

Injection Moulding Technique

Clinical Guide



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Injection Moulding Technique



The Injection Moulding Technique (IMT) is a novel process ideal to treat clinical situations with challenging aesthetic demands, recreate complex morphologies, reestablish the vertical occlusal dimension and treat wear cases in both anterior and posterior regions with optimal aesthetics.

The technique is also very useful because it allows the surface texture to be copied from the wax-up, which results into a natural smile with a life-like appearance whilst saving valuable chair-time.

Two materials are paramount for a successful procedure: a transparent silicone and an injectable resin composite.

The transparent silicone enables checking every detail and prevents the formation of an oxygen inhibition layer, thus facilitating the final polishing. It also allows to control the injection while treating several teeth simultaneously.

An injectable resin composite with high flexural strength and wear resistance will make it possible to translate a diagnostic wax-up into composite restorations with high strength and gloss.



The aim of this clinical guide is to present an easy and predictable technique that will enable clinicians to create direct restorations as aesthetic as indirect ones, yet created more quickly and more cost-effectively, while working in a minimally invasive way.

Materials for Injection Moulding Technique

EXACLEAR

Clear vinyl polysiloxane material



EXACLEAR is an innovative, clear silicone material that fulfils the needs of demanding aesthetic cases and facilitates the way to great results. Its absolute transparency makes it particularly effective in complex clinical situations.

EXACLEAR, used together with an injectable composite such as G-ænial Universal Injectable, enables clinicians to create restorations as aesthetic as indirect veneers, but more quickly, more affordable and using less invasive preparations.

G-ænial Universal Injectable

Inject, shape and contour all at once



GC's world-leading filler technologies have allowed us to develop an injectable material that is significantly stronger than most conventional paste composite materials. It's a new paradigm in thinking that a composite with a more flowable consistency is actually your strongest option! Because G-ænial Universal Injectable doesn't slump or string, you have total control to adapt, shape and contour as you inject for fast and effortless restorations. It adapts perfectly to the cavity floor and allows you to easily build contours, cusps and even proximal walls.

G-Premio BOND

One-component light-cured universal adhesive



Selecting the appropriate bonding for a given indication, and ensuring to precisely follow the different procedure steps is not always easy. This is why GC developed G-Premio BOND - a one-bottle universal bonding compatible with all etching modes, which cannot only be used for direct bonding, but also for repair cases, hypersensitivity treatment and luting. Moreover, GC wants to offer this ease of use and versatility without any impact on the quality of the bond. G-Premio BOND offers the advantages of a universal but with outstanding performance in all situations thanks to its unique combination of monomers.



A close-up photograph of a dental mold, likely a wax or plaster model of a tooth, showing intricate details of the tooth's structure. The mold is partially covered by a green overlay that contains text. The background is dark and textured.

POSTERIOR WEAR

Injection Moulding Technique



1. Initial patient situation.
(This plastic model simulates a patient with generalised tooth wear)

NON-CLINICAL STEPS

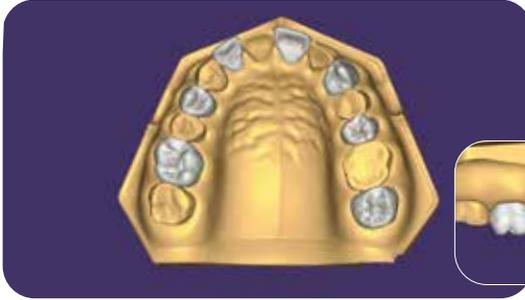
I CREATION OF WAX-UPS



2. Take an impression of the patient
(digital or conventional).



3. Create a TOTAL wax-up of all teeth
(digital or conventional).



4. Create a PARTIAL wax-up with alternate teeth (digital or conventional)*.



5. Print TOTAL and PARTIAL 3D printed models.



6. Seal the two models (PARTIAL and TOTAL):

- 3D-printed models: separator**
- Gypsum models: water hydration for 5 min.

**If you are working with a conventional wax-up on a gypsum model, make the TOTAL silicone index first and afterwards remove carefully the wax from the teeth alternately. Only then you can make your PARTIAL silicone index (see page 10).*

***The application of a separator is not mandatory, and it will only be necessary when the resin of the 3D-printed model isn't fully polymerised, leading to a reaction between its surface and the vinyl polysiloxane material. In the case of gypsum models, immersion in water for 5 minutes is mandatory.*

II CREATION OF TRANSPARENT SILICONE INDEXES



7. Dispense the EXACLEAR in a non-perforated tray (metal or transparent).

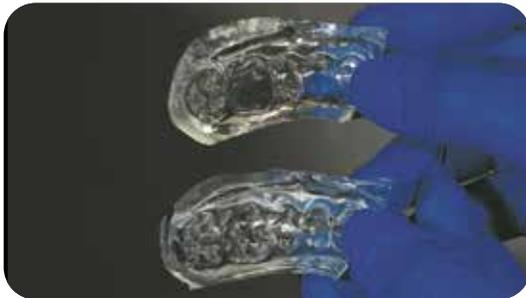
OPTIONAL: additionally, apply EXACLEAR on the occlusal surface to avoid bubbles.



8. Take the impression of both (TOTAL and PARTIAL) models.

The setting time of EXACLEAR outside the mouth is 7 minutes.

Optionally the models can be placed in a pressure pot during the setting to avoid bubbles.



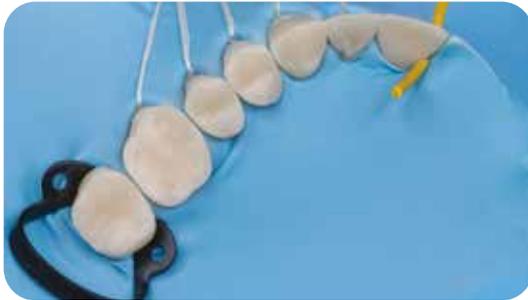
9. This will result in two transparent silicone indexes (TOTAL and PARTIAL).

The minimum thickness of the index should be 3-4 mm to avoid distortions.

CLINICAL STEPS

I TOOTH PREPARATION AND ISOLATION

Injection Moulding Technique is a preparation-free technique. Nevertheless, teeth can be slightly prepared to fit the new restoration design planned on the wax-up, if desirable.



10. Isolate the half arch with rubber dam.

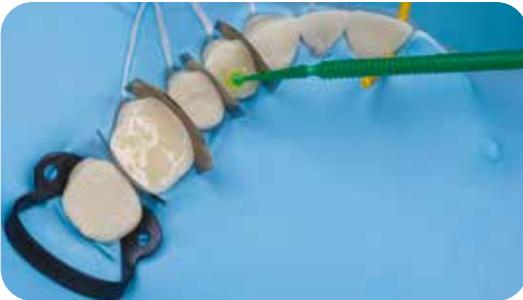


11. Sandblast teeth 17 to 14.

II CREATION OF THE FIRST SERIES OF TABLE TOPS (OCCLUSAL VENEERS) USING THE ALTERNATE INJECTION TECHNIQUE



12. Selectively etch (only enamel) teeth 16 and 14 for 30 sec.
Rinse and remove excess water (slightly dry).



13. Apply **G-Premio BOND** on teeth 16 and 14 for 10 sec.
Dry for 5 sec. with maximum air pressure and light-cure for 10 sec.



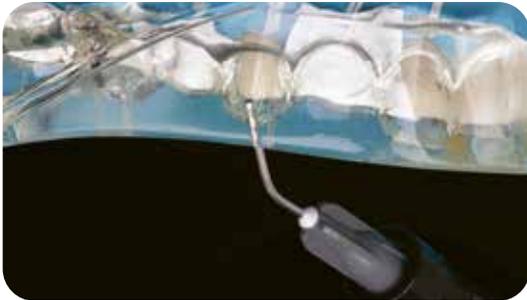
14. **PARTIAL** index: create 2 perforations, preferably on the tips of the cusps of teeth 16 and 14.

One hole will serve for the injection of the composite and the other one for the escaping of air.

Do this preferably from the inside to the outside of the index.



15. Detail of the two holes.



16. Inject **G-ænial Universal Injectable** using the **PARTIAL** silicone index. Inject the composite for the first tooth until the excess comes out through the second hole. Hold firmly and polymerise for 5 sec. Repeat the process for the second tooth.



17. Carefully remove excess composite with a scalpel for each injected tooth. Light-cure each side for 20 sec.

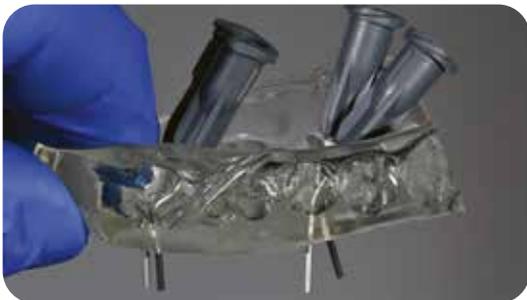
III CREATION OF THE SECOND SERIES OF TABLE TOPS (OCCLUSAL VENEERS) USING THE ALTERNATE INJECTION TECHNIQUE



18. Selectively etch (only enamel) the teeth 17 and 15 for 30 sec. Rinse and remove excess water (slightly dry).



19. Apply **G-Premio BOND** on teeth 17 and 15 for 10 sec. Dry for 5 sec. with maximum air pressure and light-cure for 10 sec.



20. **TOTAL index**: create 2 perforations, preferably on the tips of the cups of teeth 17 and 15. One hole will serve for the injection of the composite and the other one for the escaping of air. Do this preferably from the inside to the outside of the index.



21. Inject **G-ænial Universal Injectable** using the **TOTAL silicone index**. Inject the composite for the first tooth until the excess comes out through the second hole. Hold firmly and polymerise for 5 sec. Repeat the process for the second tooth.



22. Carefully remove excess composite with a scalpel for each injected tooth. Light-cure each side for 20 sec.

23. Repeat the procedure on the other half of the arch.

IV FINISHING STEPS



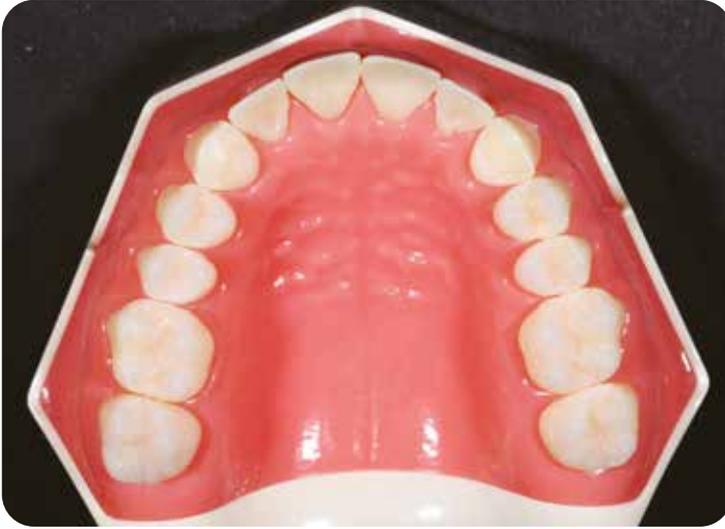
23. Remove the rubber dam and the remaining excess composite with a scalpel, then finish with **New Metal Strips** and **EPITEX**.



24. Adjust the occlusion.



25. Polish with the fine grey EVE Diacomp TWIST rubber polisher.



26. Final result of the posterior restorations.







ANTERIOR WEAR

Injection Moulding Technique





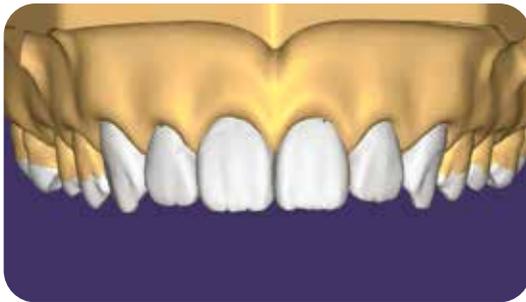
1. Initial patient situation.

NON-CLINICAL STEPS

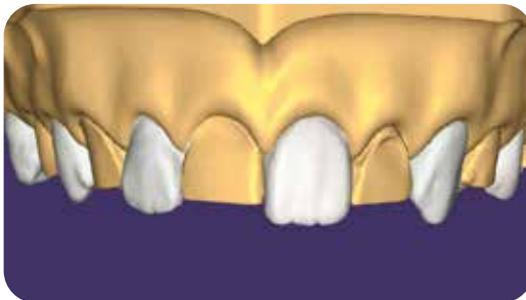
I CREATION OF WAX-UPS



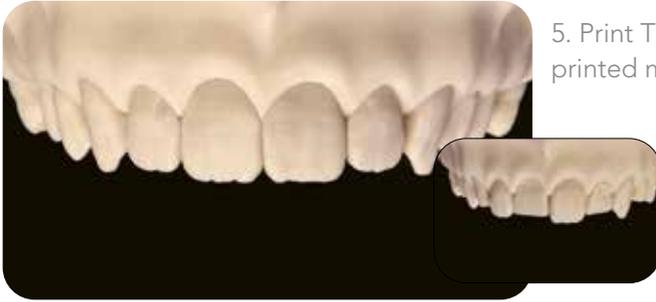
2. Take an impression of the patient (digital or conventional).



3. Create a TOTAL wax-up of all teeth (digital or conventional).



4. Create a PARTIAL wax-up with alternate teeth (digital or conventional).*



5. Print TOTAL and PARTIAL 3D printed models.



6. Optionally prepare a putty silicone index for the layering technique (only from the TOTAL model).



7. Seal the two models (PARTIAL and TOTAL):

- 3D-printed models: separator**
- Gypsum models: water hydration for 5 min.

**If you are working with a conventional wax-up on a gypsum model, make the TOTAL silicone index first and afterwards, remove carefully the wax from the teeth alternately. Only then you can make your PARTIAL silicone index (see page 22).*

***The application of a separator is not mandatory, and it will only be necessary when the resin of the 3D-printed model isn't fully polymerised, leading to a reaction between its surface and the vinyl polysiloxane material. In the case of gypsum models, immersion in water for 5 minutes is mandatory.*

II CREATION OF TRANSPARENT SILICONE INDEXES



8. Dispense the **EXACLEAR** in a non-perforated tray (metal or transparent).



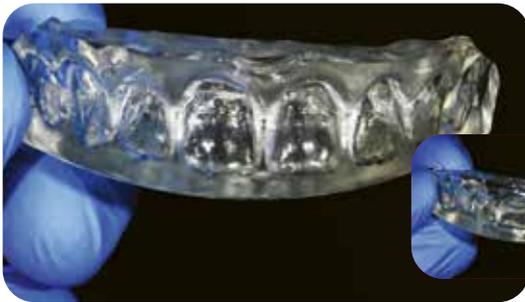
Optional: additionally, apply **EXACLEAR** on the labial surface to avoid bubbles.



9. Take the impression of both (TOTAL and PARTIAL) models.

The setting time of EXACLEAR outside of the mouth is 7 minutes.

Optionally, the models can be placed in a pressure pot during the setting to avoid bubbles.



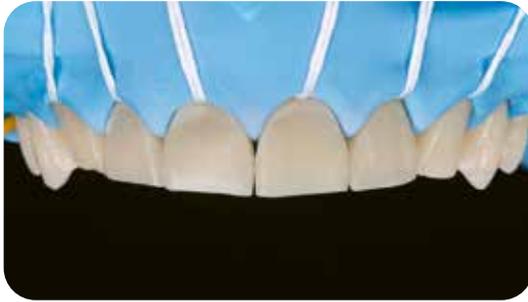
10. This will result in two transparent silicone indexes (TOTAL and PARTIAL).

The minimum thickness of the index should be 3-4 mm to avoid distortions.

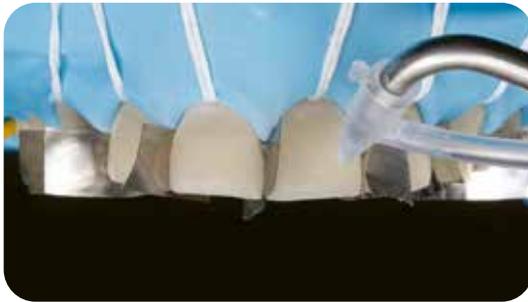
CLINICAL STEPS

I TOOTH PREPARATION AND ISOLATION

Injection Moulding Technique is a preparation-free technique. Nevertheless, teeth can be slightly prepared to fit the new restoration design planned on the wax-up, if desirable.

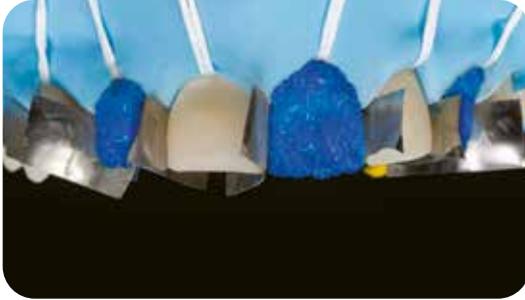


11. Isolate from tooth 15 to 25 with rubber dam.

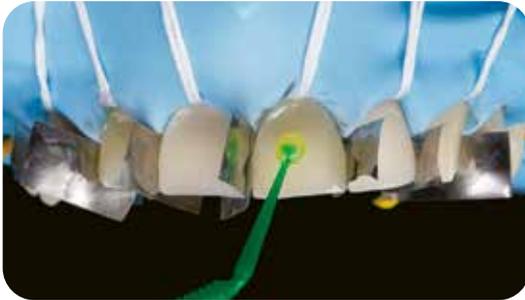


12. Sandblast teeth 13 to 23.

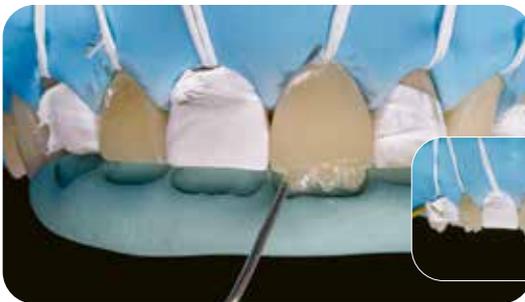
II CREATION OF THE FIRST SERIES OF VENEERS USING THE ALTERNATE INJECTION TECHNIQUE



13. Selectively etch (only enamel) teeth 12, 21 and 23 for 30 sec. Rinse and remove excess water (slightly dry).



14. Apply **G-Premio BOND** on teeth 12, 21 and 23 for 10 sec. Dry for 5 sec. with maximum air pressure and light-cure for 10 sec.



15. Optionally, for a more natural look of the restoration, mamelons can be designed by using opaque **G-ænial Universal Injectable** or an opaque paste composite with the help of the putty silicone index. Don't forget to light-cure.



16. PARTIAL silicone index: create an access hole in the silicone index at the incisal border of teeth 12, 21 and 23. Do this preferably from the inside to the outside of the index.

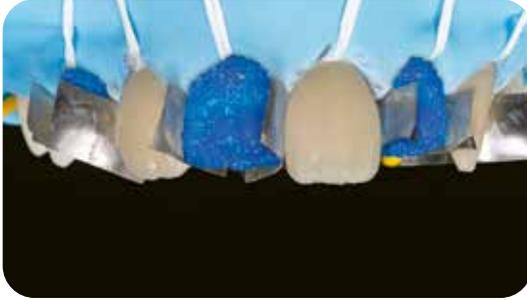


17. Inject **G-ænial Universal Injectable** using the PARTIAL silicone index. Inject it for the first tooth until it completely fills up the mould of the tooth. Hold firmly and polymerise for 5 sec. Repeat the process for the second and third teeth.

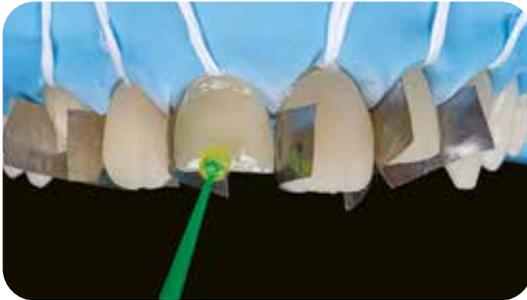


18. Carefully remove excess composite with a scalpel for each injected tooth. Light-cure each side for 20 sec.

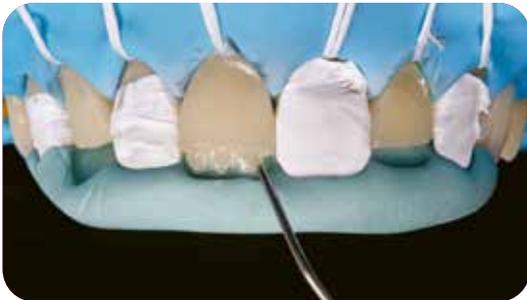
III CREATION OF THE SECOND SERIES OF VENEERS USING THE ALTERNATE INJECTION TECHNIQUE



19. Selectively etch (only enamel) teeth 13, 11 and 22 for 30 sec. Rinse and remove excess water (slightly dry).



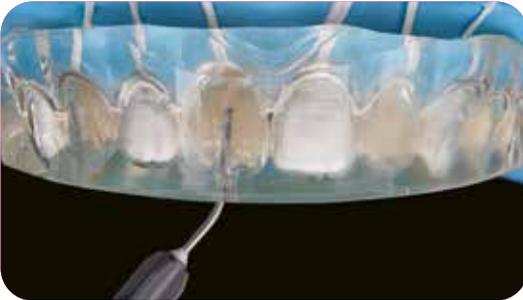
20. Apply **G-Premio BOND** on teeth 13, 11 and 22 for 10 sec. Dry for 5 sec. with maximum air pressure and light-cure for 10 sec.



21. Optionally, for a more natural look of the restoration, mamelons can be designed by using opaque **G-ænial Univesal Injectable** or an opaque paste composite with the help of the putty silicone index. Don't forget to light-cure.



22. TOTAL silicone index: create an access hole in the silicone index at the incisal border of teeth 13, 11 and 22. Do this preferably from the inside to the outside of the index.



23. Inject **G-ænial Universal Injectable** using the TOTAL silicone index. Inject it for the first tooth until it completely fills up the mould of the tooth. Hold firmly and polymerise for 5 sec. Repeat the process for the second and third teeth.



24. Carefully remove excess composite with a scalpel for each injected tooth. Light-cure each side for 20 sec.

IV FINISHING STEPS



25. Remove the rubber dam and the remaining excess composite with a scalpel, then finish with **New Metal Strips** and EPITEX.



26. Adjust the occlusion.



27. Polish with the fine grey EVE Diacomp TWIST rubber polisher.



28. Final result.

ORDERING INFO LIST



GC EXACLEAR Injection Moulding Kit
 1x EXACLEAR cartridge
 + 3x G-æniel Universal Injectable (A1, A2 & A3)
Art. nr.: 10003753



GC EXACLEAR Refill
 EXACLEAR cartridges 2x 48ml (51g)
 + 6x mixing tip II L (Blue)
Art. nr.: 10001483



G-æniel Universal Injectable
 16 colours
Art. nrs. between: 10006896 & 10006911



A1
 art. 10006896



A2
 art. 10006897



A3
 art. 10006898



A3.5
 art. 10006899



A4
 art. 10006900



B1
 art. 10006901



B2
 art. 10006902



CV
 art. 10006903



CVD
 art. 10006904



AO1
 art. 10006905



AO2
 art. 10006906



AO3
 art. 10006907



JE
 art. 10006908



AE
 art. 10006909



XBW
 art. 10006910



BW
 10006911



GC D-Light Pro Kit

Handpiece (sleeve & electronic module), light-guide 8mm, battery pack x2, charging station, power supply, EU/UK adapters, hard eye-protection shield, soft eye-protection shields x3

Art. nr.: 70000008



GC G-Premio BOND, 3-Bottle Pack

Art. nr.: 10001458

GC G-Premio BOND, Bottle Refill, 5ml

Art. nr.: 10001461



GC EPITEX

Starter Kit, Stand with Dispenser of each Grain

Art. nr.: 10000117



New Metal Strips

GC Metal Strips, Assorted (All Grains), 12pcs

Art. nr.: 10000096



EVE Composite Polisher

Pink - DIACOMP plus TWIST DT-DCP14m

Grey - DIACOMP plus TWIST DT-DCP14f

EVE is not a trademark of GC.

GC has always invested heavily in providing the very best in training and education to dentists, dental technicians and dental hygienists. The ability to promote and disseminate knowledge amongst dental professionals is a fundamental principle of our business.

GC Europe Campus laboratories can host up to 60 participants at the same time in a modern state-of-the-art facility.

Visitors are always welcomed in a comfortable and authentic setting, tailored to the specific goals of the course. The experience is completed by a specialised team of trainers and invited experts, all dedicated to provide the necessary skills, completed with useful tips and tricks that participants can benefit from in their practical work.

GC endeavours to offer courses of the highest quality in a comfortable setting to create a positive and valuable learning experience for all its customers. Thereby, the company wants to remain true to its philosophy of 'Semui' – true products made for the good of others and not for their own sake – with the ultimate goal to satisfy its customers and to contribute to a healthy, long-living society.

