What must a dental brush be capable of?

Professional mixing
Mr Gausmann, could you please give a brief description of your core tasks at VITA.
I am manager of the technical services at VITA. The department consists of the VITA courses, education department, application technology and the hotline. We are responsible for the organization, coordination and implementation of international VITA courses. A very important area of responsibility is the education department, which coordinates and implements worldwide the internal and external education of our employees.

Question:
How many course lecturers work in the porcelain sector worldwide for and in collaboration with VITA?
Over 100 external course instructors work full-time and part-time worldwide for VITA in the veneering porcelain sector.

Question:
Approximately how many course participants do you have annually?
The number of international course participants can only be estimated, however, it is many thousands of participants.

Question:
You decided to implement Renfert’s lay:art system of mixing palettes and brushes as a standard for your course instructors. Why is it important to you?
As course director the system gives me the possibility of providing each of my instructors tools which perfectly complement individual techniques. They select their preferred combination of palettes and brushes and thus improve their accustomed technique.

Question:
What trend do you envision in the porcelain sector and what innovations does VITA offer?
Starting in Autumn 2013 VITA will provide VITA SUPRINITY, a CAD/CAM block, which had its premiere as a world innovation at the IDS. VITA SUPRINITY is a zirconium-ox-
“I think the combination of high-quality VITA materials and the lay:art system of Renfert is a genuine high-end combination.”

Thomas Gausmann, VITA

We are listening to our customers’ requests

The intelligent high-tech crystal aqua is now available in a compact, smaller size.

Thank you for the very positive feedback regarding our new lay:art system. This is the highest praise and confirms our development aims. With the new crystal aqua s we want to cater more for your individual wishes and also offer the most popular functional concept of our crystal aqua lay:art system in a compact design.

- Extremely smooth, abrasion-resistant float glass, which is also gentle on the brush
- Precise moisture control
- No drying of the porcelain
- Shape and dimensionally stable foam strips from medical technology (odorless and anti-mould effect)
- Compact dimensions

New

The market trend in the porcelain sector is not uniform worldwide, as due to the different developments in countries there are marked technological differences – particularly in the CAD/CAM sector. Generally, however, it can be seen that also the emerging countries are catching up quickly. With the growth in prosperity one thing is certain, prosperity promotes the desire for quality, precision and aesthetics, fields in which VITA and Renfert in my opinion are optimally positioned.

I think the combination of the high-quality build-up materials of VITA and optimal tools – excellently provided by the lay:art system that we recommend in our courses – coupled with expert instructions by our course instructors is a genuine high-end combination. On the one hand our course instructors are pleased to have available an all-round concept and on the other hand our course participants are delighted by the new system of mixing palettes and brushes.

A special thanks to Mr Gausmann!

lay:art crystal aqua s, Art. No. 1043 2000
Palette: 159 × 4 × 90 mm, housing: 211 × 28 × 147 mm

lay:art crystal aqua xl, Art. No. 1043 1000
Palette: 220 × 4 × 120 mm, housing: 291 × 36 × 223 mm
At the very beginning of the porcelain brush technique there was only the standard Aquarell brush for artists. Then there were continuous individual adaptations for the dental sector, which did not really re-interperte the brush instrument.

lay:art style – The first special dental brush
The aim of our development was to create a genuinely new dental brush from scratch, which if possible perfectly fulfils all of our requirements for optimal building up of porcelain. To do this I had to familiarise myself with brush manufacturing technology to find out how one brush is more suitable than another and how I can influence these properties during development. Simple advertising claims were no longer sufficient, as from now on there are clear parameters on which the quality of dental brushes can be measured. My findings follow from one dental technician for dental technicians.

Requirements
1. One thing in common: the difference in performance
Firstly, I had to find out which requirements are stipulated by the majority of dental technicians and determined: all demand that they are able to continue using their special technique unchanged! An example: All have the same aim, i.e. consistently moistened brush with a perfect tip. Each technician, however, has developed her/his own, unbelievably quick routine, a completely individual and intuitive pattern of movements: brush in glass of water, then shake, wipe on the foam or cloth, hit against the edge of the bench, taper to a point in the mouth etc. If a brush does not behave as it should, the whole process flutters, the rhythm is lost and this costs time and nerves.

Other sub-processes differ greatly depending on the technician, e.g. method of building up, way of holding the brush and the type of mixing palette. It is impossible that one single brush could incorporate all these differences.

Finding 1: I had to develop not one but several versions of a brush, so that each technician receives an instrument that optimally supports her/his special routine.

2. We place the highest requirements on the brush tip
These must be fine and at the same time stable. The tip must also have a very high tension force and in particular a very high service life, be easily shaped (taper) and not flare out. All these characteristics however, are contradictory.

Finding 2: The traditional fabrication technique is the reason for this conflict. I therefore had to discard this tradition and develop a completely new concept to make these contrasts compatible. I was successful.
3. The most complex requirement was the moisture concept

The different, individual techniques as described in 1. have the biggest effect here. There are two major requirements when talking about moisture within the brush tip:

- Storage (the amount of water)
- Transportation (the flow from and to the brush)

We now therefore differentiate between a large and small water reservoir and between quick and slow water transportation. Why? The reason is again the individual technique. Depending whether I shake the brush lightly or strongly, taper in the mouth or rotate it over dry or moist foam etc., I influence the moisture behavior and therefore the consistency of the porcelain. In addition, do you pick up a lot or little porcelain, do you apply longer or point wise on the tooth, do you have a self-moistening mixing palette or more regulate the moistness in the brush etc? As you can see many variations are possible.

With regard to the porcelain it could also be generally stated: if the porcelain we pick up is very moist and of a very loose consistency, then the brush should absorb a little moisture, so that the porcelain is placed quicker and more controlled on the brush. If the porcelain is more dry and stiff (set) more moisture is required when picking up the porcelain, to make it looser and easier to pick up. Dental technicians who pick up large amounts of porcelain generally prefer greater moisture release than those who rather pick up small amounts.

Finding 3: In my investigation I was able to confirm Finding 1, as the versions of the brush must differ in their moisture handling. I was able to condense the large number of types of applications into 8 special moisture and shape concepts.

Aims

1. Invent a new brush manufacturing concept, which will meet the different and greater demands of the brush tip
2. Design 8 brush shapes, which have clear differences but the tip is always still the same.
Influencing factors of the brush tip

Hairs, a distinctive feature
It is not without reason that the Aquarell brushes made from Kolinsky hair proved to be the most suitable. The load-bearing capacity of this hair sets it far apart from all other types. However, there are also great differences in quality in this area. “Kolinsky hair” is not a protected name and anyone can use it, even with “poor quality” hair.

Pre-treatment of the hair is also part of the quality criteria, as depending on the amount of care taken the brush hair has better or poorer properties.

Solution:
We require the best quality hair for our needs. In this case it is actually true that the most expensive is also the best. The price results from the difficult and exclusive selection procedure, the manufacturing process, the complex preparation and refinement of the raw hair.

The hairs of the lay:art style are:
> tail hairs of a male Kolinsky marten, which generally have the longest and finest tips with the highest tension force
> from the winter fur of an older male animal (approx. 3 – 5 years)
> from animals from particularly cold regions (border region of Siberia and China), whose hairs are very resistant due to the weather conditions – from a certain, less mechanically stressed area of the tail

Refinement of the hairs
The natural oil content prevents water absorption, too little oil reduces the tension force. I developed a procedure with which it is possible to set the oil content of the hair precisely; high enough, so that the water uptake function is correct and the tension force only reduces slightly.

Manufacture
The professions of hair finishers and brush makers rely greatly on their tradition. With this classic design the hairs are arranged similar to a pyramid, i.e. the longest hairs are in the tip and the hair becomes ever shorter towards the outside.

This procedure is perfectly designed for the classic use of the brush. The color can be extracted better from the brush in this case. In contrast the brush is moved against the direction of the hair in dental technology.
Wet the brush and leave it to sit 2-3 min before using, so that the hair has time to absorb the water.

Very important: It is recommended to dry the hair after use. If the protective sleeve is attached after use, the moisture condenses on it. With hair that always remains moist the moisture penetrates too deeply between the cuticles and medulla and the memory effect is lost. The cuticles no longer return to their position and the tensioning force is lost. If you nevertheless want to fit the protective sleeve, trim ventilation holes in the protective sleeve with a round bur to the height of the hairs.

Disadvantage for dental technicians
If the tip includes very fine hairs, it is too fine and produces only very low stiffness and tension force. With very strong hairs the resistance, which the individual hair must withstand when loaded, is very high and it breaks easily (reduced service life). When taking up porcelain very many hairs are subjected to high loading (reduced service life).

Solution:
I developed a procedure that enabled the individual hairs to be selected according to their quality and appearance and be specifically placed on the required location on the brush. The very fine tapered hairs have a high quality with regard to elasticity and service life.

In addition, I have redesigned the tip formation bundling the number of very fine hairs in the tip to a high network of hair with unsurpassed stiffness. The load on the individual hairs has been reduced due to the same lengths of hair and the applied forces are deflected to the side.

“Cut of the hair” in comparison
Traditionally the number of hairs reduces towards the tip (sharp cut), with the lay:art style the force of virtually all hairs is used (edge cut).

Ventilation holes in the protective sleeve ensure optimal drying

the new reference of dental brushes
The international event “aesthetic dental full HD”

The event was held in the wonderful setting of the Casa Enzo Ferrari museum in Modena, Italy.

The event was first held in 2011 by Vincenzo Musella from an idea to combine the dental world with the most famous cars in the world. This was intended to take place in a private exclusive international company. A series of diverse, very high-level presentations is offered, all connected with the common denominator of enthusiasm for dental aesthetics. 220 participants from 19 countries took part in 9 conferences by 10 lecturers.

Further information: www.vincenzomusella.com

Mauro Fradeani
New perspective in prosthetic rehabilitation

Rogerio Marcondes
Indirect conservative restorations – an evidence-based approach for both

Alessandro Agnini
Management of complex cases with new technologies

Paulo Monteiro
Aesthetics and longevity – new materials for indirect restorations

Nelson Silva
Advances in biomaterials – how they affect the clinics of today and tomorrow

Nitzan Bichacho
Dental Esthetics – average versus elegant

Yoshimi Nishimura
Essence of morphology

Angelo Putignano and Stefan Koubi
The Styleitaliano philosophy

Vincenzo Musella
The aesthetic preview – the real communication
“aesthetic dental full HD”
Limited special edition of the lay:art style brushes in two sets

At the high-grade event of our friend Vincenzo Musella we took the opportunity to produce an appropriate, limited special edition of our equally high-grade and extremely successful lay:art brush.

Vincenzo Musella compiled his wish system consisting of two sets: the build-up and the detailed-up.

Vincenzo Musella: “The build-up set contains the slender versions of Size 8 for building up the dentine core and 6 for the delicate build-up of the enamel, which for me avoids the cut-back. The slender shape has a lower moisture flow rate and therefore prevents over-watering of the porcelain, which allows precise, delicate application. The detailed-up set contains the slender version of the Size 4 and colour intended for finishing.”

This limited edition combines the famous Ferrari design with the quality of the lay:art brushes. Other sizes and versions are contained in the standard lay:art range.

Renfert training centre in Saudi Arabia

The first training center, including showroom, will soon celebrate its opening

In collaboration with our representative, Rashed Mattit, our partner and friend Omer Al-Rashed from the Rad company opened the first Renfert training center (5 participants) including showroom and conference room in Saudi Arabia. The first courses will be offered at the beginning of 2014 and cover subjects such as “modern model fabrication”, “efficient waxing up” and much more from the world of Renfert quality. Other training centers will also soon be built in Lebanon and Dubai.

Rashed Mattit
Area Sales Manager
Near and Far East

aesthetic dental full HD
Set Build up
Art. No. 1725 1500

Set Detailed up
Art. No. 1725 1600
Fabrication of dental restorations has changed greatly in the past decade due to new technologies. In particular optoelectronic scanning of working models requires very high accuracy, as only then can the designed prosthetic restoration be fabricated to high precision.

We have already extensively tested many scan sprays. The Renfert Scan-Spray fulfills all the requirements of precision work, while having a very attractive price. Breaking the quality and efficiency chain can be prevented by using the correct spray, in this case the Renfert-Scanspray.

Dr. Amine Benalouane
Dentist, dental technician, CAD/CAM system specialist
Managing Director CADfirst
Dental Fräszentrum GmbH, Ingolstadt/Karlskron, Germany

“Smooth, light-reflecting surfaces such as implant components for example, or even other modern model materials will result in unusable scan results without matting. A surface is required, which on the one hand perfectly reproduces the surface structure and texture and on the other hand precisely supports the optical scanning using laser or stripe light. This is achieved by a very small grit size with very good matting properties and a thin and homogeneous layer.

Renfert-Scanspray, 200 ml
Art. No. 17310000
“I tried all existing knife-edge polishers and wheels in the laboratory in the search for a suitable rubber polisher for prepolishing IPS e.max®. They mainly failed on cutting capacity or there was too much heat build-up and the rubber began to smear. If I found a polisher with good cutting capacity, I could not come too close to the margins, as they would otherwise quickly fray. Finally I attached the Renfert silicone polisher to the mandrel and could hardly believe what I saw. Top cutting capacity, the orange film disappeared in no time despite a relatively low motor speed of only 8,000 – 10,000 rpm, and this with relatively low heat build-up. But then came the highlight, the surface, silky luster and without any facettes. When the silicone polisher is shaped to a knife edge it can be easily guided softly over the surface of the IPS e.max® and also produces an equally silky matt surface.

And the margins? No problem, despite the good cutting capacity the silicone polishers can be introduced very softly to the margins and slide smoothly along the margins without them becoming frayed or chipped. It is a real pleasure to polish the surface to the required degree of luster using Brinell L or Kohinoor L. All nuances up to a mirror finish are possible.”

“In my opinion the silicone polisher from Renfert is No. 1 for pre-polishing IPS e.max®!”

“Tip: I prefer the Dynex Brillant diamond-coated cutting disc, also from Renfert, for cutting off press sprues due to its cutting capacity with minimal heat build-up and because it can separate on average 50 sprues without any problem.”

Silicone polisher, Ø 22 × 3.2 mm
100 polishers, Art. No. 86 0000

Dynex Brillant, 20 × 0.25 mm
10 discs, Art. No. 56 2520

Brinell L, 5 ml
Art. No. 519 0001

Kohinoor L, 5 g
Art. No. 516 0001

IPS e.max® is a registered trademark of Ivoclar Vivadent.
Twister video
Scan the image code with a smart phone (e.g. using the "Scan" app) or enter the link in the browser: www.renfert.com/en/twister
How does the Twister do it?

The GC company uses the Twister evolution in the production of its investment (see Renfert Report 01/2011). A special team from quality assurance and Research & Development team uses the unit for batch control and fabrication process. Why? The Twister provides reliable standardized processing of the material and therefore eliminates human factors as possible causes of deviations.

Is it important for the laboratory?
More than ever! Because the quality standards in the laboratory are the same and are also increasing constantly – due to the modern working procedures (e.g. CAD/CAM or implantology) and due to competitive pressure.

A few good reasons
- Recommendations of the manufacturer only function if a mixing unit can also fulfill them. Only then is the optimum utilized.
- GC rightly emphasizes the advantages of the pre-mix function with regard to reproducible quality, particularly as the Twister evolution provides a sophisticated program for plaster and investment, which prevent agglomerate formation.
- Reproducible good quality keeps customers.
- Avoiding errors in the quality chain saves cost-intensive corrective measures.
- Errors could lose customers.
- Perfect models as business cards of the laboratory keep customers and generate new customers.
- Optimizations of the processes rationalize the work and reduce costs. Investments in new technology are only an advantage if the periphery is able to keep up with the quality.

Minimum investment with maximum effect
We have received reports from our dealer network of laboratories that mix using old units without recognizing the need for change. This arises because this unit still obviously does the work and the operator has become accustomed to the quality of the results. The requirements of 5 or 10 years ago, however, are completely different to those of today and the future. A model scanner does not forgive poor quality anyway. It only produces the advantages digital technology provides by starting with a 100% accurate basis. Traditionalists rightly defend themselves: in the non-digital world the quality standards are just as high. If it is...
Your quality base is stable and reliable with a Twister

seen how frequently the results of a vacuum mixer are important in the CrCo processing chain then the relatively low unit investment is not an obstacle.

The basis for modern quality
- Reliability and therefore reproducibility
- Highly effective
- Ease of use

The Twister units produce this as follows

High-torque motor
The motor produces very high torque, which allows it to mix even the largest volumes with ease. The results are optimally and fully reproducible even with the most difficult and very materials. This is completely independent of the quantity mixed, whether 40g or 1 kg.

Vacuum to order
Both the powerful motor pump and also the ingenious Venturi technology guarantee consistent vacuum levels. But even more important is the absolute value of the vacuum because inadequate vacuum output results in uncontrollable expansion behaviour of the materials. Many, and in particular older, units do not achieve the minimum requirement for investments of 90 mbar. The Twister units achieve on average 60 mbar and better (the smaller the value the higher the vacuum), so that we can guarantee the required value.

Effective mixing
Due to the special geometry of the mixing paddles the material is optimally mixed where it collects because of the centrifugal force. There are appropriate sizes of mixing bowls for different quantities, so that this effect is always utilized.

Also in the programmable versions

Always consistent pre-mixing results from Monday morning to Friday evening
The two pre-mixing functions process the two different materials plaster and investment individually and prevent from the outset that powder is spun out of the mixing area. Always perfect.

Programmed mixing
Programs you can use to select the optimal values, connect the mixing bowl and always rely on the same result.

Note: GC now also uses the Twister evolution in the production of Fujirock dental stones and during development of new investments and plasters.

The units with the byname "evolution" have more than 100 individually programmable mixing programs

Twister evolution, 100–240 V
Art. No. 1828 0000

Twister evolution venturi, 100–240 V
Art. No. 1829 0000

Twister, 100–240 V
Art. No. 1826 0000

Twister venturi, 100–240 V
Art. No. 1827 0000
The master in a new design

The excellent properties and also extremely thin application without solvents have led to picosep now becoming part of the die:master system. The system is designed for technicians with the highest standards in quality and convenience. The packaging of picosep has now been changed, it is packaged in the modern die:master design. The properties of the separator remain the same.

picosep, 30ml
Art. No. 1552 0030

Exceptional dental technology requires exceptional materials

Rainer Semsch
Master Dental Technician, laboratory owner, course instructor and member of the DGÄZ

“…and all analogously fabricated crowns and bridges (still approx. 75% of all units fabricated) require well prepared bases, including dies with varnish and spacer application.

My material of this year’s IDS is: “die:master” And why this material?

The “die:master duo” die hardener is absorbed quickly and seems to take effect deep in the dental stone

The hardener does not form a layer on application

The hardener combines with the colored spacer (in the colors gold, silver, red, blue and grey depending on the layer thickness required)

The spacer forms a smooth, homogeneous surface

The well-known separator ›picosep‹ ideally rounds off the range. It reliably separates in a very thin film thickness!

The materials are presented in an attractive tray to please the eye and ensure a tidy workstation. The magnet-retained brush for separation is always in the correct position.”

“Brilliant Renfert! – how have I actually managed this until now?”

picosep has a long tradition as a proven separator of dental stone and wax/ceramic
Plastercut

Plastercut is a very popular, high-performance, diamond-coated cut-off disc for quick, efficient separation of stone dies.

The inclined-positioned, diamond-coated cutting edge (coated on both sides) of the Plastercut guarantees a precise cut without tipping. The high service life of the Plastercut is achieved by the electroplated diamond layer.

Due to many end-customer requests we have included a third size version in the program. The intermediate size 38 x 0.30 mm has now been added to the existing sizes 30 x 0.30 mm and 45 x 0.35 mm. The different sizes enable the dental technician to adapt optimally to any situation.

NEW: Plastercut, 38 x 0.30 mm
Art. No. 331380

Plastercut, 30 x 0.30 mm
Art. No. 331300

Plastercut, 45 x 0.35 mm
Art. No. 331450

Perforations in the disc provide transparency when cutting and therefore facilitate the work of the dental technician.