

SPRINT ROBOTICS AWARDS | 2020



Groundbreaking Collaborative Work towards Acceptance of Inspection and Maintenance Robotics

1st PLACE Hibot & BASF Antwerp

Hibot & BASF Antwerp joined forces to investigate how a robotic arm could become beneficial for inspection and maintenance in the future. Using [hibot's FloatArm](#), a new snake manipulator designed for long-reach applications in confined spaces, they defined a roadmap and validation tests. A team was put in place, involving several stakeholders within the plant operations: ranging from operation to inspection and maintenance groups. Due to COVID-19, the first trials on-site could not take place in Europe, however, with support from BASF Antwerp, it was possible to conduct trials at the BASF plant in Japan with having online streaming of the system in action.

2nd PLACE ANYbotics & Petronas

ANYbotics and PETRONAS have entered into a long-term partnership to establish autonomous robotic inspection and remote operation on oil & gas platforms. They recently conducted a successful multi-week installation with the [robot ANYmal C](#) on one of their offshore facilities. For use in potentially explosive environments, an Ex-certified version of the legged robot ANYmal is being developed, designed according to the IECEx international standard and intended for deployment in Zone 1 areas.

3rd PLACE Rolls-Royce plc & University of Nottingham & Metallisation

The collaboration between Rolls-Royce, University of Nottingham, and Metallisation resulted in FLARE, (which stands for FLame spray Adder for in-situ patch Repair of Engine combustors). The [FLARE project](#) primarily focuses on the patch repair of aeroengine combustor tiles where thermal barrier coating has been lost in-service. The key benefit of the FLARE project was to fast-track the development of a multi-purpose, highly-dexterous robotic platform which could be deployed in a range of jet engines when access is limited.



Scaling of a Robotic Solution

1st PLACE JIREH Industries

The [NAVIC - robotic inspection platform](#) is used to facilitate inspections in many environments and applications. It can be used to perform non-destructive testing with various types of sensors mounted. These sensors can be among others Ultrasonic, X-ray, Eddy Current, and Structured Light. It can also be used for cleaning and maintenance, automating various cleaning heads and attachments. These attachments can include Laser, Induction, Wire Brush, and more.

Taking a modular design approach has fueled the growth of the NAVIC platform. Starting with a base crawler capable of operation on many different surface geometries, attachments were then designed to enable operation for many different applications.

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New Innovative Technology in Inspection, Maintenance or Cleaning

1st PLACE Voliro

Voliro's flying inspection robot the Voliro T is a 360 degree flying robot with the unique capability to perform physical work at height and in confined spaces. The unique design of the system combined with various payloads enable the system to conduct lightweight inspection and maintenance jobs safely and rapidly, reducing the risk of human exposure to hazardous environments while increasing speed and quality of the job.

2nd PLACE Sonobotics

The SONUS acquisition system developed by Sonobotics is a NDE inspection acquisition system, custom-designed to enable the use of Electro-Magnetic Acoustic Transducers (EMATs) with existing robotic platforms. This technology offers non-contact ultrasonic testing without the need for surface preparation. The system is capable of performing thickness measurements, predominantly for corrosion detection and mapping, and crack detection on metallic structures such as pipes, plates and storage tanks.

3rd PLACE Intero Integrity

The OTIS online robotic tank inspection system, developed by Intero Integrity, takes on-line settlement measurements. Edge and differential settlement, centre to edge sag and ripples and bulges of storage tank bottoms can be measured on-line with the OTIS 500 system. As the tank can remain in-service during inspection, this results in no downtime, no cleaning costs, no waste of product or spills, and no man entry.

ABOUT

SPRINT Robotics

The SPRINT Robotics Collaborative is a global, not-for-profit, industry-driven organization which focuses on the development, availability and application of robotics techniques in technical inspections and maintenance of capital-intensive infrastructure. Founded in 2015, it has developed into a strong organization with a strong support base of more than 90 organizations globally. It has become the internationally recognized platform for Inspection & Maintenance Robotics, primarily for the Petrochemical Industry. One major focus of SPRINT Robotics is to engage and bring together the whole value chain, from end users to service and technology providers.