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PLAINS TALK

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July/August 2017

Recognizing the Value in Safety: MIDCO

Strategic Direction Report: Electrical Safety

Studies to Support Science: Barrick Goldstrike Mines, Inc.

westplainsengineering.com

NEXT ISSUE

3D modeling is more than a nice touch in project design – these days it's a must have. Learn how our engineers and drafting team use Autodesk Revit™ 3D modeling software to visualize design concepts and fix problems before they ever arise.

MECHANICAL ELECTRICAL PLUMBING POWER

AN ENGINEERING SOLUTION CENTER

IN THIS EDITION...

It should come as no surprise that we engineers LOVE statistics. From the percent reduction in fuel costs a new boiler saves to our favorite baseball team's batting average against an ace pitcher – we can't get enough. But there are certain statistics that just plain bother us. For instance, electrocutions are responsible for more than 100 work-related deaths in the U.S. each year. That's 100 people who were at risk for an electrical hazard and possibly didn't even know it.

To us, that's unacceptable. And it should also come as no surprise that we're out to improve that stat. For years, we've worked with companies across the region to perform electrical studies, analyses and mitigation design to reduce the risk involved in working with electrical equipment. ring though, we took our tep further and now have a Certified Electrical Safety Compliance Professional (CESCP) on staff to provide he critical NFPA-70E aining these workers need.

We see it as putting the final piece of the puzzle in place. Reviewing, analyzing and upgrading equipment is as important as ever – but educating the men and women who use it is simply too important to be ignored.

West Plains Engineering is now offering NFPA-70E electrical safety training, led by a **Certified Electrical Safety Compliance Professional (CESCP).** Check out the back page for more information and how to schedule!

On July 27, ground was broken on the new $40 million Gage Brothers manufacturing plant in Sioux Falls. Shovelers included design team members, owners, community leadership and even Governor Dennis Daugaard (far right).

Welcome New Team Members

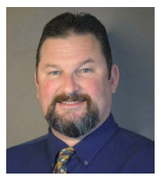
Nick Carr, EIT
Mechanical Designer
Sioux Falls

Adam Christensen
Draftsperson
Sioux Falls

West Plains Expands Power Division to Wyoming

West Plains Engineering is pleased to announce the expansion of its Power Engineering Division to Casper, Wyo. The Power Division specializes in transmission and distribution system design, substations, SCADA and load management; and joins WPE's existing MEP engineers at 145 South Durbin, Suite 205.

Senior Electrical Engineer John Rickert leads the division's effort in Casper with 25 years of experience in consulting and utility power engineering.



The expansion means WPE can now better support rural and municipal utilities in the Wyoming and Colorado service area, while continuing to partner with clients in North Dakota, South Dakota and Nebraska out of its Rapid City office.

For more information on the Power Division, including a complete list of services and portfolio of past projects, visit our website.

To speak with a member of our team, call (307) 234-9484 (WY) or (605) 348-7455 (SD).

PROJECT PROFILE
ARC FLASH STUDIES

MIDCO
North Dakota
South Dakota
Minnesota
(10 Locations)

MIDCO is one of the largest and most highly diversified communications and network providers in the Upper Midwest – with more than 150 locations in nearly half a dozen states and hundreds of employees. This sheer size and geographic diversity is part of what makes MIDCO's dedication to safety so impressive. In fact, across all of its sites, MIDCO routinely addresses the critical process of review, analysis, mitigation and education that is at the heart of electrical safety.

West Plains began supporting MIDCO in this objective more than a decade ago. Beginning in 2007/2008, our team completed site investigations and redesign for nearly 30 MIDCO sites in North & South Dakota. These studies were to evaluate and implement a "hardening" of the facilities. This means that the intent was to assess each site for code violations, reliability and electrical capacity. Our evaluation determined that many site services, generators and UPS's were due for upgrade. Our engineers designed the system changes and, working closely with MIDCO personnel, each site was bid out and constructed.

Currently, WPE is again working on designs for 10 sites in North Dakota, South Dakota and Minnesota – with much the same goal as in 2007/2008. However, over the past decade, MIDCO (and many companies like it) has recognized the importance of arc flash assessments in assuring the safety of its team members working around electrical equipment. Additionally, employers are now required to assess workplace risks, measure potential electrical arcs and equipment ratings needed, and provide PPE necessary to protect against risk.

With that in mind, all 10 sites now involve an arc flash component, which includes design mitigation. In order to support MIDCO in its mission, while also helping to keep the company's expenses down, these recommended mitigation strategies are created in concepts that lower the incident energy levels as much as possible, while factoring in cost control.

As a company, it's clear MIDCO recognizes and values the techniques and training available to the industry to prevent capital losses and, more importantly, harm to employees. As a team that has seen first hand the effects arc flash injuries cause – we couldn't be happier to help them.

A recent poll showed that most company executives said that for every $1 their company spent on workplace safety, they saved at least $3. A similar poll of financial decision makers showed that, on average, for every dollar spent improving work place safety, approximately $4.41 would be returned.

Strategic Direction Report

ELECTRICAL SAFETY

Todd Weidner, P.E., RCDD, CESCP
Principal Electrical Engineer

It's a pretty safe bet that every single person reading this has had an electrical shock at some point in his or her life. Whether it was something as accidental as touching a metal door handle after walking across the carpet in socks, or as direct (and ill-advised might we add) as accepting your buddy's dare to touch the electric cattle fence – we've all experienced that jolt. Lucky for us, the shock we felt was minor and relatively harmless... albeit quite uncomfortable. Now, take that discomfort and multiply it more than a hundred times over, and you suddenly get some idea of how it feels to experience an "incident energy event."

In the United States, one person is electrocuted in the workplace nearly every day. That means at least one person, each day, is exposed to an electric current on the job that results in painful shock, loss of muscle control, possible respiratory and/or cardiac arrest, nerve damage, severe burns – and even death.

True, electricity is an ingrained part of our modern world and essential to a productive workplace. But no employee should ever work in fear of unsafe conditions. The role of electrical safety studies, mitigation strategies and education is to reduce the risk involved in working with electrical equipment, and more importantly, to improve worker safety and confidence.

Arc Flash Assessments

Since beginning our Electrical Specialties Division in 2013, West Plains Engineering has seen our largest volume of electrical studies focused on arc flash assessments. One reason is that employers are required to assess workplace risks, measure potential electrical arcs and equipment ratings needed, and provide PPE necessary to protect against risk.

A second reason is that arc flash assessments are actually a fiscally responsible strategy for most companies. National statistics show that the cost of a single arc flash incident can run between $12-15 million when you consider medical expenses, lost productivity, fines, etc. It doesn't take complex math to understand that the cost of performing the assessment and putting safeguards in place is significantly less expensive.

Finally, although not surprisingly, many companies choose to perform comprehensive incident energy analyses simply because it's the right thing to do. They genuinely care about their employees and want to assure that the utmost has been done to assure their safety on the job.

All of these arguments for arc flash assessments, as well as other electrical safety studies, are explained in greater detail in our complete Strategic Direction Report.

Download the Full Strategic Direction Report

Visit www.westplainsengineering.com/SDR or click on the QR code below to download the FREE full white paper on Electrical Safety, which includes detailed information on the uses and purposes of various electrical studies, where Certified Electrical Safety Compliance Professionals (CESCP) fit in, and how to get the conversation started with your company or client.

Effect of Electrical Currents on the Human Body

<1 milliampere
Generally not perceptible

1 milliampere
Faint tingle

5 milliamperes
Slight shock felt; not painful but disturbing. Average individual can let go. Strong involuntary reactions can lead to other injuries.

6-30 milliamperes
Painful shock; loss of muscular control. Individual cannot let go, but can be thrown away from the circuit if muscles are stimulated.

5-150 milliamperes
Extreme pain; respiratory arrest. Severe muscle contractions. Death possible.

1-4.3k milliaperes
Rhythmic pumping action of the heart ceases. Nerve damage; death likely.

10k milliamperes
Cardiac arrest and severe burns occur. Death is probable.

15k milliamperes
Lowest overcurrent at which a typical fuse or circuit breaker opens a circuit!

Todd Weidner is a Principal Electrical Engineer and Manager of the Electrical Specialties Division. Todd has been with West Plains more than 15 years, recently turning his focus to electrical studies and energy audits in support of a variety of clients in North Dakota, South Dakota, Wyoming, Iowa and Minnesota. Also a Registered Communications Distribution Designer (RCDD) and Certified Electrical Safety Compliance Professional (CESCP), Todd is based out of our Sioux Falls office. *todd.weidner@westplainsengineering.com*

Hawkeye on Safety | September 20, 2017
Meet Todd and learn more about electrical safety during his session at the 2017 Hawkeye on Safety Conference in Coralville, IA.

PROJECT PROFILE

ARC FLASH &
INFRARED THERMOGRAPHY

Homestake Mine/
Barrick Goldstrike Mines, Inc.

Lead, SD

Daren Beckloff is a Senior Electrical Engineer in our Power Division. He has worked on various projects at the Homestake Mine site over the course of a decade, including being involved with the power distribution for de-watering the mine through the Ross Shaft at the initial re-entry point. Daren has been with West Plains since 2006 and is based out of our Rapid City office. For more information on Daren, check out the Team Profile on Page 7.
daren.beckloff@westplainsengineering.com

STUDIES TO SUPPORT SCIENCE

When Barrick Goldstrike Mines, Inc., reached out to us for arc flash and infrared thermography studies at the Homestake Mine in Lead, South Dakota, we knew we had an important task ahead. After all, Homestake houses the multi-million dollar Sanford Underground Research Facility (SURF) – one of the world's foremost underground research laboratories.

Electrical Specialties Division Manager Todd Weidner, P.E. spent a week at the site's water treatment plant with local electrical contractor, Muth Electric. After comprehensive data collection, Todd and our Power Division collaborated to develop a findings report, along with mitigation strategies, for Barrick's operations team to review. In short, our job was to determine any looming safety concerns and develop a remediation plan, which ultimately resulted in more than 500 arc flash labels being issued.

Barrick and Homestake put their trust in us to help keep their most valuable research tools – their staff – safe.

Team Spotlight

DAREN BECKLOFF, PE

Title: Senior Electrical Engineer
Years with WPE: 11 years
Home Team: Daren and his wife Tawnya have three children – Hope, Drake and Cole.

Every team loves a utility player – the one person you can put at any position and they'll knock it out of the park. Baseball analogies aside, for us, that person just might be Daren Beckloff. Daren has been a consulting electrical engineer for more than 20 years, spending the last 11 with West Plains. He's a senior leader for our Power Division, which means he has special expertise in the design of medium to high voltage systems. But company-wide, our engineers know if they need help on any size electrical project – Daren is their guy.

With registrations in seven states and a unique understanding of electrical design and project management, Daren's stamp can be seen on projects ranging from apartment complexes to military hangars to substations. It's not only his talent and experiences, but also his willingness to lend a hand or provide an insight that make him invaluable to West Plains.

At home, Daren plays the jack-of-all-trades for his family of five, including assistant coaching his son's high school tennis team. (He's also an avid Kansas State Wildcats fan, but hey, nobody's perfect!)

Partner Spotlight

Homestake Mining Company

Homestake Mining Company has quite literally stood the test of time. The mine itself has been around since a gold deposit was discovered at the site in 1876 – and it was the largest and deepest gold mine in North America until closing in 2002.

Since then, what once was an iconic symbol of the Old West, has set the bar for modern day scientific exploration. In 2007, the mine was selected by the National Science Foundation as the site for the Deep Underground Science and Engineering Laboratory (DUSEL). Now operated by the South Dakota Science and Technology Authority, the site is known as the Sanford Underground Research Facility (SURF) and is home to exciting scientific research on dark matter and neutrinos in order to better understand the universe and how it affects our world.

As engineers, we can't help but admire the work being done right here in our own back yard, and we're always proud (and pretty excited!) to support them in any way we can.

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NEW!

STUDIES + **ANALYSIS & LABELING** + **SAFETY TRAINING**

West Plains Engineering is pleased to now offer OSHA compliant NFPA-70E electrical safety training from a Certified Electrical Safety Compliance Professional (CESCP).

This 4 or 8-hour course includes a certificate of completion and can be customized to your company's needs and conducted on site. Special pricing on training packages when included with safety studies and analysis.

Call **Todd Weidner, P.E. at (605) 362-3753** to learn more or schedule training.

Identification & Understanding of Electrical Hazards

OSHA Safety Standards (including CFR1910)

NFPA-70E Safety Requirements

Protection Against Electrical Hazards

Selection of Protective Clothing & PPE