

difference

THE KÄRCHER MAGAZINE

01 | 2020



CONNECTIONS

Sustainable and secure

THE ELEPHANT WHISPERER

The secret life
of elephants

EVERYTHING IS CONNECTED

Manufacturing
of the future

BRING BACK THE WOW

No rest,
just progress



» 01 | 2020

Dear readers,

Times are changing. Cleaning is no longer a monotonous task to be completed every weekend. These days, cleaning is more of a personal thing, to be carried out flexibly and when needed to keep up with each individual's requirements. As the market leader in cleaning and maintenance, we are responding to this trend with an innovative product portfolio, the Kärcher Battery Universe, brand communication that will really WOW and new digital technologies in production and logistics. All of this means we can respond more quickly to our customers' needs.

It is of particular interest that, in our fast-paced age, increasing, analogous focus is being placed on the ability to slow down. This could be cleaning your home, as psychologist Dr Bösenkopf explains in her interview, or working with animals. Did you know that elephants are a symbol of peace? We had the privilege of accompanying a Thai mahout for a day. Read our featured story to find out more about his work with elephants and the huge importance of cleanliness in conserving the species.

Thank you for reading –
I hope you find this magazine inspiring and relaxing.

Yours,
Hartmut Jenner
Chief Executive Officer
Chairman of the Board of Management
Alfred Kärcher SE & Co. KG



04

**CLEAN AND RELAXED
TO THE MAX**
Facts and figures

06

THE ELEPHANT WHISPERER
The secret life of elephants

12

EVERYTHING IS CONNECTED
Manufacturing of the future

18

NEW PRODUCTS
The current highlights of the
Kärcher range

23

AIMING HIGH
Cleaning with industrial climbers

24

**HOW BATTERIES ARE
CHANGING THE WORLD**
A look at the future
of mobile energy storage

28

BRING BACK THE WOW
No rest, just progress

34

PROTECTING OUR OCEANS
With One Earth – One Ocean

35

IMPRINT

02
03

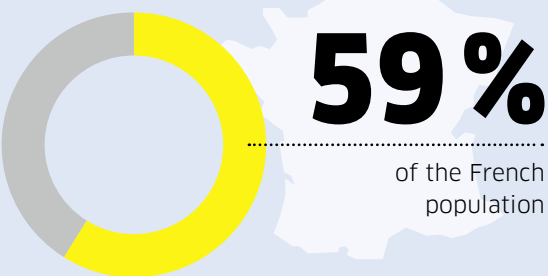
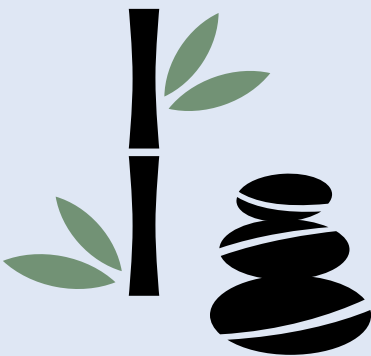
difference
01 | 2020

CLEAN AND RELAXED TO THE MAX

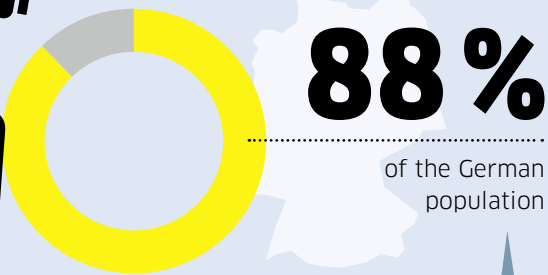
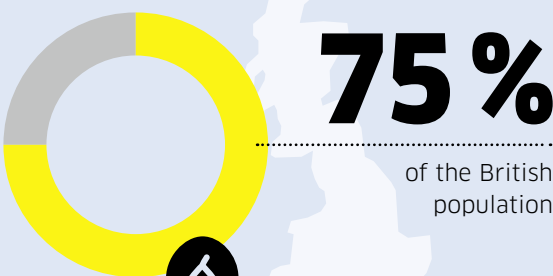
The motivation to pick up a cloth or a vacuum cleaner is the anticipation of the result: a clean home where you can truly relax and feel great. Often, though, the process is just as important as the result, and many people find that cleaning is relaxing.

CLEANING AWAY THE STRESS OF THE DAILY GRIND

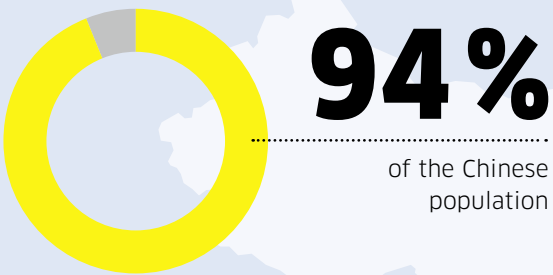
Fifty-nine per cent of the French population describe themselves as meditative and calm when cleaning. Seventy-five per cent of the British population say they mop when they are stressed. Neurobiologists have discovered that our brains release natural “reward chemicals” when they are allowed to go on autopilot. That is exactly what cleaning offers. We are focused on the moment, our mind is clear and we are rewarded for our efforts with a clean home, too!



describe the cleaning process as stress busting.



value a clean home.



Source: online survey by Dynata, commissioned by Kärcher, 2019. 11,099 people took part. The results are weighted and are representative of the population in Belgium, Brazil, China, France, Germany, Japan, the Netherlands, Poland, Russia, the UK and the USA in the 18-to-65 age group.

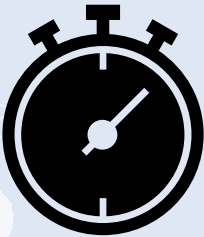
CLEANING TIMES AROUND THE WORLD

As a global average, people spend about the same length of time cleaning their homes every week as they would on a cinema trip, a good walk or a coffee with friends. Coming in at four hours and 49 minutes, the Russians spend the longest time cleaning their homes.



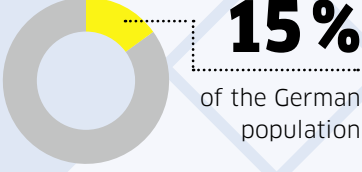
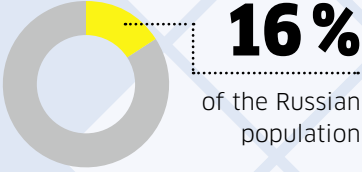
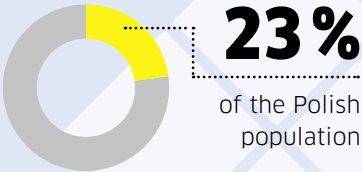
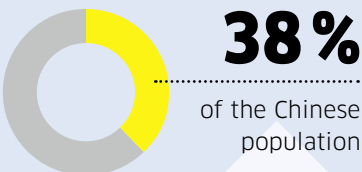
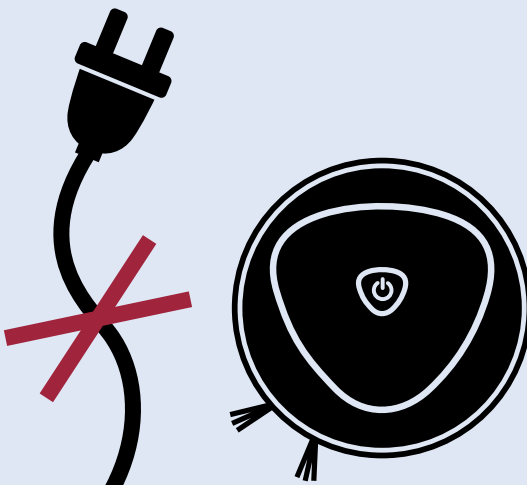
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GLOBALLY

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Poland	03:45 h
Belgium	03:39 h
Brazil	03:01 h
China	02:42 h
UK	02:35 h
Germany	02:30 h
USA	02:22 h
France	02:09 h
Japan	01:29 h

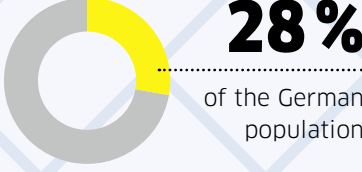
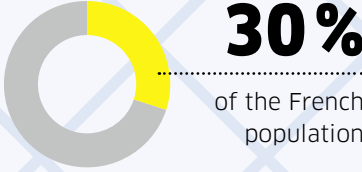
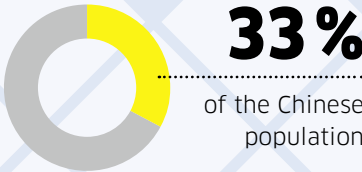
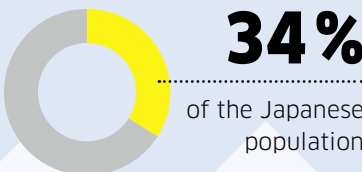


USING THE LATEST TECHNOLOGY

We are seeing a clear trend towards cord-less devices. Battery-powered appliances are particularly popular in Japan, where a third of the population is already using them. Acceptance of autonomous cleaning solutions such as robot vacuum cleaners varies wildly from country to country – China stands out with the highest popularity by far.



clean with autonomous appliances.



use battery-powered cleaning devices.

Can cleaning help with well-being?
Read more in our interview with Dr Brigitte Bösenkopf (psychologist, journalist and head of the Vienna Stress Centre): [kaercher.com/cleaningstudy2019](https://www.kaercher.com/cleaningstudy2019)

The secret life of elephants

THE ELEPHANT WHISPERER

Somchat Changkarn and his charges can communicate without words – this mahout can tell how the animals are feeling by their body language. He spends up to 12 hours per day with the pachyderms at the Thai Elephant Conservation Center.



» THAILAND WITHOUT ELEPHANTS? I JUST CAN'T IMAGINE IT.«

SOMCHAT CHANGKARN



Somchat Changkarn has dedicated his life to elephants. At 40 years old, he is the head mahout at the Thai Elephant Conservation Center (TECC).

01 | 2020
difference

There is no holding back when the elephants see water! A few moments ago, the troop was taking a leisurely trot towards the lake in single file and then, suddenly, they crash down the bank and throw themselves into the cool water. "Bath time is the real high point of the day for our charges," explains Somchat Changkarn. The Thai mahout has been in the job at the Thai Elephant Conservation Center (TECC) in Lampang for 17 years. To make things easier for visitors to the Center, the 40-year-old goes by Dang for short. He has two children and is now the chief mahout, caring for 111 elephants, along with the rest of his team. The Center is around 80 km south-east of the provincial capital, Chiang Mai, in the north of Thailand. The Center covers a large, wild area full of thick forests

and lush, green hills; a breeding station and elephant hospital; a visitor centre and a mahout school.

12
HOURS PER DAY
IS HOW LONG THE MAHOUTS
SPEND WITH THE ELEPHANTS -
A TRULY FULL-TIME JOB!

Mahouts are trained elephant herders, able to direct these grey giants with simple commands, gestures and touches. "Nobody knows elephants like an experienced mahout," says Dang. "We can

read their body language precisely and it tells us how that animal is feeling at that moment and what it needs, and when it is time for a refreshing bath in the lake, they tell us that, too. They get restless and that shows us that they want to go down to the water."

Splashing in the lake is skincare

Baths are not just about the welcome cooling effect for elephants. In fact, the skincare implications are far more important. "That is why bathing in the lake is a part of their daily routine," explains Dang. This is where the elephants wash off the muddy crust they have built up over several "sand baths". They use the sand to protect themselves from the sun, from overheating and from irritating insects.

Thailand - the home of the elephants

The day-to-day lives of humans and elephants are more closely interwoven in Thailand than anywhere else on earth. Up until 1917, the national flag even featured a white elephant to symbolise the absolute monarchy. The birth of a white elephant (often albino or "normal" elephants with paler flecks of pigment on their ears or foreheads) was regarded as a good omen for the ruler of the time. Even today, white calves automatically pass into the ownership of the Thai royal family and, according to legend, one of Buddha's incarnations was as a white elephant. Many Thais believe that the country's borders depict the head of an elephant. The "forehead" forms the border with neighbouring Myanmar in the north and the "trunk" stretches to the



FIVE FACTS ABOUT THAILAND

- The Kingdom of Thailand covers an area of 513,115 km². The capital is Bangkok.
- The Thais adore their king. You will find pictures of him everywhere.
- This South East Asian country borders Myanmar, Laos, Cambodia and Malaysia.
- The national anthem is played every day on Thai television, radio channels and in public buildings at 8 am and 6 pm. When they hear the anthem, people stand or stop for a moment - before going back to normal life.
- The principle crop in the country is rice.



» I OFTEN BURN INCENSE STICKS IN THE TEMPLE AND PRAY FOR OUR ELEPHANTS TO REMAIN HEALTHY.«

SOMCHAT CHANGKARN

.....
A clean environment and daily skincare are important for elephants' well-being, preventing them from becoming ill.



SKINCARE FOR ESPECIALLY THICK SKIN!

Elephants regularly wallow in mud or water. They also enjoy taking "sand baths". These skincare rituals are beneficial in several ways: bathing keeps the skin supple and flexible, while the muddy crust protects against overheating, too much sun and irritating parasites.

Andaman Sea in the west, plunging into the Gulf of Thailand in the east.

Working animals with no work

Unfortunately, the history of these gentle giants also includes their use in war over many years and as "carhorses" to pull tree trunks weighing several tons through the dense Thai forests. In 1989, logging was made illegal in Thailand, meaning many elephants became surplus to requirements. From that point on elephants had to earn their keep as tourist attractions and by transporting holidaymakers through the jungle on trekking tours – often living in poor conditions. Thankfully, mindsets have been changing on this for a long time now: the Thai government has declared vast stretches of land to be conservation areas, is encouraging green tourism and

is proactively raising awareness. This is where the vast wealth of expertise possessed by mahouts really comes into its own. At the National Elephant Institute (NEI), which is part of the Thai Elephant Conservation Center in Lampang, mahouts together with Taweepoke Angkawanish, Head of the Elephant Conservation Programme, care for sick or orphaned elephants, as well as elephants who were given up by their former owners. The in-house hospital treats elephants for free and is funded by the Thai government and the income from eco-tourism on the Center's land. Throughout their treatment, each elephant receives care from their own assigned mahout. "The recovery period often lasts two or three months, and during that time we try to educate the mahouts as much as possible so as to avoid

future health problems for the elephants," explains Taweepoke Angkawanish. "We show them how to take proper care of the elephants."

3,000
KG
IS THE WEIGHT OF AN ADULT
ASIAN ELEPHANT.

Hygiene is a crucial factor in keeping domestic elephants. "Elephants often get sick because they are kept in dirty stables," explains Dang. "The animals

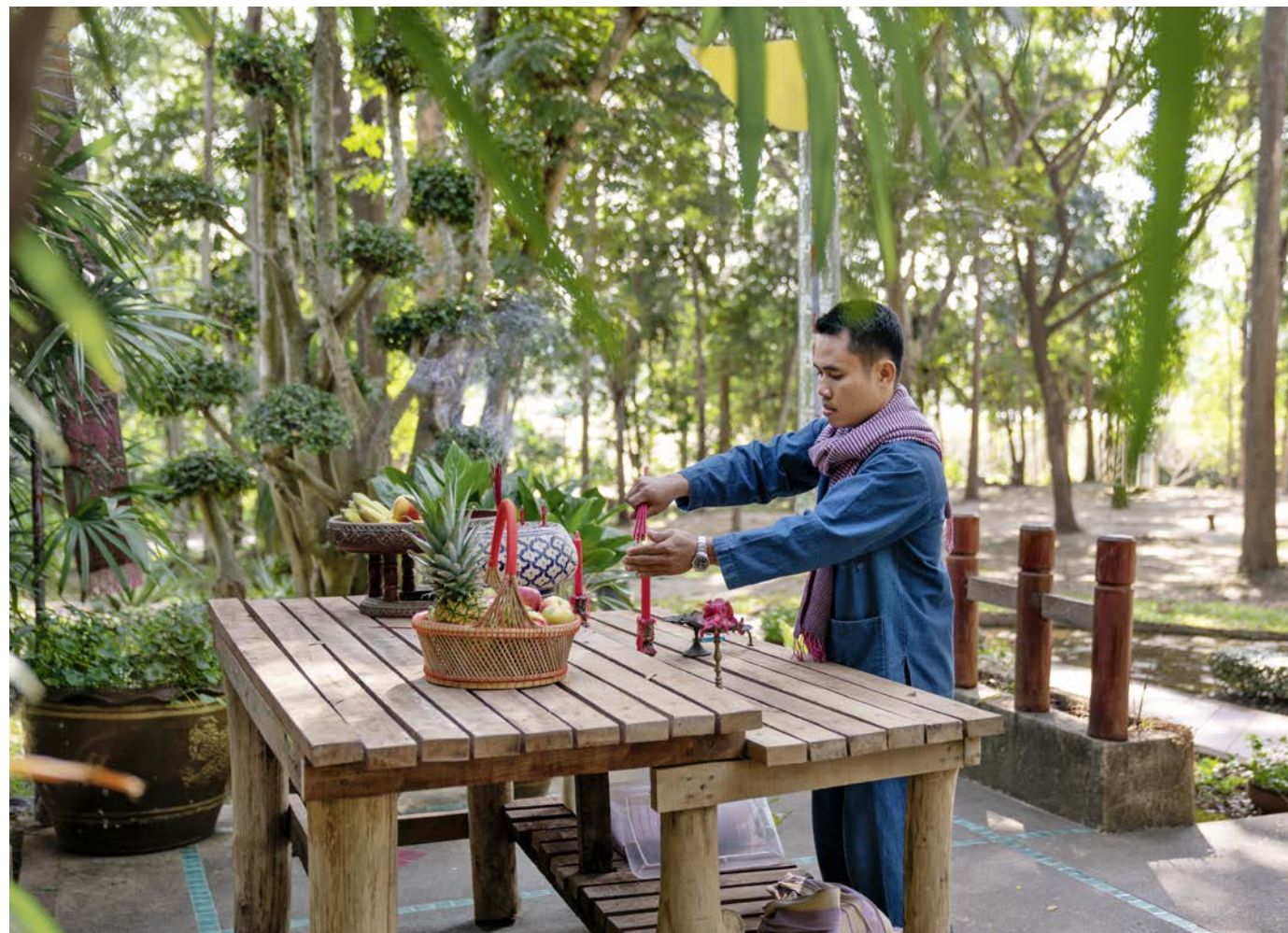
have to eat off the dirty floor and catch illnesses that way. Many elephants also do not receive sufficient care."

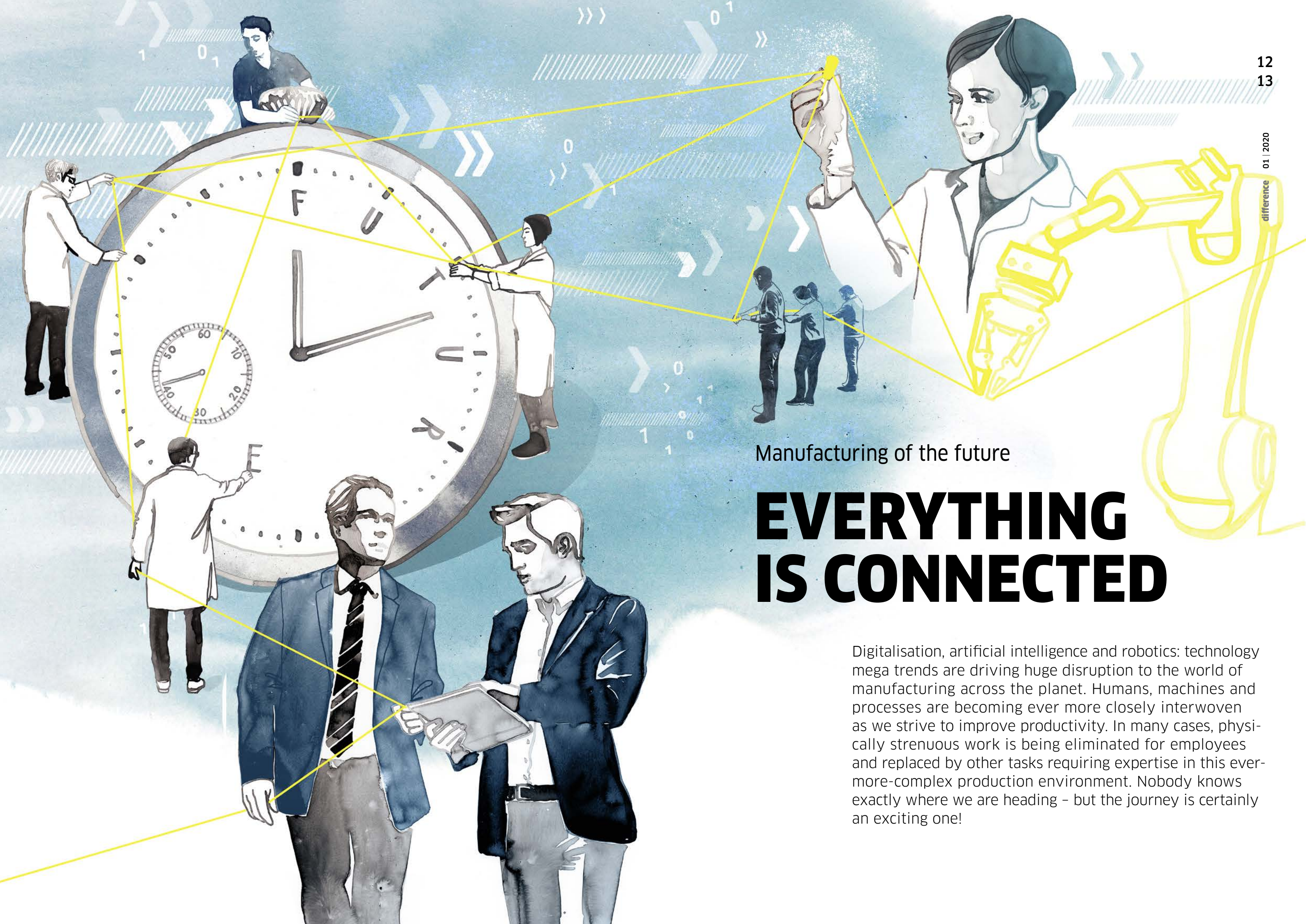
The animals need to keep clean in order to survive

In Lampang, the staff use a hot water pressure washer every day to clean the elephant stables and open spaces of stubborn dirt. The small elephants also get a gentle shower using the garden hose. "Many elephant owners are not aware of how important it is to clean the animals' environment every day," Dang points out. In Lampang, they are reaping the benefits of being consistent with this policy. Each year sees up to two elephant births, meaning the Center is making a significant contribution to conserving the species. "Thailand without elephants? I just can't

imagine it," says Dang, pensively. "There is no more beautiful animal for me than an elephant. They are astoundingly clever and highly sociable. They look after one another and every elephant has its own unique personality. That makes them much more similar to us humans than many people realise." ■

Video of elephant whisperer
Somchat Changkarn:
www.kaercher.com/difference

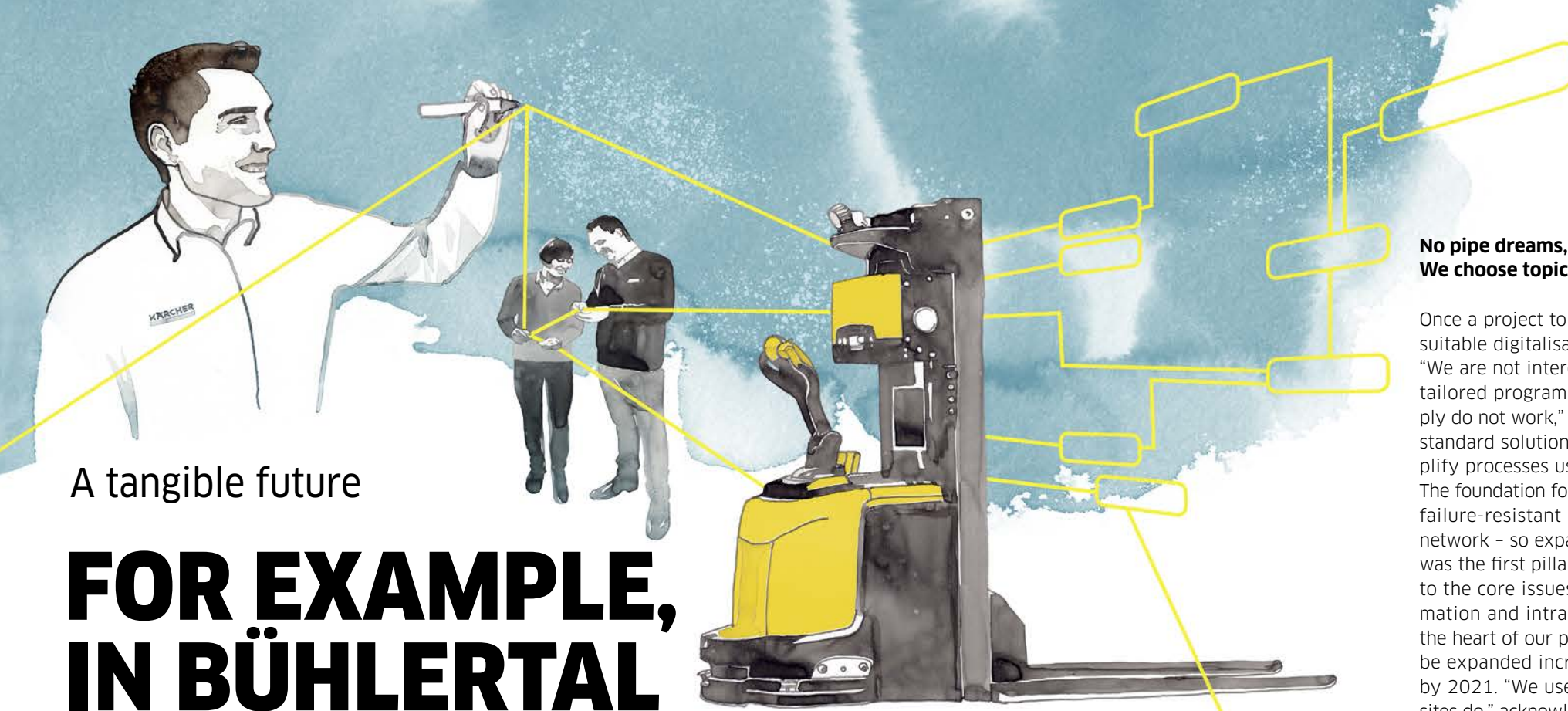




Manufacturing of the future

EVERYTHING IS CONNECTED

Digitalisation, artificial intelligence and robotics: technology mega trends are driving huge disruption to the world of manufacturing across the planet. Humans, machines and processes are becoming ever more closely interwoven as we strive to improve productivity. In many cases, physically strenuous work is being eliminated for employees and replaced by other tasks requiring expertise in this ever-more-complex production environment. Nobody knows exactly where we are heading – but the journey is certainly an exciting one!



A tangible future

FOR EXAMPLE, IN BÜHLERTAL

Manufacturing locally while remaining competitive. Implementing client requests in high quality at high speed. Assuring the long-term existence and sustainability of our site. Kärcher is heading in this direction and going fully digital at the Bühlertal site. Even before the Bühlertal 5.0 project started, the plant was already over 50% automated. Within just two years, production control, manufacturing and intralogistics had all been introduced or further automated. But why do driverless vehicles need swarm intelligence and why do employees now have to carry much less weight? Let's take a look.

Taking seasonal work digital: business goes on

Large projects have a habit of petering out before they come to anything. This is a particular problem when the scope is too big and employees are not on board. Katja Rantzsch, project manager for Bühlertal 5.0, explains: "Right from the start, it was important that all staff were involved because they are the ones who will have to take on many of the tasks in the implementation process. That can only happen if they are motivated and open to new ideas – not to mention that business goes on and we have to reliably run the operational side of things, too."

In Bühlertal, operations comprise, for example, in-house plastic manufacturing of 50,000 components every day and the production of 25,000 products for domestic and professional use. Then there is the particular challenge posed by cleaning technology being a seasonal business. In the retail segment, demand for high-pressure cleaners is especially high in spring and summer. "As soon as the sun comes out, orders spike and they need fulfilling quickly – so we work with a team of 570 permanent staff plus an additional 300 seasonal staff across three shifts," explains Rantzsch.

No pipe dreams, please. We choose topics and tackle them.

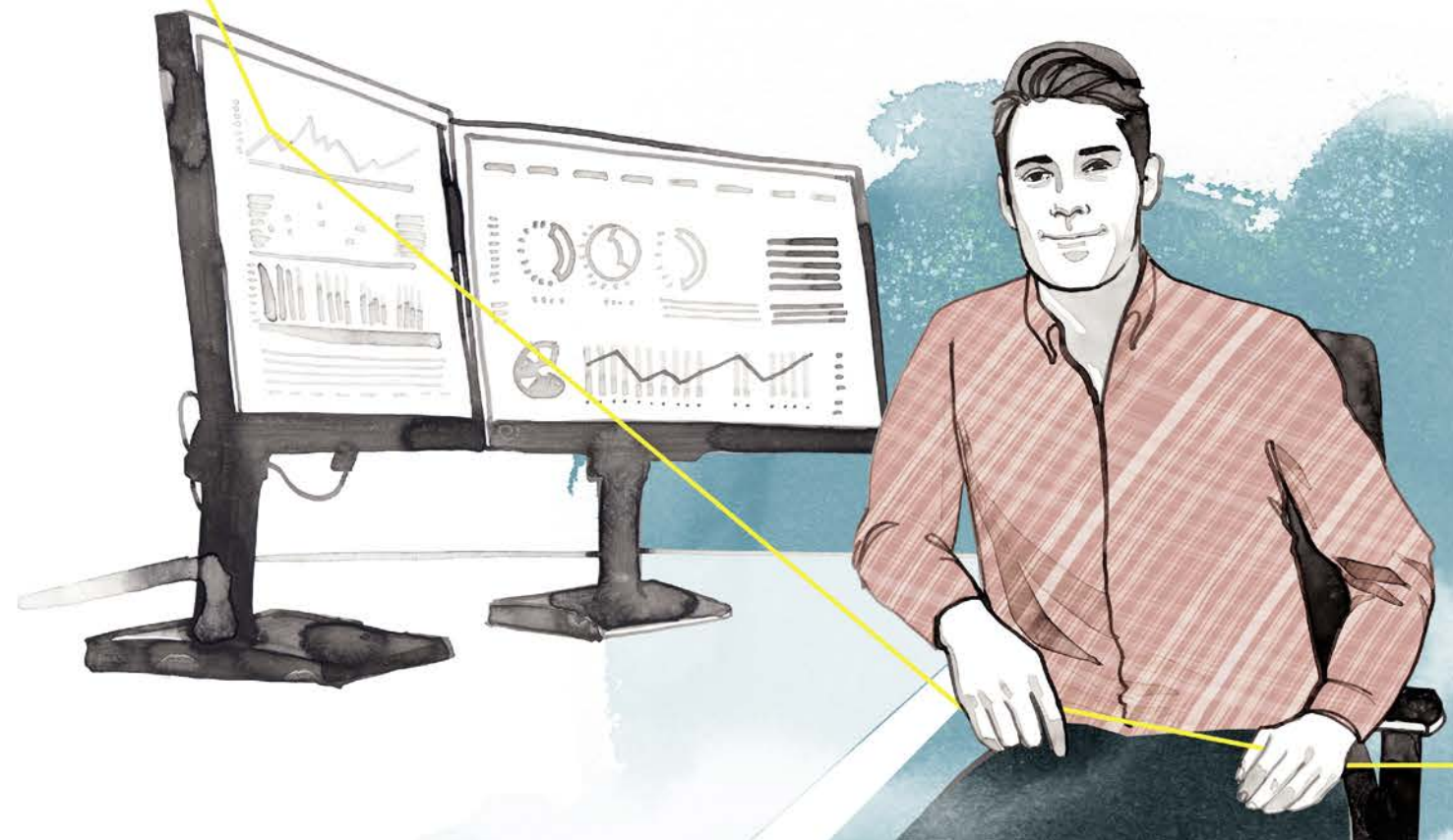
Once a project to tackle has been identified, a suitable digitalisation strategy must be selected. "We are not interested in commissioning large, tailored programming projects which then simply do not work," says Rantzsch. "We use fairly standard solutions which already work and simplify processes using software where we can." The foundation for all of this is high-performance, failure-resistant Wi-Fi and the right in-house network – so expanding our digital infrastructure was the first pillar of the project. Then we turned to the core issues of production control, automation and intralogistics. An MES system is at the heart of our production software, and it will be expanded incrementally with SAP interfaces by 2021. "We used to use Excel a lot, as many sites do," acknowledges Rantzsch. "That works, but it is labour-intensive and relies on just a few experts." The new system is even able to handle all of the detailed production planning, from pre-production to final assembly and all the way to quality control. "At the moment, we are finding potential for optimisation on an almost daily basis," says Rantzsch. "For example, our injection moulding machines have always had high capacity utilisation, but the MES has managed to improve this."

Humans and machines: working hand in hand

The digital revolution has hit the world of work, and some companies are automating with the goal of reducing staffing levels. Katja Rantzsch explains why that is not the goal in Bühlertal: "At the core of all of this is the goal of increasing the plant's output – by improving working conditions and smoothing processes." So the production lines were analysed, showing where work could be made easier. The final assembly of the K2 pressure washer involves manually installing the 2 kg pump – a very strenuous and not particularly ergonomic task when repeated over and

WHAT IS GOING ON IN BÜHLERTAL? (1)

The Bühlertal plant boasts 26,000 m² of production space and 23,000 m² of warehouse space. The in-house plastic production facility has 26 injection moulding machines and 250 tools. In-house motor production for models with up to 3.2 kW of power runs on two lines. The production facility turns out indoor steam cleaners, pressure washers and surface cleaners for domestic use and high-pressure cleaners for industrial use.





over. From 2020, this task will be completed by a machine. Steps will also be taken to ease the strain of working on our professional products. This will be particularly advantageous when dealing with the heavy machines. "Just like in the automotive industry, underdrive driverless transport systems will take the HDS high-pressure cleaner to each workstation in future – greatly improving ergonomic standards."

Once a product is ready to be picked up, the packaging robot places it on a pallet. The machines are then picked up by a driverless transport system (DTS). "This is truly fascinating technology," reports Röntzsch. "And the DTSs work using swarm intelligence. They don't simply complete a route; the DTS closest to the current task will pick the product up." Then it goes to the warehouse or to direct dispatch – where the plant has improved its quota from 30% to 50% using the measures already implemented, with a goal of 70% going forward. "Direct dispatch means orders are addressed and sent out quickly, with minimal storage costs."

WHAT IS GOING ON IN BÜHLERTAL? (2)

Many processes are automated at the facility and, of course, that requires the right solutions. Among others, these include 49 assembly and handling robots, 21 portal robots for moving and making screw connections, 53 torque-monitored electric screwdrivers and a 100% inspection rate of all machines using 34 image-processing and camera systems.

Well on the way – but not there yet: progress is motivation

Many initiatives have been or are in the process of being implemented in Bühlertal – and that is all within two years. "We are well on the way to becoming a paperless factory, as well," reports Röntzsch. In keeping with the digitalisation strategy for the whole company, we are setting up HR management at the plant so that employees who do not have their own computer can request holiday and report sick leave using digital terminal devices. Increased productivity and a reduction in costs caused by errors are the proof that all of this is working. "This project is not the end for us, though; it is just the beginning," says Röntzsch with a smile. "Because we want to go a step further every day, just like we have been doing so far – there is always more that can be done." ■



Learn more:
www.kaercher.com/difference

» WE ARE FINDING
POTENTIAL FOR OPTI-
MISATION ON AN
ALMOST DAILY BASIS.«

KATJA RÖNTZSCH

In demand at Jungheinrich

INTRALOGISTICS TO COMBAT WASTE*

Jungheinrich specialise in intralogistics solutions, and they provided support for Kärcher with the Bühlertal 5.0 project. What are the biggest challenges today?

Markus Staringer For a start, we rarely implement our solutions on a blank slate. We usually work on the basis of existing processes and assembly workflows. We work with our customers to investigate where resources are being wasted on things like unnecessary journeys, waiting times and storage. Then we optimise processes using this as a basis. There is very high demand for system availability. To assure availability, we have around 8,000 customer service technicians on duty so that we can remedy any issue in the shortest possible time.

Processes are overlapping more and more – primarily bridging intralogistics and production. Where do you see the greatest potential for more efficiency?

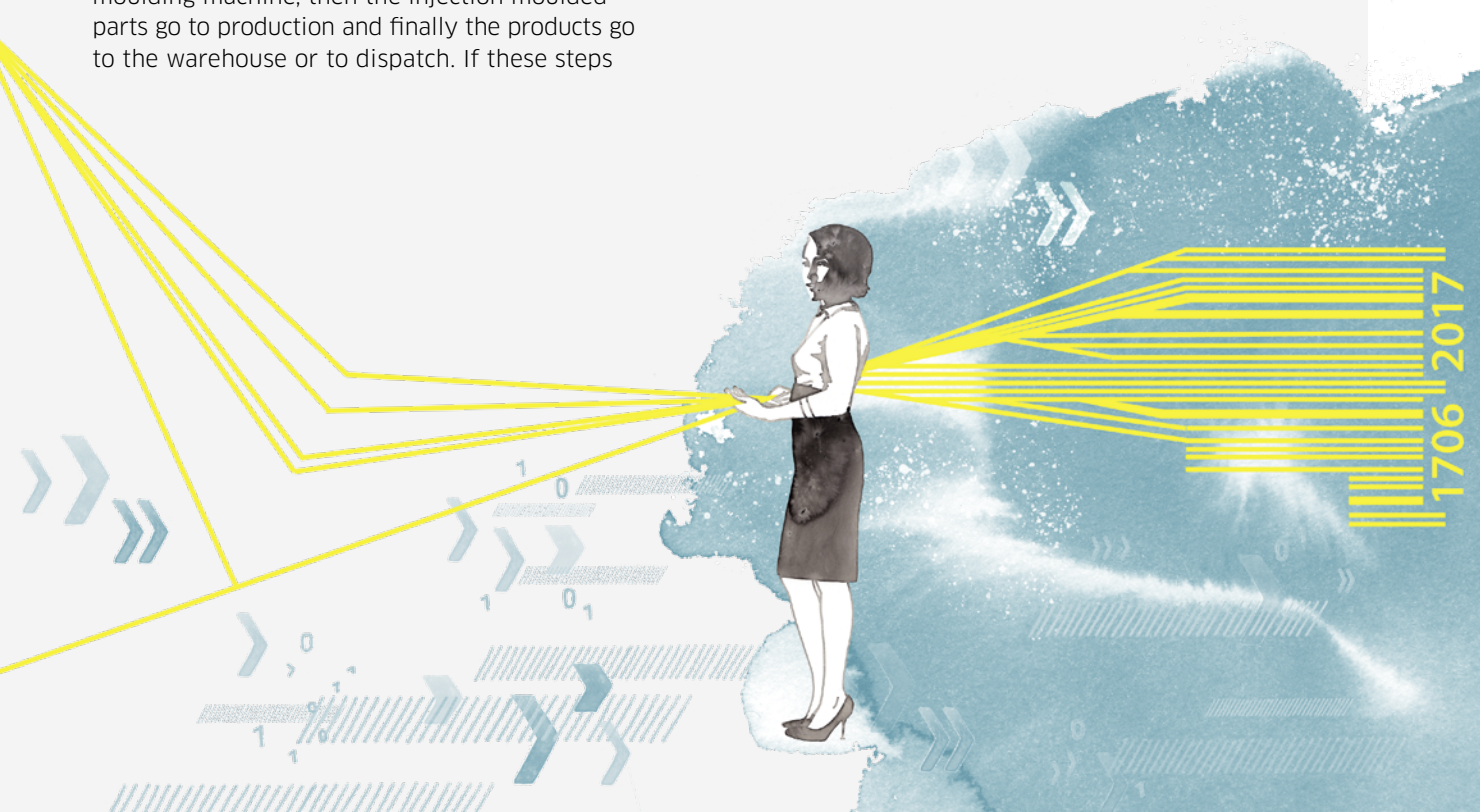
Markus Staringer That only becomes clear when you look at the process chains. At Kärcher, for example, the merchandise leaves the injection moulding machine, then the injection moulded parts go to production and finally the products go to the warehouse or to dispatch. If these steps

run automatically, the risk of error is significantly reduced and work can continue uninterrupted, with reliable cycle times. All of that means that investments in intralogistics pay for themselves quickly.

Digitisation, automation and artificial intelligence – the magic three. Much is already possible, but what will the future hold?

Hennes Fischbach There has been a constant trend towards automation in intralogistics for decades now. Current solutions are incredibly reliable and our customers really value that. You see, the mantra is: the production environment is far too sensitive for experiments. Artificial intelligence is a buzzword tied up with all kinds of visions and dreams these days. What AI really means is that machines are able to learn and, within a specific framework, independently find the right solution. It also means that we as humans are delegating more responsibility to machines. It will be some time before we are really ready for that and sure that it is safe. ■

* Markus Staringer and Hennes Fischbach are project managers at Jungheinrich and supervised the Bühlertal 5.0 project.



The current highlights of
the Kärcher range

NEW PRODUCTS

In 2020, Kärcher is once again offering many new product ideas for every cleaning requirement, allowing you to achieve sparkling clean interiors and outdoor areas – be it for domestic or commercial use.

Professional

IB 10/8 L2P

.....
Dry ice blaster that
makes its own pellets
.....



Home & Garden

HGE SERIES

.....
A stylish trim
for a handsome hedge
.....



Home & Garden

WD 1 COMPACT BATTERY

.....
Battery-powered
multi-purpose vacuum cleaner
.....



Professional

BD 17/5 C

.....
Scrubber for manual use
in confined spaces
.....



Home & Garden



NEW BATTERY-POWERED HEDGE TRIMMERS: THE HGE SERIES BY KÄRCHER



- Three models of battery-powered hedge trimmer
- Precise cut: diamond-ground blades with a cutting length of up to 50 cm.
- The teeth are more angular at the front of the blade. Use the sawing function to cut thicker branches.
- The hedge broom is a particularly useful accessory when trimming on a horizontal plane.
- The HGE 18-50 Battery and HGE 36-60 Battery feature a handle which can rotate through up to 180°.
- All models feature an integrated two-handed safety switch.

kaercher.com/home-garden

Professional



DRY ICE BLASTING FOR EVERYONE: IB 10/8 L2P



- The IB 10/8 L2P generates its own dry ice – whilst cleaning is taking place and in just the required amount.
- The logistics require just two items: liquid CO₂ and a compressed air supply or small compressor.
- It is easy to use and features several assistive technologies, meaning even inexperienced users can operate it.
- Dry ice blasting is both gentle and thorough, meaning it can be used to reliably clean delicate components such as electronics.

kaercher.com/professional

Home & Garden

CNS SERIES

Cordless chain saws



Professional

OUTDOOR POWER EQUIPMENT

Hand-guided, battery-powered devices for commercial use



Professional



BD 17/5 C: CLEANING TECHNOLOGY THAT GETS INTO EVERY CORNER



- This hand-guided, motorised brush is a real alternative to working manually.
- Clean and polish quickly and ergonomically, reaching into corners and onto vertical surfaces.
- It is lightweight, at less than 5 kg, and features an ergonomically designed handle to make work pleasant.
- Due to the adjustable brush speed (0 – 450 rpm), the BD 17/5 combines several application options in one machine.
- As well as the classic scrub, this device can be used to crystallise and polish surfaces when using suitable diamond pads.

kaercher.com/professional

Home & Garden



CORDLESS AND VERSATILE: WD 1 COMPACT BATTERY



- The 18 V battery enables this cordless multi-purpose vacuum cleaner to be used independently with maximum freedom of movement.
- Always ready for action: run time varies from 10 minutes (2.5 Ah) to 20 minutes (5.0 Ah), depending on the battery.
- This cordless assistant will remove coarse and fine dirt, as well as small quantities of water, without changing the filter.
- For anywhere that cannot be vacuumed, there is also a handy blower function.
- Accessories can be stored on the device so all utensils are available for use at all times.

kaercher.com/home-garden

Professional

IVM RANGE

Industrial vacuums raising mid-range standards



Home & Garden

EDI 4

Ice scraping made easy





CORDLESS POWER FOR OUTDOORS: OUTDOOR POWER EQUIPMENT



- Eight powerful 36 V products for efficient and flexible use, independent of power supply.
- Leaf blower, chain saw, lawn mower, lawn trimmer, hedge trimmer, brush cutter, multi-tool and backpack leaf blower.
- Low operational and maintenance costs: reduced operational costs when compared to petrol-powered models.
- Low noise output means these devices are suitable for working at night or in noise-sensitive areas.
- They are lightweight and ergonomically designed, feature ergonomic or rotatable handles and an innovative carry system to make work convenient.

kaercher.com/professional



CNS SERIES: SIMPLE, FAST AND EFFECTIVE



- The CNS 18-30 Battery with 18 V battery is ideal for standard sawing jobs around the house and garden.
- For more extensive projects, we recommend the CNS 36-35 Battery – even tough tree trunks are no problem with this model.
- Tool-free chain tensioning means effortless tensioning using just a knob.
- The brushless motor makes for a durable product.
- The bumper spike ensures secure aim and precise cutting.

kaercher.com/home-garden



EDI 4: BRING ON WINTER!



- This electric ice scraper is even able to remove stubborn, thick ice from vehicle windscreens quickly and effortlessly.
- A rotating disc with six plastic blades quickly and powerfully cuts through the ice.
- The ergonomically designed upper surface of this compact ice scraper provides plenty of space for your hand, ensuring you can guide it securely.
- After use, no smears or crystals are visible on the windscreen.
- The lithium-ion battery means the device can be used at temperatures down to -20°C .

kaercher.com/home-garden



IVM RANGE: POWERFUL, DURABLE AND ERGONOMICALLY DESIGNED



- The air flow of around $800\text{ m}^3/\text{h}$ is one of the highest in its class, making for impressive cleaning performance.
- The focus is on machine durability and ease of use for the operator.
- All containers which come into contact with the product are made from stainless steel as standard.
- Accessories and wear parts are very robust, keeping maintenance costs and effort down.
- The filter cleaning system and cleverly designed inlet shape mean you can work for long periods uninterrupted.

kaercher.com/professional

AIMING HIGH

Up to 100 years' worth of grime had gathered on Germany's second highest monument, the Kaiser Wilhelm Monument in Porta Westfalica. Kärcher has been working with industrial climbers to gently remove these deposits.

The expert climbers abseiled down from the dome canopy to execute the cleaning process. The cleaning methods selected were particularly gentle to ensure that the original character of the 88-metre-high monument was preserved in its entirety: organic matter was removed from the plinth and the canopy using hot water high-pressure cleaners with a reduced surface pressure of 1 – 1.5 bars at a temperature of approx. 90°C . This technique was able

to remove moss and lichen without using high pressure or chemicals. It also combats regrowth on the Porta sand stone monument because the high temperature kills any spores hiding deeper in the stone. Lime deposits on the sandstone surface were removed from the plinth using low-pressure particle-beam technology and fine aluminium silicate ($40 - 90\text{ }\mu\text{m}$) as an abrasive. ■



Watch a video of this spectacular cleaning process.
<https://www.kaercher.com/int/inside-kaercher/sustainability/cultural-sponsorship.html>

HOW BATTERIES ARE CHANGING THE WORLD

A look at the future of mobile energy storage

Everyone is talking about battery technology at the moment, and the 2019 Nobel Prize for Chemistry was even awarded for battery research. Mobile energy storage has already provided new opportunities in all areas of life – from mobile phones to electric vehicles and even medical applications. So let's take a quick journey through the rapid development of lithium-ion technology, look at upcoming trends and ask whether trainers really need lights.

A global research success story: the victory of the lithium-ion battery

Throughout history, technologies have popped up which have a profound impact on human life – the lithium-ion battery is one of them. The initial driver of this technology came from the electronic entertainment devices of the 1970s, when the search began for an alternative to the disposable batteries used in Walkmans and the like. It was quickly recognised that lithium-ion batteries had great potential because they are energy-dense, compact in size and are not susceptible to the memory effect.

There were problems though: they were highly flammable and prone to short circuits inside the cell. Scientists had to address these problems and, to an extent, they are still doing so. A decisive breakthrough came along in the form of research by John B Goodenough (USA), M Stanley Whittingham (UK) and Akira Yoshino (Japan), who received the 2019 Nobel Prize for Chemistry. The first rechargeable lithium-ion batteries were manufactured in 1983, and they were launched to market by Sony in 1991. Since then, they have been unstoppable, as is borne out by the statistics: in 2019 the global market was worth approx. €40 billion. This is expected to grow to €60 billion by 2022.

From music to mobility to industrial cleaning: batteries improve systems in all kinds of places

Consider your mobile phone, digital camera, laptop or torch: barely any electronic gadget exists that is not run on lithium-ion batteries these

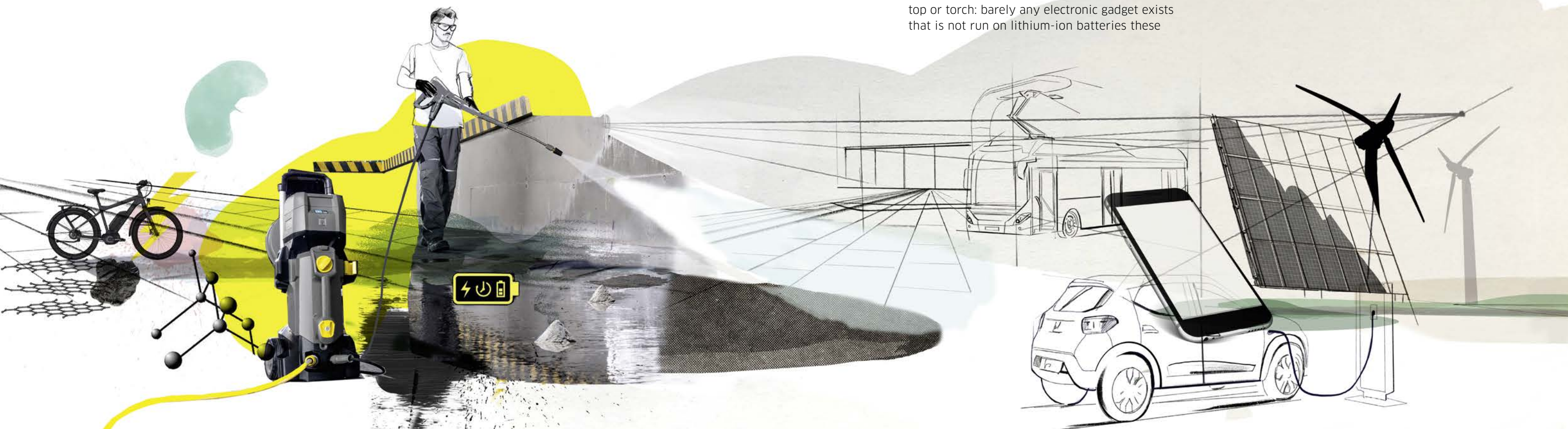
days. This technology is lighter, smaller and provides a higher capacity and performance than standard nickel-cadmium or nickel-metal hydride batteries. This is a significant factor for practical devices such as power tools, gardening equipment, vacuum cleaners and the like – in both domestic and commercial environments.

Electromobility is another hot topic. Lithium-ion batteries can be interconnected, meaning several can be connected together to form a power pack. This technique is used in all kinds of vehicles, from electric bikes, electric scooters and Segways to hybrid and electric cars and buses.

Even in photovoltaics, lithium-ion batteries have proven themselves useful for energy storage due to their compact size, long life and lack of maintenance requirements. A domestic lifespan of 6,000 cycles is standard, adding up to about 20 years – roughly the same as a photovoltaic system.

Today: lithium ions. Tomorrow...? Where are we heading?

Lithium-ion technology is everywhere these days and has made sustainable solutions possible in some areas. It would be hard to replace. However, electromobility is one driver that is increasing the demand for energy storage so dramatically that this technology will probably not be able to meet that demand on its own. Not to mention issues like higher performance and shorter



charging cycles, which may be better tackled using other technologies, even though there is still some potential for development in lithium-ion cells. Finally, the availability of the raw materials – primarily cobalt and lithium – will become problematic in the medium term.

The search for alternatives is therefore well underway. One option is the solid-state electrolyte battery, which contains no fluids, just a solid-state electrolyte as the electrical conductor. It is expected to achieve a range of at least 500 km for electric vehicles and charge in just minutes. Current research is focusing on materials and manufacturing techniques. Another option is the magnesium battery, which is expected to be more powerful, cheaper and safer than current lithium-ion batteries. Not to mention that magnesium is a thousand times more common than lithium as a raw material. And it is easier to recycle.

Do we need batteries everywhere? Sustainability and recycling options.

From a sustainability perspective, there are pros and cons to lithium-ion technology. On the one hand, it is used for purposes such as electric vehicles and energy storage for power from photovoltaic systems – key steps towards a more environmentally friendly future. On the other, batteries are currently being used with very few restrictions – even trainers and jumpers have lights now

and straws are decorated with LEDs! This runs contrary to our progress towards a responsible use of resources. Recycling is a further issue as current methods are insufficient to deal with the high number of vehicle batteries out there.

It is predicted that cobalt and other materials will be in short supply soon, so solutions are in the works. Thermal fusing, for example, can be used to recover cobalt, nickel and copper. Another approach is to shred the highly flammable batteries in a nitrogen atmosphere. What remains is shredded material, from which we can recycle graphite, manganese, nickel and cobalt. The battery can then be reproduced with a carbon footprint 40% lower than manufacturing a new battery from scratch. There are many other variations on the theme but the goal is the same – conserve energy and reuse the greatest possible proportion of the raw materials.

The Second Life scheme has a different approach, using old batteries for stationary energy storage. The batteries in electric vehicles no longer perform well enough to meet range requirements after eight or nine years so they have to be replaced – but they still work. Various car manufacturers therefore intend to use these batteries with reduced charging capacity in a large stationary energy store.

There is a lot going on in battery technology, and the journey into the future will be one thing in particular: exciting. ■



KÄRCHER AND BATTERY TECHNOLOGY:

Four questions for Dr Jan Becker, manager of our Module Center Energy Storage Systems

When did Kärcher first bring battery-powered devices to market?

We have had products with batteries in our portfolio for over 30 years – and they offer all of the usual advantages. We have always asked ourselves where their application makes the most sense for our customers and how to approach the technical challenges.

With the Kärcher Battery Universe, you are now launching two new battery platforms. What was the focus in developing these?

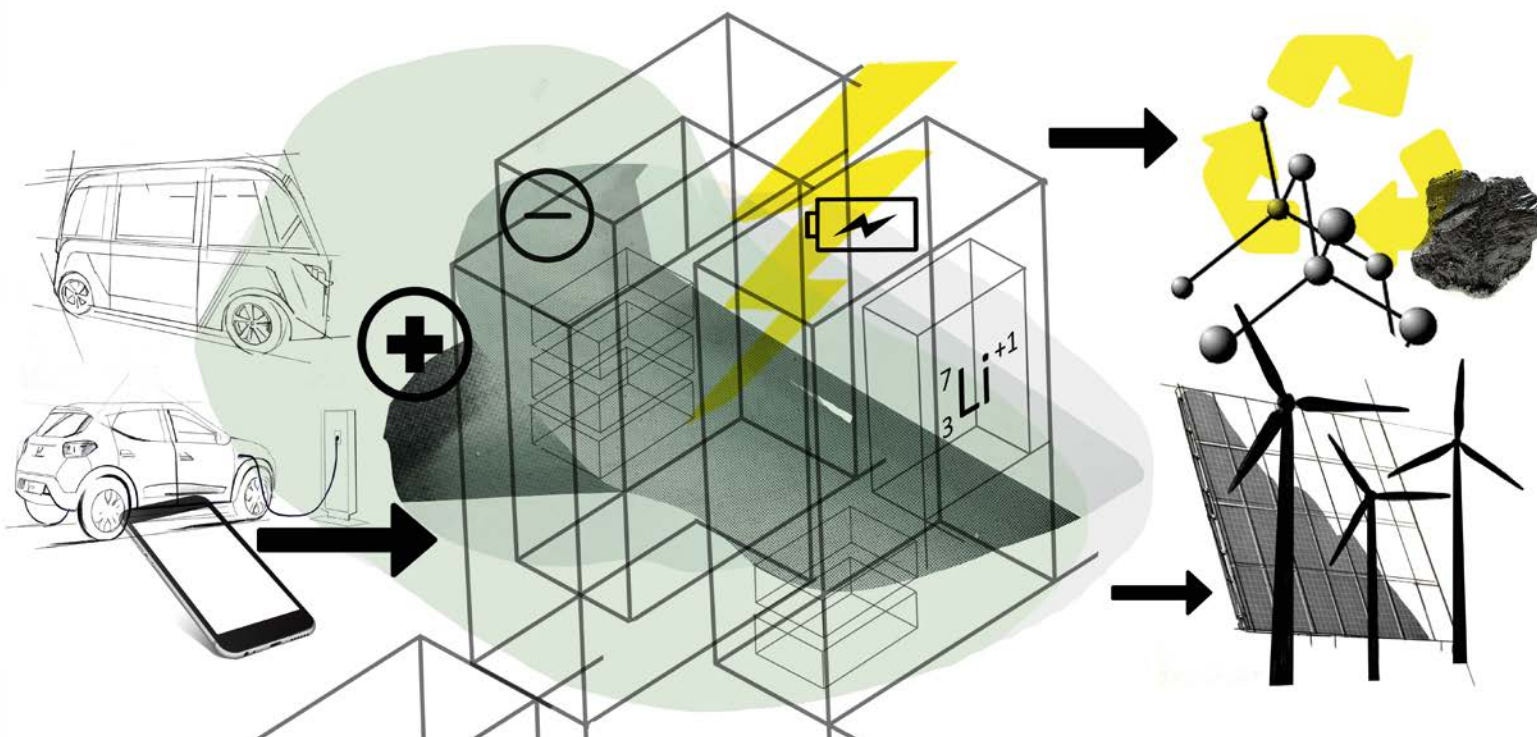
There were several important factors to keep in mind – including increased performance and run time, and an accurate display showing charging time and remaining run time down to the minute. We have 18 V and 36 V batteries available with different capacities. All batteries in a voltage class fit every device.

What products will be available?

In the Home & Garden range, the new battery products have been on the market since spring 2019. The range includes medium-pressure washers, wet and dry vacuums and various gardening tools. Our Professional range will be launched in 2020 and includes wet and dry vacuums, as well as professional tools to maintain green spaces. And we are the first company in the world to launch a battery-powered high-pressure cleaner for commercial use.

Lithium-ion batteries will still be around for a while, but the next technologies are already in the starting blocks. What is Kärcher's response?

Our platforms are designed so that we can easily fit new cell technologies into our interface. That is an important way that we can offer our customers future-proof solutions.





No rest, just progress

BRING BACK THE WOW

Companies often refresh their branding to increase brand recognition or to improve an otherwise damaged image. Happily, Kärcher is well liked by our customers world-wide and our business growth over recent years has been excellent. However, rather than resting on our laurels, the company is heading into spring 2020 with a new campaign. The main characters: real life and a little emotion.



.....
Real life – Kärcher's new campaign presents images of our customers' real worlds.

.....
Ulrich Lützenkirchen, Executive Creative Director at antoni boost, is responsible for Kärcher's new brand image, along with his team.



WOW is what brings value

FEEL GOOD

Scrub. Vacuum. Clean the windows. Sweep. Dry ice blast. Pressure wash. There are countless ways to clean dirt from places and objects. Whether it is at home, at the office or cleaning construction machinery – we rarely think about what is really involved. At its heart though, all of this is about preserving the property's value and longevity. This may sound unwieldy, but in times of sustainability and resource conservation it is more than appropriate. And the best motivation of all is to bring back a bit of cherished wonder into our day-to-day lives.

A GREATER FOCUS: WHAT CUSTOMERS ARE DOING WITH KÄRCHER

For a long time, Kärcher had no strategic marketing policy, but a lot has changed in recent years. In 2010, we standardised our corporate image and "make a difference" has since become our established core message. Now, the company has brought on board a "tailor-made agency" called antoni boost as our marketing communications partner –

with a team 100 % responsible for Kärcher. Our aim is to bring our overall image further up to date and add in more emotion.

Ulrich Lützenkirchen, Executive Creative Director, on our starting position: "Previously, the focus of the approach was on proving the performance of the products. Now, we can work on the basis that 'Kärcher' is synonymous with 'high-performance cleaning technology' all over the world." antoni boost has worked from this starting point to create a confident and appealing campaign with

»WE WANT TO APPEAL TO ALL CUSTOMERS: THE YOUNG MOTOCROSS RIDER JUST AS MUCH AS THE INDUSTRIAL CLEANER.«

ULRICH LÜTZENKIRCHEN

customers at the centre – i.e. people who are achieving things with help from Kärcher. “We want to use pictures, people and a story to move closer to real life rather than create a sterile, shiny world.” Large headlines, bold typography and an increased role for Kärcher’s corporate colours of yellow and black will create the backdrop to all of this.

WHAT IS A BRAND THESE DAYS? HOW YOU AS A COMPANY ACT AND HOW YOU DEPICT THE WORLD.

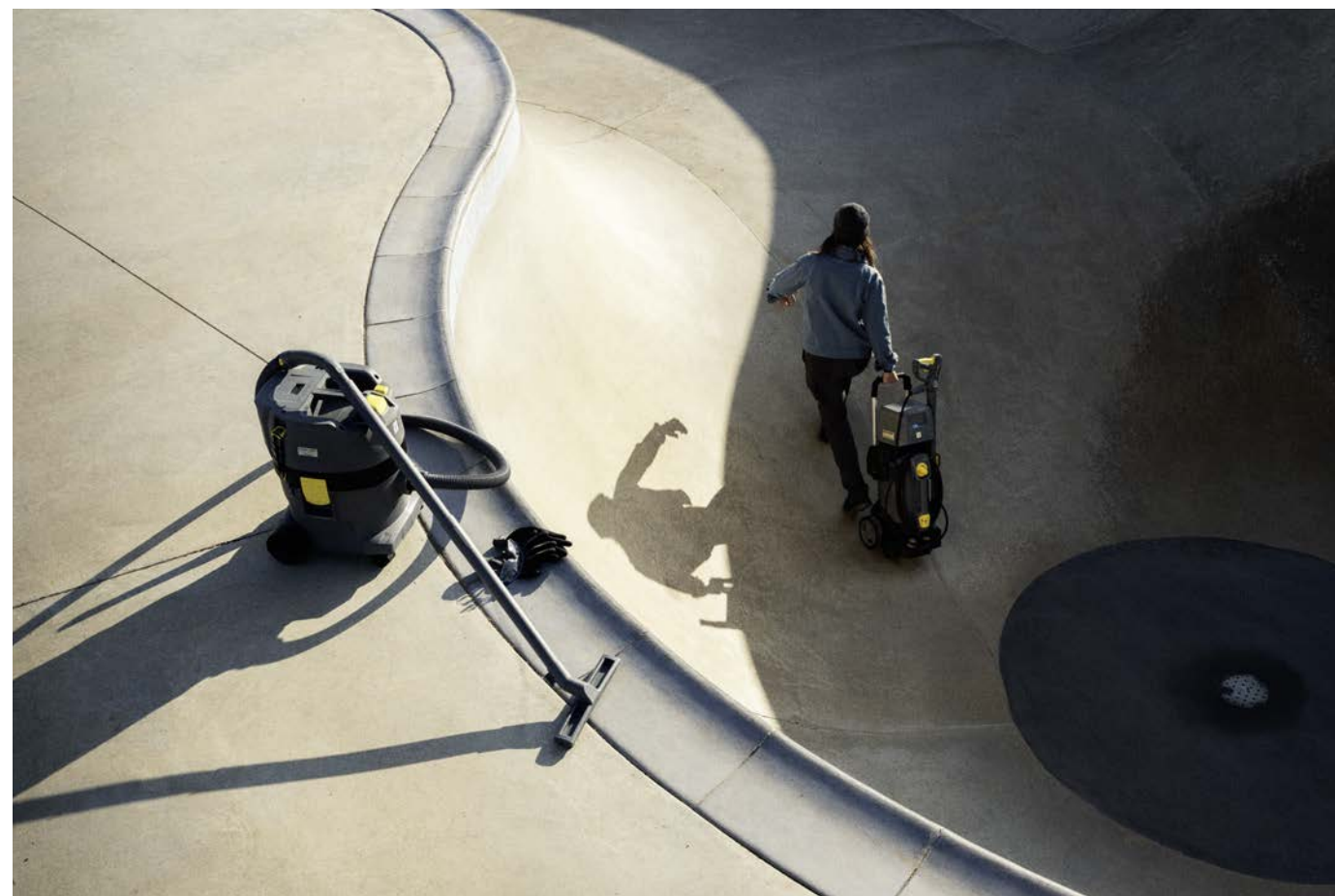
Alongside the basic strategic considerations, the question of what a company stands for is becoming increasingly important to its corporate image. Though customers do still want to know what a product can do and how they personally can use it. Lützenkirchen says, “Young people in particular want to know what is going on behind the image. Kärcher has much to contribute to this conversation – conserving value, involvement in social projects and preserving monuments. And, as compared to a normal hose, pressure washing saves vast quantities of water.”

At the same time, Lützenkirchen believes companies are responsible for deciding what kind of society they choose to display in their advertising. “We should at least display an image of the real

world and not a counterfeit one.” Diversity, an international view and a contemporary image of male and female roles are therefore key in the selection process for the characters in Kärcher’s campaign and in how they are presented.

WOW MOMENTS AND OTHER JOYS: ONE CAMPAIGN, MANY CUSTOMER GROUPS

Kärcher cleaning technology is used in almost every area imaginable – that is both a blessing and a curse when you are creating a marketing campaign. “It is a very broad reach,” says Lützenkirchen. “And we want to appeal to all customers: the young motocross rider just as much as the building services provider, the DIY-ers as much as the farmers.” Now we need to develop the right image for each of these groups and get it out there. The campaign will be rolled out incrementally on all channels from spring 2020. “It will take a while for us to reach everyone, but I am sure that customers will notice – because we are bringing back the WOW.” ■



.....
Our new brand language is intended to appeal to all Kärcher customer groups, be they domestic or commercial.



Find out more about Kärcher’s new branding campaign:
www.kaercher.com/difference

One Earth – One Ocean is working to free our global waters of plastic waste, oil and chemicals.



PROTECTING OUR OCEANS

One Earth – One Ocean (OEEO) is an organisation which tries to collect rubbish on beaches before it finds its way into the sea and becomes a problem for the ecosystem. Kärcher provides financial support and much-needed publicity.

Since 1986 an International Coastal Cleanup Day has been organised, yearly on 21 September to raise awareness of ocean pollution and take action to combat it. On the one hand, it is sad that we live in an age where an International Coastal Cleanup Day is needed. On the other, it is good news that more and more people are getting involved in environmental conservation. The Cleanup Day has become the biggest global initiative to save our oceans.

In 2019, hundreds of helpers cleaned several sections of beach on the North and Baltic Sea coasts of Germany under the banner “heroes of the sea”. Volunteers were trained beforehand and equipped with rubbish bags and work gloves before being sent out in small groups to collect rubbish. For every kilo of plastic that is prevented from entering the sea, the strain on living organisms there is reduced. As well as cleaning beaches, One Earth – One Ocean has also launched an ocean clean-up operation. This consists of converted ships that fish waste from the oceans and have already been put to use in locations such as Hong Kong and Cambodia. “We are very pleased

that, in Kärcher, we have found a strong partner to help combat plastic waste in the sea, and we hope to expand our cooperation in the future,” says Lennart Rölz, Beach Cleanup Organiser at One Earth – One Ocean.

We already have practical plans for the form this cooperation will take in 2020. Forty cleaning initiatives are planned for beaches and rivers in 22 countries across Europe. “Taking responsibility and acting sustainably have always been an important part of our company culture,” says Andreas Mayer, Director of Management Systems & Sustainability, explaining the partnership. “That is why we are supporting these initiatives in 2020 and providing the necessary publicity. It is also important for us to use technology to look for more sustainable options.” That is why Kärcher aims to build a partnership to tackle the issue of recycling plastic waste removed from the ocean. ■



Find out more about our clean-up initiatives on our YouTube channel:
www.youtube.com/KarcherTV

IMPRINT

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Sources

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KÄRCHER is the world's leading supplier of cleaning technology. With high and ultra high-pressure cleaners, vacuum cleaners and steam cleaners, vacuum sweepers and scrubber dryers, vehicle wash systems, cleaning agents, dry ice blasters, drinking and waste water treatment systems, water dispensers, and pump and watering systems for Home & Garden, Kärcher provides innovative solutions. These include products and accessories which are designed to work together, as well as consultation, technical service and several digital applications. In 2019, Alfred Kärcher SE & Co. KG achieved the highest turnover in the company's history: € 2,578 billion. This family-owned company employs 13,500 employees in over 127 subsidiaries across 72 countries. More than 50,000 service points provide comprehensive service for customers all over the world. Innovation is the most important growth factor for the company and has been a pillar of our corporate culture since our founding in 1935. Around 90% of our products are five years old or newer. This cleaning device manufacturer boasts over 1,000 employees in research and development. Kärcher brought 150 new products to market during 2019 – more than ever within one year.





www.kaercher.com