Terra Inspectioneering

Introductrion

Terra Inspectioneering

KIK|MPI
Kennis- en innovatiecentrum
Maintenance Procesindustrie

Interreg
EUROPESE UNIE
Vlaanderen-Nederland
Europees Fonds voor Regionale Ontwikkeling

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Use case: storage tanks

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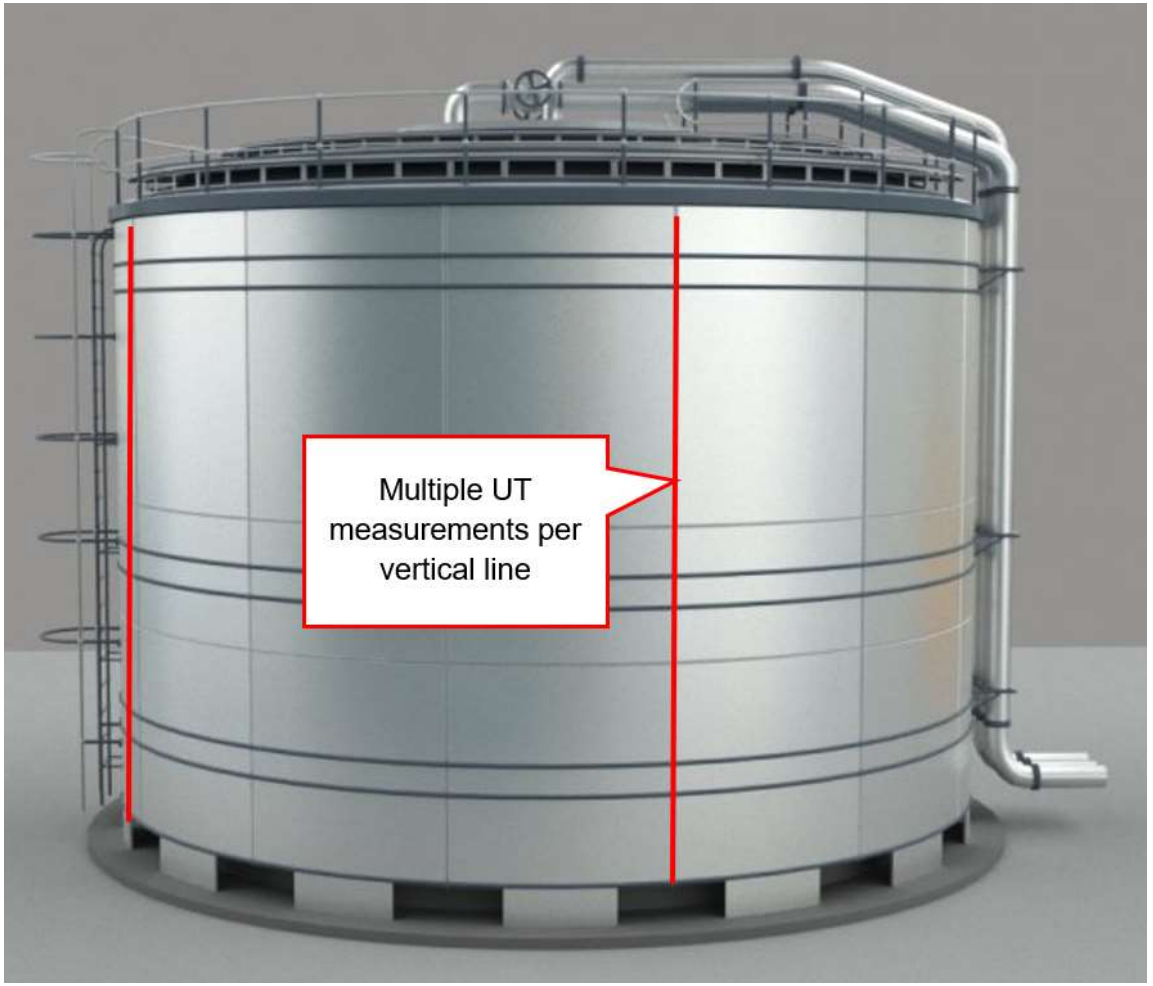

https://vimeo.com/254860035#t=25s

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Result 2020: RoNik UT drone

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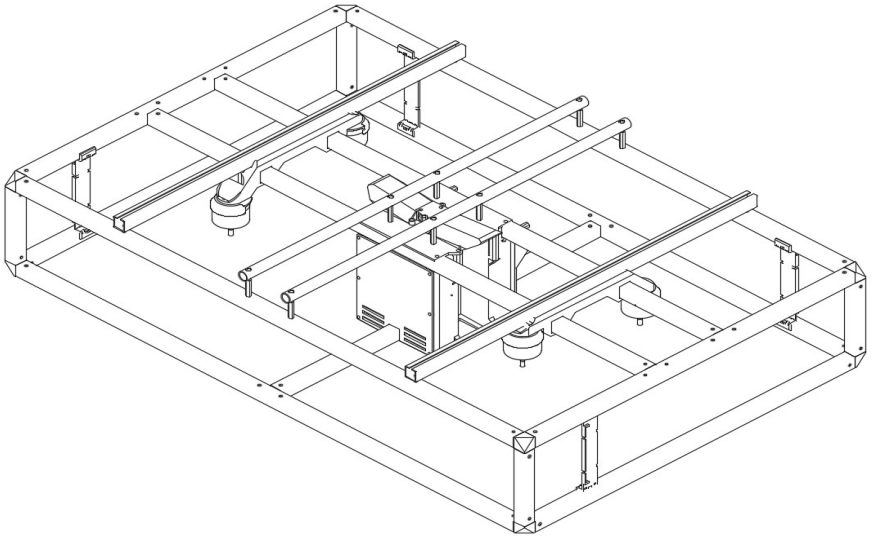

Highlights:

- Collision tolerant
- Modular
- Proven technology
  (~ 1000 flights executed in 2019)
- Outdoor
- Non-entry
- Cloud-enabled

Current modules:

- Vertical walls
- Roof plates
- Diagonal walls
- IPE\C\U beams
- Floors
- Non-spark cleaning brush

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RoNik UT drone

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https://a360.co/30nKo0m

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Technical architecture

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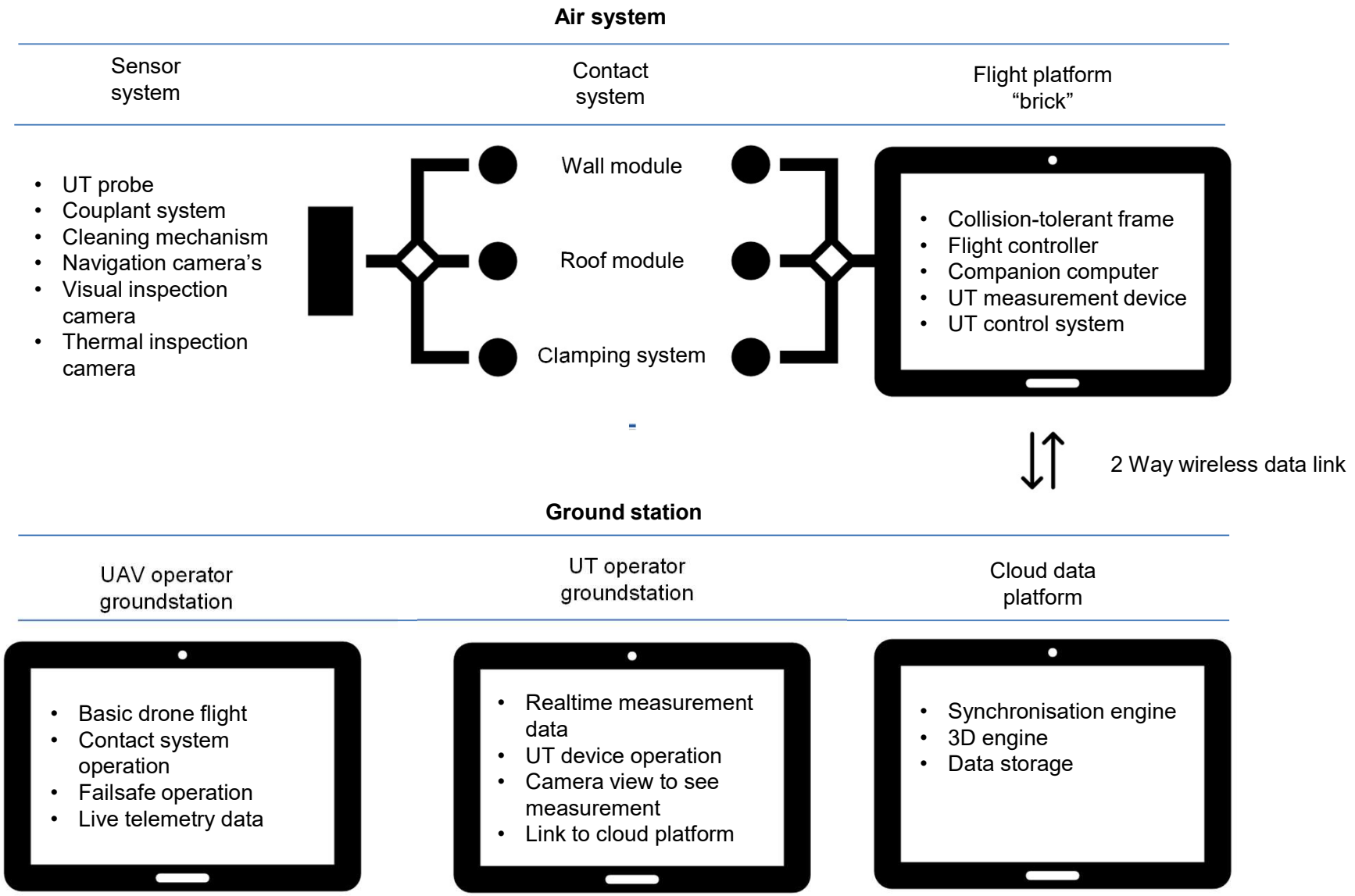

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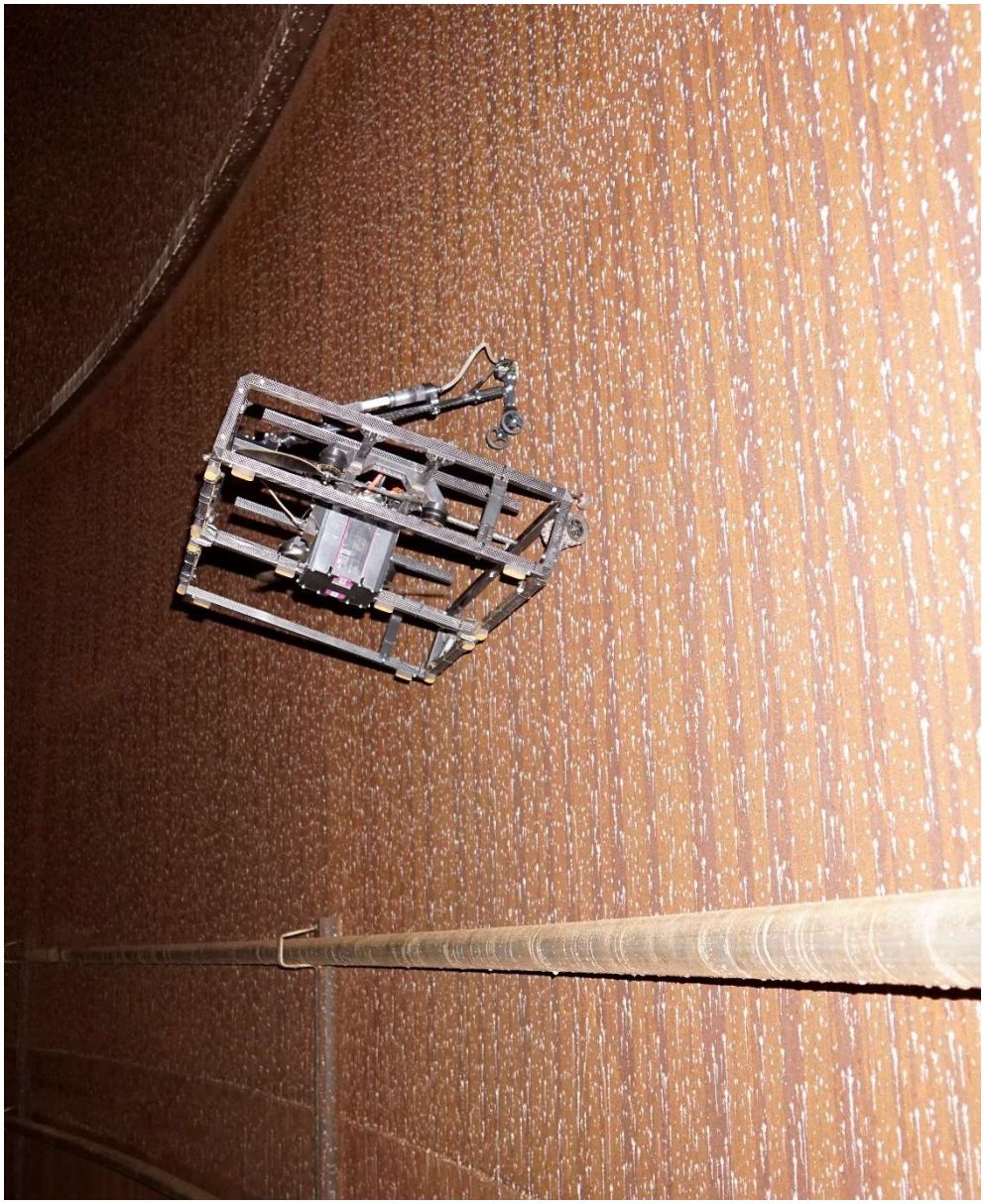
Modular: walls



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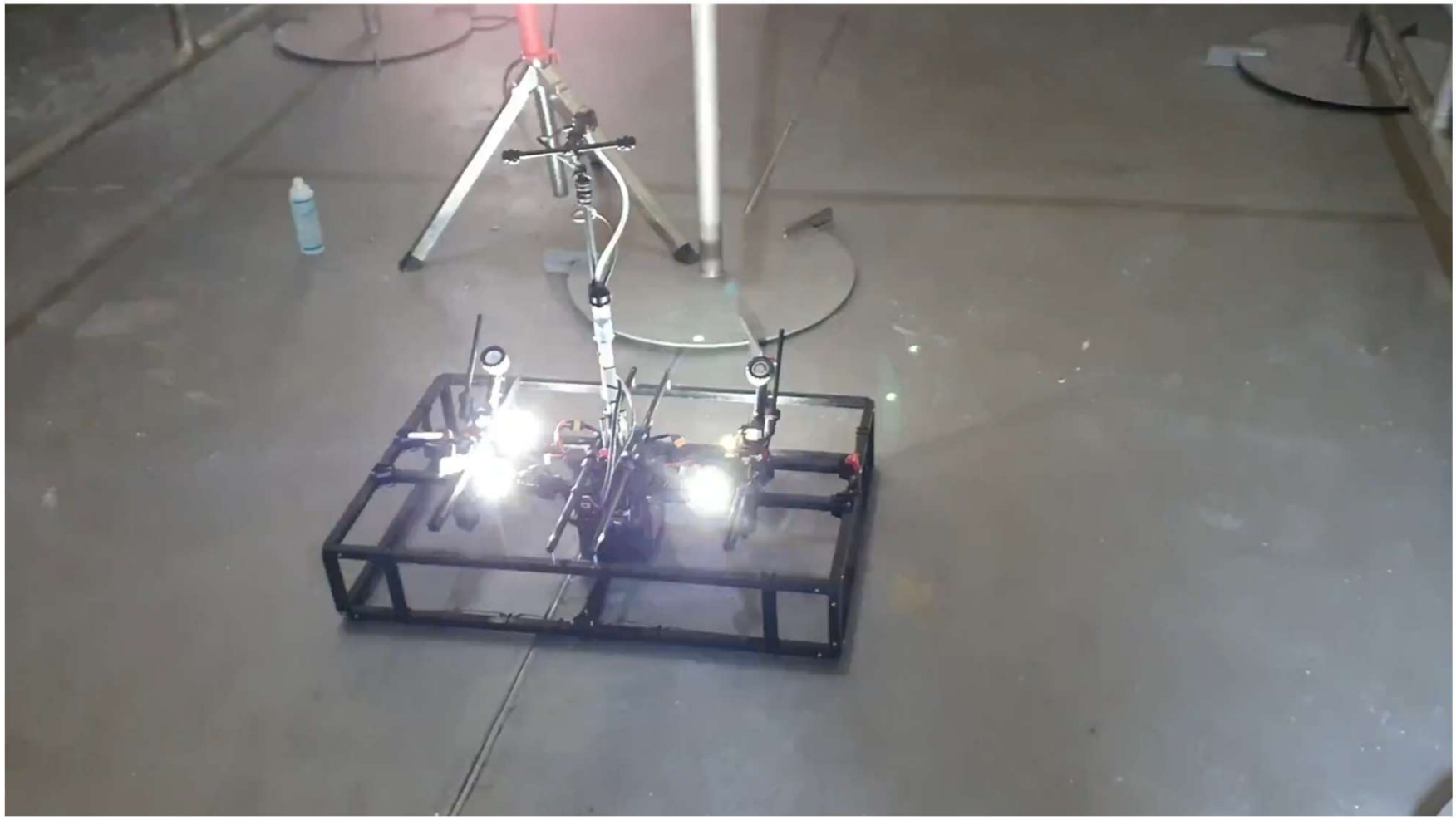
Modular: roofs



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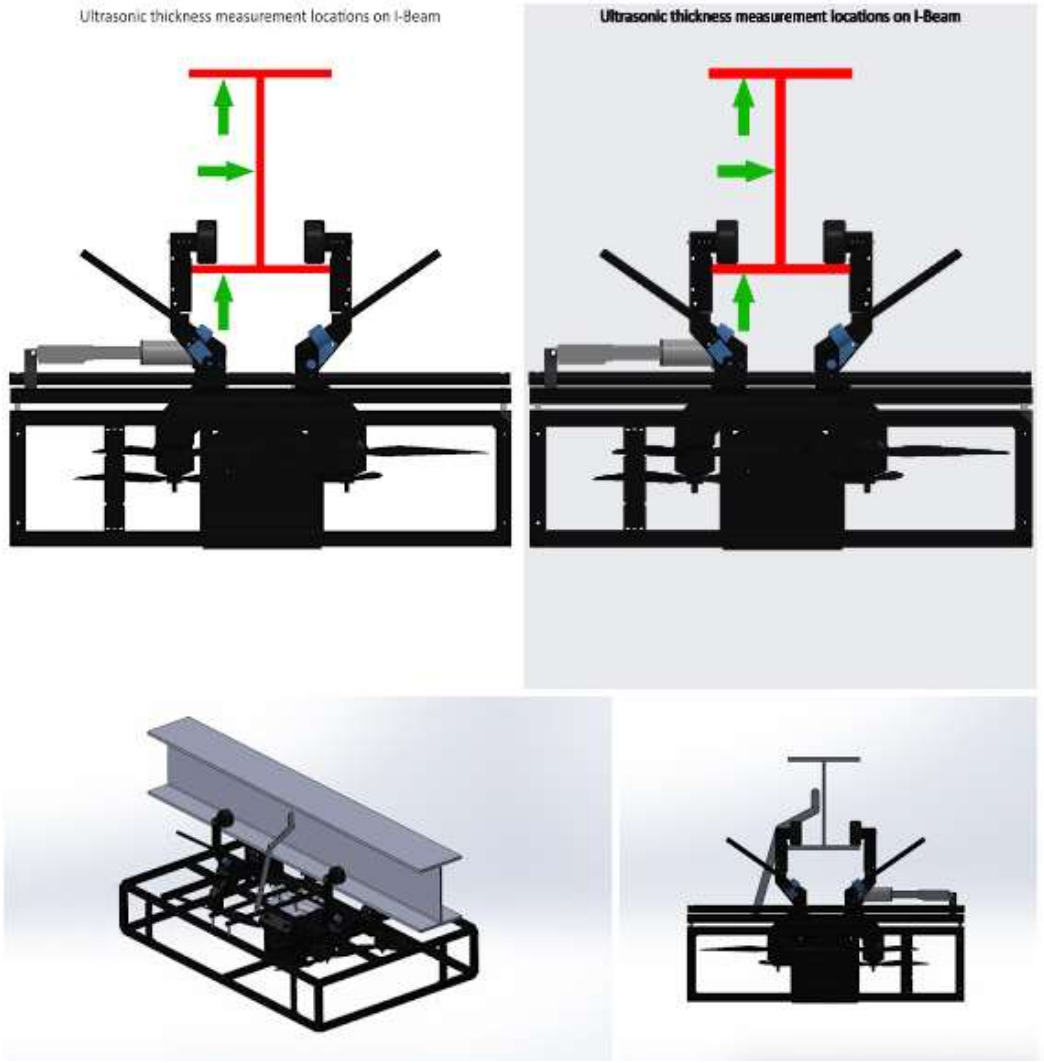
Modular: beams



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Modular: beams

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https://a360.co/30rfiFu

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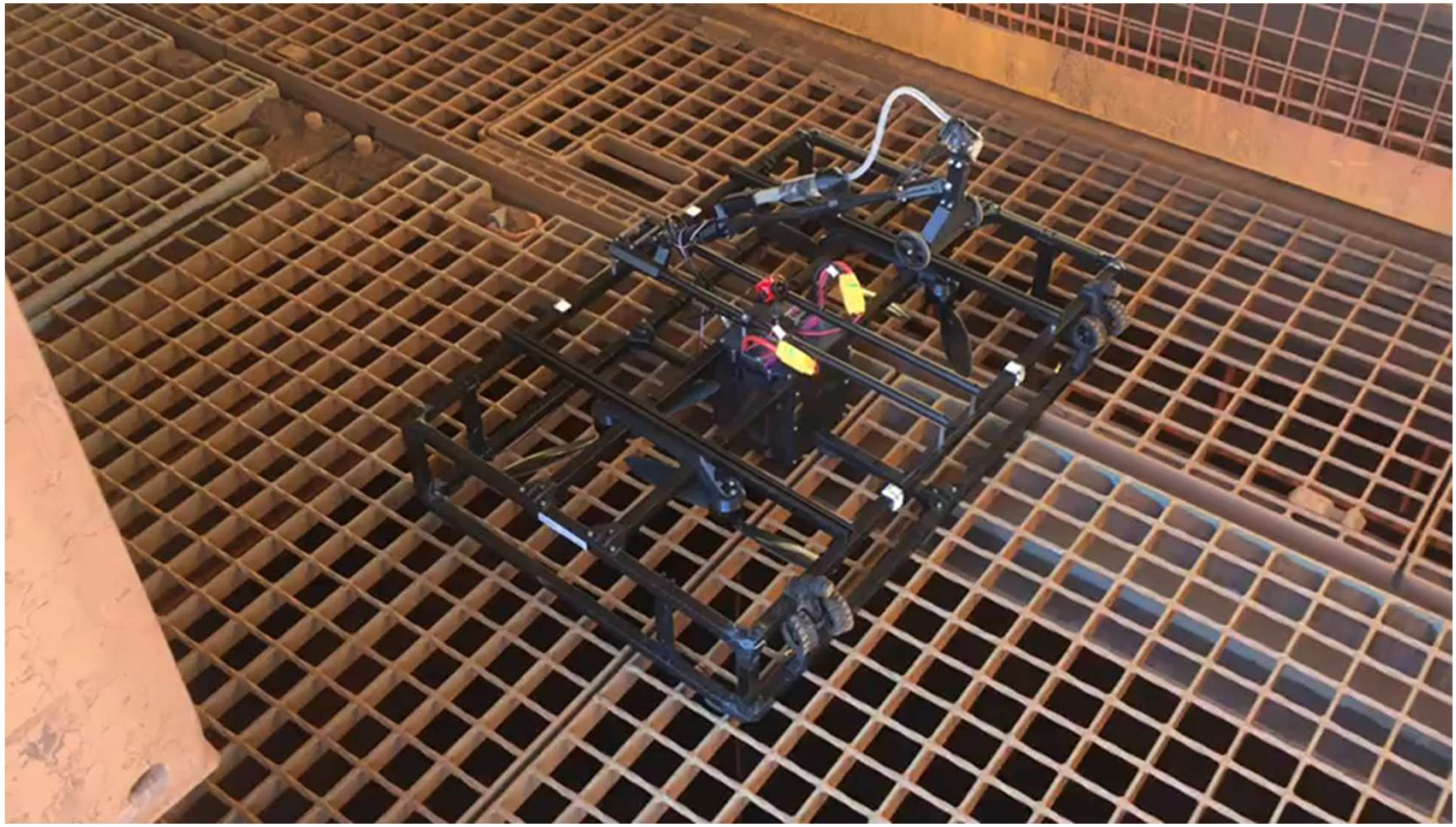
Outdoor: Rio Tinto surge bins



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Outdoor: OMV Romania

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https://photos.app.goo.gl/JuXrSDCEZ7WyAT67A

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Non entry / BVLOS: Nippon steel Japan

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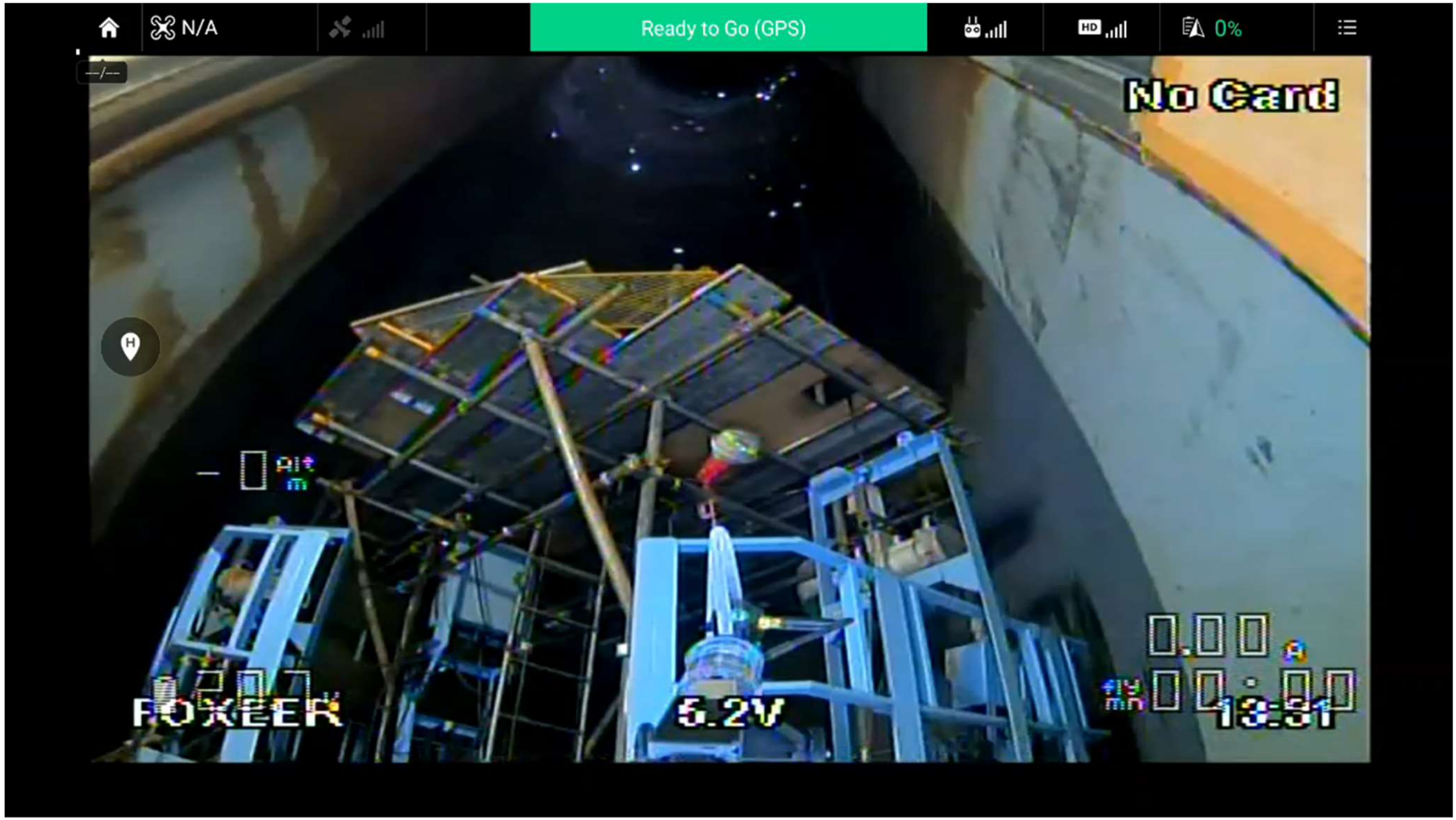

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Cleaning

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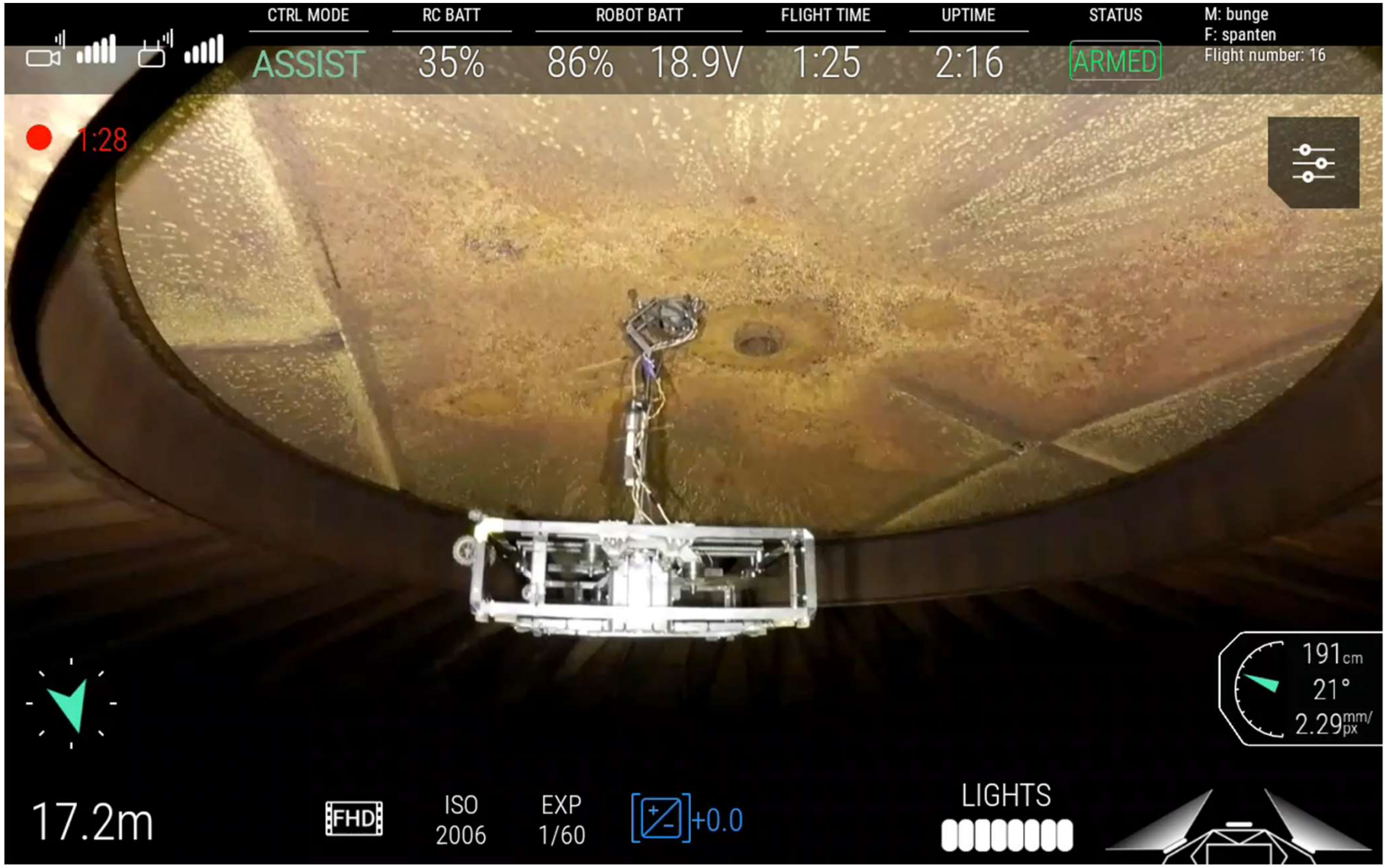
Cleaning



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Modular: downward pointing sensor

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FPSO Mockup pilot BP Chicago

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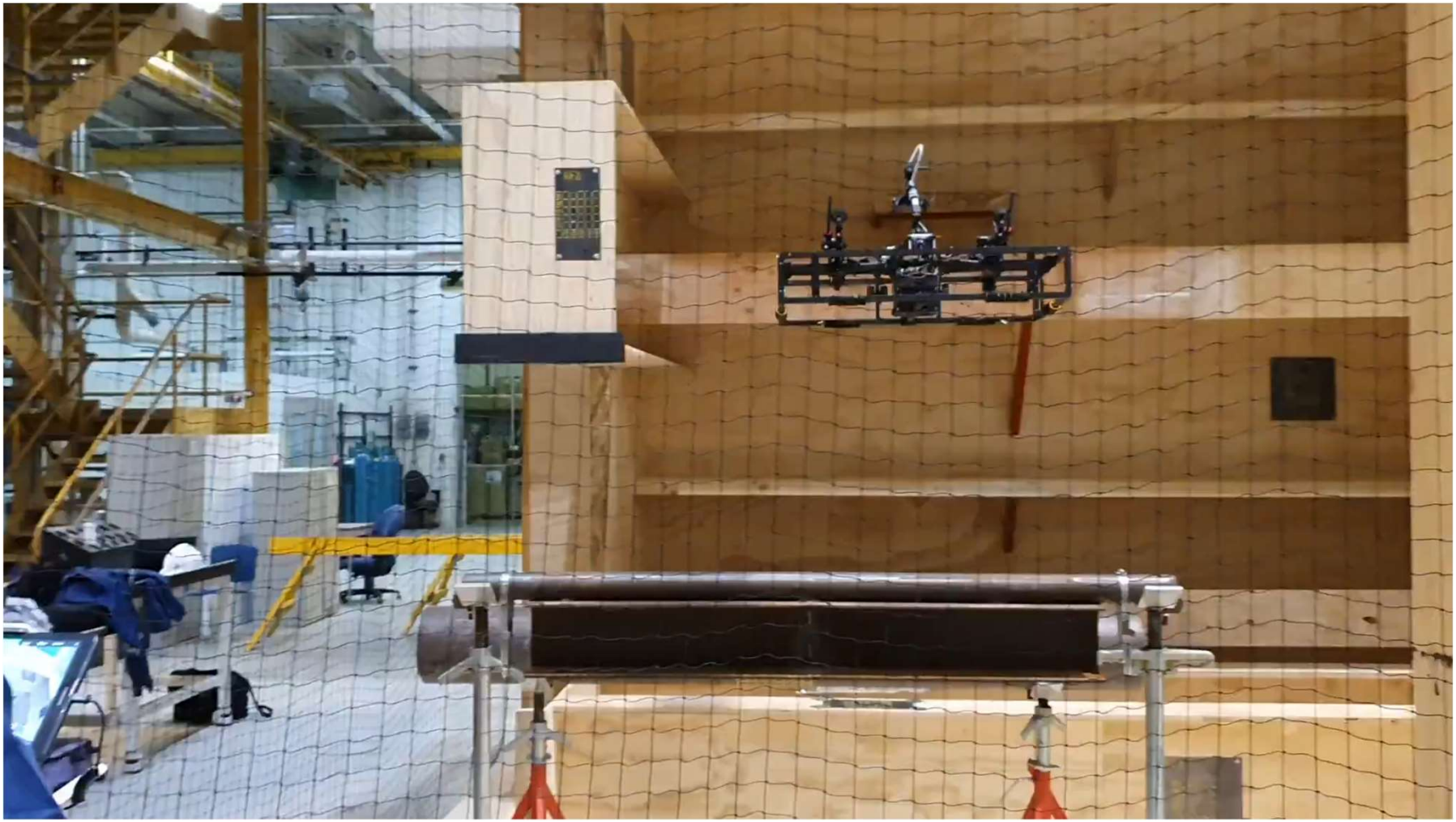

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FPSO Mockup pilot BP Chicago

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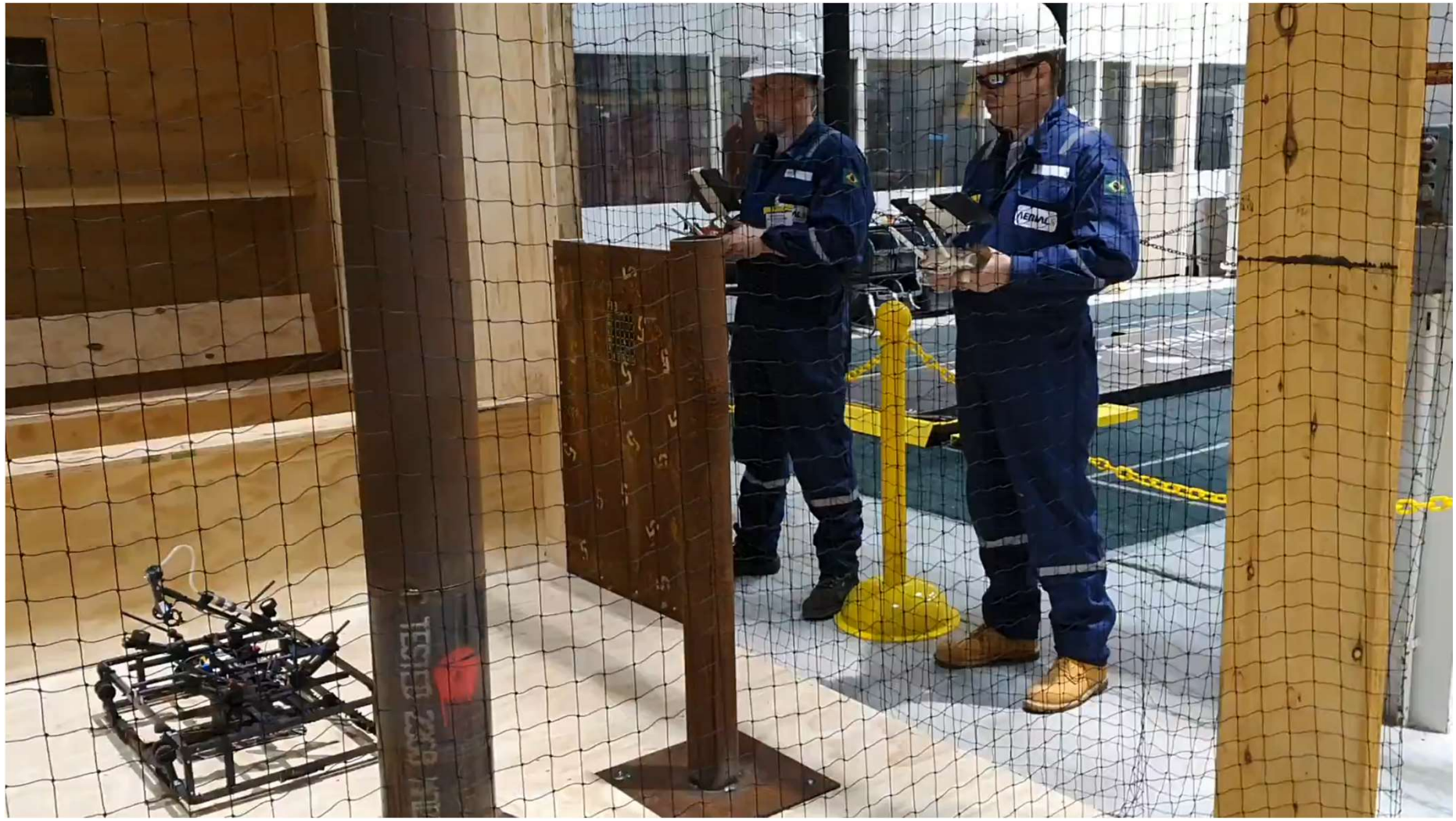

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R&D Roadmap

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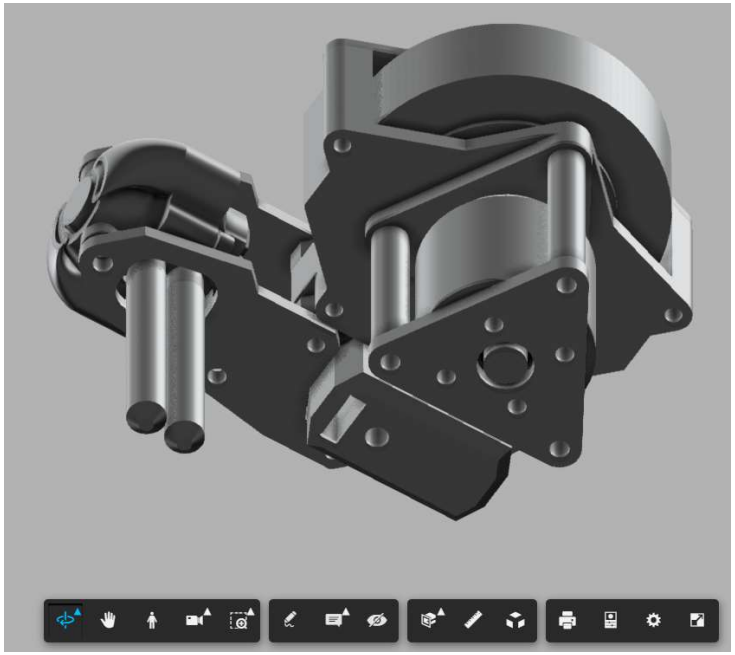
- Improve non-entry support for confined spaces.
- RTK GPS \ Lidar support for outdoor use.
- Robotic arm to reach more complex structures.
- Clamping\gripping mechanism for more complex structures (e.g. U-, Z- or L-beams, pipes, etc)
- X8 design (8 motors) for more redundancy.
- Support for other NDT techniques, e.g. PEC Scanners (based on eddy current, to measure through isolation).
- Autonomous navigation.
- Waypoint planning to measurements can be repeated at exactly the same spots.
- AI\machine learning service provider integration.



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