



# Case Study

Matrix Advanced NDT Inspection Services Ltd



[www.measurement-solutions.co.uk](http://www.measurement-solutions.co.uk)



**Matrix is a company that has been built on the back of over 30 years combined inspection knowledge and practical application in the field of Non-Destructive Testing (NDT).**

## **Objective**

The objective of the company is to provide highly experienced NDT inspection personnel combined with the most advanced technology available to enable the safe and effective delivery of projects, ultimately reducing cost and downtime. They have a fleet of UAV's (drones) that can be deployed wherever access through more traditional methods is deemed to be too dangerous, difficult or, cost prohibitive.




## Application

Matrix approached MSL because they wanted to be able to offer a 3D scanning service for inspection and reverse engineering across a wide range of industries. These applications could be based either in house, on site or even offshore. Some of the applications could include large fabrications that need inspecting for alignment or quality assurance, such as turbine blades and subsea clamps down to smaller components; valves, clamps and pipe fittings.

**Matrix also saw the potential for providing their 3D Scanning capability to external companies as a service provider to gain an increased ROI.**

The Scanners will be used to work inside and outside of vessels and tanks, to scan turbine blades for damage and to scan pipework in order to profile the surface where damage has occurred so that the remaining wall thickness can be determined and what repair or replacement is required.

The materials and condition of materials being scanned varies and can be anything from carbon fibre or stainless pipework that either has damaged surfaces or is machine finished.





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## **Challenges we faced**

Matrix were using standard measuring equipment for validation and photogrammetry and pit gauges for NDT work, Bosch laser line measures for distance and profile gauges then drawing the damage/surface profile on paper and analysing the remaining wall thickness to allow for fitness for service.

They wanted to find a more efficient and repeatable way of working and replace their existing analogue systems and introduce the ability to provide digital data files to reverse engineer. Enabling them to inspect back from them in the form of heat maps, cross sections providing the ability to recreate models and components of existing parts.



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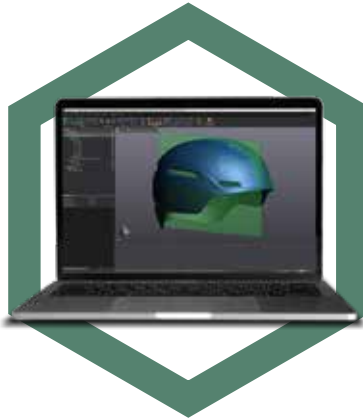
**We felt like MSL understood our requirements and we had full confidence with the products they recommended**

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## How we resolved the issues

The portability of the equipment meant that on any occasions where they are required to travel, the scanner can be easily packaged away and set back up in a matter of moments to fulfil the customers' demands.



### VX Model & Inspect

VXinspect is the ideal, entry-level 3D inspection software solution for manufacturing companies conducting first article inspection (FAI) and production control.

### Creafom VX Elements

VX Elements software is an application that enables you to share your X4 inspection files with your customers, partners or even subcontractors, offering them the ability to visualise your measurement results and data





### Go!SCAN Spark

Unquestionably Creafom's fastest, user-friendly, handheld 3D scanner. Out-performing all other fixed or handheld scanning devices on the market today.

### HandySCAN 307

Featuring accuracy, portability, simplicity, versatility, and a trusted patented technology, the SILVER Series captures highly accurate and repeatable 3D measurements of any complex surface in any location.



**Matrix are also looking to purchase additional HandySCAN units to provide services to external companies.**



## HandySCAN Black

The surface of components are now captured from the HandySCAN to immediately create .stl meshed scan data. Once this is edited, Creaform VXModel is used to create the surfaces and physical entities such as planes, cylinder, and cross sections etc.



Scan to view full spec sheet





Large Scanning Area



Resolution Of 0.025mm

Accuracy Of 0.02mm

Light weight- 0.94kg (2.1lb)



**Matrix have seen vast improvements in speed, accuracy, and portability which they believe competitors of MSL would not have been able to achieve.**

## The final outcome

Due to the nature of the applications the equipment can now be used wherever the components are, this could be anywhere Globally both indoor and outdoor where the scanning of damaged components for assessment, reverse engineering of remanufacture is required.

Matrix are also looking to purchase additional HandySCAN units to provide services to external companies where they can either hire the scanners or outsource their scanning requirements to Matrix depending on in house resources, budget, and experience.

Matrix are aiming to be one of the leading providers of laser scanning in the North of Scotland for reverse engineering applications and acquiring data for NDT. Therefore, further expansion is also planned into Automotive, Aerospace, and general engineering organisations to offer outsourced services in the areas of 3D scanning, reverse engineering, and repair.





## **3D Scanning, Inspection, and Metrology**

With over 23 years' experience, MSL brings a wealth of engineering experience to metrology, combining tools and software from leading manufacturers to create integrated systems for your workflows.

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