Issue 9/2023

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Commemorating longstanding partnerships with Pratt & Whitney and SIA Engineering Company

Our longest-running joint venture for engine turbine overhauls with Pratt & Whitney (P&W) just turned 35! We also celebrated the 22nd anniversary of a longstanding turbine repair partnership with P&W and SIAEC. These successful partnerships are driven by mutual trust, a common vision and a shared commitment to excellence.

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Harnessing solar power for more sustainable operations

Solar energy is pivotal in shaping our approach to sustainability. By installing over 25,000 solar panels at our Commercial Aerospace facilities, we have not only reduced our annual carbon dioxide emissions by over 5,500 metric tons, but also yielded annual energy cost savings that surpass initial estimates by more than eightfold!

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Featured Article

Aerospace InnoChamp 2023: Continuing a Culture of Innovation

by Sam Li Pak Sum

The Aerospace InnoChamp is an annual competition, held to encourage and celebrate the innovative efforts of our employees across the different business units of ST Engineering's Commercial Aerospace business.

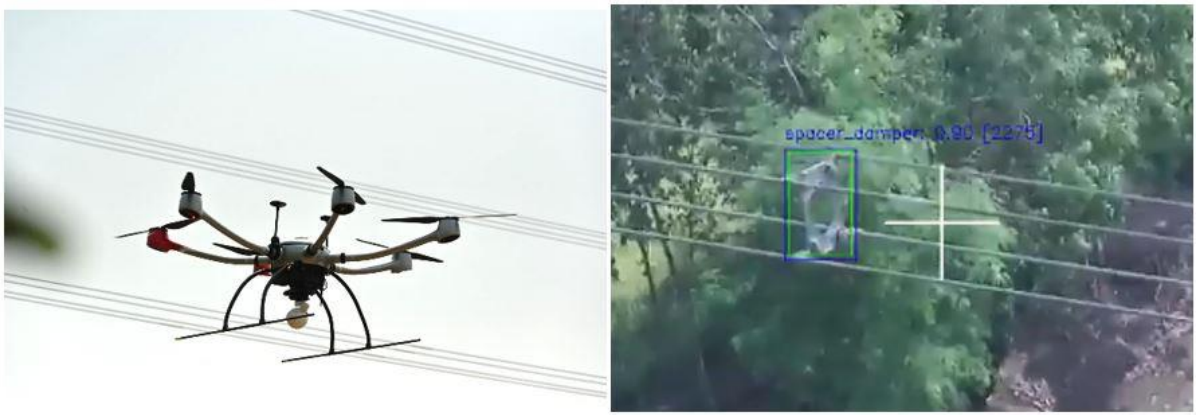
In 2023, the 22nd edition of Aerospace InnoChamp further raised the stakes, given the increasing calibre of submissions received each year. Prize money across the majority of the award categories was increased, while the qualifying criteria were also made more stringent. Only products which had entered the market and had a successfully developed prototype within a 12-month qualifying period were eligible for the competition.

The following are the 2 gold-award winning entries.

DroNet + Advanced AI for Power Infrastructure Inspections (DroNet-API)

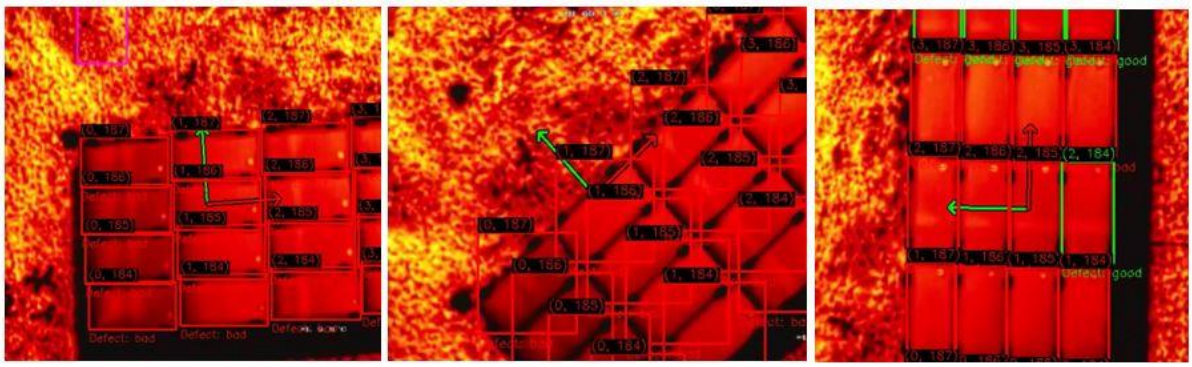
Power infrastructure, such as electric pylons and solar farms, keeps the electrical grid running and is essential to our daily lives. As such, there is a need to inspect them regularly for defects, a time-consuming endeavour especially when manually ascending electric pylons that are typically 80 metres tall.

To inspect defects more safely and efficiently, our team from the Unmanned Aircraft Systems (UAS) business developed DroNet-API, an Unmanned Aerial Vehicle (UAV) equipped with features such as live detection, tracking, easy mission planning and automatic report generation.



(Left) DroNet-API UAV in action (Right) Live detection (blue) and tracking (green)

More importantly, DroNET-API is also enhanced with advanced AI technology which enables it to perform localisation independently. The pictures below illustrate the UAV's ability to determine its own position and navigate within a Solar Farm.



DroNet-API UAV detects that it has reached the end of one side of the Solar Farm and re-orientates itself to scan the next side.

Underwater Nanobubble Airfoil Cobot

Engine vane polishing is an essential process of aircraft engine maintenance. However, manual polishing is very repetitive and time-consuming as an engine can contain a huge number of vanes. To substantially speed up the process and improve efficiency, an innovative polishing technique using underwater nanobubbles has been developed at one of our Engine MRO business units.

This technique involves the use of a cobot (robot arm) to pick up the repair material and polish it in nanobubble water. The surface quality is found to be consistently better than manual polishing and is practically burr free! Beyond the improvement in surface quality, the Underwater Nanobubble Airfoil

Polishing Cobot can also cut down processing time by more than half and maximise manpower efficiency, which will allow our MRO business to pursue volume parts repair and flow production more effectively.

Underwater Nanobubble Airfoil Polishing Cobot

That is it for this year's gold-award winners. Stay tuned to next year's InnoChamp for more exciting innovations!

Have a suggestion? Engage with us here!

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