

SPRINT ROBOTICS AWARDS 2022



Groundbreaking Collaborative Work towards Acceptance of Inspection and Maintenance Robotics

1st PLACE

Waygate Technologies & PETRONAS

PETRONAS has been collaborating with Waygate Technologies Robotics (WTR) on the adaption of the BIKE, a very versatile robotic platform for inspection in confined spaces and work at height to the specific needs of PETRONAS. The BIKE can perform various maneuvers such as concave and convex crossing making it possible to transition from the bottom plate to the annular section of the tank or vessel as well as performing manhole entry and exit. However, it cannot cross certain obstacles that could be present in the tank/vessel. In order to solve this issue, PETRONAS and Waygate Technologies Robotics collaborated to design a completely new version of the BIKE robot, called "BIKE I-Beam". This robot can cross the I-Beam as well as plate edges while maintaining the same inspection capabilities as the BIKE standard version. This is achieved by adding two more wheels that can move independently to the rest of the body, making it easier to adapt to the obstacle terrain.

2nd PLACE

Flyability

Flyability worked with members of Team Cerebus (University of Nevada, Reno, ETH Zurich, NTNU, University of California Berkeley, Oxford Robotics Institute, Sierra Nevada Corporation) to launch the first ever collision-tolerant drone for inspections in confined spaces with the Elios 1. With the Elios 2, they drove widespread adoption of indoor drones for visual inspections and with the Elios 3, introduced LiDAR data collection on a collision-tolerant drone for live 3D mapping and survey-grade 3D mapping. Flyability has conducted over 200 missions in the field, collaborating with dozens of product advisors to make sure the Elios 3 would be a reliable, easy-to-use inspection platform for inspectors to collect data in confined spaces.

3rd PLACE

Taurob

Taurob has been a part of Autonomous Robot for Gas and Oil Sites (ARGOS): a Joint Industry Project for the first Offshore Work-class Robots is aiming at development of a next-generation robot for the Oil & Gas industry. The aim was to fit in the operational vision of Normally Unmanned Installations the robot will be ATEX/IECex certified and controlled either remotely or operate autonomously based on scheduled missions. The parties involved included: SAFT Batteries, Dietsmann Technologies, TotalEnergies, Equinor, Net Zero Technology Center and Petrobras - Petróleo Brasileiro S.A.

SPRINT ROBOTICS AWARDS 2022



Scaling of a Robotic Solution

1st PLACE Diakont

Diakont developed, introduced, and now scaled the use of robotic systems that perform cleaning and desludging of surfaces in nuclear power plants, for the purposes of reducing worker exposure to radiation, and cost savings through shortening of nuclear plant refueling outage duration. The Diakont cleaning systems incorporate a hybrid crawler-ROV with an integrated scrubbing/vacuuming system, remotely operated by a small team of Diakont field technicians. The tool transitions seamlessly during operation between ROV.

2nd PLACE ExRobotics and Energy Robotics

ExR & ER achieved to deploy in scale with customers in the oil & gas, energy and chemical industries their mobile robotic systems for remote inspection of assets in capital intensive industries. The ATEX/IECEx Zone 1 certified ExR-1 and the new ExR-2 robots developed by ExR are deployed at scale now. Moreover, due to the cloud based platform approach of ER a whole fleet of further types of mobile robots, can seamlessly be operated via a common user and data interface. This homogeneous platform and interface removes one of the largest challenges for customers to deploy heterogeneous types of remote inspection robots at scale. By this, ER & ExR achieved the scaling of their product from pilots to regular 24/7 operation of 43 robot units at more than 15 different customers (asset owners) on 4 continents (as of today).

3rd PLACE Thread

Thread (formerly Airtonomy) provides a suite of tools which allow enterprises to build rules-based flight templates that automate the collection of data while adding contextual information, reducing the need for post processing. With these tools Thread will enable enterprises to embed drones into their workflows and scale them to their workforce. Inspection knowledge from skilled pilots can now be embedded into the rules-based flights and replicated across any similar asset, reducing the reliance on the pilot skill while guaranteeing high quality, consistent data every time.

SPRINT ROBOTICS AWARDS 2022



New Innovative Technology in Inspection, Maintenance or Cleaning

1st PLACE Voliro

Asset owner Shell, Robotics company Voliro and Service company Intertek joined together to develop a drone that can execute a full workflow of a coating spot repair. The drone can execute: Inspection to identify corrosion spots, Surface preparation and cleaning via a mechanical brush [Automated], Closed film coating application [Automated], Quality assurance via visual inspection and/or Dry Film Thickness measurements. The true innovation relies in the automatic execution of surface preparation and coating application; that guarantees an asset lifetime extension of ~5 years.

2nd PLACE Flyability

Flyability's ELIOS 3 is a drone for indoor remote inspection. Following the steps of its predecessors, the E3 keeps people out of confined spaces and hazardous environments. Unlike its predecessors, the E3 is a robotic device equipped with a powerful computer which will enable automated flights over time. It uses both LiDAR data and computer vision cameras to scan its surrounding, map in real time, and track its flight path. The ELIOS 3 is designed to be future proof: it is equipped with a versatile payload bay to sense a variety of things, and our FlyAware engine to enable future automation and flight paths. The E3 was designed as a tool to be used by all, as it is as stable as leading outdoor aircrafts.

3rd PLACE ANYbotics

Industrial operations are complex, and safety is crucial. Hazardous and potentially explosive environments make mandatory inspections risky and costly, requiring Ex-certified equipment. Until now, Ex-certified robots were bulky, slow, and lacked the mobility required to navigate the complex, multi-level nature of typical industrial facilities. To meet this challenge the ANYbotics team developed ANYmal X, the world's first Ex-certified, legged inspection robot, with identical performance, functionality, speed, and mobility to that of ANYmal (Gen. D), our leading non-Ex inspection robot. ANYmal X complies to the IECEx and ATEX certification standards for usage in Zone 1, Gas type IIB, explosive atmospheres.

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 robust support base of more than 100 organizations globally. It has become the internationally recognized platform for Inspection & Maintenance Robotics. One major focus of SPRINT Robotics is to engage and bring together the whole value chain, from end users to service and technology providers.