

The Inevitable, Connected Future of Construction

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A LOOK AHEAD AT TOMORROW'S TECHNOLOGY-DRIVEN OPERATIONS

It can be hard to keep up with the heavy equipment industry these days – new excavators and wheel loader models with new options, gadgets, and updated features are popping up at a more frequent pace than they once did. It can be easy to lose track of these developments, and some new machine options may go unnoticed by the contractors who might ultimately benefit from them.

It's no secret that emerging technologies have improved the compact equipment industry. But what's next?

Keep in mind that this future is one in which innovation will coexist side-by-side with conventional machine and technology offerings. Ultimately, business owners and contractors will have a variety of choices for which types of solutions they incorporate into their operations, and at what time they do so.

Today, the industry is in the connection phase. One-way telematics, remote operating capabilities, and software-as-a-service (SaaS) dealer offerings have become commonplace, and these solutions continue to improve over time. Business owners have become comfortable with telematics and using



data to make smarter, more efficient decisions for their operation.

Within 3 to 5 years, the industry is expected to enter an engagement phase, where semiautonomous equipment operation becomes the norm. The growth of augmented reality (AR) technology in the consumer and automotive sectors will also increase in popularity and provide more opportunities for owners to grow their return on investment (ROI) and expand their geographic footprint. Advances in machine sustainability and green power will start to become the norm, and business owners will have learned to manage a mixed fleet of equipment.

Finally, within a decade, an integration phase for fully electric, autonomous equipment will be our inevitable future. Business owners will be able to capitalize on opportunities they

never could before, thanks to full-machine electrification, virtual reality (VR), or gamified work and an interconnected cloud ecosystem of information that will provide incredible opportunities for multiple-machine coordination and connectivity.

Throughout each of these phases, operators and business owners will see continued improved performance and better oversight into the inner workings of their companies. In addition, this movement toward deeper connection and autonomy will transform how the industry thinks about jobs, recruits and retains employees, and how construction operations are scaled. While the unknown can sometimes feel uncertain, this as an exciting opportunity – a true transformation of the industry.

Connection Phase: Hardware

Business owners can't be on every jobsite 24/7 and need an easier and more precise view of what's going on across their operations. They want to anticipate future needs instead of reacting to current demands. And within the next 3 years, there will be will an increased amount of technology to do that.

With advents in remote operation, increased hardware platform sophistication helps owners track equipment and jobsite happenings. Fleet management systems will use telematics to send up-to-the-moment machine and component stats to the owner's cellphone.

The fleet management systems of the near future will also immediately notify dealerships about equipment issues. Gone will be the days of calling a dealer and scheduling a technician to come, diagnose, and repair equipment. The dealer will be able to remotely diagnose many machine issues in minutes by accessing the diagnostics.

As a result, businesses will need fewer on-site mechanics, and leasing equipment rather than owning it will become a more favorable and cost-effective option. Leasing offers certainty of costs, as well as full warranty and maintenance coverage. With machine and operator performance characteristics in hand, business owners will save significant time and money on equipment, logistics and labor.

The industry is seeing some of this take place already, with the increased incorporation of more telematics platforms and cellular connectivity. While the last 18+ months have certainly created global challenges on multiple levels, the resiliency of the industry will regain momentum as it always has during times of abnormality. If anything, the need for connectivity has never been greater, as remote work has become the new normal.

Engagement Phase: Software

With a movement toward semi-autonomous operation, business owners can optimize their operations. The engagement phase – the second technology evolution – will help business owners increase business intelligence by making it easier to estimate jobs and evaluate efficiency.

For example, this engagement phase will put a focus on how much work has been done. This provides an opportunity between manufacturers and business owners to monetize output, not just a piece of equipment. This more connected performance also allows savvy business owners to estimate jobs more easily, as actual work is translated to an actual cost. This innovation will also help business owners plan with greater specificity over time since they will have historical data and trends at their fingertips.

Integration Phase: Artificial Intelligence

Finally, within a decade the integration phase will allow business owners to become true job experts, with all their assets combined for seamless connectivity and versatility.

The advent and normalization of smart equipment and an integrated artificial intelligence platform will advance to create specific competitive advantages to complete complex tasks the most efficiently and at the lowest cost. Business owners will be able to make more predictive decisions about what jobs they could take on that present real ROI opportunities for their organization.


A key enabler for this to happen is artificial intelligence, and a move toward fully autonomous operations. Fleet owners, if

they choose, will be able to assign operatorless equipment to complete repetitive tasks like basic material movement while reserving their skilled operators for the most complex tasks to complete. Because the need for operators – and skilled workers in general – will continue to be in high demand, equipment manufacturers are designing and building equipment that maximizes their productivity without having to make trade-offs in performance. In addition, assigning autonomous operations to those repetitive tasks will allow your team to tackle larger, more complex jobs that may not have been a reality before.

For jobs with complicated tasks that require an operator, such as final grading and finish landscaping, design plans will now appear on the front windows of the operator's machine via virtual and augmented reality. Features, elevations, and grade data are easily accessible to operators, allowing them to accurately orchestrate each project.

Operations that were once estimated and varied will become precise and measured. Specialization will increase, and the businesses that can orchestrate and coordinate a project's distinct pieces will meet the most success going forward.

Connectivity is about information. If businesses know more – more about the machines, their operations, the jobsite, the operators – they can do more and can do it better, improving efficiency and – most importantly – profitably.

Again, there is room in this inevitable future for all ways of working – for contractors who are ready to jump headfirst into fully autonomous machines and interconnected fleets to owners who wish to maintain their current business models. 



About the Author

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