

New Shining 3D Aoralscan 3 intra oral scanner road test

By Terence Whitty



Figure 3. Cart option.

NTRAORAL SCANNING has now become mainstream in dentistry and the uptake, especially in the US, Europe and Australia, has been phenomenal to say the least. Acquisition is the first-and arguably the most important-component of the Digital Dentistry Workflow. The majority of dental labs now work with digital scans of the dentition, so intraoral scanning replaces the need for traditional impression taking and model pouring in the clinic and model scanning in the lab and importantly rests control of accurate 3D scan acquisition with the dentist.

Siemens first commercialised the intraoral scanner way back in 1985 with the launch of CEREC. Whereas the scan, design and mill workflow introduced by CEREC has endured, the subsequent increase in applications, the choices of technology now available and the outcomes possible have revolutionised dentistry.

While intraoral scanning has been an option for over 35 years, it has only come into its own in the past decade or so. In recent times, the entry of multiple manufacturers into the market offering a range of products at all price points has seen scanning wands land in the hands of more dentists than ever. Confidence in digital intraoral impressions has surpassed analogue impressions and whilst clinical dentistry embraced going digital relatively recently, dental laboratories have had skin in the game for almost three decades and couldn't wait for dentists to catch up.

Circa 2021 and the features available even on value-priced scanners is amazing. You can take scans for just about everything you would have taken a traditional impression for nowadays including diagnostic models, fixed and removable prosthetics, implant restorations, surgical guides, splints, aligners and other orthodontic appliances plus sleep devices.



Figure 4. Scanning software interface wizard mode.



Figure 6. Co-ordinate adjustment.



Figure 8. Margin line detection and mapping.

This article introduces the amazing Shining 3D AoralScan 3 intraoral scanner, which is packed with features, giving you food for thought when it comes to choosing a new scanner.

The AoralScan 3 is a video-based scanner at 15 frames per second, which means it's capturing a lot of pictures compared to the single shot camera scanners; more frames means more data to work with and ultimately greater ability to calculate precision and accuracy. It's also a full colour scanner with realistic colour that gives you and your patients instant feedback and a certain "WOW factor" as you scan. The colour render engine is excellent and can be calibrated to suit your needs. The scanner is powderless, so no messy powder is needed and it will easily capture teeth, soft tissue, amalgam restorations and most shiny surfaces as well, saving valuable chair time in application and clean-up.

This third generation scanner has been completely redesigned from version 2 to be more ergonomic. It weighs in at at only 240 grams, making it one of the lightest scanners on the market. However, it still feels solid and is designed to be held with ease.



Figure 5. All software functions for scanning can be done with gestures from the scanner.



Figure 7. Occlusal mapping.



Figure 9. Tooth number masking.

The removable tips of the new Aoralscan 3 have been redesigned and are longer and narrower, making it easy to reach posterior teeth. There is also an additional smaller-sized tip for difficult access patients as well as children and the tips can be changed during the scanning process to cover every situation. The tips are heated to counter fogging so no erroneous or distorted images are introduced into the scan. The tips can also be autoclaved up to 100 times each - the scanner comes with 5 tips straight out of the box, so you're good to go for your first 500 scans!

The scanning technology of the Aoralscan 3 has been improved in many ways, including a massive 58% increase in the field of view and the utilisation of a new imaging mechanism. Improvements in the software accuracy has also been increased by 30%. The speed of scanning has been improved by 25% and the scan depth has been increased to 22mm. All these improvements effectively add up to a brand new scanner with far superior speed and accuracy than anything in its in its class.

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Figure 10. Undercut detection.



Figure 12. Proven Accuracy. Example colour coded deviation map.

There is a new Artificial Intelligence function that allows you to scan away and not worry if you pick up a bit of cheek, tongue or your finger in the scan as the software will recognise this and automatically trim it away, leaving you with just the important parts of the scan - a nice feature indeed.

Using the Aoralscan 3 is very straightforward and Shining 3D have tried to make it as intuitive as possible - just pick up the scanner from the newly designed cradle and it's ready to scan. You just start scanning and you don't need to touch a mouse or a screen as all functions can be executed from the scanner itself. There is one button on the scanner plus built-in sensors which allow you to interact with the software hands-free using a menu on the screen and a series of gestures working through the scanning process - viewing the scans, tilting and panning can all be accomplished in this way. This is a very good way to work, especially in a dental surgery where touching surfaces needs to be kept to a minimum, not to mention the convenience of executing all software commands from the scanner itself.

Speaking of the software, it's very easy to use with a wizard-type interface at your fingertips, making the whole process a breeze. As a bonus, the scanning software can directly integrate with the exocad suite of CAD software, making it a very powerful system indeed.

For scanning, just setup the type of job you would like to do and the software will automatically prompt you and tell you exactly what action needs to be taken next. For example, if you want to scan a case for two anterior implant sites, the software will tell you when to scan the tissue, the implant scan abutments (scan flags), the opposing dentition and of course the bite registration.



Figure 11. Direct Integration with exocad CAD software.



Figure 13. Oral health report.

In fact, one of the most impressive actions is taking the bite registration where a small scan is taken in the registration area and alignment is performed automatically; it's most impressive! Remember, you could take a bite in CR or CO or in a specific bite such as a construction bite for a splint or a sleep device. Just use your normal bite technique with wax or bite registration material and scan away, making sure there is not too much overhang and you will nail it every time.

The software offers more features such as undercut detection - valuable when trying to get preps parallel, margin line detection, occlusion maps and an interesting new feature called the *Oral Health Report*.

After scanning, the software will generate an *Oral Health Report* which includes information such as existing dental caries, missing teeth, dental calculus, pigment, etc. The idea here is to give patients a visual report to help relay a better understanding of their oral health - a novel idea indeed.

Also, an orthodontic simulation module is included, allowing a virtual setup and a visual treatment plan for the patient. This is primarily aimed at clear aligner cases but can be adapted to traditional fixed appliances as well. Of course, we all know orthodontic simulation is a big deal nowadays, so no scanner is really complete without this function!

There is also a neat feature I really like where you can turn your scans into files that are ready to print on your favourite 3D printer. You can even add labels; this is a really helpful feature.

The calibration module is simple and easy to use - just plug the head of the scanner into the calibration unit, press a button and the rest is automatic. The software will even tell you when it's time to calibrate.

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Figure 14. Cloud communication, storage and inspection portal.



Figure 16. Ortho simulation Occlusal.



Figure 18. Implant scan - note depth of tissue scan.



Figure 15. Marking of teeth for Ortho simulation.



Figure 17. Ortho Simulation facial view.



Figure 19. Scan markers in implant scan.

Finally there is a specific cloud data transmission platform that allows efficient communication between clinics and dental labs, or other clinics of course. It allows transfer of scans, data storage, order tracking and a streamlined communication system between dental surgery and laboratory. The scans are instantly available on your own computer as they are saved locally, so you have a choice if you wish to save them to the cloud as well.

With the Aoralscan 3 you get a heck of a lot of bang for your buck. It's a fantastic, easy-to-use powderless colour scanner with speed and accuracy to please everyone. A solid and full software suite is included that will do everything that you will need it to plus there is exocad integration. If you really want to take it to the next level, the cloud portal and communication software is hard to beat with no annoying ongoing "click" fees or upgrade fees. All this at a price that is so affordable you can buy one for each surgery. For more information about the Shining 3D Aoralscan 3, visit https://www.fabdent.com.au/aoralscan.html

About the author

Terence Whitty is a well-known dental technology key opinion leader and lectures nationally and internationally on a variety of dental technology and material science subjects. He is the founder and owner of Fabdent, a busy dental laboratory in Sydney specialising in high tech manufacturing. Using the latest advances in intra- and extra-oral scanning, CAD/CAM, milling, grinding and 3D printing, most specialties are covered including ortho, fixed and removable prosthetics, computerised implant planning and guidance, TMD, sleep appliances and paediatrics.