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CLEARLY IMPRESSIVE

ASIGA 3D PRINTERS STREAMLINE DENTAL DEVICE PRODUCTION

**ACCELERATING
3D TECHNOLOGIES**

ASIGA PRO2 75 3D PRINTER STREAMLINES THE PRODUCTION OF Orthodontic Clear Aligners

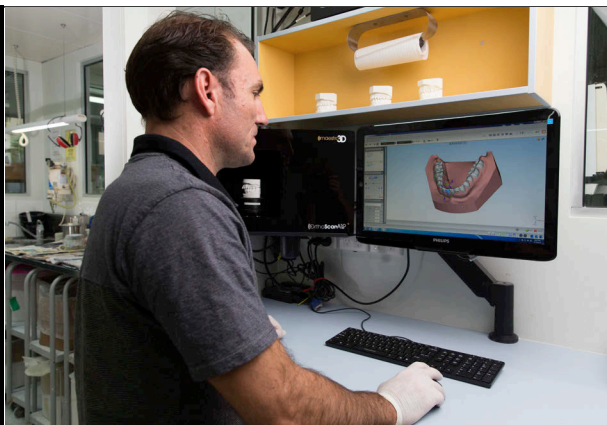


◀ **LEFT:** A dental model is 3D scanned to commence the design process.

It's difficult to name an industry that hasn't been revolutionized by innovation since the turn of the millennium; whether that's the manufacture of cars using robotics, the introduction the iPhone had to the cell phone market or, the example that gets championed most in the 3D printing industry, the effect additive manufacturing has had on the production of hearing aids – over ten million people now wear 3D printed hearing aids. As well as having a profound effect on our aural health 3D printing has totally transformed our oral wellbeing.

Dentistry continues to offer a significant opportunity for 3D printer manufacturers with the global market expected to grow to \$55 billion by 2019 thanks to digital innovations. In this article David Rodwell, who has been exploring how digital innovations can improve dentistry for over 20 years, explains how his laboratory uses Asiga 3D printing technologies in the production of one of dentistry's most desired products...

CLEAR ALIGNERS HAVE proven to be a very useful addition to treatment plans for many orthodontists and dental practitioners around the world. Clear aligners are made from thin thermoformed plastic that gently apply a controlled force to gradually move or adjust a patient's teeth in incremental stages to improve dental alignment. This has proven to be a popular treatment alternative for many patients wanting to avoid traditional braces or correct a relapse from previous orthodontic treatment. The process of clear aligners is fairly simple. In fact, the commercialized process using 3D printers has been around for nearly 20 years with Align Technology, USA, founded in 1997.



- ▲ **ABOVE TOP:** Model manipulation.
- ▲ **ABOVE:** Model production.
- ▲ **ABOVE RIGHT:** Clear aligner production.
- ▲ **RIGHT:** Finished product.

PHOTOS COURTESY OF
RODWELL ORTHODONTIC
LABORATORY



THE PROCESS INVOLVES 4 MAIN STEPS:

1. **Digitizing a patient's teeth.** - by acquiring an image from either a dental impression or cast model using an in-house 3D scanner or directly scanning a patient's teeth using an intra oral scanner.
2. **Model manipulation** - using specialized orthodontic software to manipulate the dentition in a strategic manner.
3. **Model production** - using an in-house 3D printer, in our case the Asiga PRO2 75 to produce an analog production model.
4. **Clear aligner production** - by pressure forming a pre-fabricated plastic blank over each printed model.

The Asiga PRO2 75 has proven to produce a very high standard model. At 50 micron build layer thickness, even the most

discerning practitioners should be more than satisfied with the model's detail. The Asiga PRO2 75 uses DLP technology and also allows the use of many compatible third party materials including Dreve, Pro3dure, NextDent and Detax.

I have found the Asiga Composer software very easy to learn. In fact, Composer software pretty much navigates the process from the time you add the parts to submitting the build to the printer. We have been successful in placing between 7 - 10 clear aligner models per build. We are currently scheduling two builds per day.

At Rodwell Orthodontic Laboratory, our clear aligner business is in a very healthy growth phase and with this, we are fine-tuning and streamlining our process to be more productive. We are not alone. I believe the Asiga PRO2 75 has opened a door for many smaller specialized dental laboratories. A more manageable capital outlay and the

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relatively small footprint of the Asiga PRO2 75 enables smaller laboratories like us, to easily accommodate the machine within their current business activities. ■

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