CONDOR® intra oral scanner

ANALYSIS OF THE ACCURACY OF THE OPTICAL IMPRESSION

made using the Condor Intra Oral Scanner

This analysis has been made by DR. BRUNO PELISSIER & MAXIME BENAUSSE at the University of Montpellier, France.
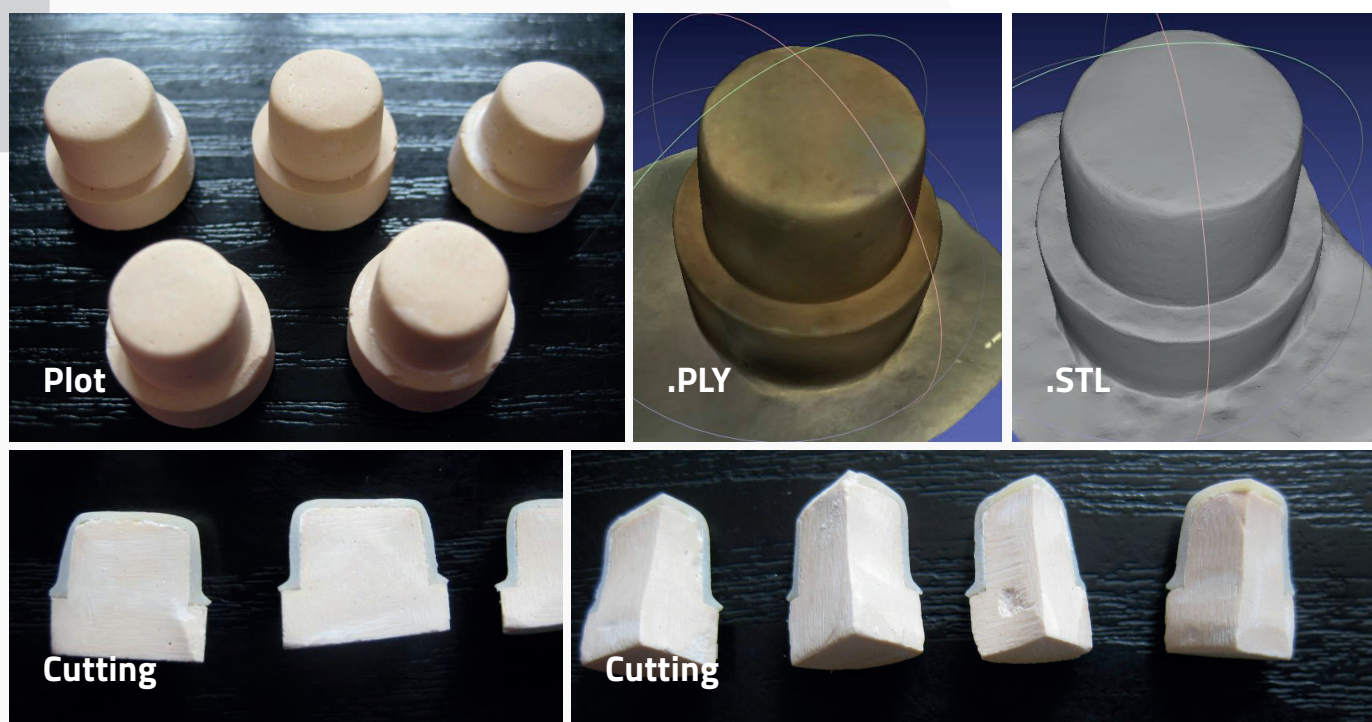
Goal of this analysis

A new intraoral dental scanner (IOS), entirely software dependent, arrived on the market. The objective of this study is to evaluate the accuracy of the Condor intraoral scanner, locally (on a preparation) and regionally (a complete arcade) and compare it to other scanners already in use (Planscan, Itero and Carestream 3500).

Material and method

Models of 5 identical reference pieces (e.g. flattened cone with chamfer), 5 dental preparations and 5 dental arches are made in plaster and scanned, using a tabletop scanner (Imetric 102, CH), in order to obtain 15 reference STL files (3 x 5) with a precision of less than 10 µm. These same 15 models are scanned 3 times using a dental stereoscopic IOS Condor (SAS Condor France) by 3 different operators. They allow to get 45 x 3 is 135 STL/PLY files (3 models by 3 operators).

This manual scanning must be done within a reasonable timeframe, i.e. not to exceed one and a half minutes on the dental preparation or reference piece and two and a half minutes for a complete arch. Each of the 135 PLY/STL files obtained using the Condor camera are compared with 15 reference STL files using the CloudCompare V2 software. Precision histograms are generated based on comparisons with scans from other IOS systems.

1

Plot

.PLY

.STL

Cutting

Cutting

2

Preparation

.PLY

.STL

Crown

Cutting

Preparation

.PLY

.STL

Crown

Cutting

.PLY of a bridge

.STL of a bridge

Cutting

Resetting

Resetting

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.PLY of a natural mandibular arch

.STL of a natural mandibular arch

Table scan

Resetting

C2M signed distances[<1]

0.500000	
0.400000	
0.250000	
0.150000	
0.000000	
-0.150000	
-0.250000	
-0.400000	
-0.500000	

20

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.PLY of a mandibular arch plaster model

.STL of a mandibular arch plaster model

Table scan

Resetting

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