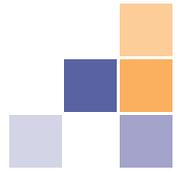


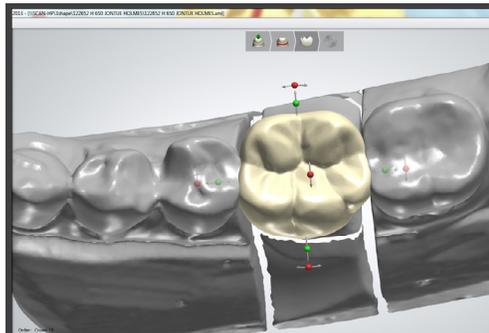
Highland Dental Laboratory reports on the impact of Digital Manufacturing with the EnvisionTEC Perfactory® 4 DDP on their production process.

Case Study



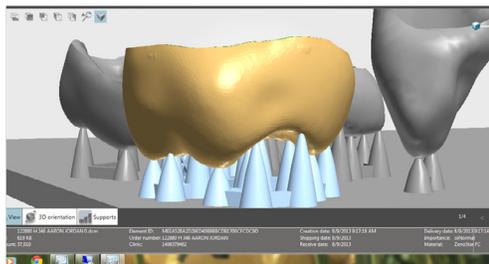
Perfactory® 4 DDP | Press-E-Cast (Wic300)

Highland Dental Laboratory purchased a Perfactory DDP4 printer in December of 2012 for crown and bridge production. We use this machine to produce patterns for casting and pressing and are now in the process of ordering a 3Dent machine for model production.



The crown is placed into general alignment in the "smile composer" screen in order for the software to generate the best proposal.

Our plan is to offer a full digital solution to our clients that include an intra-oral data acquisition device coupled with a full complement of production equipment. This will afford our business an organic growth opportunity from our current customer base and help to attract new business as well. We anticipate labor savings as we digitally design and manufacture the total work flow from model to finished case. Instantaneous data transfer from our dentists will also reduce shipping and infection control costs while enabling immediate communication. In most cases we will be able to see the impression before the patient leaves the dental office.



This is a preview of how the print will actually build the crowns as dictated by the way they are sprued and aligned in the CAM software.

Existing Work Methods

We are a relatively new user of 3shape. We purchased the scanner and CAD design software package together with the Perfactory DDP 4 printer. The 3shape software is primarily used to design full contour alloy, e.max and zirconia while the Perfactory DDP 4 printer prints wax patterns for copings and full contour monolithic crowns that can either be pressed or cast.

Prior to the installation of the 3shape and Perfactory DDP 4 printer we had been hand waxing crowns to be pressed or cast. Although we had the ability to produce our work by hand internally, we felt it was more cost effective to outsource the smaller and less complicated work. Now with the addition of the Perfactory DDP 4 printer we are able to produce a higher quality product at a lower cost than outsourcing.

In-House Production vs. Outsourcing

Prior to acquiring the printer the bulk of our work was outsourced. Only the most difficult cases were done in-house. Now we produce all e.max, zirconia, full cast alloy and most PFM's in house thus giving our lab better quality control and faster turnaround times.



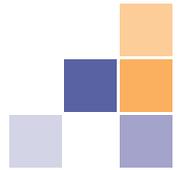
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Perfactory® 4 DDP I Press-E-Cast (Wic300)

“When we were outsourcing, one of the biggest challenges was the inconsistency of the case work and the amount of time devoted to quality control. Now that we have the 3shape and the Perfactory DDP 4 we are able to produce a highly consistent and highly accurate product at a lower cost, and with a faster turnaround time than outsourcing.”

Jason Jones (owner of Highland Dental Laboratory)



Once the print job is complete it's raised out of the liquid base plate and ready for cleaning.

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E.max crown after being devested. This is the rough state before grinding off the sprues.

During the evaluation process we looked at all the printers offered to the dental market and paid close attention to a few key factors. Material consumption and ease of use were high on the list but material options were also a consideration. Eventually it came down to EnvisionTEC. Other systems we considered were limited to one material and had excessive waste during the build process. These factors coupled with reports from other labs regarding the reliability of equipment made our choice an easy one.

EnvisionTEC offers several different printer options based on size of build area and productivity. Ultimately we chose the Perfactory DDP 4 as that model fit our production needs best. The larger build area allows our lab the ability to produce higher volumes in a single run and we are able to produce several runs in a single day.

Following delivery, we were fully functional within one week. The easiest part of the total CAD system was the printer. The scanner and software took longer to learn but now it all fits together nicely.



Plans for the Future

As we expand we expect to have a greater need for EnvisionTEC's high production machines to fit into our growth strategy. Highland Dental Laboratory's main goal was to stop outsourcing for full contour monolithic restorations and we have achieved that easily. We now expect to see growth from the implementation of a fully digital work flow that includes encouraging our clinicians to utilize chair side intra oral scanning.

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About Highland Dental Laboratory

Founded in July of 2006, Highland Dental Laboratory is a full service dental lab located both in Austin and Dallas, TX.

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