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The evolution of Geometrical Product Specification and Verification in the field of surface metrology and the challenges of its vocational training

Abstract:

Surface metrology is the science of the measurement on micro/nano surface which plays an important role in the control of the manufacture process of a workpiece and the prediction of its performance. In the last three decades, there is an evolution in the field of surface metrology, such as the emerge of many new data collection methods, the development of novel data processing techniques and the shift of characterisation technology from profile paradigm toward areal paradigm. Therefore, in the last 10 years, ISO have developed and released lot of new standard documents to standardise the specification and verification procedure of surface texture assessment in the framework of its technique language, i.e. Geometrical Product Specification and Verification (GPS). It empowers engineers with a richer and unambiguous language to detail their requirement with the less specification uncertainty. However, an engineer has difficulty to develop his/her skill in use this technique language due to the increase of its complexity and flexibility.

To this end, an EC founded project is undertaking to develop e-learning platform and workshop to deliver the latest development of GPS to engineers. It will use the student-centred method which focused user friendly learning environment, the learning outcomes (i.e. skill and knowledge), self-directed learning etc. This three-year project will be completed at end of 2018. In the beginning of the project, it is of importance to develop a better understanding the challenge of training and user requirement.

Therefore, this paper reviews the evolution of GPS in the field of surface metrology with highlighting the issues from training aspect. It explores the current ISO standard documents and training materials, together with a short review of education theory and practise in the information era. A survey has undertaken from industrial participants which outline the requirements of its main users. The outcome of this research maps the field of this training project.