

REVERSE ENGINEERING

The PES team specialise in reverse engineering and use various technologies to capture the data. Some of the technologies we have at our disposal include;

- **White Light Scanning (WLS)**
- **Photogrammetry (Used in conjunction with a WLS)**
- **Computed Tomography (CT) scanning**
- **Rapid Surfacing**
- **Class 'A' Surfacing**
- **Digital Archiving**

The benefits of reverse engineering:

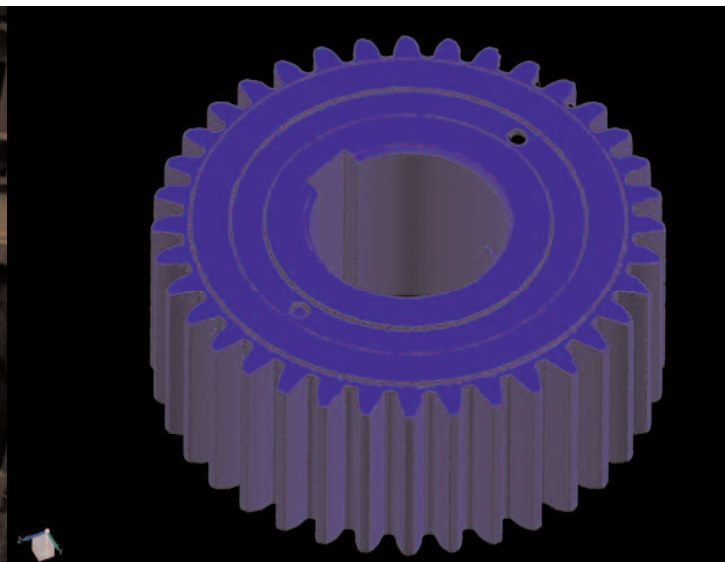
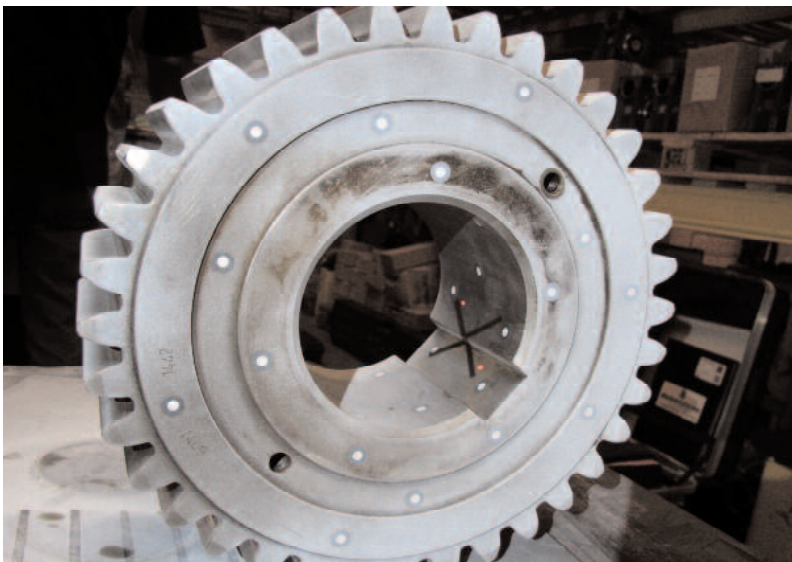
Legacy Equipment: PES can scan the component to capture the data, and reproduce it as a digital model in CAD. One of the applications for this process is as part of a Planned Preventative Maintenance (PPM) programme. Captured data can be archived and available to manufacture future spares or to have critical components manufactured for immediate installation. This therefore can reduce manufacturing 'downtime', saving time and money in the process.

Optimisation: This is about capturing the data of a current piece of equipment and improving its performance through a design & review process looking at optimising materials, design and manufacturing performance.

Commercial or Military Data Capture:

Learning about an competitor's latest research by capturing data to secure as much detail as possible to understand its capabilities. It may result in development of similar product.

Documentation improvement: Reverse engineering can be done when documentation about a piece of equipment, production, operation or maintenance have shortcomings or the original design may not be available.





We have offered these services in a number of sectors including:

- Heavy engineering, i.e; large legacy gear boxes.
- Classic vehicles and aircraft parts.
- Sculptures and rare pieces of art to be reproduced or repaired.
- Scale models of classic items from vases through to cars.

White Light Scanning Services

3D Scanning

Obtaining precise physical data for 3D objects of all sizes. This service is used for design engineering, medical products, education, 3D presentation, art & archaeology, products, virtual reality & much more.

3D Design

Capturing free-form surfaces, hand-made or hand-modified designs into CAD. Ideal for turning original designs into production-ready data.

3D Visualisation

Turning real life objects into computer gaming or animation. Visualising products at the prototype stage of production. Creating 3D brochures and presentations.

Computer Aided Engineering

Data scanned from an object can be modelled in CAD, using Computational Fluid Dynamics (CFD) or Finite Element Analysis (FEA). These analysis packages require accurate scan data to compare "as built" to the computed model and support design optimisation to drive the performance of a new product or part.

Digital Archives

3D digital records for the conservation of all pre-digital objects from classic aircraft and cars, art, archaeological artefacts etc.

Rapid Manufacturing

A quick, reliable and cost-effective way of precise production. Used for engineering design, tool making, jigs and fixtures, turbines, aerospace, power generation, art & archaeology, consumer products, prototypes and injection moulding.

Reverse Engineering

Fast replication of freeform and organic products within tool making, design, enhancement, models, rapid prototyping, injection moulding, rapid milling and products including all pre-digital legacy equipment.

Quality Control

To ensure repeatability and accuracy within manufacture: Tool making, Sheet metal, Aerospace, Turbines, Injection Moulding, Consumer Goods, Power Generation, Casting and Forging. CAD Comparison, First Article Inspection, Route Cause Analysis all computed within the GOM software.

Component Testing

Stiffness Tests, Simulation, Strain, Component Dimensioning, Deformation Analysis

The range of services shown is indicative of our capabilities. Please contact us to discuss your precise requirements.

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