Midwest Roofing Contractors Association
June 2016

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June 2016

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www.mrca.org

Find us on

President's Message

MRCA 2016 Navigating the Future

Bob Schenkel, MRCA President

We recently completed our Board and Committee meetings in Columbus, Ohio in preparation for our upcoming Conference and Expo being held October 31st to November 2nd at the Columbus Convention Center and Hyatt Regency. I could not be more excited for the industry to get to know the amazing Midwestern city that Columbus has become!

Both the Convention Center and the Hyatt Regency are newly renovated and truly capture the cultural spirit of the city. Located right between Columbus's two premier entertainment districts, the Arena District surrounding the hockey stadium and the baseball field and the Short North Arts District, the Conference will be just steps away from the very best that Columbus has to offer. There are dozens of great restaurants, bars, live music, and unique shops and galleries all within a quick walk from the Hyatt.

The Conference will be just north of downtown Columbus so it's also a quick cab ride to the Ohio Statehouse and a beautiful riverfront park that weaves through the city. This newly completed parkway renovation links even more great restaurants, theaters, and parks with the renowned Center of Science and Industry (COSI). There are miles of beautiful walking or running paths that lead back to the Arena District making the entire area completely walkable and easily accessible for a beautiful fall experience.

Many of the Board Members who attended were blown away at how much the city had to offer and how easy it was to get there. The airport is an easy ten-minute drive from the Convention Center. There's also great access to I-70 and I-71 that converge right downtown. All in all it was a very impressive trip and I'm anxious to share it with all of you this fall.

In addition to a GREAT venue we are also developing a stellar lineup of speakers, exhibitors, and entertainment for you to enjoy. Our theme, Navigating the Future, is sure to inspire you towards how to plan for and implement the wave of technology washing over our industry. From workforce development in the digital age and retaining young talent, to the latest in jobsite materials and safety tech, we're going to cover a lot of territory as we explore this new world together!

So please mark your calendars and plan to join us as we Discover Columbus AND Navigate the Future together!

Be safe, stay safe,

Bob Schenkel
CL Schust Company, Fort Wayne, IN
rschenkel@clschust.com

MRCA.ORG

NAVIGATING THE FUTURE

MRCA 2016 CON EXPO

OCT 31ST – NOV 2ND COLUMBUS, OH

Worker Fatality Rate Grew in 2014 for First Time Since 2010

By Bruce Rolfsen, Published by: BNA Construction Labor Report on April 28, 2016

The workplace fatality rate in the U.S. increased slightly during 2014, rising to 3.4 deaths per 100,000 full-time-equivalent workers, the Labor Department's Bureau of Labor Statistics announced April 21.

Although 3.4 is the second lowest rate recorded since 2006, when the agency changed how it calculates fatality numbers, the uptick marked the first time since 2010 that the fatality rate increased. The record low, 3.3, was recorded in 2013 (61 CLR 225, 4/30/15).

Altogether for 2014, the BLS counted 4,821 workplace deaths, up about 5 percent from 4,585 in 2013. The 4,821 fatalities is the most deaths since 2008 when 5,214 workers died on the job.

An increase in overall deaths was expected. American workers logged about 2 percent more work hours on the job in 2014 than they had the previous year, according to the BLS.

The numbers released April 21 were the BLS's final calculations for the 2014 Census of Fatal Occupational Injuries. In September 2015, the BLS issued preliminary numbers for 2014. The final calculation added 142 deaths that hadn't been officially counted as on-the-job when the September figures were issued (61 CLR 729, 9/24/15).

Hispanic Deaths Decline

While rates and fatalities grew slightly during 2014 for most worker categories and occupations, there was one notable decrease. Deaths among Hispanic workers declined.

The fatality rate among Hispanic workers was 3.7, down from 2013's rate of 3.9. The overall number also decreased, from 817 deaths in 2013 to 804 during 2014. Foreign-born workers accounted for 64 percent of the Hispanic losses in 2014.

Among industry groups, construction continued to have the most deaths—899 in 2014—up about 9 percent from the prior year. The number of hours worked grew 7 percent.

The construction fatality rate increased 1 percent to 9.8 deaths for every 100,000 full-time-equivalent workers. By construction occupation, roofers had the worst fatality rate—47.4, and structural iron and steel workers the second most—25.2.

Transportation and warehousing had 766 deaths, up about 5 percent from 2013. The rate increase was less than 1 percent.

Manufacturers experienced 349 deaths, about 12 percent more than in 2013. The rate grew about 10 percent.

Wyoming High

When examined by state, Wyoming had the highest 2014 fatality rate—13.1. North Dakota, which had experienced the highest rate for 2013 and 2012, had the second highest rate—9.8. The states' high rates have been attributed to several factors including the rapid growth of oil and gas industry that put thousands of inexperienced workers into hazardous jobs and the large numbers of high-hazard agriculture and mining jobs.

Most of the states with the lowest rates were clustered in Northeast, with Massachusetts recording the lowest figure—1.7.

Texas had the largest number of fatalities, 531, with a rate of 4.5, and California the second most deaths, 344, with a rate of 2.0.

Bloomberg BNA

ARE YOU?

Left; MRCA Business Management & Committee Chairman Mark Gwaltney, congratulates Larry Marshall of L. Marshall Roofing in Glenview IL on being the first of many contractors to apply for MRCA ELITE status.

ELITE ROOFING CONTRACTOR PROGRAM

FIND OUT IF YOU QUALIFY. APPLY TODAY!
VALERIE DAHLBERG AT VDAHLBERG@MRCA.ORG

Gary's Corner

OSHA® UPDATE

Gary Auman, MRCA Legal Counsel

OSHA is an ever changing landscape. Several issues have come to light recently which I hope to discuss in this article. The most significant issue is the finalization of the new OSHA standard for respirable crystalline silica. There is a separate silica standard for the construction industry and it is found at 29 CFR 1926.1153. I will discuss he obligations under this standard at the end of this article.

Before we get there permit me to update you on a few other issues.

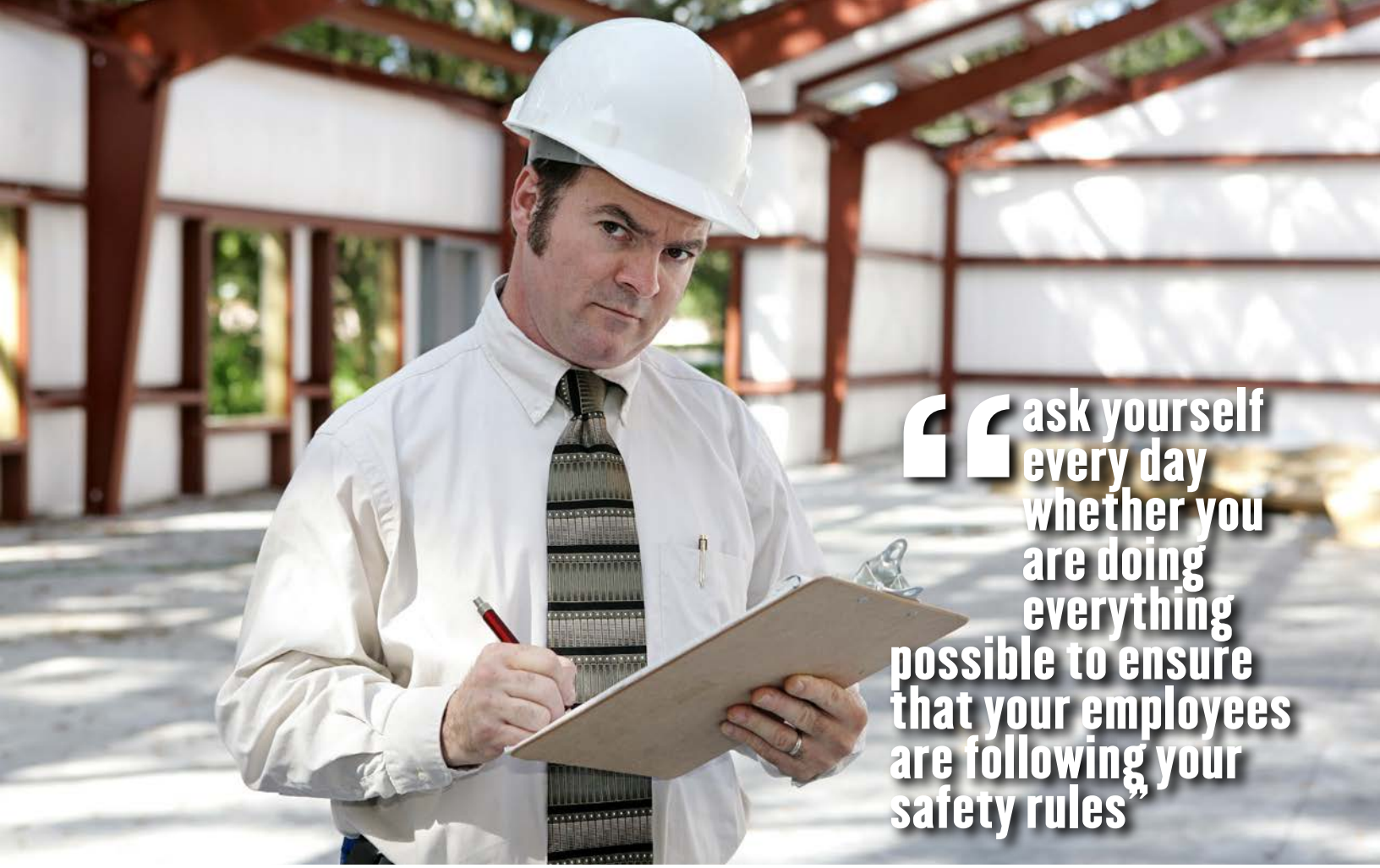
The reasonable responsible employer; this is a standard applied by OSHA in general duty clause violations, but we are also seeing it in the use of the unpreventable employee misconduct defense as well as with regards to specific citations. In other words when you are stating that as the employer you were not aware of the violation of a specific standard or that an employee was exposed to a hazard that was causing or likely to cause death or serious physical harm, OSHA will evaluate your conduct against a standard of what actions a reasonably responsible employer would have taken in a similar situation.

An example of the application of the "test" could occur in a situation involving an allegation that you violated a specific standard and you are claiming that you were not aware of the violation. Frequently this will occur because you had an employee working alone or with another employee on a jobsite on which the employee has been observed accessing a roof with an improperly set ladder. When you assigned the employee(s) to the job you instructed them to access the roof by using a stairway that led to the roof in a penthouse. While it was several hundred feet to the working area, it was the only way you saw to access the roof. You were concerned about ladder safety so you instructed your employees to use the stairs to access the roof. Unknown to you, another contractor began working on the roof a few days after your employees began their work. Even though a supervisor visits the site daily, the other contractor sets a ladder which your employees begin to use to access the roof and their work area. OSHA arrives on the site for no specific reason but witness your employees using an improperly set ladder.

In the preceding situation you will have to be able to convince OSHA or a Review Commission judge that you were not aware that your employees were using a non-permitted means of accessing their work area. To do this you will have to be able to show that neither of the employees on the site could be considered a member of management and that neither employee had told anyone in management that they were using the ladder to access their work area. But, the real key will be for you to be able to demonstrate that you were at all times acting as a reasonably responsible employer. This means you will need to be able to convincingly demonstrate that you did have a safety person or a supervisor visit the jobsite on a daily basis to monitor safety compliance and that at the time of these visits they did not observe the employees using the ladder to access the roof. In other words, what would a reasonably responsible employer do to ensure that its employees, working without direct supervision, were working safely.

> "be able to demonstrate that you were at all times acting as a reasonably responsible employer"

The question you have to ask yourself every day is whether you are doing everything possible to ensure that your employees are following your safety rules AND any instructions you issue to them governing how they do their job on a daily basis. You can see from the above example, the employer gave specific instructions to the



employees on the site as to how to access the roof. The employer also provided training to all of its employees as to ladder safety. The employer acted responsibility in both of these actions. BUT, a reasonably responsible employer would also monitor the jobsite which was manned by one or more employees without supervision and would monitor their activities on at least a daily basis. So the fact that a supervisor or safety person visits the site daily may be enough to demonstrate that the employer is acting responsibly, but multiple site visits would be even better. Along with this is the need for the employer to demonstrate why he felt the number of visits to the site were reasonable. The seniority of the employees, the amount and level of their safety training as well as their past safety records will be important in determining the amount of monitoring that is reasonable.

It should be of no surprise to you that this exact issue is one that is covered on the MRCA safety application for the SHARP Safety Recognition Program. This alone demonstrates the value of this program. By participating in the program you receive valuable information that applies to every job you work day in and day out.

I did promise some information on the new silica standard. First, you need to know that the construction industry silica standard takes effect on June 23, 2016, but companies in the construction industry will have one year to get into compliance, until June 23, 2017. You need to understand that this standard will apply to all occupational exposures to crystalline silica. These might occur in areas you never contemplated. They may also occur secondarily to other work you are doing in which the respirable silica is generated by another contractor. More will be coming on this new standard prior to June 23, 2017 with specifics on compliance. For now, be advised that this new standard specifically requires the employer to employ engineering controls to reduce exposure to respirable silica before employing PPE. The only exception to this is if the employer assesses and limits the exposure in accordance with the alternate exposure control methods listed in the standard.

Take advantage of a great MRCA member benefit-complimentary legal advice on OSHA-related issues from MRCA Legal Counsel Gary Auman. Contact Gary at GWA@dmfdayton.com.

ON DECK with Morgan

MRCA Member

VP of Estimating and Sales

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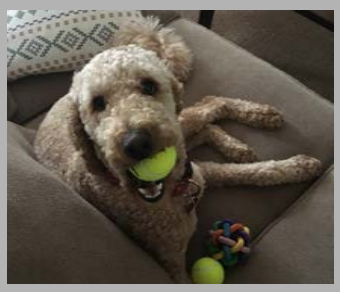
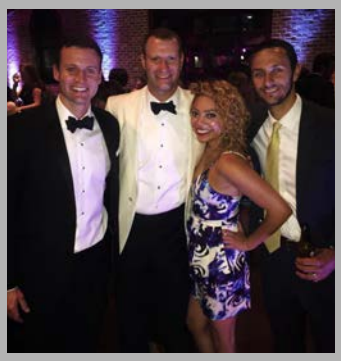
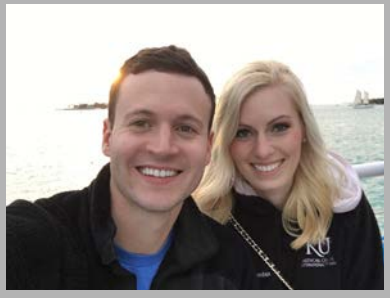
7 THINGS ABOUT JAMES BOLAND OF THE QUALITY ROOFING COMPANY KC, MO.

- *James grew up in Kansas City, graduating from the University of Kansas, School of Business and continued his education there to earn his Master's in Accounting.*
- *James recently purchased a new home and is currently spending a lot of time on renovations.*
- *He can be found regularly at the gym, participating in the high-intensity interval training exercise, CrossFit.*
- *Forest, James' one and a half year old Golden Doodle, loves to play and exercise.*
- *A true Kansas sports fan at heart, James appreciates all Kansas sports, including the Chiefs, Royals, and of course, the KU Jay Hawks!*
- *James enjoys spending time with friends, family and his girlfriend, Sarah.*
- *James feels it's important to be active within the MRCA because, "it allows you to get an honest outside opinion of new roofing innovations, techniques, even business models, from contractors outside of your immediate area who are not your direct competitor on a daily basis. The MRCA allows contractors from all over the mid-west to form friendships and compare what's working, and what isn't, for their businesses."*







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facebook.com/Young-Contractors-Council-219124635109694/timeline

Course for Presidents

RUN YOUR BUSINESS, DON'T LET IT RUN YOU

As the owner, CEO, or president of an organization, it's your job to ensure the organization is adaptable, efficient, sustainable, and profitable. That's easier said than done.

Many business owners get so involved in the day-to-day operations of the business, they never have time to focus on what's really important: Growing the business and preparing for the future. This day-to-day approach can be dangerous because when business leaders are too focused on the short term they can't see or plan for what is out in front of them, such as changes in the business environment, until it's too late.

What's the answer? Professional management

Professional management is a proven system that enables business owners to focus on:

- Establishing and influencing the future Direction of the organization by clarifying the strategic direction and ensuring your own leadership meets the future needs of the organization.
- Aligning the Operations to that future desired state. It involves the continuous alignment of the business structure and developing people so they can help drive toward the desired future state.
- And establishing the Controls through a strong culture and performance management that allow your organization to hold each other accountable to the vision, values and objectives.

Aileron's flagship two-day Course for Presidents program focuses on the fundamentals of Professional management, including Aileron's DOC (Direction, Operation, and Control) structure.

Focusing on these areas can help you simplify and control your business, gain operational clarity, and organizational discipline. It will also help position your company for long-term success, reduce your stress, and create more free time.

During the program, you'll also interact with business owners, CEOs, and presidents who are facing the same issues and challenges that you face. You will also participate in a self-assessment to help you understand your company's strong and weak areas. This will help you develop your action plan.

After completing the program, you'll be able to apply new knowledge of the Professional Management System to identify areas of improvement in yourself and your organization.

Aileron®

Aileron's Professional Management System

Course for Presidents

RUN YOUR BUSINESS, DON'T LET IT RUN YOU

Individualized Support

- Customized Assessment Review & Action Plan with a Business Advisor (1 per organization)
- Up to 8 hours of guidance from an experienced Business Advisor within the first year after attending the program
- Ongoing support from the Client Development team
- Resource Identification

June 21 - 22, 2016
(2 days)
8:00 am - 5:00 pm
Aileron Campus, Dayton, OH

Oct. 4 - 5, 2016
(2 days)
8:00 am - 5:00 pm
Aileron Campus, Dayton, OH

Nov. 1 - 2, 2016
(2 days)
8:00 am - 5:00 pm
Aileron Campus, Dayton, OH

WHO SHOULD REGISTER?

This program is exclusively for business owners, presidents, and CEOs of privately held organizations. Typically, participants have 10 or more employees and are between $1-20 million in sales.

MRCA is Partnering with Aileron to Offer this New Member Benefit!

Aileron®
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For more information, visit our website at www.aileron.org or contact Valerie Dahlberg at (800) 497-6722 or vdahlberg@mrca.org

Five Key Technologies for Roofing Contractors

Heidi J. Ellsworth • *hje@ellsworth.us*
HJE Consulting Group

In today's world where efficiency and precision take precedence, technology is a key component when it comes to doing business within the contracting community. Technology comes in many shapes and sizes but leading contractors are realizing that if they are not progressive in their use of technology they are going to be left behind.

Technology is not just software, it is using services and software that help increase productivity for the company and employees. Looking at several types of technology is important but whether you are a small or large roofing contractor, residential or commercial, it is essential to incorporate technology into your processes and culture. In fact, contractors are finding that they can get more done, faster by using technology.

New technologies are introduced literally every day. Understanding what is beneficial for your business and more importantly the best technology for the size of your business is critical. Here are five technologies that can make a difference in keeping your business profitable, agile and the right size.

Smart Devices

It does not seem possible to survive in today's world without a smart device and that is especially true when it comes to business. Smart phones allow contractors to be in touch immediately with their customers giving them the edge when it comes to customer service. The agility of utilizing smart phones makes sense for communication with your team and the overall benefit of informed customers.

It is important to use phones in a way that works with customers, so knowing their preferences concerning email, text or phone is beneficial for creating enhanced communications. Part of utilizing technology is understanding how customers want to interact with the technology.

Smart phones and or tablets can also make day-to-day business easier to do on the road, hopefully eliminating some of the late night work. Asking vendors about their technology offerings and especially finding out the apps that make working with them easier. To be able to order materials, reports or services through the phone or tablet makes for efficiency and time savings.

In deciding which smart device to use, take the time to coordinate your phone, tablet and computer system with cloud based software in a way that all devices can speak to each other creating an easy, efficient means of transferring data and documents while also documenting customer discussions.

Customer Relations Management

There are several CRM systems with many of them integrated with project management software. But first you may be asking what is a CRM? It is a Customer Relationship Management System and it could be Microsoft Outlook, an Excel file or a higher level software such as Salesforce. In the roofing world, there are many contractor CRM software systems that help manage customers and often are connected to project management and/or accounting software.

Questions to ask when looking for a CRM system include how the program works for residential vs. commercial business or ideally will it handle both. There are companies that are very focused on residential projects and tracking canvassing and sales processes or overall leads. That is very important but if you are looking for something that also tracks customer's data along with project management that may be a different system.

There are programs that offer customer portals where you can share data, photos, job progress, inspections and invoices with customers at their convenience. This type of CRM can be used for initial customer contact and sales with the scalability to store all of the customer's projects as they grow with the company. This type of program is usually used more with commercial business. It is also a great tool to use if you are focused HOA work.

Whichever CRM you use, the key is to maintain a strong, up-to-date customer database that becomes not only a historical view of our customers and projects but also a strong database for future sales and marketing. By using a CRM software instead of Excel or a Rolodex, customer contact can be automated including notes, past correspondence, property data, material preferences and/or potential future projects.

Aerial measurement technology

This technology has been in place since 2008 and it just keeps getting better. Gathering roof measurements traditionally was a time-consuming process prone to mistakes such as mathematical errors or simple human error but has now become a quick, easy and reliable technology. Many contractors now rely on the service for accurate measurements, professional presentations and efficient production planning.

Sales and marketing efforts have benefited greatly from aerial imagery and measurements. In fact, many sales processes have changed substantially as contractors can now share with home and building owners aerial photos, drawings and measurements of almost any structure. Consumers see this as a differentiator. When they can see their property and use the drawings and measurements for reference, it brings a whole new level of professionalism to the sales call.

> **"The quicker you can deliver an estimate for a roof repair or replacement project, the more likely you are to win that job."**

Advancements in this technology are leading to even more solutions for contractors in ordering materials and production. In today's climate of instant information, customers are looking for answers fast. The quicker you can deliver an estimate for a roof

repair or replacement project, the more likely you are to win that job. Many companies have used the aerial roof measurement technology in their estimating programs. By utilizing the CAD files generated from the technology, it is easy for contractors to import the drawings and measurements; saving significant time and complications.

With technology companies working with manufacturers and distributors, contractors can also now utilize the measurements to bid jobs and order materials online. Sales people have moved to using tablets to share the information with customers quickly and efficiently which is important in this technology age.

Estimating technologies

Advancements in estimating software and platforms as well as the introduction of web-based solutions have put this tool within the reach of virtually any size roofing contractor. Not every solution will fit every business right out of the box so it's important to understand your company's needs, how the technology fits into your existing processes and what new efficiencies can be realized through the implementation of an estimating platform.

Some contractors are large enough to require robust, enterprise-level estimating programs that provide job management, estimating and customer relationship management solutions. While for the smaller to mid-sized contractor, an enterprise solution is probably overkill. Smaller operations may want to consider a simple, intuitive, web-based solution that delivers a professional estimate.

Whatever solution is chosen, it's important for contractors to make sure that it integrates with the other technologies they are using. For example, if you are using aerial measurement technology, be sure that the measurements will flow into the program and populate the correct fields. Manual entry of numbers can be time consuming and lead to costly errors in the case of a typo.

Marketing Software

The number one must important marketing technology is a website. It needs to provide enough information about your company in such a way that potential customers will take action and request an estimate for their job. A customer wants to feel confident that you are experienced and that your team is professional. You need to validate that you will support your work with service afterward if needed and that you are knowledgeable about the latest products and technologies. This can all happen on your website and speak to the customers long before they pick up the phone.

Your website should be dynamic, meaning that the content is fresh and always up to date. Have a section on your site that provides short articles and information that your customers will find interesting. Post your press releases and other news regularly on your site. A good website will have a prominent button or link on every page that a visitor can click on to request an estimate. Ask them to complete a form that captures their contact information (name, address, phone and email) but also use the opportunity to gather some basic qualifying information.

Finding a good website developer can be challenging but it is amazing what is available today. Everything from do-it-yourself, to leasing a website to finding a good internet marketing agency. Before hiring a company to update or develop a website, take the time to look at other websites and see what you like. Often the name of the company that developed it is on the site. Also pull your information together ahead of time, it will save you time and money when you start working with the web development company. Lastly, look internally first. It is amazing how many people know how to create websites and you may have someone already working for you that would love to work on a new website.

Take the Time

The most important part of incorporating any technology is to take your time and evaluate. Talk to other contractors through your associations or networks and see what has worked for them. Look at online reviews and see if you can have some trial time to play with and understand the technology. There is a large commitment in time whenever there is a change or adoption of new technology so be sure it is matches the goals of the company.

Also be aware that many types of software adoption will actually have a cultural effect on the company. Processes will need to be updated, personnel trained and data uploaded. It is not easy to change software so create a relationship with the software provider upfront so there is a high degree of comfort and confidence when initiating the new technology and processes into your company.

RCMA Reflective Roof Rebates Database Now Available to the Public

WASHINGTON, DC (March 3, 2016) – The Roof Coatings Manufacturers Association (RCMA) recently made its Reflective Roof Rebates Database, originally created exclusively for use by RCMA members, available to the general public.

The Reflective Roof Rebates Database was enhanced in 2014 with increased functionality for searching available reflective roof incentives across the country. The database has since been further enhanced to include steep slope roofs and increase the frequency of updates for California, Florida and Texas. These three states are now updated on a monthly basis, while all other states are updated every three months.

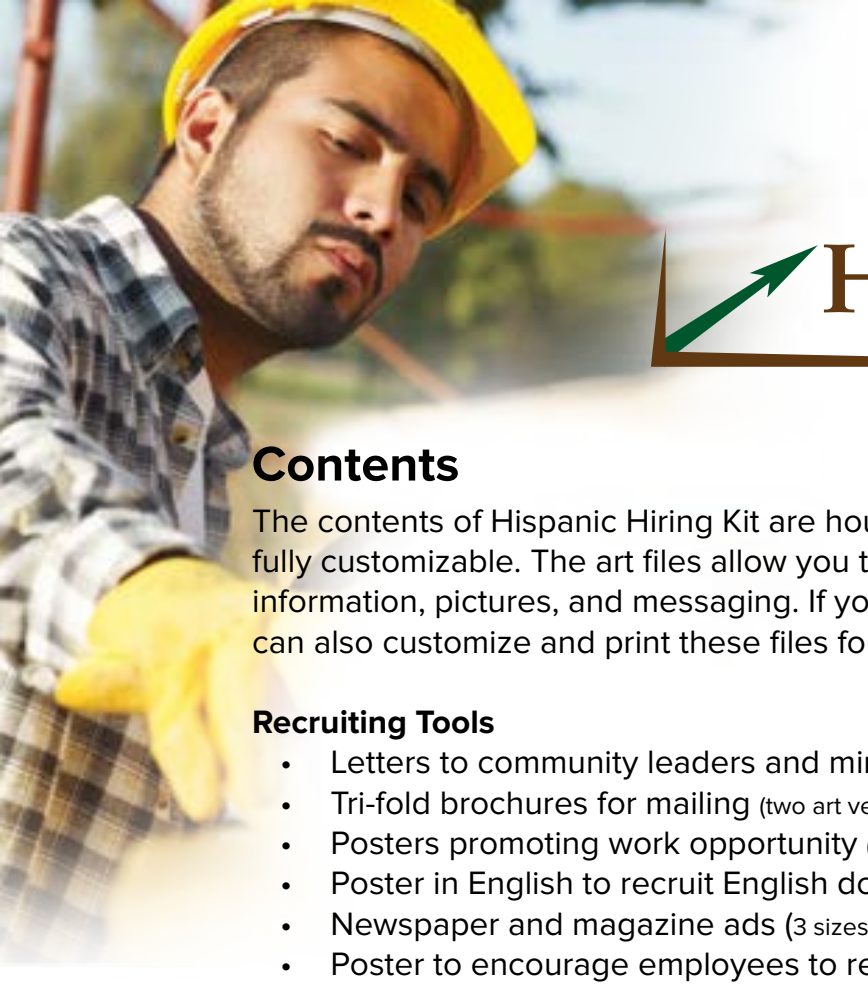
The Reflective Roof Rebates Database includes a comprehensive list of rebates, loans, grants, and tax credits pertaining to reflective roof coatings applied to low slope and steep slope roofs. The database covers all of the United States, including state, local, and utility company rebate programs and uses a customized search tool to find the most up-to-date listings available for installing reflective roofs. The search tool also offers filtered results by energy rebates, reflective roof rebates, or all available rebates within a specific state or ZIP code.

Additional information is available within the database, which includes detailed information on each of the available incentive programs including eligibility, links to supporting documents, key program contacts, and online applications to apply for rebates. There is also a view print option that allows users to easily review the available information in a ready-to-share format.

The RCMA Reflective Roof Rebates Database is available here: http://www.roofcoatings.org/reflective-roof-rebates-database/

About RCMA

RCMA is the national trade association representing manufacturers of asphaltic and solar reflective roof coatings and the suppliers to the roof coatings industry. RCMA and the Reflective Roof Coatings Institute (RRCI) have merged into one industry association that continues to advance, promote, and expand the national and international market for roof coatings through education, outreach, technical advancement, and advocacy.



HISPANIC™ HIRING KIT

Contents

The contents of Hispanic Hiring Kit are housed on your Data CD and are fully customizable. The art files allow you to plug in your own logo, contact information, pictures, and messaging. If you would like, Bilingual America can also customize and print these files for you at a reasonable fee.

Recruiting Tools

- Letters to community leaders and ministers (Spanish and English)
- Tri-fold brochures for mailing (two art versions in Spanish)
- Posters promoting work opportunity (two art versions in Spanish)
- Poster in English to recruit English dominant Hispanics (Spanish)
- Newspaper and magazine ads (3 sizes, Color and BW, English and Spanish.)
- Poster to encourage employees to recruit others
- Social Media training session with Ricardo González online

Hiring Tools (All hiring tools are in both Spanish and English.)

- Applications
- Interview Questions
- Assessment for Entry Level Employees
- Assessment for Potential Leaders
- Letter of Welcome
- Letter of Reprimand
- Guide to Work Visas for Foreign Nationals
- Guide to Legal and Illegal Interview Questions
- Opportunity Axis Power Point Slides and Teaching

Onboard Process (Completely in Spanish and the HHK includes access for 5 people.)

- *Cómo Tener Éxito™* course.
- 20 day continuity program to internalize teaching of course.
- Teaches how to succeed personally and in your company.

If you're employing Hispanics, or want to, the Hispanic Hiring Kit is a must have suite of culturally relevant and professional grade tools. It provides you with everything you need, and more, to attract Hispanic employees.

Bilingual America™
Open your World. Abra su Mundo.

MRCA is Partnering with Beeline Purchasing LLC to Offer a New Member Benefit!

The Midwest Roofing Contractors Association has launched a Safety Marketplace through the Beeline Purchasing Program. MRCA members can buy safety products directly from manufacturers at considerable discounts - **up to 30% savings!**

To browse the catalog, go to http://www.beelinepurchasing.com/store/categorylist.cfm

To make a purchase, please contact Kevin Holden at Beeline Purchasing, 513-607-5955 or email him at kevin@beelinepurchasing.com

Benefits include:

- 10-30% savings over traditional methods of purchasing
- Multiply the buying power of the entire group (MRCA) for additional discounts
- First hand technical assistance and support from factory reps
- Independent and unbiased brokers
- Reduce middleman expenses
- Pass on manufacturer promotions

"Over the past 5 years, I have saved thousands of dollars by purchasing my safety products from Beeline. They offer everything from hard hats and safety glasses to fall protection and other safety equipment that is shipped quickly and directly to my warehouse. In addition to being cost effective and convenient, Beeline provides you with your own personal broker, something you would not get dealing with a large distributor!"

Fred Horner
President/CEO
Advanced Industrial Roofing, Inc.

Labor Department announces $1.9M funding opportunity to expand apprenticeships, support for women in nontraditional occupations

Grants seek to create regional, multi-state resource centers

WASHINGTON, DC – The U.S. Department of Labor today announced a $1.9 million grant competition to recruit, train and retain women in high-skill occupations, such as advanced manufacturing, transportation, energy, construction and information technology. The Women in Apprenticeship and Nontraditional Occupations program will fund the grants.

"Apprenticeships are a time-tested method for training workers with the skills needed to succeed in the jobs employers need most, but for too long these earn-while-you-learn opportunities have been too scarce for women and other under-represented populations," said U.S. Secretary of Labor Thomas E. Perez. "These grants will help to turn the tide and ensure that more women have the support and access they need to be successful in a variety of 'nontraditional' careers."

The department will award approximately four grants to community-based organizations to create regional, multi-state Technical Assistance Resource Centers.

The centers will support efforts to increase the number of women entering into nontraditional occupations and Registered Apprenticeships. Services to current and potential sponsors of apprenticeship will include providing technical assistance and support related to:

•Development of connections with pre-apprenticeship programs to prepare women for Registered Apprenticeship programs.

•Orientations for employers on creating a successful environment for women in apprenticeship.

•Identifying resources for supportive services including child care, transportation, support groups and other efforts to remove barriers to women succeeding in these industries.

Eligible applicants include community-based organizations capable of establishing technical assistance resources for Registered Apprenticeship programs to assist women to enter nontraditional occupations.

The department's Women's Bureau and Office of Apprenticeship are jointly administering the grants.

The solicitation for grant applications will be available at http://www.grants.gov/. For information on the department's range of employment and training programs, visit http://www.doleta.gov/.

MRCA Continues Its Aggressive Promotion of CERTA

The CERTA (Certified Roofing Torch Applicator) training program is ideal for contractors whose work involves torch applications. The full-day program trains experienced roof system installers on the safe use of roofing torches used to apply polymer-modified bitumen roofing products. CERTA training shows how proper roof system configuration design and application techniques can result in fire-safe installations.

The MRCA Board of Directors and T&R Committee recognize the importance of promoting torch application safety and has placed the marketing program for CERTA as a high priority.

MRCA is involved with CERTA Applicator courses scheduled over the next 60 days, throughout the Midwest. Plans have already been finalized for MRCA to sponsor both CERTA Train-the Trainer; and Applicators courses at the MRCA Annual Conference and EXPO scheduled in Columbus, Ohio on November 2 and 3, 2016.

Additional information on CERTA can be found at both the MRCA.org and NRCA.net

Pictured above is the CERTA Class held by MRCA Member, ED Chase Co., Inc., this past Spring.

Work or play? Caio De Azevedo, a Project Engineer with McCarthy Building Companies, tests the Oculus Rift as part of a comparison to determine which current virtual reality option is the best fit for clients, partners, and the Building Team. Photo: McCarthy Building COS.

New Technology
Lets Construction Projects Go Virtual

When McCarthy Building Companies works on large projects such as hospitals or office complexes, it often incorporates VR (virtual reality) to put project details instantly and simultaneously in the hands of owners, designers and subcontractors so better decisions are made in minutes rather than hours, days or weeks.

The technology can offer potential benefits at the jobsite, including the ability to view plans in realtime and identify mistakes, which in turn enhances safety. Additionally, the technology is compatible with mobile and wearable devices, further promoting the use of wireless tools at construction sites.

Dave McCool, director, virtual design and construction, McCarthy Building Companies, says the company has the capability to use VR on every project, but is extremely sensitive to the appropriate use of technology depending on owner and design partner needs. "Our impression is that like any other cool technology, it's not always practical or effective. Sometimes pencil and paper are the most effective tools. But, when it makes sense to use, it can be very powerful," McCool points out. "The most significant benefit of VR is obviously visualization through an immersive environment," McCool says. "You can see and feel what the space will be like before we finalize the drawings. This kind of foresight enables us to reduce wastefulness, respond to skilled labor shortages and create a great experience for our owners and design partners."

McCool says McCarthy was quick to adopt VR and is eager to do more with AR. "As an industry leader in our use of technology throughout the design and construction process, our VDC (virtual design and construction) teams around the country are continuously looking for ways to enhance our services to benefit clients and partners," he says. He adds client feedback has been extremely positive although some need to learn more about the capabilities the technology offers. "Some people believe that looking at a model on an iPad is AR, so we've got some educating to do," he says. "However, the owners who understand the capabilities of AR are blown away."

"You have to have the two elements (physical and virtual) working in harmony in order to call it AR. Our industry is heading down the right path, but we probably need another two to three years of R&D in location tracking before it becomes mainstream," McCool says. McCool admits there was some initial resistance to adoption. "Construction companies aren't traditionally built on innovation; they're built on operations, so there definitely were and will continue to be challenges," he says. "However, we think we've got a healthy balance of resistance at McCarthy, which makes us grounded innovators. We're continually looking at ways to push existing technology tools and test out new ones to improve client results."

While McCarthy was an early adopter, other construction companies are likely to add the technology to their arsenal within the next few years. ABI Research anticipates mobile virtual reality device shipments to hit more than 50 million by 2020. Gartner, meanwhile, includes virtual and AR on its predictions for the top 10 strategic technology trends in 2016.

VR immerses the wearer in a 360-degree, 3D environment, while augmented reality overlays 3D graphics onto the wearer's view of the real-world environment.

Meanwhile, AR can be defined as the real-time

enhancement of VR with data or models from computer sensory input. The technology is compatible with either mobile or wearable devices and uses visual targets and data, such as project blueprints or jobsite billboards, to overlay project data like BIM (building information modeling) models.

Graham Leslie, research and development team lead JBKnowledge Inc., developer of web, mobile, and wearable technology solutions for the industry, believes AR has a strong future in the construction industry. "Augmented reality is a technology that will considerably impact the field of construction in the next several years," Leslie says. "Right now, contractors using our augmented reality app, SmartReality+, can point their smartphones and tablets at their printed plans and see their BIM models above the plans in realtime 3D. SmartReality+ lets our more than 4,000 users see their BIM models in line with their plans in the field or office without expensive BIM workstations or headsets in angles and scales that are impossible in plain reality."

Leslie adds AR eventually will offer even greater value to contractors as the technology matures. "In the near future, augmented reality will be able to accomplish other tasks to improve worker efficiency," Leslie says. "Workers will be able to wear augmented reality hard hats like DAQRI's SMART HELMET to see step-by-step installation instructions appear over components in the field. A worker onsite wearing a Microsoft HoloLens could be virtually joined by an architect in the office also wearing HoloLens to collaborate on a BIM model to fix a clash together in realtime."

Stéphane Côté, research director, Bentley Systems, agrees the construction market will garner more benefits from the technology in the near future."The increased use of augmented reality on construction sites is inevitable. It will remove a lot of the guesswork, facilitate the understanding of the work to be done, accelerate the identification of mistakes, ease scheduling and planning, and will therefore save time and lower costs," Côté maintains.

So far, he says, AR is used primarily for monitoring the state of projects and facilitating the work of verifying whether the equipment has been installed or not. It is also used for visualizing buildings in real context, before construction. "However, those are simple uses for the technology compared to what could be done," Cote says.

Obstacles Remain

While some contractors have adopted AR or will do so in the near future, others face obstacles that will prevent near-term adoption, Leslie maintains. "The biggest challenge to reality will be the lack of research and development budgets among contractors," he says. He adds contractors can prepare for AR by addressing their budgets to better incorporate IT and R&D. "Companies with these resources will be able to stay on top of the rapidly advancing field of construction technology and be prepared to stay competitive with augmented reality," Leslie says.

"The main obstacles to widespread availability of augmented reality apps for construction are related to the technology," Cotes agrees. "The technology is not quite up to the task yet. A construction site is a complex place, and using augmented reality technology in such a place can be difficult. In fact, sometimes the efforts required to do augmented reality on construction sites outweigh the benefits."

Research conducted in 2015 by Deutsche Bank maintains AR offers numerous benefits to construction including the visualization of major projects as a result of the 3D depiction of blueprints. The technology is also valuable during rebuilding or restoration projects, as it enables contractors to see buildings and other structures that no longer exist. For example, during the planning stage of a reconstruction project, it is possible to visualize exactly how the space will look, how the shadows will fall, and how the construction will affect local wind conditions, according to the research.

AR offers other benefits as well, including cost and time savings. For example, the ability to visualize a 3D model of a project reduces the need for travel and enables project stakeholders to refer to the model when discussing the next steps with the construction manager and his team.

There's little question AR will play a significant role in the future of construction. Widespread adoption has not yet occurred, but as obstacles to implementation dissolve, it is a tool likely to play a beneficial role in far more construction projects, as it enhances communications and collaboration, and improves safety. Project participants can use the technology to develop detailed safety plans.

For the past three years, Siemens has been using drones to conduct surveying work above the Aspern Vienna Urban Lakeside project in Austria, one the largest urban development projects in Europe (Photo: Siemens)

How drones are poised to help build the cities of tomorrow

by Nick Lavars • Gizmag

Over time we have gotten used to machines assuming certain roles in society, but even at the dawn of the the age of robotics, some types of skilled labor still seem beyond their reach. After all, how does a machine wield a hammer and overcome the perpetual problem-solving involved in putting together a house or a high-rise? While we might be some ways off from watching buildings sprout out of the ground at the push of a button, flying robots are already carrying out surveying and mapping tasks on construction sites from the US to Japan. But leading researchers are adamant that when it comes to automating the building industry, these machines have more to offer.

The value of drones in construction, at least for the time being, is more or less tied to their ability to venture where humans and heavy machinery cannot. This dictates that the vehicles remain small, agile and with minimal payload, zipping around with onboard high-res cameras and relaying progress shots and aerial surveys to construction teams on the ground. This might sound like little more than a negligible cost-cutting, but drones are already forming an integral part of business operations for innovative construction firms the world over.

In Japan, an aging population has the construction industry turning to new technology to help build the infrastructure of the future. Leading the charge is the multinational machinery maker Komatsu which has just announced the launch of a new service called Smart Construction, aimed at helping fill Japan's void of a fit young workforce with cutting edge information and communication technologies. The service includes a a platform called KomConnect that will connect machinery and workers to the cloud to improve overall efficiency, artificial intelligence-assisted control for operating machinery and, of course, drones.

Komatsu has turned to San Francisco-based

Photo: Komatsu

drone service provider Skycatch to put UAVs to use in its Smart Construction venture. Skycatch's vehicles will be deployed to conduct surveys and produce 3D models, culminating in live interactive maps of the job sites.

"The map comes to life on our dashboard, so to speak, and clients can do things like impose overlays of plans onto what's actually been built, calculate volumetric measurements, and make annotations for themselves or to share with co-workers," Skycatch CEO Christian Sanz tells Gizmag.

In the view of Sanz, the potential of drones in construction is becoming too great to ignore.

"Right now, drone technology is providing a competitive edge to the companies who've successfully adopted it," he says. "They use their equipment and resources more efficiently, communicate better through accurate maps and data, and now have highly quantitative means of measuring their progress against their schedule. In the future, the construction industry will realize aggregate benefits such as a much better safety record and fewer projects that are completely late and off budget."

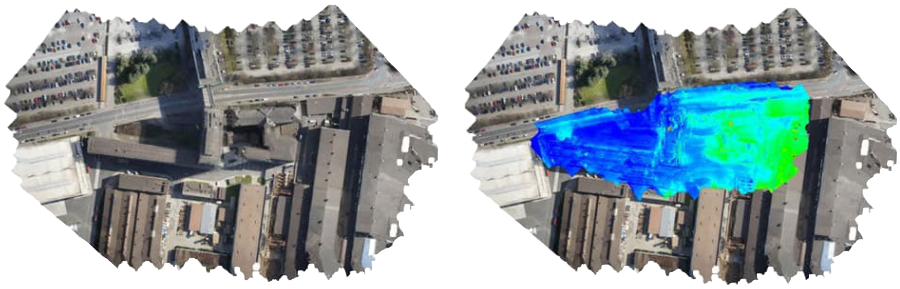
Though Komatsu prides itself on a history of technological innovation, it is far from the only construction company enlisting armies of flying robots. In all corners of the globe, firms are recognizing the aerial surveying potential of drones (a capability that has seen them used in applications as diverse as the hunting invasive plant species in Australia and warding off rhino poachers in Kenya.)

For the past three years, Siemens has been using drones to conduct surveying work above


Photo: Skycatch

the Aspern Vienna Urban Lakeside project in Austria, one the largest urban development projects in Europe. Last month it unveiled a pilot project whereby aerial data collected by drones combines with image processing software to visualize energy losses across entire neighborhoods. The data is then presented as thermal maps, making it easier to identify which buildings could be renovated to be made more energy efficient.

Down under, Australian firm Soto Consulting



Last month, Siemens unveiled a pilot project whereby aerial data collected by drones combines with image processing software to visualize energy losses as thermal maps across entire neighborhoods (Photo: Siemens)

Engineers are using drones to monitor heavy industry and mining sites, scoping out large concrete structures, boilers and skyline conveyers to identify hard-to-spot structural problems.

"The high-res cameras allow us to pinpoint

> **"The high-res cameras allow us to pinpoint corrosion and use that as part of our report,"**

corrosion and use that as part of our report," Jim Allan, Chief Operating Officer at Soto explains. "The main benefit is the cost saving. It alleviates the need for cages and harnesses and safety requirements are reduced."

And according to Rory San Miguel, founder of Australian startup Propeller Aerobotics, there are significant savings to be made. Much like Skycatch in the US, his company offers drone services to companies looking for cheaper, higher quality aerial data. His aim is to create a standardized mapping interface for the surveying industry so that companies can benefit from consistent, easily digestible data.

"There is a AU$4 billion surveying and mapping industry in Australia, which at the moment doesn't involve drones," he tells Gizmag. "Surveyors are using tools like LIDAR that are very expensive and work very slowly. If we have a drone take off and fly in a grid pattern, taking a photo every 20 m (65.6 ft), we can cover the entire site very quickly and build 3D renders with true absolute accuracy. Like Google Maps on steroids."

So through monitoring and aerial mapping, drones are proving indispensable for forward-thinking companies looking stay one step ahead. By negating the need for expensive and heavy-duty safety equipment the robots are saving time and money, while also delivering precise information more reliably than is otherwise possible. But are drones capable of contributing more to construction than just gathering data?

Back in 2011, a team of roboticists from ETH Zürich's Institute for Dynamic Systems and Control offered a glimpse of what might be possible. The researchers presented a 6-meter (20 ft) tall tower constructed from 1,500 polystyrene bricks, every one of which neatly assembled without any assistance from a human hand. One by one, a fleet of flying robots dropped the pieces into place, guided by mathematical algorithms that took digital design data and translated it into flight paths.

In the time since, the team has continued to work on improving aerial construction and overcoming weaknesses such as payload capacity. Federico Augugliaro, a researcher at the Institute for Dynamic Systems and Control, says that no longer are the vehicles seen merely as passive onlookers capturing information about an environment, but are engaging with that environment in a meaningful way through manipulation, construction and the way they interact with humans.

"Unlike cranes, drones have the ability to reach any point in space," says Augugliaro. "To have drones work close to humans on a construction site, however, their size has to be kept rather small. This limits the amount of payload they can carry and the amount of construction material that can be moved around."

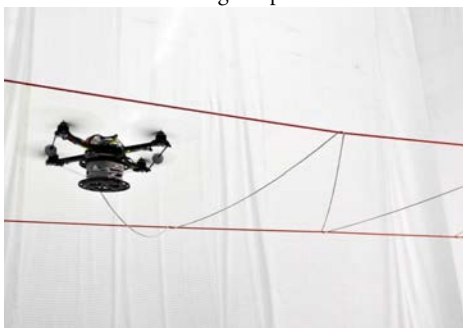
The team is looking to more than just software and controllers to dictate the drone's movement, and are developing techniques that enable humans to reposition the drones with their hands.

"For the situations when drones and people will work closely together, some sort of compliant behavior on the drone side is desirable, both for safety reasons and convenience," says Augugliaro. "For example, instead of using a remote to pilot the drone, one can simply push the drone away."

At the same time, the team is partnering with ETH Zürich Chair of Architecture and Digital Fabrication to investigate the kinds of structures drones might be capable of building.

"Aerial robots are generic and can be equipped with different tools to transport and manipulate material in different ways, but a key subject hereby is weight," Ammar Mirjan, a researcher at the Chair of Architecture and Digital Fabrication, tells Gizmag. "This motivates the investigation into lightweight construction systems. We are particularly interested in the fabrication of tensile structures such as cable-net structures and three-dimensional suspension structures that could not be built with other fabrications methods."

In Mirjan's view, a drone has a unique set of attributes that sets it apart from conventional construction machinery. The most obvious being that they are capable of flight, but also that they aren't limited to working in the one area and can access spaces that simply aren't accessible otherwise. This could see them carry out construction in hard-to-reach places like between buildings or sites without access to streets. Furthermore, they have the ability interact and collaborate on structures that cannot be built by single machines (like cranes that are limited to individual tasks) and can also move through and around materials during the process.



Researchers at ETH Zurich are investigating how drones could be used to build tensile structures (Photo: Professorship for Architecture and Digital Fabrication, ETH Zurich and Institute for Dynamic Systems and Control, ETH Zurich)

"Since it will be difficult to imitate existing construction processes because the tools are so radically different, it is likely that the conditions of how things are designed and built will be altered and hence resulting in new forms of architectural materialization," says Ammar. "History suggests that new tools and technologies often shift existing processes. Drones in construction will enable architectural materialization in ways we cannot imagine."

So while architectural practices may be adapted to suit the capabilities of drones in the future – optimizing a system by which they can work productively with lightweight materials is one way of overcoming the payload problem – it's not the only way researchers are approaching this dilemma.

In February of 2012, Indian roboticist Dr Vijay Kumar delivered a TED Talk revealing the work of his engineering team at the University of Pennsylvania robotics lab. He presented a

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CALENDER OF EVENTS

FRSA – Florida Roofing and Sheet Metal Contractors Association
94th Annual Convention and the Florida Roofing & Sheet Metal Expo
June 16-18, 2016
Hyatt Regency Orlando & Orange County Convention Center, Orlando, FL
Orlando FL 32819
www.floridaroof.com/convention

RCMA – Roof Coatings Manufacturers Association
International Roof Coatings Conference
July 18-21, 2016
Sonesta Hoel Philadelphia
Philadelphia, PA
http://goo.gl/M3SZov

NTRCA North Texas Roofin
6th Annual "Not So Mini Tr
August 10, 2016
10am -2:00pm
1010 Collins Street
Arlington, TX 76011
www.ntrca.com/events/calendar

NRCA CERTA Train-the
August 24, 2016
Rosemont, IL
www.nrca.net/store/detail/ce
authorization/1505

ng Contractors Association
ade Show"

NORTH TEXAS ROOFING CONTRACTORS ASSOCIATION
who's on your roof?

Trainer Authorization

erta-train-the-trainer-

NRCA

ARCA – Arizona Roofing Contractors Association
46th Annual Convention & Trade Show
October 6-8, 2016
Tucson Casino Del Sol
Tucson, AZ
www.azroofing.org

ARCA
ARIZONA ROOFING CONTRACTORS ASSOCIATION

MRCA – Midwest Roofing Contractors Association
67th Annual Conference & Expo
October 31-November 2, 2016
Greater Columbus Convention Center
Columbus, OH
www.mrca.org

NAVIGATING THE MRCA 2016 CON FUTURE EXPO
OCT 31ST - NOV 2ND COLUMBUS OH

RCAT – Roofing Contractors Association of Texas
41st Annual Conference & Trade Show
October 12 - 14, 2016
Gaylord Texan Resort & Conference Center
Grapevine, TX
http://roofingcontractors-texas.com/tradeshow/

ROOFING CONTRACTORS ASSOCIATION OF TEXAS

NRCA CERTA Train-the Trainer Authorization
November 1-2, 2016
Columbus, OH
http://www.nrca.net/store/detail/certa-train-the-trainer-authorization/1507

CERTA NRCA

MetalCon
October 26-28, 2016
Baltimore, Maryland
www.metalcon.com

METALCON
A FUTURE BUILT BY HAND

Continued from page 23

How drones are poised to help the build cities of tomorrow

video demonstrating a fleet of robots flying in tight, centimeter-perfect formations, requiring them to calculate control commands 100 times per second to avoid crashing into one another. Banding together to form neat squares, rolling figure eights and various other patterns, the choreography on show certainly made for an impressive spectacle, but held more value than was reflected by the wows in the audience. As explained by Kumar, with an ability to fly in effect as one solid shape, it follows that the strength and carrying capacity of the drones multiplies.

Among the research currently underway at the Vijay Kumar Lab at the University of Pennsylvania is a project called "Cooperative Manipulation and Transport." This seeks to solve the problem of how autonomous robots can be made to work together to move large payloads by looking to nature. The team draws inspiration from ants and the way they collaborate to transport items of food much larger than the individual ants themselves. Kumar tells us that since his presentation in 2012, his team has improved the system in two ways. The first is the use of sensors, such as cameras, to determine the position of the neighboring robot, negating the need for communication between vehicles. The second is an ability to enroll larger numbers of small, ant-like robots in cooperative tasks. "Now theoretically, we can do hundreds," he says.

Among the research projects currently underway at the Vijay Kumar Lab at the University of Pennsylvania is one called "Cooperative Manipulation and Transport"

When it comes to overcoming the payload limitations of drones with a view to using them in construction, Kumar believes having them work together is the best way forward. While scaling the vehicles up could render them capable of moving heavy materials like girders and beams, this will also make them more cumbersome and sacrifice one of their key strengths: agility.

"Making individuals more powerful or stronger is possible, although this would make this large, unwieldy, heavy and awkward, especially when there might be need to maneuver in tight spaces and or adapt to differently sized payloads," he says. "This is why we prefer the small, modular solution. It is not only bio-inspired and elegant, it is also more practical and economical."

In Europe, a consortium of robotics professors from across the continent have come together to put this thinking into action. The Aerial Robotics Cooperative Assembly System (ARCAS) project is aimed at taking cooperative robot flight and using it to build real world structures. First though, it must establish solid scientific grounding for real world deployment of a flying robot workforce, and like other research efforts, is creating and solving new problems as it goes through the process.

"By using the cooperative control techniques we are developing in the ARCAS project, it will be possible to share the weight of the carried structures over a platoon of robots, hence further increasing the overall payload capacity," says Professor Vincenzo Lippiello from the University of Naples Federico II and one of the ARCAS researchers.

But Lippiello says this brings on another set of challenges, including designing control laws that take into account the destabilizing effect of having several drones hold onto the same object in the air and how sensing capabilities might be best integrated.

Another hurdle that the ARCAS project is working on overcoming is determining the ideal payload for the drones, a predicament that pretty well seems to hang over all researchers working in this area. Its first prototype tested indoors had a payload capacity of 6 kg (13.22 lb), the second saw this increased to 9 kg (20 lb) per vehicle. An upcoming prototype drone will have a total payload of between 15 and 20 kg (33 and 44 lb). It does say, however, that external factors could bring about advances in the carrying capacity.

"It is true that technological limitations exist and are mainly linked to the power to weight ratio of the current batteries," says Lippiello. "But the recent improvements of battery technology, mainly related to the cellular business, have also generated benefits for the drones performance in terms of autonomy and or payload."

So the value of drones in construction in terms of aerial mapping and surveying is pretty well established, if not yet entirely realized by the industry. As successful firms such as Komatsu, Siemens and Soto Engineering continue to lead the way, it seems logical that there will be more to follow, especially when we consider that the technology is only becoming cheaper and its benefits harder to ignore.

But for actually building the structures themselves? The general line of thinking among the experts we've spoken to for this story is that the technology is at least five to ten years away. But it appears that if it does come to fruition, it will come with its share of limitations. Drones as construction machines may spawn a new niche in architectural design just as the team at ETH Zürich anticipate, or they may cooperate to make light work of moving heavy materials, but even then it seems they will only amount to a technology that complements the construction industry, rather than truly disrupts it.

What we also know is there will need to be a serious economic case to get the drones out of the lab and onto construction sites. Delivery drones were unheard of until Amazon came along and professed that they had the potential to turn its business model on its head, and now here we are, with the technology more or less there and pilots projects being carried out all around the world. For flying robots to form part of construction sites of the future, their capabilities will need to align with the private interests behind them. This might involve scenarios where it is just not cost effective or physically possible to put human workers on the job.

"It's likely to be somewhere where labor is prohibitively expensive, or workers cannot go there," imagines Dr Kumar. "Think of us colonizing Mars. The first things that build for us there will be robots."

So if you think that using drones in construction is a pretty out of this world idea, in the end, you may just be proven right.

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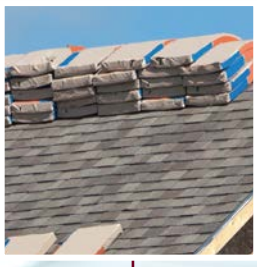

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