NoMan®

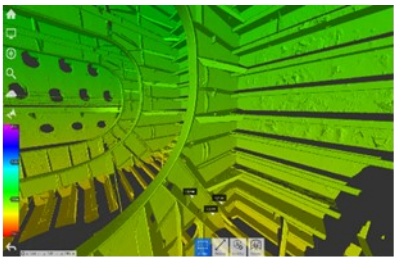
NoMan Optical
European Patent No: EP3452795
Africa (ARIPO) Patent No: AP/P/2018/011168
USA Patent No: 10,871,455 B2
Please see www.emialliance.com for other patents pending

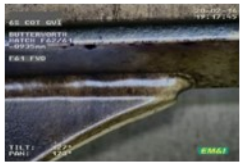
The NoMan® confined space inspection system – a brief description

What is NoMan?

NoMan is a revolutionary new method for remotely inspecting confined spaces such as cargo oil and water ballast tanks, pressure vessels and other critical components.

NoMan uses optical and laser systems, introduced remotely into a confined space, that scan the structure and provide detailed integrity information including deformation, coating condition, general and close visual, thickness measurements and pitting surveys… all without human-entry.





General and Close Visual Survey

Synchronous Laser Survey

What are the benefits?

The system improves safety and reduces the risks and costs associated with tank preparation for human-entry.

NoMan is quick and uses a 2-person team, which reduces out of service time, offshore bedspace, costs, travel and carbon emissions.

Unlike crawlers NoMan does not damage coatings, is far faster and with negligible risk of getting stuck or having to navigate complex structures.

NoMan is not restricted by battery life, with intrinsically safe optical scanners and does not need human-entry to pilot, and always knows exactly where it is and what it is 'looking' at.

Is it proven?

The optical inspection element of NoMan has already been proven. The system is class approved and has been used since 2016 on tanks, pressure vessels and turrets.

The laser technology is also proven, and we will be demonstrating it and the robotic deployment methods in early December 2020 so that class approvals can be sought soon afterwards.

How does it work?

The NoMan optical system uses a high-performance video and still camera system, with integral multiple-angle lighting systems. This allows NoMan to capture general and close up visual images in clear detail to meet stringent class requirements.

The NoMan optical camera is inserted through deck openings in pre-planned locations and the camera lowered into position on a robotic manipulator.

NoMan optical has powerful optical and digital zoom, pan and tilt capabilities enabling general visual and close visual inspection of critical components. The robotic arm is used to position the camera to avoid shadow areas.

The NoMan laser unit is also inserted through deck openings and located either on the tank bottom or suspended under deck from where the robotic arm can position the scanner in pre-determined locations to gather point-cloud data.

NoMan®

What preparatory work is needed?

Confined spaces need to be cleaned, gas freed and ventilated, but not to the extent required for human-entry.

Workscopes and workpacks are prepared to identify tank entry points and scanner locations needed to identify and inspect critical components.

Deploying NoMan as part of existing RBI programmes is useful to help identify critical areas and thus optimise the workflow.

What cleaning is required?

The areas to be surveyed need to be cleaned to normal class requirements for a structural survey.

What data is produced?

High definition visual inspection data is used to provide general and close visual reports. Laser generated point cloud data is used to provide thickness readings, distortion measurements, pitting surveys, coating condition and other valuable integrity data to inform digital twins and structural models and calculations.

The objective is to provide high quality information for a full survey that satisfies both class and owner requirements, without having the risk and costs of human-entry.

When will the NoMan service be available?

NoMan Optical is already approved by class, has been extensively used in the field and the service is available, world-wide, today.

NoMan Laser is currently going through the class validation process and will be available in early 2021.

You can find out more about NoMan and other EM&I products and services on our website:
https:/ www.emialliance.com/

Track Record

We measure our performance through systems like FPAL and unsolicited testimonials.
Our proven track record of satisfied Clients is available on our Website.

Further information is available from your nearest EM&I office who will be pleased to discuss your particular needs.

Case Histories and References, demonstrating our capabilities and Client satisfaction, are available on our Website.

Credentials

Health & Safety – We assure Occupational Health & Safety through our ISO 45001 accredited Health & Safety Management System. EM&I has an outstanding HSE record and has been awarded twelve, consecutive, RoSPA Occupational Health & Safety Gold Awards including five Gold Medals and four President's Awards plus other international awards.
Other safety awards include a platinum IFAP Safe Way Safety Achievement Award in Australia and the Leith Offshore Safety Award.

Environmental – We assure Environmental performance through our ISO 14001 accredited Environmental Management System.

Quality – We assure quality through our ISO 9001, ISO 17020 and ISO 17025 accredited Quality Management Systems and seek continuous improvement by measuring Client satisfaction through FPAL and regular Stewardship Reviews.

Compliance – EM&I's methods are approved by Classification Societies and accepted by regulators worldwide.

Rope Access – EM&I have been a Full Member of IRATA since its inception in the 1980s.

HITS JIP – EM&I have a leadership role in the Hull Inspection Techniques and Strategy (HITS) JIP whose members include Oil Majors, Classification Societies, Regulators, Lease Operators and service companies.