

# ROBOTICS FITNESS CHALLENGE

📍 BRAZOSPORT COLLEGE, LAKE JACKSON, TEXAS, USA

MAY 31 – JUNE 1, 2023

VENUE SPONSOR



## Put your robotic solutions to the test in a real-world environment

After a highly successful pilot edition of the [Robotics Fitness Challenge](#) last year in Rotterdam, SPRINT Robotics brings the event to North America. The Robotics Fitness Challenge takes demo days to a new level, putting robots to the test in a real-world environment. The two-day event allows robotic vendors to showcase their technologies to asset operators and see how they perform different tasks in various categories.

Each solution participating in the Robotics Fitness Challenge will follow a predefined list of use cases and tasks to be performed on actual assets or on constructed test objects. These use cases and tasks are defined by the Robotics Fitness Challenge Steering Committee, which is comprised of members from the four SPRINT Robotics Action Groups.

The jury members, all from end user companies, will score the solutions; and participating companies can demonstrate that they pass relevant thresholds.

## CHALLENGES

Each action group will define challenges in the following categories:

- Mission initiation
- Navigation
- Inspection
- Interpretation
- Reporting

Check out asset specific information in the following pages.

## REGISTER

May 31 – June 1, 2023

2-DAY EVENT

**Brazosport College,  
Lake Jackson, Texas,  
USA**  
(1 hour south from Houston)

**PARTICIPATION FEE  
FOR ROBOTICS  
COMPANIES AND  
SERVICE PROVIDERS  
\$750**

*\* Lunch and snacks for both days are included, as well as the networking dinner on May 31<sup>st</sup>.  
\* Up to teams of four people per company  
\* Price for SPRINT Robotics members*

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## Enter your solution in the Robotics Fitness Challenge

1. Fill out the participation form.  
[Click here](#)

2. Secure your RFC spot by paying the \$750 fee for your team. The costs cover lunch and snacks for both days as well as the networking dinner which will be held on May 31<sup>st</sup>. The fee covers up to four team members. Would you like to bring more team members? Additional passes can be purchased.

Questions? Please contact **Maarit Sandelin**  
[maarit.sandelin@sprintrobotics.org](mailto:maarit.sandelin@sprintrobotics.org), RFC Project Manager

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May 31 – June 1, 2023  
-  
**2-DAY EVENT**  
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## Why participate?

The [Robotics Fitness Challenge](#) brings the value chain together in a realistic and challenging environment to:

- enable asset operators to view latest robotics solutions
- enable robot developers and service providers to test and showcase their robots in a realistic environment
- organize an opportunity for asset operator feedback to the developers and service providers
- bring end users and developers together
- enable service providers to identify potential gaps
- enable solution developers to identify new use cases for demonstrated technology
- support future development



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## AGRO | Robotics Fitness Challenge

Operator round will put the solutions to the test with a predefined route around the facility with points of interest. The route will include stairs (optional) and obstacles with inspection tasks, such as thermal and visual inspections, gas detection, and manipulation tasks to challenge the robots in a real-life like environment.



## Use Cases | Operator Round, tasks

*Note: The map of the route with POIs will be released with the technical information package*

- Gas leak detection (VOC)/Methane monitoring
- Detection of fluid leak (colored water simulation)
- Operational data collection
- Sound/noise level monitoring
- Vibration monitoring
- Manipulation
- Thermal inspection

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## AGST | Robotics Fitness Challenge

The storage tank action group has a great opportunity to challenge the robotic solutions for **in-service** tank inspections in an insulated water tank.

- Diameter 50 feet, roof manway 24 inches (open at the roof), **filled with potable water**
- Several inserts, piping at the inside (floor) Sump
- Beams at the roof
- NO floating roof, NO seal
- Insulated



**REGISTER**

## Use Cases

*Note: The tasks specified are subject to change based on demand and/or feasibility. **If you are offering internal inspection of storage tanks with drones, please register for the pressure vessel challenge (see AGPV)***

- Inspection floorplate, wall, roof, beams , inserts, supports, sumps, annular, corner weld .
- Wall/floorplate thickness, crack detection, weld inspection , streaming data, taking pictures, repeatability, reporting and localization of defects
- Extra points if able to inspect without a CSE
- Extra points for ATEX certification 0-1-2 or equivalent (US)
- Timeslot
- Internal inspection 2 hour for the floor, 1 hour wall and roof. ( not the entire tank!!)
- External inspection 1 hour for the roof and wall
- No 3D's available.
- Tripod needed , Cranage needed



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The College of Choice®



## AGPV | Robotics Fitness Challenge

Pressure vessel challenges are set in two vertical pressure vessels (small storage tanks) challenging the robotic systems within the pre-defined use cases for internal and external inspections.

- Diameter 6 feet
- 20-inch manway
- Steel, non-insulated

## Use Cases

*Note: The tasks specified are subject to change based on demand and/or feasibility.*

- Internal Pressure vessel Inspections
  - \*Dimensions, design to be provided soon\*
- UT capturing
  - Spot readings
  - Corrosion Mapping
  - Weld Inspection
- Visual Inspection
  - Still image and resolution
  - Video recording and resolution
  - Zoom capable
    - Optical
    - Digital
    - Magnifier (x)?
  - Lighting sufficient
  - Photogrammetry capable
- LiDAR
  - Digital Twinning
- Surface measuring corrosion
- EMAT
- Eddy Current
- Automated capabilities demonstrated



**REGISTER**



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## AGPP | Robotics Fitness Challenge

The Action Group Process Piping arranged a wide range of pipelines with different diameters and conditions to challenge the robotic solutions for in-service and out of service, internal and external inspections in non-insulated pipes.

- Pipes diameters: 4inch., 6inchs, 8inchs, 12inchs.
- Pipes length: 4ft
- Non insulated
- Internal and external inspections



**REGISTER**

## Use Cases

*Note: The tasks specified are subject to change based on demand and/or feasibility.*

- Asset scanning, digital twins, 3D model generation
- Drone inspection
  - Visual inspection of pipe rack and fittings as e.g. bolts, steel structure
  - Post analysis of results: 3D model generation, annotation, AI assisted assessment
  - Wall thickness measurements at hard-to-reach locations
- For non-insulated pipes:
  - General overview of corrosion
  - Corrosion under pipeline support (CUPS)
  - Welds inspection all pipe around
- For insulated pipes: PEC measurement

