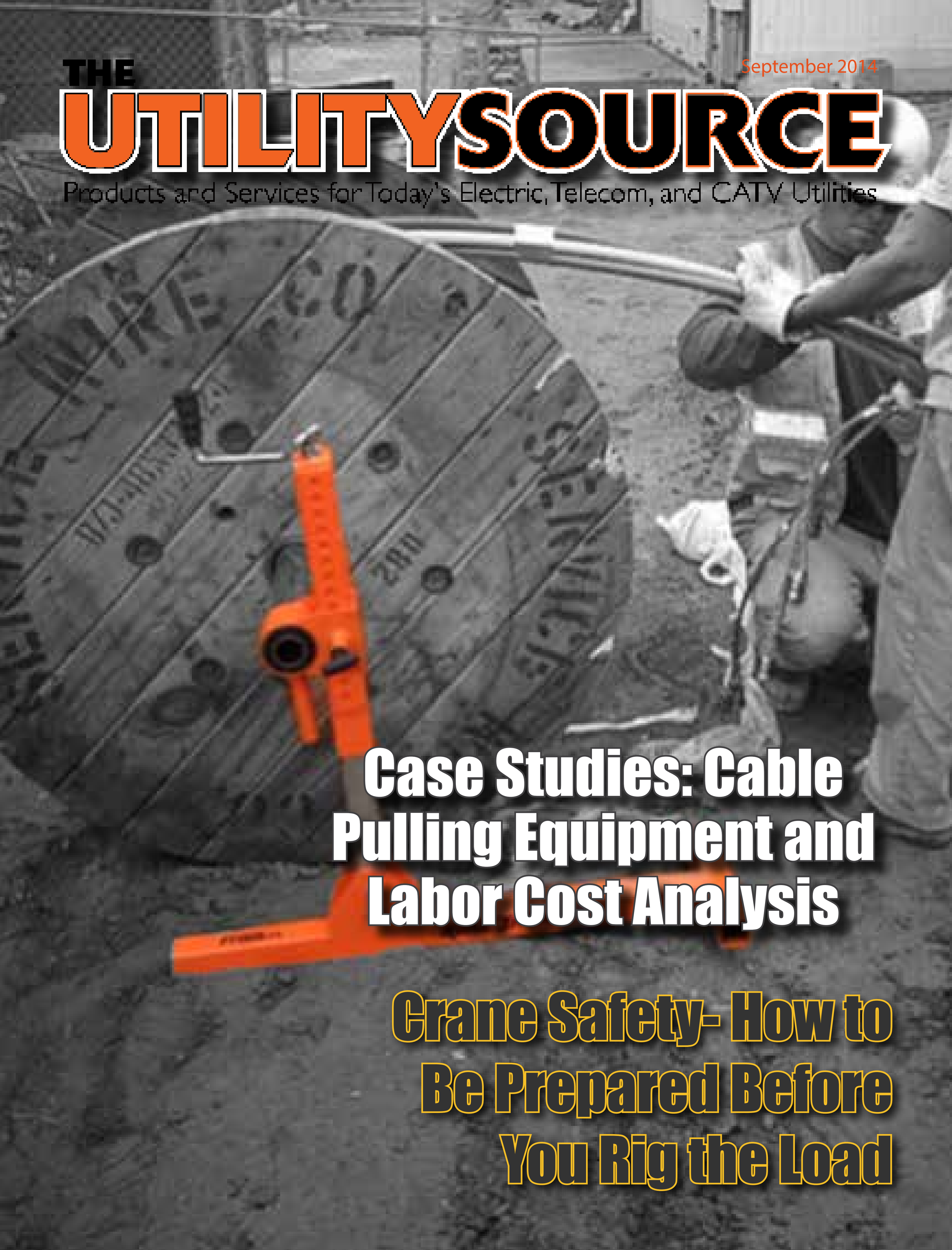
September 2014

THE UTILITY SOURCE

Products and Services for Today's Electric, Telecom, and CATV Utilities



Case Studies: Cable Pulling Equipment and Labor Cost Analysis

Crane Safety- How to Be Prepared Before You Rig the Load


Voted by Contractors As The Best Pulling Tools 2014
iToolCo
Made in the USA
Crank Lift and Bearing Spin
Real Jacks RJ6K
Huge Time Savings
iToolCo
PüLLSLiCK
Fastest When Pulled With the Cannon 10K
Cannon 10K Dual Capstan 4 Speed 10K Tugger "Easy, Strong, & Fast"
iToolCo
Demo Today
9 to 40 Fpm
Made in the USA
i Toolco.com
865-670-3713

FABRICATED DUCT SPACER

UNDERGROUND DEVICES FABRICATED DUCT SPACERS:

- Accomodate virtually any and all types and sizes of conduit
- Any conduit separation and configuration can be made
- Off-site duct bank assembly is possible, allowing for labor savings
- A safer installation - less time is needed in the trench
- Fabricated Duct Spacers cannot fall or tip over
- Concrete flows easily through the spacers during the pour

With Fabricated Duct Spacers from Underground Devices your duct bank jobs become easier. Fabricated Duct Spacers are designed and manufactured to your exact specifications. Your duct bank can easily be pre-assembled outside of the trench, allowing for a fast and safe installation.

To request more information please call Underground Devices at (800) 800-2112.

UNDERGROUND DEVICES
INCORPORATED

420 ACADEMY DRIVE • NORTHBROOK, ILLINOIS 60062
Phone: (847) 205-9000 • Fax: (847) 205-9004
Website: http:\\www.udevices.com

THE UTILITY SOURCE
Products and Services for Today's Electric, Telecom, and CATV Utilities

ASSOCIATE GROUP PUBLISHER
Rick Harless
205-382-6182
rick@handfmedia.net

EDITOR/ WEB DESIGNER
Danny Thompson
danny@handfmedia.net

CREATIVE DIRECTOR
Jacklyn Greenhill
jacklyn@handfmedia.net

ADMINISTRATIVE COORDINATOR
Annie McGilvray
annie@handfmedia.net

FACILITATOR/ LEAD COORDINATOR
Steven Hobson
steven@tipsmag.net

CEO
Christy Hobson

PRESIDENT
Glen Hobson

Executive and Advertising Offices
951 1st Ave. W.
Alabaster, AL 35007
phone: **205-624-3354** fax: **205-624-3354**
www.theutilitysource.net
glen@tipsmag.net

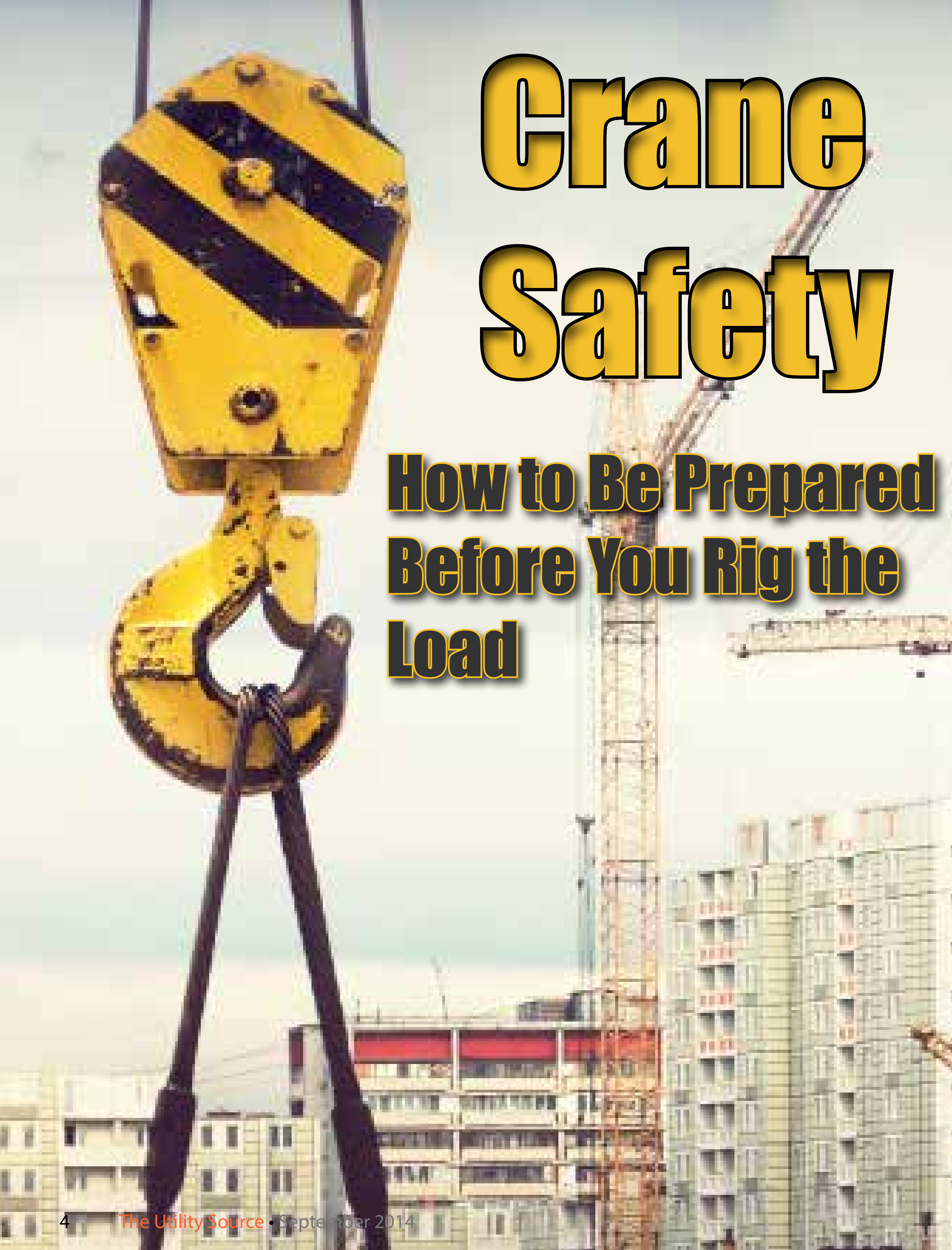
The Utility Source™ is published twelve times a year on a monthly basis by H&F Media Group, Inc., 951 1st Ave. W. Alabaster, AL 35007 USA. The Utility Source™ is distributed free to qualified subscribers. Non-qualified subscription rates are $57.00 per year in the U.S. and Canada and $84.00 per year for foreign subscribers (surface mail). U.S. Postage paid at Birmingham, Alabama and additional mailing offices.

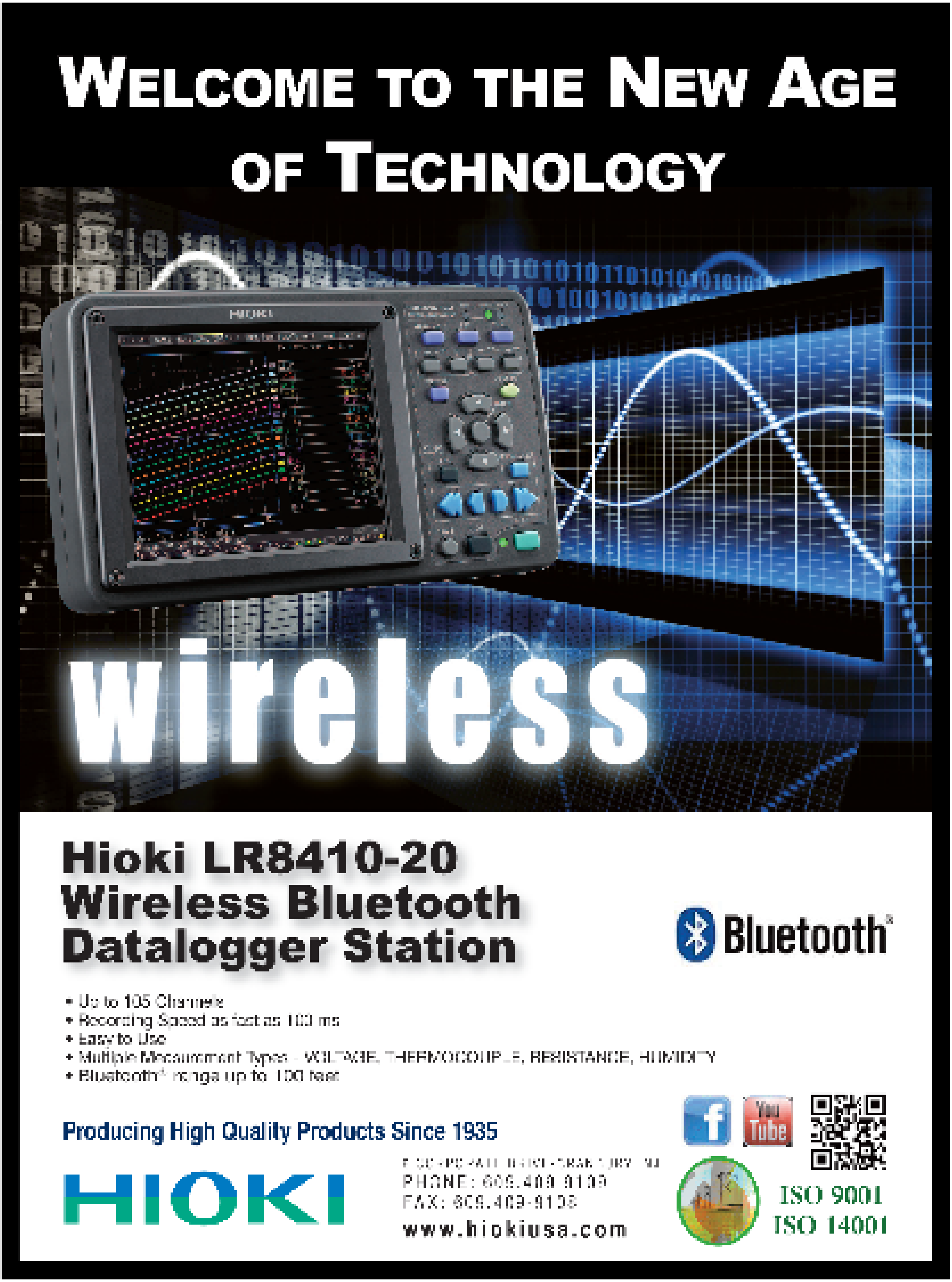
POSTMASTER: Send address changes to
H&F Media Group, Inc., P.O. Box 1568
Pelham, Al 35124
PRINTED IN THE USA

Use Electricity to heat your floors and add comfort to your home!
Electric radiant heat underlayment panels ideally suited for floating laminate and engineered wood flooring.
Revolutionary wireless configuration, combining over 30 years of electric radiant heat science for a gentler, more even heat distribution.
World's easiest radiant heat system to install uses no thinset or self-leveling mortar. Roll out, cut to fit, run lead wires to a programmable thermostat, if desired.
Maintenance free and Saves money by consuming up to 50% less power than traditional wired systems.
NEW!
Perfectly Warm
RADIANT HEAT UNDERLAYMENT
Searching for Dealers & Distributors nationwide
Heat your FLOOR for PENNIES a day!
MP global products L.L.C.
(888) 379.9695
www.perfectly-warm.com
PROUD MEMBERS OF
wfca
RPA
NALFA
National Wood Flooring Association

Crane Safety

How to Be Prepared Before You Rig the Load




WELCOME TO THE NEW AGE OF TECHNOLOGY
wireless
Hioki LR8410-20
Wireless Bluetooth
Datalogger Station
Bluetooth®
• Up to 105 Channels
• Recording Speed as fast as 100 ms
• Easy to Use
• Multiple Measurement Types - VOLTAGE, THERMOCOUPLE, RESISTANCE, HUMIDITY
• Bluetooth® range up to 100 feet
Producing High Quality Products Since 1935
HIOKI
www.hiokiusa.com
ISO 9001
ISO 14001

By Charlie Bentson King

Cranes are undeniably helpful in the workplace. They can lift enormous amounts of weight and make jobs quicker and more efficient. However, because of their enormous power they are also extremely dangerous. If a load drops there is almost no way to stop it or warn other workers to get out of the say. The resulting damage can result in serious injury and even death. 90% of crane accidents involve human error, so the proper preparation and training is crucial. By learning how to work Cranes safety, possible accidents can be greatly avoided.

Before operating a crane workers need to take note of the Crane's characteristics including the Crane's weight, is the Host Rope rated for the load, is the load getting attached correctly? Knowing this basic information gets the worker prepared to operate the crane safely.

There are many types of cranes but industrial cranes are the most powerful and dangerous type of crane and the mental aspects of operating a crane cannot be ignored. 90% of Crane-related accidents are caused by human error so the right attitude, hard work and basic knowledge are essential. An accident could kill you or someone else, so the serious nature of mentally preparing yourself cannot be overstated.

Most accidents that occur are caused by poor judgment, lack of attention or overconfidence. Run down a mental checklist before you begin. Ask yourself is you are physically and mentally prepared to work with the machine. If you are taking medication ask your doctor or pharmacist if it could affect your performance. Also, ask yourself if you are emotional prepared. Are you angry, upset and more prone to make hasty decisions?

Being prepared also involves wearing protective clothing and equipment including steel-toed safety shoes, a hard hat and safety glasses to help protect against falling objects. A tucked in, long sleeve shirt is also essential.

Once you are physically and mentally ready for the job you need to inspect the Crane and the area where you will be working. Look for small leaks, clear the space away around the crane so that nothing is in the way and check the crane itself. Test the fluid levels, controls and brakes while listening for unusual noises. Also, it's very important to check the Limit Switches that cut off power at the end of a crane's range of motion and the hook to make sure it's in perfect working order and right for the job.

There are three basic categories of cranes and each has its own characteristics.

Boom Cranes such as Tower Cranes and Truck Cranes are the most complicated and require rigorous training and qualification before using them. Boom Cranes have an arm which can be raised and lowered. This changes the "Boom Angle". Special emphasis on the setup of Boom Cranes can

greatly reduce accidents. The most important thing about a Boom Crane is that it is level or it could cause severe structural damage and even tip over. Many Boom Cranes have outriggers (legs that extend and keep it level). Make sure they are on solid ground and keep the crane absolutely level. A bubble level on the base of the boom is a simple procedure to make sure the crane is level. When setting up a lift with a Boom Crane always use a load chart so you know the weight capacities for all the lifting angles. Every Boom Crane has its own load chart. One copy is attached to the crane and one copy is held by the supervisor.

Jib Cranes such as a Wall Crane or a Hammerhead Crane share many characteristics with Boom Cranes. They also have an arm which suspends the hoist Rope, Block and Hook. Jib Cranes have an arm which suspends the Hoist Rope, Block and Hook. However, unlike most Boom Cranes, a Jib Crane can not be adjusted for angle if it is locked in a horizontal position.

Before starting a Jib Crane lift, inspect the Crane for bent supports or misalignment. Make sure that you know the range of motion of the Jib Arm. Be sure that you know where the Emergency Stop Button and the Overload Indicators are located.

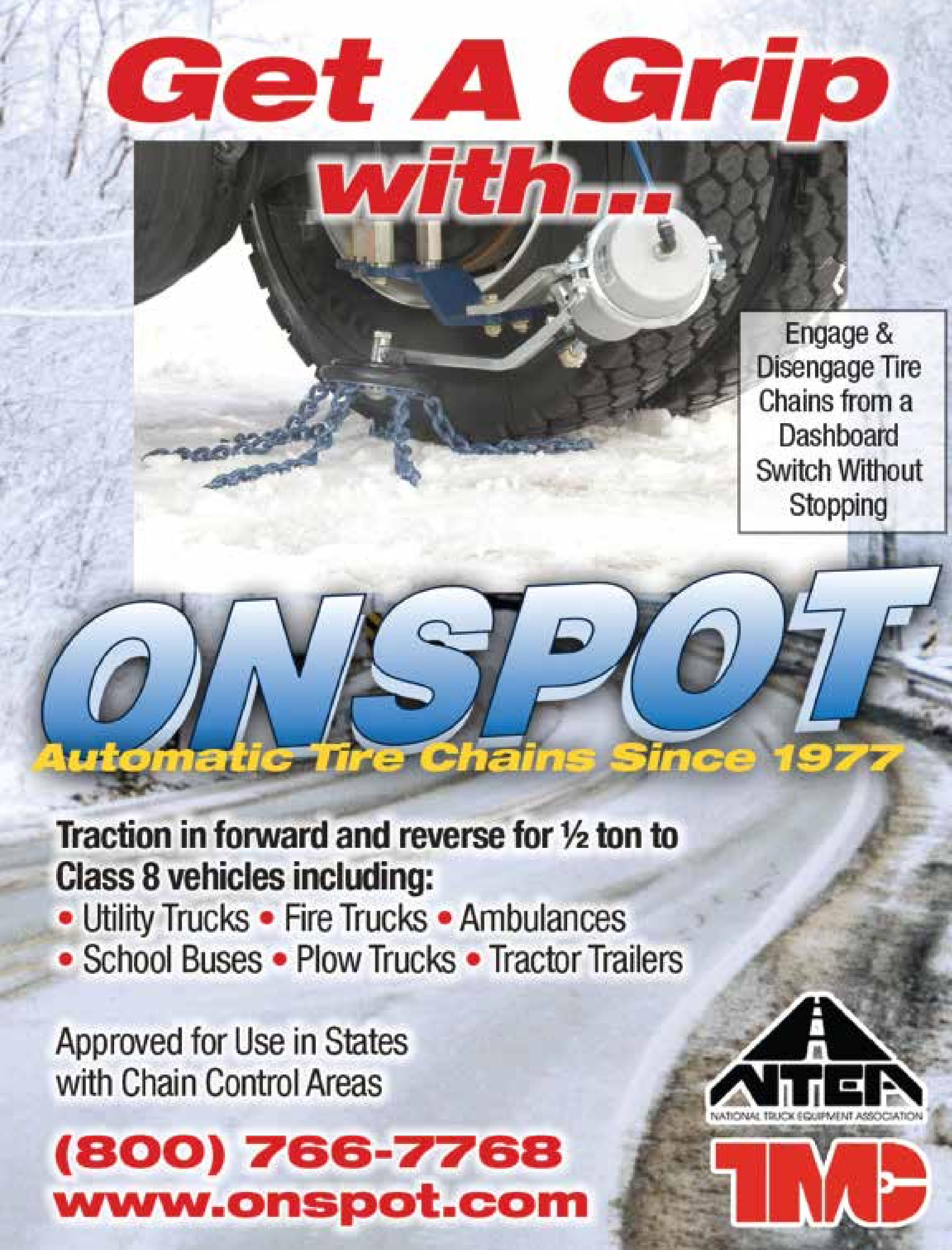
The third major type of Crane is the "Overhead Crane". An Overhead Crane, such as a Gantry Crane, carries its load along a bridge. It is attached to a building's walls, or to supports running up from the ground. Before using an Overhead Crane, make sure that the "End Stops" and "Bumpers" are secure and functioning properly. These devices prevent the Crane from running off the end of its rails and reduce the impact when a Crane reaches its End Stops. You should also test the "Trolley" (the moving portion of the Crane). Make sure that it can travel the full distance of the bridge without problems. Try the brakes to be sure that they work as well.

On any crane, the weight capacity limits should be checked before using and you should be aware of the safety devices that all cranes have. There are two kinds of devices -general Safety Devices and operational safety devices. General devices include bells and warning lights. Operational Safety Devices monitor and control the handling capacity of the Crane and include overload Indicators, emergency stop buttons and limit switches.

Now you are ready to rig the load.

Being completely prepared mentally, physically and emotionally to operate a crane is essential. Before you are ready to rig the load there are a number of steps that need to be undertaken. Do you take these steps lightly - your own safety and the safety of your co-workers depend on it.

Charlie Bentson King is a VP for Workplace Safety Videos. Workplace Safety Videos is a distributor of safety videos and safety DVDs including Crane Safety Training DVDs.


Get A Grip
with...
Engage & Disengage Tire Chains from a Dashboard Switch Without Stopping
ONSPOT
Automatic Tire Chains Since 1977
Traction in forward and reverse for ½ ton to Class 8 vehicles including:
• Utility Trucks • Fire Trucks • Ambulances
• School Buses • Plow Trucks • Tractor Trailers
Approved for Use in States with Chain Control Areas
NTEA
NATIONAL TRUCK EQUIPMENT ASSOCIATION
TMC
(800) 766-7768
www.onspot.com

Safety Regulations

For Workers Working With Overhead Cranes

By John Tweak

Overhead cranes have become vital in modern industry. They are common sight in sectors like construction, steel, mining, shipyards, and others. Overhead Cranes are useful in many industrial activities and are commonly used to move extremely heavy items from one place to another. The rapid industrialization in many parts of the world has made the use of overhead cranes a crucial component of every major industry. Operating overhead cranes requires skill and proper knowledge of safety procedures. For the proper utilization of overhead cranes, it is essential that workers and crane operators are fully trained and are completely skilled in the job. It is always to be remembered that unskilled or untrained operators not only put their lives at peril, but also cause the lives of other to be at risk.

For this reason, certain safety regulations for workers have been laid down by OSHA and US law for operating overhead cranes. Crane operators are responsible for their actions and for therefore, they must obey various rules and regulations that are in force. All employers must realize that there are different types of cranes and each crane has a different set of training and maintenance requirements. For proper operation of the crane, it is essential that the crane owner as well as the operator is familiar with its operating instructions. Amongst the foremost safety regulations for crane operators, it is essential that they possess corrected eyesight as mandated for a driver's license. It is also essential that crane operators are able to effectively use both their hands and feet and are sufficiently tall to operate the controls of the overhead crane. Additionally, operators are expected to have proper coordination between their eyes, hands, and feet and should be free from disorders that could cause convulsion or unconsciousness.

Furthermore, as required by the new rules passed in July 2010, the US safety and health administration body OSHA has come up with new safety regulations for crane operators. Amongst the more important safety regulations are that cranes operators are required to be certified by an accredited body such as the National Commission for the Certification of Crane Operators (NCCCO). This is to ensure that crane operators are familiar with the hazards that come along with their daily routine. This will also help them to prevent accidents. Amongst the other notable safety measures require that the equipment be safely assembled. They should not collapse during or after installation and should be assembled under the guidelines of a qualified individual. Regular inspection of the crane equipment is mandatory every year. The crane should also be visually inspected after installation and also before the commencement of each shift.

Furthermore, audible warning signs are required for cranes when they are in motion. Every worker who is working onsite requires to be trained in crane warning signals so that they are aware of every potentially dangerous situation. No one should exceed the load capacity of the crane. The point is clear - loads that exceed the weight limit should not be moved at all. At the same time, if an operator cannot rig the load properly due to technical or other reasons, it should not be lifted. The crane operator should also inspect the path of the crane and check for any obstacles or people crossing the path. This should be done before the crane is operated. Additionally, the controls on the crane should be clearly marked and the operator should be very familiar with the use of these controls.

Workers should know how to evacuate the area in case of an emergency. Additionally, they should be familiar with how to handle an unexpected even such as an electrical or a mechanical failure. They should also be familiar with crane operation signs and should know how to handle the crane in event of a power failure. Additionally, workers should not wear loose clothing and also should secure their hair and jewelry. They should also park the crane safely when not in operation and lower the loads when the crane is not in use. Also, never ride on the hoist or pulley of a crane. This can be dangerous to life as just a slip could cause the worker to fall and can lead to disastrous consequences. Regulations also stipulate that workers should be familiar with using lockout procedures to avoid accidental starting or movements.

Broadly, it is essential that workers should understand signs, labels, as well a various instructions. In conclusion, the worker needs to be trained and tested before operating an overhead crane. There are other operator requirements including demonstrating proficiency in operating the crane. Once all the requirements are met, the worker is issued with a permit, and it is mandatory for workers that this permit is carried on their person and is made available upon request.

Since 1987, ACE World Companies has supplied industry American-made, custom designed material handling solutions. Let us know about your requirements of overhead cranes. We build various types of overhead cranes including custom solutions for a range of companies. Our products are proudly built in the USA by skilled craftsmen.


CONSTRUCTION
LIGHTING
Larson Electronics
Magnetic Mount LED
Power Distribution
16 Foot Telescoping Light Mast
30 Foot LED Light Tower With Generator
Solar Power Light Tower
1-800-369-6671
LarsonElectronics.com
Sales@larsonelectronics.com

I-80 EQUIPMENT

North America's La

Lift-All LOM10-55-1S-2003 GMC C7500 4x2 Bucket Truck

Double Over-Center, 1,000lb Material Handler, 4x2 Bucket Truck, Stock# 514568, Vehicle Make- GMC, Vehicle Model- C7500, Odometer Miles- 108,276, CAT 3126 Diesel, 240 Horsepower @ 2,300rpms, 720lbs of Torque @ 1,450rpms, Allison Automatic Transmission, Push Button PTO.........................**$58,500**

Versalift VST-240I-2004 Ford F-750 4x2 Bucket Truck

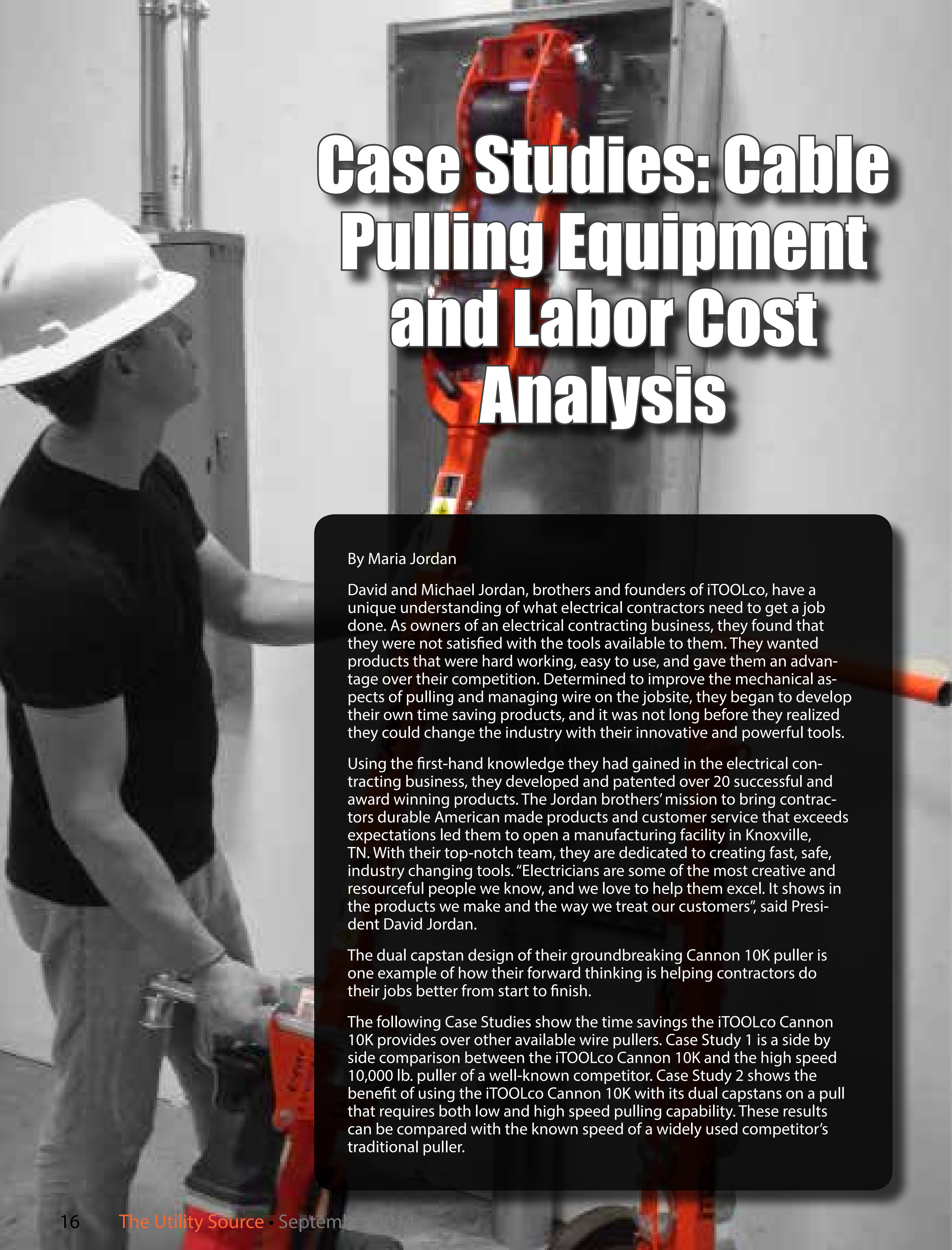
Under Body Frame Stabilizer, Under CDL, 4x2 Bucket Truck, Stock# 106795, Vehicle, Make- Ford, Vehicle Model- F-750, Odometer Miles- 94,805, CAT C7 Diesel, 250 Horsepower @ 2,400rpms, 800lbs of Torque @1,440rpms, Allison Automatic Transmission, Push Button PTO.........................**$51,000**

Altec AM855-2004 Freightliner FL80 4x4 Bucket Truck

2,000lb Material Handler w/Hydraulic, Ext. & Tilt, Stock # M31142CA, Odometer Miles- 63,097, CAT 3126 Diesel, 246 Horsepower @ 2,300rpms, 620lbs of Torque @ 1,450rpms, Allison Automatic Transmission, Push Button PTO w/Master Switch.................................**$75,250**

Altec L42M-2007 Chevrolet C7500 4x2 Bucket Truck

1,500lb Material Handler w/Hydraulic, Stock #- 401471, Odometer Miles- 107,124, 7.0L Duramax Diesel, 320 Horsepower @ 3,200rpms, 650lbs of Torque @ 1,600rpms, Allison Automatic Transmission, Push Button PTO...**$59,500**



Case Studies: Cable Pulling Equipment and Labor Cost Analysis

By Maria Jordan

David and Michael Jordan, brothers and founders of iTOOLco, have a unique understanding of what electrical contractors need to get a job done. As owners of an electrical contracting business, they found that they were not satisfied with the tools available to them. They wanted products that were hard working, easy to use, and gave them an advantage over their competition. Determined to improve the mechanical aspects of pulling and managing wire on the jobsite, they began to develop their own time saving products, and it was not long before they realized they could change the industry with their innovative and powerful tools.

Using the first-hand knowledge they had gained in the electrical contracting business, they developed and patented over 20 successful and award winning products. The Jordan brothers' mission to bring contractors durable American made products and customer service that exceeds expectations led them to open a manufacturing facility in Knoxville, TN. With their top-notch team, they are dedicated to creating fast, safe, industry changing tools. "Electricians are some of the most creative and resourceful people we know, and we love to help them excel. It shows in the products we make and the way we treat our customers", said President David Jordan.

The dual capstan design of their groundbreaking Cannon 10K puller is one example of how their forward thinking is helping contractors do their jobs better from start to finish.

The following Case Studies show the time savings the iTOOLco Cannon 10K provides over other available wire pullers. Case Study 1 is a side by side comparison between the iTOOLco Cannon 10K and the high speed 10,000 lb. puller of a well-known competitor. Case Study 2 shows the benefit of using the iTOOLco Cannon 10K with its dual capstans on a pull that requires both low and high speed pulling capability. These results can be compared with the known speed of a widely used competitor's traditional puller.


PATENT PENDING
EZ OIL DRAIN VALVE™
NEW & IMPROVED
REMOVABLE HOSE END
• REPLACES YOUR EXISTING DRAIN PLUG
• JUST TURN THE LEVER TO DRAIN OIL
THE EASIEST OIL CHANGE
Optional Hose Connections
LEVER CLOSED
ATTACH THE REMOVABLE HOSE END
LEVER CLOSED
CONNECT A HOSE
LEVER OPEN
OPEN THE LEVER TO DRAIN OIL
STRAIGHT HOSE END
L-SHAPED HOSE END
For Heavy Duty Trucks and Buses, contact the following distributors:
NORTHWEST
Wesrep Sales Co.
(253)851-9099
ROCKY MOUNTAIN
TEWCO, INC.
(800)558-8730
NORTH CENTRAL
TEWCO, INC.
(800)558-8730
NORTHEAST
Gomco Sales Co.
(800)793-0154
SOUTHWEST
TMA
(619)579-9603
MIDWEST
Gomco Sales Co.
(800)793-0154
SOUTH CENTRAL
J.J O'Connell Co.
(800)727-0770
SOUTHEAST
Mys-Tec Sales
(404)505-0163
CANADA: DKSI 1-(877) 508-3900 email: info@ezoildrain.com
For Cars and Pickups order from: www.oildrainvalve.net
USA: www.EZoildrain.com Canada: www.EZoildrain.ca
WARRANTY LIFE TIME WARRANTY

Side by side comparison of iTOOLco Cannon 10K with well-known competitor's 10,000 lb Puller

Case Study 1: Michael Maloney of Great Lakes Electrical Sales conducted the following analysis on a demo iTOOLco cable pull. These are all REAL numbers and nothing has been inflated. The General Foreman on the site validated this report.

Jobsite: *** Distribution Center

Scope: Installation of (2) parallel feeders. 2 x (3c 500 mcm cable, 1 – 3/0 cable) Length of pulls: 640′ each. Total footage of cable runs installed: 640 x 2 = 1,280′.

Both cable pulls were fed from metal multi multi-compartment cable reels. Reusable pulling heads were attached to each cable pull along with a pulling "sock" and covered in wraps of duct tape.

A competitor's high speed 10,000 pound puller was used to perform the first cable pull. This puller had to be custom configured with 3″ conduit for this application.

The iTOOLco Cannon 10K was used to perform the second cable pull. The iTOOLco puller also had to be custom configured with 2.5″ conduit for this application.

Results (Pull #1):The first cable pull was completed with the competitor's cable puller. The competitor's puller was able to perform the entire pull in high speed. Set-up time was lengthy due to heavy equipment and no pivot/leverage point on the puller. Total pull time was 60 minutes.

Average speed of pull was 10.6′ per minute = 640′ in 60 minutes of pulling time.

Three employees worked on the installation of the cable: 3 x 60 minutes = 180 minutes.

Total cost of pulling time (Rate of $100.00/hr.): $300.00.

Results (Pull #2): The second cable pull was completed with the iTOOLco Cannon 10K. The Cannon 10K was able to perform the entire pull on the high speed capstan. For the first 40′ of the cable pull, the Cannon 10K was set at low speed (20′ per minute). This was to ensure the cable reels were positioned properly. The remainder of the pull was completed at high speed (40′ per minute). Set-up time was minimal due to the light weight and highly versatile pivot/leveraging system on the Cannon 10K.

Average speed of pull was 32′ per minute = 640′ in 20 minutes of pulling time.

Three employees worked on the installation of the cable: 3 x 20 minutes = 60 minutes.

Total cost of pulling time (Rate of $100/hr.): $100.00

63% SAVINGS ON JUST PULL TIME WHEN USING THE iTOOLco PULLER!

Case Study 2: Michael Maloney of Great Lakes Electrical Sales conducted the following analysis on a demo iTOOLco cable pull. These are all REAL numbers and nothing has been inflated. The General Foreman on the site validated this report.

Jobsite: ***Airport

Scope: Installation of (5) parallel feeders. 5 x (3c 500 mcm 15 kv cable) Length of pulls: 130′ each. Total footage of cable runs installed: 130 x 5 = 650′.

All (5) cable pulls were fed off of the same reel and fed from COMPANY X'S cable truck. Reusable pulling heads were attached to each cable pull. Diameter of reel was 6.5′, and required the cable truck/operator.

iTOOLco Cannon 10K cable puller was set-up behind switch gear where there was 4 feet of space between back of switch gear to wall. We customized the iTOOLco Cannon 10K puller with 2″ and 2.5″ conduit to create an "A" frame, and no anchoring or hanging of wheels was necessary.

Results: The first three cable pulls were done at high speed on the high speed capstan. The pulls were completed in 6 minutes each. The last two pulls were pulled at a combination of high and low speed on the low speed capstan. These pulls were completed in 4 minutes each. Total pulling time of all 5 pulls was 26 minutes.

Average speed of pulls was 25′ per minute = 650′ in 26 minutes of pulling time.

Four employees worked on the installation of the cable: 4 x 26 minutes = 104 minutes.

Total cost of pulling time (Rate of $100/hr.): $173.33

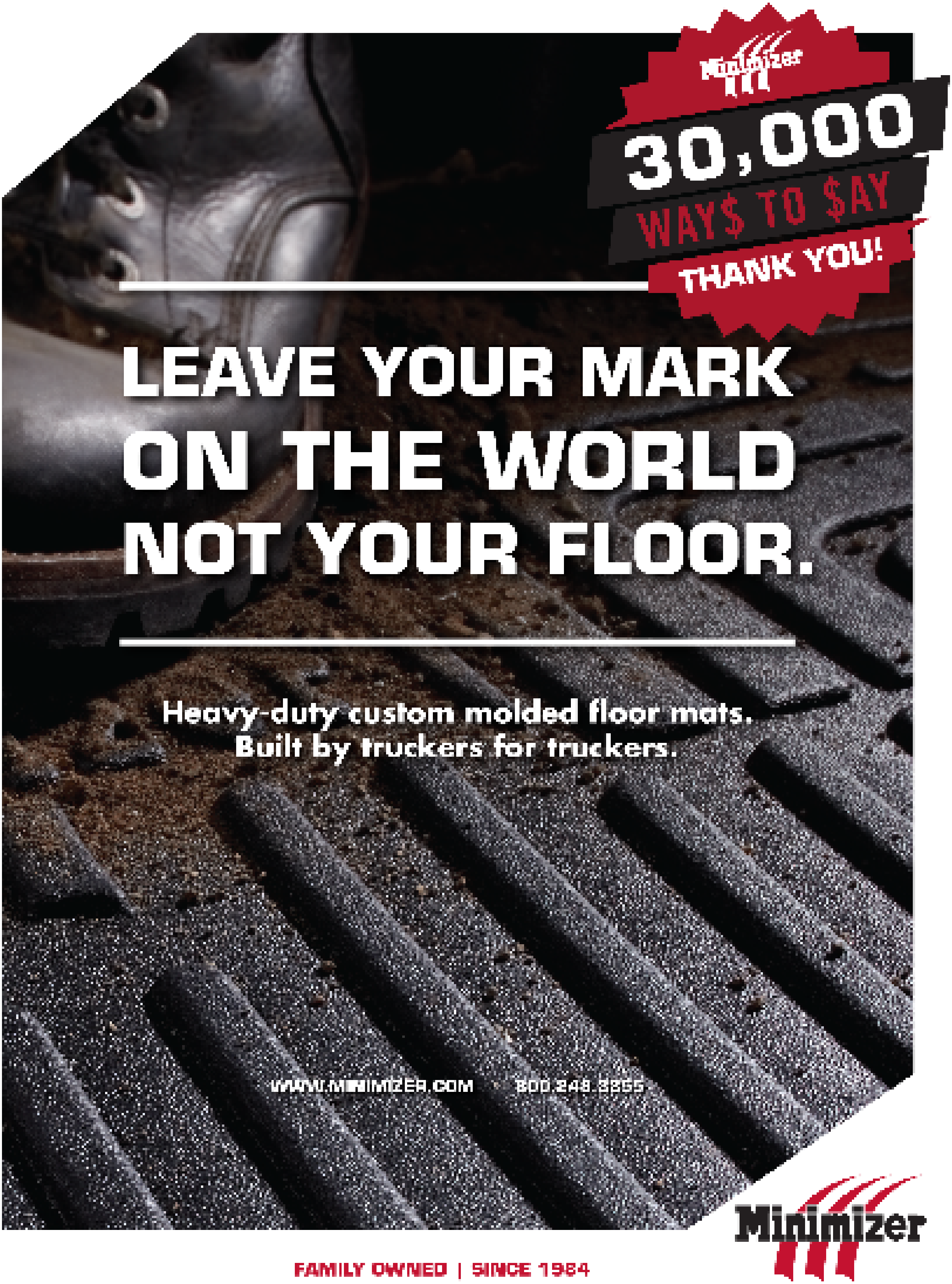
A traditional wire puller pulls at 6′ per minute = 650′ in 108.33 minutes of pulling time.

Four employees x 108 minutes = 432 minutes.

Total cost of pulling time with a traditional puller: $720.00

SAVINGS OF $547 OR 76%! Plus labor force would be able to accomplish other tasks.

These two Case Studies give an overview of the savings contractors can expect by using just one of iTOOLco's innovative products. David and Michael Jordan have a passion for making tools that give contractors a competitive edge, and their entire line of tools is designed to work together for maximum efficiency.



FAMILY OWNED | SINCE 1984

Geothermal Power on the Rise – A Global Perspective

By Euan Blauvelt

Geothermal power generation capacity worldwide rose from 7,972.7 MW in 2000 to 8,933 MW in 2005, with 8,035 MW running. This is about 0.2% of the total world installed power generating capacity.

The geothermal heat pump (GHP), also known as the Ground-Source Heat Pump (GSHP) or generically as geoexchange, is the fastest growing geothermal application today. GSHP is a highly efficient renewable energy technology that is gaining wide acceptance for both residential and commercial buildings, with 1.4 million installations worldwide by 2005, and growth from 1,854 MWt of capacity in 1995 to 15,284 MWt in 2005.

Ground-Source Heat Pumps are used for space heating and cooling, as well as water heating. The technology relies on the fact that the Earth (beneath the surface) remains at a relatively constant temperature throughout the year, warmer than the air above it during the winter and cooler in the summer. GSHP systems do work that ordinarily requires two appliances, a furnace and an air conditioner and use 25%-50% less electricity than conventional heating or cooling systems.

Geothermal technology is suitable for integrated regional energy systems, rural electrification and mini-grid applications, especially in distributed generation systems, in addition to national grid applications. It is being promoted as a regional resource, combining the exploitation of renewable energy resources together with environmental advantages.

Geothermal energy is contained in the heated rocks and fluid that fill the fractures and pores within the earth's crust. It can be harvested in two ways, direct use of hot water or steam for space heating or industrial use such as aquaculture, thermal baths and hot springs, and to power electricity generation plants. Direct use is confined to low temperatures, usually below 150o C whereas, pow-

er generation employs high temperature resources over 150o C. 80 countries have developed direct use of geothermal energy and 20 exploit geothermal energy for power generation. Direct low-temperature use employs about twice the energy capacity as is used for power generation.

Direct use of geothermal heat has been used for thousands of years. The major direct use applications today are GSHP installations for space heating, presently estimated to exceed 500,000 and are the first in terms of global capacity but third in terms of output. Direct use of geothermal energy achieves 50-70% efficiency, compared with the 5-20% efficiency achieved with the indirect use of generating electricity.

Geothermal power started in 1904 with the Larderello field in Tuscany, which produced the world's first geothermal electricity. Major production at Larderello began in the 1930s and by 1970; power capacity had reached 350 MW. The Geysers in California started in the 1960s is the largest geothermal plant in the world. Individual geothermal power plants can be as small as 100 kW or as large as 100 MW depending on the energy resource and power demand.

The three countries with the largest amount of installed direct heat use capacity are USA (5,366 MW), China (2,814 MW) and Iceland (1,469 MW), accounting for 58% of world capacity, which has reached 16,649 MW.

The global installed capacity of geothermal power generation at in December 2005 was 8,933 MW, of which 8,035 MW was operational. Six countries accounted for 86% of the geothermal generation capacity in the world. The USA is first with 2,564 MW (1,935 MW operational), followed by Philippines (1,931 MW, 1,838 MW operational); four countries (Mexico, Italy, Indonesia, Japan) had capacity at the end of 2005 in the range of 535-953 MW each. Mexico and Indonesia have grown 26% and 35% respectively between 2000 and 2005. Although on a smaller base, Kenya achieved the highest growth, from 45 MW to 129 MW.

In the last five years geothermal power generation has grown at an annual rate of 2.3% globally, a slower pace than the 3.25 in the previous five years, while direct heat use showed a strong increase. With current technology, the global potential capacity for geothermal generation is estimated at 72,500 MW and at 138,100 MW with enhanced technology.

A strong decline in the USA in recent years, due to over-exploitation of the Geysers steam field, has been partly compensated by important additions to capacity in several countries: Mexico, Indonesia, Philippines, Italy, New Zealand, Iceland, Mexico, Costa Rica, El Salvador and Kenya. Newcomers in the electric power sector are Ethiopia (1998), Guatemala (1998), Austria (2001) and Nicaragua.

In 2005 and 2006 the United States showed strong signs of renewed growth for geothermal power generation. Five states now have geothermal power generating facilities; California, Nevada, Utah, Alaska and Hawaii. The Richard Burdett Power Plant (formerly Galena I) in Nevada commenced generating power in 2005 and the first geothermal power plant in Alaska being installed in 2006 at Chena Hot Springs. A fairly extensive list of projects has been announced for the next ten years, with new installations planned in Arizona, Idaho, New Mexico and Oregon, in addition to the existing five 'geothermal' states. Japan, Philippines and Nicaragua have all announced ambitious plans for further development of geothermal power.

There are three basic technologies for generating electricity from geothermal energy. Dry steam power plants using dry steam systems were the first type of geothermal power generation plants to be built. They use the steam from the geothermal reservoir as it comes from wells and route it directly through turbine/generator units to produce electricity. Flash steam plants are the most common type of geothermal power generation plants in operation today. They use water at temperatures greater than 182°C that is pumped under high
pressure to the generation equipment at the surface. Upon reaching the generation equipment, the pressure is suddenly reduced, allowing some of the hot water to convert or "flash" into steam.

This steam is then used to power the turbine/generator units to produce electricity. Binary cycle geothermal power generation plants differ from dry steam and flash steam systems in that the water or steam from the geothermal reservoir never comes in contact with the turbine/generator units but is used to heat another "working fluid" which is vaporised and used to turn the turbine/generator units.

Geothermal power projects require high capital investment for exploration, drilling wells and installation of plant, but have low operating costs because of the low marginal cost of fuel. Return on investment is not achieved as quickly as with cheaper fossil fuel power plant, but longer term economic benefits accrue from the use of this indigenous fuel source.

Construction costs of geothermal plants can vary widely, depending on local conditions and range from a minimum of $1.1 million to $ 3 million per megawatt. The DOE has calculated an average cost of $1.68 million for geothermal plants built in the Northwest of America in the last two years, where the bulk of US plants are situated or planned. However, while this is high in
comparison with gas power, which can be as low as $460,000 per megawatt, the operating cost can be lower because there is no cost of fuel.

The leaders in developing geothermal technology and installing new plants are three American companies - Calpine, Unocal and Ormat, and one Japanese company- Marubeni. These companies have been active in establishing joint ventures in the Philippines and Indonesia and more recently in Central America.

USA

In December 2005 the installed geothermal capacity in the USA was 2,564 MW, of which 1,935 MW was usable. The considerable difference between installed capacity and operating capacity in the USA was due to lack of steam caused by over-exploitation of the Geysers geothermal field in California. On this site, available steam can now only supply 888 MW out of the 1,421 MW installed capacity.

Current geothermal resources using today's technology are estimated at 6,520 MW and at 22,000 MW with enhanced technology.

Over the last three decades, the US geothermal power-generation industry has grown to be the largest in the world, with over 2,445 MW of installed electrical capacity. Growth during the first two decades (1960-1980) was due to a single utility's development of one dry-steam resource. After 1983, growth shifted toward independent power producers and development of waterdominated geothermal resources at several locations.

The steady growth of geothermal development in the United States from 1960 to 1979 was led by activities at The Geysers, where the field developments of the partnership of Union Oil Company of California, Magma Energy Company, and Thermal Power Company were greatly expanded toprovide steam to the Pacific Gas and Electric Company (PG&E) electrical-generation system.

This construction made The Geysers field the largest geothermal development in the world. Production from The Geysers peaked in 1988 but pressure declines in the reservoir limited any further expansion of the field. In December 2006, it was announced that the 55 MW Bottle Rock Geothermal Power Plant at The Geysers will reopen after being dormant since 1990. It will operate initially at 20 MW with plans to expand.

Towmaster's Hydraulic Tail trailer has quality features built to stringent Towmaster specs. It features a T1 steel flange outer frame design with the axles attached to a sub-frame and junior I-Beam crossmembers to tie it all together. This trailer includes a hydraulic operated two-piece tail with a low load angle for loading low ground clearance type equipment. An optional hydraulic deck ramp allows equipment to be loaded onto the 5-foot top deck. A hydraulic winch can be installed to pull equipment onto the deck.

The hydraulic operated fold-under tail design features a diamond plate metal approach with wood ramp to [illegible] section. Stake pockets and telescoping parking stands are standard equipment.

Driver's side controls make it easy to operate the functions. All lights on the trailer are long-lasting LEDs and the trailer is finished with two-component corrosion-resistant polyurethane primer and top coat.

More information can be found at www.towmaster.com or call Towmaster at 800-462-4517.

Geothermal well drilling has tapered off in the US since the 1980s. In California, four wells were drilled in 1996 (one at The Geysers and three at Salton Sea), nine in 1997 (four at Coso, two at The Geysers and three at Salton Sea) and seven in 1998 (three at Coso, one at The Geysers and three in the Salton Sea). In all, between 1996 and 1998, only 13 production and seven injection wells were drilled in California. The most promising new areas for geothermal exploration are in Hawaii and the Cascade Mountains of Washington, Oregon, and northern California.

Future developments are planned, with projects being considered in some 55 stages. Not all of these will happen since some are in the pre-planning phase and others are awaiting approval. The opinion in the geothermal industry in the US is up-beat for future expansion.

Philippines

The Philippines is the second largest geothermal power generating country in the world after the USA, with installed capacity of 1,930 MW at the end of 2005, of which 1,838 MW was operational.

The Philippines now leads the world in terms of wet steam field capacity and ranks just behind the US in terms of geothermal power generation.

The Philippines is located in the Pacific Rim of Fire, a volcanic region which extends in a crescent from Sumatra in Indonesia at the western end, across the 3,000 mile archipelago of Indonesia, through the Philippines archipelago to Japan in the east. It has a considerable number of high quality geothermal resources. These are all island arc volcanic systems as typically found in the Circum-Pacific region, and show close similarities with geothermal systems in Indonesia and Japan. The widely distributed nature of the geothermal resources in the Philippines has long been an impediment to geothermal power development.

With over 20 years of experience in geothermal development and power generation, the geothermal industry in the Philippines is now in a mature state and currently the Philippines Department of Energy is supervising the operations of nine geothermal service contract areas. In the early 1990s, there was a rapid upswing in geothermal power development and 1,000 MW of geothermal capacity was added between 1993 and 1997. This was largely due to BOT
legislation in the Philippines, which allowed international power utilities to enter the market and to fund and construct geothermal power plants. This enabled an increase in the much needed generating capacity without increasing national debt.

The Philippine government plans to add 526 MW of new capacity between 2002 and 2008.

Indonesia

Development of geothermal potential has proceeded very slowly in Indonesia and is currently facing difficult challenges and uncertainty. Over a span of 20 years, Indonesia has developed only 797 MW of geothermal power, approximately 4% of 20,000 MW geothermal potential. In the early 1990s, eleven contracts for development of geothermal power plants were awarded, with a total committed capacity of 3,417 MW and original completion dates between 1998 and 2002. As a result of the 1997-1998 financial crisis, which brought PLN, the state utility to technical bankruptcy, the Government suspended nine conventionally powered IPPs and seven geothermal projects. The government is now attempting to resuscitate the seven contracts but
with little progress.

The new oil and gas law, passed in October 2001, bars geothermal

ROME

Manufacturing Heavy Duty Construction and Agricultural Implements Since 1932

ROME PLOW COMPANY IMPLEMENTS

The ROME brand name has always been tied to heavy duty Construction and Agricultural disc plows.

ROME continues to manufacture the same style of implements that has made the ROME PLOW brand name famous for almost 80 years.

ROME also manufactures pivot dump and ejector scrapers for the AG and Construction Industries.
This includes a full line of Earth Moving Scrapers and precision land levelers, such as land planes and float planes.

For more information on our products or for the closest authorized ROME dealer please contact us.

770-748-4450
www.romeplow.com

as an area of regulation, requiring the Indonesian Government to develop a new legislative basis quickly. PLN understands that the future of geothermal power will depend on its competitiveness against other means of electricity generation. High capital costs and the associated electricity tariff required remain core problems. In addition, unresolved decentralization issues, uncertainties in security and contracts, and the potential regulatory changes of a planned geothermal law
discourage investment in geothermal projects. In the long run, Indonesia still presents one of the world's most attractive geothermal regions, but the Indonesian Government must develop new approaches to maximize its potential.

PLN is currently negotiating to bring down tariff rates on various geothermal ESCs, with the intent of lowering prices from US ¢ 6-8 cents/kWh agreed under Power Purchase Agreements (PPAs) to around US ¢4 cents/kWh. The original prices negotiated by the geothermal developers ranged between US ¢7.25-9.81/kWh, about double the viable rate.

Italy

Italy is one of the world's leading countries in terms of geothermal resources. Commercial power generation from geothermal resources began in Italy in 1913 with a 250 kW unit at Larderello. Subsequently, the main emphasis has been on the production of power. Geothermal electric power generating capacity in Italy has reached 791 MW with four geothermal power plants in 2005.

The geothermal development has been almost entirely privately funded. Since 1985, $US 280 million has been spent on R&D and $US 1254 million on field development. Of these funds, 99% were obtained from private sources and only 1% was derived from public sources.

Mexico

Mexico is one of the fastest growing geothermal producers in the world. Twenty-seven geothermal power plants are operating in the three Mexican fields, with total geothermal capacity of 953 MW in December 2005. There is a project to install 75 MW in 2006-2008 in the new area La Primavera pending resolution of some environmental matters. CFE has programmed to increase capacity in Cerro Prieto (100 MW) and Los Humeros (25 MW) in 2010.
Direct uses of geothermal heat are widespread in Mexico, including industrial laundries, refrigeration, district and greenhouse heating, and fruit and wood drying.

Japan

The first experimental geothermal power generation in Japan took place in 1925 in Beppu and capacity reached 535 MW in December 2005, which ranks Japan sixth in the world. The government target for the year 2010 is installed geothermal capacity of 2,800MW. The plants range in size from the 65 MW Yanaizu-Nishiyama unit to the 100 kW Kirishima International Hotel back- pressure generator in Beppu, Kyushu.

The Japanese government gives substantial support to the development of geothermal power. ANRE, the Agency for Natural Resources and Energy is playing a core role in development and utilisation of geothermal energy in Japan, such as providing subsidy. NEDO plays a central role to support renewables and after a slow start is now promoting geothermal development as an element of the concept of regional renewable integrated self-sufficient systems. The introduction and promotion of geothermal energy as an alternative for petroleum, has been its major task.

The organisation is also encouraging international cooperation relating to geothermal engineering.

Other countries

A further 16 countries have geothermal generating facilities of varying size, ranging from under 500 kW in Argentina to 435 MW in New Zealand. Many of the smaller countries have higher direct use.

A graduate of Cambridge University, Euan Blauvelt was trained in market research in London, later moving to Southeast Asia for twelve years where he was responsible for many research studies for a wide range of industries and governments. On his return to London he was a co-founder of ABS Energy Research seventeen years ago, which specialises in energy and environmental services market research. ABS Energy Research publishes research on the renewable energy industry and the Geothermal power market as well as all other types of energy and environmental services. http://www.absenergyresearch.com


Lighting the Way
Golight/RadioRay
Remote Control Spotlight
NEW - Available in LED
370° Rotation x 135° Tilt
Portable or Permanent Mount
3 Year Limited Warranty
Wireless or Hard-Wired Remote Control
Golight Inc
800.557.0098 | 308.278.3131
www.golight.com | info@golight.com
GOLIGHT®


WERE ON FACEBOOK!
HTTP://WWW.FACEBOOK.COM/THEUTILITYSOURCE
Like


The VertAlert™
Save Lives and $$$
Warning System Confirms Safety Harness Lanyard
is Connected to the Anchor Point
VERT-ALERT
Cost Pay-Back Opportunities
• Will Reduce Insurance Premiums
• Reduced Workers Comp Claims
• Reduced Liability Exposure
• Prevents Injuries and Protects Employees
• Eliminate OSHA Citations & Fines
• Improved Productivity
• Data Recovery of all Lift Events–Time & Date

Simpler.Faster.Better

Solar PV Mounting Solutions

HatiCon Solar

From Residential to Utility Scale

HatiCon Solar Ground Mount solar PV mounting system is optimized for quick and efficient installation with a flexible and forgiving foundation, pre-assembled components and compatibility with all module types.

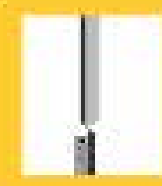
Key Benefits:

- On-site flexibility, no on-site fabrication
- 0°-35° of North/South tilt
- No extensive grading required
- Pre-assembled components
- Click technology components for fast installation
- Non corrosive aluminum
- Shallow embedment
- Multiple footing options

Bearing Block ±35° North/South ±8° East/West In Onsite Flexibility

Universal Clamp 51mm – 33mm

Universal Clamp 51mm – 36mm



Up to 12 in of onsite vertical Adjustability

Contact us at
(866) 469-4472
info@haticonsolar.com
www.haticonsolar.com

Wind Costs - Utility Scale Power Generation

By Steve Snively

What does the production of power by wind cost? Since its California inception in the 1970s, the cost of wind energy production has dropped nearly 80% as a result of better scaling and improved technologies. Today commercial wind costs are on par with other power generation technologies. At the end of 2006, the wholesale wind cost for power generated by large scale wind farms in the United States ranged from 3.00 to 6.50 cents per kWh while the aggregate costs for power across were approximately 5.50 cents per kWh range across all production technologies.

Wind costs have reached the point where projects can be justified on a purely financial basis.

Production commercial utility scale wind power generators today have a typical capacity of 2MW (enough to power 400 houses) and are being installed in groups of 30 to 150 generators at a cost of $2 to $4 million dollars each. Significant cost factors include the wind turbine generator and tower, land acquisition, transportation and installation of equipment, power transmission and interconnection to the grid. Once in production wind costs are attractive, ongoing maintenance and operations average a little less than 1 cent per kilowatt hour.

Our appetite for electricity continues to grow, in the US demand for electricity is expected to increase 40% between now and 2030. New wind generation capacity is an essential component of any overall energy plan. Regardless of wind cost, it must be a critical component of our overall power strategy.

- Advantages of Wind Power
  The source of power -wind- is a renewable and regularly available source of energy. While power generation fluctuates over short periods based on wind, long term generation is consistent and reliable.

- The cost of energy produced is very predictable and is not impacted by volatile prices and availability issues associated with fossil fuels in the 21st century. As world demand for oil increases and supplies diminish, wind power becomes a very attractive alternative.

- The environmental impact of wind power generation per unit of energy produced is substantially lower than conventional production methods. Wind power does not emit pollutants or green house gases. As a result wind power does not contribute to global warming and is a compelling tool to assist in avoiding massive climate change.

- Wind power solutions create more net new jobs in the economy than new capacity from other sources.

- Wind farms provide long term income to farmers and ranchers who allow installations on their property.

- Few of us realize that 48% of domestic water production is consumed by electricity production. Water in vast quantities is a critical component in today's thermoelectric power production facilities. While efficient in their usage, in aggregate huge amounts of water are consumed by the generation of electricity with estimated losses of 9%. Wind power solutions do not add demand to this fragile infrastructure.

Power by Wind Cost and Disadvantages

- The challenges facing new wind power initiatives and effecting their cost and performance include:

- Since 2006, wind turbine costs have been increasing faster than technology improvements due to increased worldwide demand,

poor dollar performance and a limited number of suppliers.

- Construction of wind driven power generation plants represents a heavy up front investment when compared to coal or natural gas where operational fuel costs are a large component.

- While there is an abundance of wind energy in the United States, finding locations with appropriate wind, available ground coverage and proximity to transmission facilities is challenging.

- Short term fluctuations in wind and consequent power production require extra care locally or on the network to assure stable supplies. Consumer power focuses on delivery during peak demand periods while maximum wind production rarely coincides with peak demand. Wind power needs to be part of a system that includes alternatives such as easy to spin up production combustion turbine natural gas facilities or hydroelectric reverse storage to maintain consistent power delivery on the grid.

- The cost figures used generally take into account the renewable energy Production Tax Credit (PTC) which presently provides an income tax credit of 2.1 cents/kilowatt-hour for production of electricity from utility-scale wind turbines. When removed from the equation, wind costs are not easily justified based strictly on the energy produced.

- Utility scale wind power has adverse environmental impact including disruption of habitats and mortality of birds and bats flying into the fans. It is noteworthy that the Audubon Society has largely remained quiet on this front because wind power's overall impact on habitats compared to new coal or natural gas alternatives. Wind turbine bird fatalities are a negligible component of overall bird deaths caused by human endeavors.

More on the Production Tax Credit

Established in 1992, the Production Tax Credit has always included a near term expiration date. Since its inception, there have been 3 year-long lapses and the remaining renewals consistently passed at the last minute.

The wind cost calculations sited above take into account the PTC in determining the cost of wind energy produced. The economic case for new wind power is significantly weakened without this credit as incentive. This is clearly demonstrated in the marketplace by the significant (roughly 80%) drop in new wind power capacity addition in the 3 lapse years.

An argument insisting on strict economic feasibility has little merit in lieu of inherent government support of coal, oil and natural gas production and the consequential un-recovered social and environmental costs associated with health care and pollution.

The appropriate course of action is for congress to make the Production Tax Credit permanent or renew it with an extended expiration date therefore greatly reducing the risk costs in project feasibility assessments.

Outlook

Prior to the recent financial collapse, the outlook was good for continued growth of wind production was excellent even in the face of a recession. There are provisions in the stimulus bill to encourage wind energy and green initiatives however at this time it is unclear if they are sufficient to overcome the lack of market capital and availability of partners looking for the project tax credits.

Longer term, wind power will be a significant component of our energy mix and should approach the Department of Energy's goal of 20% by 2030.

Steve Snively is an energy enthusiast and supporter of practical green initiatives. For more information Review the 20% Wind Energy by 2030 study by the US Dept. of Energy. Or visit my web site http://www.greenelectricproducts.com.

Ad INDEX

thermOweld

Spark Your Interest with thermOweld®'s

Come See thermOweld® at NECA, Sept. 27-30 in Chicago Booth 1638

EZ Lite Remote® Electric Ignition System

Getting the job done on time without delays. Does that spark your interest? When the job is mission critical you require the versatility of thermOweld's EZ Lite Remote® System so you can finish your exothermic connections without delays. Our remote system is the only system that gives you 2 ignition options so you can finish your job on time.

- Use your Flint Ignitor or the EZ Lite Remote® and never be stuck out on the job!
- Have 100% confidence that you will get your connections done when you want!
- Reliable patented Ignitor - 100% guaranteed to ignite
- Use with existing thermOweld® EZ Lite® Mold and Weld Metal

For more information on the thermOweld® EZ Lite Remote® Ignition System and other great grounding products thermOweld® has to offers check out www.thermOweld.com.

thermOweld

The Contractors Choice

BURNDY

Connecting Power to Your World

www.thermoweld.com • Phone: 800 558 1373 • Fax: 800 788 1668

HUBBELL