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Dimensional accuracy of camera casing models 3D printed on Mcor IRIS: A case study

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ABSTRACT

The main objective of this research was to determine the deviations and evaluate the dimensional accuracy of 3D printed camera casing models compared to the original models in the STL format. The study sample consisted of the 3D printed camera casing models and the same models in the STL format. The STL format came from Mcor in a set of sample models shipped with the 3D printer. The models were 3D printed on Mcor IRIS and then scanned with ATOS 3D scanner. A comparison between the scanned and original STL models was made in the GOM Inspect software. The results indicate that the maximum deviation occurred on the scanned front camera cover and it is 0.82 mm in the direction z. The average deviation of scanned front camera cover is 0.0845 mm and the average deviation of scanned back camera cover is 0.0722 mm. The analysis of the results proves that the three-dimensional printed paper-based parts have the dimensions close to the original CAD models.

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Dimenzijska natančnost modelov ohišja za kamero 3D, tiskanega na Mcor IRIS: Študija primera

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POVZETEK

Glavani cilj raziskave je določiti odstopanja in ovrednotiti dimenzijsko natančnost 3D tiskanih modelov ohišja za kamero v primerjavi z originalnimi modeli v STL formatu. Vzorce za raziskavo predstavljajo 3D tiskana ohišja za kamero in njihovi modeli v STL formatu. STL format kamere je eden izmed primerov Mcor, ki so bili poleg 3D tiskalnika. Modeli so bili natisnjeni na Mcor IRIS tiskalniku in skenirani z ATOS 3D skenerjem. Primerjava med skeniranimi in originalnimi STL modeli je bila izvedena v GOM Inspect programskem okolju. Rezultati kažejo, da se največja dimenzijska odstopanja pojavijo na sprednjem pokrovu kamere in znašajo 0,82 mm v smeri *z*. Povprečno dimenzijsko odstopanje sprednjega pokrova kamere znaša 0,0845 mm, povprečno dimenzijsko odstopanje zadnjega pokrova kamere pa 0,0722 mm. Analiza rezultatov dokazuje, da imajo trodimenzionalno natisnjeni izdelki temelječi na papirju dimenzije blizu originalnim iz CAD modelov.

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