A Note from Wendy and Howard...

Hello,

Manufacturing and industrial facilities are host to a diverse spectrum of hazards related to equipment and complex processes. Workplace injuries can be devastating, affecting every aspect of life for workers and their families. We all want to keep our employees safe, and to that end, Huffman Engineering has safety experts on staff to help our customers identify and mitigate safety risks - see our feature article for more information.

To enhance our safety expertise, Huffman Engineering recently attained the **Rockwell Automation Recognized System Integrator** status for **Machine Safety** through the Rockwell Automation Control Systems Integrator program. Currently Huffman Engineering is the first and only company to achieve this certification in Nebraska, and one of only two in Colorado.

This month's spotlight is on **Jason Weedin,** an electrical engineer who has been with the company since his graduation from the University of Nebraska in 2012. Jason has been an asset to the Huffman Engineering team in so many ways; as a mentor, advocate, team player and more. Read below to get to know Jason!

When you need an expert to help solve automation challenges, we are here to help. We deliver engineered solutions tailored to your automation needs. Visit our website for more information on our areas of expertise, or call us (402) 464-6823.

Best regards,

The Huffman Engineering Team

Huffman Engineering, Inc.
5301 N. 57th St.
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Colorado Happenings

Huffman Engineering, Inc.'s office in Colorado has moved! The new location allows Huffman Engineering to accommodate a growing client base in the western part of Nebraska, as well as Colorado and Wyoming. The new office will be able to mirror the Nebraska office capabilities with a testing and training room, conference area, and a production area for testing, calibration and modifications.

The growing staff now includes Sean Creager who recently moved out to Colorado to increase Huffman Engineering's expertise, knowledge and understanding to the growing number of Midwest customers. Mr. Creager brings over 20 years of knowledge and skills to the team including numerous years of experience in Citect applications and utility applications.

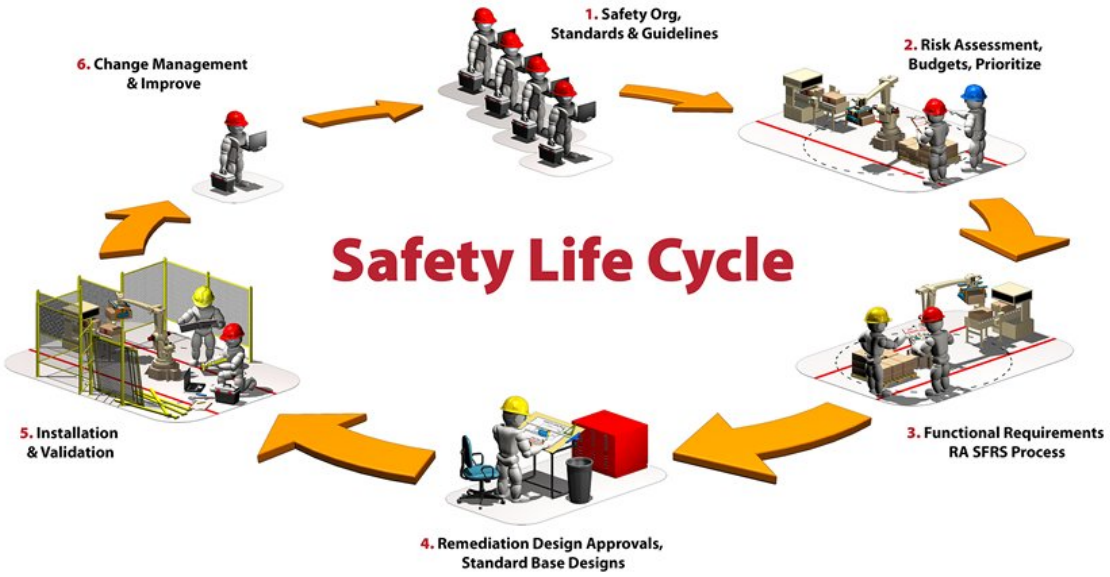
The new location is now 112 Inverness Circle East, Suite E, Englewood, CO 80112.

Rockwell Automation Machine Safety Certification

Huffman Engineering recently achieved Machine Safety recognition in the Rockwell Automation Recognized Control System Integrator program. As of July 2018, Huffman Engineering is the first and only company headquartered in Nebraska to achieve this recognition, and is one of only two to hold it in Colorado. The Machine Safety credential is added to Huffman Engineering's 20+ years as a Rockwell Automation Recognized System Integrator, first in the Control Integrator program, and later adding the Process Integrator status. As a member of the program, Huffman Engineering joins an elite group of system integrators who have differentiated themselves in the areas of machine safety design, delivery, remediation, and experienced staffing.

To achieve the Machine Safety certification, Huffman Engineering employees had to complete an extensive machine safety education and assessment process which includes topics such as global safety standards, safety risk assessment practices, and safeguarding mitigation and validation. They also completed the following:

- Interview by Rockwell Automation
- TÜV Rheinland Certified Safety training courses
- Submission of the safety documentation package from one or more projects detailing all stages of the machine safety life cycle



Rockwell Automation Safety Life Cycle

Increasing Awareness of Machine Safety

In the last few years, there has been an increased industry awareness of and focus on machine safety. At Huffman Engineering, we have also seen an uptick in customer interest and the number of

projects relating to machine safety, prompting us to pursue additional safety training to best serve the needs of our customers. With our in-house experience and expertise, the Machine Safety recognition was the next logical step, and is consistent with Huffman Engineering's core value of pursuing continuing education, training, and certifications for the company and its employees.

The current emphasis on machine safety is driven by OSHA and other compliance standards, as well as audits and insurance requirements. Many clients approach Huffman Engineering seeking to have a safety study or safety risk assessment completed and request a proposal for any mitigation work that may be necessary. These evaluations are commonly requested for older equipment, which may have safety devices or protocols installed but may not meet current standards, which are constantly evolving and improving.

Newer machinery can also benefit from a risk assessment if safety compliance was not a design specification during commissioning. Since machine OEMs don't have information about all the ways a machine may be used and may not offer customer-specific modification, safety evaluations should be performed after commissioning to determine if the safety equipment provided by the OEM for their process meets the standard or if mitigation needs to be done to bring the risk down to acceptable levels.

Safety Assessments

The two most common assessments that are performed by Huffman Engineering are the safety study and the safety risk assessment. A **safety study** is typically performed by one engineer who reviews the equipment and drawings, then prepares a written report detailing whether it meets the current standards. A **safety risk assessment** is much more detailed and is typically a team effort to capture all the ways a particular machine is being used. A Huffman engineer meets with client employees from various departments, often including a machine operator, maintenance personnel, a client engineer, and someone from the management team. Once all the information has been gathered, Huffman Engineering creates a document ranking the machine's risks and detailing the mitigation procedure.

Terminology

Two standards are commonly used in the U.S. for classification of safety circuits. The ISO 13849 standard uses Performance Level (PL) categories to quantify risk, with PLa being the least safe designation, and PLe being the safest. The IEC 62061 Safety Integrity Level (SIL) classification ranges from SIL 1 being the least safe to SIL 3 being the safest. For more discussion on this topic, view this Robotics Industries Association download.

Post-Assessment

Huffman Engineering's risk assessment final report typically contains both the design documents showing the risks and the initial risk assessment report, and the safety functional specification which shows what devices can be used to mitigate the risk.

After the initial risk assessment has been completed, the report shows the known risks ranked by severity. The customer then must determine what level of risk is tolerable and choose a mitigation plan to reduce the hazards. Once the upgrades are complete, another risk assessment is undertaken for validation and verification. If the risks have not been properly mitigated, the cycle repeats.

Safety Hardware and Best Practices

Mitigating risks uncovered in a safety risk assessment often means adding redundancy to the system, so that if one method fails, the second one will stop the system. Further, if one method fails, the second system should bring the equipment to a safe state and prevent it from resetting so that personnel become aware that there is a problem.

Safety devices used should be dual channel, meaning that they have two independent circuits per input. Upgrading the machine's safety system is commonly done with the following devices:

- Safety PLC
- Safety relay
- Emergency stop device
- Safety guard
- Safety interlock
- Safety contactor
- Safety presence sensor

Recent Project

Huffman Engineering's Tanner Grieve recently completed a safety risk assessment on how the client's VFDs were set up and determined if they had the necessary safety equipment and protocols installed. This study was triggered by two incidents that happened at other plants, when the machines started up while the maintenance people were working. The client found the machines started up because someone in another department was making changes to the parameters on the VFD, which bypassed the PLC-controlled interlocks. The client imposed two criteria for determining if the machines at the facility passed. They were:

- The safety interlocks must be controlled by a hard-wired safety system rather than by the PLC using a software processor
- The VFDs cannot be overridden by a control on the PLC or drive itself

In addition to "passing" or "failing" the client's equipment based on the above criteria, the study also made recommendations on how to bring any non-compliant machines into compliance. After the study was complete, Huffman Engineering was requested to begin remediation work on non-compliant machines, and this is ongoing. This project was the subject of a presentation for a safety seminar at the SAC Museum in March 2018.

Huffman Engineering adds the Rockwell Automation Machine Safety recognition to the company's already-impressive machine safety-related knowledge base. To learn more about Huffman Engineering's machinery safety capabilities, read our blogs Safety Risk Assessments and The Importance of Involving Multiple User Groups when Conducting Safety Risk Assessments.

If you are interested in having a safety study or safety risk assessment performed at your facility, contact Huffman Engineering for more information.

Spotlight - Jason Weedin

In this edition of the Huffman Engineering Newsletter, we are shining the spotlight on Electrical Engineer Jason Weedin, who goes above and beyond to make our company successful. Jason has been with Huffman Engineering since he graduated from the University of Nebraska in December of 2012 with a degree in Electrical Engineering.

“Jason displays the Huffman Engineering core value of being a team player,” said Howard Huffman, president of Huffman Engineering. “We can count on him to support others and make them successful. He helps guide younger engineers, develops partnerships with customers and vendors, and supports company leaders. Jason’s quiet, humble demeanor puts people at ease.”

Since joining the Huffman Engineering team, Jason has delivered meaningful contributions to the industrial side of our operations, serving the Life Sciences and Food Processing industries. On a recent cup line expansion, Jason was asked to work long hours onsite to re-configure code we had been told had been done and tested. He completed 3 months’ worth of work in about 2 weeks and gave the customer a working system.

Jason’s work at Huffman Engineering has been primarily focused on programming Rockwell PLCs and HMIs. He also played an integral role in the process of certifying Huffman as a Rockwell Safety Integrator Partner. During the certification process, Jason was part of the team that was responsible for developing and executing design, commissioning, and validation documentation.

Jason understands the work it takes to do a job well. Since coming on board, Jason has been working to build relationships and partnerships both with local vendors and customers. He is great at follow-up with his contacts, scheduling meetings, keeping discussion on track, creating proposals, investigating a customer’s need, maintaining contact, and more.

Jason works well in a team, and a great example of that is from a recent project where he was part of a team that was moving all the data from a purchased company to its new parent firm. Jason coordinated with the technical leads to keep the rest of the team moving ahead. His role in translating requirements to action for the younger team members let the technical leads focus on more difficult tasks. This allowed the project to flow more smoothly in a critically-compressed time-frame.

Jason's role on a recent project to automatn part of a breakfast sandwich line put his programming skills to the test. Not only did Jason have to understand controls, he also had to understand the mechanics that went into the process. As a result of this project, the customer plans to continue to automate the line.

When asked what he likes best about working with Huffman Engineering, Jason said, "It's a company that values relationships, not just making money. When something comes up in an employee's personal life they make every effort to help the employee during that time- whether that be time off or allowing work hours to shift from normal office hours. The same can be said when working with customers. Huffman Engineering does its best to look out for the long-term interests of their customer instead of just doing a project and moving on to something else."

Jason grew up in Hampton, NE and moved to Lincoln, NE upon graduating from college where he now lives with his wife, Lindsey, and three boys: Theo (3 years old), Asher (2 years old), and Truman (2 months old). In his spare time, Jason enjoys working in the yard and on projects around his home. Jason also takes part in his community by volunteering at his church, teaching Sunday school for 2-3-year olds and running the sound system when needed. Finally, when he has the chance, Jason enjoys taking time to visit and help out at his family's farm.

In Case You Missed It...

Huffman Engineering Named Rockwell Automation's Recognized System Integrator for Machinery Safety

The Importance of Involving Multiple User Groups when Conducting Safety Risk Assessments

Blog post by Tanner Grieve

Motor101_Run
Motor101_Start
Motor101_Stop
Motor102_Run
Motor102_Start
Motor102_Stop

3 Ways Tag Naming Standards Will Improve Development and Troubleshooting if PLC/HMI Systems

Blog post by Casey Oppegard

Huffman Engineering Hires Nick Hein to Support Growing Demand for Control Systems Integration and Engineering Services

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