

3D METROLOGY SCANNING



INFORMATION SHEET

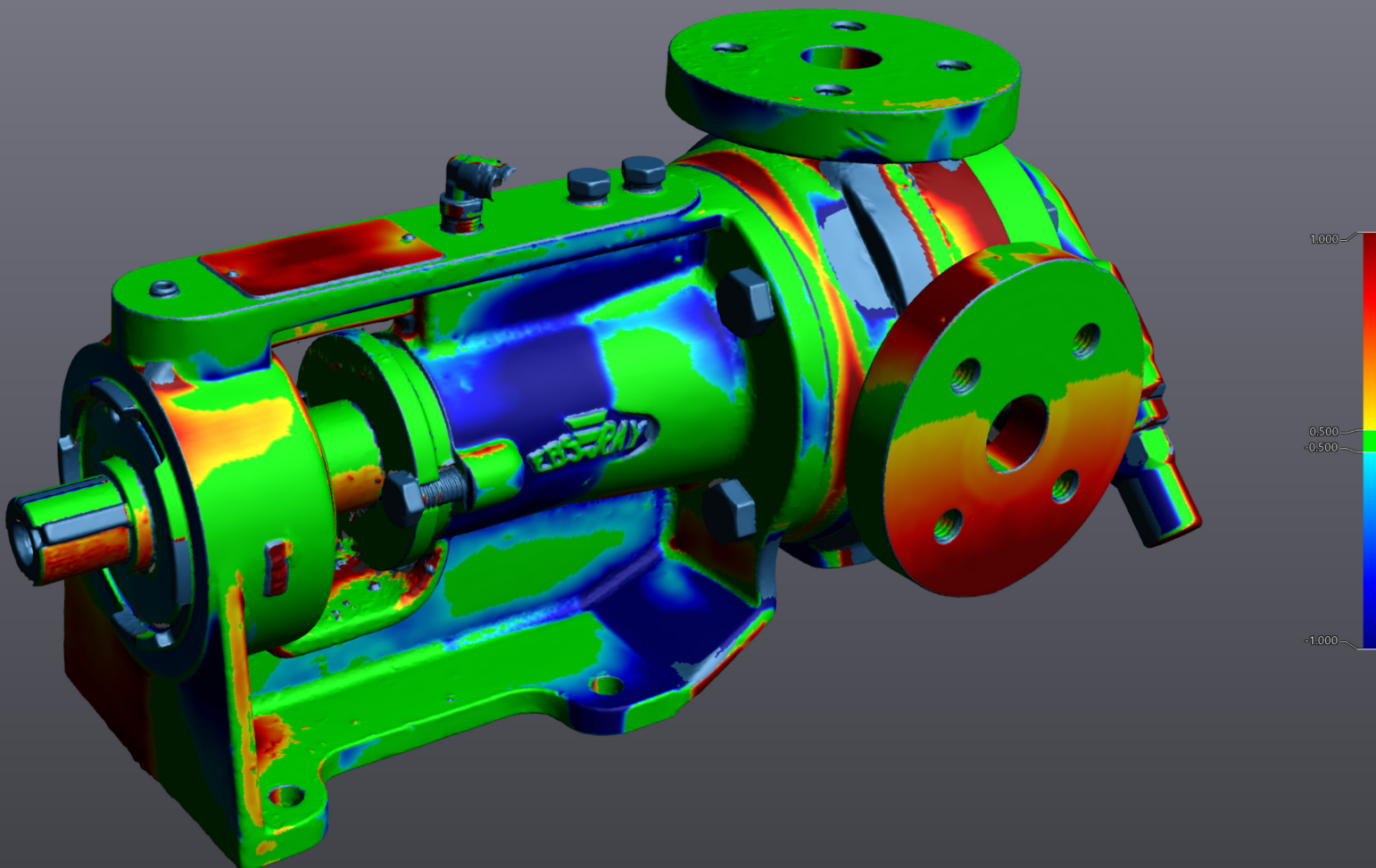
WHAT IS METROLOGY SCANNING?

3D Metrology Scanning is the process of capturing and digitising the physical attributes of a part or an object.

The scanners we use, how we process the data and how we deliver the data are all determined based on the object and our clients' needs, resulting in an ideal bespoke approach for every, and any type of project. This approach allows for the complete integration of scanned data into existing digital component and assembly workflows, providing precision measurements with a dimensional accuracy of up to 0.035mm.

When employed during design processes, our 3D Metrology solutions guarantee;

- Shorter prototyping cycles
- Improved fitment and tolerances when integrating into existing assemblies
- Quality control & inspection
- Conformance during manufacture and enhanced component aesthetics.
- In addition, we can reverse-engineer existing OEM (Original Equipment Manufacturer) parts, regardless of whether part specifications are available.



HOW DOES IT WORK?

Depending on the type of scanner, either laser or structured light are used to detect the distance between the part and scanner, capturing millions of measurements per second to instantly and accurately reconstruct 3D information digitally.

Our structured light scanners are ideal for small to medium sized projects, capturing comprehensive and highly detailed 3D measurements of any complex surface with an accuracy of up to 0.05 mm. Alternatively, our terrestrial laser scanners are more suitable for larger scanning areas and are capable of withstanding more active work environments, such as production facilities, without compromising the quality and accuracy of data.



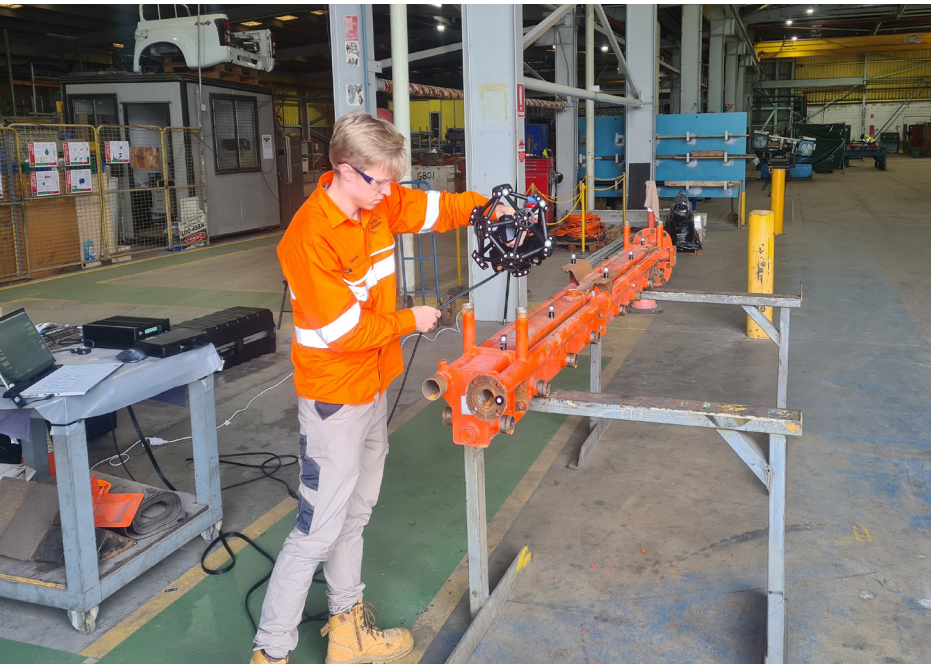
PROJECT WORKFLOW:

As a trusted provider of spatial data services with extensive experience, we have developed a streamlined and effective workflow, allowing for accelerated turnaround times, but reduced risk to your business.

- Client sends us photos and information about their project so we can understand the scale and complexity of the part.
- We discern the most suitable scanner, capture method and scanner resolution settings to use.
- Scanning takes place on-site or in-house depending on the part. We apply mid-scan aids if required (sublimation spray, scan targets, etc.)
- Analyse collected data prior to finalisation of scan to ensure there is no data missing on required areas of the subject
- We complete post-processing and refine data off site where possible to clean and remove unwanted data and align to the CAD (Computer Aided Design) origin.
- At this stage, we deliver scan data as a 3D mesh, and offer further modelling services to create a solid CAD model (Scan to CAD).

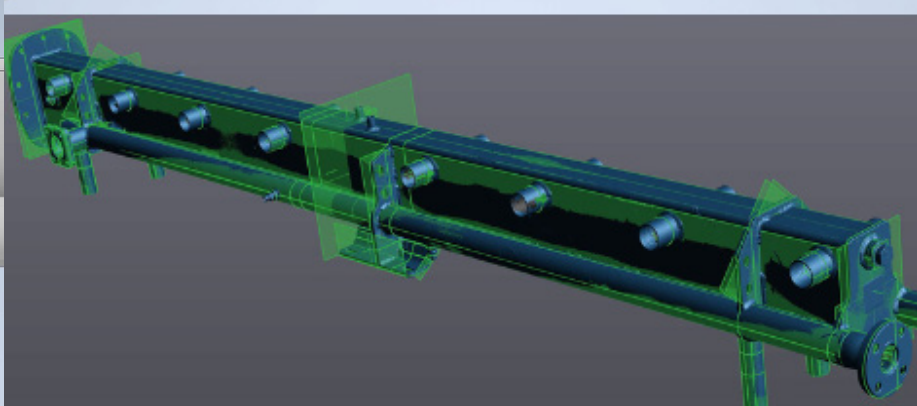
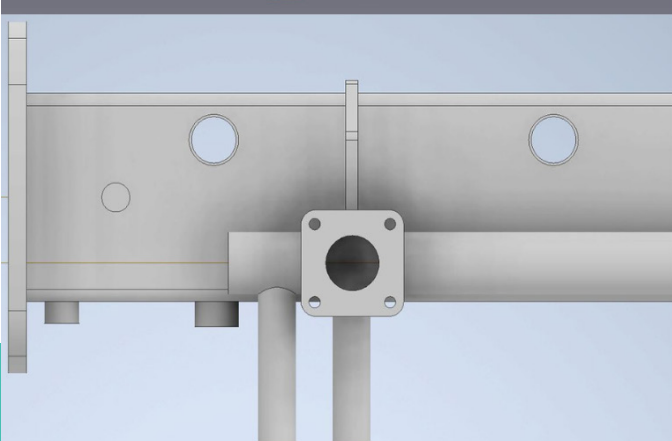
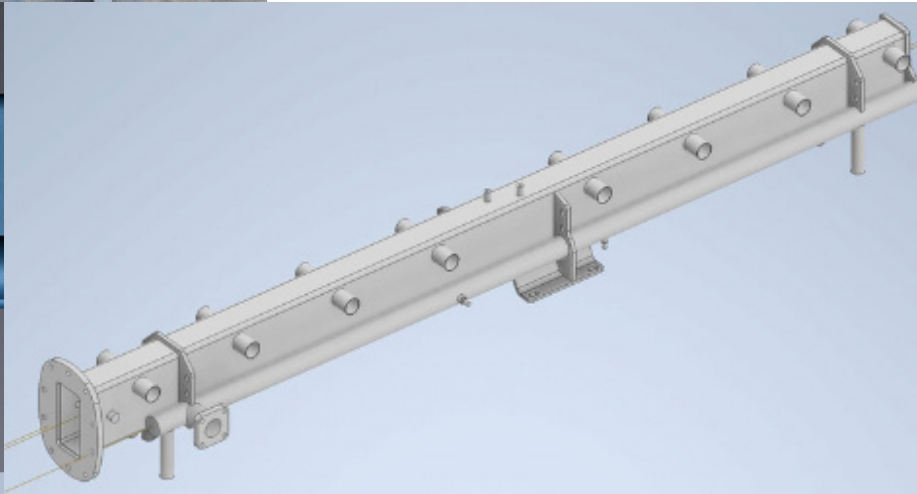
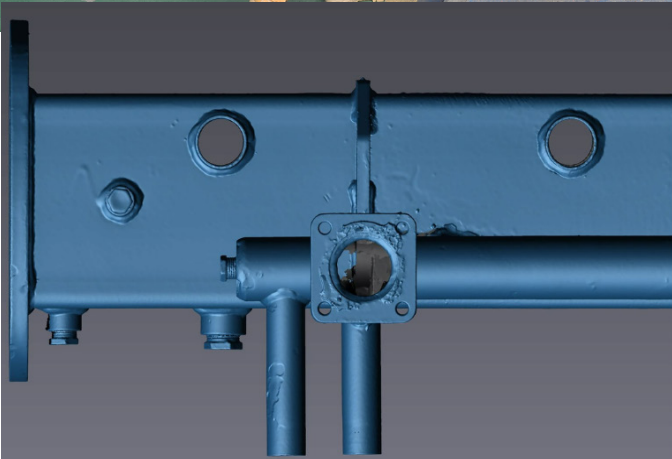
HOW DOES 3D METROLOGY SCANNING BENEFIT YOUR ORGANISATION?

- How does 3D Metrology Scanning benefit your Organisation:
- Efficiency – Quickly digitalise the part and save time on site and during design work
- Assurance & Accuracy – Know that the data is accurate, and that replicated parts or new assemblies will fit
- Portable & flexible – We can bring our equipment to you, or perform our scanning in-house
- Broad output file types available for latent purpose of the data.



KEY DELIVERABLES:

- Sub-millimetre accurate surface mesh (multiple industry standard file types available upon request)
- Surface mesh & model overlay
- Scan to CAD parametric model (additional service to initial scanning)
- Tolerance/heat map comparisons (visual aid)
- Deviation analysis - This classifies variations between the surface and geometry of 3D scan data vs. a CAD model or any prior scan
- Scan to CAD Deviation Analysis



| POSSIBLE APPLICATION | DETAILS |
|--|--|
| Reverse engineering | Detailed data sets of existing products to ensure high quality of fitment prior to prototypes/full production. Creating a 3D model that is accurate to an existing part to enable the analysis of functionality, subcomponents and to allow for potential CAD alterations. |
| Parts replications | Accurately replicating existing parts from 3D scan data. |
| OEM fitment | Creating new parts using 3D scan data to be integrated into or onto existing forms when specifications are not readily available. |
| Rapid prototyping | Digitally capturing prototypes for the purpose of analysis, tracking progress, parametric modelling, 3D printing, comparison to existing products on the market, and compatibility with human factors. |
| Wear monitoring/analysis | Fitment of consumable components to original “golden sample” model – allow for wear conformance to be detailed, and a historical model database to be maintained and compared against. Especially important for use cases where a variety of brands offer the same consumable part, coating, or service. |
| Preventative/Predictive Maintenance | See wear monitoring point/s to assess state or part, need for maintenance or determine a timeline for replacement. |
| Equipment within restricted environments | Scanning within restricted environments (in situ) is especially important for mining, tunnel boring, Naval & Aerospace where equipment cannot be removed from base due to size, privacy or security. |
| QC & Conformance | Assessment of individual parts to suit various tolerance windows, benefiting mass manufacturing and smaller bespoke pieces. |
| Patent Enforcement | Demonstrate how products sharing similar design features differ and to what extent similar features overlap. |

3D METROLOGY SOLUTIONS ARE APPLICABLE TO MULTIPLE SECTORS INCLUDING:

- Manufacturing
- Architecture, engineering & construction (AEC)
- Oil & Gas
- Automotive, marine & aerospace
- Medical & Healthcare
- Agriculture
- Warehousing / mass storage
- Art / Explorative Design
- Theatre, Film, TV & gaming



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