



# All-ceramics versatility

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## Open-architecture equipment and open partnership options combine with next-generation materials to help laboratories create exceptional restorations.

Noritake, a ceramics technology company, synthesizes the most advantageous features of dental ceramics: pressable ceramics, layering ceramics, and an exceptionally translucent YTZ zirconia material. Noritake's 1,200-MPa zirconia copings exhibit fracture toughness, marginal integrity, and cementability. The availability of nine shades that correspond to the Vita-Lumin shade guide give the laboratory technician versatility while offering the esthetics of pressable ceramics.

The following technique illustrates how to create a beautiful yet strong all-ceramic restoration using Noritake's CZR Press system, Katana YTZ zirconium, and an integrated outsource solution from Custom Milling Center (CMC).

**01** Scan the model using the Dental Wings scanner to create an STL file (**Fig. A**). **Note:** CMC offers different business models to accommodate the desired level of laboratory involvement. The basic level allows the lab to send either models or dies to CMC, where they are scanned, the case designed, and framework milled. In the second level, the lab purchases a scanner from CMC for full control of the scanning process and design of the restorations.

**02** Design the desired framework for the press-to-zirconium technique.

**03** Electronically send the digital STL file to CMC for fabrication.

**04** When the STL file is received, CMC splits it into two separate data files (**Fig. B**), allowing for simultaneous manufacturing of the zirconia substructure and either printing or milling of the full-anatomical wax-up.

**05** The Katana zirconia milling machine (**Fig. C**) receives the STL file to mill the zirconia substructure to exact details (**Fig. D**).

**06** The wax printer or milling machine creates a full anatomical wax-up that will be used in the press-to process (**Fig. E**). **Note:** This process is designed to save time for dental laboratories, allowing technicians to concentrate their skills in other value-added areas.

**07** Prepare the milled YTZ zirconium-oxide framework for the pressing procedure.



### All-Ceramic Restorations

- Dental Wings scanner allows scanning and design to be done in-laboratory
- Open-architecture STL files can be split into milling and waxing components
- The cementable milled zirconia frameworks exhibit fracture toughness and marginal integrity
- Rewards program reimburses participating labs for all or part of scanner lease payments

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**08** Thin the framework as necessary (0.4-mm minimum thickness).

**09** Weigh the framework and record to determine the number of ingots necessary to press (**Fig. F**). **Note:** The pressing ingots are offered in a total of 20 shades, including four bleach shades, with two translucent levels.

**10** Sprue, invest, and press according to Noritake recommendations in any manufacturer's press furnace.

**11** Divest, cut off sprues, reduce, and cut-back pressable material respective to chosen technique (i.e., staining or layering technique).

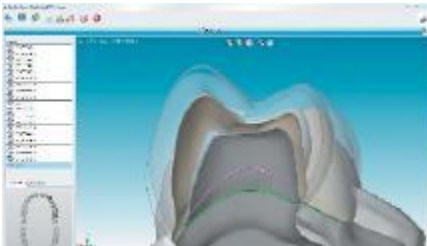
**12** Complete the functional build-up using Noritake CZR ILS (Internal Live Stain) and Luster Opal Enamels (**Fig. G**).

**13** Sandblast the framework using 50-micron aluminum oxide at 25 psi (**Fig. H**), then ultrasonically clean.

**14** Characterize with ES (External Stain) and apply glaze if using the Staining Method. Minimal staining results in an esthetic restoration displaying optimal opalescence and strength (**Fig I**).



**Fig. A** The Dental Wings 5-axis scanner allows simultaneous scan and design steps with open-architecture STL scan data output.



**Fig. B** The STL data can be split into separate milling and waxing steps.



**Fig. C** The robust Katana milling machine uses the STL files to mill zirconia frameworks to exact details.



**Fig. D** Katana milling creates a shaded zirconia substructure for press-to technique.



**Fig. E** Create a full anatomical wax-up by either printing or milling.



**Fig. F** The pressing ingots are offered in a total of 20 shades, including four bleach shades, all with two translucent levels.



**Fig. G** Pressed CZR H ingot to zirconia coping.



**Fig. H** Sandblast the crown using 50-micron aluminum oxide at 25 psi in preparation for the stain technique.



**Fig. I** The completed restoration combines strength, esthetics, and a “never before seen” opalescent quality.