

Robotics & Automation and Digital Solutions, and Funding Schemes



Benefits of Robotics & Automation and Digitalisation



Productivity Gains

Reduced manpower reliance through automation and digitalisation



Quality and Accuracy Improvement

Consistency and reduced rework/errors



Efficient Resource Utilisation

More precise and optimised use of materials, minimising overuse/excess



Safety Benefits

Replace / isolate people from hazard, reducing risk of potential accidents



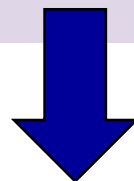
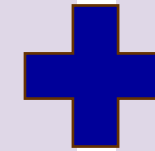
Technological Appeal to Talents

Attract a younger, tech-savvy workforce



Job Redesign and Process Re-engineering

Restructures processes, jobs and responsibilities to optimise workflow and job values



These lead to cost savings in the long run

Ready-to-deploy Robotics & Automation (R&A) Solutions



Structural Works: Welding, Rebar Tying and Concrete Finishing



Welding robot

- Remote-controlled welding works
- At least 30% productivity improvement
- Has been deployed in Hong Kong projects



Rebar tying robot

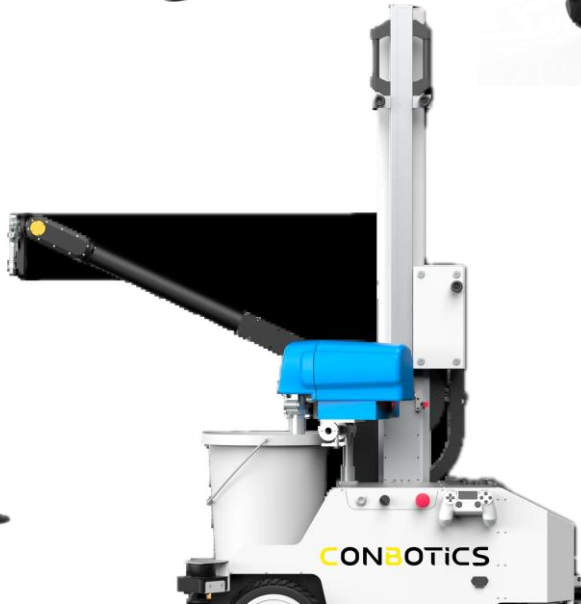
- Autonomous rebar tying (16-29mm)
- 40% productivity improvement
- Deployed in Singapore



Concrete finishing robots

- Remote-controlled with high precision
- Reduce up to nine workers
- Deployed in Singapore

Architectural Works: Wall Skimming & Painting



Wall skimming and painting robots

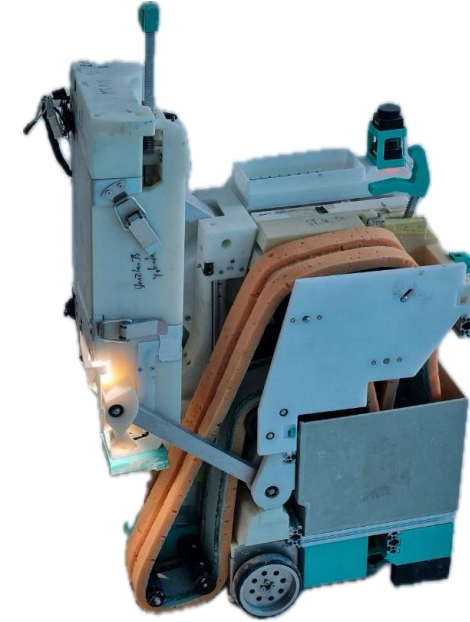
- Autonomous wall skimming and painting
- Up to 2.5x faster
- Reduce workers' exposure to chemical hazards
- Deployed in Singapore

Architectural Works: Floor Tiling and Tile Grouting



Floor tiling robots

- Autonomous floor tiling
- 2x faster than manual tiling
- Trialled in Singapore



Tile grouting robot

- Autonomous mapping to cover more than 90% of unobstructed floor space
- One worker can operate up to five robots simultaneously (25 man-minutes per residential unit)
- Deployed in Singapore

Architectural Works: Floor Grinding and Floor Coating



Floor grinding robots

- Autonomous/remote-controlled navigation and automatic grinding operation
- Consistent operation with minimal dust generated
- Reduces up to two workers when used with floor coating robot
- To be deployed in Singapore



Floor coating robot

- Automatic application of primer, middle and top-coat
- Greater precision and quality
- Reduces up to two workers when used with floor grinding robot
- To be deployed in Singapore

Architectural Works: Floor Marking and ALC Panel Installation



Floor marking robot

- Consistent and precise marking at higher speed
- Minimises abortive work arising from inaccuracies
- Deployed in China and Hong Kong



ALC panel installation robot

- Installs ALC panels consistently and with precision
- Reduces up to five workers
- Minimises injuries from manual lifting
- To be deployed in Singapore

Mechanical, Electrical and Plumbing (MEP) & Other Installation Works: Drilling and Anchoring



Drilling and anchoring robots

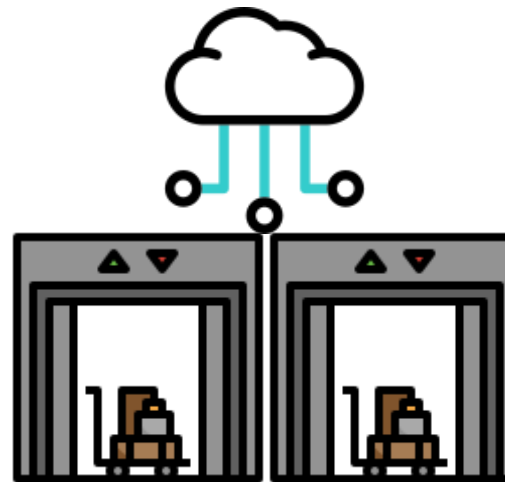
- Autonomous/remote-controlled ceiling, wall and floor drilling and anchoring
- Higher speed compared to manual drilling
- Minimise hazards from work-at-height
- Deployed in Singapore

Material Handling Works: Transporters and Exoskeletal Suits

Material transporters



- Autonomous/follow-me navigation to transport materials
- Deployed in Singapore
- Future development for lifts to communicate with material transporters for autonomous operation.



Exoskeletal suits



- Reduces injuries brought about by manual carrying of materials

Civil and Infrastructure Works: Road-marking and Pre-marking



Road marking robots
(incl. pre-marking)

- Remote-controlled for safety
- At least 30% productivity improvement
- Deployed in Singapore

Digital Solutions



Digital Solutions that can improve productivity

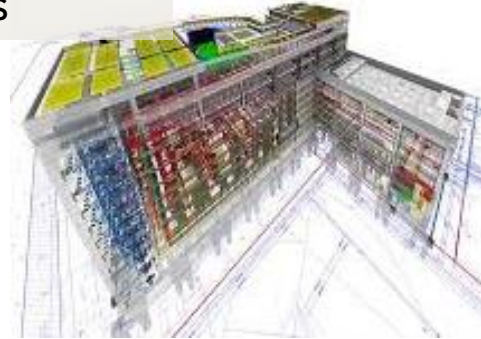
Solutions can be supported under the Productivity Solutions Grant (PSG)

3D Modelling, Immersive, Visualisation, and Analysis

- BIM authoring
- Visualisation solutions/analysis tools

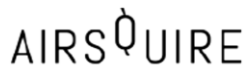


Supports Corenet X implementation



Smart Inspection and Management

- Site inspection and reality captures
- Video analytics for work site safety



Enhance project management & workplace safety



Common Data Environment

- Collaboration platforms
- Site management platforms



Enables better value chain collab

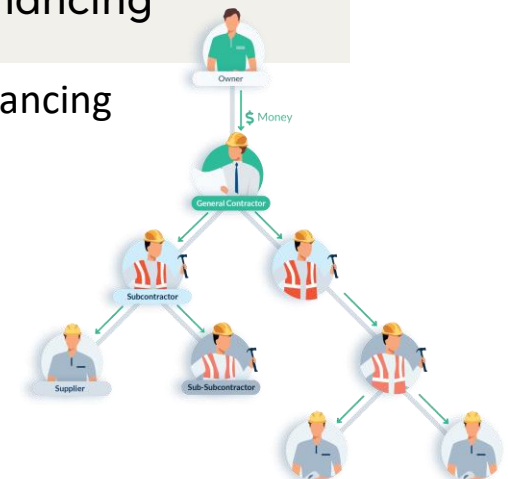


Payment and Financing

- Digital procurement and financing



Supports collab contracting



Funding Schemes to Support R&A, Digitalisation and Work Redesign



For firms considering:

Built Environment Technology and Capability (BETC) Grant



Eligibility:
SMEs/Non-SMEs



<https://go.gov.sg/betc-grant>



Funding support:
Up to 70% for SMEs
and 50% for non-SMEs



Robotics & Automation

Investment Allowance Scheme (IAS)



Eligibility:
SMEs/Non-SMEs



<https://go.gov.sg/ias>

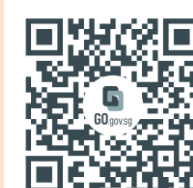


Funding support:
Offset up to 50% of
incurred expenditure
against taxable income

Productivity Solutions Grant (PSG)



Eligibility:
SMEs



<https://go.gov.sg/psg>



Funding support:
Up to 50% for
preapproved
solutions



Digitalisation

Job Redesign under Productivity Solutions Grant (PSG-JR)



Eligibility:
SMEs/Non-SMEs



<https://go.gov.sg/psg-jr>



Funding support:
50% of job redesign
consultancy cost,
capped at \$30k



Job
Redesign

READY TO
TRANSFORM?



Firms who are keen to pilot or deploy R&A solutions for their projects, or have any challenge statements to share may contact BCA

Ms Delfin Yeo

Delfin_YEO@bca.gov.sg

Ms Chin Saw Bian

CHIN_Saw_Bian@bca.gov.sg