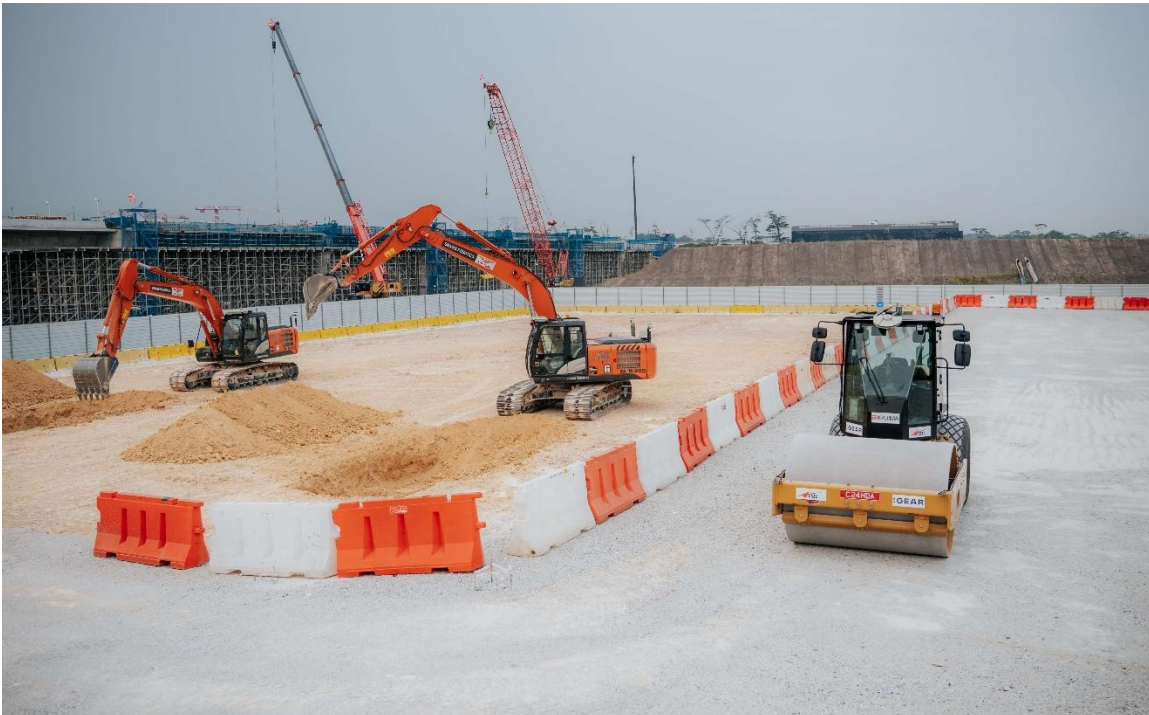


JTC and Kajima launch Singapore's first autonomous heavy construction equipment pilot to ease manpower constraints and improve worksite safety



The JTC-Kajima project targets a 50% reduction in skilled operators required, while keeping workers out of the hazard zone.

Singapore, 17 September 2026 – JTC Corporation (JTC) and Kajima Corporation (Kajima), Japan's leading construction company, have launched the first pilot project to explore the use of autonomous heavy construction equipment in Singapore.

Held at Jurong Innovation District, these autonomous machines, starting with excavators and compactors, will be tested at the Bulim Autonomous Yard (BAY), JTC's sandbox for validating autonomous construction equipment under real site conditions. Together with the Public Sector Science & Technology Policy & Plans Office (S&TPPO) and the Housing & Development Board (HDB), this pilot will test how these machines can ease Singapore's construction manpower constraints and improve safety.

Building faster: Raising productivity with fewer workers

Since 2025, JTC has been mandating the use of robotics in construction tenders to achieve higher productivity in the sector.

Under the trial, an operator assigns tasks and sets virtual geographic boundaries (geofencing) for each autonomous construction machine. Using sensors and artificial intelligence, the machine then carry out the tasks independently, without an operator in the cabin or elsewhere. The activities are monitored remotely by staff who will intervene whenever an issue occurs. JTC is targeting a reduction of operator manpower by half, with one operator overseeing two machines.

The pilot will draw on technologies from multiple technology partners. To automate digging, the excavator uses a retrofit kit from Gravis Robotics¹, a Zurich-based startup that develops autonomous software and hardware for earthmoving equipment. Similarly, the compactor runs on Kajima's A⁴CSEL², its first deployment outside Japan. Retrofitting is an important design feature that lowers the barrier to adoption, as contractors can upgrade machines they already own, rather than replace entire fleets.

Mr Calvin Chung, Assistant Chief Executive Officer, Engineering & Operations Group, JTC, said: "Adding more manpower is not a sustainable way to meet Singapore's future construction needs. JTC has a pipeline of at least 800 hectares of earthworks projects over the next five years. If the pilot succeeds, we will deploy autonomous heavy construction equipment across suitable projects in our pipeline and support wider industry adoption."

Building safer: Keeping workers away from hazardous zones

Autonomous construction equipment has the added advantage of reducing workers' exposure to some onsite safety hazards by decreasing the need for personnel to operate machinery or work in close proximity to moving equipment.

¹ Gravis closed their Series A in August 2026 with a \$200 million investment from SoftBank. As the largest Series A in construction robotics history, this funding enables Gravis to scale autonomous heavy machinery across jobsites globally.

² A⁴CSEL has been used across a range of civil engineering projects in Japan. During the construction of Naruse Dam in Akita Prefecture, A⁴CSEL enabled three operators based 400km away to manage 14 automated dump trucks, bulldozers, and vibratory rollers, with the machines running continuously for up to 70 hours at one point.

Arising from the BAY trials, JTC is working with Ministry of Manpower (MOM) to develop operating guidelines and safeguards to support industry-wide deployment while prioritising human safety. These include geofencing to keep machines within designated areas, LiDAR sensors to detect humans and obstacles, and emergency-stop controls on site and in the control room.

Building smarter: Scaling from individual machines to coordinated autonomous fleets

JTC and Kajima will also explore extending the trial to autonomous bulldozers and dump trucks in 2027, creating a coordinated fleet of machines (see Annex A).

Mr Yoshihiko Riho, Senior Executive Officer, Kajima Corporation, said: “Through close collaboration with JTC and our local partners, we will advance the development of automated construction technologies that enhance productivity, safety and quality, while addressing the challenges facing Singapore's construction industry. We believe the combination of Kajima's technologies and Singapore's innovation-driven environment will help realise the next generation of construction.”

Scaling autonomous construction will require new skills in data interpretation, digital task planning, system integration and maintenance. As these capabilities are nascent in Singapore, Kajima is working with local contractor Kok Tong Construction and equipment provider Tractors Singapore Limited to retrofit conventional equipment with autonomous capabilities, train Singapore-based operators and engineers, and document lessons from the pilot for wider industry adoption.

Beyond the pilot, JTC will be collaborating with public agencies, contractors, equipment providers, research institutions, and technology companies to conduct more autonomous construction trials at the BAY sandbox.

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About JTC Corporation

JTC Corporation is a government agency under Singapore's Ministry of Trade and Industry. We master plan, develop and manage sustainable, green and smart industrial estates such as one-north, Seletar Aerospace Park, Jurong Innovation District, and Punggol Digital District. Our estates attract new investment and foster collaborative ecosystems that strengthen Singapore's position as an advanced manufacturing hub. We also drive innovation in the Built Environment sector by piloting new construction technologies. For more information on JTC, visit www.jtc.gov.sg.

About Kajima Corporation

Founded in 1840 and headquartered in Tokyo, Kajima Corporation is one of Japan's leading construction, engineering, and real estate development companies. Drawing on nearly two centuries of experience, Kajima provides integrated expertise across civil engineering, building construction, architectural and engineering design, technology development, and real estate development.

Innovation has long been central to Kajima's business. Through continuous research and development, close collaboration with industry, government, academic, and international partners, and the application of advanced technologies to real-world projects, Kajima works to enhance the productivity, safety, quality, and sustainability of the built environment.

With operations in Japan and across international markets, Kajima combines its engineering heritage with local knowledge and partnerships to address the evolving needs of society. The company remains committed to creating lasting social and environmental values and contributing to a safer, more resilient, and sustainable future.

About the Public Sector Science & Technology Policy & Plans Office (S&TPPO)

The Public Sector Science & Technology Policy & Plans Office (S&TPPO) is a department under the Prime Minister's Office. S&TPPO works with Public Sector agencies to build a first-class, future-ready Public Service through harnessing science, technology and engineering to advance national and agency priorities and achieve greater impact.

About the Housing & Development Board

The Housing & Development Board (HDB) is Singapore's public housing authority. We plan and develop Singapore's housing estates; building homes and transforming towns to create a quality living environment for all. We also provide various commercial, recreational, and social amenities in our towns for our residents'

convenience. Today, more than 1 million flats have been completed in 24 towns and 3 estates across Singapore. HDB flats are home to close to 80% of Singapore's resident population, of which about 90% own their homes. For more information, please visit <http://www.hdb.gov.sg>.

About Gravis Robotics

Gravis Robotics delivers next-generation earthmoving autonomy—retrofitting standard excavators and loaders into robotic teammates. The Gravis platform boosts job site productivity, safety, and precision by layering AI, 3D surveying, geospatial positioning, and adaptive performance tools onto machines contractors already use. At its core: the Gravis Rack, a rooftop-mounted control kit, and the Gravis Slate, a rugged touchscreen that makes getting started with autonomy as simple as tapping a finger. The system supports autonomous digging, loading, and trenching—whether operators are in the cab, outside, or working remotely. With “Anywhere Autonomy,” Gravis empowers contractors to reduce fatigue, minimise rework, and dig smarter—not harder. The result? Faster projects, safer jobsites, and a smoother path to scalable construction automation.



BUILDING INDUSTRIES

Annex A:

Relationship between heavy construction machines for earthworks

The JTC-Kajima trial demonstrates how autonomous excavators and compactors can ease Singapore's construction manpower constraints, boost productivity, and reduce workers' exposure to worksite hazards.

The next phase, scheduled for 2027, adds bulldozers and dump trucks to the pilot, with all four machines working in tandem as one coordinated, autonomous fleet.

HOW EARTHWORKS ARE DONE

A simple 4-step process to prepare the ground for safe and strong construction



Note: Autonomous excavator runs using Gravis' retrofit kit, while autonomous dump trucks, bulldozers, and rollers run on Kajima's A⁴CSEL system.