ECF22 - Loading and Environmental Effects on Structural Integrity

Experimental setup development of additively manufactured mandible with teeth and compensations subjected to compressive load

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Abstract

Examination of strain field underneath the teeth created due to influence of bite force in ''in vitro'' conditions requires thorough preparation of the examinee and equipment. Failure of tooth-compensation bond is often caused as a consequence of inadequate processed tooth design causing uneven strain distribution. In this paper design solutions for examination of strain field located underneath the teeth have been shown for different types of teeth and compensations. Strain measurement was performed using contactless optical 3D system ARAMIS 2.0. Mandible model with teeth was additively manufactured using SLA technology. Cap shape compensations are made of silver. Measurement of force was performed on a dynamometer, with a maximal capacity of 800N. Obtained results show how developed experimental setup enables comparison of influence of different shapes of teeth and compensations on strain distribution.

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