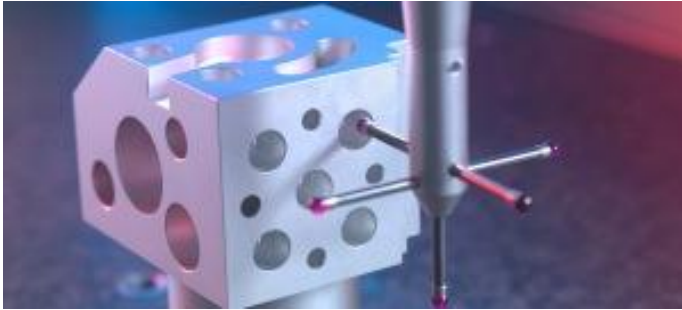


Product Verification Program Training & Consultancy Services

Programme for Advanced Manufacturing

The DGS Product Verification Process



The ability to manufacture products and components 'Right First Time, Right Every Time' is a key factor in reducing costs and gaining competitiveness.

DGS's Product Verification Services help companies to manufacture products to original design specifications through better measurement and inspection practices.

We can look at every aspect of your measurement or manufacturing practices and procedures and find the improvements that will make a difference.

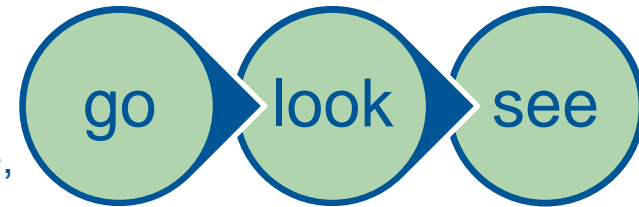
All training and learning has been mapped to the Engineering Council UK registration competency requirements (ECUK Spec) to formalise the knowledge transfer to key staff in the client business



The DGS Product Verification Process

How does it work?

DGS's Product Verification specialist team come to site, spend time getting under the skin of your inspection practices and procedures, then produce a diagnostic report that details areas for improvement.



The DGS team will recommend specific modules to address the gap between current status and best practices.

The diagnostic report and recommendations will include savings that can be expected (ROI information).



PVP- The Diagnostic

Topic	Charged Days		Overview
	Min	Max	
Product Verification Health Check - PVHC	2	9	Full diagnostic of the Product Verification process and application of measurement. Identifies good practice, gaps and recommendations for improvement opportunities
PVHC Lite	1	5	Shortened PVHC diagnostic focussed on pre-agreed topics

- Dedicated time on site by DGS practitioner(s)
- Review all aspects of 'measurement' or targeted at specific focus areas.
- Full diagnostic report generated, detailing areas of good and bad practice.
- Recommendations of modules required to close gaps, with expected impact.

Module Set 1: Managing the Product Verification Process

Topic	Charged Days		Overview
	Min	Max	
Managing Measurement: Approaches and Decisions for Managers	1	1	An interactive workshop to ensure decision-makers are fully equipped to understand the relevance and potential business performance consequences of their decisions on measurement activities
Managing Calibration: Approaches and Decisions for Managers	1	1	An interactive workshop to enable managers and their business to be equipped for both compliance and optimal efficiency of the equipment calibration function
Managing Variation: Approaches and Decisions for Managers	1	1	An interactive workshop to equip managers with knowledge of their role and responsibilities in the process of data-driven management of variation
Defining & Planning M&I Skills/System	2	6	Tailored support on defining, developing and demonstrating the measurement competencies required by the business and customers
Developing QMS	2	8	Tailored support on developing and implementing measurement related process within a QMS

- These modules address how measurement is tackled by the organisation, looking at the implications of addressing the measurement aspect of a process at the correct time to maximise potential.
- These modules are aimed at the organisation's leaders.

Module Set 2: Measurement & Inspection Foundation Tools

Topic	Charged Days		Overview
	Min	Max	
Measurement System Analysis (MSA) / Evaluating Measurement Process (EMP) Basic Training – Tools & Techniques	2	4	These modules provide staff with the ability to understand and apply techniques to quantify the capability and understand the behaviour of measurement processes. This is often a customer requirement and the basis for the effective and efficient management of the manufacturing process.
MSA/EMP Application/Study	4	10	
Shop-Floor Metrology	1	N/A	This is a 2 hour session to train shop floor operators in the basic requirements for the use of commonly used measurement equipment
Equipment Calibration - Good Practice	2	4	These modules support businesses to adopt good “Industrial Calibration” practices. They provide the knowledge of what constitutes traceable calibration and support the implementation in practice. E.g. Defining calibration requirements, make versus buy, calibration records and equipment procurement.
Equipment Calibration - Application	2	8	
Environmental Considerations for Measurements	1	2	This equips staff with the knowledge and skills to systematically consider and evaluate the potential effects of environmental conditions on the quality of measurement results and potential consequences on decisions based on those results
Machine Tool Verification - Ball Bar Test	1	2	These modules equip staff with a technique to evaluate machine capability to aid assignment of jobs to machine tools and TPM activities.
Machine Tool Verification - SOP Creation	1	4	
Data Design & Problem Solving	2	8	These modules provide the foundations of data-driven manufacturing, providing knowledge of how to determine what data needs to be collected and then how to use that data to improve manufacturing process
PV Framework Development	8	12	This provides a systematic, risk-based gated approach to managing the Product Verification process.

- The foundation stones of good measurement practice.

Module Set 3: In-Process Validation & Inspection

Topic	Charged Days		Overview
	Min	Max	
Application of On-Machine Probes	1	4	This provides an introduction to how the implementation of on-machine probes can be used to reduce the amount of up-stream inspection.
Operator Led Inspection	2	8	This provides coaching in developing a process and skills that enable Operators to perform inspection activities, reducing the chance of detecting non-conformance later in the process and reducing the burden on final inspection.
SPC - Statistical Process Control (understanding and managing variation)	2	6	This provides the knowledge and coaching in the implementation of the use of measurement data and Statistical Process Control for both operators and managers to ensure a fully functioning, holistic system is achieved.
Validation & Inspection prevention	2	8	This provides knowledge and implementation coaching in inspection planning. It provides a structured approach to considering current processes, ensuring that measurement operations and planning are effective/efficient/capable

- Building from the foundations, a more advanced approach to measurement.
- Shift from 'goal-keeping' culture to data driven continuous process control.

Module Set 4: Technology Application & Innovation

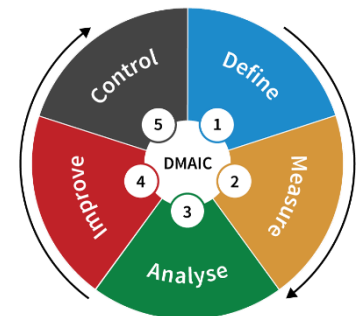
Topic	Charged Days		Overview
CMM - Good Practice	1	4	This module ensures that the business has the understanding and practices in place to have confidence in CMM operations and associated conformance decisions whilst maximising throughput to reduce inspection bottlenecks
CMM - Artefact Good Practice & Implementation	2	8	This module ensures that the business fully understands and addresses their CMM performance based on data. It also will assist the business to develop a process to monitor and maintain CMMs between calibrations.
Other Measurement Technologies on request			E.g. Tailored support for Laser Trackers, portable articulated arms

- Focused training for CMM related measurement
- Other focused training available for specific measurement of temperature, force, torque, pressure, etc.

Module Set 5: Part/Process Specific Projects

Topic	Charged Days		Overview
	Min	Max	
Manufacturing Capability/Process Audits	2	10	Tailored review and coaching focussed on improving a specific challenge.
Quality Costs Analysis – Tools & Techniques	1	2	These modules provide the foundation concepts/knowledge of QCA and coaching in the use of trusted measurement data as an integral part of implementing the techniques in business defined projects.
Quality Costs Analysis – Application	2	6	
Design of Experiment – Tools & Techniques	1	2	These modules provide the foundation concepts/knowledge of DoE and coaching in the use of trusted measurement processes and data as an integral part of implementing the techniques in business defined projects.
Design of Experiment – Application	4	10	
D/PFMEA – Tools & Techniques	1	2	These modules provide the foundation concepts/knowledge of D/PFMEA and coaching in the use of trusted measurement processes and data as an integral part of implementing the techniques in business defined projects.
D/PFMEA – Application	4	10	

- Good practice for measurement in line with structured approaches such as 6 Sigma DMAIC.
- Understand the impact of the measurement aspect of the full process.



Module Set 6: Industry Standards Compliance

Topic	Charged Days		Overview
NADCAP M&I Gap Analysis	3	6	A review of the potential compliance of current practices against the standard and specific process sheets, conducted in collaboration with the business, providing recommendations of how gaps might be closed to increase likelihood/accelerate achievement of certification. Support can also be provided to implement those activities.
ISO17025/ISO10012 Gap Analysis	2	6	A review of current practices against the standard, conducted in collaboration with the business and recommendations of how gaps might be closed to increase likelihood/accelerate achievement of certification. Support can also be provided to implement those activities.

- Specific processes required to ensure compliance with industry standards



Bespoke Services & Case studies

DGS Quality Assurance can offer bespoke services to utilise best use of client resources. This is something that can be captured proactively via the Health Check, or where directed by clients to a specific problem with a process.

We can look at every aspect of your measurement or manufacturing practices and procedures and find the improvements that will make a difference.

All training, learning and consultancy services have been mapped to the Engineering Council UK registration competency requirements (ECUK Spec). It is our aim to ensure that every business has the benefit of our knowledge transfer, so that clients become independent in knowledge post engagement with DGS Quality Assurance. The mapping activity also allows client staff to meet the “initial” and/or “continuous” professional development required in order to register as a professional engineer or technician with the Engineering council via a professional engineering institution.

Case studies are available, and some are posted in the download section of the DGS Quality Assurance Website (www.dgs-qualityassurance.com)