Advances in Ultra-High Precision Manufacturing of Optics

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Abstract

One of the engineering areas focusing on the research and development of high-value components and manufacturing technologies is precision engineering. Precision engineering represents a variety of engineering and science disciplines ranging from areas such as mechanical, electronics and industrial engineering to chemistry, physics, optics and materials science. The presentation aims at familiarising the audience with the recent advances in ultra-high precision manufacturing technologies and their applications for the production of various critical components employed in different sectors of the industry. In this presentation, the principles of ultra-high precision manufacturing will be discussed followed by examples of their uses in various industrial applications. The status of ultra-high precision manufacturing in terms of current research issues and future trends will be discussed. In addition, research activities and projects in the area of precision manufacturing that are currently conducted at the Nelson Mandela University will be also highlighted. Finally, the author looks forward to presenting herewith comprehensive information that could be useful to the audience and easy to understand by the bigger engineering research community.

Keywords: Precision engineering, ultra-high precision manufacturing, diamond machining