

THE UTILITY SOURCE

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

Probing Infrastructure Readiness for 5G and Beyond

THE "FIRST LINE OF DEFENSE" IN PROTECTING MEMBRANE FILTERS

HOW TO CUT LOSSES WHEN SOURCING A POWER TRANSFORMER



WE KEEP AMERICA ON TRACK



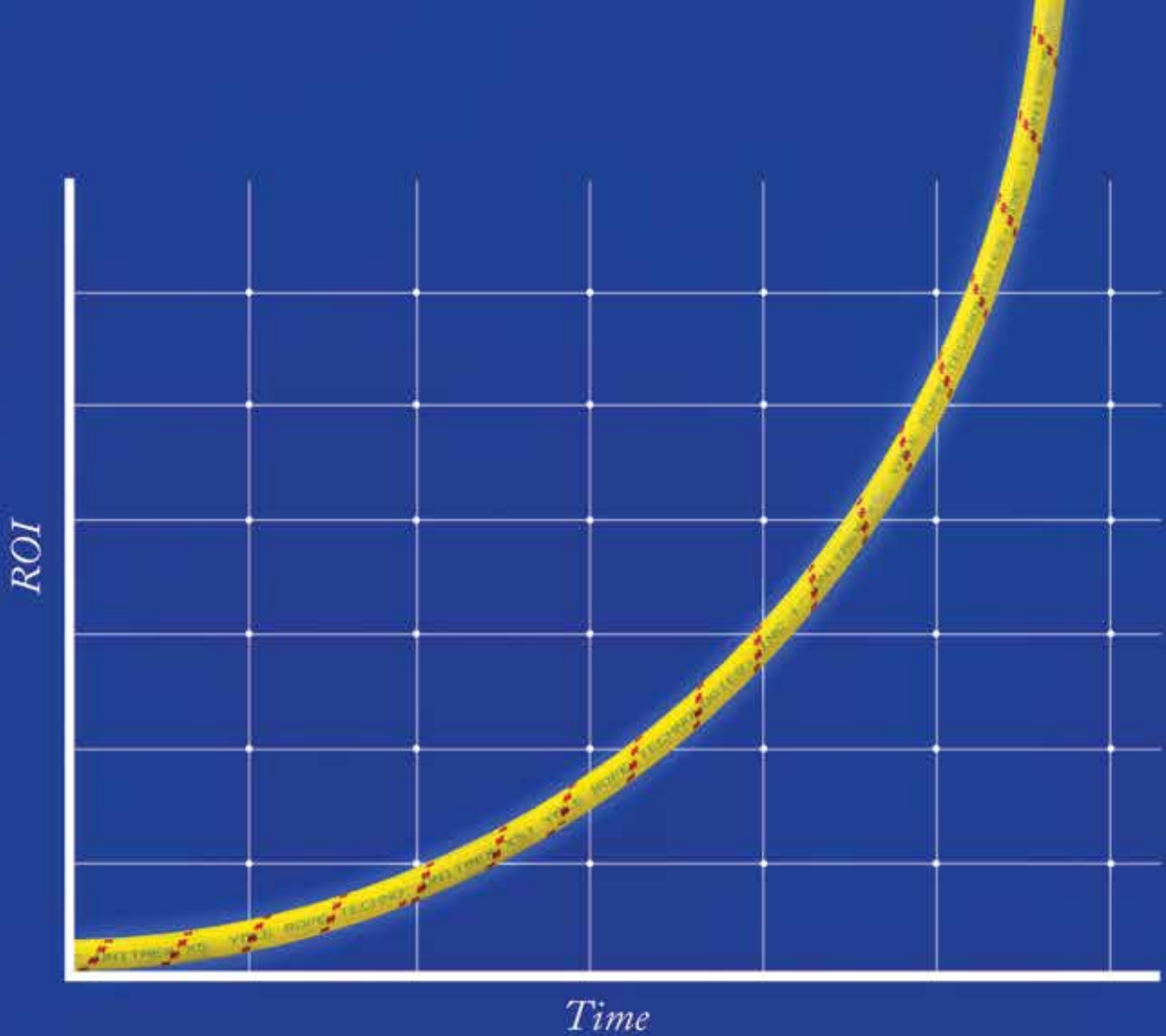
MOROOKA

UTILITY CARRIERS

Call: 800-365-7260

OR

Visit: morookacarriers.com



Unitrex XS™ Max Wear. Unmatched performance in the field and in the boardroom.

Electric line stringing is easier and more economical with Unitrex™. Made with a core of Honeywell Spectra®, it is up to 10 times lighter than steel, while delivering comparable strength. The urethane-coated polyester jacket provides excellent abrasion resistance for great productivity that lasts.

To learn more, visit www.yalecordage.com

YALE CORDAGE
Performance. Passion. Possibilities.

77 Industrial Park Road | Saco, Maine 04072 | p (207) 282-3396, f (207) 282-4620

PG 4	Terex introduces New TL Series Aerials for Transmission Work at EUFMC 2019; Built for Cost-Effective Ownership
PG 10	Probing Infrastructure Readiness for 5G and Beyond
PG 20	How to Cut Losses when Sourcing a Power Transformer
PG 26	The “First Line of Defense” In Protecting Membrane Filters
PG 28	Ad Index




Pg 8

Get Cool!

Extend transformer life!

Increase transformer capacity up to 166%!

- expert technical assistance
- low sound levels
- energy-efficient motors
- large inventory
- one-piece cast aluminum blades
- galvanized or stainless steel guards



KRENZ-VENT
quality engineered, performance tested

www.krenzvent.com

P.O. Box 187 Germantown, Wisconsin 53022 262.255.2310

THE UTILITYSOURCE

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

Vol. 19 Issue 6

PUBLISHER

Glen Hobson
205-441-5591
glen@tipsmag.net

ACCOUNT EXECUTIVE

Hank Underwood
205-624-2182
hank@handfmedia.net

ADMINISTRATIVE DIRECTOR

Steven Hobson
steven@tipsmag.net

EDITOR

Brandon Greenhill
brandon@handfmedia.net

CREATIVE/ WEB DIRECTOR

Jacklyn Greenhill
jacklyn@handfmedia.net

P.O. Box 1568 • Pelham, AL 35124
Phone: 205-441-5591 • Fax: 205-624-2181
www.theutilitysource.net
info@theutilitysource.net

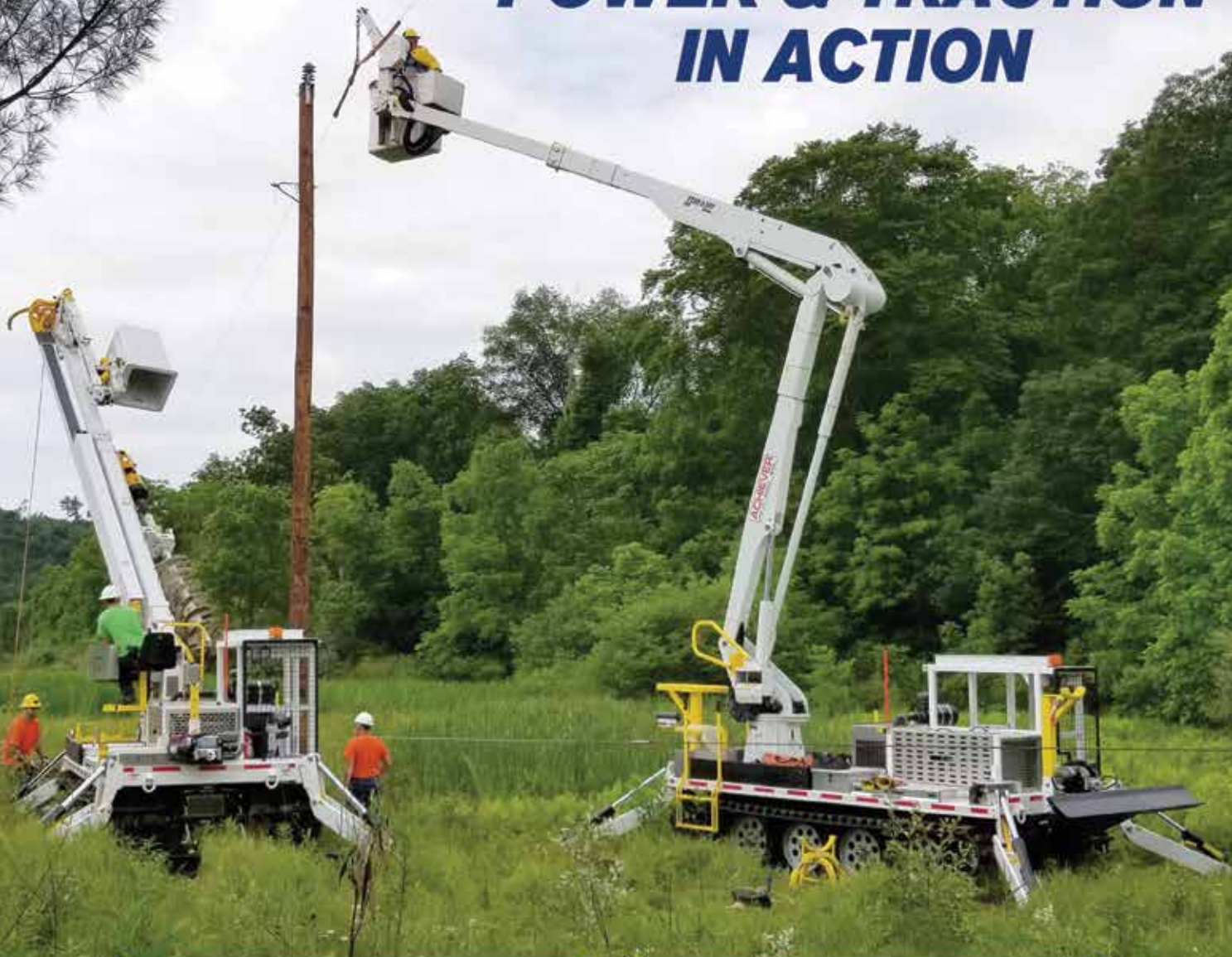


The Utility Source™ is published twelve times a year on a monthly basis by H & F Media, Inc. *The Utility Source*™ is distributed free to qualified subscribers. Non-qualified subscription rates are \$57.00 per year in the U.S. and Canada and \$84.00 per year for foreign subscribers (surface mail). U.S.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

The Utility Source™ is distributed to Power, Telcom and CATV Utilities and Utility Contractors throughout the USA. Publisher is not liable for all content (including editorial and illustrations provided by advertisers) of advertisements published and does not accept responsibility for any claims made against the publisher. It is the advertiser's or agency's responsibility to obtain appropriate releases on any item or individuals pictured in an advertisement. Reproduction of this magazine in whole or in part is prohibited without prior written permission from the publisher.

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

POWER & TRACTION IN ACTION



ACHIEVER
RT-02 DD DIGGER DERRICK

ACHIEVER
DPM-52 TRACKED AERIAL

TRACKED DIGGER DERRICKS & AERIALS

- 57' working height (aerial)
- Exclusive hydraulic fold-out/removable bucket (digger derrick)
- Can be towed on a 10 ton trailer behind a line truck
- Sets up to 65' poles / 24" diameter
- 2.25 psi ground pressure (loaded), 17,500 lbs, 134 hp
- Super stable 45° hydraulic radial outriggers
- The shortest production lead times in the industry



For more information or to schedule a demonstration contact UTV International today.

2sales@utvint.com

1-800-985-8665

www.utvint.com



Terex introduces New TL Series Aerials for Transmission Work at EUFMC 2019; Built for Cost-Effective Ownership

Terex Utilities has expanded its TL Series of aerial devices with three new telescopic and material handling models designed for transmission work. “Cost-effective mounting options, commonality of parts, and reduced maintenance features are ways TL Transmission Aerials Devices deliver economical cost of ownership over the life of the equipment,” said Dan Brenden, Director of Engineering. Terex introduced the new series at the 2019 Electric Utility Fleet Managers Conference (EUFMC) on June 3.

The series includes the TL80, TL100, and TL80/112, which provide 80 ft., 100 ft., and 112 ft. working heights, respectively. The new TL Transmission aerial devices were developed to have strong working ranges when compared to similar transmission aerials. “With variable capacity through the working envelope, the TL Series delivers optimum capacity in the work zone areas where you need it the most,” said Brenden. For example, the TL100 has more than 61 ft. of horizontal reach. It has a maximum material handling capacity of 1,000 lbs.

All three models feature end-mounted two-person platforms with capacities up to 700 pounds. Self-leveling platforms rotate 180 degrees. The TL80 and TL80/112 are also available with an option of a side mounted platform having a jib capacity up to 2,000 lbs.

Designed to provide ground access, the platform on all TL units can be lowered to within inches of the ground. “This makes it easier for line workers to hand off tools and clean out debris in the platform. It also aids personnel



RENTAL EQUIPMENT THAT WORKS AS HARD AS YOUR CREW

NESCO isn't just a premier provider of utility rental equipment, but a leader in responsiveness and support for all customers. Dedicated rental and service teams, combined with one of the industry's largest rental fleets, ensure NESCO meets your job site needs.

**AERIAL > DIGGERS > CRANES > STRINGING EQUIPMENT
UNDERGROUND > TOOLS & ACCESSORIES**



800-252-0043
www.NESCORENTALS.com



rescue,” said Balaji Dhondiba, Engineering Manager for Aerial Products.

“Typically able to be mounted on lower GVW chassis than traditional transmission units, it affords fleet owners greater flexibility to aid in managing their budget,” said Dhondiba. For example, the TL80 can be mounted on a 33,000 lbs. GVW, tandem axle chassis. “Not only is this less expensive to purchase than a tri-axle chassis, it also costs less to maintain over the life of the vehicle,” he said.

In addition, the boom design increases bed space and bed access to the bucket.

Use of high grade, high yield strength steel in the upper and lower boom sections, provides rigid operation while reducing weight in the boom. In addition, the lower boom comes with a fiberglass lower boom insert and an upper boom that allows the TL80 and TL80/112 Category B Dielectric to be rated for 138kV work. The TL100 can be rated up to 69kV.

Commonality of parts is another way Terex Utilities is working to streamline fleet management for owners. The TL80 uses the same cylinder for its lower and upper booms, as does the TL100. All three models feature the same leveling cylinders. In addition, the same part is used for the upper boom rest for the TL80 and TL100. For ease of maintenance, hydraulic fittings above the rotation bearing utilize o-ring seals, and adjustable wear pads are easily accessible from outside the boom when adjustment is necessary.

“The new TL aerial devices are a cost-effective addition to transmission fleets when lower GVW chassis are preferred and specific work zone capacity meets the needs of the type of work being done,” said Brendan.

“EUFMC provides electric utility fleet managers a time and place to discuss issues affecting them. We will continue to attend, listen and deliver solutions – as we have been through the years,” said Joe Caywood, Director of Marketing.

www.Terex.com

Material Handling Equipment

Your One Source For All Your Material Handling Needs

- Storage Products (Steel Cabinets, Shelving & Lockers)
- Loading Dock Equipment
- Conveyors
- Pallet Racks
- Mezzanines
- Carts & Trucks
- Containers & Bins
- Safety Equipment
- Drum Handling Equipment
- Hoppers
- Wire Partitions
- Lift Tables
- In-Plant Buildings
- Cranes (Jib & Bridge)
- Hoists & Trolleys



1-800-239-3434

WAREHOUSE EQUIPMENT AND SUPPLY CO.®
116 West Park Drive • P.O. Box 19808
Birmingham, AL 35219
Email: sales@warehouseequipment.com
Web: www.warehouseequipment.com

W
SINCE 1958



Your Trusted Partner.

Partnering with Ring Power gives you access to a vast range of jobsite-tough products to round out your fleet. Ring Power carries machines from dozens of manufacturers to ensure you always have access to the right tools for your job.

Short-term, long-term or rental-purchase options available.



1-844-766-RENT • Utility.RingPower.com

MAKE YOUR OPERATIONS

**BETTER.
FASTER.
SAFER.**

**REGISTER NOW FOR
ICUEE 2019
WWW.ICUEE.COM**

*Photograph Courtesy of
Custom Truck One Source™*

North America's Largest Utility & Construction Trade Show

**1,000+ Leading Manufacturers & Service Providers
More than 28 Acres of New Products
18,000+ Utility & Construction Professionals**

Utility & construction professionals worldwide use ICUEE to make informed purchasing decisions that position their businesses & teams for success.



October 1-3, 2019, Louisville, KY | Register Now at www.icuee.com

MORE EQUIPMENT OWNERS RELY ON US.

We're proud that Dominion
Rubber Tracks are the

**#1 SELLING
RUBBER TRACK**

brand in America.

CALL US TODAY
TO GET THE BEST
PRICE ON
RUBBER TRACKS,
YANMAR PARTS
& UNDERCARRIAGE
PARTS

800-365-7260

DOMINION
Equipment Parts

depparts.com

Ashland, VA » Jacksonville, FL » Dallas, TX » Cincinnati, OH » Portland, OR »
Sacramento, CA » Schenectady, NY » Leduc, AB

Probing Infrastructure Readiness for 5G and Beyond



Three-dimensional, gyroscope-based mapping of telecom ductwork will verify whether it is ready for high-density fiber optic cable and allow assets to be properly charted

As the era of 5G arrives, the field of telecommunications is about to become even more dazzling, dramatically impacting every aspect of people's lives – autonomous cars, smart communities, far-reaching IoT. However, with the rollout currently underway, many contractors and telecom operators are discovering a significant challenge with the existing underground infrastructure, as well as potential obstacles for installing new fiber optic cable - the backbone of 5G and beyond.

As a result, gyroscope-based 3D mapping tools are beginning to play a critical role in telecom infrastructure, enabling operators to digitally track assets as well as ensure that installations are not inadvertently compromised.

Navigating underground maze

The challenge is twofold. First, due to a much greater fiber count, the physical makeup of fiber optic cabling for 5G is not only considerably heftier – having a much larger outside diameter than 4G – but in many cases, it is also less flexible. Second, the duct through which the fiber must run is often installed in highly congested underground areas competing for space in a tangled web of utility infrastructure. This is where telecom, electricity, gas, water, and cable TV grids all compete for space with drainage, mass transit, and other networks.

As a result of these and other natural obstructions, contractors are often forced to maneuver the ductwork to avoid existing barriers. Such maneuvers sometimes result in unexpected turns or bends that compromise min-

GREENMACHINE

CLEAN. QUIET.
ALL ELECTRIC
PULLING AND
TENSIONING.

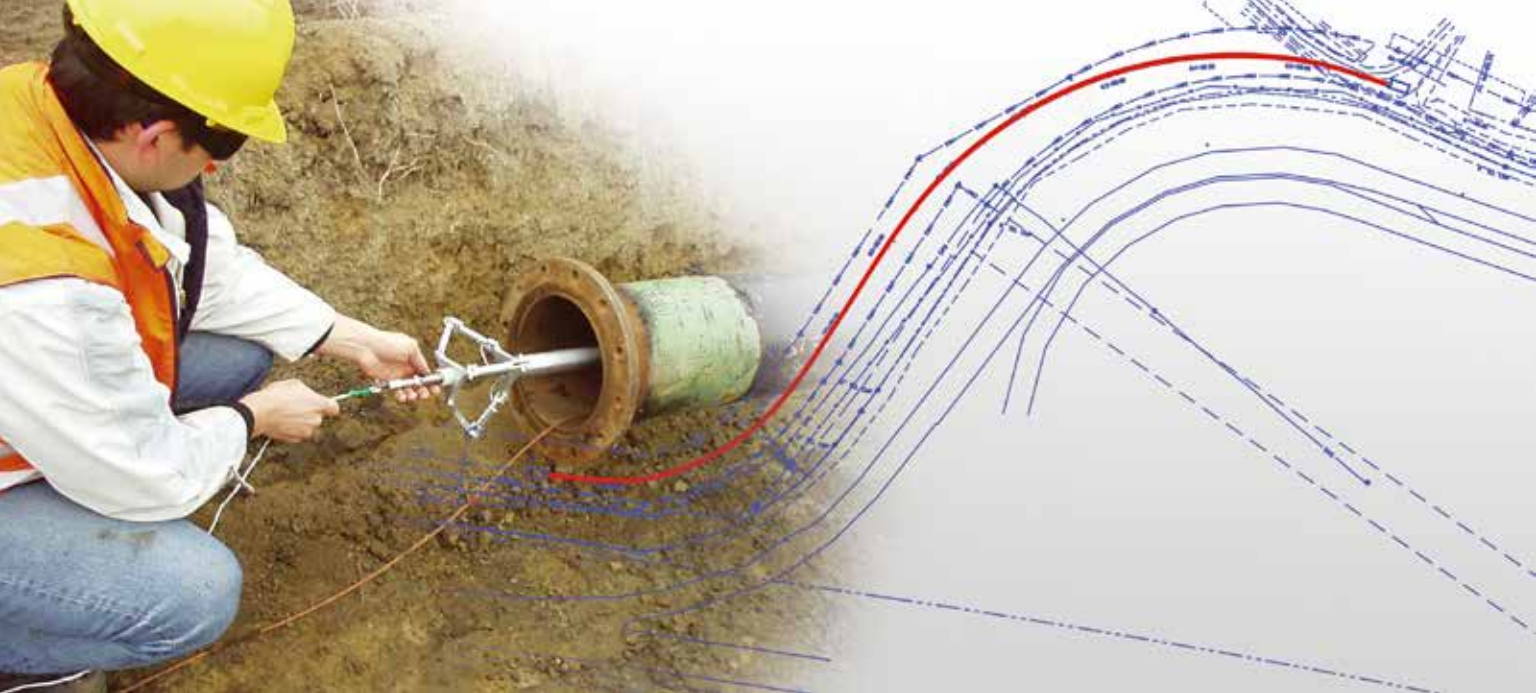


THE NEWLY DESIGNED DPT40E IS POWERED BY A REGENERATIVE ELECTRIC MOTOR, ELIMINATING THE NEED FOR DIESEL AND HYDRAULIC OIL.

FOR SALES INQUIRIES, PLEASE EMAIL US AT SALES@TSE-INTERNATIONAL.COM

U.S. PATENT NOS. 8,322,689 B2 AND 9,178,340 B2

TSE
INTERNATIONAL, INC.
1-800-825-2402



imum “bend radius” specifications mandated by the cable manufacturer which can cause breakage and ultimate failure of large quantities of fiber during installation. Additionally, these manipulations with the path of cable ductwork can leave assets which are not properly mapped, more vulnerable to accidental damage.

It is not only new construction that is at issue. Many plans for installing 5G cable include utilizing what is known as empty or “dark” HDPE ducts that were previously installed with earlier cable installations to allow for future growth. Yet, not many telecom experts were able to foresee the potential shortcomings of these pre-installed ducts. With the smaller 4G and earlier cable generations, the fibers within were able to withstand the tighter bends. Installing 5G cable in many of these same areas has become an unknown risk.

“Looking back on the emergence of 4G, who could have envisioned five years ago that the increase of fiber count for 5G would double or triple – with a range of 1,700 to nearly 7000 fiber strands in a single cable resulting in a fill ratio in excess of eighty percent,” says Santosh Saride, Market Analyst, with Condux International (Mankato, MN).

Condux is a major supplier of equipment used to install fiber optic cables, and has found that utilizing advanced duct mapping technology is saving telecoms significant time and money during the ramp-up to 5G.

“Proper mapping of the duct in both new and previously installed ductwork promises to expedite the installation of fiber optic cable for 5G and beyond, as well as reduce future downtime due to improperly mapped ducts,” Saride adds.

Evaluating possible solutions

The fact is, many, if not most, telecom operators do not have precise maps of their underground assets. Even for those that have invested in geographic information systems (GIS) to store network-related data, the quality of their three-dimensional (XYZ) data provided from most standard GIS platforms is often inaccurate or inadequate. This is largely due to factors such as: unknown depth; references to aging or no longer existing above ground landmarks; analog data references; and the inability to map infrastructure installed by means of trenchless methods, such as river crossings, underneath buildings, etc.

Alternative techniques such as ground-penetrating radar and beacon-based systems are unreliable or impractical because these systems are difficult to use and don’t get the exact measurement of the pipe’s centerline. Moreover, beacon-based systems can measure to a limited depth and are highly susceptible to electromagnetic interference, rendering them virtually useless in densely piped areas or near railways and power lines.

BUILT TO WORK HARD

MAXIMUM POWER FOR
HEAVY DUTY JOBS



Elliott's D86, D105 and D115 digger derricks offer the widest digging radii, highest torque, smoothest operation and best lifting capacities in the industry. Plus, they're backed by a lifetime structural warranty.

Elliott's Digger Derrick line is specifically engineered for transmission and heavy-duty construction projects. Built to work hard, day after day, year after year, the digger line boasts Elliott's high boom pinpoint geometry allowing for maximum power out of the hole, as well as features offering ergonomic seating and a variable displacement piston pump.

Every Elliott machine is designed to be the right tool for the job, which is why our aerial work platforms have working heights to 215', boom truck cranes with tip heights to 207', digger derricks, and special purpose track vehicle cranes. We will work with you to customize your machine, maximize your productivity, and get the job done.

CONTACT US TODAY

Find a Distributor at www.elliotequip.com

+1(402) 592-4500 | sales@elliotequip.com

ELLIOTT
EQUIPMENT COMPANY

WE HAVE THE ROPE TO GET THE JOB DONE.



Gyroscopic-based 3D mapping systems, however, are solving the underground duct mapping problem, delivering reliable XYZ data as well as the centerline of the duct or pipe. The technology, which has been proven through years of mapping underground water infrastructure and pipelines, is now being applied to both existing and new ductwork within the telecom market.

Automated gyro-based mapping

Condux International, a U.S. based company that has spent decades providing tooling for blowing and pulling fiber through ductwork, has started providing gyroscopic-based 3D mapping technology that allows customers to ensure successful installations of pipelines and ducts – including those for fiber optic cable.

“The gyro-based tools can precisely map the duct or pipeline through miles of dense infrastructure, accurately locating irregularities in ductwork and providing data on bend radius and other deviations that can interfere with the transmission of fiber optic signals, often robbing a 5G cable of up to 40% or more of its transmission capabilities,” says Saride.

Precise mapping of underground cable ducting is now possible through the use of inertial guidance technology that incorporates the exacting 3D instrumentation – gyroscopes, accelerometers, and magnetometers. Incorporated into an innovative tool that travels through the cable ducts, it can precisely map the path from end to end, including bends, undulations and other deviations that may have been required to route the duct through the congested maze of existing underground infrastructure.

Knowing the extent of those deviations, particularly bends, can be critical to understanding the true capacity of the ducts to successfully accommodate the bulkier super-high-bandwidth fiber cable. This is because the radius of every bend in an underground duct can adversely affect the ability of the 5G-or-higher cable to perform according to cable manufacturers’ specifications.

Constructed with military grade hardware, the unit features centralizing rings that support a body containing mapping instruments. The 3D gyro-tool is articulated,



800-358-7673

www.bucope.com

PIONEER OF TOMORROW'S INNOVATIONS.

Solutions for electric utilities focusing on power delivery systems



History speaks for itself. Terex Utilities has a legacy of innovative solutions that have changed the industry – from the first hydraulic digger derrick to our recent launch of the Terex® Load Alert™ system. We provide game-changing solutions that work for our customers and plan to continue well into the future. Terex Works for You™ by listening and taking action. We are here to help solve your challenges and provide innovative, high quality products and services that fit your needs.

www.terex.com/utilities



WORKS FOR YOU.™



Get a Grip on Snow and Ice

...AT THE FLIP OF A SWITCH!

TRACTION IN FORWARD AND REVERSE FOR 1/2 TON TO CLASS 8 VEHICLES

- UTILITY TRUCKS
- FIRE TRUCKS
- AMBULANCES
- SCHOOL BUSES
- PLOW TRUCKS
- TRACTOR TRAILERS

ONSPOT
AUTOMATIC TIRE CHAINS

800-766-7768
www.onspot.com

*Approved for use in states with chain control areas

enabling it to pivot through various bends, bumps and turns that typically occur in telecom ducts. It also features an easily accessible data port for uploading data to a GIS file via laptop or notebook computer.



Some gyro-mapping systems are now available in extremely compact sizes, ranging from the world's smallest gyro-based mapping probe (duct range 40-75mm) to larger models with operational ranges for pipelines 3.5 in. and up.

For information contact: Condux International, 145 Kingswood Drive, Mankato, MN 56002-0247 USA; Phone: (800) 533-2077; FAX: (507) 387-1442; Email: conduxinfo@condux.com; Visit the website www.condux.com

On Site Employee Verification



Bob Put In 9 Hours And 3 Minutes Of Work On Tuesday.
Stop Guessing. Start Verifying!

Always Know Who, When and Where with eMars Compliant Client and RFID

Be Davis - Bacon Compliant in Minutes • Users Report 85% Savings of Money and Time • Alerts You of 30 Compliance Errors

Ph. 480-595-0466



eMarsinc.com



ENGINEERED, TESTED & CERTIFIED

A Tethered Tool System for Applications Involving Work at Height

LEAVE IT TO THE EXPERTS

Snap-on provides a drop prevention system like no other.

We'll work with you to determine your drop prevention needs... including the tools, attachment points, lanyards, pouches, and holsters, that combine to create a turnkey solution that enables your workers to do just that...WORK.

SAVE TIME AND MONEY

Engineered attachment points don't interfere with the functionality of the tools, and are more durable than simple "add-ons" that require frequent maintenance or replacement.

BEAT THE STATISTICS

About 70% of drops happen during the exchange of the lanyard from one tool to another. The Snap-on Tools@Height system features independent tethering, which means each tool is attached to its own lanyard. Minimizing exchanges reduces the likelihood of drops and increases safety.

MINIMIZE RISK

Independent tethering also allows the tool to be removed from and returned to its holster or pouch using just one hand. Safety is improved by allowing the user to maintain the critical "three points of contact" when working at height.

RETAIN CONTROL

Our modular approach means you can configure the tools/holsters based on a user's personal preference, while providing a system that meets your safety standards.

See what the most comprehensive tool drop prevention solution in the industry can do for your team's safety and productivity by contacting:

John R. Tremblay | Power Generation & Utility Market Manager
413-519-3380 | John.R.Tremblay@snapon.com

Snap-on
INDUSTRIAL



GET WIRED THE RIGHT WAY

The NECA SHOW is North America's LARGEST Event for Power, Light and Communication Technology

WHAT'S INCLUDED

Free Admission for three days includes:

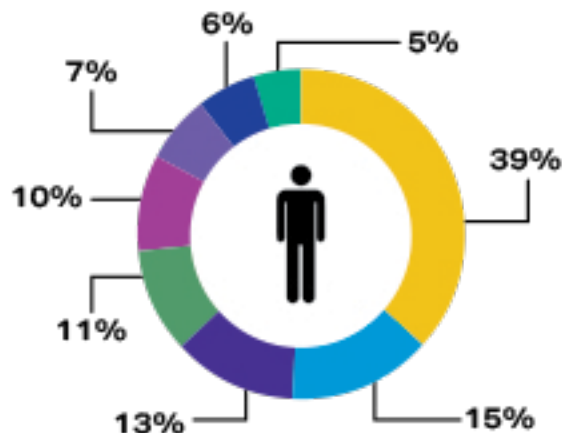
"I was training to be an electrician. I suppose I got wired the wrong way somewhere along the line." **Elvis Presley**

75+
education sessions on the show floor

300
exhibitors

1000s
of products, services and solutions

185+
new products in the Showstopper Showcase presented by Electrical Contractor magazine



WHO COMES

- Owner/CEO/President/Vice President/Co-Owner
 - Director
 - Sales/Marketing/Purchaser
 - Foreman/Superintendent
 - Manager/Services
 - Journeyman
 - Project Manager/Estimator
 - Other
- Open to the entire industry!

WHY YOU SHOULD ATTEND

91%
of attendees rated the show floor education as *Excellent* or *Very Good*

9 out of 10
are likely to purchase a product or service seen at the NECA Show

96%
are likely to recommend the NECA Show to an industry colleague

95%
of attendees rate the NECA Show as *Excellent* or *Very Good*

7000+
Electrical Professionals from all 50 states and 17 countries to share best practices with

FREE
Best value for any event in the industry

September 14-17 • Mandalay Bay • Las Vegas

Register now with this **FREE ADMISSION CODE 19TIS** at www.necaconvention.org

For more information contact Taylor Kershaw at 301-215-4508 or taylor@necanet.org

"Man, I really like Vegas." **Elvis Presley**

Presented by the National Electrical Contractors Association

Follow us on Facebook and Twitter @necanet



From Lignomat, an Expert in Moisture Detection

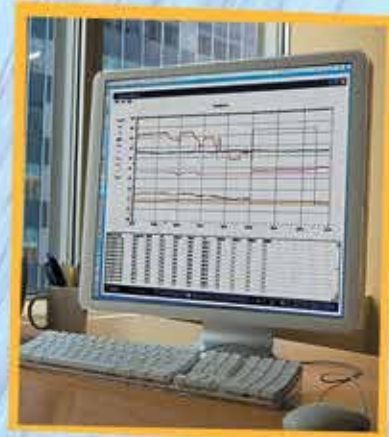
Innovative Solutions for Moisture Tracking



● All types
of Handheld
Moisture Meters



● Wireless
Measurements



● Internet
Accessible

800-227-2105

Call us with your
Moisture Detection
Question.

Lignomat
www.lignomat.com



● Concrete
Moisture Testing



Quick, custom bus work for replacement power transformers speeds installation, shortens outages and gets production up and running again.

Power transformers can last anywhere from 15-30 years, but when they enter the end of their life cycle and suddenly self-destruct, plant managers are left scrambling to find a replacement. Under the gun, they often believe the best move is to source a duplicate from the exact same manufacturer. Otherwise, the fear is that the installation will slow to a crawl while contractors in the field try to make a square peg fit in a round hole, almost literally. For good reason, too, as the process of trying to match the transformer bus work and fitting it into the enclosure can drastically delay installation and keep a plant offline for far too long.

However, the availability of transformer manufacturers that specialize in customizing the bus work and footprint to match an end-user's setup saves time and money, while greatly reducing downtime and the associated headaches. Plant engineers can benefit from a few tips before choosing based on the lowest quote.

Case in point

The fear of switching to a different transformer manufacturer is well founded, as many engineers have been burned by the false promises from some vendors who proclaim, "Trust us, we can do it and it will fit," with their fingers crossed. Quite often, it doesn't. Feet that don't match runners and bus bars that don't line up properly often delay installations for days or weeks until everything can be cobbled together. In the meantime, production suffers.

Last summer, the CertainTeed plant in L'Anse, Michigan, encountered this exact issue. They had a turn-to-turn short in the 1000 KVA transformer running their manufacturing floor. "It ended up being a total failure, so production went down immediately," recalls Logan Edwards, an electrical engineer for the building products producer.



You'll never see it coming.

One second can change everything - especially where arc flash is concerned. That's why it's critical to understand the proper selection and use of PPE tested to withstand an arc flash event. To learn more about arc-rated PPE solutions from MSA or request a FREE, no obligation safety evaluation, visit MSAsafety.com/safetyevaluation.

WE KNOW WHAT'S AT STAKE.

© MSA 2018 • ID 55-6085-MCP

MSA
The Safety Company

CertainTeed is North America's leading brand of exterior and interior building products, including roofing, siding, fences, decking, railing, trim, insulation, gypsum and ceilings.

"We could not afford to halt production, so I rented a 1000 KVA generator until we could get an exact replacement for the transformer," continues Edwards. "But the monthly rental fee for the generator was extremely expensive - approaching five figures. Plus, the fuel required to run it was costing thousands of dollars. The hard part was none of this was considered capital. It was all an operating expense. So, we needed a transformer, fast to help offset the mounting operating costs."

"In a high-production manufacturing plant, getting the power back is the highest priority," says Alan Ober, an engineering manager at ELSCO (www.elscotransformers.com) a Cincinnati, Ohio-based transformer manufacturer providing new, repaired and rebuilt transformers ranging from 500 through 3750 KVA in 2.5, 5 and 15KV primary voltages.

With 42 years of experience as a lead design and integration engineer, Ober has lived the war stories (both losses and victories) and has the wisdom to explain why engineers need not fear the prospect of sourcing a transformer from a manufacturer other than that on the nameplate.

Finding like for like, in a hurry

In search of not only a fast and perfect fit – along with original quality of construction – plant engineers often assume that they can still get the same exact replacement from the same exact manufacturer.

"The reality is that many of the original manufacturers went out of business long ago or were bought out," observes Ober. "For instance, GE Industrial, Square D, Schneider and a lot of others are either no longer in business or are part of other companies now."

Even if a plant manager insisted on a power transformer being built to original specifications, that can take an extended amount of time, and there still is no guaran-



tee that the unit would match exactly.

Yet, through much due diligence some plant engineers have discovered a way around the "exact replacement vs. quick replacement" dilemma in the form of vendors who specialize in repairing original transformers, or building new transformers with quality materials, in advance.

Once completed, both remanufactured and new transformers are stocked in a warehouse. When an engineer calls up for an emergency replacement, the transformer is pulled out of storage, custom bus work is machined to the exact specifications of the enclosure, and the transformer is loaded onto a truck. Some manufacturers can do all this in a matter of 24-36 hours.

Much of the credit for such a solution goes to the careful gathering of the dimensions of the transformer, and then duplicating it as precisely as possible. As a result, both the high side and low side line up as in the original installation. The same attention to dimensional detail extends to ensuring the transformer feet fit on the front-to-back runners of the existing enclosure. As a result, the transformer gets energized quickly and the plant resumes full operation with minimal downtime.

Failed Delivery

"I started looking to see who could get me a dry type transformer to replace the blown one," continues Edwards. "The rating would be the same, but we knew it would be hard to find a custom retrofit transformer."

Edwards gathered multiple quotes from different

Rugged Dependability

STANDARD IN EVERY MACHINE WE BUILD!

Hogg & Davis has been proudly manufacturing utility line equipment for more than half a century.



Our trusted products are part of the fleets and tool cribs of nearly every investor-owned power and communications company in the United States and Beyond.



HOGG & DAVIS, Inc.

HOGG & DAVIS, INC.

3800 EAGLE LOOP • ODELL, OR 97044

TEL 541.354.1001 • FAX 541.354.1080

WWW.HOGGDAVIS.COM

vendors and decided upon one who promised form-fitting bus work at a bargain price. Part of the low price stemmed from the fact that their transformer was wound with aluminum, which costs less than copper but is also less durable.

“They said, ‘Don’t worry. We’ll have it done by such-and-such time,’ adds Edwards. “So, we scheduled a specific downtime to get it installed.”

However, as is often the case, the manufacturer over promised and under delivered.

“The weekend before we were set for installation, they called to tell me that there had been some issues and it wasn’t going to happen by the scheduled date,” explains Edwards. “What a letdown.”

Not only was it a hassle for the plant to reschedule the downtime, but they were still piling up operational costs with the generator.

“That’s when I reached out to ELSCO who I used before and asked if they could rush a transformer with custom bus work before the ‘down’ which was scheduled in three to four days.”

Measuring up

Few manufacturers offer the customization of a transformer before shipping, and of those only a handful can turn it around within a day or two and guarantee it fits right the first time. So, it is critical to ensure the vendor selected is actually capable of the carrying out the task. The trick for any transformer manufacturer to create custom bus work that match exactly is to obtain the exact tolerances. This may seem simple, but it’s more than just H x W x L.

“If the bus is right there where it’s supposed to be, then all the installers have to do is measure the cable coming from high-side switch, cut it, terminate it, and they are done,” says Ober. “Then, you can energize it in as little as two hours after the transformer is setting on its base.”

“It’s funny how it all worked out. The transformer we



got from ELSCO had the higher quality copper windings, which increased cost, but we ended up with a much more robust transformer,” adds Edwards. “The added cost for the copper was actually a ‘wash’ considering that we would have had to rent the generator another week while waiting for the cheaper transformer.”

Edwards then worked with a contractor to have it installed. “We didn’t have to shim it up, nor did we have to slot any additional holes. Everything fit perfectly.”

For more information, contact: Electric Service Company (ELSCO); 5331 Hetzell Street, Cincinnati; OH 45227; 800-232-9002 or 513-271-1752; FAX: 513-271-0543; info@electric-service.com or www.electricservice.com.

www.electricservice.com •



MADE FOR **MORE** TO KEEP PACE WITH **YOU**



You begin each day before dawn with a drive and determination to do **more** than the day before. When you move at this pace, you know to do more you need equipment that is made for more. That's why our utility line and land clearing equipment, like our **Forestry Mulchers and Aerial Trimmers**, is built from the ground up to meet your needs, delivering:

More Power and Production
Lower Operating Costs
Greater Reliability
Better Safety Features
Superior Operator Comfort and Control

If you're ready to operate equipment that's made to keep pace with you, then we invite you to go to morbarkdealers.com to find your local authorized Morbark or Rayco dealer. Your dealer will work with you to assess your needs now and in the future, as well as offer equipment recommendations, financing options, wear parts and service if you should ever need it.

Equipment is available for **SALE** or **RENT**.



RAYCO
BY MORBARK



THE "FIRST LINE OF DEFENSE" IN PROTECTING MEMBRANE FILTERS

Multi-element, self-cleaning pre-treatment filters optimize membrane filter life and production, while minimizing maintenance and downtime

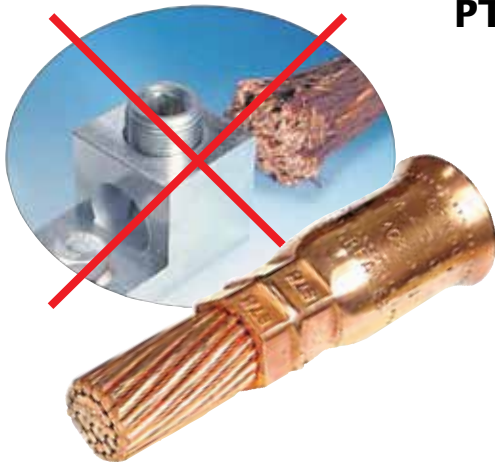
For municipal water authorities, pre-filtration of water is critical to protect and extend the life of membrane systems, as well as increase intervals between backwashing or necessary maintenance.

Pressure-driven membrane systems utilize thin, porous sheets of material to separate contaminants from water. The technology, in the form of microfiltration, ultrafiltration, reverse osmosis filtration, and nanofiltration membranes, provides superior water quality with less waste than technologies like sand filtration. Because of this, it is commonly used for potable water production and advanced wastewater treatment, including "purple pipe" reclaimed and recycled wastewater applications.

However, without adequate pre-filtering of the water entering the membranes, such systems can be susceptible to irreparable damage from large particles. In addition, water that is not adequately pre-filtered can cause excessive membrane fouling, leading to sub-par water production as well as costly, premature replacement and unscheduled production downtime.

When the cable doesn't fit, and you need a solution... **FAST**

GO TO THE GREAVES ADAPTER ZONE!



PT-FX Shoo-Pin™ Compression Adapters

- All-copper compression adapters
- Allows reliable termination of highly stranded flexible copper cable into mechanical lugs
- Used in locomotive, mining, marine, and machinery applications
- Fits into mechanical set-screw type connectors in panels, transformers and machinery
- Features revolutionary Shoo-in™ barrel-opening design for easy cable insertion
- Fabricated of wrought copper with pin of Class B copper conductor
- Insulating covers are provided



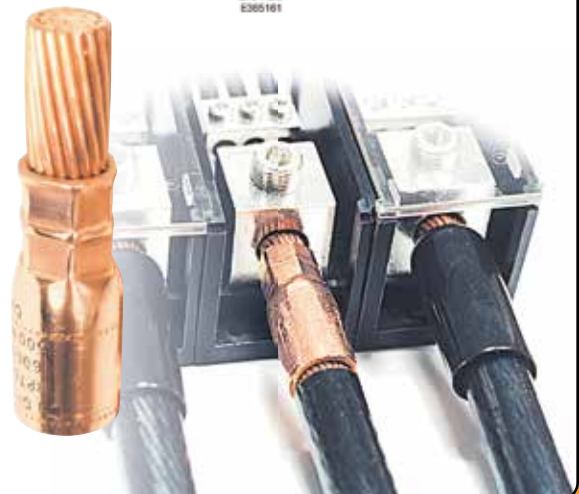
For Copper
Cable Only

PT-R ReduceR™ Cable Reducing Adapters

- All-copper compression adapters
- Use where cable is oversized to reduce voltage drop on long runs
- Use fit existing C/B, transformer, or other gear lugs
- For Class B 'building wire' cable stranding only
- Fits into mechanical set-screw type connectors in panels, transformers and machinery
- Fabricated of wrought copper barrel with pin of Class B copper conductor
- Insulating covers provided



For Copper
Cable Only



GREAVES

www.greaves-usa.com ■ 1-800-243-1130



Fortunately, a growing number of municipalities are ensuring superior water quality, as well as membrane longevity and reliable production, utilizing low maintenance, multi-element, self-cleaning, pre-treatment filters.

Optimizing Membrane Longevity and Production

When a municipal water utilities plant in the Southeast United States needed to protect its membranes filters, a superior pre-filtering system was required.

According to an instrumentation technician who installs, programs, configures, and troubleshoots monitoring devices in the drinking water facility, as soon as the water is pulled from the wells, it goes through a strainer. From there, it goes to other parts of the plant for further treatment and cleaning, with membrane filtration utilized at the end of the process.

“The well water has to be strained,” says the technician. “If the sand got through, it would destroy the membrane. The membrane is sensitive to large particles and expensive [to replace].”

While the facility has utilized a sand strainer, instrumentation technician felt this was too small for the plant’s volume, which produces millions of gallons of drinking water per day.

In response, the plant turned to a multi-element, self-cleaning pre-treatment filter from R. P. Adams,

which first introduced and patented the technology in the 1960s and has over 10,000 installations worldwide today.

This design provides an alternative to sand filters, centrifugal separators, and basket type strainers. Unlike those designs, which have limitations in particle size filtration and also require frequent maintenance, the multi-element, self-cleaning pre-treatment filter can provide continuous removal of suspended solids. When utilized as the “first line of defense” for pre-membrane water filtration, it typically filters out sand, silt, and other suspended solids from 500 to 75 microns.

Another significant feature of the multi-element design is in the engineering of the backwash mechanism. With traditional strainers, the backwash mechanism comes into direct contact with the straining media. This can be problematic, as large, suspended solids often encountered with raw water can become lodged between the straining media and the backwash arm. The result is straining media damage and/or rupture that can compromise membranes and other downstream equipment, hindering plant operation.

Instead, the multi-element design utilizes a tube sheet to separate the straining media from the backwash mechanism. This prevents the backwash mechanism from coming into contact with the media and damaging the elements, caused by large solids becoming lodged between the media and the backwash arm.

According to the instrumentation technician, the pre-filter has helped to prolong the usable life of the drinking water facility’s main membrane.

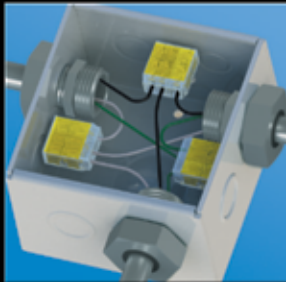
“With pre-filtering, our main membrane functions well for about seven years before it needs to be replaced,” he says. “Without pre-filtering, it would need to be replaced much sooner.”

Municipal water plants also need to consider how to best reduce membrane fouling and required maintenance. Traditional strainers, however, due to limitations in straining area can become clogged quickly. When that occurs, cleaning, media replacement or backwashing is necessary, which adversely affects pro-

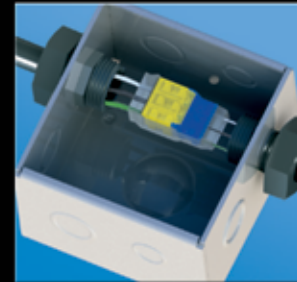
THINK™

DESIGN SOLUTIONS

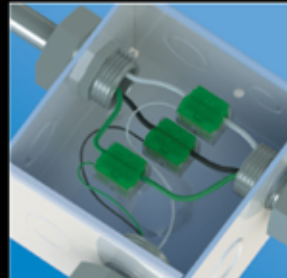
... with i-Clamps - Wire Connectors



One-Way Series
for splicing several
lines together



Two-Way Series
uniquely designed for
pre-assembly to add
fixtures or components
to existing wiring



T-Series
for branching off
a common wire run



- IDC (Insulation Displacement Connectors) • Easy to use • Quick and reliable connections
- Tamper Proof - Designed to withstand shock and vibration • Housing made from durable Polycarbonate • Tin-plated, High Performance, copper alloy contacts
- For use with 10-22 AWG insulated wires

IT'S WHAT'S ON THE INSIDE THAT COUNTS

KEYSTONE®

ELECTRONICS CORP.

www.keyelco.com • (516) 328-7500 • (800) 221-5510



REQUEST CATALOG M65



Atlantic Screen & Mfg., Inc.

- Well Rehab. Products
- Manholes
- Bentonite
- Filter Sock
- Inline Chemical Mixers
- Sampling Ballers
- Clear PVC Pipe
- Locking Caps

Manufacturers of Slotted & Perforated Pipe ranging from 1/2" to 24" in diameter

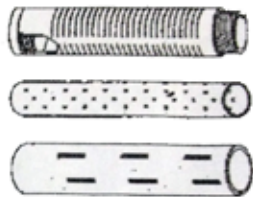
302-684-3197

FAX 302-684-0643

142 Broadkill Rd. • Milton, DE 19968

www.atlantic-screen.com

email: atlantic@ce.net



ductivity as well as maintenance costs.

In this regard, the multi-element design provides three to four times the surface area of traditional strainers and pre-filters. This translates directly into less frequent backwashing so less water goes to waste, less power is consumed, and less maintenance is required.

"We have had no real issues since we bought the pre-filter," says the technician.

When considering pre-filter technology for municipal potable water or wastewater systems, automatic multi-element, self-cleaning, pre-treatment filters are an increasingly popular choice and a reliable, cost effective solution.

For more information contact R.P. Adams, Inc., P.O. Box 963, Buffalo, NY 14240-0963; Phone: (716) 877-2608, toll-free: (800) 896-8869; Fax: (716) 877-9385; E-mail: info@rpadams.com; Visit the web site:

www.rpadams.com

The all new T14-54/617 is the Tier 4-compliant Trencher Mechanical Trencher. Packed with plenty of power for the toughest rock, the new T14-54/617 runs so cleanly there is no regen cycle needed. Trencher is known for being the longest lasting, toughest, underground equipment in the industry all backed by 24/7, worldwide, service and support. PinPoint® Telematics comes standard, logging and transmitting real-time data to optimize operations and reduce downtime due to missed maintenance.

©2018 American Augers, Inc.
A Charles Machine Works Company



T14-54/617



THE ONLY HEAVY METAL SHOW YOU NEED TO SEE



**NORTH AMERICA'S LARGEST
CONSTRUCTION TRADE SHOW**
CONEXPOCONAGG.COM
MARCH 10-14, 2020 | LAS VEGAS, USA

Ad Index

Company	Pg.	Website
Atlantic Screen & Mfg., Inc.	30	www.atlantic-screen.com
Buccaneer Rope	14	www.bucrope.com
Con Agg Expo	31	www.conexpoconagg.com
Dominion Rubber Tracks	9	www.depparts.com
Elliott Equipment	13	www.elliottequip.com
eMars Inc	16, 32	www.emarsinc.com
Greaves	27	www.greaves-usa.com
Hogg Davis	23	www.hoggdavis.com
ICUEE	8	www.icuee.com
Keystone Electronics	29	www.keyelco.com
Krenz Vent	2	www.krenzvent.com
Lignomat	19	www.lignomat.com
Manitex	BC	www.manitex.com
Morooka USA	IFC	www.morookacarriers.com
MSA Safety	21	www.msasafety.com/safetyevaluation
NECA	18	www.necaconvention.org
Nesco	5	www.nesco.com
Rayco	25	www.rayco.com
Ring Power	7	www.ringpower.com
Safe Guard Equipment	IBC	www.safeguardequipment.com
Snap On	17	www.snapon.com
Terex	15	www.terex.com
Trencor	30	www.trencor.com
TSE	11	www.tes-international.com
Universal Horizontal Directional Drilling	3	www.unihdd.com
Warehouse Equipment	6	www.warehouseequipment.com
Yale Cordage	1	www.yalecordage.com

On Site Employee Verification

Bob Put In 9 Hours And 3 Minutes Of Work On Tuesday.
Stop Guessing. Start Verifying!

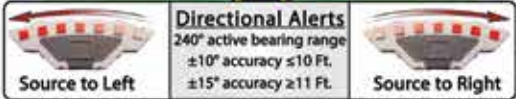
Always Know Who, When and Where with eMars Compliant Client and RFID
 Be Davis - Bacon Compliant in Minutes • Users Report 85% Savings of Money and Time • Alerts You of 30 Compliance Errors

Ph. 480-595-0466  eMarsinc.com

COMPASS

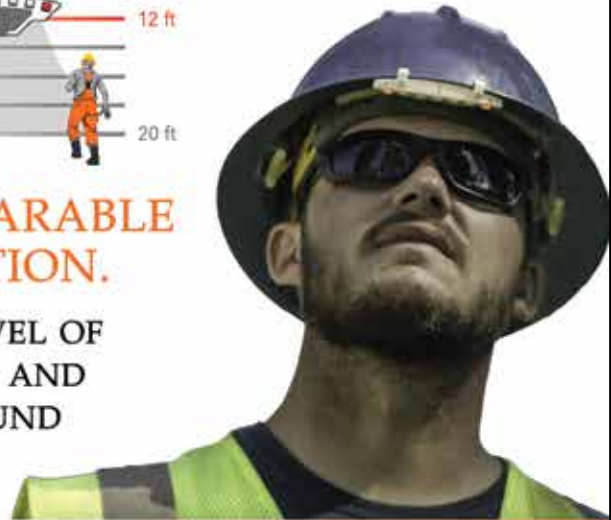
AVAILABLE NOW - WATCH IT LIVE AT
WWW.SAFEGUARDEQUIPMENT.COM

PERSONAL VOLTAGE & CURRENT DETECTOR



INTRODUCING THE FUTURE OF WEARABLE VOLTAGE AND CURRENT DETECTION.

PROVIDE YOUR CREW WITH THE NEWEST LEVEL OF PERSONAL SAFETY THROUGH DIRECTIONAL AND PROXIMITY ALERTS WHEN WORKING AROUND ELECTRICAL THREATS.



ALWAYS KNOW WHAT IS HOT AND WHAT IS NOT.



SAFEGUARD

CALL NOW (509) 590-6976

PUERTO RICO 2017

MANITEX UNDERSTANDS

THE UTILITY INDUSTRIES

WITH MANITEX,
CRANES CAN BE
USED AS A LIFT
CRANE AND AN
AERIAL WORK
PLATFORM IN
THE SAME DAY!

NEW DUAL PURPOSE MACHINE

IDEAL FOR UTILITY
CONTRACTORS WITH WORKING
HEIGHT UP TO 209 FT

A92.2 CERTIFICATION

Available now on the TC500/50155S/SHL and the new TC400/TC450 models.

The dual-rating option can be ordered from factory or as upgrade to qualifying existing fleet. The A92.2 option includes lift crane and aerial platform operating modes, radio remote controls and "Quick Attach" personnel basket.

The new options eliminates the need for basket test weights, saving you valuable time and greatly increasing productivity.

PLEASE CONTACT YOUR REGIONAL BUSINESS MANAGER OR CALL 512-942-3080 FOR MORE INFORMATION

