

TECH OFFER

Reconfigurable Workspace Soft Gripper



KEY INFORMATION

TECHNOLOGY CATEGORY:

Electronics - Actuators

Infocomm - Robotics & Automation

TECHNOLOGY READINESS LEVEL (TRL): **TRL6**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175036**

OVERVIEW

The Reconfigurable Workspace Soft Gripper (RWSG) is a bio-inspired, pneumatically actuated, shape morphing soft robotic gripper that is capable of rapid reconfigurability. It features passive retractable nails, bi-directional foldable petals, and a flexible palm to adapt to various grasping and manipulation tasks and requirements. The ability to rapidly reconfigure allows the RWSG to grasp a wide range of large, thin, hard, delicate, and deformable objects. These capabilities make the RWSG a uniquely advantageous tool for high mix low volume manipulation and packing scenarios such as food assembly, packaging of groceries, and packing of consumer electronics.

TECHNOLOGY FEATURES & SPECIFICATIONS

The RWSG features retractable nails to help in precision grasping of small, thin, and high aspect ratio objects. An optimized bidirectional finger flap design allows its fingers to morph into scoop-like shapes to easily manipulate granular and semi liquid

items such as grains, jelly, stews, curries or scrambled eggs. A multi-material palm design helps regulate the RWSG's aperture to adapt for large or wide objects. The RWSG utilizes low, safe pressures (-80kPa to 60kPa) to switch between and operate the various grasping modes.

## POTENTIAL APPLICATIONS

High mix low volume manipulation tasks for consumer goods, logistics, and food industries can benefit from advanced robotics to meet evolving demands in productivity, safety, and sustainability. These sectors often require manipulation and grasping capabilities that cannot be achieved by conventional robotics using rigid grippers or end-effectors. The RWSG can provide reliable and safe robotic handling of a wider range of objects in these challenging scenarios using its adaptive capabilities. With the ability of handling a wider range of objects, RWSG automation setups can help reduce changeover times (less or no tool changes required), improve safety (humans are not required any longer for manipulation in hazardous environments), and even contribute towards sustainability (less overall resources required).

## UNIQUE VALUE PROPOSITION

The RWSG has a unique structure that allows robust and safe grasping of a wide range of large, thin, hard, delicate, granular, and deformable objects. Its structure is composed of food safe, hypoallergenic silicones that can tolerate both high and low temperatures. These unique features far surpass the capabilities of traditional rigid grippers and end-effectors. The RWSG can be seamlessly integrated with all major cooperative manipulators currently available in the market.