



THE Future OF Building

An analysis of the **10 key trends** that could dramatically change the way construction companies operate in North America



Introduction

With ongoing advancements in converging technologies, energy generation and usage and other business models, the construction industry has an opportunity to transform the way it functions.

Challenging conventional norms could be the key to solving many of the bottlenecks the industry has faced for years. At the same time, there are inherent risks associated with transformative shifts. The time is right to take advantage of the potential financial, environmental and societal rewards.

Many would agree that a transformation of the construction industry has already commenced. Technology is changing the way buildings are designed, equipment operates and organizations function. Renewable energies are being leveraged more often and in more ways. A generational shift in the workforce is already underway.

The Association of Equipment Manufacturers (AEM) Vision Team and Futures Council spent countless hours discussing how these influences, among many others, could transform the construction industry over the next 10 years. Following is a look at **10 trends** that will have a significant impact on construction.

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ENVIRONMENTALLY DRIVEN TRANSFORMATION

The construction industry will help lead the transition to clean energy, embracing the use of alternative fuels and building the infrastructure needed to repower America.

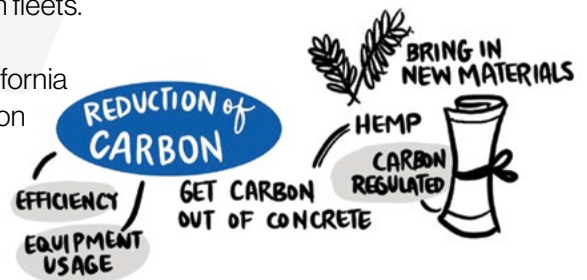


1

Increased regulation of carbon-based fuels spurs adoption of alternative power solutions

Although engine emissions regulations are nothing new to the construction industry, a mounting desire to gravitate toward alternative energy sources is expected to result in restrictions and mandates that would dramatically change the complexion of construction fleets.

Look at what is already taking place in **California**. The California Air Resources Board (CARB) recently approved a regulation that bans small gas engines (up to 25 hp) on new equipment starting in 2024. Rigid regulations like this tend to spread to other industries. There is a growing list of 15-plus other states that take their cues from CARB.



Considering that the U.S. aims to drastically reduce greenhouse gas (GHG) pollution by 2030 (50-52% reduction from 2005 levels), dramatic changes are already taking place in many industries.

The EPA recently finalized its **most aggressive GHG emissions rule** for passenger vehicles and light-duty trucks for model years 2023-2026. Additionally, the EPA recently announced plans to reduce GHG emissions from **heavy-duty trucks** through a series of rulemakings over the next three years beginning with model year 2027.

A **bill** was also introduced in the U.S. House of Representatives on February 3, 2021, with the intent to regulate fuel for the aviation industry. This proposed legislation establishes a national goal of a 35% net reduction in GHG emissions from flights by 2035 and net zero emissions by 2050.

The EPA recently announced plans to reduce GHG emissions from heavy-duty trucks

While aggressive goals like these may initially seem daunting, they also prompt other industries to embrace the changes necessary to capitalize on transformative opportunities.

A significant level of investment into the development of a wide swath of alternative power solutions is well underway. Long-term it isn't practical to pursue all of the options being explored due to the needed infrastructure surrounding each power source. Once solutions are vetted, the construction industry can expect more than one to be leveraged in their fleet based on the varying power and performance needs of each piece of equipment.

Over the next 10 years, a rationalization of a few select power solutions to reduce carbon emissions will take place that infrastructure can then be built around. Construction companies will see their fleets transform, while at the same time building out vital new infrastructure.



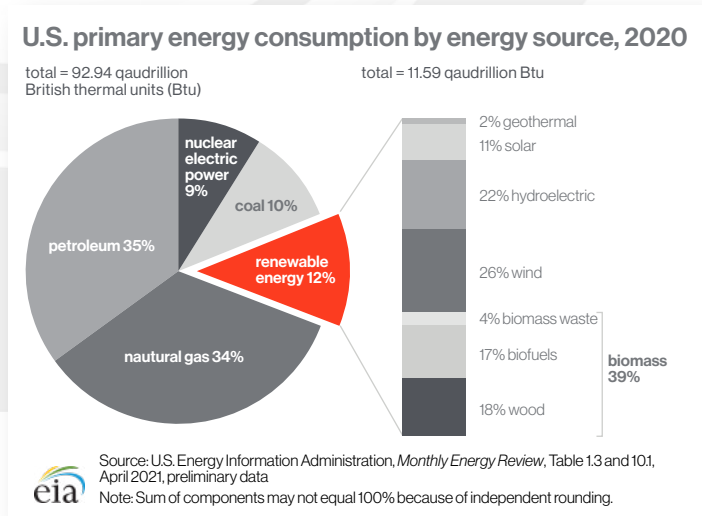
2

Renewable energy production booms

As pressures to decarbonize intensify, a congruent shift toward renewable energy production will accelerate, thus creating an urgent need for new and modernized infrastructure. The public and private sector investment will provide a high demand for construction completed with a smaller carbon footprint.

Progress has already been seen. The [Center for Climate and Energy Solutions](#) states that renewable energy is the fastest-growing energy source in the U.S., increasing 42% from 2010-2020.

Furthermore, U.S. Energy Information Administration data shows that renewables now account for roughly 12% of U.S. energy consumption (*see graph*).



Renewable energy's share of total energy consumption will continue to increase. The U.S. Department of Energy's (DOE) Office of Energy Efficiency & Renewable Energy has outlined a [strategy](#) to help accelerate renewable energy production over the next decade. Goals include 30 gigawatts (GW) of [off-shore wind](#) production by 2030 and enough

community solar production to power the equivalent of 5 million homes. Roughly 80 [community solar](#) providers have already pledged to put more than 20 GW of power on the grid by 2025. Perhaps this is why the U.S. Bureau of Labor Statistics predicts that wind turbine technicians and solar installers will be among the five [fastest-growing occupations](#) through 2030.

The DOE has also created the Clean Energy Corps. Leveraging investments from the 2021 Bipartisan Infrastructure Law, the group's objective is to help the U.S. meet its goals of a carbon-free power sector by 2035 and a decarbonized economy by 2050. Along the way in this transition, natural gas will play an important role in resolving renewables' intermittency issues.

Combined with increased government focus and investment, private sector investment will also help accelerate the shift toward renewables. One example is Duke Energy Sustainable Solutions which provides wind, solar, backup power and managed energy services to more than 1,000 projects across the U.S., with a total electric capacity of more than 5,100 megawatts (MW) of nonregulated renewable energy. Duke Energy strives to reduce carbon emissions by at least 50% by 2030.

continued

ENVIRONMENTALLY DRIVEN TRANSFORMATION



Renewable energy production booms *continued*

Other energy industry leaders are helping lead the charge toward renewables. For instance, **Shell** is making investments in hydrogen, wind, solar, electric vehicle charging and biofuels. **ExxonMobil and Global Clean Energy** have expanded their five-year agreement to increase ExxonMobil's purchase of renewable diesel by up to 5 million barrels per year. *(See table for a look at what leading energy companies are doing.)*

Company	ESG Report	Scope 1 Emissions	GHG Reduction Target	Net Zero Target
ExxonMobil	●	●	18% by 2025	●
BP	●	●	20% by 2025	2050
Shell	●	●	20% by 2030	2050
Equinor	●	●	19% by 2025	2050
Chevron	●	●	38% by 2028	2050
Total	●	●	26% by 2025	2050
ConocoPhillips	●	●	40% by 2030	2040
Occidental	●	●	40% by 2025	2050
Hess	●	●	44% by 2025	2050
EOG	●	●	21% by 2025	2040
Chesapeake	●	●	20% by 2025	2035
Marathon	●	●	50% by 2025	●
Pioneer	●	●	25% by 2030	●
Continental	●	●	●	●
Diamondback	●	●	50% by 2024	●

Note: ExxonMobil has not made a final decision on its net-zero pledge, but it is being considered and the company is expected to announce strategic moves on environment at the end of 2021.
Source: L.E.K. Energy Transition Study

Major corporations beyond the energy sector are also helping propel the shift. **Intel** is one example. They joined the American Business Act on Climate Pledge in October 2015. Also in 2015, the company purchased 3.4 billion kilowatt hours (kWh) of green power, enough to meet its entire U.S. electricity needs. All

in all, 417 corporations representing 21% of the world's largest public companies have made net zero pledges, according to the **Energy Transition Study** published by the global consulting firm L.E.K.

Net zero pledges are also being released by project owners for new buildings and infrastructure, including a reduction in embodied carbon which will require the use of alternative materials and building processes. Contractors will play a role in these goals through more efficient operations and equipment. Existing buildings will search for their own paths to sustainability. Upgrading to renewable energy sources and participating in carbon markets are likely. The entire construction industry supply chain will play a role in helping the industry meet sustainability goals.

Construction companies will be critical in the nationwide energy transformation. Beyond taking steps to lower their own GHG emissions, construction companies will build the vital infrastructure necessary to help renewable energies claim a significantly larger share of total energy consumption over the next 10 years.



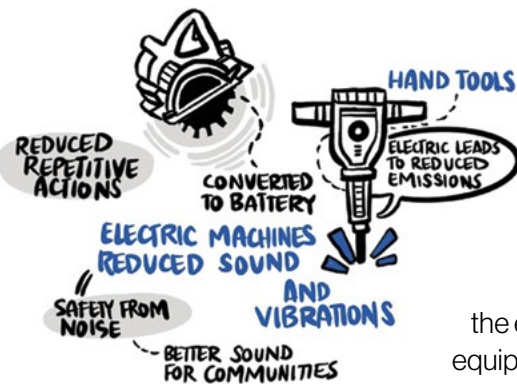
3

Compact equipment trends electric

The majority of new-to-market compact construction equipment will feature varying degrees of electrification. Equipment manufacturers will make strategic decisions on which approach to take based on equipment type and size, application and workload. Equipment such as compact excavators, skid loaders and wheel loaders could ultimately see propulsion and selective work functions go fully electric. At the same time, the need for efficiency gains will drive innovation in the hydraulic circuits and components.

The trend toward electrification will largely be driven by ongoing efforts to decarbonize. Just look at what is happening in the auto industry. According to [Consumer Reports](#), nearly 100 battery electric vehicle models are set to debut by the end of 2024. Honda, for instance, expects 100% of its sales to come from electric cars by 2040. The current Administration plans on spending \$15 billion to build a national network of 500,000 [electric charging stations](#) throughout the country.

With respect to the construction industry, environmental and societal pressures to reduce noise on jobsites will also be a catalyst for growth in compact electric equipment. Gas-powered [leaf blower bans](#) in parts of California and other municipalities around the country can be viewed as a precursor to what will ultimately happen in construction. Regulations that greatly limit or ban the use of gasoline engine-powered equipment, as recently seen in California with small engines used in landscaping equipment, will also accelerate the trend toward electrification.



As the reliability of equipment becomes validated after reaching market, more construction companies will look to electrification as a way to not only meet regulatory and social pressures, but also reduce operating costs. It is possible that significant economic or other market disruptions could slow the shift toward electrification. Regardless, given the U.S.'s ambitious goal of slicing carbon emissions in half by 2030, the electrification of many segments of the compact construction equipment market will take place over the next decade.

TRANSFORMATION OF OUR INDUSTRY

The convergence of key technologies will enable the construction industry to make significant advancements in efficiency, productivity, quality and safety. Woven throughout is Artificial Intelligence (AI) that is the silent technology partner already at work today. It is the expected amplification of these individual elements together with AI that show breakthrough potential.



4

Connectivity leads to jobsite transformation

As digital connectivity improves through the expansion of 5G networks, LEO (low earth orbit) satellites, fiber optic cable and other means, construction jobsites will become better connected, thus providing the real-time data necessary to improve decision making and efficiency.

Real-time visibility into machine utilization, diagnostic information and performance helps construction fleets improve asset management, reduce fuel consumption, increase safety and improve preventive maintenance scheduling. Equipment tracking is a critical area where construction companies can reap the benefits of a connected jobsite.

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The synergy of bringing together all the existing technologies is the key to transformation, and connectivity is what enables it. A connected jobsite simply means that real-time digital connections exist on a project between people, equipment, materials and designs both on the jobsite and remotely. These connections tie to a centralized information hub in the cloud that provides data and insights to assist decision making on a range of issues including scheduling, staffing, billing, materials and equipment.

WILL INFO BE
ACCESSIBLE FOR
ALL TO USE?
DEMAND
FOR DATA
SHARING

Ubiquitous connectivity also enables AI across jobsites. Machine-to-cloud connectivity allows for AI-driven data analysis and problem solving, allowing automated machine functions to improve and expand.

Jobsite connectivity is not just machine-centric though. Connectivity allows for efficiency and productivity gains throughout an organization. For instance, data from earthmoving equipment can be sent to the cloud, allowing staff in another location to view that data in real-time to monitor progress and compare it to project design. Additionally, laborious tasks that have historically been completed manually, such as quantity surveying and payroll time-tracking, can become automated.

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TRANSFORMATION OF OUR INDUSTRY



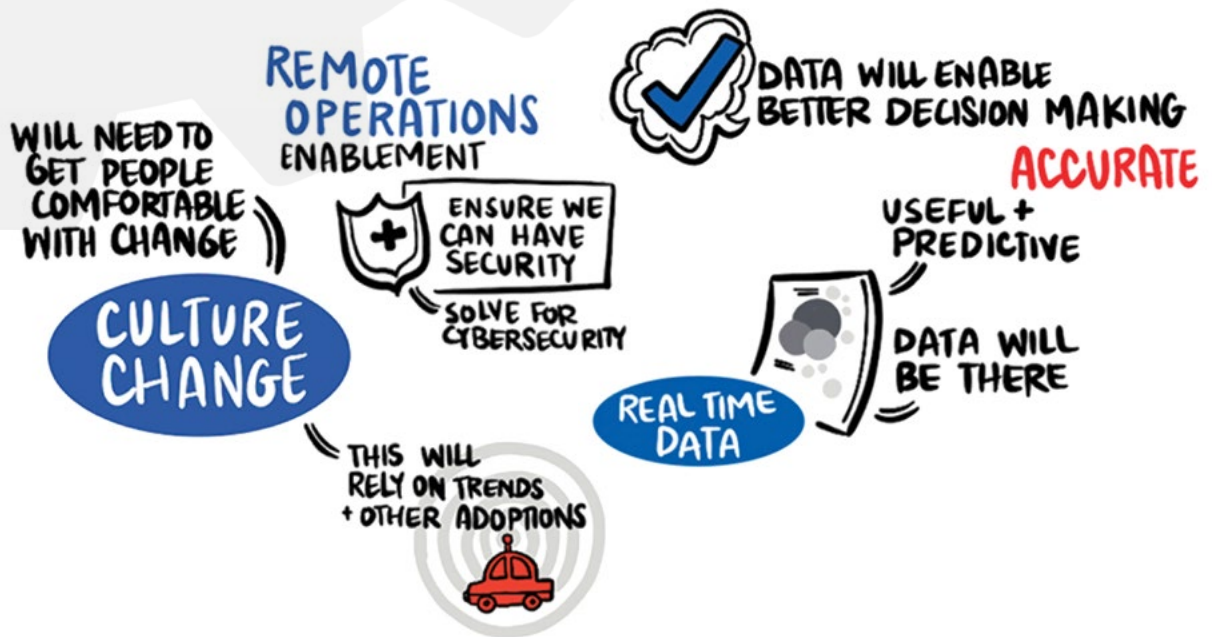
Connectivity leads to jobsite transformation

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Cloud-to-cloud connectivity makes the efficiency-enhancing possibilities even greater by breaking down silos that typically exist among construction project stakeholders. Communication improves and workflows become automated when strong jobsite-to-office and office-to-office connections exist.

Connectivity also opens the door to interoperability, which simply means two or more computerized systems (for example, software platforms or pieces of equipment) are capable of talking to one another. Interoperability stemming from interorganizational cooperation can lead to a rich data ecosystem that helps elevate the industry as a whole.

The technologies already exist. Ubiquitous connectivity will expand their capabilities and speed their adoption – the possibilities it enables are endless.





5

Pathway toward autonomous machinery

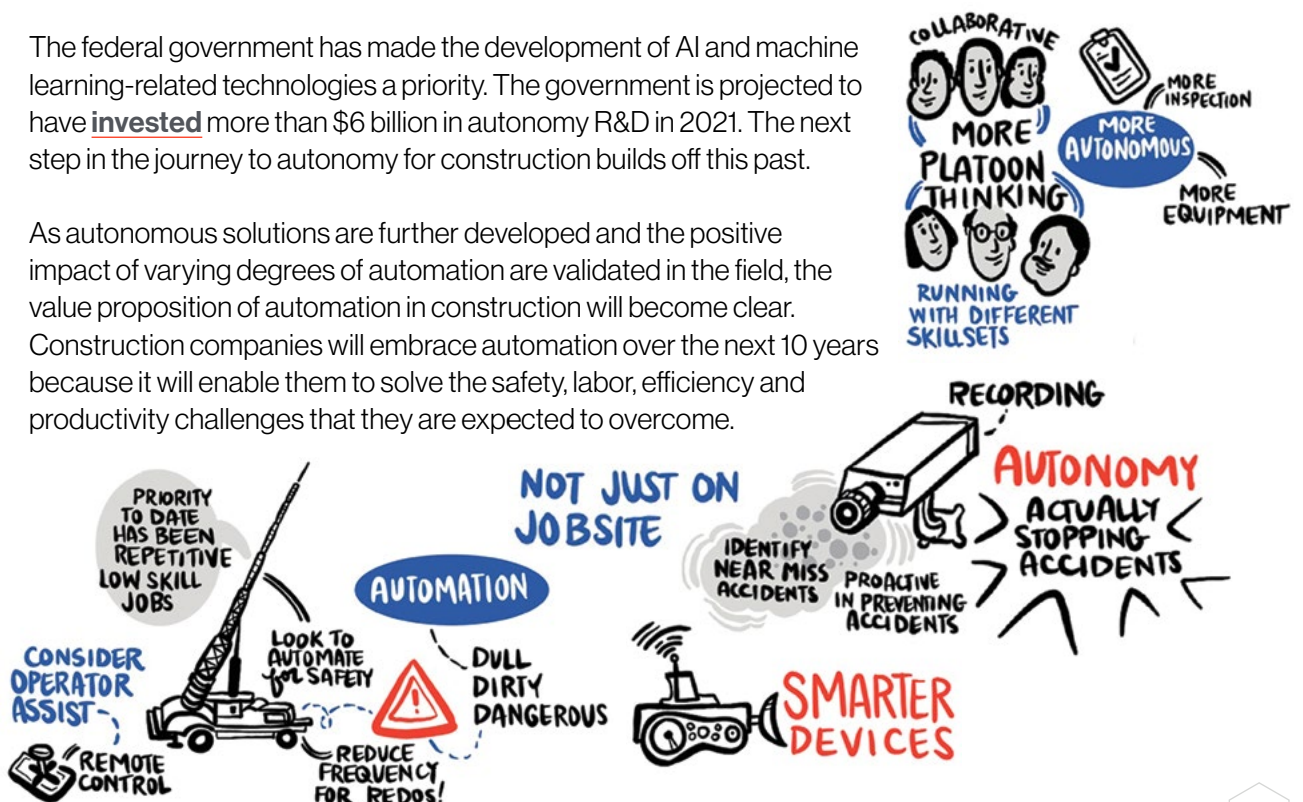
Autonomous equipment will be a critical beneficiary of connected jobsites. Although full autonomy in all operations will likely not yet be achieved within the next 10 years, situational automation and moments of autonomy will increase considerably.

There are certain laborious and repetitive tasks in construction that lend themselves well to automation. Nonetheless, construction is often considered to be one of the slowest industries to adopt technological innovation. A [2017 study](#) showed that just 16% of surveyed construction companies were using automation technologies. While that number isn't staggering, it does show that construction equipment automation is beginning to show benefits and garner adoption. Interest will grow over the next decade as workforce shortages, safety risk mitigation and cost control take on increasing levels of importance.

The journey to autonomy in construction began many years ago. Automatic grade control is a good example of how the construction industry has already taken an important step toward automation. Remote control operation (TeleOp) is another good example. Robots are on the market for specific construction tasks from hanging drywall, plastering, painting, bricklaying, trenching and rebar tying. Additionally, we have already seen platooning trucks for road construction and autonomous cranes for material handling. With a closed environment and repeatable paths, mining has become a [proving ground](#) for autonomous drilling and loader operation going back to the 1990s.

The federal government has made the development of AI and machine learning-related technologies a priority. The government is projected to have [invested](#) more than \$6 billion in autonomy R&D in 2021. The next step in the journey to autonomy for construction builds off this past.

As autonomous solutions are further developed and the positive impact of varying degrees of automation are validated in the field, the value proposition of automation in construction will become clear. Construction companies will embrace automation over the next 10 years because it will enable them to solve the safety, labor, efficiency and productivity challenges that they are expected to overcome.





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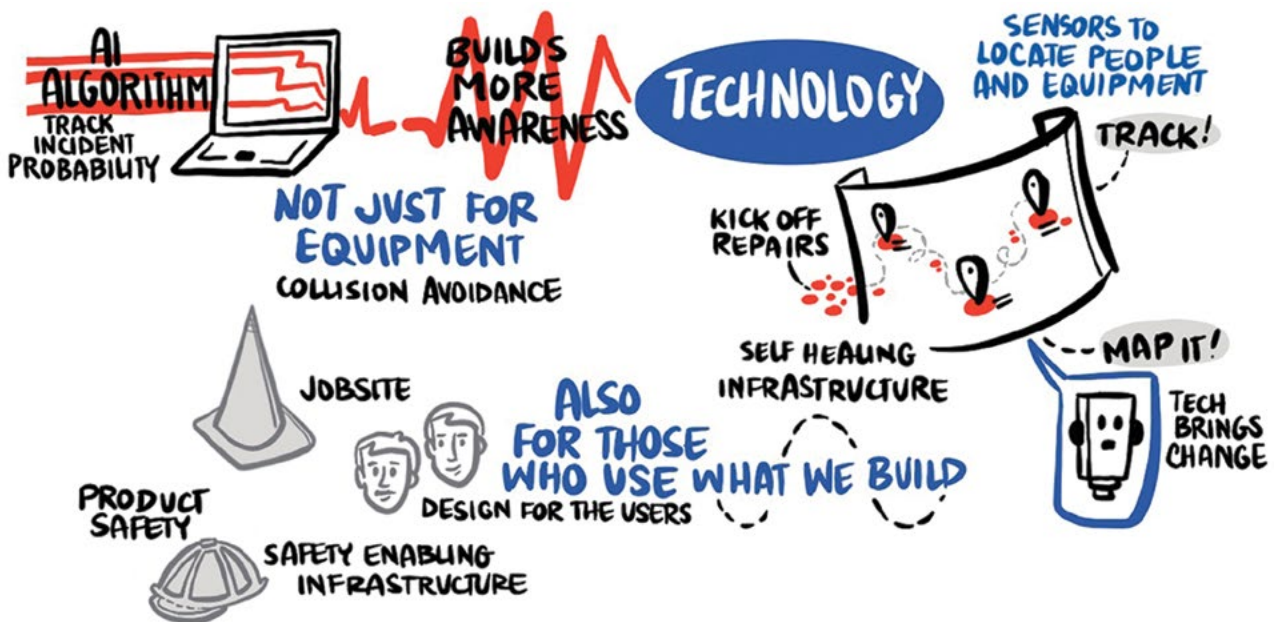
Sensors improve efficiency and safety

Moving from singular devices tracking and reporting people and equipment, a multitude of sensors will expand in quantity. Construction companies will gain leverage to build insights that lead to proactive safety results and efficiency gains both on the jobsite and in the office.

A variety of wearable devices such as watches and helmets are already showing promise in jobsite safety. An article published by [ScienceDirect.com](https://www.sciencedirect.com) describes how wearables have helped reduce the number of accidents over the past 10 years. Wearables can monitor the movement of workers to detect falls, breaches of secure zones, exposure to heat, noise and dangerous gases, as well as a worker's body temperature and heart rate. Over the next 10 years, all these individual devices and their data will come together for a more holistic view of worker safety.

In addition to wearables, there are many other ways IoT devices are benefitting construction companies, such as:

- Allowing project managers to gain visibility into material deliveries
- Noise, vibration and motion sensors helping alert managers to on-site accidents
- Computing innovations like Google Glass improving the efficiency of remote diagnostic and troubleshooting assistance
- Sensors monitoring dirt and aggregate stockpiles *continued*





Sensors improve efficiency and safety *continued*

Already today, numerous sensors generate data that assists fleet managers in predicting maintenance intervals and component failures, thereby adding value through reduced downtime and repair costs. Going forward, through the use of visual-recognition technologies such as radar, lidar and camera systems, sensors will play an essential role in the construction industry's journey toward autonomy. Additionally, equipment sensors will be used to gather data on ground conditions, temperature, vibration and noise.

As important as these many sensory devices will be, the software used to aggregate, analyze and present the sensor data will play a pivotal role. AI will use this data to automate jobsite decision making. Machine learning will analyze real-time data to perform predictive analysis of safety risks and jobsite conditions that impact productivity.

Sensory devices are learning to mimic what humans have been asked to see, hear, smell and feel on jobsites for centuries. Sensory devices, however, will do it faster, better and more safely in the next 10 years, thereby enabling the transformation of the construction jobsite.

Wearables have helped reduce the number of accidents over the past 10 years

TRANSFORMATION OF OUR BUSINESS

As construction companies and jobsites become more technology-driven, revolutionary changes in the way projects are staffed, equipment is acquired and data is leveraged will begin to take place over the next 10 years.



7

Fewer workers, different skillsets

There will be fewer people on jobsites and throughout the construction value chain as an evolving workforce continues to take shape.

A report from **McKinsey & Company** states that roughly 41% of the U.S. construction workforce is expected to retire by 2031. Also consider an **AEM report** that speaks to the broader labor market constraints. On average, roughly 2 million baby boomers retire each year. In 2020, more than 3 million retired. At the same time, 1.1 million additional people decided to leave the workforce for various reasons. In general, the relative size of the working-age population has been shrinking since 2008. Worker shortages will drive construction companies to embrace technology and advanced equipment as a way to reduce reliance on labor.

Balfour Beatty, a multinational infrastructure group, believes that continued investment in new technologies will help change outdated perceptions of the construction industry, enabling companies to attract a new, younger and more diverse workforce. The industry will still have an overwhelming need for hardworking people with a passion for the built world. However, those people will also possess a high level of technological acumen that will become increasingly necessary over the next 10 years.

41% OF THE U.S. CONSTRUCTION WORKFORCE IS EXPECTED TO RETIRE BY 2031

Consider **Generation Z**, born after the mid-1990s. This segment of society already represented 20% of the workforce in 2020. That percentage is only going to grow, and there will be a congruent shift toward technology-focused jobs. Roughly 91% of Gen Z says technology will influence their job choice among similar employers.



During a 2021 CONEXPO-CON/AGG Tech Talk, a road construction contractor said technology will help the industry replace the large numbers of experienced workers who are beginning to retire. “We need to find a way to attract young workers if we are going to keep this industry stable,” said Rod Stephens, President of All Roads Construction in British Columbia,

continued



Fewer workers, different skillsets *continued*

Canada. “Instead of putting a shovel in their hands, we put a joystick in their hands. They love running equipment with the use of technology. The intangible is that you’re creating a whole new culture in your company where people are motivated and want to come to work because they are leading in technology. People love to be part of a team that is leading.”

Increased use of TeleOp, automation and prefabrication will also enable the industry to become more inclusive and productive, creating new roles for skilled workers in cutting-edge areas. TeleOp opens the door to individuals who previously saw the jobsite as physically inaccessible or too far from their urban homes. Automation reduces the need for workers undertaking repetitive manual tasks. Multi-language e-learning and VR simulators delivering culturally agnostic training experiences all go to attracting the new workforce for the jobs of today and tomorrow. Similarly, moving to off-site construction techniques such as precasting, prefabricating and preassembly has the potential to address the shortage of skilled labor while also maximizing efficiency, consistency and safety.

Instead of putting a shovel in [young people’s] hands, we put a joystick in their hands

Navigating the next 10 years, the efficiency gains afforded by technology will allow for increased productivity on jobsites with fewer available workers. For that to happen though, workers need the right skills that enable the leveraging of technologies. The construction industry must think about the new backgrounds and skills that can lend themselves to construction jobs of the future and begin marketing to the changing demographic with the right messaging. Job titles such as machine learning technician, IoT architect and autonomous fleet supervisor will become just as common as project estimator, superintendent and heavy equipment operator.

TRANSFORMATION OF OUR BUSINESS



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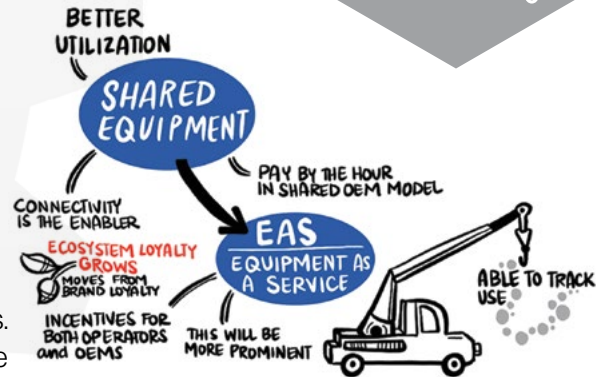
Business models shift toward subscriptions

Construction companies will gain new, innovative ways to access equipment and equipment technology, thereby diversifying risk and reducing capital outlays.

The traditional model in the industry has been to purchase core equipment and then supplement the fleet with rented units to meet varying production needs. Construction companies that own their equipment have the responsibility to maintain and repair that equipment as needs dictate.

Going forward, as technology and equipment increasingly go hand-in-hand, construction companies will see additional value in shifting from capital expenditure to operating expenditure. Converting equipment technology to operating expenses can improve budgeting, estimating and cash flow. Additionally, capital is freed up for investment in other areas of the business. It also becomes easier for companies to scale as they grow and to keep pace as technology advances.

The shift from capital expense to operational expense has already been happening by way of equipment rentals, which continue to grow in line with overall industry growth. Another example of a potential operating expense is web-based, on-demand software, also known as Software as a Service (SaaS). Rather than purchase a plethora of software and servers and assume responsibility for the installation and management itself, a company simply pays a monthly fee to someone else for access to that software. Under these models, companies “pay as they go.”



Similar shifts can be seen with respect to equipment in other industries. In manufacturing, for instance, Equipment as a Service (EaaS) gives companies an opportunity to lease equipment for a specified period. Payment is based on the output of that equipment along with any other services that go along with it, such as preventive maintenance and repairs.

EaaS has similar applicability in the construction industry. Construction companies can gain access to the newest, most technologically advanced equipment without having to outlay large sums of money to own it. EaaS is a very different equipment acquisition model than the construction industry is used to. But it brings the potential to transform construction, allowing the entire industry to make tremendous advancements in efficiency, productivity, safety and sustainability.

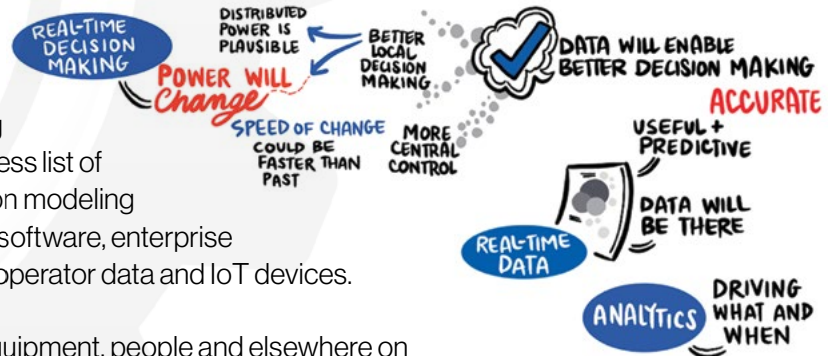
Each construction company will decide for itself which equipment acquisition model makes the most sense from an ROI standpoint. Over the next 10 years, more acquisition options will be made available to help more companies capitalize on the latest equipment and technologies that will drive the construction industry of the future.



9

Construction data will reveal its value

An abundance of data across the construction industry will become actionable and monetizable. The construction value chain is creating and storing data from a nearly endless list of sources such as building information modeling (BIM), parts databases, estimating software, enterprise resource planning (ERP) systems, operator data and IoT devices.



As discussed earlier, sensors on equipment, people and elsewhere on jobsites provide the real-time insights necessary to make proactive decisions.

A few examples include reducing downtime with insight-driven maintenance and safety alerts with AI cameras. Direct economic value is derived from the data because it helps companies improve productivity, quality, safety and profitability.

Over the next 10 years, construction companies will also derive value from their data by making it available to others. Sensors on construction equipment present a great deal of potential. Equipment is on a jobsite 24 hours a day and can provide rich insights into weather, ground conditions, noise, vibration, gas leaks and more. When part of a robust data ecosystem, these types of insights have great value both within the construction value chain and also to external markets.

Over the next 10 years, as connectivity improves and jobsite IoT devices become commonplace, an abundance of construction-related data will be generated

Terbine is a tech startup that has recognized the potential of shared IoT data. Millions of connected vehicles, machines and other IoT devices currently see their data tucked away

in proprietary silos. As Terbine points out, the need to share siloed data is growing and thus created a data exchange platform with standardized monetization. The Las Vegas Smart City project, connecting digital twins, IoT devices and vehicle and infrastructure data, is an early example of data being integrated and used, yet decoupled from its original source to benefit a community. We are entering an era where aggregated data has value outside the traditional walls of a company.

Over the next 10 years, as connectivity improves and jobsite IoT devices become commonplace, an abundance of construction-related data will be generated. Construction companies will benefit by leveraging that data in decision making. Sharing or selling data holds surprising new value not yet realized.



10

Cybersecurity becomes central to corporate strategy

Investment in cybersecurity will grow to protect the technologies and infrastructure needed to power equipment, jobsites and organizations as a whole.

While the construction industry historically hasn't been viewed as a primary target for cybercrime, it is a rather vulnerable target for a couple of reasons. First, **research shows** that 74% of construction companies are not prepared for a cyberattack. Secondly, a growing number of connected devices in offices and on jobsites creates an endless array of potential entry points for cybercriminals. Perhaps that is why **Safety Detectives** is reporting that construction has become the third most common industry to report ransomware attacks in North America.

Data capture and a desire to monetize data creates a new risk. With BIM (building information modeling), for example, numerous devices are connected to a central repository housing digital blueprints, project notes and other sensitive information. A breach could greatly disrupt operations, and a ransomware attack could end up costing a construction company thousands, if not millions, of



dollars. Connected equipment can also be vulnerable. In 2019, **Forbes** published a story discussing how easy it was for cranes to get hacked.

The website **IoT for All** suggests that construction companies must ensure that their teams are utilizing reliable IoT devices capable of deterring and detecting cyberattacks.

IoT is now ranked as **strategically important** by each of the major U.S. federal agencies that focus on increasing competitiveness, economic prosperity and national security. This is a good sign that points to robust research and investment into cybersecurity. In fact, the federal government has allocated \$1 billion of the recent \$1.2 trillion infrastructure bill for cybersecurity funding, as reported by **StateTech magazine**.

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The National Institute of Standards and Technology (NIST) is helping to lead the effort. NIST's Cybersecurity for the Internet of Things **program** supports the development and application of standards, guidelines and tools to improve security of connected devices.

continued



Cybersecurity becomes central to corporate strategy *continued*

Manufacturers will adopt a **Zero Trust** strategic approach to IoT device security. Zero Trust assumes there is no implicit trust granted to assets or user accounts based solely on their physical or network location, nor their asset ownership. Authentication and authorization (both subject and device) are discrete functions performed before any connection to an enterprise resource can be established.

**SPENDING ON SECURITY
INCREASED
188%
FROM 2018 TO 2019
IN CONSTRUCTION COMPANIES**

Another important cybersecurity initiative is FedRAMP, a government-wide program that leverages NIST standards and guidelines to provide standardized security requirements for cloud services used by federal government agencies. In other words, when a cloud service earns FedRAMP approval, you know it's trustworthy and reliable to use for your business too.

When it comes to cybersecurity in construction, positive steps are being taken. **Spending on security** increased 188% from 2018 to 2019 in construction companies. However, much more needs to be done in coming years. The future of building hinges on an increasingly connected construction jobsite, and increased connectivity hinges on an increased level of cybersecurity.



Conclusion

The construction industry is at a critical juncture. An urgent need for building is colliding with an unprecedented shortage of skilled workers. At the same time, aggressive goals to lower GHG emissions are being put into place.

Technology and innovation, if used appropriately, will produce the future society we desire. Connected jobsites will be safer, more productive and more conducive to an evolving workforce that is technologically savvy. Renewable energy development will allow construction companies to evolve their equipment fleets accordingly, while also creating opportunity to build the new infrastructure needed for a future America. Over the next 10 years, the construction industry will help lead the transformation and, in turn, continue to reveal its true value.

PROJECT SPONSORS





acknowledgements

The AEM Futures Council set out to develop a shared industry vision for the future and its implications to AEM, its members and ultimately end-users.

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Several of the Vision Team meetings were documented with visual notes by [Ink Factory](#), and portions of these are used throughout the document.

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