rice Lake senior programmer), really helps us out. He knows all the nuances of the 920i. We call him up and ask him how we can do something, and he knows a way. That makes the 920i easy to program for any application we come across. Some other brands of indicators have sub-routines. But you call the company with a question and nobody knows anything about it. If we have a question about Windows-based programming, we call Travis Gibson, (Rice Lake software engineer). Same deal. We get the answers we need. I would say Rice Lake has an exceptional service and support team.”

As for Murray’s Chicken, Progressive Scale’s “Provision Processing System,” with the 920i running the majority of their production, has now had 100 percent uptime for over a year and a half. Progressive Scale hasn’t made a single service call in all that time. ■
All Batch Engines are not Created Equal

Some batch engines lack speed, functionality, flexibility, or all three.

LET’S TAKE A MINUTE TO DISSECT some problems that occur with most batch engines.

The core software that resides in a standard weight indicator is composed of several basic processes. These processes read the A-D (Analog to Digital Converter), provide updates to the display, monitor and read the keypad input or other user interfaces, write and read memory, transmit/receive serial data, monitor digital inputs and update digital outputs. In an indicator with digital I/O, it is typical for core software to also include a batch engine.

A batch engine is designed to control processes; however, in the past some have been rather clunky and under-powered. Instead of having intricate features, they have often been too general to meet demands, or too specific to embrace all the requirements of the applications they are intended to be used on. This stems from limited expectations that were present in past decades when control was simply a reed switch on a dial or the control sequence was mostly reliant on external logic. In today’s environment, just passing this responsibility on to someone else’s equipment is no longer cost effective or competitive.

Controllers based only on weight reaching a setpoint have evolved from what used to be very crude methods to code and languages that require an extensive programming knowledge. In addition, the controllers required a programmer who had a deep understanding of weight-based technologies. Across the spectrum of weight-based control are a number of methodologies that are utilized to meet the needs of weighing applications. These methods have often fallen short of performing exactly what is required, especially if there is any upstream or downstream control. It seems that setpoints are either too basic or have evolved to become specialized objects that are strung together in an attempt to be one-size-fits-all.

In the 1980s, a diagram in a manual typically showed graphically the basic concept of control and offered some “canned” sequences for single or multiple products with target, preact, dribble and zero band. In the last 20 years, little has changed with regards to the basic weight setpoint, despite an ever increasing set of expectations in control applications. Because of this, much of the marketplace is inundated by the implementation of programmable logic controllers, even when the application is completely weight based.

Another problem with using most weight indicators as controllers is there are far too many variables in customer applications to meet the majority of the controlling processes needs. Some examples may be applications that involve such things as impact loads, free fall, and head pressure. Although most batching indicators can deal with those variables, when you actually compound them with operator prompts or inputs, formulas or recipe storage and simultaneous control — then add data capture and reports — it starts to become a daunting application. And to think we still haven’t dealt with scenarios like what to do when the system is paused, idled or aborted.

In general, a setpoint can be thought of as having a condition that is evaluated, with actions that occur based on the condition being satisfied. Most setpoints in an indicator actually have true or false conditions or actions that have been predefined. These predefined setpoint events typically are assumptions that have limited flexibility. It is common to find that these setpoints are limited, especially where multiple conditions may need to be addressed simulta-
We have combined the flexibility, intuitiveness and power of a high speed single scale programmable instrument with the nimbleness to handle all the little nuances that are different about your customers’ business process. We call it “Ability and Agility.”

Available in either our standard Universal or ultra-thin Panel Mount enclosures.

Let us demonstrate the 720z and ProAct™ on today. Call your Rice Lake representative, 800-472-6703, extension 5466, or visit www.ricelake.com/world.

Introducing the new 720z™
AS I WRITE THIS ARTICLE, we’re well into spring and yesterday morning we had another snowfall. Some of the biggest snowflakes I’ve ever seen! Once the snow quit, the temperature went up and the snow started to melt, creating quite a mess around here. I know these early spring storms are to be expected in northern Wisconsin, but they’re hard to take after some of the beautiful warm spring weather we’ve been having.

The warm weather, melting snow, and rain were a reminder to me that it’s time for your annual truck scale inspections. All the melting snow creating running water, mud and muck can wreak havoc on your truck scale operations; washing debris into pits and foundations, and damaging equipment. Not to mention the critters who have taken up residence over the long winter.

I recommend completing the following steps in late spring to ensure your customers are up and running in time for the busy summer season.

Topside Housekeeping

Take a walk around the outside of the scale. Examine the entire deck, scale pit, foundation and approaches for any major structural or surface problems. Urge scale owners with any deterioration to fix them right away. Remind them that any deck and approach repair is not merely cosmetic; those damages will have a negative effect on the scale. Flaking rust and crumbling concrete falling into the pit will add maintenance costs now, but in the future they will reduce the scales’ usefulness.

Check Deck Clearance

While still outside the pit, use a crowbar to check the weighbridge for free movement both with and without a vehicle on the scale. If binding seems to be an issue, check the pit wall-to-deck clearance. If clearance looks good all around, with no debris between the walls and the deck, you’ve done all you can topside. The binding problem is coming from below. Get your boots, gloves, hornet spray and lights, and get ready to head into the pit. Just remember to check the oxygen level in the pit before you go down there.

Keep it Clean Below

In my many years of servicing truck scales, and I’ve been doing this a long time, the most common cause of incorrect weighments is debris in the pit binding movement. Clean all dirt from each component. Remember, even though most scales these days are
A few years ago I had a customer call requesting I come out to figure out what was causing his scale to weigh incorrectly. It was a pretty urgent situation because the scale had been red tagged and his whole business was shut down while they tried to figure out the problem. Well, I soon discovered the problem — a single piece of gravel wedged between the weighbridge and side of the foundation!

To cut down on future problems, suggest that the scale owner invest in flexible T-Grip or T-Strip molding. These moldings, while being flexible enough to work with the movement of the scale, will keep debris from causing problems and eventual damage to the scale. Depending on the scale design, the molding might only be necessary to cover the end gaps where the trucks enter and exit the scale. Scales weighing open trucks or messy operations will also need side molding to protect against spillage falling into the pit.

If the pit is clear but the scale readings are still erratic, inspect and adjust all checking devices. Load the scale, note the reading, and then loosen check rod jam nuts or bumper bolts. If the scale reading changes, you know you’ve found part of the problem. Scale parts can and do move from their correct positions, causing binding. Adjust rods or jam nuts a little less vigorously, while keeping an eye on the weight reading as you tighten.

After all the components are in order, generously lubricate all moving contact points with heavy bearing grease. Don’t forget load buttons that fit into load cells. I sometimes have new scale technicians asking where to grease. I recommend smearing grease on all moving parts that touch each other except the manhole cover grab handle.

**Load Cell/Lever Hybrids**

When you have a hybrid lever scale converted to digital readouts with an S-beam load cell, you need to check a few more items during the inspection.

Replace any damaged load cell cables rather than splicing them. Cable splices are prone to moisture entry, leading to a new host of problems. For further moisture safeguards, replace j-box desiccant, or fill the box with Waterguard Gel.

If rodent or radio frequency interference are problems, switch to a cable offering both rodent protection and EMI/RFI protection. I recommend the EL147RP cable. For protection against rodents only, run the cable through conduit or in the Rice Lake SURVIVOR Cable Armor. Get your customer started for the season with proven accuracy by finishing the inspection with a full section calibration.

Email your questions to doc@ricelake.com.
Graham Stamping began with a DOS-based front office computer program that kept track of receiving, work in process, finished goods and shipping and bill of lading documents. Inventory, blanket orders, and raw materials also went through the system.

Numerous pieces of handwritten information and documentation from the shop floor needed to be hand-entered, checked, and modified to reflect the orders and raw materials present in the system. Besides the manual data transcription, the system required constant monitoring by knowledgeable, watchful eyes. Those belonged to the tireless team of Patty McGranahan, materials manager, and Nancy Kefurt, shipping clerk/secretary.

In 1999, Graham Stamping installed a system to collect data from the production floor; four terminals with keyboards and two line displays, connected to barcode printers. The terminals were controlled by a single PC located in Nancy’s office.

However, the two systems had no interface to each other. The data collected from the shop floor system was manually exported to MS Excel several times per day and used to modify data in the front office system. The data collected from the shop floor was then modified to reflect the new information present in the front office system since the last update. Although all the data from both systems was in electronic form, Patty and Nancy’s workload did not diminish.

Graham Stamping needed a single unified system that could take in both front office and production floor data, integrate and make changes instantly, without sacrificing visibility to Patty and Nancy. They needed to know when circumstances changed so they could quickly respond to their customers’ needs.

The authors of the DOS system were contacted to see if they could upgrade their system to accomplish this, but the project was out of their scope and far beyond the budgetary requirements for Graham Stamping.

**Enter Rice Lake**

Armed with only the basic documentation for the production floor system and no documentation other than the program itself, Travis Gibson, programmer at Rice Lake went to work on a solution. Travis needed to produce not only a documented picture and scope of the system, but also an implementation that would take into account all of the present requirements, including current ongoing manual data manipulation.

“The changes that were made to our release system have cut our work in half.”

Nancy Kefurt
Graham Stamping secretary
After a few site visits and many emails, the program began to take shape. Individual modules including shipping, receiving, raw materials, and administrative tasks such as order entry, materials inventory, and materials quarantining were sent to Graham Stamping for Patty and Nancy to review. Travis made revisions and the final installation was completed in February 2008.

The Rice Lake Solution

Now Graham Stamping has a true Client-Server system that includes all of the functionality of both previous systems. The system is ported to a Windows-based Client Server configuration including a SQL server system running in the office, and four clients running in the receiving, work in-process at two production floor areas, and finished goods.

These systems also interface with a scale in finished goods, and barcode printers in all four client installations that print labels and tags for in-process raw materials and finished goods.

In addition, shipper documents, reports, bills of lading, and invoices are printed on the same multipart forms that were being used in the previous system. Personnel simply log into a system, enter their passwords, and are directed to appropriate areas of the system. They complete their tasks quickly and efficiently — with no handwritten reports to lose or decipher.

The system is designed to mimic the previous system making it instantly intuitive to all operators. Training was minimal. The system is also easy to modify to meet new requirements as they arise. Future additions include the ability to print all multipart forms on standard inkjet printers using multiple copies, saving printing costs.

Today Graham Stamping is a state-of-the-art facility that uses the latest software. Rice Lake Weighing Systems is proud to be a small part of their continued success.

“Previously one person would make changes in the database files and then copy them from one computer to another to keep them up to date. Now Graham Stamping has a reliable, multi-user system that encompasses their raw material handling, parts management, in-process work flow, inventory and shipping.”

Travis Gibson
Rice Lake Weighing Systems
software developer
CALEB OLSON AND HANNAH MARTELL, technical writer and graphic design specialist for Rice Lake Weighing Systems, respectively, visited Kaskaskia Valley Scale Co., southeast of St. Louis, MO. The following is a recollection of their experience.

There are many automobiles that strike the fancy of the male spirit. As I waited at the Budget Rental car station in St. Louis, MO., I wondered which of these amazing chariots the kind professionals behind the counter would select for us. Eyeing us down, I was certain they had correctly estimated our impressive style and would make a choice worthy of our emanating desire.

“Mr. Olson, your car is ready,” I heard in a slight southern drawl. I hopped to my feet, snatched the keys, signed a form I will never understand, and Hannah and I rushed outside, wondering whether the Dodge Viper or Corvette was eagerly awaiting its new masters. We loaded our equipment in the back, climbed in, and turned the key of our Hyundai Santa Fe. Unsure if it was actually running,

I moved the shifter into “D” and gave it some gas, leaving the Budget Rental car station. Now on the highway, I had become 80% sure it was running, despite lack of audible confirmation.

Hannah and I were in the St. Louis area on a mission to capture video and still footage of Rice Lake’s BCi In-Motion Belt Scale System. With a combined three years of experience in the scale industry, and both of us spending the majority of our days in front of a computer (as a technical writer, I primarily write manuals; as a graphic design specialist, Hannah spends most of her time photo and video editing) it would also be an adventure into the “real world.” We were anxious to see in exactly which applications the BCi was being used.

Finding ourselves moderately disoriented in an unfamiliar city, we were lucky to have Todd Dietrich, of Kaskaskia Valley Scale Co. to show us the way. We joined Todd, whose specialty is in-motion checkweighing, and made our way to our first stop—Peavey Dock, just outside of St. Louis. Here we observed Rice Lake’s BCi deliver-
ing fertilizer to barges on the Mississippi River. The fertilizer raced its way across the belt and, like a mutant waterfall, dropped a white river of pellets into each barge container. Today was to be our fertilizer and aggregate day (the following days would be consumed by coal). We loaded our equipment and traveled to Granite City Terminal in Granite City, IL.

Here, Hannah and I witnessed the BCi again drenched in fertilizer, only this time it was loading trucks—lots of trucks. In fact, there were so many that a traffic jam of awaiting truckers monopolized the nearby service road; each eagerly inching their way toward the facility’s entrance when the first in line was allowed to enter. The busy terminal was utilizing a wheel loader to dump ammonium nitrate fertilizer through a floor grate, landing on a high-speed belt. From here, the fertilizer elevated through a covered conveyor until it reached the end of its relatively short line, positioned directly above a truck. In a matter of minutes, the truck was completely full and made its way to the facilities exit. Granite City Terminal reminded me of a busy restaurant and I imagined the excitement of the next trucker in line when notified he could enter. It was akin to waiting for a table and being overjoyed, thinking “Ooh, I’m next!” when seeing someone had just finished.

Now racing against the setting sun, we made our final stop of the day at Beelman Truck Co., also in Granite City. One look at the facility and it was clear that Beelman specializes in aggregate. A perfectly timed coordination of crisscrossing trucks and wheel loaders navigated the large quarry. In the distance, a mountain of blast furnace slag was being air-cooled. It looked like remnants of a volcanic eruption, emitting steam as a nearby wheel loader carefully did its work. Bill Emmendorfer, plant manager, escorted us to a bird’s-eye view of the facility. From our perch, we could see an intricate highway of conveyors leading aggregate over the BCi. The sun now dipping below the horizon, Hannah and I made our way back to the hotel.

After a solid night’s sleep, the next morning we met Todd at his office in Lenzburg, IL. From there, we traveled to Peabody Gateway Coal, near Coulterville, IL. According to Peabody Energy, the mine shipped 2.4 million tons of coal in 2006. Most of the coal is supplied to Northern Indiana Power Service Company, Tampa Electric and Archer Daniels Midland. The mine has 20 million tons of recoverable coal reserves, 230 employees, and operates seven days a week, year-round. The coal travels from the mine via a 1,200-foot beltline to temporary storage and then travels by overland belt 1.4 miles to the preparation plant.

Toward the beginning of that 1,200-foot beltline is where Rice Lake’s equipment comes in to play. This sounded pretty interesting to me, and I was excited to see the mine. Neither Hannah nor I had ever been in a coal mine before. (First, however, we had to be informed of the various ways we may be killed during our suddenly

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**The BCi Brings Energy to Light**

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**Todd Dietrich, Kaskaskia Valley Scale Co.**

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**Fertilizer making its way to the truck.**

**www.ricelake.com | RICE LAKE MAGAZINE 18**
After watching an instructional video on how to use the respirator we would soon be wearing and learning other safety procedures, we fully clad ourselves in mining attire, complete with a hard hat/head lamp combination, safety goggles, respirator, and what felt like a 10-lb battery hanging off our pants. It is believed British sailors invented the belt buckle in the 1600s. I thanked them.

Todd “Ring” Leverton, belt line engineer at the mine and referred to as “Ring” because he sports an earring in one ear, joined Todd Dietrich, Hannah, and me as we made our gradual descent via service elevator. Two hundred feet later, the dark mine waited for us. We flipped on our head lamps, and quickly learned not to look each other in the eye. The head lamps were like looking into the sun on a foggy morning, except the fog was actually coal dust.

I looked around. The scenery looked like a post-apocalyptic world—devoid of sunlight; strange-looking vehicles; everyone wearing protective gear and covered in dust; and catacombs as far as the eye could see. The only thing missing was murderous robots.

Hannah and I loaded the camera gear in one of those odd-looking vehicles, a cross between a miniature Humvee and an oversized golf cart. “Ring” manned the helm and we were on our way. Periodically, I would catch a glimpse through an adjacent tunnel and see the massive conveyor. After a series of turns onto underground roads that all looked the same to me, we finally stopped at a dimly lit area of the conveyor. A 920i, covered in coal dust, was mounted to a nearby wall. Beneath it ran a never-ending river of coal, rapidly traveling to escape the mine while the 920i dutifully displayed the belt speed, current load and rate per hour.

Todd mentioned, “You see those cables running along the ceiling through these tunnels?” We nodded.

“In case something goes wrong, that’s there so the miners can find their way out. There are little arrowheads on the cable pointing toward the exit.”

I didn’t remember that from the video. What other crucial information had I missed? I formed my own escape plan.

Without “Ring” driving, Hannah and I would likely still be down there. It amazed me how he could navigate the identical tunnels as if there was a secret system of street signs not told to outsiders.

Caleb Olson, guest writer

Coal-filled barges on the Mississippi River, Kinder Morgan, Cora Terminal Facility, Rockwood, IL.

Without “Ring” driving, Hannah and I would likely still be down there. It amazed me how he could navigate the identical tunnels as if there was a secret system of street signs not told to outsiders.

Caleb Olson, guest writer
The next morning, I blew my nose to find a coal-dust-ridden tissue in my hand. Like the soreness your body feels the morning after a hard day’s work, Gateway Mine did not let me forget where I was the day before. But today was a new day.

With one day and one stop left, the next morning Todd, Hannah and I loaded up the Hyundai and left on a 500-mile round-trip visit to Duke Energy Cayuga Station, on the shores of the Wabash River in Cayuga, IN. This 1100-megawatt power plant utilizes a twin-920i setup with matching BCi scales to accurately monitor its coal use. In addition, the 920i outputs a serial audit trail of weight, time and date. Alternatively, it can send an analog output to a chart recorder or communicate to a Programmable Logic Controller with a protocol card. Bob Cooper led us around the plant, currently expanding its size. He commented that in his industry, it is of the utmost importance to maintain accuracy. Overcharging a customer can lead to severe consequences and undercharging a customer is bad for business. Accuracy and reliability — that’s Rice Lake’s best habitat. The BCi scale/920i indicator combination is used throughout the lifecycle of coal (among other materials), from the mine, to barge loading, to its final destination at the power plant. Hannah and I followed this journey and, for us, it was an eye-opening experience. I’m just glad we wore safety goggles.
IN INDUSTRY INSIDER

IN THE 1970’S, WHEN THE ELECTRONIC INDICATOR was introduced to the scale industry, the scale technician’s job changed forever. Instead of being mechanics, working on dials, weight-beams, and levers, they had to evolve into electronic technicians, working on circuit boards and load cells.

In 2003 when CRS was introduced to the scale industry, the technician’s job evolved again. Freed from the mountain of paperwork, the technician was able to concentrate on servicing and maintaining weighing equipment.

Today, those five years of experience helps dealers increase their profitability. The latest version of web-based calibration software, released in January 2008, completes the transformation of all three phases of our technology. CRS 3.0 is a stable, secure and powerful platform designed by scale dealers for scale dealers.

Two of our newest dealers have shared their reaction to our software. The owner or management team’s perspective is interesting because they feel the pressure of today’s marketplace more than anyone else.

Jim Holman owns Fox Valley Industrial Scale Inc. near Chicago. He purchased CRS 3.0 after seeing it presented by Keith Ness, CRS product manager, and Mike Ryan, midwest regional sales director, at Rice Lake’s “On The Road” training session. “We’re two months into our start-up,” Holman reports. “I’m learning this program and deciding how to make it work for Fox Valley Scale. Learning the software was the easy part. It’s pretty intuitive. The tougher part is fine-tuning CRS for my business. There are all kinds of options. I choose what my calibration forms look like, how my techs conduct our calibrations, what my customers see when they log onto my web site. And with every decision, I have a better idea what this program will do for my business.

“CRS told me to expect significant time savings with my techs and their PDAs. Last week I sent two techs to one of my largest
accounts. This job usually takes two guys two days because of all the paperwork. When they came back to the office at the end of day one, I expected an update on their progress. I did not expect them to have the calibration work finished. There were smiles all around, because we got our first glimpse of what this investment is going to produce for Fox Valley Scale.”

CRS calibration software improves profitability and increases efficiency by replacing pen and paper with technology. Every scale dealer is looking for experienced service technicians. With CRS, technicians discover more time in their schedules. Instead of spending time producing a mountain of paperwork, technicians can move on to the next customer. Improved response times, plus the time to serve more customers every month increases dealers’ service business.

Joel McMullen, general manager for G.T. Michelli Co. Inc. in Harahan, LA., invested in CRS 3.0 and began their start up in January after a presentation by Chris Hanson, the new Rice Lake regional sales director for the Southwest Region. “We’re in the process of creating the most complete record of our customers and their scale equipment that we’ve ever had,” says McMullen. “Our customers are excited about logging on to our web site to see their calibration documents. Our techs are happy to put down their pens and pick up their PDAs. CRS is changing how we run our service business.”

CRS 3.0 is more stable, more secure, easier to expand and adjust, and more intuitive. PDAs, instead of tablets or laptops, are less expensive and easier for technicians to use, and most important, they provide improved security for the dealer. Laptops and tablets may carry more information than is needed for calibration and could expose the dealer to significant loss. Confidentiality agreements are standard procedure with CRS and in the five years CRS is celebrating, no dealer has lost data or experienced a breech of security.

Congratulations, CRS!

FREE DEMO DISK
Drop your pen and paper certificates right now! Go to www.ricelake.com/ecertdemo to download your FREE 60-day eCert® demo. Call Rice Lake (800) 472-6703, ext. 5325.

No More Calibration Paperwork

Try eCert®, our paperless weight calibration certificate solution, for 60 days and save endless* hours.

No more stacks of calibration certificates to file, misfile, and retrieve. No more manual transcriptions to decipher. Rice Lake puts the weight-specific calibration solution in the palm of your hand with eCert. This all-new weight-specific calibration solution allows you to calibrate multiple scales and weight devices in minutes instead of hours, including “as found/as corrected” results. The friendly Windows®-based program utilizes Pocket eCert on a PDA to prompt you through the proper calibration routine every time. The calibration history is downloaded to your PC — providing a vital aid for ISO compliance.

*How many hours do you spend transcribing, deciphering and filing calibration certificates?

Congratulations, CRS!
"We’ve been sending engineers to Rice Lake training for many years. The hands-on approach is an invaluable learning tool."

"Trainers at Rice Lake are scale people who sell and troubleshoot products everyday. And the learning environment at Rice Lake is great."

"I went from thinking I understood scales to being confident I could figure out and fix anything. Rice Lake took care of me like family."

"We know when our sales and service people come back they will be able to put their knowledge to use immediately in their daily work."

"You all proved that your slogan ‘Commitment Beyond Measurement’ is more than words on the wall."

"Successful Selling was a great course. I increased my self-confidence and this year I became the top sales person in the company."

"The Advanced Scale System Troubleshooting was excellent. The one-on-one training with the scale equipment is most valuable."

"Our technical training courses cover both mechanical scales and electronic scale systems. We have courses for everyone; from fundamentals to advanced troubleshooting, programming and calibration. We have also added a high performance sales course that teaches students how to sell complete weight-based solutions. Beginners to advanced scale technicians go home with sharpened skills that they can put to work immediately."

Director of Technical Training
Paul Cernick
Students give Rice Lake Technical Training an A+

Course fee includes:
- Continental breakfast, lunch and dinner daily
- Comfortable state-of-the-art training facility
- Transportation to and from hotel and plant
- Study Guide for each course
- Operation and Service Manuals

ES-300
**920i CONFIGURATION / APPLICATION TRAINING** 4.5 days
Introduction to 920i basic capabilities, hardware configuration, setup and calibration. Experience the power of the 920i indicator while you discover that it is remarkably easy to use.
June 2-6          October 13-17             $1,195

ES-301
**920i ADVANCED PROGRAMMING** 4 days
Study components and syntax of iRite programming language. Hands-on exercises and examples. Gain experience writing, compiling, editing and downloading the 920i programs. Explore capabilities of the 920i database.
October 20-23       $1,195

ET-400
**COMMUNICATION & EMERGING TECHNOLOGY** 4 days
Update of scale innovations, iQUBE digital diagnostic junction box, liquid fillers, in-motion checkweighers, unattended data collection, RF modems, fiber optic transmitters and protocols, such as Ethernet, Allen Bradley, Profibus, and DeviceNet.
September 8-11       $1,195

SS-100
**HIGH PERFORMANCE SALES COLLEGE** 4 days
It’s not about selling single products, it’s all about selling complete scale solutions. Brush up on presentation and listening skills. Learn techniques for closing the first sale and that big sale.
Fall 2008 TBA         $1,195

PCE-101
**INTRODUCTION TO PROACTION** 3 days
This course is a hands-on introduction to the 720i Process Control Engine. Day 1 covers the structure using conditions and actions to write application programs with ProAction PCEE. In Day 2, the focus is on database storage, retrieval and reporting using ProAction DBE. Day 3 is an optional day used to gain more familiarity with ProAction capability or the 720i indicator.
July 29-31          September 16-18           $795
August 26-28        October 7-9               $795

CRS-101
**ADVANCED CALIBRATION SOFTWARE** 2 days
Discussion will focus on dealer setup and start-up of CRS (Certificate Retrieval System). This class includes considerable hands-on experience with both the PC and the PDA to highlight the value and return of investment with CRS.
November 18-19       $1,095

Application form is located on our web site in pdf format on the Technical Training link.
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Joe Heinecke, Rice Lake field service engineer, goes a long way to install CB-2 automated concrete batching systems. The farthest, so far, has been to historic Tinian island. Tinian is one of the Northern Mariana Islands, a commonwealth of the United States.

The Mariana Islands consist of 15 islands about three-quarters of the way from Hawaii to the Philippines. Only three of the Mariana islands are inhabitable, due to mankind’s discouraging experience with active volcanoes. One of those more hospitable islands is Tinian, with a population of less than 4,000. (It was from Tinian’s lone airstrip that the Enola Gay, B-29 Superfortress, took off for Hiroshima one August day in 1945.)

Joe never expected to become a world traveler, but that’s exactly what he has become. Last year alone, Joe traveled at least 30 out of 52 weeks. So far this year, he has worked with Rice Lake distributors in Wisconsin, Minnesota, Maine, New Jersey, Iowa, and, of course, all the way to Tinian in the Northern Mariana Islands, 20 hours from the United States to Tokyo, Nagoya, Saipan, and then a short hop to Tinian.

Being a field service engineer for Rice Lake is not a nine-to-five job and doesn’t always involve travel. On one occasion, Joe spent hours on the telephone, until nearly 10 PM, helping a customer work through some issues with their equipment. While working with one customer to gain NTEP approval on a product, he worked 12- to 18-hour days for 21 days in a row, with only two days off — for a nap!

The majority of jobs that Joe works on are CB-2 installations. These usually last about three days. The first day is reserved for defining and marking all existing wiring. Day two consists of wiring the controller and calibrating the plant by noon. The afternoon is dedicated to running a couple batches and tuning the plant. Day three is set aside for employee training and making concrete. Depending on the situation, installation sometimes takes only two days and other times, it can take longer. Everything depends on the amount of preparation done ahead of time and the skill level of the people who will be using the CB-2.

One of the most important aspects of any installation is the site evaluation done prior to the installation. This is usually completed by the Rice Lake distributor Joe is working with. Everything needs to be looked at, including the power supply, wiring, location, space, and the size of the equipment. When the site evaluation is not conducted properly and thoroughly, there will almost always be problems. “A big time-consumer is when the wires aren’t labeled,” Joe says. “The CB-2 can automate any batching system in the world, but it can’t fix sticky gates or bad relays.”

Even though most of Joe’s jobs are with the CB-2, its not the only Rice Lake equipment Joe installs. He is fully trained on everything Rice Lake has to offer and available to assist with any installation. Some of his past jobs also consist of installing the Omni-4000 wrapper, in-motion check-weighers, 920i programmable indicator and numerous other Rice Lake products.

An Omni-4000 Wrapper installation makes a good example of what can go wrong when everything is not evaluated. When the wrapper was delivered, it was soon discovered that it wouldn’t fit through the door to the room where it was to be set up. The owner of the company used a Sawzall® to cut around the door frame and enlarge the entrance. Then he reframed the door after the wrapper was installed.

Joe not only does installations, he has also completed product training, trained classes in preventive maintenance, and assisted with NTEP certifications. He’s a “Joe of all Trades”!

Traveling over half of the year can get old fast, but Joe keeps it interesting. New York’s Empire State Building, Canton, Ohio’s Pro Football and Rock & Roll Halls of Fame are a few of the sights he’s seen. Customers have commented on Joe’s work ethic and professionalism, of course, but also on his sense of humor. One of Joe’s favorite non-work-related adventures happened in Florida. He and a friend from the area tried their luck at alligator hunting. As you can see, Lucky Joe hauled in a lunker!

If you would like Joe to assist with an upcoming installation, service project, training or certification, please contact Rice Lake’s Inside Sales Manager at 1-800-472-6703 or via the Request Service link at www.ricelake.com.
For over 60 years, we've made it our business to answer your call. Do you need assistance with a weight related process control or data collection application? Need to verify the appropriate load cell configuration for a vessel or tank? Fieldbus concerns? Network integration questions? We make it our business to understand yours. Call 800-472-6702, ext. 5168.

Go to www.ricelake.com for more information and to request a copy of our latest White Paper “Weight Related Process Control — the Things You Need to Know.”