

Product Presentation

Applicant name – Star Vision Limited

Product name – Hovermap

Specification – SLAM based mobile laser scanner

Core function – Through the use of SLAM technology and specific algorithms, Hovermap collects data over a relatively wide area, saving considerable time, and provides autonomy and exporation to a UAV in GPS enabled and GPS denied environments



Technology used –

- Simultaneous Localization and Mapping (SLAM) based 3D LiDAR (laser scanning)
- SLAM based autonomy

Construction process involved –

- Initial site inspection
- Construction progress monitoring on a daily basis during the whole construction process
- As-built 3D scanning after completion of the construction
- Change detection over time

Key improvement in construction process -

- Productivity
- Quality
- Safety

Job reference

- Building and Urban work, Brisbane Australia, trial, 2020
- Power lines, Indonesia, trial, 2020
- Enclosed tank, Queensland Australia, trial, 2020
- Tunnel, Melbourne Australia, trial, 2019
- Pier and port, Brisbane Australia, trial, 2019

Innovative Features

Core Technology

SLAM based mobile laser scanner

Patent

"Mapping and control system for an aerial vehicle", WO 2019/222810

"Method for exploration and mapping using an aerial vehicle", WO 2020/01474

Comparison with current practice and popular models

Technology – Tripod based laser scanning

Specification - 10 x faster in the field and office for an accuracy trade off

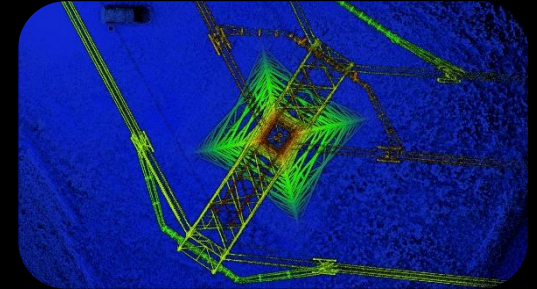
Benefits – massive time saving in the field and office plus significant reduction in regard to staff being required to occupy potentially dangerous areas for extended periods

First launch date

13th May 2018

Awards

- Winner, 2019 Australian prestigious 'Good Design award'
- Finalist, 2020 AUVSI XCELLENCE Awards (winner to be announced 6 Oct 2020)
- Finalist, 2020 Greyhound Innovation (METS) Queensland Mining Awards
- finalist 2019 Austmine award for METS Innovation category



HOVERMAP – Adoption example

- Project for illustration: Capri Building, Brisbane, 2020
 - Work process: Hovermap flights around/ between buildings for laser scanning and photogrammetry purposes. Walking surveys around building, Inside of the building and car parks also utilized.
 - Use/ function in project: Allow photogrammetry flights as well as collect point cloud data. This will be used to monitor change over time.
- This work and data was all conducted/ collected in one day rather than weeks with conventional methods.
- Time saving in the office was also of a similar magnitude.

Cloud from
Drone and walking survey



HOVERMAP – Benefits - Productivity

- **Improve productivity by:**
 - 1-20 ratio, Hovermap vs conventional method in the field.
 - 1-10 ratio, Hovermap vs conventional method in the office.
- **Traditional Output:** Scanning and processing this 500m section of coal terminal with tripod mounted laser scanners took 50 + ‘man’ days.
- **Output by Hovermap:** Scanning and processing this same 500m section of coal terminal with flying and walking was achieved in 4 ‘man’ days.
- Total saving in Man days: 46 ‘man’ days.
- Total saving in project period: 3 ‘man’ days of activity vs 50 ‘man’ days. I.e, \$500,000.00 + HK\$

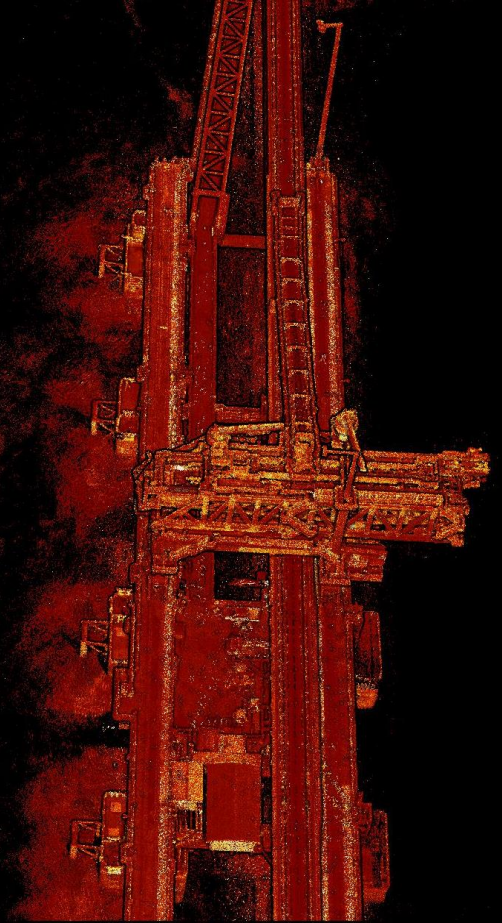


Image is of an offshore coal terminal

HOVERMAP – Benefits - Quality

- Improve quality by:

Error reduction – Hovermap allows the opportunity to collect data over a very large area in one scan rather than having to take many scans with a tripod-based scanner and then join these together. This reduces errors and the chances of data not merging.

Ease of use – Hovermap is very easy to use and straight forward, this broadens the range of staff who can access the technology and further justifies the investment.

Better workmanship – Quick processing allows data to be processed on site which allows for a review of collected data to be performed on site, this improves the ability to detect issues before leaving site and potentially having to return to site unnecessarily at a later date.

Less fatigue Surveying an area in one walking session at normal walking speed rather than setting up a tripod and moving this 30 times to capture the same area is the start of the reductions in fatigue. Not having to merge 30 clouds later in the office is also a massive benefit.

HOVERMAP – Benefits - Safety

- Improve Safety by:

Safety tracking/ detection and warning – Hovermap produces very repeatable results. This is to the extent that the same area can be surveyed at different points in time and then compared for change or movement. This can be used for deformation monitoring or change detection. This rapid and easy method of change comparison can be used to great effect in many situations to reduce impact on staff or members of the public.

Dangerous work – Hovermap operates very efficiently on a UAV and allows data to be collected at a distance from the operator, this can even be beyond the visual line of site of the operator. This virtually eliminates any risk to human life.

Manual handling eliminated/ reduced – Hovermap is quite compact and lite weight. At 1.8kg, compared with conventional systems, the operator is significantly less burdened, assisting with many HR based considerations.