

CREATE

The vhf Customer Magazine



A look back

30 years of enthusiasm
for perfection

Perspective

The new
vhf machines

Outlook

Looking beyond
the horizon

**“IS ABSOLUTE
PERFECTION
EVEN
ACHIEVABLE?”**

**“WELL, YOU CAN
AT LEAST ALWAYS
STRIVE
FOR IT.”**

PORTRAIT

Let us introduce ourselves – vhf in numbers, facts, and a time line. And, our board members set out their plans for the future of the company.

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LOCATION

If you can make it here ... Since 2016, vhf has had a branch in New York state – we take a look across “the pond” and of course at the home of vhf in the Swabian town of Ammerbuch.

CUSTOMERS

Just as exciting as the products created by vhf are the applications produced by the customers: find out why it can take ten years before a vhf machine becomes due for service and what the outlook may be for the future of dentistry.

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NEW PRODUCTS

Our anniversary year is packed with innovations. In the case of the CNC milling machines, the X has just been introduced and, in the dentistry sector, a best seller is being relaunched in the form of the K5+.

BRAND

vhf has been given a makeover that perfectly embodies the company values and reflects the claim “Creating Perfection.”

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INNOVATION

How does a vhf product come into being and what steps are necessary? Accompany our division manager for innovation and development on the journey from an idea to reality.

EMPLOYEES

First-class products require highly qualified employees. Learn what it is that makes working for vhf special and how we create the best products for you.

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COMMITMENT

Responsibility is an important aspect of our business activities – both locally and nationally. We therefore strive not only to establish an environmentally friendly production process but also to support the local soccer club.

Frank Benzingger, CEO vhf camfacture AG



EXCEEDING EXPECTATIONS FOR MORE THAN 30 YEARS. EVERY DAY.

Dear Reader,

You are surely familiar with this: on round birthdays, we like to take stock and make decisions for the future. Here at vhf, we are proud of what we have achieved in over 30 years and look forward to everything that lies ahead.

To ensure our success, we at vhf go the extra mile every day. Each day, we want to be a little bit better so that we can supply you with a perfect product. A spirit of inventiveness and a willingness to always give our best helps us achieve that. This is the secret of our success and our aspiration has led us to become one of the leading companies in the dentistry sector, sign-making, and industry when it comes to holistic solutions for milling.

I hope you will enjoy reading this first edition of CREATE – I am pleased to have you as one of our customers!

Sincerely,
Frank Benzinger



VHF SUBSIDIARY
HAUPPAUGE, NY,
SINCE 2016



VHF AVAILABLE FROM
160
RESELLERS
WORLDWIDE

100%
GREEN POWER

PARTICIPATION IN
22
INTERNATIONAL
TRADE FAIRS
IN 12 MONTHS

DUBAI
STUTTGART
CHICAGO
BERLIN
NEW YORK
LOS ANGELES
MUNICH
DÜSSELDORF
BEIJING
SHANGHAI ...

HEADQUARTERS
AMMERBUCH,
GERMANY



VHF CURRENTLY HAS
250 EMPLOYEES

OVER 250,000

TOOLS CONSTANTLY IN STOCK

WITH SALES TO OVER SEVENTY COUNTRIES

WORLDWIDE

**COMPUTER-AIDED
MANUFACTURING**

SINCE 1988



A VHF R5 CONTAINS
2,803 PARTS
IDEAL FOR YOUR DENTAL LAB



In the beginning there was the Atari. The first version of the innovative software "Platon" for unbundling printed circuit boards was developed for the Atari ST.

30 YEARS OF PROGRESS.

1988: the DAX is introduced; Steffi Graf becomes the first German to win all of the Grand Slam tournaments; Bruce Springsteen plays in East Berlin at the biggest concert ever staged in the German Democratic Republic (East Germany). And vhf is founded. It is time to take a glance though the company's varied history. But one thing has always remained constant: using our own strengths to break new ground.

1988

Foundation as VHF-Computer GbR

Marketing begins for the printed circuit board CAD system "Platon", which could also be used to control milling machines.



1997

Formation of vhf elektronik GmbH

This independent company takes responsibility for the development and manufacture of all vhf control electronics. In addition to vhf, the company now counts other well-known businesses among its client base.



2003

Introduction of the Premium line

A stable structure, powerful drive systems and flexible configuration options make the line of special interest for industrial applications.



1997

Internet pioneers

In at the beginning: vhf creates the first online store for tools.

1999

Relocation to the newly built company building in Ammerbuch

Seven employees work at vhf in an area of 500 square meters.



2004

vhf introduces the Active Systems

Unlike the Premium line, the new Active line features a standard integrated vacuum table and rack-and-pinion drive. Both improve efficiency, and the 2 x 3 meter Active variant quickly becomes a best seller in signmaking and large-format industrial applications.



2007**vhf tools GmbH is founded**

With the highest vhf quality standards, the company produces hard metal tools for the vhf product range. Over 1,000 different cutting edge geometries are now offered.

**2017****Same-day dentistry with the Z4**

Behind a futuristic housing lies a highly precise and easy-to-use milling and grinding machine for the quick production of dentures for labs and practices. The Z4 is perfect for the direct connection of intraoral scanners.

**2018****Launch of the X**

The new flagship among portal milling machines is introduced: the X. This also embodies easy operation perfectly combined with the performance of a fully mature milling machine. An integrable XtraUnit enables the automatic change to cutting and grooving tools.

**2011****The K4 conquers the market**

With this desktop machine, dental restorations made of modern material such as zirconia can be produced in the dental lab. It quickly becomes a best seller.

**2010–2016****vhf grows and grows ...**

... and becomes one of the leading manufacturers for dental milling machines. At the same time, new office and production space is created and the branch in the USA is opened.

**2018****Launch of the R5**

With the revolutionary high-end machine R5, vhf has developed a highly automated milling and grinding machine for sophisticated applications in laboratories and practices.

The company now has
250 employees.

OUR MILESTONES

“WE’RE STRIVING FOR PERFECTION.”

An interview with Ria Brandenberger and Frank Benzinger, board members of vhf camfacture AG



**r. Benzinger,
what is the
secret to vhf’s
success and
how does vhf
differ from other
companies?**

Frank Benzinger: At vhf, we have an excellent feel for the needs of users. From the very beginning, we have placed great importance on ease of use and on providing superb service, without robbing our customers of their freedom – that’s what makes our products and concepts stand out from those of many competitors. Creating an atmosphere built on trust and partnership with our customers, dealers, and suppliers has been equally, if not just, as important in achieving our success.

Ria Brandenberger: Our corporate culture and suitable personnel are other crucial factors. I often hear people say that both the work environment and colleagues are fantastic! This harmonious yet positive vhf vibe can be felt at all times, no matter where you go. I particularly like that we have been able to maintain this personal touch as we have grown – I regard it as an extremely essential component to our success. Our culture of open communication is also near and dear to me.

There are currently 250 employees at the Ammerbuch site – and the number is rising. Why will vhf continue to grow?

Frank Benzinger: Our user-friendly products make it possible for us to live up to the demands of modern-day users for increasingly simpler and more convenient solutions in an ever more demanding and complex digital world. Everyone can immediately or quickly use our systems without requiring any special prior knowledge. We’re successful here because we are more than just a machine manufacturer: vhf software was equipped with a graphic user interface right from the get-go, at a time when the command line was still the industry standard. As a result, we were well ahead of our time 30 years ago in terms of user-friendliness.

Our philosophy “Everything from a single source” is another big advantage. In addition to machines, the vhf Group also develops and manufacturers software, control electronics, and tools itself. vhf thus offers complete solutions that are not only ideal to operate but which are also simultaneously modern and efficient. Users of such vhf solutions, however, can continue to further develop their skills whenever they want and use other software and tools, for example. I truly

“Our new motto sums up what has always made us special.”

believe in this approach. After all, tomorrow's users also want to be free to use open solutions at the same time.

Alongside developing our products in the right direction, we're constantly seeking and finding the best structures to support our continued growth. In fact, we just introduced a new level of management. Once a company reaches a certain size, you have to be able to reliably delegate decisions. In line with our motto "Creating Perfection," it's our objective to continually improve our structures: the better the conditions here, the faster and more sustainable the growth process will be. We've been doing exactly this for the past 30 years, and thanks to this approach, we have achieved a growth rate of 30 percent every year since our foundation.

Ria Brandenberger: Having the perfect conditions in place is important – in addition to establishing the necessary structures, we have always initiated the corresponding processes that will keep us fit for the future: a state-of-the-art management tool or very modern software for employee relationship management are just two examples. Many things have taken place in the background that make us very optimistic about the future.

vhf is moving forward with the new claim "Creating Perfection" – what does this claim mean for both of you?

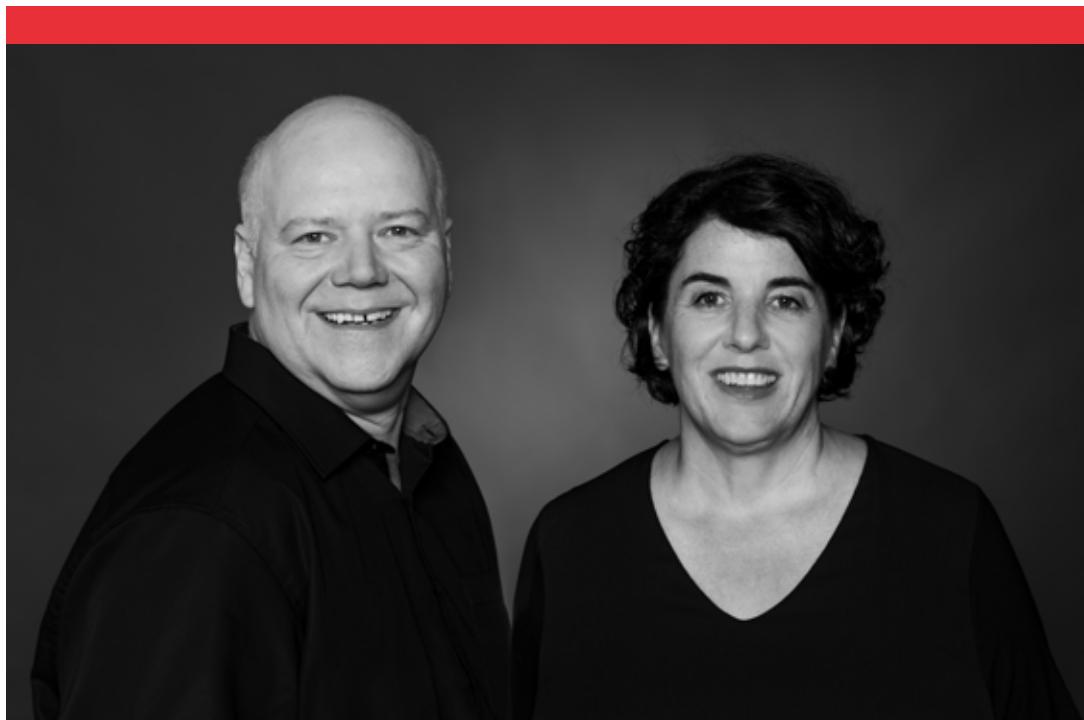
Ria Brandenberger: Our new motto sums up what has always made us special: we try to achieve the best possible result with highly motivated and qualified employees – in terms of products, service, and our daily interactions.

Frank Benzinger: That's exactly right – and we always view perfection as a process here. You can't be perfect everywhere all the time. Instead, it is about continually striving to be perfect.

Why does the seal of quality "Made

Mr. Benzinger, vhf is currently celebrating its 30th anniversary. What will your company look like when it celebrates its 50th anniversary?

Frank Benzinger: Looking so far ahead in the future with high-tech products and markets is only possible to a limited



A powerful team: Ria Brandenberger and Frank Benzinger, board members of vhf.

in Germany" continue to be so important to your customers?

Frank Benzinger: If you look at the international market, it's precisely this meticulous perfectionism and high quality standards that people living abroad have come to expect from cutting-edge technology Made in Germany. Perhaps we're just a little more obsessed with detail here in Baden-Württemberg. In any case, the area was able to develop into a powerhouse for mechanical engineering and medical technology. And vhf is right at the center of it all.

extent. It depends on many factors: what are the new, forward-looking technologies? Where can we get involved and innovate? For continuous growth, you have to constantly reinvent yourself a little bit. The values which we represent and for which we stand as a company will be where we remain true to ourselves, however. They are timeless, unshakable, and will still be valid in 20 years. ■

HOW TO BECOME A HIDDEN CHAM- PION AMONG THE GREEN FIELDS.

Christel Halm officially took office as Mayor of Ammerbuch in April 2014. With its approximately 11,500 inhabitants, the municipality has established itself as an attractive residential and commercial location and its Altingen district is home to the vhf campus.

In our interview, Mrs. Halm explains why she values vhf as an exemplary employer and why the community is pleased with the positive development of vhf.



Mrs. Halm, what do you appreciate most about Ammerbuch?

Ammerbuch is a unique community. As a large municipality, it consists of six districts that are very different in all their facets. Beautifully situated at the edge of the Schönbuch forest, Ammerbuch offers a wonderful experience of the rural and idyllic while providing convenient connections via the local trains. In addition, there are great hiking trails in Schönbuch with beautiful views winding through the pristine nature reserves. The Ammer Valley is also ideally suited for cyclists. So, you could say that Ammerbuch gives you an all-round feel-good package: diverse recreational options, short commutes to the workplace, and good childcare in the districts. At the moment, we have four primary schools and one high school as well as 10 preschool and childcare facilities. There are also over 80 clubs from music to sports as well as a lot of volunteer opportunities, so one can quickly get connected in Ammerbuch.

Is Ammerbuch prepared for future growth?

We are currently allocating a new building site, which is exciting. Here, again, we are looking to build family-friendly and affordable housing, such as town houses, semidetached houses, and apartments, so that new workers can find a place to live in Ammerbuch. In smaller communities, people know their neighbors and there is a family-like atmosphere. This is often very appealing to young families.

How would you describe the economic future of Ammerbuch?

We will have to keep a close eye on our budget in the coming years. A new high school and a seven-group kindergarten are being added as well as a primary school with a gymnasium. These are just the building construction projects, but one also has to consider sewer rehabilitation and other related matters. Everything has to be financed and we have to plan carefully. We have a large investment backlog and cannot afford to make any big leaps in the next few years. Naturally, we hope that our positive economic development will continue and are relying on the success of companies like vhf. Corporate success not only translates into tax revenues, but it also provides jobs. I am optimistic about the future, though. The new industrial park was awarded very quickly – within

six months. vhf also secured additional space here, which speaks for the excellent positioning of the Altingen location.

vhf is one of the largest employers in Ammerbuch – what image does vhf have in the community?

We visited vhf once with the local council and our impression was extremely positive from the beginning. It starts when you enter the main building: everything looks very open and modern. You can also see it on the employees' faces that they feel comfortable here. I think vhf has earned its distinguished reputation and makes a well-structured and organized impression. Naturally, we are proud of vhf's success as a community. It's great and I'm pleased that we can contribute to Swabia's reputa-

I hope to maintain the strong working relationship with the company that we have enjoyed so far, and I am glad that vhf is involved in the life of the community. Beyond this, I would like to take on even more projects together in the future – perhaps helping students from the new high school gain experience at the company as interns. These kids are the skilled workers of tomorrow and this could be one way to counteract the shortage of skilled workers at an early stage.

Birthdays are always an opportunity for congratulations – what would you like wish vhf for its future?

First of all: congratulations on 30 years! I wish you continued success and the best of luck moving forward



Ammerbuch: picturesque landscape and well connected to the cities.

tion for great ideas and high technology.

As a politician, what do you like to see from vhf?



Christel Halm
Mayor of Ammerbuch

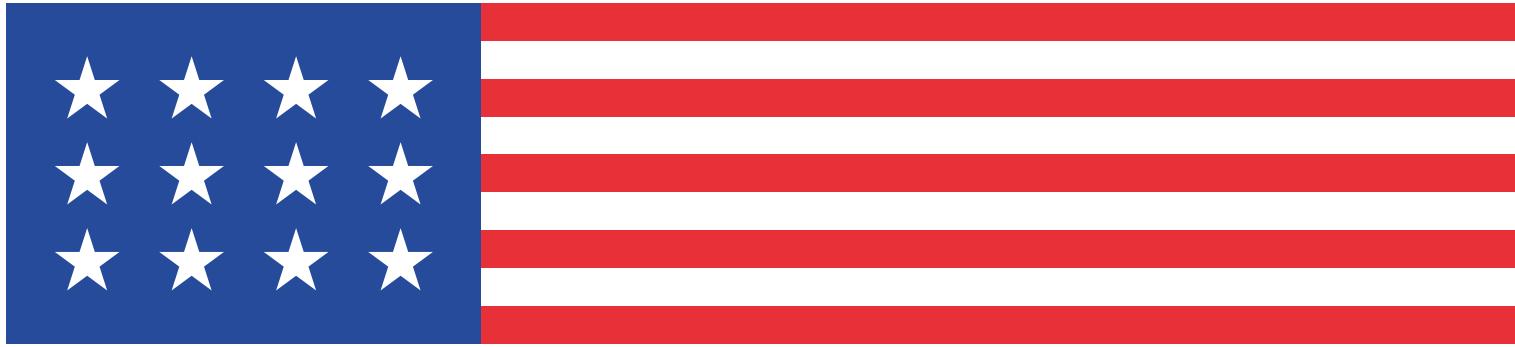
– and the courage needed to run a successful company. Ultimately, this includes the responsibility towards employees and the community – and I think vhf is doing a great job in these areas. I'll keep my fingers crossed that your success continues! ■



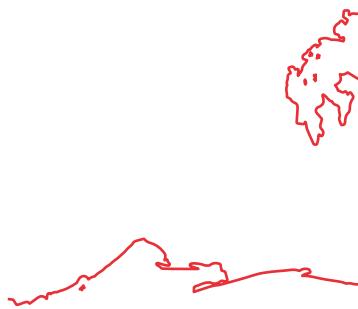
GO WEST.

In the land of opportunity, citizens appreciate particularly fast cars and hearty food from ‘Good old Germany’ – as well as dental milling machines from Ammerbuch.





HAPPY AMERICA



Since 2016, vhf has had a US branch in Hauppauge, not far from New York City. The location makes it easier for us to better service and support our American dental partners.





Hauppauge

The name Hauppauge goes back to a word used by the Native Americans and essentially means “sweet water.” The city is known for its underground water sources and high groundwater level.



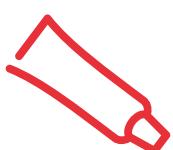
\$\$\$ Ka-ching

A good salary and first-class work-life balance – dentists rank at the top of at least one job ranking in the USA. According to the U.S. News & World Report, dentists had the most desirable occupation in 2017.



Yummy!

In the USA, they’re an integral part of everyday culture; in Europe, they were relatively unknown for a long time: donuts. Donuts are particularly delicious with various (chocolate) glazes. Currently, cronuts are all the rage: cronuts are a cross between croissant and donut.



Toothpaste to the moon

Did you know that 53 million liters of toothpaste are consumed in America every year? That’s enough to fill three Olympic swimming pools. Made into a long strip of toothpaste, it would cover a distance that extends to the moon and back again – twice!

“The openness and optimism of the Americans is unique – the glass is usually half-full instead of half-empty. Americans continue to appreciate quality products from ‘Good old Germany.’ As an innovative company with solid German mechanical engineering technology, vhf is very popular in the USA.”



Nicolas Rohde, PhD
CEO vhf Inc.



UNBELIEVABLE: A TEN-YEAR SERVICE INTERVAL!

An interview with Peter Lohse from Hamburg.





Peter Lohse is a certified dental technician and runs the Hanseident-Zahnmanufaktur (dental lab) in Hamburg, Germany. His aim: "I want to sell aesthetics" – and, to accomplish this, he uses a machine from vhf. In spring 2018, Peter Lohse visited vhf in Ammerbuch to have his machine serviced for the first time – after an incredible ten years! He uses a model of the four-axis milling machine CAM 4-02 Impression; the first dental processing machine to be manufactured by vhf. As part of the service, the axes and spindle were exchanged, the tool changer was repaired, and the machine thoroughly cleaned. All in all, a pretty typical factory maintenance.

Did it surprise you that the machine didn't need to be serviced for so long?

Honestly, I found it a little scary. At the end of last year, I kept thinking: "This machine has lasted really long – I hope nothing will break!" (Laughs) But we also take good care of our machines. For instance, we clean them every week and, once a year, they get a thorough cleaning.

How many hours does your vhf unit run per day? As we noticed, you were still using the first spindle.

It runs for nine out of ten working days – so it's almost constantly in use. By now, we have processed more than 850 blanks. We use it to mill wax, plastic, and zirconia. Mostly zirconia – roughly 85% – as that's our main business. We have milled some composites, but that is rather the exception. We generally mill wax bridges. Working on a PC and the machine, this process is super fast and accurate – and takes maybe five minutes. This allows us to produce high-quality crowns and bridges quickly and return the product to the dentist's office promptly.

What observations have you made about the materials processed? For instance, are there any problems with plastic melting during processing?

I haven't had any problems with the processing. But I have tested many materials and there are differences in quality.

How satisfied are you with the service of vhf?

I can only answer that to a limited extent since I haven't needed it much – and that's good news! So far, I am very satisfied with the contact I have had with the vhf team. Everything always went to plan, and the interactions were always very pleasant. I find the personal atmosphere at vhf very positive – that is important to me. This is a welcome contrast to the sometimes pushy sales strategies of other manufacturers.

How has your day-to-day work changed since the advent of digitalization and what directions do you think the digital trends for the future will be heading in?

The introduction of digitalization into the laboratory has resulted in processes becoming significantly faster and simpler. Today, nobody needs to check a telescopic crown with a parallelogram. Using a PC and the software, we can create high-quality restorations within a very short space of time and the machine mills it quickly and reliably. And the results are astonishing! In addition, the user-friendliness has improved continuously compared to a few years ago.

Obviously, increasing digitalization will always depend on a good collaboration between dentists and the dental laboratory. Digital impression is going to be increasingly used – I see that many laboratories and practices are extremely open to this trend and the expertise is continuously growing. There is also a strong willingness to invest in the necessary technical equipment.

What do you want from vhf for the future?

The question is not easy for me to answer. But if I had to buy a new milling machine, I would buy one with a blank

changer. For instance, I really liked the S2 when colleagues showed it to me. Back when I opened my lab, I knew I wanted a scanner, but not a milling machine. However, we then processed a lot of zirconium, so it was worthwhile for me to buy my own machine instead of having the orders processed by milling centers. When I decided to buy a machine from vhf, the investment paid for itself within a year. I also didn't have room for a huge device. The vhf machine was perfect as I was able to place it in my laboratory to save space. And when the time comes for a new machine, my first contact will be with vhf. ■

"I was very satisfied with the vhf service – everything always went to plan, and the interactions were always very pleasant."

Peter Lohse, certified dental technician from Hamburg, Germany, has been self-employed for many years (hanskeident.de) and has offered zirconium dioxide machining since 2002. He has worked with a vhf milling machine for over ten years now. Moreover, his dental laboratory has hands-on experience with all common implant systems and manufactures individual implant abutments made from zirconium or titanium.



FORWARD INTO THE FUTURE.

An interview with Dr. Ingo Baresel about the latest trends in the dental industry

vhf was a premium exhibitor at the fourth annual DGDOA conference for digital oral impressions from October 26–27, 2018, in Düsseldorf, Germany. The Z4, an innovative and versatile dental milling machine for same-day dentistry applications, was presented there and was of great interest to professional visitors.

How did you become a pioneer in the field of digital impressions?

I was interested in this topic during my studies and attended an advanced training course back then held by Prof. Dr. Möhrmann – one of the “inventors” of digital impression technology. However, the qualities achieved at that time were not sufficient for me. Afterwards, I repeatedly dealt with this topic until I came across the iTero intraoral scanner at a workshop in the dental laboratory in 2011. The concept impressed us so we started to digitize impressions at our practice with this device. Very quickly we became one of the practices in Germany that used this technology with above-average frequency

and started receiving requests to pass on our knowledge and experience. This led to the foundation of the German Society for Digital Oral Impressions (DGDOA) and joint collaborations with various companies in the field of digital dentistry.

Why will digital impressions continue to gain in importance?

There is no doubt that the digital impression will prevail. The reasons are manifold. On the one hand, there is their high accuracy across the whole jaw. On the other hand, these kinds of impressions lead to fewer repetitions and modifications as we discovered together with our laboratory in 2,500 examined cases. There



is also the aspect of patient wishes – they will increasingly inquire about this form of treatment. The possibility of creating prosthetic restorations in a single day is also an option that will certainly encourage many dentists to change their thinking.

The additional benefits for the patient here include the reduced need for temporary solutions, arranging another appointment for insertion and can therefore save themselves multiple injections of anesthesia. On the part of the dentists, the advantage is certainly the additional added value through the provision of laboratory services.

You have tested the vhf Z4 intensively. What are the biggest advantages of the milling machine?

The Z4 is a milling machine that offers very high precision. Its milling times are also worth mentioning here as they enable same-day dentistry restorations. The touch panel controls are very simple and intuitive with a clear overview, for instance, regarding the wear of the milling tools or whether the inserted tool blocks are correct.

Why does the Z4 fit so well into the digital workflow?

The Z4 fits perfectly into the digital workflow because it optimally meets the requirements for a same-day dentistry solution. It is important that systems such as intraoral scanners, design software, and milling machines are perfectly coordinated with each other. Dentists do not want to deal with all three components separately and constantly adjust settings – they need intelligent solutions. The transfer from the scanner to the design program must function without delay; the design of the restoration, nesting, and transfer to the milling machine must be automated, simple, fast, and at the same time highly precise. The milling machine must be able to check the processes, warn of errors (such as

incorrectly inserted blocks or tools), and deliver extremely precise results.

Why is a good cooperation between dentists and dental technicians so important?

Digital impressions require an even more intensive cooperation between dentist and dental technician than usual. Both must be intimately familiar with the workflows and procedures of the other along with all the potential pitfalls. This is particularly important in the context of digital impressions for implants, as this workflow can function very well, but it must be extremely well-coordinated. We

are currently working with three laboratories that have gained experience in this field over many years. The conversion to a fully digital workflow requires a rethink and considerable financial investment. All bridge frameworks, for example, must be able to be milled directly, regardless of the material. Model casting implants must be digitally constructed and printed before they are converted into metal and the bite splints must be digitally designed and then milled from a circular blank. The advantage of working with a commercial laboratory is that it can offer very high quality in all areas due to the specialization of its employees in individual areas of dental technology. This investment sum cannot be shouldered by a practice laboratory.

Dr. Ingo Baresel has been successfully running a dental practice in the Franconian municipality Cadolzburg, which is located near the city of in the Fürth, Germany, for almost twenty years. He places a special focus on work with digital impressions. In 2014, he was a co-founder of the German Society for Digital Oral Impressions (dgdoa.de).

As a dentist, what do you want from vhf as a manufacturer?

I hope vhf will continue to provide innovative approaches along future-oriented thinking and actions. The goal should always be on optimizing existing equipment and developing new, practical solutions. I also think cooperating with manufacturers of intraoral scanners and design programs in order to offer dentists certified product chains is very important.

I find the relationship with vhf very pleasant and target-oriented, as they are very interested in feedback and take it seriously. The representatives and leadership make a very professional and competent impression. Suggestions for improvements are implemented very quickly. Support also works smoothly for problems large or small. ■



*The Trios Pod
from 3Shape*

vhf

Steffen Tartler (right) during the launch of the X at the AMB Stuttgart 2018 with Matthias Brehmke, vhf PR manager. More information at tartler-zelte.com.



HOW VHF MACHINES HELP EVENTS SUCCEED.

The company Tartler Zelte AG has been manufacturing mobile tent systems as temporary space solutions for various purposes for more than 90 years. Development, production, leasing, and logistics have been firmly in the hands of the family for four generations. The modular tent systems are suitable for both short-term events and long-term projects. Since the beginning of 2016, Tartler Zelte AG has owned a very well-equipped vhf Active Pro with a traverse range of 1.5 × 4 meters to mill panels and profiles for its tents.

Mr. Tartler, why did you choose a machine from vhf?

I noticed some vhf advertisements while searching for machine suppliers and they resonated with me. A decisive point for us was the modular design – I didn't find that with other suppliers. What really makes vhf stand out from its competitors is that we were able to configure our machine to our exact specifications. A short delivery time was also particularly important to us, and your sales manager Mrs. Becker was able to meet this – we received the new machine just in time and were therefore able to fulfill our order.

How satisfied are you with your vhf machine?

I am very satisfied with the machine because it has met all expectations

and even surpassed them. It can be said that it has become an important part of our family business.

What is so special about vhf's service?

I have never experienced such service before – a really great performance! Questions are usually answered immediately and, if no quick solution is possible, the vhf service consults and submits a solution proposal. Especially in mechanical engineering, where every second can be crucial, it is important that the machine always functions flawlessly.

Your company has similar values to vhf: quality and innovation Made in Germany.

Absolutely! For me, as a father of three, this is an aspect of sustainability. I'd rather invest a little more money to purchase a quality product than spend less but wind up replacing products every couple of years. The same is true as a family entrepreneur: quality is extremely important to me. We have grown steadily for 90 years and our core business is the manufacture,

renting, and sale of tents. The integrated lighting, which is so unique on the market, is particularly innovative. A further quality feature is our modular construction principle – similar to the modular design of vhf's machines. This concept offers a time advantage for our custom-

“I have never experienced such service before!”

ers during assembly and dismantling.

We also use aluminum for the construction of our tents – also similar to vhf. For

me, it is an ideal building material to work with. It can be welded very well, and the available alloys promise high strength.

You also use the Cenon software. What do you like about it?

I make the design with AutoCAD and convert the format into DXF, which the program recognizes. An important argument for vhf's software for me was the compatibility for all imports. Moreover, at vhf you get everything from a single source: that's a really big plus.

What achievements are you especially proud of?

We created 24,000 square meters of floor space in four weeks for a trade fair – that's a feat that is only possible if you can rely 100% on the quality of your tools. Over the last two years, our vhf machine has contributed noticeably to this success.

The company Tartler Zelte recently turned 90 and vhf camfactory AG celebrated its 30th birthday in 2018. Is there anything you would like to wish us for our anniversary?

I hope vhf continues to enjoy much success! And obviously the energy to continue offering such an excellent service. If they do that, I'm sure I'll be buying a vhf machine again. ■

THE WOLF IN SHEEP'S CLOTHING.
HIGH TECHNOLOGY.
MADE IN GERMANY.



ING.



MILLING AND CUTTING IN A NEW DIMENSION.

The X is the beginning of a new era and the culmination of more than 30 years of the German art of engineering by vhf. With this experience and passion for perfection, vhf has created a new generation of machines that literally has it all. A milling machine which can do much more than just milling.



No screw is visible – the unique design of the vhf X lets it become a solitaire in every workshop.

With a glittering launch at the AMB trade show in Stuttgart, Germany, vhf introduced its latest flagship product: the X. The new top model for panel processing optimally combines precision, drive power, and stability. Its many included features mean that the X is already a must-have product in sign-making and industry.

The X offers both innovative technology Made in Germany and intuitive operational convenience. vhf is particularly proud of the specially developed, pressed, and anodized aluminum profiles that not only give the machine extreme rigidity. Their internal X-shaped structure is where the X gets its name. Together with massive machine castings, especially quiet operations are ensured. Compared to steel designs, this principle known as Xstructure offers maximum load-bearing capacity at a significantly lower weight which results in traverse speeds of about 30 m/min. Many parts of the X's cutting-edge technology are also integrated into the Xstructure of these profiles to save space.

The vhf X uses innovative drives: three axes are driven by three motors at a time and an intelligent gear design which guarantees precise propulsion and excellent milling results. With a processing spindle that reaches 5.8 kW peak power and spindle speeds of up to 40,000 rpm, the X can mill numerous materials, including aluminum, plastic, wood, and even stainless steel sheets. However, the X is capable of more than just milling. On request, an optionally integrable cutting and creasing unit with switchable lance oscillation can process soft

materials such as cardboard and seal material. This means that V-cuts, kiss-cuts, and creasing operations can be performed reliably and without retooling.

The extensive equipment offers several advantages for users: the newly developed Xhead, the processing head of the machine, contains the milling spindle, the cutting and creasing unit, a suction unit with simultaneous minimum quantity lubrication, as well as a built-in camera. This integrated camera, for example, makes it possible to find the workpiece's zero

point easily and accurately. Optionally, you can equip the X with an optical register mark recognition system for printed workpieces, so that the contour is milled or cut precisely along the print. Another highlight is the electronic workpiece leveling system which enables the user to achieve perfect engraving and chamfering across the entire 2 x 3 meter machining area, even with material thickness tolerances. The stylish and prominently placed status display on the Xhead informs the user about the machine status via an RGB LED.

The safety laser scanner and the usual vacuum technology for plate processing are also already integrated in the machine. The user benefits from considerable space savings and the convenient operation controls typical of vhf.

The eight suction units integrated in the machine table intelligently control the separate vacuum zones and offer an impressive 1,325 m³/h volume flow for maximum holding power, even at highly free milled operations. The retractable tool changer can hold 12 tools even in the basic version

and optionally up to 24 tools. The ability to flexibly and quickly change all milling, cutting, and creasing tools is incredibly convenient, time-saving, and does not



The vhf X up close and in reach: at the launch at the AMB in Stuttgart.

require any manual user intervention. With the development of the X, vhf is also breaking new ground digitally: the system can be easily operated via tablet – enabling future-oriented and intuitive controls.

vhf CEO Frank Benzinger is convinced of the new machine: "The X stands out with its versatility and numerous features that make working with it particularly easy. In addition, vhf is an absolute pioneer in terms of user-friendliness – allowing the X to be controlled quickly and intuitively via a tablet." Customers are also in the best hands when it comes to service, as Frank Benzinger explains: "Users receive everything from a single source and benefit from outstanding service and decades of expertise." ■

"The X stands out with its versatility and user-friendliness."



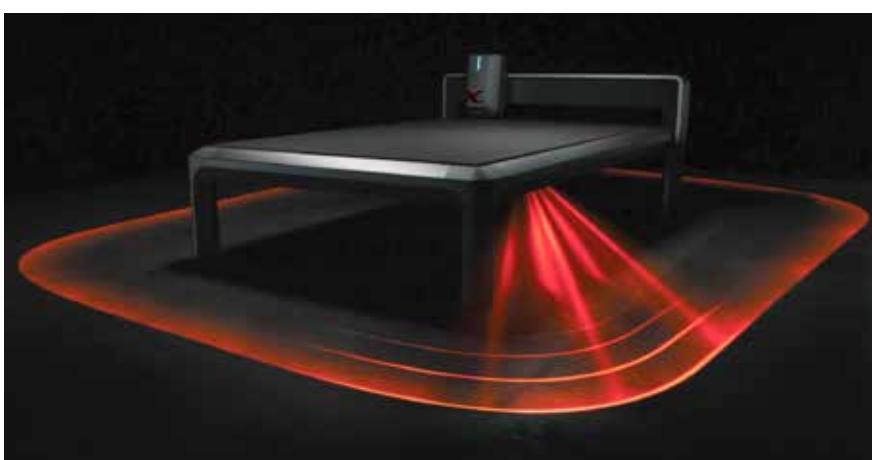
STABILITY

High-strength aluminum profiles specially developed for the X achieve an unparalleled degree of stiffness with the most state-of-the-art technology inside.



POWER

No material is a match for a powerful 5.8 kW of peak power paired with speeds of up to 40,000 rpm. The X reliably mills a wide range of materials, including plates made of aluminum, plastic, wood, and stainless steel sheets.



SAFETY

The safety laser scanner offers maximum protection without compromising handling. State-of-the-art safety technology – without annoying light barriers, safety mats or enclosures that slow down your workflows.



PRECISION

The integrated camera makes it possible to move towards the workpiece's zero point easily and accurately. Optionally, you can equip your X with an automatic register mark recognition system for printed workpieces, so that the contour is milled or cut exactly along the print.

**When it comes to
buying a new machine,
I won't sacrifice
anything.**

**Except
compromises.**

Rafael, Project Manager

R5: MAXIMUM AUTOMATION FOR PERFECT RESTORATIONS.

Redefining milling and grinding.



A revolution has begun in the dental laboratory: within a very short space of time, the new vhf R5 has conquered the market.

The highly automated milling and grinding machine for dry and wet processing can reliably handle every material used in dental technology. And thanks to its compact dimensions, there will be space for it in any dental laboratory.

The patent-pending loading system for blanks is particularly innovative: they can be easily and directly milled without the hassle of having to screw them down into clamping frames. The working chamber drying system, also patent-pending, makes it possible to quickly switch between wet and dry machining. It can process up to ten discs, 60 blocks, or abutments nonstop.

There is almost no material in use in a dental laboratory today that the R5 can't machine. For instance, it can wet-grind glass ceramic or wet-mill titanium. Materi-

als like cobalt-chromium alloys, zirconium oxide, and PMMA are dry-milled. In this context, blanks up to a width of 40 mm can be machined. For wet-machining, the built-in tank only needs to be filled with clear water, which can then be easily disposed of later. Milling additives only need to be added to the water when machining titanium! And when dry-machining synthetic materials, a built-in ionizer reduces the particles' disruptive static charge.

The R5 is equipped with German-engineered technology from vhf which guarantees that at the end of the process, dental technicians get a true-to-the-original restoration that fits perfectly. A repetition accuracy of the linear axes of ± 0.003 mm and a sturdy body made of solid cast aluminum ensure the highest level of precision with minimal vibration. The use of a high-frequency spindle with

a peak power of 800 watts and fourfold hybrid ceramic ball bearings offers significant power in reserve. In addition, the machine is equipped with a separate water circulation system that keeps water constantly flowing through the spindle carrier and as a result, considerably reduces the heat expansion of the z-axis and the spindle. These design characteristics guarantee constant high-quality results while simultaneously maximizing the life of the spindle – which is particularly important in machines with blank changing units that are often run continuously over-

night. And finally, speeds of up to 80,000 rotations per minute make high feed rates possible. The components have been carefully designed to work together in perfect harmony, making the R5 one of the fastest machines on the market. ►

Milling or grinding?
Wet- or
dry-machining?
The R5 can do it all!



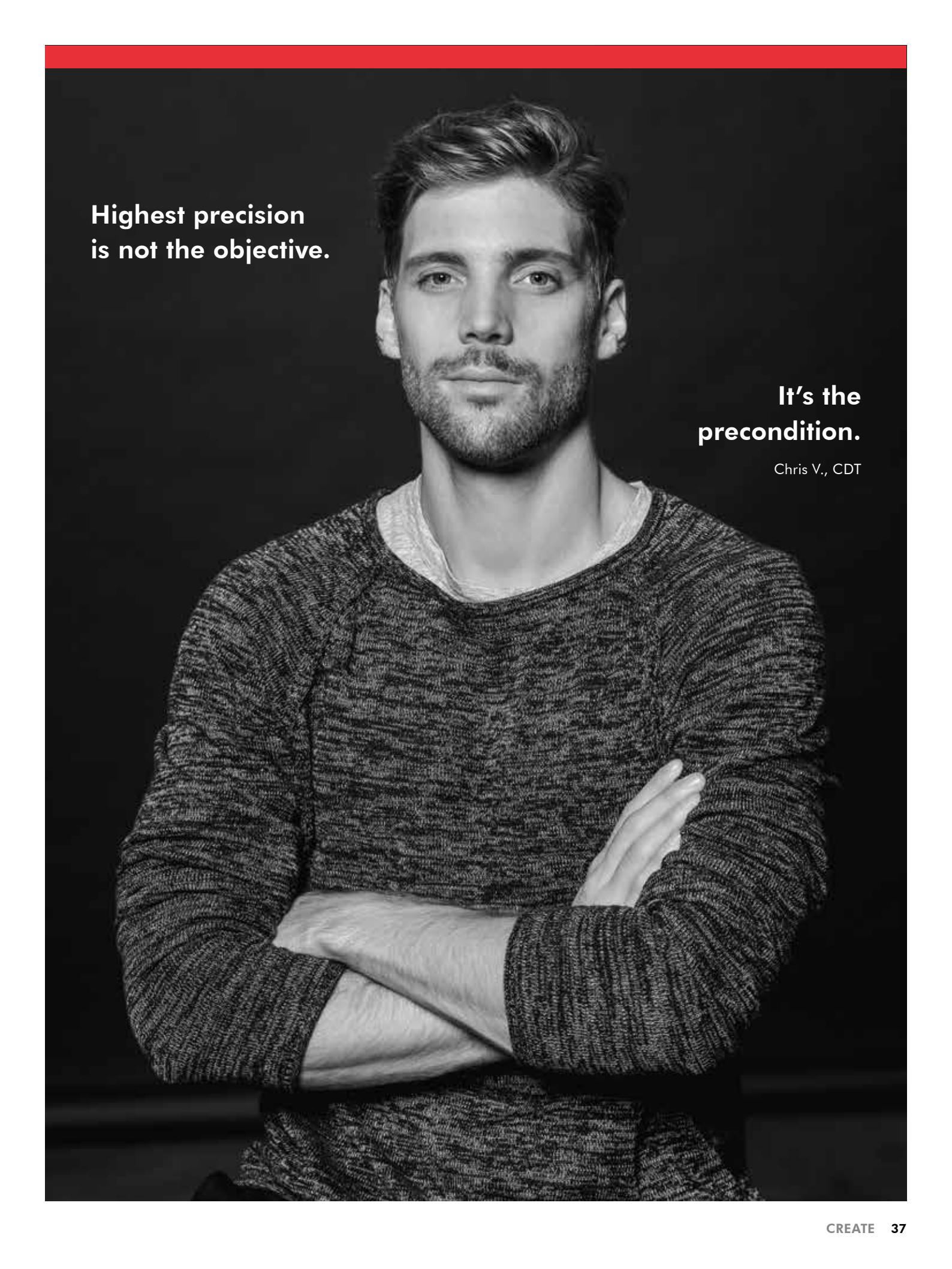
Despite having a small-sized footprint of only 580 × 380 mm, the machine weighs an enormous 145 kg. As a result, it offers a level of machine rigidity that meets even the highest demands, yet space for it can easily be found in any laboratory. Today, five-axis simultaneous machining is now considered standard. But when it comes to machining with five axes, the available range of motion of the axes is critical. Thanks to the intelligent configuration of the axes, whereby one of the R5's rotary axes directly moves the spindle, users enjoy impressive angles of tilt of ±35 degrees. This key angle of tilt determines the range of motion and thus the ability to produce for numerous dental indications, such as undercuts for crowns and bridges, drilling templates, or implant-based work.

Similar to all other vhf machines, the R5 is also completely open in every sense of the word: data can be imported in the standardized STL format, and when selecting discs, blocks, and abutments, the R5 can be used with materials from any manufacturer. ■



The automatic, tenfold blank changer can be loaded without any tools in a matter of seconds. Afterwards, the machine can process up to ten blanks, as necessary. Either in sequence or as required.





**Highest precision
is not the objective.**

**It's the
precondition.**

Chris V., CDT

GOOD BECOMES EVEN BETTER: THE NEW K5+

The latest horse in the stable: during the fall of 2018, the K5+ was introduced with some impressive new features Made in Germany. This best-selling specialist device for wet processing has been upgraded by fitting it with toolless blank clamping and an ionizer.

Dry milling to perfection

Development of our dental machines is always geared towards market requirements – that way we can always achieve perfect results for our customers. The new K5+ is thus fitted with revolutionary DirectDiscTechnology for fixing blanks. Thanks to this tool-free blank clamping system, the machine can be loaded with material more quickly and easily.

An integrated ionizer to neutralize the static loading on acrylic chips and an improved air flow in the work area significantly reduces your cleaning time and costs. But even that is not enough: further highlights that will impress customers include the built-in camera for simplified support. An integrated Ethernet connection also increases the connection stability and flexibility at the installation site.

Lastly, the K5+, with its new, clean, and white look, also differs significantly from precursor models in terms of its aesthetics.



PRECISE + ALMOST INDESTRUCTIBLE: TOOLS & ABUTMENT HOLDERS.



**Composite single-tooth cutters
made by vhf**

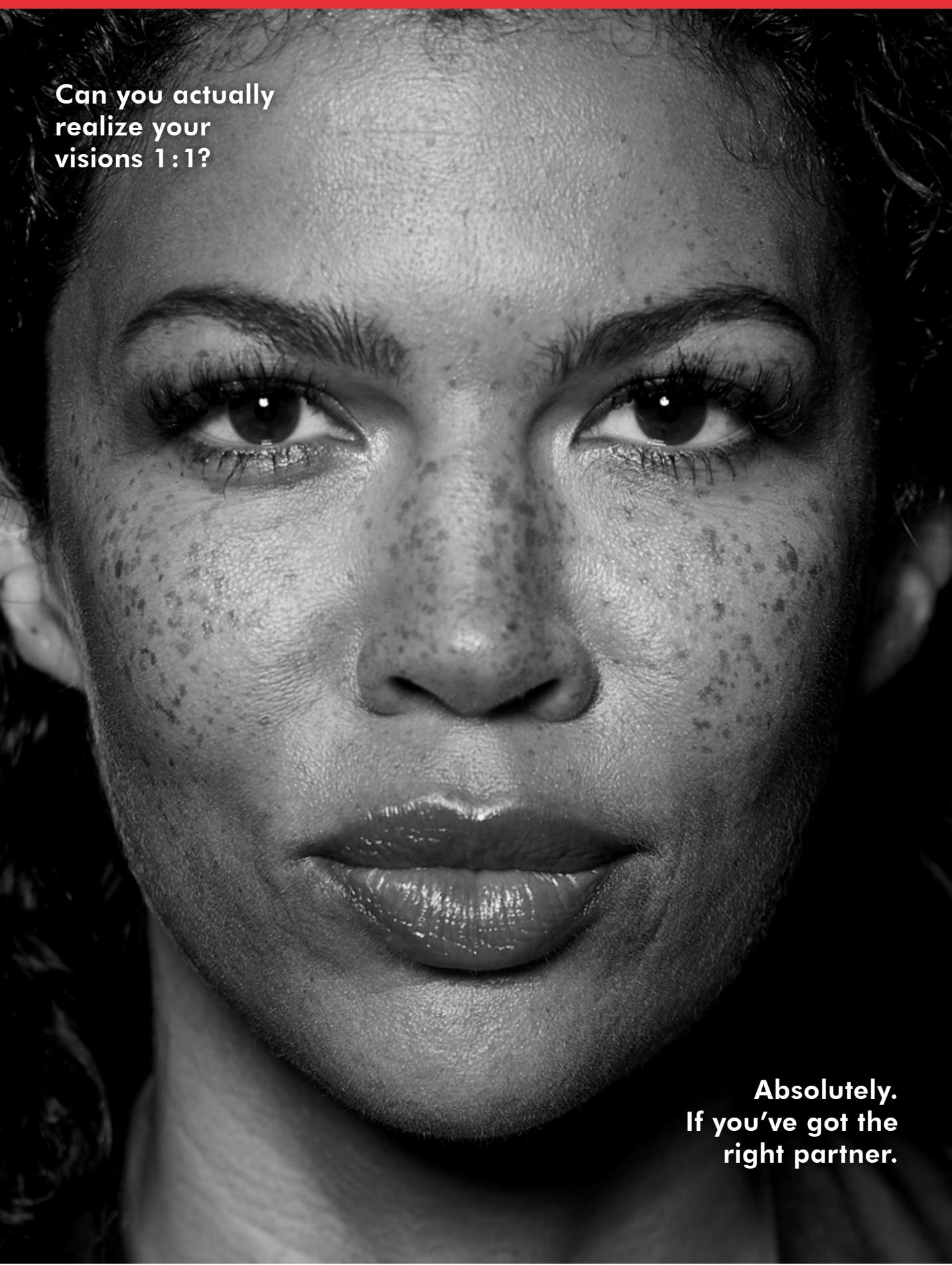
Homemade is always best: for example, the new and extremely durable composite single-tooth cutter with a diamond coating for dental technology. Like all tools: made by vhf itself with the renowned uncompromisingly high quality standards.



**Open to all – even with
abutments**

Being open to all materials has always been a matter of course at vhf. This naturally applies to abutments as well, and vhf is continuously expanding its range. Currently, holders are available for the Medentika (PreFace[®]), nt-trading (NT-Preform[®]), MIT (ZEUS), and DESS systems for the wet processing machines Z4, R5, N4, and S2. As a result, our customers benefit from steadily growing processing possibilities.





**Can you actually
realize your
visions 1:1?**

**Absolutely.
If you've got the
right partner.**

SURPRISINGLY DIFFERENT: OUR COMMUNICATION.

While most people don't need a face-lift yet at 30, we have given ourselves a makeover and are stepping out into the future with freshness and courage.

Striking features: our new online and print-based values advertising campaigns include powerful motifs and bold slogans.

OUR NEW APPEARANCE.

What immediately stands out is the vhf brand's new layout, which confidently reflects our corporate values.

Classy design, high-quality appearance: our product advertisements and catalogs emphasize the pride we take in our products – the machines made by vhf.



The dialog between our customers and vhf stands in the foreground: the current partner campaign highlights the link between people and vhf machines.



At vhf we think of a trade show as a "company living room" – we treat visitors to our best in order to leave a lasting impression.

Regarding vhf's new appearance, Christine McClymont, Head of Marketing and Communications at vhf, reveals a few details:

Why has vhf been given a makeover?

vhf has been growing continuously over the past three decades – the time had come to enhance our appearance and be ready for the coming decades. We have created a modern, uniform look that optimally reflects our self-image.

How is the new appearance aligned to vhf's values?

vhf's new corporate design excellently reflects our approach: straightforwardness, precision, and the highest standards of quality. Our motto "Creating Perfection", is behind everything we do – not simply as a vision but in our day-to-day work. That is the secret of our success.



Christine McClymont
Head of Marketing and Communications at vhf.



FROM IDEA TO REALITY.

Dr. Jens Butschan: how a vhf product is created.

The development of a new product is like a marathon run – you need discipline, endurance, and it takes many steps to reach the goal. CREATE met with Dr. Jens Butschan, Head of Innovation and Development at vhf, and talked about the development process of a new vhf machine.

The idea

An interdisciplinary team of product management and sales starts with brainstorming: What is in demand on the market? What do customers want? Are there new regulations that have to be met? “We drive product development in two ways. On the one hand, we implement incremental improvements derived from concrete customer needs into our existing product portfolio. On the other hand, we try to take disruptive paths, leave the existing tracks, and constantly critique existing systems from different perspectives. This approach allows us to always develop the right innovations for our customers,” says Dr. Butschan. “With our latest dental milling machine, for example, it was user feedback that prompted us to install a tool-free blank clamping system and an ionizer. These innovations significantly minimize the workload of our customers.”

Project definition and planning

In this phase the idea becomes a concrete project: “We consider how the requirements from the specifications can be implemented in principle,” says Dr. Butschan. “In this development step, we try to develop and evaluate as many approaches as possible. The results flow into initial rough concepts, which are continuously discussed and adapted with product management. This ensures that experience from existing products is incorporated and possible risks are calculated. All findings from this development phase are incorporated into the requirements specification, which forms the basis for the subsequent steps in the project.”

The realization

Now our product is really taking shape: mechanics and electronics are developed, drawings and test planning procedures are created. At the same time, the design



CAD design plays a decisive role in the development of new products.

is coordinated and sample parts are produced. “With the help of agile project management methods, we are successively approaching the desired target state and the requirements from the specifications,” explains the division manager. “After each step, technical and economic aspects are taken into account and new measures defined. This process continues until we are satisfied with the overall concept and we can build the first prototypes.” The extensive validation process begins with the creation of the prototypes. Here, too, the product is further developed in loops until all business units have given their approval and the product can go into series production. “We test and check until we are one hundred percent satisfied – and everything works perfectly,” summarizes Dr. Butschan.

The conclusion

Now the market launch and the start of production are on the agenda. Thousands of hours of work have been invested thus far. The following steps will clarify how the launch should take place, which marketing tools will be used, and much more. ■

**“We test and
check until
we are one
hundred percent
satisfied.”**



LONDON?
PARIS?

AMMERBUCH!



“At vhf, there is excellent team spirit among the colleagues. Our ability to create innovative products is due in large part to teamwork and flat hierarchies.”

Daniela Winter
Front Office Assistant



“vhf is a growing company with a diverse team. The open and friendly working atmosphere provides consistently high motivation for the employees.”

Elvis Kana
Design Engineer



“Our customers demand from us what we expect from ourselves: excellent service in every situation. We want to be measure against this standard.”

Markus Sayer
Team Leader
Technical Support





TOP PERFORMANCE EARNS RECOGNITION

At vhf we are proud of our staff – people who think ahead: with motivation, they conscientiously shape the future of our company,” comments Ria Brandenberger, member of the board, summarizing the commitment of the workforce.

To continue its history of success, vhf engages skilled workers, who are easily infected with this enthusiasm. “vhf’ers” – as they refer to themselves – work in dynamic teams with short lines of communication and flat hierarchies. And they are supported by a modern and extremely well-equipped working environment which includes, for example, ergonomic furniture. Ria Brandenberger describes it as follows: “Our principle is: efficient and innovative work through responsible actions and pleasure from work. This is what I often hear from our employees: ‘The camaraderie at vhf is unique – you won’t find that anywhere else!’ That fills me with pride.”



Scan the code to discover more about working at vhf.

For our fair and respectful Human Resources Management and Communication, Kununu has awarded us the coveted seals “Open Company” and “Top Company”.

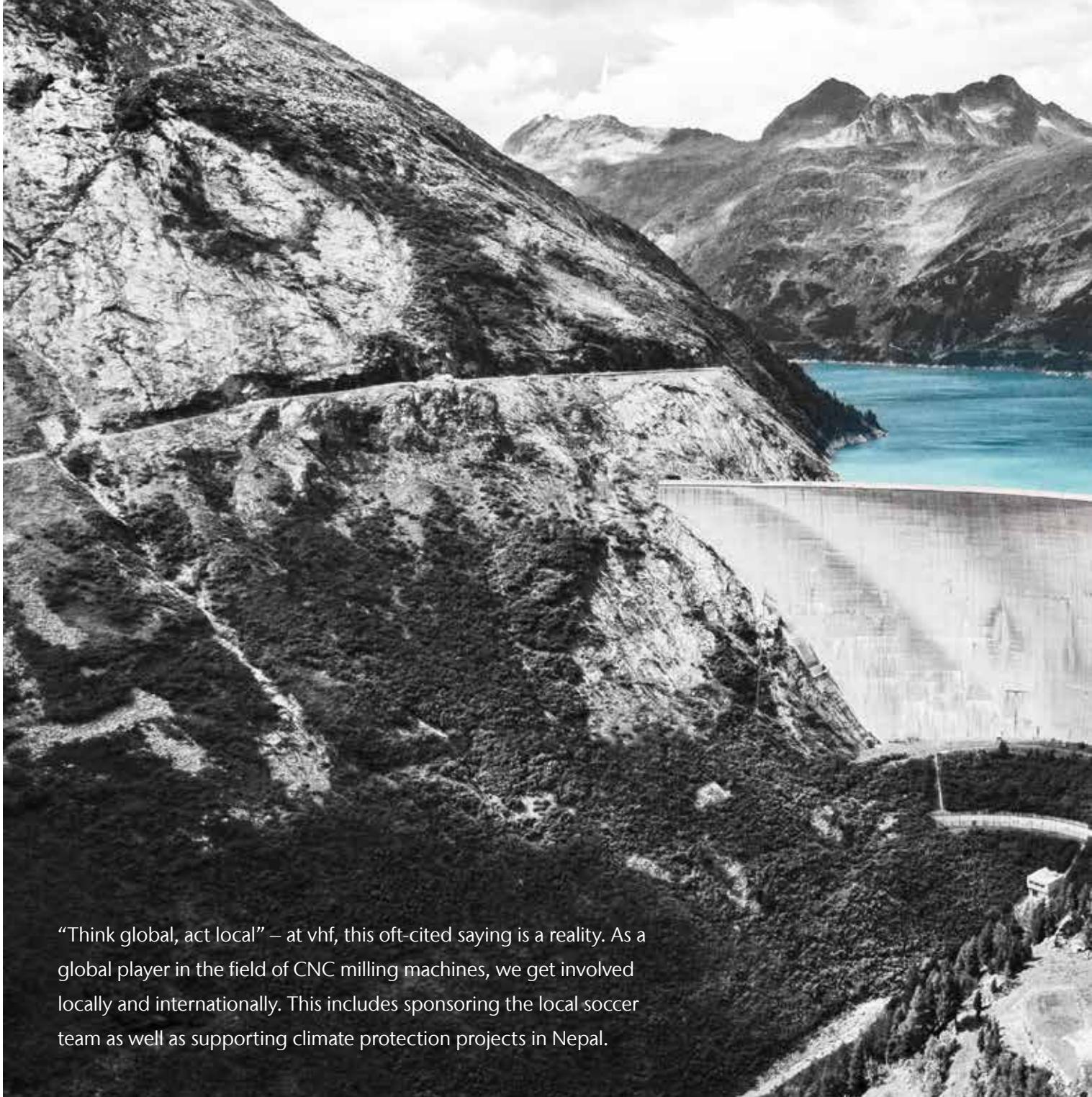


PERFORMANCE ON.

So much commitment reaps its rewards:
at regular events, vhf employees celebrate
away from their workbenches and desks – in-
cluding at the 30-year anniversary party.



RESPONSIBILITY. THI



“Think global, act local” – at vhf, this oft-cited saying is a reality. As a global player in the field of CNC milling machines, we get involved locally and internationally. This includes sponsoring the local soccer team as well as supporting climate protection projects in Nepal.

INKING BEYOND TODAY.





Sustainability is a key aspect of our business activities. Hence, among other things, we print our catalogs, brochures, and flyers on recycled paper. And, for many years already, vhf has been using only green electricity from self-generated solar power and local hydroelectric power.

SPONSORING

Direct hit: for four years in succession, vhf has been promoting physical activity among young people and sponsors the vhf youth soccer cup, which is geared towards the sports club TSV Altingen.



RENEWABLE ENERGIES

vhf generates a large share of its energy requirements for itself using solar panels. The company also uses local hydroelectric power and therefore gets all its energy from green sources.

Last but not least, we take a personal approach to commitment: for 30 years, we have been manufacturing in Germany and offer our employees a secure job with numerous additional benefits. This includes, for example the "Job Bike" so that our staff can be environmentally friendly and cycle to work. And this is also good for their health.

DONATIONS

vhf is committed to protecting the climate: the traditional fundraising campaign enables projects such as atmosfair to be supported. The organization actively protects the climate through renewable energy projects that compensate greenhouse gases. In an atmosfair project, biogas plants in Nepal are built to provide households in rural areas with eco-friendly energy (see picture). That's how vhf helps to preserve our planet for future generations.

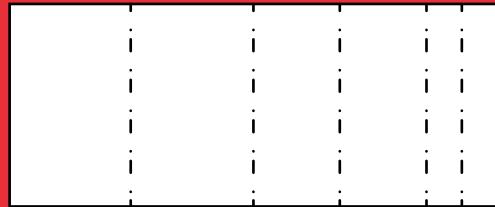


Image © atmosfair

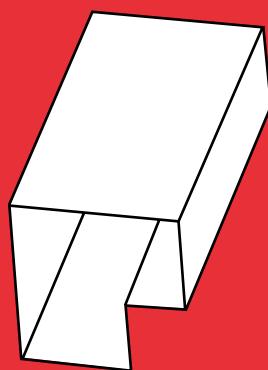
RECYCLING

According to calculations, the recycling of various reusable materials has resulted in a saving of 585 tonnes of resources and 187 tonnes of greenhouse gases in 2016.

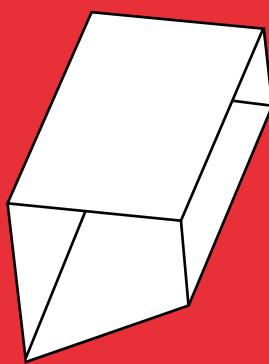




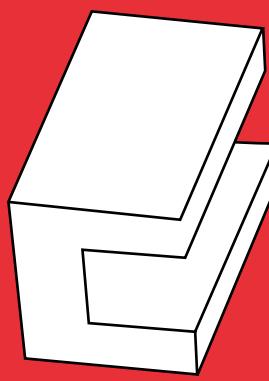
Which three-dimensional figure can be made
by folding the two-dimensional template?



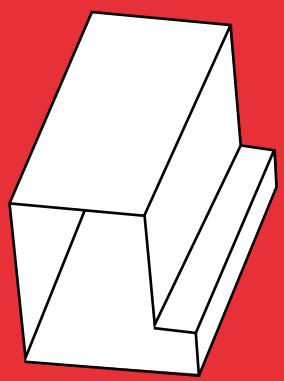
A



B



C



D

THINKING OUTSIDE THE BOX.

Imprint

vhf camfacture AG
Lettenstraße 10
72119 Ammerbuch
Germany

Phone: +49 7032 97097 000
Fax: +49 7032 97097 900

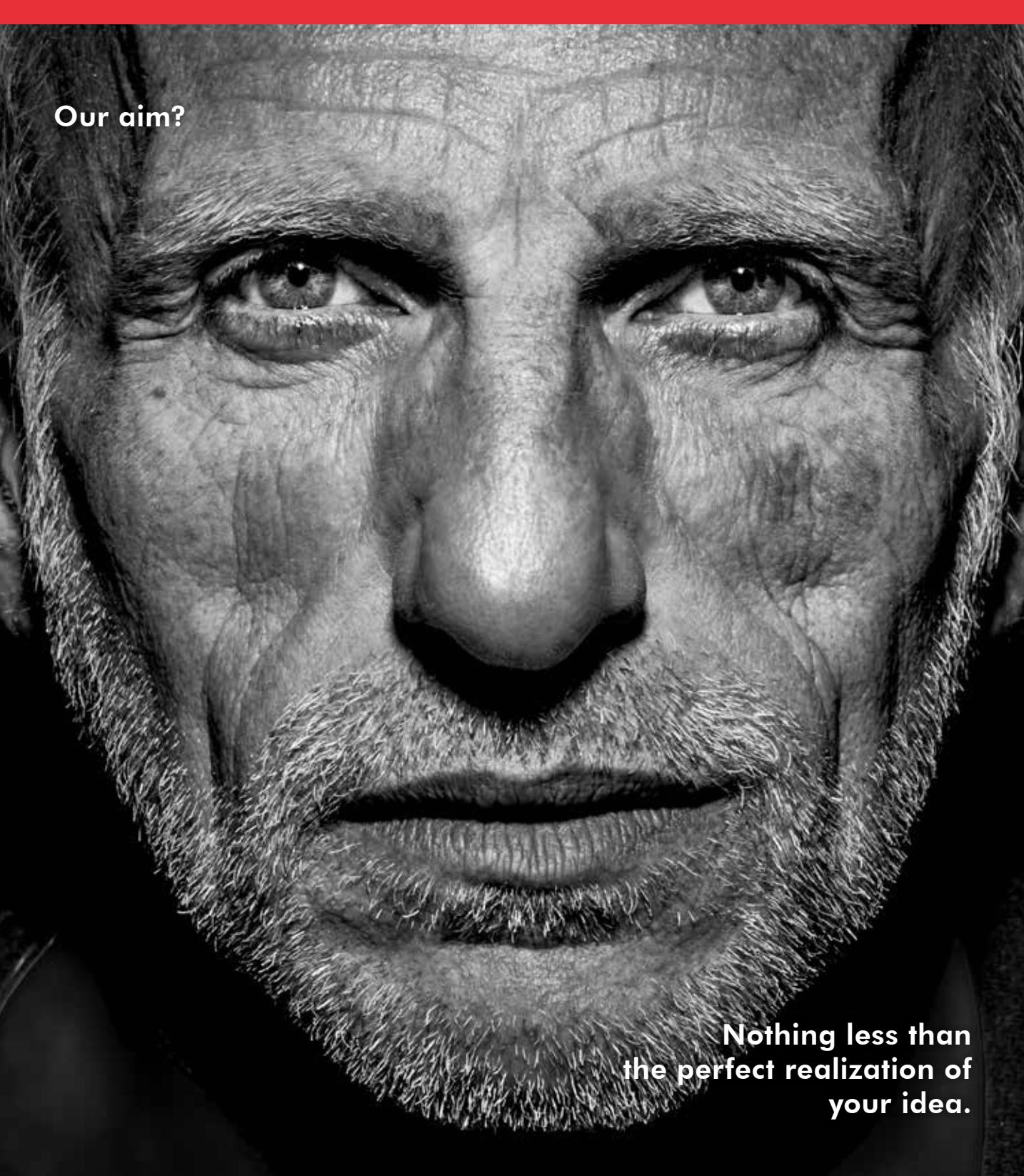
As of: March 2019

Editors:

Christine McClymont
Jörn Vogt
Matthias Brehmke

Internet: vhf.de
The Americas: vhf.com
E-mail: info@vhf.de

Puzzle solution: D



Our aim?

**Nothing less than
the perfect realization of
your idea.**

vhf is a technology company with an unparalleled passion for engineering. For over 30 years, we have been striving for perfection in everything we do. To offer our customers the prime solutions for all milling, cutting, and grinding applications. Machines, tools, and software from a single source – always 100% Made in Germany. See for yourself: vhf.de

vhf
CREATING PERFECTION