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## Influence of surface location within depth of field on measuring by a conoscopic holography sensor integrated in a machining centre

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### Abstract

In this work, a Conoscopic Holography (CH) sensor integrated in a Machining Centre (MC) was used for analysing how the measurements taken are influenced by the location of the digitized surface within depth of field (DOF). With this aim, two different digitizing strategies were conducted on a stepped specimen with flat surfaces. In the first strategy each step of the specimen was located at different positions within DOF whereas the CH sensor was kept at a constant height along the scanning of all steps. In the second strategy the sensor height was adapted so that each step was scanned at the same distance within DOF. The comparison between both strategies was performed by calculating the discrepancies between measurements taken by the CH sensor and those obtained by a touch probe (TP) also installed in the MC. Finally, the study provides a series of recommendations for practical application of the sensor.

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### 1. Introduction

Industrial use of commercial scanners like non-contact digitizing systems has grown significantly in recent years with a wide range of applications that go from dimensional metrology to reverse engineering [1]. Apart from avoiding contact with the object to be measured, the main advantages over contact systems are the ability to capture small geometries and complex shapes as well as the high speed for points acquisition. Additionally, the portability of

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