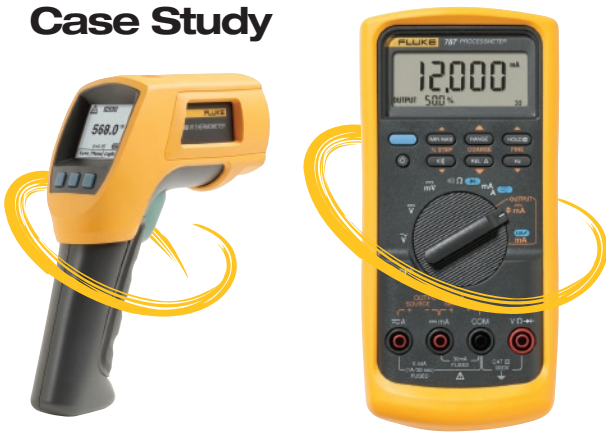


Martinelli's pursues the sweet taste of safety

Application Note

We've all heard how an apple a day can keep the doctor away. Since the Great Depression, cider maker S. Martinelli & Co. has been urging consumers to "Drink Your Apple a Day®" in a refreshing glass of juice.

Testing Functions Case Study



Tools: Fluke 787 ProcessMeter, Fluke 568 IR Thermometer

Operator: Keith Morin, facilities electrician at S. Martinelli & Co.

Measurements: Electrical measurement safety, arc flash, Lockout/Tagout/Blockout.

The health and safety of his fellow workers is also a daily issue for Keith Morin, the facilities electrician at Martinelli's 450,000 square foot production facility in Watsonville, Calif., south of San Francisco. Morin believes that a solid industrial safety program is vital to keep accidents and all sorts of health problems at bay, so he has worked to instill the safety ethic among the hundreds of employees in Martinelli's sprawling plant.

The juice making season begins in August as a new apple crop ripens, and Martinelli's continues to produce millions of gallons of cider each week, working 24/7 until early May. Then the facility, the size of several football fields, shuts down as Morin, the only facilities electrician, 22 mechanics and 50 other year-round employees dig into their off-season maintenance tasks.

Making apple juice in an immaculately clean plant filled with glistening equipment of German stainless steel might look completely safe, but dangers are there. "Number one, we bottle juice, so we're in a wet environment," Morin said. "Number two, we have broken glass, because bottles break. Those are

the two biggest concerns that we have. And there is noise. With that much glass in one place, it's pretty noisy. Wearing safety protective gear is probably the most important thing in the world."

A single bottling line can fill 500 to 600 bottles a minute, so the cost of a shutdown mounts quickly—and that creates its own hazard. "When the plant's down it costs several hundred dollars a minute," Morin said. "There's a rush to get things fixed, to get a motor swapped out or troubleshoot an electrical problem. That's why we implemented the program, to make sure that everybody's working safely, wearing their protective gear and trying to correct the problems in a safe manner."

A safety program was in place, but "over the last three years we've built on that more and more because of OSHA requirements," Morin said. "The State of California has probably the strictest safety program anywhere in the U.S., and a lot of other states have adopted what we've got here in California. It's getting more stringent every year, and we're trying to stay up-to-date. It helps the company and it helps everybody to work safely."



Keith Morin comparing heat signatures on MCC fuses.

Ripe apples mean it's safety season

With support from management, Morin established a formal safety program expanding on the existing effort. Safety training starts in August as the apple harvest begins and employees arrive. Though their employment is seasonal, many employees return each year. No matter how often they've been trained before, everyone goes through safety training and sanitation training.

Training is geared to the kind of work each trainee performs: operating processing equipment, working on the line trimming apples, moving finished product with a forklift, working in recycling or handling plant maintenance.

General safety awareness is training for everyone.

"Being aware of your surroundings, having first aid training, reporting anything you see broken—really this is the basic

stuff," said Morin. An intensified focus on order and cleanliness in the plant creates safer working conditions and an environment that supports the training program. After this introduction to safety, workers receive additional training targeted to the specific job they do.

Operator safety.

"Next we move into how you operate the equipment," Morin said. "All the machinery is equipped for safety—with safety doors and so on—but we make sure they shut the equipment off if they're going to reach a hand inside and take all the proper steps before interacting with a machine." The fork lift drivers who move finished product receive special training on safe operating procedures. Those using scissor lifts for overhead work get a special class.

Chemical safety.

A separate chemical safety program ensures that the daily plant sanitization process proceeds without hazard. Employees use bleach to keep the plant glistening, and ammonia plays an important part in the production process. Employees receive special training on safe ways to work with these chemicals.

Electrical safety.

Each mechanic receives five to six hours of safety training annually. As the sole professional electrician at Martinelli's, Morin makes sure mechanics know the dangers of electricity and follow his "test before you touch" approach. Morin checks for voltage using a vibrating tester because he can "feel the live voltage" if it's present. Other safe operating procedures, such as standing to the side when turning breakers on or off, are also part of the program.

This year, Morin is emphasizing arc flash hazards, and his company is considering the purchase of fire resistant uniforms and arc flash personal protective equipment (PPE) as recommended under National Fire Protection Association (NFPA) electrical safety standard 70E.

Another key is Lockout/Tagout procedures, which Morin teaches with a special California twist: Lockout/Tagout/Blockout. "It used to be just Lockout/Tagout," Morin said, "but in California it's called Lockout/Blockout. The reason we do that is because you can lock something out and tag it out, but most of the systems we're using can still contain kinetic energy. An assembly line could move, a press could come down, so we need to block it in some way so it doesn't accidentally move. A lot of people have never heard of that before."

Is safety working? Bingo!

The safety emphasis involves everyone, from line workers to management. Safety is now a standing agenda item when supervisors meet every Wednesday. And Martinelli's makes its focus on safety fun with a program called Safety Bingo. For every day without a safety incident, the company adds \$1 to a bingo pot. As the pot grows, the focus on safety intensifies, because with any accident, the pot goes back to \$25. Every day a new bingo number is posted, and employees have a new chance to win the pot. Employees are divided into four teams, and four Safety Bingo games are going all the time. "I think the most we've gotten up to was more than 200 days without an incident," Morin said.



Keith Morin using his Fluke 787 Process Meter to spot-check ac noise on a 4–20 mA loop. The panel is an air-activated valve control center in the filter department of the plant, and it contains 120 V ac and a single 24 V dc power supply for 4–20 mA level sensors.

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Fluke Corporation
PO Box 9090, Everett, WA 98206 U.S.A.

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

For more information call:
In the U.S.A. (800) 443-5853 or
Fax (425) 446-5116
In Europe/M-East/Africa +31 (0) 40 2675 200 or
Fax +31 (0) 40 2675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-5500 or
Fax +1 (425) 446-5116
Web access: <http://www.fluke.com>

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Printed in U.S.A. 5/2009 3358372B A-EN-N

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