

# Zirkonzahn®

*Human Zirconium Technology*



## ZIRCONIUM MILLING TECHNOLOGY

*Move the world with your hands*



Patented system

# The Inventor.

Dear colleagues,

Please allow me to look back on the development history of our milling system.

Five years ago, I had the idea of elaborating zirconium by the means of a manual milling unit. A lot of patience and inventiveness was needed from the first idea to the actual realization of the milling unit ready for sale. I started with a wooden model and tried out several possibilities, before I developed a working prototype. After two years and 15,000 milled units, the first unit was ready for sale. Thanks to international teamwork we were able to sell our system in 60 different countries.



This brochure will tell you more about how the machine works. It would be a pleasure for me, if after having read it, you feel like trying out my system.

I am looking forward to your reaction!

Sincerely,

A handwritten signature in black ink that reads "Juris Stejneger". The signature is written in a cursive style.

## MANPOWER

### *Move the world with your hands*

This is the motto of our milling system.  
It provides the technician with the possibility to make high-quality units with his own hands.



**Zirconium** is one of the oldest and most abundant elements in the terrestrial crust and it is the basis for Zirconium oxid (yttrium stabilized Zirconium dioxid). This first-class-performance material was successfully used for artificial limbs and joints in the medical field in the last decades and now it is also available to the dental industry.

Due to its excellent biological characteristics, Zirconium is nowadays the preferred material for dental restorations. Its use in the dental field is on the increase since the 1990s. It is assumed that 15,000 to 20,000 units are made in zirconium every day. Laboratory tests revealed that zirconium bridges and metal ceramic bridges on the basis of precious metal alloy show the same fracture resistance.

«ZIRCONIA-  
the ceramic  
material of  
the future»

**MATERIAL AND WORK EXPENDITURE**

|   |                                       |
|---|---------------------------------------|
| Milling bur consumption:                            | approx. 80-100 units per bur          |
| Milling time per unit:                              | approx. 10-15 min. per unit           |
| Time for modelling:                                 | approx. 10-15 min. per unit           |
| Sinterization cycle:                                | approx. 8 hours                       |
| Maintenance:  | Cleaning and lubrication              |
| Wear and tear:                                      | Wearing parts can be easily exchanged |
| Consumption furnace:                                | 900 Watt                              |
| Total costs per unit, incl. all costs also ceramic: | 15 €                                  |
| Preparation:  | All kinds of preparation possible     |

**IMPROVE YOUR  
MILLING  
TECHNIQUE**

Our product range includes special instruments for milling all kinds of abutments and other demanding works.





## Zirconium milling technology.

Zirkonzahn Ltd offers individual solutions of manual milling technology.

Technical solutions – for simple as well as highly complex and demanding constructions.

A wide range of accessory material rounds off the system.

### ICE ZIRCONIA TRANSLUCENT AND ZIRCONIA PRETTAU

Both ICE Zirconia materials can be used for crowns and bridges.

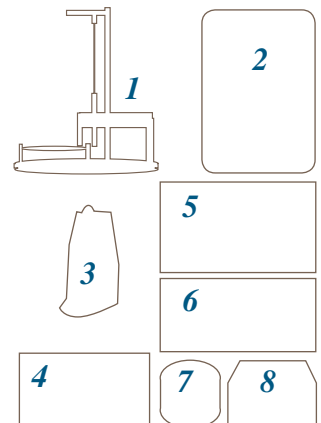
Due to the high level of translucency the Zirconia Prettau is especially suitable for full zirconia bridges.

### ICE ZIRCONIA TRANSLUCENT

| COMPOSITION                            | Specification |                  |
|--|---------------|------------------|
| Zr O <sub>2</sub> (+HfO <sub>2</sub> ) | %             | : Main component |
| Y <sub>2</sub> O <sub>3</sub>          | %             | : 4.95 ~ 5.26    |
| Al <sub>2</sub> O <sub>3</sub>         | %             | : 0.15 ~ 0.35    |
| SiO <sub>2</sub>                       | %             | : Max. 0.02      |
| Fe <sub>2</sub> O <sub>3</sub>         | %             | : Max. 0.01      |
| Na <sub>2</sub> O                      | %             | : Max. 0.04      |
| Density (g/cm <sup>3</sup> ) sintered  | 6,05          |                  |
| Hardness (HV10)                        | >1250         |                  |
| Weibull modulus                        | >10           |                  |
| Flexural strength R.T.(MPa)            | >1200 (MPa)   |                  |

### SOME COMPONENTS OF THE SYSTEM

1. Milling unit „Designer Zirkograph“
2. Sinter furnace „Zirkonofen 600“
3. Infrared Preying lamp
4. 5th axis
5. Assortment of ceramics
6. Assortment of stains
7. Zirconia blanks
8. Colour liquid (for the colorization of zirconia)

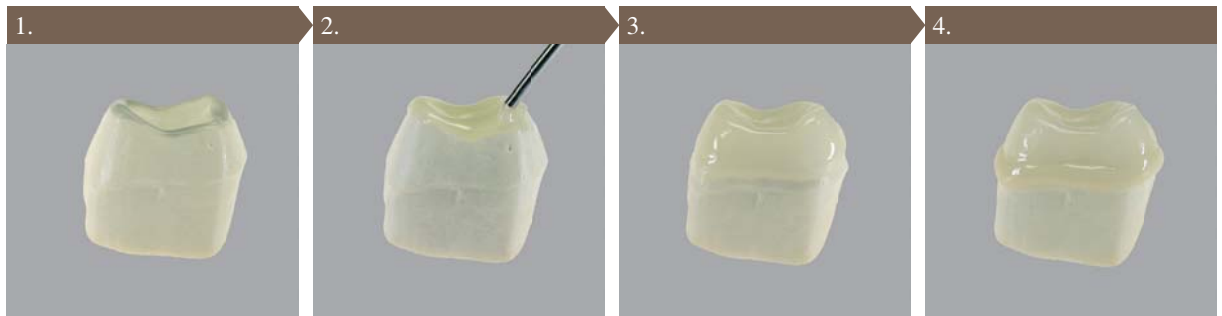




## Mock-up frame construction.



No limits on the type of preparations.

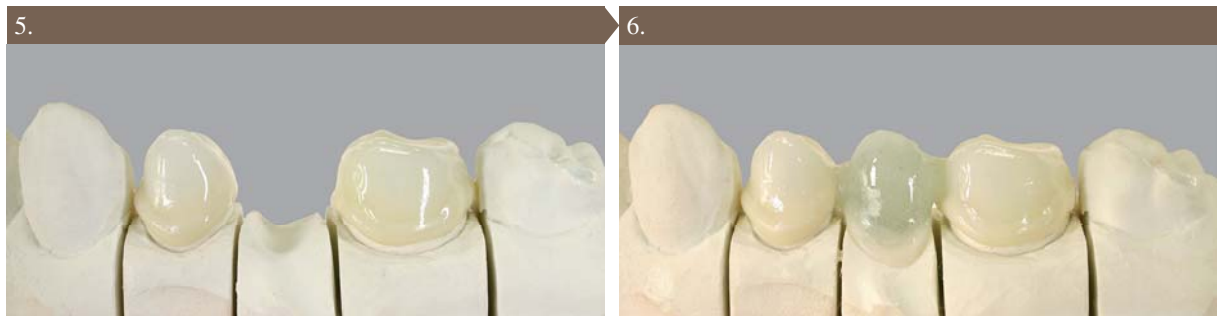


1. Round off sharp corners  
– block out undercuts  
(Vaseline)

2. Apply Rigid T

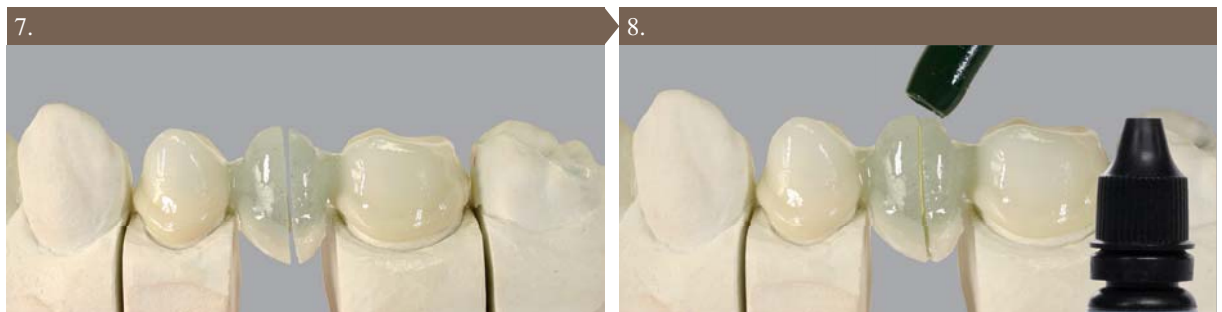
3. Apply Rigid T stopping 1  
mm above the margin and  
cure

4. Finalize margins with Rigid



5. Finalize crowns – do not elaborate

6. Insert bridge pontic (light cure tray material)



7. Cut bridge pontic

8. Reconnect bridge pontic  
(without plaster basis)



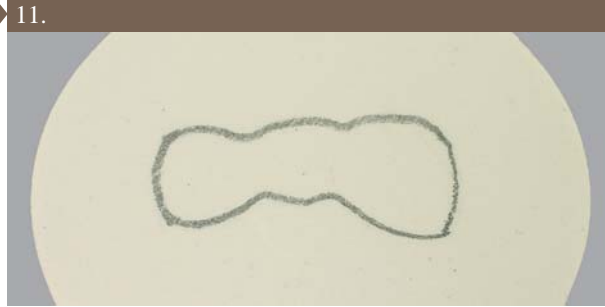




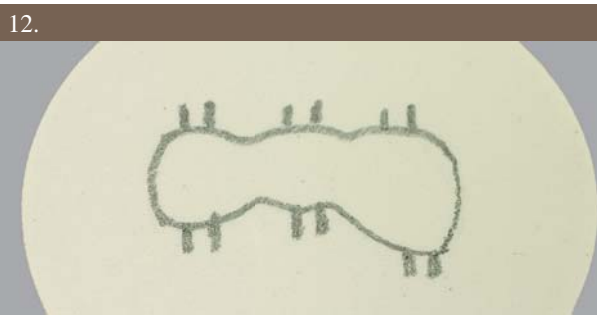
9. Resin template (Frame)



10. Mark perimeter on template



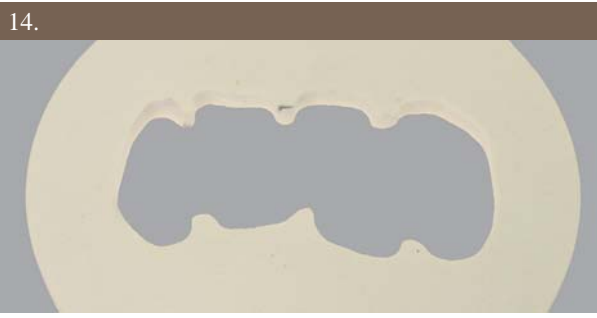
11. Marked perimeters



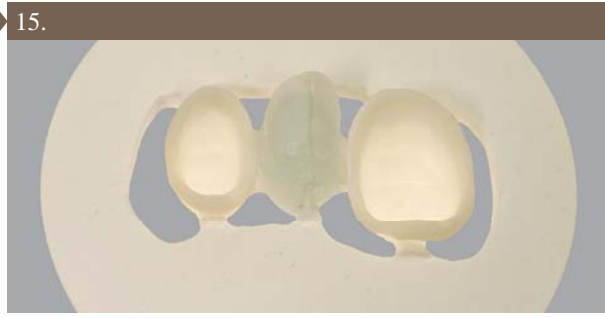
12. Draw connectors



13. Cut with tungsten bur



14. Cut template



15. Fix bridge into template



16. Double check fixed bridge on model



17.

## Milling procedure.



Start the milling process with the 4L bur. Use smaller instruments for fine and final milling.

1.



Glue Zirconia block into position at both ends

2.



Mill the outer form by using the bur 4L

3.



Do not push too much during milling

4.



Remove surplus material of the outer margin

5.



Mill down to margin level

6.



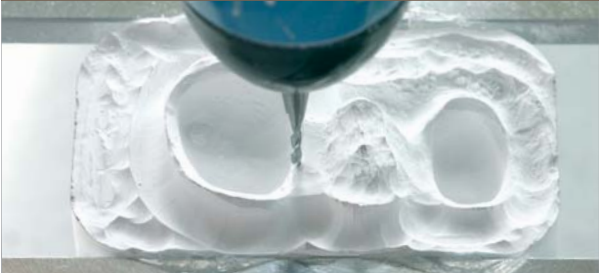
Internal milling of crowns

7.



Further detailed internal milling with 2L bur

8.



Precise internal milling and smoothing with 1L bur

9.



Milled unit – ready for disconnection

10.



Disconnected bridge with remaining support base – ready for immersion into Colour Liquid

11.



Dip into Colour Liquid for 5 seconds



Put the objects under the infrared pre-drying lamp. Overnight sinterization – firing cycle approx. 8 hours.

## Stratification.



“Much dentin – little enamel!”  
Zilio Aldo, Venice



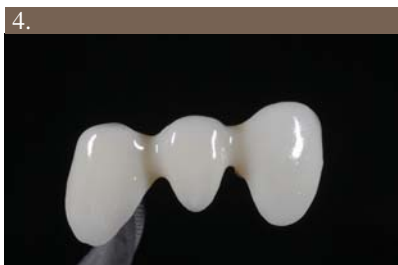
1. Elaborate zirconium frame structure with zirconium dioxid stones



2. Blast structure with aluminium oxyd at bar



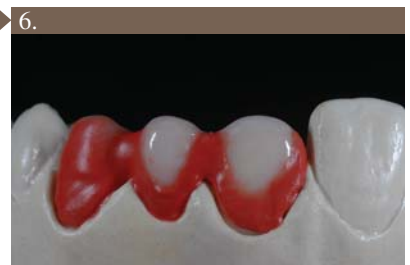
3. Apply washbrand with dentin opaquer (high fluorescence)



4. Increase temperature 100°, holding time 2 min.



5. Surface should be as smooth as glass



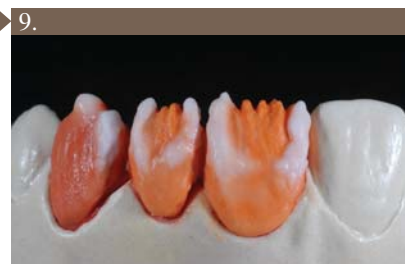
6. Apply dentin with 50% of dentin orange



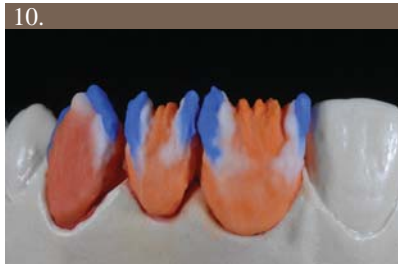
7. Apply dentin



8. Indentation of dentin in incisal areas



9. Apply thick coat of transpa 3 at the sides



10. Apply transpa blue into the approximal space



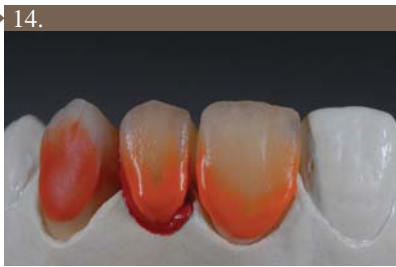
11. Apply the corresponding enamel mass in forms of stripes



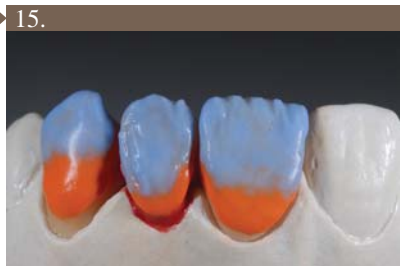
12. Apply transpa masses



13. First intermediate firing



14. Apply only dentin on the cervical area



15. Add enamel



16. Apply T3 on incisal and approximal area

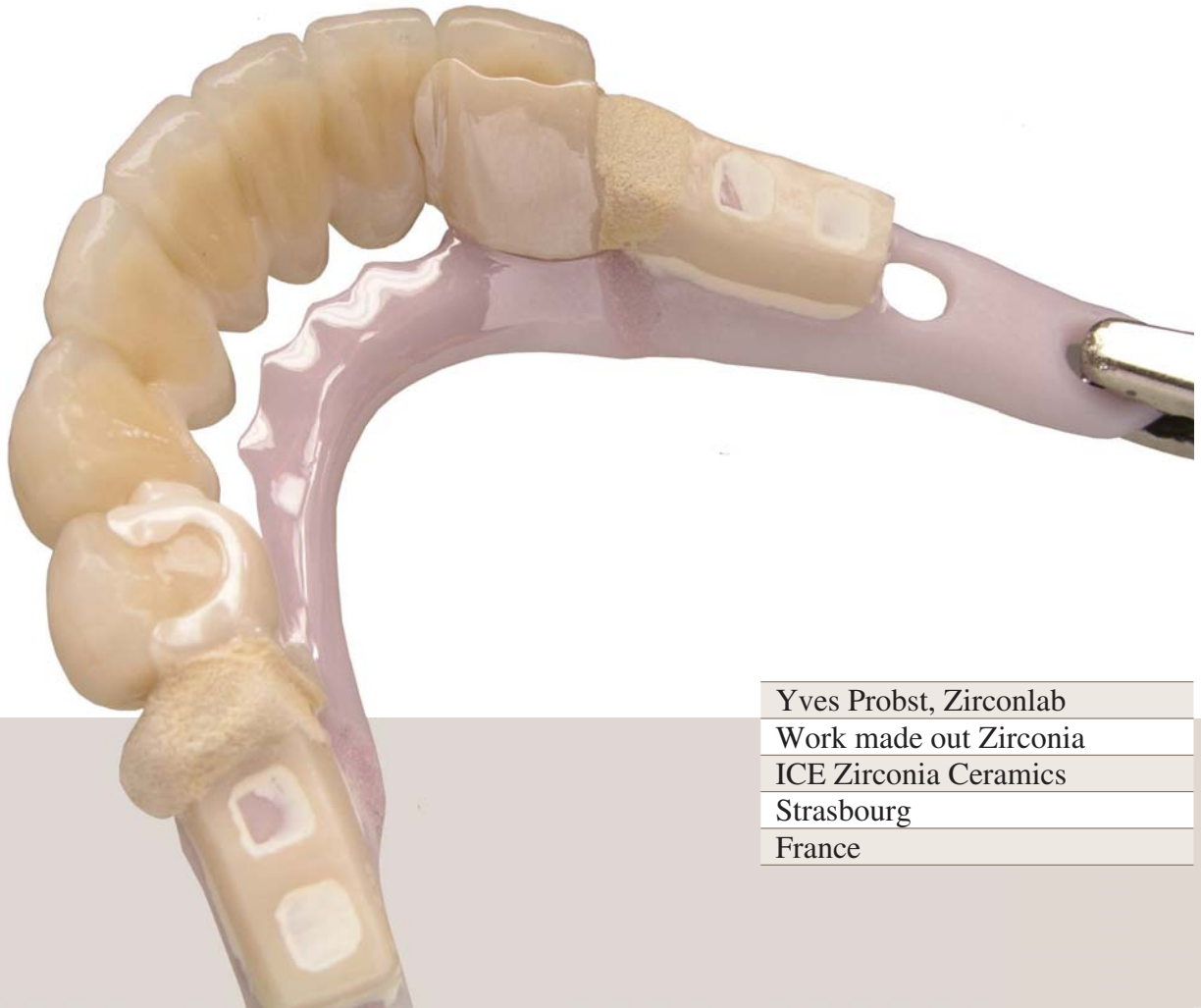


17. Bridge – after final firing

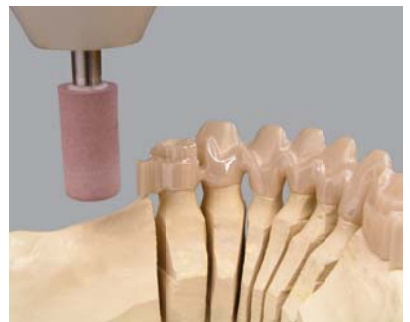


Zilio Aldo, Venice

## Cases.



|                        |
|------------------------|
| Yves Probst, Zirconlab |
| Work made out Zirconia |
| ICE Zirconia Ceramics  |
| Strasbourg             |
| France                 |

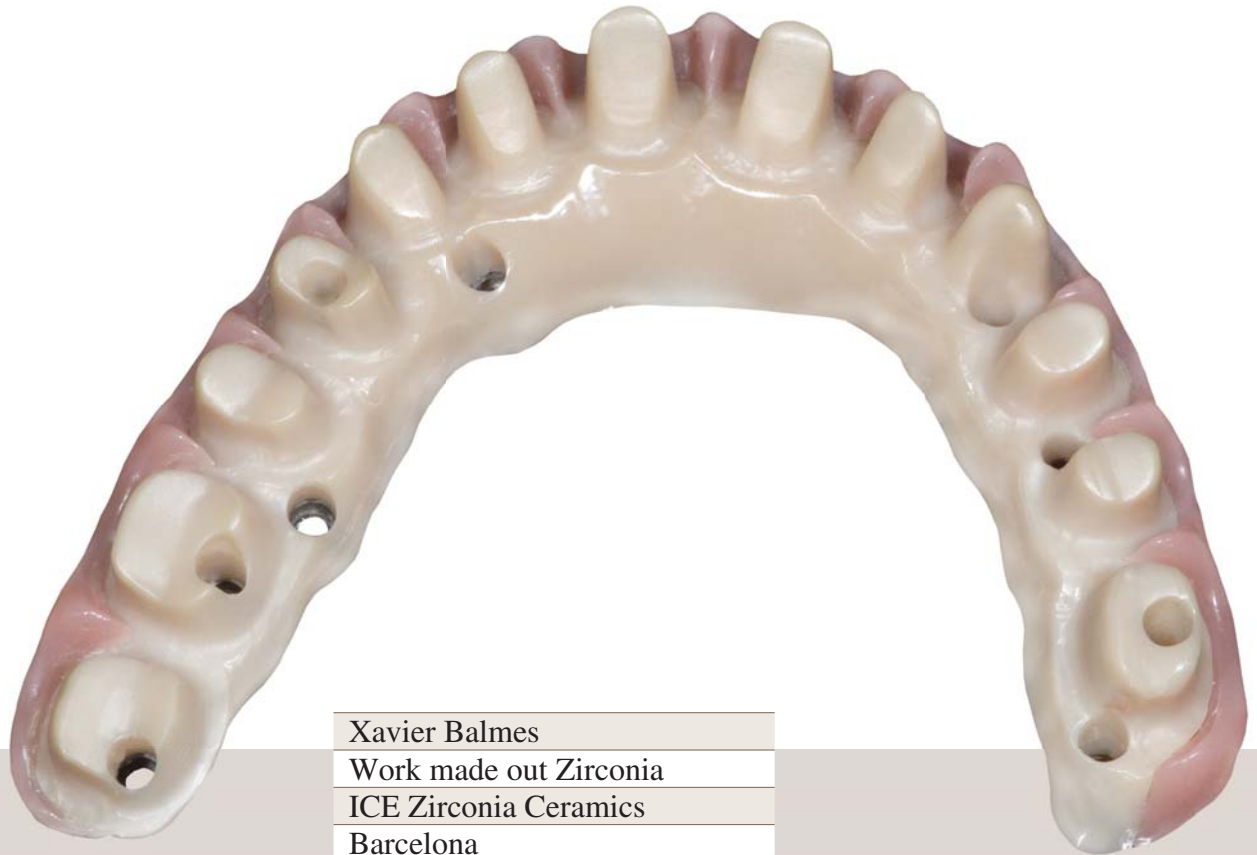




|                          |
|--------------------------|
| Georg Walcher, Zirkozahn |
| 100% Zirconia            |
| ICE Zirconia Ceramics    |
| Bruneck                  |
| Italy                    |



## Cases.



|                        |
|------------------------|
| Xavier Balmes          |
| Work made out Zirconia |
| ICE Zirconia Ceramics  |
| Barcelona              |
| Spain                  |







|                        |
|------------------------|
| Zilio Aldo             |
| Work made out Zirconia |
| ICE Zirconia Ceramics  |
| Venice                 |
| Italy                  |





South Tyrol – the magic of diversity

Nice sociable people and good food make your stay unforgettable



Enjoy with us South Tyrol's nature and calmness



Laboratory Steger

## Introductory courses.

Every week we offer several introductory courses on the zirconia milling systems in our education centre in Bruneck (South Tyrol).



### PROGRAM:

- Introduction to the milling concept
- Manufacture of resin frame work
- Tension-free frame assembly
- Milling zirconia
- Frame refinement at presintered stage
- Colouring
- Sinter fire over night
- Fitting and frame preparation for bonding
- Other hints and tricks

### COURSE DURATION:

Day 1: 9 am to 6 pm (approx.)

Day 2: 9 am to 12 pm (approx.)

Cost per person: 190,00 € (excl. tax)

Maximum participants: 12

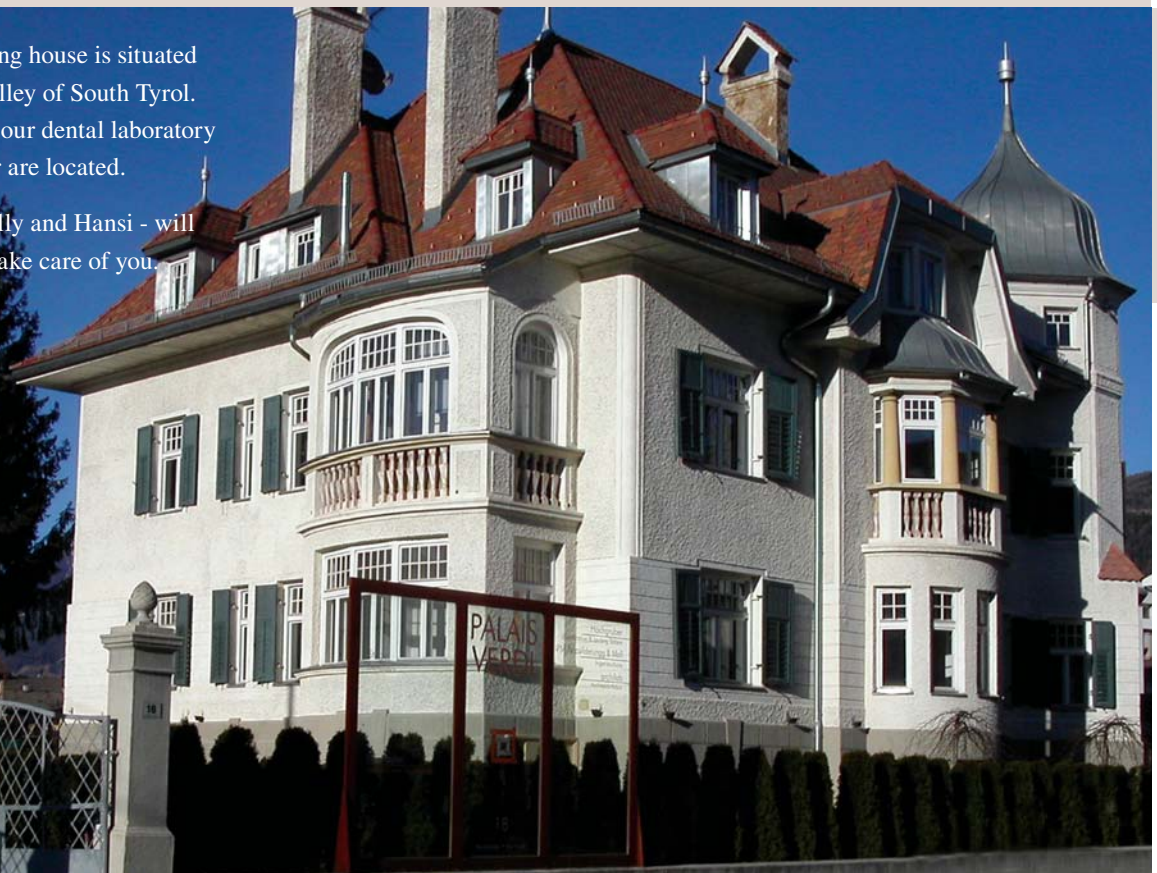
### REGISTRATION AND FURTHER INFORMATION:

[www.zirkonzahn.com](http://www.zirkonzahn.com)

TEL: +39 0474 066 670

This old and charming house is situated in a mountainous valley of South Tyrol. It is the place where our dental laboratory and education center are located.

Our presenters – Willy and Hansi – will train you there and take care of you.



# Zirkonzahn®



## ZIRCONIUM MILLING TECHNOLOGY

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ENGLISH



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