

# FMD

# Facility Maintenance Decisions™

www.facilitiesnet.com/fmd • October 2015

# HIGH ACHIEVERS



The 2015 FMD Achievement Awards recognize outstanding accomplishments by maintenance and engineering departments • PAGE 18



## Special Report: Mobile CMMS

Departments incorporate technology to support maintenance on the move  
PAGE 11

## Safety First: Aerial Work Platforms

By understanding hazards and focusing on training, departments can protect workers  
PAGE 16

---

## Infrared Imaging

PAGE 6

## ROOFING

PAGE 9

## MOWERS: Texas-Sized Challenge

University embraces sustainable mowing products and practices PAGE 22



### INSIDE:

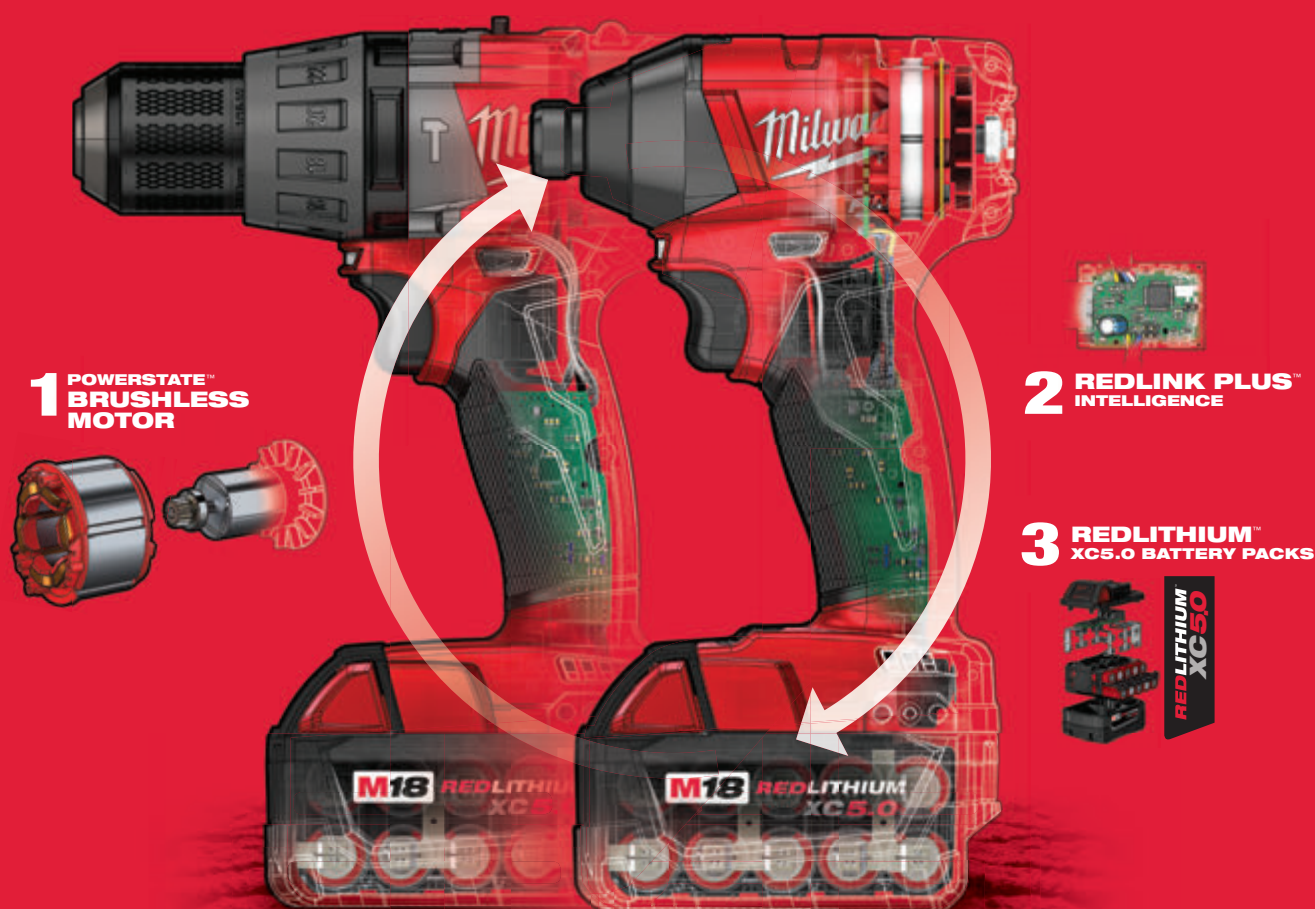
TALKING POINTS 4 | MANAGEMENT INSIGHT 5 | PRODUCT PIPELINE 27

**NEW**

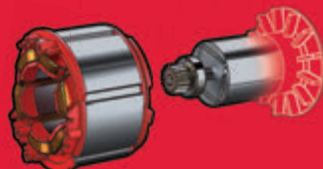
*Milwaukee*

# M18 FUEL™

**DRIVEN TO OUTPERFORM.™**



**1** POWERSTATE™  
BRUSHLESS  
MOTOR



**2** REDLINK PLUS™  
INTELLIGENCE



**3** REDLITHIUM™  
XC5.0 BATTERY PACKS



**MOST POWERFUL    FASTEST SPEED    MOST COMPACT**

M18 FUEL™ is engineered for the most demanding tradesmen in the world. Delivering unrivaled performance in a compact structure, all M18 FUEL™ products feature three MILWAUKEE® exclusive innovations — the POWERSTATE™ Brushless Motor, REDLITHIUM™ Battery Pack and REDLINK PLUS™ Intelligence Hardware and Software — that deliver unmatched power, run-time and durability. Simply put, the M18 FUEL™ 1/2" Hammer Drill/Driver and 1/4" Hex Impact Driver were engineered to be the most powerful in their class, while delivered to the user in the most compact structure.

[www.milwaukeetool.com/m18fuel](http://www.milwaukeetool.com/m18fuel)

**PART OF THE M18™ SYSTEM OF OVER 70 TOOLS.**



**FREE INFO: Circle 400**



## Saving water just got a lot easier and much better looking.

Until now, adding water-saving electronic faucets to any building was a hassle. Electronic faucets are a challenge to install. What's more, performance is inconsistent, maintenance is demanding, the price is too high and, let's be honest, the design leaves something to be desired.

**With EQ, everything is different.** They're easy to install, easy to operate, easy to maintain, and easy on your budget. They're also easy on the eyes with a choice of polished chrome or brushed nickel finishes in three versatile styles.

EQ makes it easier than ever to bring style and water savings to restrooms in offices, retail, sports facilities, and other commercial buildings. Want to learn more? Visit [eqfaucets.com](http://eqfaucets.com) for more information. It doesn't get easier than that.



Download a white paper on the rising cost of water  
and how doing the little things can really add up.

**CHICAGO  
FAUCETS**   
a Geberit company

FREE INFO: Circle 401

## contents

## forum

**18 High Achievers**

Recipients of the 2015 *Facility Maintenance Decisions* Achievement Awards discuss the benefits of their projects and programs, which demonstrate the central role maintenance and engineering departments play in successful facilities

**4 Talking Points**

Dan Hounsell, Chief Editor, says managers can create an advisory board to help them navigate through challenges that seem to arise daily



Dave Lubach, Associate Editor, emphasizes the importance of training and retaining technicians to help them reach their full potential

**5****Management Insight**

Columnist Andrew Gager offers managers guidelines on how to build an effective case for adding employees or equipment

## products

**16 Product Focus: Aerial Work Platforms**

By understanding hazards related to lifts, providing targeted training, and partnering with manufacturers, managers can enhance worker safety

**26 FMD Tech Center****27 Product Pipeline****27 Ad Index**

## online



Visit **Facility Maintenance Decisions** online — [facilitiesnet.com/fmd](http://facilitiesnet.com/fmd) — for articles, podcasts, and webcasts highlighting technologies and topics critical to maintenance and engineering management



Follow us at [twitter.com/maintenance\\_mag](https://twitter.com/maintenance_mag)



Connect with us at [facebook.com/fmdmag](https://facebook.com/fmdmag)



Connect with us at [linkedin.com/fmd](https://linkedin.com/fmd)



Connect with us on Google+ at [gplus.to/FMDmag](https://gplus.to/FMDmag)



Discuss facility topics with your peers: [myfacilitiesnet.com](https://myfacilitiesnet.com)

## features

**6 Making Infrared Imaging Work**

By understanding technology advances and avoiding common misconceptions about performance, managers can maximize their investment

Bonus info: To view more infrared articles online, visit [facilitiesnet.com/equipmentrentaltools](http://facilitiesnet.com/equipmentrentaltools)

**9 Trouble on Top: Preventing Rooftop Problems**

Focusing on traditional trouble spots, as well as on issues raised by photovoltaic systems, can help avert costly headaches

Bonus info: To view more roofing articles online, visit [facilitiesnet.com/roofing](http://facilitiesnet.com/roofing)

**11 Maintenance on the Move**

Mobile software and apps can create tangible benefits for managers who plan carefully and implement wisely

Bonus info: To view more CMMS articles online, visit [facilitiesnet.com/software](http://facilitiesnet.com/software)

**14 Clearing the Way: Planning For Efficient Drain Cleaning**

A comprehensive drain-cleaning program requires careful specification, smart planning, and knowledge of the piping system

Bonus info: To view more drain cleaning articles online, visit [facilitiesnet.com/plumbingrestrooms](http://facilitiesnet.com/plumbingrestrooms)

**22 A Challenge the Size of Texas**

The University of Texas faces the immense task of enhancing the sustainability of its mowing equipment and practices

Bonus info: To view more mowers articles online, visit [facilitiesnet.com/groundsmanagement](http://facilitiesnet.com/groundsmanagement)

# Ask the Drain Brains—How to clear grease clogs quickly and easily!

By Marty Silverman – General Pipe Cleaners

**Q.** I handle maintenance for a fast food chain and the grease clogs are wearing me out. I clear it with my snake but the clog comes right back. Is there a better tool to clear grease clogs for good?

**A.** Nothing clears a clog for good, but the best tool to clear grease clogs quickly and easily is a Water Jet. Grease creates what's called a self-healing stoppage. The grease sticks to the walls of the pipe. So when your snake punches

a hole in grease to get the water flowing, you haven't really cleared the clog completely.

Water jets are ideal for clearing grease, as well as flushing sand, and melting ice. Jets use a stream of high pressure water that cuts the grease off the walls of the pipe and flushes it away. The thrust of the nozzle drives the hose down the line for wall-to-wall cleaning action.

Electric jets typically offer a maximum of 1500 psi. Trying to get more pressure from an electric

motor runs the risk of pulling too many amps and popping breakers. It's better to use a gas powered jet. You get twice the pressure and flow rate of electric jets to handle larger and longer lines.

But beware of trying to convert your pressure washer into a water jet. Jets use vibration to overcome the friction in the pipe and help the hose glide around bends and farther down the line. If you don't have pulse, the hose could get stuck in the pipe.



For more information, or to ask a question, call the Drain Brains® at 800-245-6200 or 412-771-6300, or visit [www.askthedrainbrains.com](http://www.askthedrainbrains.com).

## JM-1450 Jet-Set® Compact! Portable! Powerful!

The JM-1450 electric water jet, a compact and portable drain cleaning machine, uses high pressure water to clear drain lines clogged with grease, sand and ice.

- Clears 1-1/2" to 4" lines of grease, sand and ice.
- 1-1/2 hp motor drives 1500 psi, 1.7 gpm pump.
- Vibrapulse® helps the hose around tight bends.
- Slide-out handle makes it easier to roll to the job.
- Easily removable hose reel to make machine more compact.
- Made in USA.



Call 800-245-6200  
or visit [www.drainbrain.com/jetset](http://www.drainbrain.com/jetset)

▲ FREE INFO: Circle 402

## JM-2900 Jet-Set Big machine power at a bargain price.

An economical alternative to the larger gas jets, the JM-2900 is lighter and more maneuverable yet maintains the same pressure and flow rate as other jets in its class.

- 13 hp (389 cc) Honda® engine connected directly to a 3000 psi, 4 gpm pump with Vibra-pulse® on demand.
- 200 ft. capacity hose reel mounted on a heavy-duty frame with two pneumatic tires.



Call 800-245-6200  
or visit [www.drainbrain.com/jetset](http://www.drainbrain.com/jetset)

▲ FREE INFO: Circle 403

## JM-2512 Typhoon™ Trailer Jet Big cleaning power in a tough new package.



Blow away blockages in big lines and long runs. The Typhoon delivers 12 gpm at 2500 psi to blast lines clean of grease, sediment and debris. A 200 gallon holding tank carries enough water to handle remote applications where access to water is limited.

- 400 ft. capacity variable speed jet hose reel and 150 ft. capacity supply hose reel.
- Electric brakes, safety strobe light, rear fold-down stabilizer jacks, retractable hose guide arm, and anti-freeze system.

Call 800-245-6200  
or visit [www.drainbrain.com/jetset](http://www.drainbrain.com/jetset)

▲ FREE INFO: Circle 404

# Grease Relief

## JM-1000 Mini-Jet™ clears grease fast

Starting at just  
**\$975**



### Special Introductory Offer

Spray Wand included **FREE**  
with purchase of complete unit.

For more Info: [www.drainbrain.com/jets](http://www.drainbrain.com/jets)

Quickly clear grease from clogged sinks and small drain lines with General's JM-1000 Mini-Jet™. This compact, lightweight tool brings surprising cleaning power to the job - at a surprisingly low price.

Water jets use a stream of high pressure water that hits the stoppage and flushes it away. The thrust of the nozzle drives the hose down the line and gives you wall to wall cleaning action. Pulse helps slide the hose around tight bends and farther down lines.

At just 22 lbs, General's tough Mini-Jet resists job-site abuse, too. The 1500 psi pump and motor assembly are safely contained in a rugged diamond plate metal case.

Pound for pound and dollar for dollar, the Mini-Jet is a great (and small) investment.



For more information, contact the Drain Brains® at General at 800-245-6200 or 412-771-6300, or visit [www.drainbrain.com/JM1000](http://www.drainbrain.com/JM1000).



**General**  
PIPE CLEANERS

**The toughest tools down the line.™**

FREE INFO: Circle 405 • NFMTORLANDO Booth 726



© General Wire Spring 2015



## Finding All the Help You Can Get

Dan Hounsell, Editor-in-Chief

Look down there, in the shaded area at the bottom of this page where it says Editorial Advisory Board. See those people? Sure, they're the magazine's editorial advisors. They help the editors fine-tune article ideas and locate sources, among other things.

But they contribute far more than that. They also let the editors tap into their expertise and experience in engineering and maintenance management with institutional and commercial facilities. They help us keep the magazine on the right track. In short, they give us peace of mind that if we are a little off track when trying to identify a trend or need a better sense of the evolving world of facilities, we can turn to them.

So who's on your advisory board? It's hard to imagine a manager who wouldn't want to call or text or e-mail a peer for a slight course correction, or some mentoring, or a little motivation when the diverse challenges of facilities start to become chaotic.

Managers should not feel they have to take on these challenges alone, and there's no need to. Creating and using an advisory board enables managers to expand the resources they have at their disposal to address whatever challenges arise, from technology implementation and regulatory compliance to personnel and budget management.

Who might you ask to be on your advisory board? Peers you respect, those who have proven reliable and resourceful in the past and demonstrated they understand your challenges and can help find answers. Who knows? Manufacturers and consultants might even be candidates.

The key to an effective advisory board is to find people you can trust to offer support and suggest direction. As with any profession, managers need all the help they can get.

Dan Hounsell offers observations about trends in maintenance and engineering management and the evolving role of managers in facilities. **Agree? Disagree? Have something to say? We want to hear from you.** Visit [myfacilitiesnet.com/danhounsell](http://myfacilitiesnet.com/danhounsell), and start a conversation.



## Train and Retain: Gameplan for Success

Dave Lubach, Associate Editor

When a defensive back in football intercepts a pass, his coaches often receive credit for putting him in position to succeed.

Maintenance and engineering managers in institutional and commercial facilities looking to improve the performance of their team of technicians might consider using the same approach: properly train maintenance technicians in order to improve their performance.

To achieve this goal, managers might need to start at the grass roots level. Consider the approach of Pat Crean, then supervisor of buildings and grounds at Dolton School District 149 in Calumet City, Ill., who stressed the basics and watched his staff succeed more than he thought was possible.

Crean's staff received so little training before his arrival that many technicians did not even know how to use computers. After familiarizing them with basic operations, Crean expanded the process to using spreadsheets and maintaining inventory logs. The staff's skills improved to the point that the staff received green cleaning certifications online.

For managers trying to develop and fine-tune training for their technicians, consider sitting down with each one to learn more about them. Discuss their goals — what they want to accomplish in their positions. Managers who can build stronger relationships with technicians can benefit in two ways. They will have greater success structuring effective training, and they are likely to retain technicians once they've been trained.

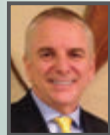
For managers wary of investing in training — “What if I train them and they leave?” — consider this question: What if you don't train them and they stay?

Dave Lubach offers insights gleaned from conversations with managers who make key maintenance and engineering decisions in commercial and institutional facilities. **Agree? Disagree? Have something to say? We want to hear from you.** Visit [myfacilitiesnet.com/davelubach](http://myfacilitiesnet.com/davelubach), and start a conversation.

5

### minutes with...

**Danny Helm**  
Energy Manager,  
Arlington (Texas) Independent  
School District



Helm discusses his district's energy management program, which helped save over \$6.5 million in five years

Listen to the podcast at:  
[facilitiesnet.com/fiveminuteswith](http://facilitiesnet.com/fiveminuteswith)

### EDITORIAL ADVISORY BOARD

**Joe Amico Sr.**  
Manager of Plant Operations  
Parkland Medical Center  
Derry, N.H.

**Sean Arnold**  
Director of Facilities,  
Maintenance and Security  
Hernando County School Board  
Brooksville, Fla.

**Ray Congdon**  
Director of Engineering  
Hewlett Packard / CBRE / ISS  
San Diego

**Patrick Crowley, P.E.,**  
Deputy Director, Facilities and  
Engineering Division  
San Jose International Airport

**Bert M. Gumeringer,**  
**MBA, CHFM, SASHE**  
Director of Facilities Operations &  
Security Services  
Texas Children's Hospital  
Houston

**Ellen Newell**  
Associate Director Facilities Management  
Arizona State University

**Harry W. Hobbs, CFM**  
Area Director of Engineering  
Intercontinental Hotels of San Francisco

**Patrick Pizzo, ABD, MBA**  
Assistant to the Superintendent for  
Administration and Special Projects  
East Meadow School District  
Westbury, N.Y.

**Thomas F. Smyth**  
Director of Facilities Services  
Cobleskill (N.Y.) Regional Hospital

**Don Turner**  
Facilities Maintenance Director  
Okaloosa County (Fla.)  
Board of Commissioners

### EXECUTIVE OFFICES

2100 W. Florist Ave.  
Milwaukee, WI 53209-3799  
(414) 228-7701; fax: (414) 228-1134  
E-mail: [dan.hounsell@tradepress.com](mailto:dan.hounsell@tradepress.com)

### CORPORATE

President/CEO  
**Robert J. Wisniewski**  
[bob.wisniewski@tradepress.com](mailto:bob.wisniewski@tradepress.com)  
Group Director, Facilities Market  
**Todd Kotlarek**  
[todd.kotlarek@tradepress.com](mailto:todd.kotlarek@tradepress.com)

COO/CFO  
**Jeff Schenk**  
[jeff.schenk@tradepress.com](mailto:jeff.schenk@tradepress.com)

Publisher  
**Brian J. Terry**  
[brian.terry@tradepress.com](mailto:brian.terry@tradepress.com)

Vice President – Content Development  
**Renee R. Bassett**  
[renee.bassett@tradepress.com](mailto:renee.bassett@tradepress.com)

Editor-in-Chief  
**Dan Hounsell**  
[dan.hounsell@tradepress.com](mailto:dan.hounsell@tradepress.com)

Associate Editor  
**Dave Lubach**  
[dave.lubach@tradepress.com](mailto:dave.lubach@tradepress.com)

Production Director  
**Bobbie Reid**  
[bobbie.reid@tradepress.com](mailto:bobbie.reid@tradepress.com)

Production Manager  
**Wendy Melnick**  
[wendy.melnick@tradepress.com](mailto:wendy.melnick@tradepress.com)

Director of Audience Development  
**Eric Muench**  
[eric.muench@tradepress.com](mailto:eric.muench@tradepress.com)

Vice President of  
E-Media & Creative Services  
**Wayne Winter**  
[wayne.winter@tradepress.com](mailto:wayne.winter@tradepress.com)

Creative Director  
**Jeff Giencke**  
[jeff.giencke@tradepress.com](mailto:jeff.giencke@tradepress.com)

Graphic Designer  
**Emily Hawkins**  
[emily.hawkins@tradepress.com](mailto:emily.hawkins@tradepress.com)

Electronic Production Coordinator  
**Jon Warner**  
[jon.warner@tradepress.com](mailto:jon.warner@tradepress.com)

For reprint pricing email:  
[reprints@tradepress.com](mailto:reprints@tradepress.com)

For address and other changes:  
Phone 1-800-869-6882  
[fmd@kmpsgroup.com](mailto:fmd@kmpsgroup.com)

# FMD

Facility  
Maintenance  
Decisions™

Copyright© 2015 by Trade Press Media Group, Inc. *Facility Maintenance Decisions*® is a registered trademark of Trade Press Media Group, Inc. *Facility Maintenance Decisions* (ISSN 1072-3560) is published monthly, except combined February/March, July/August, and November/December, by Trade Press Media Group, Inc., 2100 W. Florist Ave., Milwaukee, WI 53209. Periodicals postage paid at Milwaukee, WI, and at additional mailing offices. (Postmaster send change of address orders to *Facility Maintenance Decisions*, P.O. Box 47704, Plymouth, MN 55447.) All packages shipped via UPS, air express or common carrier, plus all general correspondence, should be addressed to 2100 W. Florist Ave., Milwaukee, WI 53209-3799. Subscriptions: 2015 rate is \$8 for a single issue; \$86 for one year; and \$155 for two years. Subscriptions mailed outside the U.S. are \$125 for one year and \$220 for two years. \$150 additional per year for airmail delivery service.



The publisher assumes no responsibility for opinions expressed in editorial contributions to the magazine. The publication is not responsible for claims in advertisements.

PRINTED IN U.S.A.



**Andrew Gager, CMRP, CPIM** — a.gager@nexusglobal.com — is director of Asia and Australia with Nexus Global Business Solutions. He has more than 28 years of manufacturing and facilities experience, ranging from warehousing operations to plant management. He is a registered CMRP, CPIM and Six Sigma Green Belt, and he is formally trained in change-management principles.



Andrew Gager

## Making the Case for Investments in Maintenance

When I was a plant manager years ago, my operations manager asked me for permission to hire four new workers to help keep up with demand. He said he could not keep up with the work and needed the extra help to manage the workload. I denied his request.

Why? Because he came to me with an emotional request rather than a fact-based, data-driven business case as to why we needed to add workers. Leaders cannot make business decisions based on emotions. Adding staff or equipment only makes sense if it increases the value to the organization and offsets the additional financial burden. The challenge for managers is successfully creating and presenting such a request.

### The human element

Making the financial case for hiring new workers requires that maintenance and engineering managers gather, analyze, present and support their request in terms that financial types and top executives can understand and buy into. These suggestions can help managers build the business case for adding new employees.

**Document needs.** Put down in writing what is not getting done as a result of a shortage of technicians. A strong case might be as simple as noting the percentage of overtime technicians currently average. In some cases, the premium dollars spent on overtime covers the cost of an additional employee.

**Focus on dollars.** Managers should note the amount of money the company is losing by not having a fully staffed team. Make sure to include tasks not getting done that a new person could do, as well as the anticipated short- and long-term benefits to the department and company.

**Assess the impact.** List the total cost, including benefits, of the new position. Focus on the way the benefits will outweigh the costs. For example, how soon can the

organization expect the new positions to pay for themselves? Also, give details on reporting structure for the position and the way it will interact with existing positions. Top executives must be crystal clear as to the benefits and emphasis placed on communicating with current staff to maintain morale. Bringing in a new resource at higher pay, grade or position can cause morale problems.

**Plan for pushback.** Anticipate and address objections and resistance. When building the business case to add workers, managers must ask themselves the same questions they expect executives and staff to ask. By preparing for this type of pushback or objections, managers will be ready to answer them intelligently and confidently.

**Keep it simple.** The request should be two pages at the most — ideally, with bullet points. Make it easy to skim, and be sure critical points stand out. Do not assume everyone will read a long dissertation. This is an executive summary of the request to add resources. With luck, the time will come to discuss the request in greater detail. At first, keep it simple.

**Follow up.** It amazes me how many managers give up when the initial answer is no. If the need is real, keep pushing forward. The first go-around apparently did not show enough

need or stress the pain points. Reformulate the request to gain support.

### Equipment considerations

Managers can employ the same approach to building a financial case for buying new equipment. When is the right time? There are no coupons in the Sunday paper, no Labor Day sales or end-of-model-year closeouts in this case.

**Focus on the future.** Assess current needs, constraints, and future requirements. It is important to understand the objectives in making such a request. Is the goal to increase productivity? Will this new equipment make the department more effective, translating to happier customers? Is it possible to upgrade instead of buying new equipment and still get better performance? Does the company have plans to expand that would require increased equipment demand? By following the suggestions discussed above, managers can create a solid business case to budget for new equipment.

**Find a partner.** Once funds have been budgeted, the next step is to do the research to locate the best suppliers or vendors. The

the procurement manager and the maintenance manager for their opinions of the equipment.

**Look at life cycle.** When calculating costs, make sure to calculate life-cycle costs, including all costs associated with design, procurement, storage, installation, start-up, operation, maintenance, decommissioning and removal. Nearly 95 percent of equipment reliability and maintainability is baked into the equipment during the design phase, so these costs are knowable.

**Look for trouble.** Reliability should be designed into the new equipment. Ask the original-equipment manufacturer for failure modes and effects analysis or reliability-centered maintenance data. Ensure the contract includes training and competency assurance for operations and maintenance.

### Seeing results

This process for making a financial case for investments works. Eventually, the operations manager came back to me with a well-thought-out plan and justification for adding additional employees. He made the case that deliveries were falling behind and that the only way to keep up with demand was to mandate overtime and supplement with temporary help. We agreed to add three employees, not the four he wanted.

When I had to buy a new compressor, I talked to a manager who recently bought the same unit. He told me the real truth about the unit's reliability, the amount he had spent on the recommended spare parts, the headaches he had to endure to fix the problems the installation team caused, and the hours of work it took from his maintenance team that they could have spent on other work.

As you build the business case for adding employees or capital equipment, keep in mind the universal objectives of every company: having productive employees and using resources as efficiently as possible. ■

**Agree? Disagree?** Have something to say? We want to hear from you. Visit [myfacilitiesnet.com/AndyGager](http://myfacilitiesnet.com/AndyGager), and start a conversation.

**It amazes me how many managers give up when the initial answer is no**

Internet provides access to a range of specialized equipment companies, so take the time to research. Check out articles that target the specific type of facility you work in, and attend shows and conferences with technicians to spend hands-on time with equipment and talk with actual users.

**Kick the tires.** Managers next should research the piece of equipment they have identified. One of my checklist items was to get three references of similar equipment that current customers had purchased. I talked to

# Making Infrared Imaging Work

By understanding technology advances and avoiding common misconceptions about performance, managers can maximize their investment

How times have changed for infrared technology in institutional and commercial facilities. Not that long ago, maintenance and engineering managers who needed infrared scans hired qualified vendors and paid a premium price for the service. The manager then tried to make sense of the vendor's report on the results and hoped in-house technicians used the information to address the issue successfully. The entire process was out of the manager's control, and it cost a bundle. But not anymore.

Managers still rely on contractors to provide infrared-imaging services, but many now participate in and control the process. A growing number of departments now have thermographers on staff who perform infrared imaging in-house, making it easier to incorporate infrared technology into maintenance programs.

Even with these changes in the landscape of infrared imaging, questions and misconceptions remain about the specification and effective use of infrared imaging to address problems with electrical, HVAC, building envelope and other facility components and equipment. Managers who are considering either adding the technology or expanding existing programs need to consider several important

items related to infrared thermography before making final decisions.

## New-generation imagers

Front-line technicians and independent contractors have used infrared thermography for condition monitoring and predictive maintenance for years.

Managers in all types of facilities have hired contractors to perform annual thermal scans of critical electrical and mechanical equipment.

As word of infrared-imaging technology's capabilities reached a larger audience, the interest grew, and dropping infrared-camera costs led a growing number of managers to take advantage of its benefits. Many contractors charged a daily rate for imaging services, requiring that managers carefully choose the areas of facilities in which to apply this valuable technology.

Until recently, using infrared-imaging cameras in the field was difficult. Reporting the findings of an inspection, for example, used to be considered an art. Early versions of infrared reports featured pictures of the imager's screen taped to a piece of paper. The next innovation was screen captures from videocassette recorders and 8-millimeter video recorders pasted into word-processing documents.

When manufacturers of infrared imagers developed processing software, it was expensive and took hours of training to use it to its fullest extent. Managers at the time would have received a paper report in a binder, but the report's applicability would have suffered because of the inclusion of low-resolution images. Managers who wanted raw data regarding a particular image were out of luck without the manufacturer's proprietary software, which managers could not afford and technicians could not operate.

Infrared thermography is vastly different now. Infrared imagers can cost less than \$2,000, and they deliver higher-quality images than those produced by a \$40,000 camera 15 years ago. New imagers use memory cards to store images, and many manufacturers include software with the camera so technicians can download images for viewing and processing at no additional cost.

Editing and analyzing images also is much easier. Intuitive software suites enable technicians to change color palettes and add graphs of temperatures, as well as enable

output of thermal images to file formats thermographers can view on any computer.

Viewfinders are mostly a thing of the past because of the National Fire Protection Association's 70E: Standard for Electrical Safety in the Workplace. The standard mandates that thermographers wear arc-flash-rated personal protective equipment and face shields, which hamper thermographers' ability to view a screen. Cameras also have vastly improved ergonomically, and battery technology enables longer inspection times. Cases for infrared cameras also are lighter, and most imagers feature an on-board digital camera, which leaves more room in the case to carry additional lenses.

## Clearing the air

Some managers have invested in infrared technology based on its supposed ability to measure temperature. In fact, infrared cameras detect infrared radiation that an object's surface emits and infers a temperature value from it. Due to the laws of physics, this process can lead to inaccurate readings and incorrect camera settings.

Despite popular belief, technicians cannot achieve accurate temperatures just by adjusting the camera's emissivity correction value. In fact, this situation can cause problems. It usually is possible to make measurement parameter corrections for high-emissivity surfaces, such as rubber insulation on a wire or a painted metal surface, but measurements of shiny, metallic surfaces are unreliable at best.

Measuring temperatures might seem useful, but it is not the easiest application of the technology. While a thermal imager cannot measure temperatures accurately, technicians in most cases can use it to locate potential problems.

Many managers also do not fully understand the link between temperature and the progression to failure, and the link often is not even predictable. It is a given that electrical connections generally should operate at or near the ambient air temperature. The temperatures at which metals melt, greases fail to function or combustion begins are also well-known, but these alarms are not very useful in helping prevent excessive damage to equipment and assets, nor the collateral damage resulting from catastrophic failure.

Despite the growing use of predictive maintenance, infrared thermography is not a crystal ball that can help managers

While infrared imagers cannot measure temperatures accurately in HVAC systems, they can help technicians locate potential problems.





# 8 NEW CAMERAS.

Up to 2.5 times<sup>1</sup> more pixels.  
*Fluke Performance Series*



**FLEXIBILITY OF CHOICE**  
Manual or fixed focus

**SECURELY STORE AND MANAGE YOUR IMAGES.**<sup>3</sup>

- WiFi upload to Fluke Cloud™ storage
- Free storage<sup>2</sup> with Fluke Cloud™ storage
- Share images in real-time with Fluke Connect®
- Removable 4GB micro SD card
- Voice annotation

**BETTER IMAGE QUALITY**  
2.5 times more pixels<sup>1</sup>  
70% better Distance-to-Spot<sup>1</sup>

**CREATE AND EMAIL REPORTS** from the jobsite with Fluke Connect®

See the **DIFFERENCE.**



[www.fluke.com/TiS](http://www.fluke.com/TiS)

**FLUKE**®

<sup>1</sup> Compared to the Fluke Ti1xx infrared cameras

<sup>2</sup> 5GB of free storage

<sup>3</sup> Within your provider's wireless service area; Fluke Connect® is not available in all countries

and technicians predict the future. It will never reveal that a component is going to fail next week, next month or next quarter. The best a thermographer can do is locate a problem and capture information managers can use to make informed maintenance decisions.

To do that, managers must prioritize problems based on more than just temperature alone. They need to consider all relevant factors, including equipment criticality, the cost of failure, the availability of spare parts, and the safety of technicians and building occupants in the event of a failure.

Contributing to the misconceptions surrounding temperature measurement is the role of the environment, including wind and solar loading. Both factors can significantly impact the images the units produce.

Due to convective cooling, outside and inside wind velocities can dissipate thermal signatures, and the result is that apparent serious thermal anomalies turn into seemingly minor hot spots and small thermal problems simply disappear.

For indoor electrical inspections, technicians should modify their procedures so

only a few enclosures are open at a time. Opening a row of enclosures to conduct an inspection means the equipment cooled, due to convective cooling from the environment. As a result, technicians did not produce images of similar components under similar conditions, leading to varying results.

Thermographers also need to consider past, present and future loading conditions when running a route. Under light loads, problems linked to abnormal electrical resistance or excessive mechanical friction simply might not show up. In failing to understand this fact, some managers

have scheduled work during shutdowns because it was more convenient.

### Infrared impact

Advances in infrared-imaging technology make it possible for the value of infrared thermography to penetrate much deeper into departments and their activities than ever before. The impact of infrared imaging is similar to that of computerized maintenance management systems (CMMS), which have made tracking asset data much easier in recent years. Instead of pulling a paper binder from a shelf, a manager can open a CMMS database and review inspections, verify that technicians have made the needed repairs, and even determine if technicians have conducted post-repair inspections.

Software for infrared-imaging systems also has evolved greatly. Analysis now consists of reviewing multiple temperature data points in one image, an overlay of isotherm palettes to highlight bands of temperature,

**Despite the growing use of predictive maintenance, infrared thermography is not a crystal ball that can help managers and technicians predict the future**

and correction factors for surface emissivity and reflected background temperature.

These changes mean a report's information gives managers more insight and value. Thermographers can generate reports and convert them into electronic formats for distribution to managers, facility executives, and consultants. In an era in which justifying equipment purchases is extremely difficult, the adage of a picture being worth a thousand words can pay dividends for managers trying to push for funds.

With camera prices at an all-time low, each facility now can have its own imagers for follow-up inspections after repairs. This advance makes it possible to conduct spot-checks of refrigerant and chilled-water flow, detect moisture in roofs and building envelopes, and perform a host of other tasks that were not possible a few years ago. With minimal coordination, follow-up inspection images taken by technicians can support vendor-supplied data to provide a deeper, more comprehensive view of a facility's overall health. ■

*This article was provided by The Snell Group — [www.thesnellgroup.com](http://www.thesnellgroup.com) — which offers training, certification, inspection, and consulting services on infrared thermography and motor circuit analysis.*



## IFMA's Facility Management Professional™ (FMP®) Credential

### What's your competitive advantage?

By earning IFMA's must-have FMP credential, you will improve your knowledge, enhance your skills, and gain immediate credibility with employers, clients and peers.

Increase your depth-of-knowledge in the core facility management topics deemed critical by employers:

- Operations and Maintenance
- Project Management
- Finance and Business
- Leadership and Strategy

**5,000  
FMPs  
and growing!**

**Earn the MUST-HAVE credential in FM!**

**[www.ifma.org/FMP](http://www.ifma.org/FMP)**



# Trouble on Top: Preventing Common Rooftop Problems

Focusing on traditional trouble spots, as well as on issues raised by photovoltaic systems, can help avert costly headaches

**R**ooftops of institutional and commercial facilities suffer from the “out of sight, out of mind” mentality more than any other building component. That view of these vital systems lasts only until a problem occurs — often at the worst possible time in the worst possible location.

For maintenance and engineering managers, the challenge is to avoid this mentality and take a proactive approach to monitoring the condition of roofing systems and understanding the impact of rooftop activity. A closer look at two ongoing threats to roofs — the presence of ponding water and of oils, greases and chemicals — and one relatively recent trend in rooftop installations, photovoltaic (PV) systems, can help managers focus their resources in the areas most likely to create challenges.

## Water watch

Ponding water can have major negative consequences, regardless of the type of roofing system. Proper design, installation and maintenance of roofing structures can prevent this condition and its associated problems. Ponding water is defined as the water that remains on a roof 48 hours or longer. The possible adverse effects of ponding water on roofs include:

- Deformation of the deck structure. Ponding water can substantially increase the load on decks. As water accumulates, deck deflections can increase, resulting in additional ponding water, which could compromise the deck's structural integrity.
- Damage to the surface. Ice develops and moves constantly with temperature changes. This movement can scrub the membrane and cause considerable physical damage to the membrane.
- Algae and vegetation growth. When water stands for long periods, algae and vegetation growth can occur, causing damage to the roof membrane and additional ponding, as well as clogging drains.
- Accumulation of dirt, debris and other contaminants. These elements can damage the membrane surface.

Ponding water also can lead to accelerated erosion and deterioration of the membrane surface and result in roof system failure. Allowing even small amounts of moisture beneath the roof membrane can reduce the insulation's

thermal efficiency and can cause serious damage to the deck, insulation, membrane, and the building's interior.

## Chemical considerations

Roofing systems are intended to provide protection from natural elements. Some roofing systems, especially those on factories, restaurants and fast food chains, require special care due to the presence of greases, oils, bacteria, and other agents that tend to adversely affect the integrity of the roof membrane.

Depending upon the number and type of contaminants, the roof system specifier must select the type of roofing system that will best satisfy all performance requirements.

Modified bitumen roofing membranes can be adversely affected by exposure to animal or vegetable cooking oils and greases. Membrane degradation typically occurs around exhaust vents, where the membrane has repeated contact with contaminants. The organic substances in the contaminants typically weaken and eventually break down the polymer-bitumen network, causing premature degradation.

Bacteria and fungi also can cause problems. Factories producing foods such as potato pulp and dry milk have reported cases of modified bitumen membrane decay due to bacteria. Such deterioration can lead to the decay of the membrane and surface coating. The degree of degradation depends on the type of microorganism, temperature and other climatic conditions, and the bitumen composition. Fungus growth, which typically occurs in hot and humid regions, does not cause the same detrimental effects as bacterial attack.

Other chemicals, such as solvents, acids, bases and oxidizing agents, can cause varying degrees of harm to polymer modified bitumen roofing membranes. Non-polar solvents can temporarily swell and soften polymer-modified bitumens, causing slumping and poor traffic resistance. They also can cause the polymers to separate from the asphalt.

While polymer modified bitumens have excellent resistance to various inorganic acids and bases, some of these chemicals can attack and degrade glass and polyester mats and fillers. Organic acids also can have detrimental effects. Strong oxidizing agents can attack the polymer and the bitumen in a membrane. When ponding water is present, inert, solid dusts also can contribute to mud cracking. All of these effects can lead to premature failure of the membrane.

When installers use proper precautions and protective equipment, PV systems go on safely and without incident.

To prevent problems, managers and technicians can take these steps:

- Determine the types and concentrations of contaminants that might be present. When re-roofing, investigate the effects, if any, that contaminants present had on the existing roof before specifying and applying a new system.
- Use commercially available traps and filters to prevent contaminants from being exhausted onto the roof.
- Establish a maintenance program to monitor the affected roof sections and maintain traps or filters.
- Provide positive drainage — at least ¼ inch per foot roof slope — to prevent ponding in the affected area.
- If contaminant effects are minor, increase the number of plies, or add resistant coatings for adequate protection.

## Spotlight on photovoltaics

The push toward sustainable building practices has led design professionals to look at roofs as more than just providing weather resistance. They view the roof as space for renewable energy sources, such as PV systems. While PV systems help the environment and building owner, their impact on membrane performance is an important issue. Due to its inherent durability, bituminous membrane roofing is well-suited as a platform for PV systems, if the parties practice proper design, installation and maintenance.

When installers use proper precautions and protective equipment, PV systems go on safely and without incident. Areas requiring attention include these:

**PMP** **PROGRESSIVE MATERIALS**

ENGINEERING SUSTAINABLE ROOFING SOLUTIONS

**WE MANUFACTURE  
100% SILICONE COATINGS  
FOR ROOF RESTORATIONS**

**100% LEAK-FREE**

**100% SEAM-FREE**

**HALF THE COST OF ROOF REPLACEMENT**

**NO PRIMER REQUIRED**

**QUICK INSTALLATION**

**AND MORE!**

**812-944-7803**

**ROOF COATINGS | SPRAY FOAM | ACCESSORIES**

**For More Info: [PMsilicone.com/FMD](http://PMsilicone.com/FMD)**



**Fall hazards.** Working at heights can be dangerous. Installers must follow all necessary precautions, safety guidelines and U.S. Occupational Safety and Health Administration regulations in conjunction with proper roofing-trade practices, including the use of appropriate fall-protection and fall-arrest equipment.

**Shock and electrocution hazard.** PV modules generate electric current. Installers and maintenance workers must observe safe electrical practices at all times. They also must comply with local codes and National Electrical Code requirements, as well as the

manufacturer's installation instructions and cautionary recommendations.

**Proper installation is critical.** Not only must the PV system be installed according to the manufacturer instructions, but any contact, adhesion, or penetration of the roof assembly by the PV system must be in accordance with manufacturer recommendations. If the specific roofing manufacturer is unknown, installers should follow generally accepted roofing practices.

In evaluating modules, managers should refer to applicable codes and standards, such as: ICC-ES AC365; IEC 61646

Edition 2.0, 2005-05; IEC International Standard, Thin-Film Terrestrial Photovoltaic (PV) Modules – Design qualification and type approval; NRCA's Guidelines for Roof-mounted Photovoltaic System Installations; and NEC Article 690.

To maximize the service lives of the PV and roof membrane systems, PV systems should be installed in conjunction with a new roof membrane system. If managers are considering having the PV system installed over an existing roof, they should consult with a roofing professional to evaluate the membrane's age and condition.

The roof membrane might absorb additional heat when building-integrated PV panels are adhered to the membrane due to their dark color, combined with the generated heat. Increased heat load and life expectancy of roofing systems generally are inversely proportional, and at elevated temperatures, commercial roof membrane systems will suffer from accelerated aging. Managers should carefully plan and execute the addition of materials to the roof system that elevate its surface temperature.

Before installing a PV system, have a licensed structural engineer inspect the roof structure to ensure the building can support the dead, wind, and seismic loads imposed by the PV system.

Consult the roofing system manufacturer for the minimum allowable slope for its membrane product. Proper drainage will help minimize accumulation of dirt and debris under the PV system.

Managers need to ensure that the design maintains positive roof drainage. Altering



## Reduce, Recycle, Reimagine.

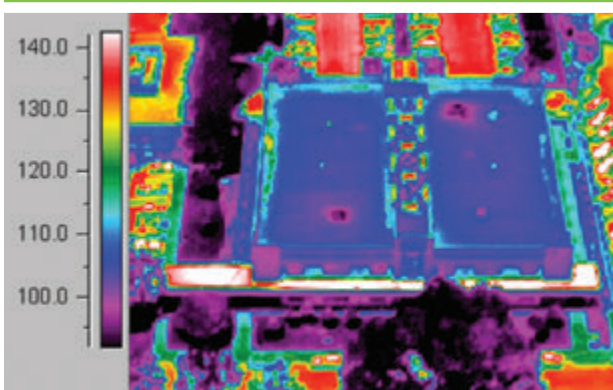
Duro-Last® was founded on the idea of prefabrication, which greatly reduces scrap on the job site and makes roof installations much quicker. Later on, our founder, John R. Burt, created Oscoda Plastics® to make resilient flooring out of manufacturing scrap. Recycling is just as important to us today – last year alone, Duro-Last recycled 3.5 million pounds of PVC.



Visit [duro-last.com](http://duro-last.com)  
or call to find out more.

**800-248-0280**

**Sustainability  
without compromise.**



**DURO-LAST®**  
THE WORLD'S BEST ROOF®

"Duro-Last" and the "World's Best Roof" are registered marks owned by Duro-Last, Inc.  
"Oscoda Plastics" is a registered mark owned by Oscoda Plastics, Inc.  
Reduce-Recycle-Reimagine\_SUS\_9.9.14\_1

**Photovoltaic modules generate electric current, so installers and maintenance workers must observe safe electrical practices at all times**

the rate and direction of water flow intended in the original design might cause dirt and debris to build up around the obstructions and accelerate membrane deterioration.

Roof-mounted PV systems may be installed using a rack-mounted, ballasted, or adhesive method. Managers must be sure installers carefully read and follow the PV system manufacturer's instructions.

Contact the roofing manufacturer for installation and waterproofing best practices and for recommendations for construction details and their installation affecting the membrane system. Before PV system installation, managers also should contact the manufacturer for recommended practices to protect the system. When planning the location of rooftop PV panels, consult with the PV manufacturer for guidelines while considering wind- and fire-resistance requirements.

To ensure comprehensive post-installation maintenance, managers should consult with the manufacturers of the PV, racking — if applicable — and roofing system for recommended inspection and maintenance programs. ■

*The Asphalt Roofing Manufacturers Association — [www.asphaltroofing.org](http://www.asphaltroofing.org) — provided information for this article.*

## MOBILE CMMS

## Maintenance on the Move

Mobile software and apps can create tangible benefits for managers who plan carefully and implement wisely

By Dan Hounsell, Editor-in-Chief

Maintenance is on the move more than ever. Institutional and commercial facilities have been talking about intelligent and smart buildings for three decades. Those smarts now extend to the smart phones and tablets technicians increasingly are taking into the field. Developers of computerized maintenance management systems (CMMS) are rolling out mobile apps for their software, offering technicians the ability to remotely access data, work orders, and other resources.

Equipment manufacturers also are introducing apps for use in monitoring and controlling their products. As a result, managers must make smart decisions about the best ways to equip their technicians with the software and hardware necessary to make the most of their investments in new-generation software. For some of the managers who have led their departments down the mobile path, the benefits have been tangible and important.

"We've changed the culture," says David White, manager of CMMS and work management with the University of Denver. "Our university technology folks have seen what we're doing and decided that might be what they need to do for some of the graduate programs that have iPads included in the curriculum. So I feel like once again, facilities is leading the technology initiatives here at the university."

## Roll-out reactions

The road to mobile CMMS has become more crowded in the last few years as software and hardware options have expanded, giving managers more opportunities to make the commitment.

In addition to the decision on software, managers must determine the most appropriate hardware choice based on their departments' needs.

"We went to the iPads because the PDAs (personal digital assistants) technicians had been using had a small screen, and it was becoming difficult for the trades to view all the information we were trying to push out to them," says Anand Sankey, director of engineering and maintenance services with Western Michigan University, whose 130-person department maintains 219 buildings with more than 8 million square feet. "We decided it was time to go to something else. We knew the PDAs

were becoming obsolete, not to mention they were \$1,000 apiece with about a three-year life cycle. We could get an iPad for \$350-400, so we decided it was time for us to look for something better."

The challenges of making the move to mobile go beyond software and hardware to include training and user morale. As with any change, the response to new mobile technology can range from resistant to enthusiastic, generally based on a user's familiarity with similar technology.

"Reactions varied," says Johnny Flores, senior facilities planning analyst with the University of Texas at San Antonio, whose department oversees 129 buildings on three campuses. "Some front-line technicians were using personal smartphones and tablets for home use, so the transition to the iPad was fairly easy. Some were unfamiliar with this new technology but came up to speed rapidly. Facilities offered a training program to accommodate these various levels of users with plenty of



**ARE YOU PREPARED?**

If you rely on smartphones for emergency communications, there's a better option. **Kenwood NX-5000** digital radios don't rely on the public network, so they will continue to work in critical conditions. We can build an affordable system, customized with features like texting, and integrate with your existing telecomm, DAS or IP assets. Call us today to set up a demo.

1-800-950-5005 [www.kenwood.com/usa](http://www.kenwood.com/usa) **KENWOOD**

hands-on training, one-on-one support, and a gradual switch to the new processes." The perils of the roll-out process emphasize the importance of user training.

"We were strategic in how we rolled it out," Sankey says. "First, we created manuals because a manual is very important as a help tool. This came from five years of experience we had with the (technicians using) PDAs. We also decided to have a series of hands-on training sessions. We trained in groups of no more than eight people at a time and about two-three hours long

because we learned that they needed the individual attention.

"The training was like a pyramid system. We trained a few people, and they trained others. But about five years prior to that, technicians had started using PDAs. We had the luxury of the benefit of having them kind of sensitized to the concept of mobile devices, so moving to iPads wasn't a shock."

Strong reactions are not uncommon in such evolving situations. One option for managers is to provide a variety of user-support options.

"People panicked, so we encouraged them to go to their peers to understand what's going on," Sankey says. "If they didn't, we were more than happy to provide staff to make them comfortable. That was the key. Even if you have on-site training, you're dead in the water if you don't have IT support to fix things if they break because you lose credibility. We had both."

### Planning for problems

The challenges presented by the move to mobile CMMS can range from mundane

to critical. For most facilities, no challenge is more critical than ensuring the security of facility systems and the related data.

"Like many institutions, we have system security concerns," Flores says. "The devices give users access to corporate data and institutional data. So our IT department has put in place system security policies. To adhere to those policies, we have to use a MDM (mobile device management) system to enforce a pass code. If you don't put a pass code on it, anybody can use it. The MDM gives us the opportunity to do things like protect the data, control access to different web sites, and limit the applications they install. It's not that we don't trust our guys. It just makes it cleaner to have the same configuration on each device."

The situation also requires Flores to take additional measures to address security.

"Policies and procedures needed to be developed to handle various issues like standardization of procedures, data security, and device tracking," Flores says. "Both the operating system and the application software have periodic updates, and the IT group had to keep up with the latest versions and be sure that they were compati-

### bonus info

We asked CMMS manufacturers about the benefits of mobile CMMS and the challenges of implementing the technology in their institutional and commercial facilities. For their responses, as well as a roundup of CMMS products, visit:

[www.facilitiesnet.com/fmd](http://www.facilitiesnet.com/fmd).

  
facilitiesnet.com

ble with the existing system infrastructure."

White's department also wrestled with user access related to mobile technology.

"Through the implementation process, we found out that if you give someone a computer, they might do silly things, like spend time in eBay," he says. "It's not an intense policy because there needs to be a balance, just like there is with any workforce as far as trying to do their online banking at work and things like that. And if a phone gets lost or stolen, we can wipe them remotely.

For White, another challenge relates to the element of buy-in among the parties involved in the complex process.

"We probably have people at different levels of management that are having difficulty buying into it," says White, whose 190-person department is responsible



MOW



SWEEP



BLOW



**POLARIS**  
COMMERCIAL

## DELIVERING A BETTER WAY TO WORK

Polaris® Brutus®, the most versatile, most capable and most comfortable commercial UTV ever created. Diesel power, hydrostatic transmission, available all-season climate control and optional front attachments deliver new levels of productivity.

— FOR UP TO —  
**\$2500** IN  
**SAVINGS\***  
— THROUGH 11/30/15\* —

GO TO  
[POLARIS.COM/COMMERCIAL](http://POLARIS.COM/COMMERCIAL)  
OR CALL

1-800-743-3436  
TO SCHEDULE  
A DEMO TODAY!

NFMTORLANDO Booth 301 • FREE INFO: Circle 419

\*Go to [Polaris.com/commercial](http://Polaris.com/commercial) and click on Special Offers for more details. WARNING: The Polaris BRUTUS® is not intended for on-road use. Driver must be at least 16 years old with a valid driver's license to operate. Passengers must be at least 12 years old. Always wear seat belts. Polaris recommends that drivers and passengers wear helmets, eye protection, and seat belts. Never engage in stunt driving, and avoid excessive speeds and sharp turns. Riding and alcohol/drugs don't mix. ©2015 Polaris Industries Inc.

for 92 buildings with 5 million square feet of space. "We definitely have executive sponsorship, as well as throughout the operation because there are groups that do the reporting to the business and financial group. But even at a level I wouldn't expect, I feel like we don't have total buy-in. We want to have full, high, wide and deep enthusiasm about what we're trying to do."

Besides the use of the new software and hardware to enhance mobility, managers looking to take full advantage of mobile technology must address users' access to and use of apps. They are trying to balance the system's security needs with the benefits provided by any given app.

"Technicians do not have the ability to download apps onto their devices," says Erik Dantes, facilities information technology director with Western Michigan. "We made a best guess as to what apps they probably would need. So they have a pdf reader and a weather app. We have considered and looked at manufacturer's apps, but we haven't rolled out any of those."

Flores says his department has taken a similar approach, taking staff suggestions into account in determining whether an app's benefits warrant its use.

"We solicit input from the technicians about apps they have discovered and review them for appropriateness," Dantes says. "If there appears to be value to the group, we add the app to the iPad configuration for all of the technicians. If the suggested app has a competing version that is already in use, we refer the technician to existing apps that have related functions. If there is a demonstrated special need, we add the app to the individual's iPad."

### The upside of change

Despite the challenges of going mobile, managers point to a series of tangible benefits that can make the process worthwhile for departments. For White, the ability of mobile technology to quickly gather, store and allow access to data from technicians' work orders has proven valuable.

"One goal was to raise our customer awareness of us and their satisfaction," he says. "People always said, 'We don't know when (a project) is done, we don't know when it's going to get done, and we don't always know how much it costs.' But with the mobile (CMMS), people get immediate feedback that says, 'The job is finished.'"

"They also get a message from the system that says what actually happened, and that wasn't happening before. And on the administrative side, we probably have \$5,000-\$7,000 less in data-entry time on the back end."

Western Michigan also has seen the benefits of improved communication.

"We handle an average of 35,000-40,000 work orders per year, including service calls and preventive maintenance," Sankey says. "There were a huge number of work orders going out, and they all had to come back to be closed. We weren't allowing the trades to close

their work orders. The backlog meant work orders sometimes weren't closed for 48-72 hours. In that time, (a customer) did not know its status. So if technicians went to iPads and entered comments, it was immediately updated as soon as they walked into an area with wireless coverage and it synced up."

For Flores, the issue of rapid information transfer has focused on providing technicians with crucial information.

"We have seen a decrease in the amount of time it takes to assign work to an individ-

ual," he says. "Information about the maintenance tasks is transmitted directly to the technician's device, eliminating the need to return to the shop for detailed instructions. We've also experienced a reduction in the amount of time it takes to record work results. The manual methods required documentation by the technician to be rekeyed by the work control department into the CMMS system. With the iPads, the technicians record their work progress directly on the device, which is automatically uploaded to the main system."

For many departments that have taken the plunge into mobile CMMS addressed initial challenges and concerns, the future involves trying to determine the best ways to maximize the organization's investment by making the system more useful for users.

"My challenge now is to find out how much more I can do with the iPads," Sankey says. "So I go around to the shops and ask, 'What do you need loaded onto the iPad?' It would be nice to start attaching pictures to the work orders. I'd like to see that happen." ■



SherCrete® Flexible Concrete Waterproofer



Searching Blue  
SW 6536



## Every one of our commercial building solutions has a unique name.

At Sherwin-Williams, our professionals like Chris understand the unique needs of Facility Maintenance Managers. You require coatings that deliver aesthetic appeal and durability all while adhering to performance and environmental requirements. Our people can recommend solutions to help you meet budgets and deadlines, as well as create appealing spaces to attract and retain tenants.

Take advantage of our expertise in the commercial market and discover our wide range of coating systems for walls, floors, roofs and concrete surfaces. [swfacilityowners.com](http://swfacilityowners.com)



# Clearing the Way: Planning for Efficient Drain Cleaning



RIDGID

Training technicians on the proper operation of drain-cleaning machines and providing support when the machines break down are two important factors for managers to consider when choosing a drain-cleaning manufacturer.

A comprehensive drain-cleaning program requires careful specification, smart planning, and knowledge of the piping systems

By Dave Lubach, Associate Editor

**D**rain cleaning is an underappreciated activity in many institutional and commercial facilities, but maintenance and engineering managers know that preventing problems with plumbing and piping systems is essential for the safe and cost-effective operation of facilities.

Managers must consider a number of factors when planning an effective drain cleaning program. Specifying products, establishing a maintenance plan, and developing knowledge of drain systems are among the important issues.

Manufacturers of drain cleaning equipment often meet with managers trying to sort out such challenges in their facilities, and know the important questions managers must ask to improve their drain cleaning programs.

## Assessing needs

The first step in establishing a drain-cleaning program is to understand department and facility equipment needs.

“One or two machines will typically not cover all possible applications unless you are in a very small facility,” says Mark Speranza of Electric Eel Manufacturing Co. One question he recommends managers consider is, “Do we have all necessary equipment that our staff will need to effectively do their jobs?”

He recommends the following products as baseline equipment for a drain-cleaning program:

- a sink machine for 1½-2-inch lines
- an intermediate size machine that typically includes a ½-inch diameter cable that is 50-75 feet in length
- a mainline machine, typically a drum-style unit or sectional cable machine, for 4-6-inch applications
- an electric- or gas-powered high-pressure water jetter to remove grease blockages in kitchens
- a pipeline inspection camera and locating equipment to pinpoint reoccurring problems.

Other important considerations to ponder as part of a drain cleaning programs are the size and age of facilities.

“Engineers and maintenance personnel will need this critical information for planning purposes,” Speranza said. “The number of buildings to be maintained will help

determine the quantity of machines needed to keep up with demand. Also, the older the plumbing system the more frequently problems may arise as compared to a newer facility with newer plumbing.”

With so many different options for drain cleaning equipment available, it is crucial that managers understand the size of drainage pipes and the average distance between access points.

“Knowing the size of the lines will assist in the selection of the correct equipment for all servicing needs,” says Brandon Moherman of Ridgid. “All machines will have a minimum and maximum line-diameter range that should be followed. Otherwise, damage to the drain cleaning cables may occur. All drain cleaning machines come with different lengths of cable, so it’s important to know the distances between access points to determine the correct cable length.”

## Manufacturer’s assistance

Training technicians on the proper operation of drain-cleaning machines and providing support when the machines break down are two important factors for managers to consider when choosing a manufacturer. When managers are developing or fine-tuning a plan, these concerns should rank near the top for priorities.

“If you are running a large university, for example, obviously a larger number of plumbers will be required to handle the never-ending, day-to-day issues that arise,” Speranza says. “If you have what you think is the correct number of employees, are they trained and qualified to safely operate a variety of drain cleaning machines and related equipment? Many times, vendors are more than happy to help train employees on the safe and proper operation of their equipment as part of the service they offer at no additional cost.”

Onsite training “is very important for the success of the department,” Speranza says. “Proper operation will ensure a quick resolution to the problem, and safe operation is critical regardless of the type of equipment being used.”

## Minimizing maintenance

When problems do occur with drain-cleaning machines, managers must feel confident the manufacturer will address the issues.

**75 Years of Excellence**

**1939** **2014**

**We** are proud to announce 2014 as our 75<sup>th</sup> anniversary as manufacturers of professional quality drain and sewer cleaning equipment. We are the originator of the Model C dual cable sectional machine, and have steadily expanded our product line to become a complete source for drain and sewer cleaning from drainlines to mainlines. Our current product line includes a wide range of electric and gas powered sectional drain cleaning machines, drum style machines, high pressure water jetters and a full range of pipeline inspection systems and locators.

**1-800-833-1212** [www.electriceel.com](http://www.electriceel.com)



"It is important to know how your equipment will be supported if it has issues, which could be the result of improper use or just wear and tear," Speranza says. "While most drain cleaning equipment is fairly simple to maintain, other equipment such as inspection cameras may require the units being sent out for service. Be aware of the vendors' after-sale support in cases such as this."

Establishing an effective maintenance program can go along way in keeping down costs.

"Preventive maintenance (PM) is much more cost-effective than emergency drain cleaning," says Dave Dunbar of General Pipe Cleaners. "But it is commonly not done when the facility does not own its own appropriate equipment. Having (to outsource) a pipe inspection tends to be the most expensive category of service."

Establishing PM plans for piping systems early in the planning process helps keep costs lower.

technicians determine what equipment is necessary for the job.

"Do you have hard or soft clogs?" Dunbar says. "Hard is something like a foreign object or a tree root. Soft is grease, sludge or sand. Snakes or cable-style machines are best for hard stoppages, and high-pressure water jetters are best for soft stoppages."

If the clogs are difficult to access, technicians must consider a number of different equipment options for their program.

"If access points are in tight quarters, such as near a wall or beside a structure, a drum machine rather than a sectional machine is a better choice since it doesn't require the footprint behind the machine," Moherman says. "If the access points require climbing a ladder, a lighter setup is optimal. An advantage of the sectional machine is its ease of transport. The machine and the cable separate, making for a lighter load."

Another situation that might require additional consideration from manag-

ers is a facility that requires higher-than-usual cleaning standards, such as a health care facility or kitchen areas where food is prepared.

"If your drainage system needs a high degree of quality at all times, a water-jetting machine is a key tool," Moherman says. "Water-jetting machines blast through sludge, soap, grease and sediment blockages. As you pull the hose back, it power scrubs the line, flushing debris away and restoring drain lines to their full, free-flowing capacity." ■

## Addressing drain-cleaning issues with an in-house preventive maintenance plan inevitably improves operating efficiency

"Preventive maintenance issues are given more visibility when done in-house, and the PM protocols and tool care schedules policies tend to be funneled into the overall business strategy, which inevitably improves operating efficiency," Dunbar says.

### Solving problems

Managers must consider a number of situations before instituting a drain-cleaning program. Among the issues for them to consider are determining the source of clogs, accessing hard-to-reach areas, and facilities that require extra-stringent cleaning standards. The faster a technician can diagnose these potential problems, the more efficient a drain-cleaning program becomes.

The emergence of video inspection technology to enhance the view inside pipes has helped technicians improve efficiency.

"Camera and locating equipment have brought a whole new aspect to drain maintenance," Moherman says. "Not only can you clear the blockage, but now you have the opportunity to visually identify exactly what type of blockage you have for optimal cleaning. If you have to dig to expose and replace a section of pipe, locating equipment can remove the guesswork and pinpoint exactly where and how deep you need to dig."

Knowing the types of clogs that regularly occur in piping also will also help

# MAKE more HAPPEN

The products you count on for your entire building.

Your job makes every other job in your building possible. So count on Staples® Facility Solutions for the supplies you need and the brands you trust. Delivered fast and free.

To learn more, visit [StaplesAdvantage.com/SpotlessBuilding](http://StaplesAdvantage.com/SpotlessBuilding)

**STAPLES** Facility Solutions



FREE INFO: Circle 411



## Product Focus

# Safety First: Aerial Work Platforms

By understanding hazards, providing targeted training and partnering with manufacturers, departments can enhance worker safety

By Thomas A. Westerkamp

Maintenance and engineering departments rely on aerial work platforms to perform essential tasks in hard-to-reach areas of institutional and commercial facilities. The tasks often include replacing lighting components, inspecting and repairing building envelopes, and painting interior spaces. The equipment helps departments perform these tasks more quickly and efficiently, but managers also must be sure workers use the platforms safely.

Managers can achieve this goal by understanding common safety issues related to aerial work platforms, implementing training that emphasize equipment safety and working with manufacturers to maximize the safe use of aerial work platforms.

## Highlighting hazards

Aerial work platform safety begins with selecting the most appropriate lift for the job and planning the job so workers can perform it safely. If managers omit either of these steps, the job starts with unnecessary

built-in risks. For example, if technicians opt to use a shortcut — modifying a forklift by adding a personnel platform to the forks, for example — the result could be an unsafe, imbalanced platform that can easily tip.

Job planning begins with determining each task and the reason for performing it. Is it being done because something is wrong somewhere else? Is some detail not right? Any extra steps added because of these conditions increases the risk exposure due to overworking technicians and equipment. The best safety precaution is planning the job carefully and completely so it is done with the right equipment, with trained and safety-oriented personnel, and under properly trained, safety-oriented supervision in the fewest steps.

Aerial work platform safety issues encompass eight equally important phases during equipment use: donning personal protective equipment (PPE); performing a pre-job equipment safety check; inspecting the job site for hazards; moving the lift to the job site; using the lift at the site; removing the lift from the site; performing post-job maintenance; and returning the lift to storage.

No work should start until workers have donned PPE, including fall protection, hard hat, goggles or safety glasses with side shields, shoes, gloves, and a respirator if required.

Depending on the work, technicians might need special equipment. For example, when welding or burning, the welder needs such items as a leather jacket, gauntlet gloves, full face protection from a welding helmet with under-helmet head covering and appropriate eye protection lens, heat-resistant boots or shoelace covers, and a respirator when fumes are present.

The pre-job inspection ensures all safety devices are in place and working properly. It should include lubricating all fittings, as well as checking hydraulic systems for leaks and proper pressure and checking tires according to the manufacturer's maintenance recommendations. Workers should check the job site to identify: floor or ground obstructions, holes, slopes, or irregularities that might cause tipping; side clearances, such as narrow passageways; obstructions, such as utility poles and anchor cables, electric wires, and piping; other obstructions that might be encountered moving the lift from

storage to the job site; and clearances at sharp corners.

Workers should arrange the job site in an orderly manner, with designated areas for material and equipment laydown when not in use. They also should test the lift's vertical and horizontal reach and stabilization controls before starting work and assign a safety watch while the lift is in use and when

**Training is the best defense against accidents. The proper use of personal protection equipment might seem like an obvious remedy, but there are right and wrong ways to do so**

it returns to storage for the protection of the operator and nearby personnel to prevent damage to the equipment and structures.

After the job is complete, workers should inspect, clean and maintain the equipment according to manufacturer recommendations. They also should store all safety devices, such as outriggers, in designated places on the lift to ensure everything is ready to go for the next job.

## Lessons in safety

Nearly 85 percent of aerial lift accidents occur during operation, according to the Occupational Safety and Health Administration (OSHA). The accidents break down like this: electrocution, 30 percent; falls due to tip-overs, 23 percent; falls from platforms, 20 percent; and hit or crushed in or by a lift, 12 percent. The remaining accident causes are maintenance-related — 10 percent — or tied to other causes, such as injuries when climbing on and off the lift, 5 percent.

Training is the best defense against accidents and injuries. The proper use and adjustment of PPE might seem like an

**Access Redefined**

**TEUPEN®**

877-838-7361  
teupen-usa.com

obvious remedy, but there are right ways and wrong ways to use them. One example is the fatal fall from a lift platform by a technician wearing fall protection. Because the harness was too long, the technician's fall momentum swung him back and forth with great velocity under the platform, where he hit his head repeatedly on the underside of the platform, causing severe trauma. Training by certified instructors spotlight these important points about proper use of safety equipment and safe practices and help workers avoid accidents.

Reading the lift manufacturer's operation and maintenance manuals is the responsibility of operators and technicians, while the owner's responsibility is to provide training by qualified and certified trainers upon delivery of a sale, rental or lease lift.

Managers also can consider third-party training. Online OSHA/ANSI-compliant training courses include downloadable operator certification cards that show proof that the employee took the course and passed the tests. Courses are equipment specific, so a technician might require multiple courses to operate several types of equipment, such as boom lifts and scissor lifts. Examples of course content provided by third-party sources are: an explanation of types of lifts; selection of the most appropriate lift; inspections; safety procedures; fall protection; and shutdown procedures.

Third-party trainers often provide: raining kits, DVDs, OSHA publications, lift-safety posters, CD-ROMs, and free OSHA information and resources, as well as first-aid kits, signs, and PPE. Kits generally contain everything needed for departments to provide their own lift training.

### Manufacturers as partners

The manufacturer's role in safe use of lifts is threefold. They introduce design improvements that promote safety, they offer training and training materials and facilities, and they provide documentation of safe practices in operation and maintenance manuals.

Equipment design emphasizes the lift's features that contribute to safe operation. For example, tipping has caused serious accidents. Now many lifts feature instruments that warn operators when the combination of load, reach, and leaning position due to slope of the surface on which the lift operates are at the equipment limit. A warning sounds in the cab, and the equipment is prevented from continuing in the unsafe manner.

Manufacturer-provided training courses can help operators become familiar with these features and the hazards they address. These courses are available in various formats — online, at the manufacturer's location, or at the user's site.

A train-the-trainer strategy is another option for managers. With this option, the operator or technician receives the training required to become a certified trainer and then serves as the go-to person for all training needs at the facility. A manufacturer also can provide operator and maintenance training course materials to be used by the

owner's certified trainer at the owner's site.

One additional advantage of training at the manufacturer's site is that the offering encompasses both classroom and hands-on training. Hands-on training is done at a site that is specific for the purpose. These courses include testing and certification documentation for recording the testing results. These documents, signed by the trainer and the student, provide a record of the training by specific aerial lift equipment make and model as required by OSHA. Departments also can provide re-training and pre-use training in this manner.

Manufacturers go to great lengths to emphasize the importance of reading the entire manufacturer's operating and maintenance manuals material before operating the aerial work platform equipment. But besides operating instructions, manufacturers have developed very comprehensive pre-operation, operation, maintenance, and post-operation checklists that provide valuable safety tips, as well as recommended preventive maintenance tasks and their frequency.

To complete the circle of safety, managers should listen carefully to the concerns of lift operators and address any deficiencies in the equipment — faulty brakes, leaks, or missing safety decals, outriggers, or wheel chocks — before operation continues. Managers and supervisors also should frequently remind operators and crews working around lifts that there is only one way to operate aerial lifts: the safe way. Any other way is the wrong way. ■

*Thomas A. Westerkamp is a maintenance and engineering management consultant and president of the work management division of Westerkamp Group LLC, <http://www.westerkampgroup.com>.*

## AERIAL WORK PLATFORMS



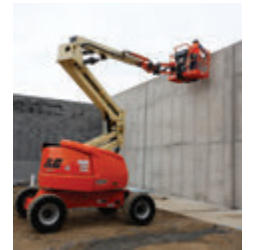
### TEUPEN Compact track lift

The TL54AJ features a platform that reaches 54 feet high and is 32 inches wide with single-door access. The lift includes an independently controlled jib and 28-foot side reach with height- and width-adjustable tracks. The lift is powered by a Kubota Z602 14.5 horsepower diesel engine with a secondary electric motor. Other features include: cable remote control; an outrigger design for slope stabilization to 21 percent; and a 440-pound unrestricted basket capacity. **Free Info: Circle 220**

### JLG INDUSTRIES INC.

#### Boom lifts

The series of lifts — the 400S, 460SJ, and 450AJ — feature platform capacities up to 1,000 pounds and use 40 percent fewer hydraulic hoses and more streamlined hose routing compared to previous models, reducing the number of potential leak points and servicing requirements. The 400S and 460SJ models are telescopic lifts and the 450AJ is an articulating model. The machines' memory display interface communicates using full language text, not just fault codes, to simplify troubleshooting and shorten service calls. **Free Info: Circle 221**



### CUSTOM EQUIPMENT INC.

#### Scissor lift

The HB-1230 is designed for projects on delicate flooring, such as tile, laminate, raised floors and mezzanines. The lift features a zero-turn radius and a working height to 18 feet. The lift's 30-inch-wide by 55-inch-long platform can hold up to 550 pounds, and the platform includes an extension that adds nearly 29 inches of length. The lift weighs 1,670 pounds and includes dual front wheels to help distribute the machine's weight for lower wheel loads. **Free Info: Circle 222**

### REECHCRAFT INC.

#### Portable lift

The PowerLift is an alternative to ladders and inconvenient aerial work platforms for certain tasks. The portability of the unit is enhanced by a hitch hauler, which eliminates the need for a trailer. The lift can fit through doorways as small as 30 inches wide and moves up and down stairs easily. A fully enclosed personnel basket provides increased security and safety. **Free Info: Circle 223**



### TEREX CORP.

#### Scissor lift

The Genie GS-4047 self-propelled electric lift is designed for use in tightly packed, high-rise indoor spaces. The ANSI/CSA-certified unit lifts up to 550 pounds to a maximum working height of 45 feet and can be driven at full height. The lift features dual-front-wheel drive and a zero inside turning radius with a footprint that is 8 feet long and 47 inches wide stowed. A 3-foot extension deck allows for additional platform workspace. **Free Info: Circle 224**

**ULINE**  
SHIPPING SUPPLY SPECIALISTS  
**SHELVING SOLUTIONS**

**SAME DAY SHIPPING**  
**1-800-295-5510**  
uline.com

**COMPLETE CATALOG**

▲ **FREE INFO: Circle 418** Online Reader Service Card: [fmdmaginfo.com](http://fmdmaginfo.com)

**FLOW HOOD**  
25-2500 cfm Range  
Fast, Accurate, Easy, Auto-Range and Zero Backpressure Compensated Air Balance System  
Automatic Density Correction  
Custom Tops Made to Order

**Shortridge Instruments, Inc.**  
7855 E. Redfield Road Scottsdale, AZ 85260  
480-991-6744 Fax: 480-443-1267  
[www.shortridge.com](http://www.shortridge.com)

▲ **FREE INFO: Circle 417** Online Reader Service Card: [fmdmaginfo.com](http://fmdmaginfo.com)

# HIGH ACHIEVERS

By Dave Lubach, Associate Editor

Recipients of the 2015 *Facility Maintenance Decisions* Achievement Awards discuss the benefits of their projects and programs, which demonstrate the central role of maintenance and engineering departments in successful facilities

## Arlington (Texas) Independent School District



### CATEGORY: SUSTAINABILITY



**THE ACHIEVEMENT:** Helped the district avoid \$6.6 million in utility costs over five years with upgraded lighting and HVAC system commissioning



**THE BENEFITS:** Being a public school district, our goal is to improve the learning environment for our students. As stewards of public tax funds, we strive to reduce electricity consumption and cost so more funding reaches the classroom. The LoanSTAR project has provided us with the means to help meet some of our conservation goals, all while creating a better campus environment.

Our interior lighting upgrades have provided better quality lighting in classrooms for students and teachers, while exterior lighting upgrades have increased safety and security by providing better lighting in parking lots and at building entrances. Comprehensive HVAC optimization has improved overall thermal comfort for occupants.

All of these considerable benefits are in addition to substantial cost savings.

— Danny Helm, Energy Manager

## Texas Children's Hospital, Houston



### CATEGORY: SUSTAINABILITY



**THE ACHIEVEMENT:** Lowered utility costs per square foot from \$7.04 to \$5.20 by maximizing the building automation system



**THE BENEFITS:** Using a daily override report and a measurement and verification scorecard allowed us to save the organization more than \$2 million dollars per year. The creation of the daily scorecard indicates how much chilled water, electricity and steam were used in our buildings the previous day and what should have been used. This comparison allows our technicians to quickly diagnose overutilization of utilities and to correct the issues, savings thousands of dollars every day for the organization.

The daily override report allows us to quickly diagnose whether a technician changed a utility system setpoint or placed a system in manual operation, reducing optimization of the system. When used in concert with the scorecard, utility systems were quickly diagnosed and restored to their operating parameters, enabling the organization to save thousands of dollars daily.

— Bert Gumeringer, Asst. Vice President, Facilities Operations

## Broward College, Davie, Fla.



### CATEGORY: PERSONNEL MANAGEMENT



**THE ACHIEVEMENT:** Centralized more than 100 full-time employees into a new maintenance team



**THE BENEFITS:** The benefits of streamlining the facility management function are many. The most important results are that employee morale has improved. The staff takes notice of the positive changes and sees the renewed focus on addressing deferred maintenance issues, including upgrading the tools and equipment that allow a facilities group to operate efficiently. The ability to manage the operations budget from a district level, rather than a decentralized management structure, has allowed for more efficient control over allocating funding based on the greatest need.

By completing district-wide condition assessments for roofing, elevators, building envelopes, roadways, parking lots, exterior lighting, and most recently classrooms and restrooms, we were able to prioritize annual funds based on deferred maintenance needs, not just a wish list of items, which often can be the case in a decentralized management structure.

Another big win in this change has been the addition of the electrical services division. With eight electricians, a supervisor, and an electrical services manager, the operations team has been able to perform many projects in-house that previously were contracted out. Staff members were on board prior to the change. However, they were assigned to campuses under the old structure and were more often assigned work orders that did not take full advantage of their skills. Pole light maintenance is now handled in-house. This change alone has saved thousands of dollars annually.

In addition, the recent customer satisfaction survey for custodial contract services and facilities management resulted in an overall rating of "very satisfied."

— Sean Devaney, Director of Maintenance and Mechanical and Electrical Systems

## Frederick County (Md.) Public Schools



### CATEGORY: PERSONNEL MANAGEMENT



**THE ACHIEVEMENT:** Helped more than 170 maintenance workers participating in the school district's professional development program improve their skills



**THE BENEFITS:** As an operations division team, we feel that providing an optimal learning environment for all students is at the crux of what we do each and every day. The professional development we've made available to our colleagues has made an impact not only on that environment but also on staff satisfaction.

Providing training that communicates in a very overt way that our district values our employees and their career development is a powerful message to send to staff. Our board of education and superintendent have developed a forward-looking strategic plan with employee development as a component: "Frederick County Public Schools will hire, support, and retain staff who champion individual, professional, and student excellence."

We take this goal very seriously and will continue to help staff grow in an ongoing manner so students all across our system can enjoy an optimal living environment.

— John Carnahan, Manager of Custodial Services

## Frito-Lay Facilities, Plano, Texas



### CATEGORY: FINANCIAL MANAGEMENT



**THE ACHIEVEMENT:** Invested in HVAC and lighting systems and data center upgrades to help reduce energy use by 2 million kilowatts annually, saving \$1.5 million per year



**THE BENEFITS:** The biggest benefits and results of our projects are the improved operations of our campus buildings and reductions in our overall operating expenses. Our projects also have delivered continuous improvements in our day-to-day operations and significantly increased our team's value-added capabilities to our company.

We have received recognitions both internally and externally, and with the recent Facility Maintenance Decisions Achievement Award, it validates that we are doing it the right way and delivering sustainability for our campus well into the future.

— George Guck, Director of Facilities

## About the FMD Achievement Awards

In their sixth year, the *Facility Maintenance Decisions* Achievement Awards recognize the central role maintenance and engineering departments play in the cost-effective, energy-efficient operation of the nation's institutional and commercial facilities. The recipients are determined by online voting, a panel of judges and the magazine's editors. To view all of the 2015 entries and past recipients, visit [www.Facilitiesnet.com/FMD/FMDAA](http://www.Facilitiesnet.com/FMD/FMDAA). In early 2016, watch the site for information on entering next year's awards program.

## Winston-Salem/Forsyth County (N.C.) Schools



### CATEGORY: FINANCIAL MANAGEMENT



**THE ACHIEVEMENT:** Used more than \$300,000 in utility incentives to upgrade lighting systems and HVAC equipment and install low-flow plumbing fixtures



**THE BENEFITS:** The biggest benefit has been a sense of pride, ownership and satisfaction knowing we have accomplished major facility improvements while maximizing our resources and contributing to a greener environment. Our students and staff will benefit from these improvements for many years.

The use of energy-efficient equipment helped the school district improve its bottom line by reducing energy consumption, and Smart Saver incentives helped lower the costs associated with the upgrades. Another bonus was contributing to a greener environment by reducing the amount of natural resources needed to keep our facilities running.

To date, we have received more than \$314,000 in incentive dollars, which have been reinvested into more energy saving projects throughout the district. These projects have resulted in a reduction of more than 1 million kilowatt-hours of electricity, along with significant water, sewer and natural gas reductions. We also reduced our carbon footprint by 962 metric tons of carbon dioxide.

— Howard Moore, Energy Manager

## Medical University of South Carolina, Charleston



### CATEGORY: RETROFITS AND RENOVATIONS



**THE ACHIEVEMENT:** Retrofitted the HVAC system, reducing maintenance costs by \$75,000 annually and lowering fuel use by 10 percent



**THE BENEFITS:** Recognizing a potential risk of total system failure — including normal and emergency power, steam, chilled water, medical gas, and waste disposal infrastructure resulting from tropical storm flooding prevalent in Charleston — the Medical University of South Carolina undertook a major utility infrastructure relocation and upgrade to mitigate this risk and improve energy-efficiency in the process. All of the university's utility equipment was moved from below flood level to above levels to avert potentially catastrophic damage.

The new equipment included three new high-efficiency fire-tube boilers, a new domestic-water multiplex variable-speed pumping package, three new medical-air and medical-vacuum systems, and four new cooling towers with variable-frequency tower fan control. The project also consolidated three emergency power plant locations into one system. All the systems are integrated in the hospital's building automation and energy management controls.

The project has significantly reduced maintenance and repair costs, improved energy efficiency, and increased reliability and capacity.

— David Dement, Director of Facilities



## Oral Roberts University/CityPlex, Tulsa, Okla.

### CATEGORY: RETROFITS AND RENOVATIONS



**THE ACHIEVEMENT:** Upgraded HVAC system, lowering overall electricity use by 32 million kilowatts, despite the addition of a 31,000-square-foot student center



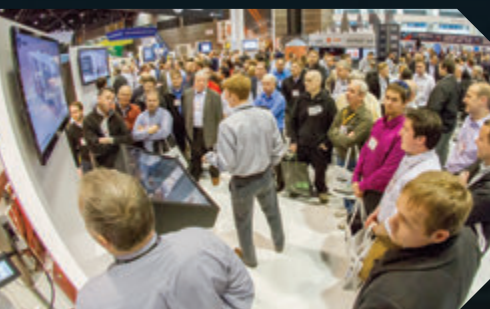
**THE BENEFITS:** Being able to shift operating expenses from the utility budget into the repairs and maintenance budget was a huge benefit. As the utility expenses were reduced, more funds were available to spend in repairs and maintenance, which became a snowball effect.

Capital funds also become available as the downward trend continued. As a result, the changes not only saved energy. They improved tenant comfort, reduced

maintenance labor for temperature adjustments, and allowed for more time with repair and maintenance.

The overall maintenance has improved because equipment runs fewer hours, and the variable-frequency drives use a soft start, saving belts, bearings, and motors. The useful life of the equipment has been extended due to the extra maintenance time and the changes in the operation of the equipment.

— David King, Director of Energy Management



JAN 25-27 2016

ORANGE COUNTY CONVENTION CENTER

# AHREXPO<sup>®</sup> ORLANDO

CO-SPONSORS



THE WORLD'S LARGEST HVACR MARKETPLACE



The AHR Expo brings 60,000 HVACR professionals together to see the latest products & technology, learn from industry experts, and build relationships.

REGISTER FOR FREE → [AHREXPO.COM](http://AHREXPO.COM)

FREE INFO: Circle 416

# A Challenge the Size of Texas

The University of Texas faces the immense task of enhancing the sustainability of its mowing equipment and practices

By Dave Lubach, Associate Editor

**M**owers that grounds crews use to maintain turf at institutional and commercial facilities have come under more scrutiny as organizations seek to make their facilities and landscapes more sustainable.

Establishing an effective mowing program that incorporates sustainability is a challenge for any grounds manager, but the task is even more complex at a large organization, such as the University of Texas at Austin, one of the largest public universities in the country. In recent years, the department has tried to enhance the sustainability of its operations by embracing such components as alternative fuels and organic fertilization program.

Sustainability at institutions like the University of Texas is achieved “one step at a time,” says John Burns, the university’s manager of landscape services. “In some cases, I’m sure it’s harder for a larger university because change has to happen on a larger scale. I would compare it to turning a large ship versus turning a small boat. It

takes more time to turn the large ship, but once it is going in the right direction, it may be easier to keep it on course.”

## Managing the fleet

Turf areas remain a prominent focus of sustainability for the university, and the four-man crew that handles mowing duties has plenty of ground to cover. The main campus consists of more than 430 acres, and a research campus consists of about 450 acres. Two nearby smaller campuses bring the total maintainable acreage to more than 900 acres.

“In the active growing season, they’re mowing weekly,” Burns says. “And once they finish (all the campus areas), they start over. It takes a week to complete the campus, and they have to travel to the remote sites one day a week.”

Each member of the crew is responsible for specific campus zones. In addition to mowing, the crew leaders are responsible for trimming, collecting trash, weeding, and irrigation. Crews use tractor-pulled gang mowers and zero-turn mowers to

maintain the research campus because of its wide-open spaces.

The university’s mower fleet consists of eight 72-inch zero-turn mowers, four of which are kept for backup in case of mechanical problems. Crews use smaller mowers, including push mowers and a 36-inch stand-on mower, to mow in tighter spaces and higher-profile areas because they provide a higher-quality cut.

The university’s main campus — occupied by a student enrollment of 50,000, as well as faculty, staff, and visitors — receives most of the mowing crew’s attention. Universities strive to keep their campuses looking pristine not only for the benefit of occupants, but to appeal to potential students and the general public visiting for on-campus events.

The main campus area includes 125 acres of turf area, including a number of smaller areas that require more than a quick run-through with a riding mower.

“In concert with all these larger mowers, we have trim mowers for our crews,” Burns says. “Our campus is split up into

eight zones, and each zone has a couple of 21-inch mowers they use for trim mowing.

“The way our mowing operation works, we have our large mowers go through, and then the zone teams will do the trimming with string trimmers and push mowers. We don’t do much with the push mowers, but each zone has them. We usually mulch our leaves as much as we can using our mulching decks, but then our teams follow behind and rake.”

Because the campus is densely packed with facilities and landscape components, as well as students, faculty and staff members, mowing crews need to be alert.

“There are a lot of small areas, so we have to deal with jumping curbs, tight turns, and a lot of students,” Burns says. “There are a lot of trees, beds, and buildings, streets, parking lots and sidewalks — a lot of obstacles.”

## Striving for sustainability

The mowers the landscape services department uses are 2-15 years old, and the department typically buys new equipment every two-three years, unless

Embracing the use of propane and mulching decks on mowers are two ways the University of Texas’ landscape services team improves the sustainability of its operations.





**We are professional grade and industrial strength.**

We are the painters of a perfect landscape.

The keepers of your view.

And we are dedicated to the quality of our equipment,  
your turf and our reputation.



**We are Kubota.**



[kubota.com](http://kubota.com)



© Kubota Tractor Corporation, 2015

**FREE INFO: Circle 415**

**For Earth, For Life**  
**Kubota**

a lack of mechanical issues allow Burns and his team to delay replacing a piece of equipment.

No matter when a purchase takes place, the department's sustainability efforts mean such features as propane power and mulching decks are high priorities.

Propane is "probably No. 1 as far as what we've required the last 10 years," Burns says. "We (use propane) for several reasons. (One is) emissions. It's a longer-running mower. And it's a cleaner burning fuel, so the engines last longer. But one of the simplest reasons is we have a (propane) filling

station on campus right next to our facility. As guys head to campus, they drive by it."

The use of mulching decks contributes to the department's fertilization activities.

"The mulching decks are better for our grass and better for the environment," Burns says. "The whole goal of the (fertilization program) is to get away from synthetics and (to) build our soils. Mulching decks fit right into that process because we're putting the organic materials back into the soil, and not hauling them off.

"We don't deal with grass clippings. We mow them, they go back into the soil, and

we haven't had any issues. Some people have had thatching issues, but we haven't had those issues at all."

The issue of noise pollution has become a higher priority in recent years, something Burns says the department will continue to consider in specification.

"We haven't paid as much attention to noise as sometimes we maybe should," Burns says. "I've been around our mowers, and they definitely have a fairly high noise level. Our (technicians) use ear protection, but it's something we should consider as one of our criteria."

The specification process has changed over the years for the university, which relies on a cooperative purchasing program called BuyBoard that is designed to help schools, municipalities and government agencies control costs for equipment and services.

"In the old days, we had to write really tight specs and try to get what we wanted right down to the nuts and bolts," Burns says. "The way things are working these days, the state of Texas has quite a few different vendors that have mowers on their BuyBoard, so we're able to go there and just buy it. Whatever brand we feel like we want, they usually have all the different models available, and we get the piece of equipment that we want."

The process has helped speed up the time it takes to purchase mowers.

"In the past, it might take several months to go through a process," Burns says. "Now, it's about three weeks or a month."

### Facing the future

Construction continues at the University of Texas, resulting in even more mowing challenges and sustainability opportunities.

"As we get smaller and smaller (turf areas) and a more compact campus from building, we always have to think about going to smaller mowers," Burns says. "But at this point, the 72-inch mowers are still working for us very well."

The campus plans to open a 515,000-square-foot medical complex in June 2016 that includes a hospital, research areas, offices and classrooms on 10 acres of land. The medical complex seeks accreditation from the Sustainable Sites Initiative (SITES), a program administered by Green Business Certification, a certification and credentialing organization within the green business and sustainability industry.

As part of the initiative, which helps facilities address issues such as climate change and resource depletion, the landscape services department intends to use electric mowers to maintain the grounds. Burns says the opportunity to try electricity-powered motors gives the university a chance to see if the technology might eventually replace its propane-fueled mowers.

"We'll use all electric trimmers, mowers and blowers at the medical facility," Burns says. "We haven't purchased the equipment yet. There won't be a lot of mowing in that area, but there will be some. Our goal is to go completely electric there. We're looking to address noise levels (and) emissions, and it is a bit of an experiment. With the SITES accreditation, sustainable practices are very important. So use of an alternative, renewable fuel source was a factor."

As the campus evolves to become even more sustainable, the landscapes, like the mowing equipment, also will change.

"As the years go by and we're able to do renovations, turf areas will be converted to native grasses," Burns says. "But in those cases, they'll still be mowed from time-to-time. We'll still be mowing them several times a year, whether it's quarterly or periodically, depending on the year." ■

# Every season. Any job.

## One machine.



**Seasons change.** So do Toolcat™ utility work machines. With more than 40 front-mounted attachments, plus limitless combinations of complementary category 1 PTO attachments on the Toolcat 5610, you can transition to spring, summer, winter or fall in minutes. To power through more tasks this season, check out the Toolcat lineup at [Bobcat.com/AnyJob6](http://Bobcat.com/AnyJob6).



[Bobcat.com/AnyJob6](http://Bobcat.com/AnyJob6) 1.877.745.7813

**One Tough Animal.**

Bobcat® and the Bobcat logo are registered trademarks of Bobcat Company in the United States and various other countries.  
©2015 Bobcat Company. All Rights Reserved. | 1253-0

FREE INFO: Circle 414

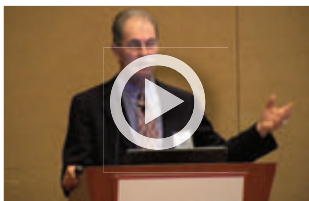
# Enjoy the National Facilities Management and Technology (NFMT) Education All Year Long



Join Today to Access Your Benefits

## Year-round Benefits

- Access to current conference session videos (posted one week after the event)
- Access to a library of over 100 past NFMT session videos
- Member only Webcasts throughout the year
- Access to a library of over a dozen past Webcasts



## One-Year Membership

# \$99

NFMT Membership is open to all.

You don't have to attend the NFMT Show to become a member.



## Bonus Benefits At NFMT 2015 Events

- Advance access to educational session handouts
- Fast check-in with special members-only registration counter
- Members-only lounge in the exhibit hall
- Bonus \$8 lunch coupons for use in the exhibit hall
- An Exclusive Polo Shirt
- Discount on pre-conference seminars

★ **JOIN TODAY** [nfmt.com/online/members](http://nfmt.com/online/members) ★

# FMD TECH CENTER

**PRODUCTS and SERVICES**  
for commercial and  
institutional maintenance and  
engineering management

## New General JM-1000 Mini-Jet™ Compact, Lightweight, Great Price



The compact, lightweight JM-1000 Mini-Jet™ from General Pipe Cleaners offers a great way to clear grease, sand and ice clogs – at a great price! Clear small lines, clogged sinks, and laundry drains from 1-1/2" to 3" in diameter with 1500 psi of cleaning power. General's powerful little water jet hits the stoppage with high-pressure, wall-to-wall water spray, and flushes them away.

General Pipe Cleaners  
For more information, contact the Drain Brains® at General at 800-245-6200 or 412-771-6300, or visit [www.drainbrain.com/jets](http://www.drainbrain.com/jets).

**FREE INFO: Circle 250**

## Fluke TiS Performance Series Cameras

See the difference with the new Fluke TiS Performance Series infrared cameras with up to 2.5 times more pixels and a 70% better D:S, to help you quickly identify potential problems before they become failures. Priced from \$1,199.99, discover the top 5 reasons industrial, commercial, and building professionals choose Fluke infrared cameras and compare models to find the right infrared camera for your specific maintenance needs.



Fluke  
6920 Seaway Blvd., Everett, WA 98203  
(800) 760-4523  
Fax: 1 (425) 446-5116  
[www.fluke.com](http://www.fluke.com) • [sales@fluke.com](mailto:sales@fluke.com)

**FREE INFO: Circle 253**



## Tankless Water Heater Delivers Hot Water Instantly

AERCO's Innovation — the highly efficient tankless water heater delivers instantaneous hot water with no storage tank or standing water that has to be heated up and then mixed down. It features a reliable, scale-resistant heat exchanger and a compact footprint. Go tankless, and you'll save energy, lower operating costs and increase ROI.

Aerco  
[www.aerco.com](http://www.aerco.com)

**FREE INFO: Circle 256**

## Get Everything You Need to Protect and Beautify Your Concrete Surfaces

Sherwin-Williams' complete line is perfect for high rises, hotels, parking facilities and many other applications. Altogether, our complete line of concrete products help you maximize performance and productivity and satisfy customers.



Discover what our complete line of concrete products can do for you at [sherwinwilliams.com](http://sherwinwilliams.com)

**FREE INFO: Circle 251**

## M18 Fuel Drilling and Driving Products Reset Expectations

Three years after the launch of the industry-changing M18 FUEL™ Drilling & Driving products, the next generation of tools reset expectations once again. The new M18 FUEL™ Drills are the most powerful 18v Drills on the market at 1,200 in-lbs of torque, while being 1/2" shorter and a 1/2 lb. lighter than leading competitive offerings. The new M18 FUEL™ Impacts are the most powerful compact impacts in their class, and offer the next evolution of DRIVE CONTROL™ for versatility.



Milwaukee Tool  
1-800-SAWDUST  
[www.milwaukeetool.com](http://www.milwaukeetool.com)

**FREE INFO: Circle 254**

## EFI by The Grasshopper Co. — It's So Much Mower!

Powerful performance. High-tech features. Remarkable efficiency. Grasshopper delivers both FrontMount and MidMount EFI mowers to cut your fuel and maintenance costs.

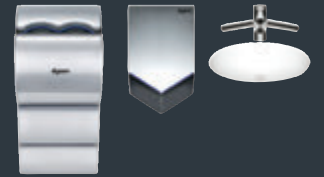
The Grasshopper Co.  
(620) 345-8621  
[www.grasshoppermower.com](http://www.grasshoppermower.com)

**FREE INFO: Circle 257**



## The Most Hygienic Hand Dryers

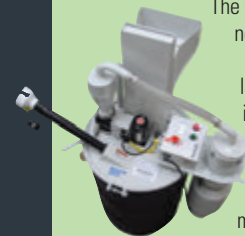
Other hand dryers can blow potentially harmful viruses and fecal bacteria onto your hands. Airblade™ technology doesn't. Dyson Airblade™ hand dryers use sheets of HEPA filtered air to dry hands hygienically. (Available now from \$799.) To learn more, watch the video at [www.dyson.com/CleanHands](http://www.dyson.com/CleanHands).



Dyson  
[www.dyson.com/Airblade](http://www.dyson.com/Airblade)

**FREE INFO: Circle 252**

## The Bulb Eater® 3 with Intelli Technology® saves money and time!



The Bulb Eater® 3 with Intelli Technology® is the next generation of the Bulb Eater® lamp crushing system engineered by Air Cycle. Crush straight lamps of any length, CFLs, and u-tube lamps into 100% recyclable material while capturing over 99.99% of vapors released. In addition to providing OSHA and ACGIH compliance, the Bulb Eater® 3 will reduce labor costs, minimize valuable storage space by up to 80%, and saves up to 50% on recycling costs.

Air Cycle Corp.  
[www.LampCrushing.com](http://www.LampCrushing.com)  
(800) 909-9709 • Fax: 866-909-6725  
[info@aircycle.com](mailto:info@aircycle.com)

**Free Info: Circle 255**

## Eel-Jet EJ1500 Jetter Blasts Through Clogs Fast

The Eel-Jet EJ1500 Electric Jetter Cleans 1/2"–4" Dia. Drain Lines with These Outstanding Features: 1500 PSI / 1.7 GPM; 1.5 H.P., 15 AMP Motor; Duplex Pump w/Pulsation; Reel Capacity 150 Ft. of 1/4" Hose; Pump/Motor Assembly Removes in Seconds for Added Portability; Thermal Relief Valve and Inlet Shut Off Valve; Removable Handle/Reel on Cart Assembly.

Electric Eel Mfg. Co., Inc.  
501 W. Leffel Lane  
Springfield, OH 45501  
Toll Free: (800) 833-1212  
E-mail: [info@electriceel.com](mailto:info@electriceel.com)  
Website: [www.electriceel.com](http://www.electriceel.com)

**FREE INFO: Circle 258**



# product pipeline



## A FIRESTONE BUILDING PRODUCTS Vegetative roof

The SkyScape pregrown modular system joins the vegetative roof portfolio. The system's engineered design manages stormwater through unitized moisture retention reservoirs and encourages airflow beneath the modules. The airflow passes through a 1¾-inch vertical space created by the reservoirs. The system sits on a foundation built from 100 percent recycled high-density polypropylene. The honeycomb design allows for sharing moisture and nutrients between modules. **Free Info: Circle 200**

## B HONDA POWER EQUIPMENT Snow blowers

The HSS series includes 10 models that feature fingertip steering, hydrostatic transmission, joystick electric chute control, electric start, increased blower power, LED headlights for improved night visibility, auger height lever diameter, increased wheel diameter, improved oil drain location, an hour meter to more easily monitor hours of operation, an impeller shield to more efficiently direct snow into the blower, and reversible skid shoes. **Free Info: Circle 202**

## C HILTI INC. Pulsed-radar scanner

The Multidetector PS 50 uses pulsed radar technology to detect concealed objects, such as ferrous and non-ferrous compounds, wood, plastic and electrical conduits at depths up to 5⅞ inches in concrete. Two additional sensors allow the classification of objects and the detection of live wires. With a built-in display for location of objects and an indication of approximate depth and material, no expert skills are required to operate the tool. **Free Info: Circle 204**

## D MIST LABS Smart sprinkler system

Mist uses wireless moisture sensors to measure real-time water needs across landscapes. The system uses solar-powered sensors to monitor moisture levels precisely and can confirm water is absorbed into roots. Technicians can program the system to adhere to local and state watering laws. **Free Info: Circle 201**

## E WEIL-MCLAIN Condensing boiler

Evergreen is designed with an annual fuel utilization efficiency of 95 percent for use in light commercial facilities with potentially tight installation areas or multi-boiler applications. The boiler operates quietly with an improved design and floor-standing or wall-mounting options. Other key features include a 10-to-1 turndown ratio, Modbus communication, natural or propane gas capability, and interactive diagnostic capability. **Free Info: Circle 203**

## F LUTRON ELECTRONICS Wireless lighting controls

PowPak increases the ease of adding individual lighting fixture control to buildings without requiring additional wiring, software and tools for programming. The controls provide dimming, occupancy-sensing and daylight-harvesting capability through a fixture-by-fixture control process. The system works with fluorescent ballasts or LED drivers and basic 0-10 volt versions, and it flexibly adapts to shifting job needs. It requires no laptops or complex programming methods for installation. **Free Info: Circle 205**

## MOWERS

### KUBOTA TRACTOR CORP. Ride-on mowers

Three models comprise the Z700 series — the Z724X-48, Z724X-54 and the Z726X-60. The mowers are powered by Kawasaki FX engines and also include Parker TorqPact GT 14 transmissions. Each model features a seven-gauge steel 48-, 54-, or 60-inch deck for an improved and efficient cut. The mowers offer improved ergonomics, including a wide operator station, a thick high-back adjustable seat and a deck height adjustment dial. **Free Info: Circle 206**



### THE TORO CO. Rotary mowers

The Groundsmaster® 4000-D and 4010-D models feature turbo charged 55 horsepower, Tier-4 Final compliant diesel engines that include Smart Power™ technology, high engine torque and a HybridDrive™ cutting deck system. The parallel hydraulic traction system maintains consistent hydraulic flow between the front and rear wheels to engage full-time four-wheel drive and ensures the ability to mow on hills and wet grass. **Free Info: Circle 207**



### THE GRASSHOPPER CO. Diesel mower

The MaxTorque™ reduces fuel costs by nearly 50 percent compared to alternative fuels and lowers levels of emissions released into the atmosphere. The design includes a fully fabricated, formed steel cutting deck and fully hydraulic, pump-and-wheel-motor hydrostatic transmission. Attachments are available for grass collection, snow removal and turf renovation. **Free Info: Circle 208**



### JACOBSEN Ride-on mower

The RZT line features zero-turn capability and mows up to 5.3 acres per hour with a 25 or 27 horsepower (hp) Kawasaki FX engine or a 27 hp Kohler EFI engine. The new model line also includes the SZT stand-ons and the WZT walk-behinds. The SZT includes a 26 hp Vanguard engine, and the WZT includes an 18 hp Briggs & Stratton engine. **Free Info: Circle 209**



### JOHN DEERE Diesel mower

The zero-turn N997R Diesel ZTrack features a 37.4 horsepower Final Tier 4 engine and four different options for discharge decks — two side discharges, one mulch-on-demand deck, and one fabricated rear discharge deck. An electrically powered 14-bushel hard shell dump-from-seat material collection system allows the operator to accumulate material with minimized leakage and extends intervals between emptying. **Free Info: Circle 210**



For more information on mowers, see article on page 22

## AD INDEX

### It's easy to get the product information you want

Use the product information cards between pages 22-23. Circle numbers on the cards corresponding to the products on which you want information. Mail the card or fax it to (888) 847-6035.

COMPANY	PAGE	CIRCLE#
AHR Expo	21	416
Avista Utilities (regional)	C3	421
Bobcat Co.	24	414
Chicago Faucets	1	401
Duro-Last Inc.	10	409
Electric Eel Manufacturing Co.	14	410
FacilitiesNet.com	28	—
Fluke	7	406
General Pipe Cleaners, Division of General Wire Spring Co.	3	402-405
HealthcareFacilitiesToday.com	28	—
IFMA	8	413
JVCKenwood USA Corp.	11	423
Kubota Tractor Corp.	23	415
Lowe's Commercial Services	C4	422
Milwaukee Tool	C2	400
NFMT Membership	25	—
NFMT Orlando (regional)	C3	—
Pepco and Delmarva Power C&I Energy Savings Program (regional)	C3	420
Polaris Commercial Vehicles - Brutus	12	419
Progressive Materials LLC	9	408

COMPANY	PAGE	CIRCLE#
Sherwin-Williams Co.	13	407
Shortridge Instruments Inc.	17	417
Staples	15	411
Teupen USA	16	412
ULINE	17	418
<b>FMD TECH CENTER</b>	<b>PAGE 26</b>	
AERCO International Inc.	256	
Air Cycle Corp.	255	
Dyson Inc.	252	
Electric Eel Manufacturing Co.	258	
Fluke	253	
General Pipe Cleaners, Division of General Wire Spring Co.	250	
Grasshopper Co.	257	
Milwaukee Tool	254	
Sherwin-Williams Co.	251	

MARKETING	EXECUTIVE OFFICES
Tim Rowe vice president of marketing communications tim.rowe@tradeexpress.com	2100 W. Florist Ave. Milwaukee, WI 53209 (414) 228-7701 Fax: (414) 228-1134

### ADVERTISING SALES

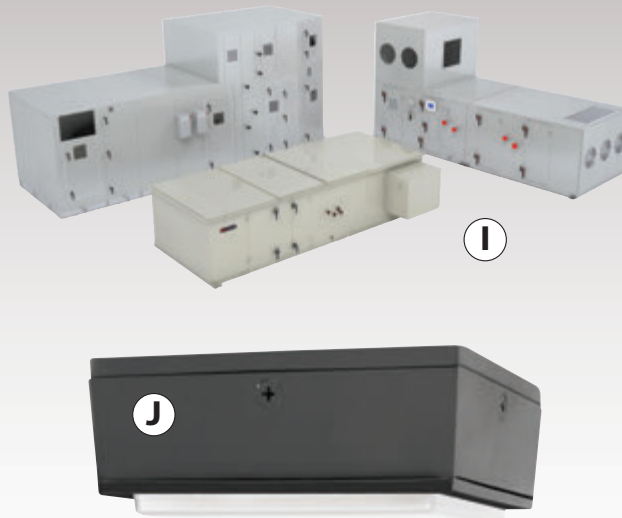
Todd Kotlarek  
group director,  
facilities market  
(414) 228-7701, ext. 577  
todd.kotlarek@tradeexpress.com

Brian J. Terry  
publisher  
(414) 228-7701, ext. 529  
brian.terry@tradeexpress.com

Greg Lynn  
northeast regional director  
(203) 359-4221  
greg.lynn@tradeexpress.com

Scott Holverson  
midwest & western  
regional director  
(928) 554-4100  
scott.holverson@tradeexpress.com

Kimberly Reed  
customer & data service  
specialist  
(414) 228-7701, ext. 441  
kimberly.reed@tradeexpress.com



The **BEST SITE** to discover facility solutions on the web...



**facilitiesnet.com**



**HEALTHCARE  
FACILITIES TODAY.COM®**

**DAILY UPDATES  
for Healthcare FMs**



**G FLUKE CORP.**  
**Infrared cameras**

The TiS Performance Series includes eight cameras, delivering more than twice the number of pixels and a 70 percent improvement in distance-to-spot than previous models for enhanced image quality. The models feature 3½-inch screens and one-touch image access to eliminate the need to scroll through a menu to view images. Five of the models offer fixed focus, and three offer manual focus, with resolution up to 260-by-195 pixels. The series works with the Fluke Connect System, which allows technicians to wirelessly transmit data. **Free Info: Circle 211**

**H MOEN COMMERCIAL**  
**Restroom suite**

The heavy-duty M•Dura™ and medium-duty M•Bition™ lines are updated with upscale faucet and showering options for college campuses, commercial office buildings and hospitality spaces. The faucets and showerheads feature increased durability within high-use environments. One- and two-handle faucets are available with ceramic disc cartridges and have vandal-resistant aerators and handles as well as solid-brass construction. Showerhead options available with flow rates of 2.5 gallons per minute (gpm) or 1.5 gpm. **Free Info: Circle 212**

**I TRANE**  
**Air handler units**

The Performance Climate Changer outdoor line features foam-injected double-wall panels, strategically designed hoods, improved casing construction, sloped roofs, and a welded base to keep water out of the unit. The BACNet listed controls and electrical components are factory-mounted inside the air handlers to protect them from the elements. The units' design helps reduce noise by eliminating belts and offering multiple fan blade and wheel options while limiting the need to replace or adjust belts. **Free Info: Circle 213**

**J RAB LIGHTING**  
**LED canopy**

VANLED covers the footprint of most traditional canopy fixtures. The fixtures are available in six power packages, ranging from 10-75 watts (W) and are designed to replace 50-200 W high-intensity discharge fixtures. The LED has an efficacy rating of 122 lumens per W, and a low-profile design proves a clean, contemporary look for a range of applications, including those with vehicle height restrictions. **Free Info: Circle 214**

**K THE GARLAND CO. INC.**  
**Metal roofing system**

The R-Mer Shield standing seam system features a 2-inch-high vertical seam with an extruded aluminum clip and top rail system that provides wind-uplift performance and ensures watertight protection in harsh environments. The symmetrically designed panel and cap allow for easier installation and flexibility during construction, replacement and retrofits. The system provides ½-inch of clearance between the panel and substrate to increase ventilation beneath the panel. **Free Info: Circle 215**

Ken Groh (right)  
Supermarkets Director and Facilities Manager  
Rosauers Supermarkets, Inc.

Ann Carey (left)  
Commercial Account Executive  
Avista Utilities

# Energy savings? Grocery Aisle 6.

Selling bread and bananas may not seem complicated. But in the grocery industry, the profit margin is just pennies on the dollar and often there are competitors on every corner. Success requires insight into consumer trends as well as tight controls over store costs—one of the biggest being energy use. It's why Rosauers Supermarkets partners with Avista on energy efficiency.

Considered one of the most innovative grocery chains in the Northwest, Rosauers first opened in 1934 during the Great Depression, when Mert Rosauer purchased a small grocery store in Spokane. Despite the economy at the time, his store quickly became a success.

Eventually, the company added superstores with full-service pharmacies. It also established Huckleberry's Natural Market, Spokane's first grocer to offer a full array of natural and organic foods. Today, Rosauers operates 22 stores in Washington, Oregon, Idaho and Montana. Successful growth, however, has only increased its need to save energy.



Higher efficiency ECM fans are now used on cases that need a steady air curtain to keep cold air from escaping.

"Energy for heating, cooling and lighting is one of a store's highest operating costs," says Rosauers Supermarkets Director and Facilities Manager Ken Groh. "But it's also one we can more easily control, especially with energy-saving rebates and incentives from Avista."

Rosauers has been committed to energy efficiency for over 20 years and, through Avista, takes advantage of the Energy Smart Grocer Program. Avista helps all types of large energy users but adopted a specific grocer program because most stores have similar efficiency opportunities. In the program, Avista provides a facility assessment as well as rebates and incentives to offset the costs of making energy-efficient upgrades.

Rosauers recently received \$106,000 in Avista rebates and incentives to complete energy upgrades for one project alone (a recent remodel of one of the company's stores). Because the changes were extensive and completed all at once, they also saw the immediate, total effect on their energy bill.

"The store reduced its electrical use by 14 percent," says Groh. "Over the last two years alone, it's saved us over \$50,000 in energy costs."

Rosauers' store strategy began with switching its lighting from 4-lamp fluorescents, high-bay HIDs and neon to higher efficiency, high-output 3-lamp fluorescents and low-watt LED track lighting. Now only a third of the floor lights stay on after hours, and all case lighting is turned off, leaving just enough light for night workers. The directional LED track lighting also requires less light to make products look appealing and generates less heat which preserves shelf life.

Rosauers upgraded refrigerated cases throughout the store, too, by installing fans with electronically commutated motors (ECMs). Unlike shaded-pole-motor fans which have heavy metal blades, ECM fans are lightweight plastic so use less energy and create less unwanted heat.

"They're more expensive, but Avista rebates help offset that," says Groh, "and the money you save in energy consumption offsets the cost."

EMC fans were also installed in the freezer cases, as were more energy-efficient doors. Unlike the older doors which were fully heated to keep from freezing shut, the new doors save electricity by using only a bit of heat along the frame.



New LED track lighting lets Rosauers more precisely aim lamps, so less lighting is needed to make products look great.

To maximize energy efficiency store-wide, Rosauers also uses an automated energy management system to control everything from lighting schedules and comfort levels to refrigerated case temperatures. The computerized system even sounds an alarm if a refrigeration-case isn't running properly to help prevent product loss.

Along with the greater energy savings, Groh is very happy with the store upgrades, especially the lighting: "Everything looks a million times better," he says. "It was well worth the money."

For more, visit  
[avistautilities.com/bizrebates](http://avistautilities.com/bizrebates)

YOU LOOK LIKE YOU COULD USE SOME

# FM solutions, strategies and sunshine.

## Get them all at ...

### BUILDING OPERATING MANAGEMENT'S

# NFMT<sup>®</sup> ORLANDO

National Facilities Management & Technology October 27-28, 2015 • Orange County Convention Center

Absolutely FREE to attend, NFMT Orlando is the one Southeast conference created especially for facilities professionals of all levels.

As an attendee you have free access to:

- ◆ More than 60 educational sessions spread out over two days
- ◆ An Exhibit Hall with 150+ FM product and service providers
- ◆ Multiple network opportunities with 1,500 like-minded FM peers
- ◆ Presentations from the FM industry's top leaders and innovators

What's a trip to Orlando without a little "you" time? While there you have access to:

- ◆ 10 exciting theme parks
- ◆ More than 40 restaurants and entertainment options – all within walking distance of the Conference
- ◆ All season golf courses
- ◆ An average temperature of 84 degrees (not bad for late October)

**Remember: There is NO COST TO ATTEND NFMT Orlando, but you do have to register to take advantage of everything it has to offer.**

**Sign up today for free at [NFMT.com/Orlando](http://NFMT.com/Orlando)**





## PEPCO COMMERCIAL AND INDUSTRIAL ENERGY SAVINGS PROGRAM

*"We've saved over 8 million kilowatt hours and nearly \$1 million in estimated energy savings each year."*

—Ralph Medina, Director of Engineering, Gaylord National Resort and Convention Center, Oxon Hill, MD



# WE'LL GIVE YOU CASH INCENTIVES TO HELP WITH ENERGY EFFICIENCY IMPROVEMENTS

Through the Pepco Commercial and Industrial Energy Savings Program, Gaylord National Resort and Convention Center upgraded their interior and exterior lighting, added motor speed controls and installed ENERGY STAR® certified kitchen equipment. Our program offers ways for your business to save money and energy too.

- **GENEROUS CASH INCENTIVES** are available on many qualified energy efficiency improvements including lighting, heating and cooling systems, commercial refrigeration and kitchen equipment and more.
- **OPERATIONS AND MAINTENANCE TRAINING** helps keep your building running efficiently.
- **MULTI-DWELLING QUICK ENERGY CHECK-UP** offers an energy assessment for dwelling units in hotels, motels, dormitories, and senior living facilities. Also, we will include the installation of recommended low-cost energy efficiency measures like low-flow showerheads and smart strips – all at no charge.

If you're a Pepco business customer in Maryland, start saving money and energy to make your business more profitable. **Visit [pepco.com/business](http://pepco.com/business), call us at 866-353-5798 or email [PepcoEnergyEfficiency@LMBPS.com](mailto:PepcoEnergyEfficiency@LMBPS.com).**



This program supports the EmPOWER Maryland Energy Efficiency Act.

Energy for a changing world.™



# MANAGE SPENDING AND SUPPLY LEVELS BEFORE YOU EVEN FINISH YOUR COFFEE.

**Lowe'sForPros.com** is a powerful e-commerce solution that lets you create custom catalogs, set spending limits and manage your Lowe's Accounts Receivable from just about anywhere. Join today. It's all about making it easier to keep your facilities running smoothly and your budget in the black.

➤ Sign up and start saving at [Lowe'sForPros.com/FMD](https://Lowe'sForPros.com/FMD).

**LOWE'S** ProServices

©2015 Lowe's. LOWE'S and the Gable Mansard Design are registered trademarks of LF, LLC.

FREE INFO: Circle 422