



Robotics | Photo source Shutterstock

## MICRO-ROBOT CAN CLIMB UP WALLS USING ELECTROADHESION

 SCIENCE & ENVIRONMENT

**Researchers have developed a small robot capable of climbing upside down using electricity and could be used to inspect large complex machinery.**

Engineers are clearly working hard to develop wall-climbing robots. We've already seen a wall-climbing robot being used to specifically [inspect industrial tanks](#). While that robot travels up and down using a proprietary magnetic system, researchers at [Harvard's Wyss Institute for Biologically Inspired Engineering](#) have taken a different approach for their own wall-climbing micro-robot. We've seen the same institute inspired by gecko feet for a previous project. Now, their micro-robot, called HAMR-E (Harvard Ambulatory Micro-Robot with ElectroAdhesion), features 'sticky feet' that enables it to explore industrial machinery.

The robot's feet stick to surfaces using electroadhesion, where a small voltage is applied to a conductive metal surface. The scientists had to develop a specific walking style for the robot to prevent it from falling. The robot lifts one foot at a time, while the opposite diagonal foot compensates and the other two stabilise. The researchers also developed specialised 'origami-style' ankle joints that allow for the complex foot movements. HAMR-E's footpads can also flex, so that it can navigate curved surfaces. The micro-robot weighs in at just 1.48 grams, while it's feet can support up to 6.2 grams, allowing it to carry small sensors.

The researchers believe HAMR-E could be used to clean and repair large, complex machinery, such as jet engines. Mechanics would normally have to dismantle such machines, so the robots will save time spent dismantling and rebuilding.

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## **Takeaway:**

Robots have huge potential in the construction and engineering industries. They are capable of reaching places humans can't, either for practical reasons or because of hazards. Researchers are making great leaps in robot design, such as soft robotics, leading to either increasingly specialised or highly modular robots. Either way, industries will see robots providing numerous business operational solutions in the near future. Could your industry be outsourcing certain tasks to robots?