

# Hexagon study explores autonomous tech use in construction



Construction companies are rapidly adopting autonomous technology, according to a recent study by Hexagon. However, there seems to be a gap between their implementation of the technology and the challenges they encounter in their operations, creating room for potential improvement in their bottom-line impact.

Hexagon's study of technology decision-makers at general contracting firms across North America, the United Kingdom and Australia revealed that 84% of them have adopted some form of autonomous technology in the last year to help address key business priorities and challenges. Additionally, 79% said they will be investing more in autonomous (or automated) technology, with 54% planning to spend between US\$5 and US\$15M (\$7.1M on average) in the next three years. Yet despite the strong adoption and investment numbers, there is a significant disconnect in the industry's understanding of the technology, its application and benefits that will hinder optimization if not addressed. These are key findings from Hexagon's recently published 'Autonomous Construction Tech Outlook'.

Based on input from more than 1,000 senior executives, [Hexagon's](#) study shows that construction firms are turning to technology to help mitigate and manage challenges, many of which have been exacerbated by the economic instability of the past few years. Notably, respondents cited operational issues including supply chain (39%), productivity/efficiency (36%) and labour shortages (35%) as the most pressing near-term priorities, while driving new business/growth (34%) and managing ESG regulations and programmes (34%) were ranked as top priorities over the next three to five years. And 81% of global respondents stated that their top three challenges represent a "moderate to significant" bottom-line impact on their business.

## Mitigating risks and improving effectiveness

The survey also shows the industry embracing autonomous technology as one of the most promising solutions. "Construction firms are turning to autonomous solutions to mitigate risks better and improve the effectiveness of operations, which are both key to overcoming the productivity, sustainability and profitability issues they face every day," said Thomas Harring, president of Hexagon's Geosystems division. "Progressive firms, which are adopting autonomous solutions at a faster rate and in more areas of their business than their competitors, know that this technology does a lot more than automate tasks. Autonomous tech makes jobsites safer, more efficient and less wasteful by closing the 'data leverage gap' – that ever-widening chasm that exists between the data created during the lifecycle of a project and the data actually used to produce meaningful insights, outcomes and opportunities for growth. And this is just the tip of the iceberg. Autonomous technology is transformative technology that will define the next era of construction. The key right now is to help the industry leverage technology in a way that ensures optimization and lasting, scalable results."

## Pain points

Survey results show the types of autonomous technology used among construction firms varies greatly – from software and tools to self-driving construction vehicles and robotics – as does the level of autonomy. Project management was cited as the most popular application (32%) followed closely by workplace safety (28%), quality control (26%), surveying (26%) and vehicle operation, document management and verification/project inspection (all at 25%). And among the autonomous technologies used, almost half are partially or conditionally autonomous (requiring human oversight and/or intervention to complete tasks), while the remaining 23% and 30% are split between limited autonomy and full autonomy, respectively.

Interestingly, even with a wide variety of solutions available, firms appear to have trouble identifying the best autonomous or automated technology to solve their specific challenges and pain points. For instance, among survey respondents who stated that improving supply chain management is a top priority in the next 12-18 months, only 28% reported their companies had invested in autonomous monitoring technology, one of the top reported technologies that aid in this area. Additionally, 37% of respondents found fully autonomous robotics drove sustainability benefits, the leading priority in the next three to five years, yet only 17% of firms are investing in this type of technology. So while construction firms are reporting clear benefits across key business areas, their use of autonomous solutions is not always aligned to their most pressing challenges.

## Bottom-line impact

The disparity between technology selection and business priorities represents a significant opportunity to help firms better address specific challenges and pain points through more targeted autonomous technology adoption. A little over half the firms surveyed plan on investing an average of US\$7.1M in autonomy within the next three years – with 30% planning to invest over US\$10 million. Perhaps unsurprisingly, the larger the firm, the larger the planned investment in autonomy.

These investments among many other priorities competing for resources, indicate that the industry sees value in autonomous technology in the long term. In fact, the majority of respondents believe autonomy will be “very” to “extremely” impactful in supporting profitability (63%), sustainability (62%), market competitiveness (62%) and owner satisfaction (62%). In other words, the more aligned these solutions are with a firm’s growth strategies and pain points, the better the return on investment they will achieve in the future.

In conclusion, Thomas Harring added: “The firms that will redefine this industry are no longer defining themselves as construction companies but rather as hybrid companies with technology, engineering and construction at their core – and autonomous technology will play a major role in this evolution. Companies are already seeing how autonomous technology can improve collaboration and streamline production, but the even greater value comes from its ability to help businesses accelerate innovation while maintaining business resiliency. At Hexagon, we’re focused on helping construction firms of all sizes realize those benefits.”

For a copy of Hexagon’s Autonomous Construction Technology Outlook white paper, “Achieving better project outcomes through autonomy”, [see here](#).



Hexagon's autonomous Leica BLK ARC laser scanner solution.