JOWAT

THE MAGAZINE | **2021**

Did someone say Jenga? The construction industry is looking to aim high with buildings made of wood, and Jowat is providing the perfect foundations with its certified adhesives.

Dear Customers,

The past year is one that none of us will forget in a hurry. The dominant theme in all areas of life continues to be the Covid-19 pandemic, the effects of which are being felt across all sectors. Against this background, we are happy to still be able to count on our flexibility, the commitment of our employees and the loyalty of our customers. After all, it is only by working closely together that we will be able to overcome the challenges presented by these difficult times.

The fact that Jowat SE is on a sustainable path is confirmed not only by an altogether reasonable 2020 financial year under the circumstances, but also by the AXIA Best Managed Companies Award. For a long time now, our attention has been focused on the challenges that lie ahead: in order to leave a world worth living in for future generations, our daily decisions focus on economic thinking and action from a sustainable perspective. We take our inspiration for this from the 17 Sustainable Development Goals of the United Nations, which we would like to present to you in this issue.

»Sustainability is the key to leaving behind a world worth living in.«

With our wide range of products and services, we already offer countless approaches to make bonding processes in various areas of life more sustainable and environmentally friendly, be it in load-bearing glulam., in the use of non-hazardous polyurethane hot melt adhesives or the increased use of bio-based hot melts.

We hope that you will join us on this pathway, brimming with ideas and energy in equal measure, and will enjoy reading this latest issue.

Klaus Kullmann

Dr Christian Terfloth

Ralf Nitschke

Contents

Publishing information

Publisher
Jowat SE
Ernst-Hilker-Strasse 10–14
32758 Detmold, Germany
Telephone: +49 (0) 52 317 490
Email: info@jowat.de

Coordinator
Product Management & Marketing/
Ingo Horsthemke

Design and realisation
MEDIUM Werbeagentur GmbH, Bielefeld

Photography
Jowat SE, VOMO Leichtbautechnik GmbH & Co KG, ALBO Türen GmbH, Garbe Immobilien-Projekte GmbH, Kjöris ehf., alamy, iStock, Adobe Stock, unsplash.com

Most of the photos used were taken before the outbreak of the Covid-19 pandemic, meaning the new rules surrounding masks and social distancing did not apply.

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Timber construction reaches new heights

Everywhere you look, impressive high-rise buildings reach for the sky, except today they're made from solid wood or wood materials rather than steel, concrete and glass. As part of this trend, the construction industry is once again putting itself, its processes and the materials it uses to the test. This time, however, the aim is not just to build 'higher, faster, further', but rather to place greater emphasis on sustainability – a development that Jowat is more than happy to support.

This is no longer a pipe dream: Wooden high-rises such as 'Roots' in Hamburg are set to become more prevalent.

Hands up if you've ever played Jenga. This game of skill involves stacking cuboid wooden building blocks to form a tower before removing them with one hand to form new floors on top. As a result, the structure becomes higher and higher over time. The game usually ends when the tower ultimately collapses, which is no wonder since the wooden blocks are only lying loosely on top of each other by this point! But of course the situation is different when it comes to real timber construction. Here, adhesives are used to hold the individual components together and form them into a large, stable whole.

Germany's tallest wooden building constructed using this technique can be found in the city of Heilbronn: the SKAIO building features several commercial spaces and residential units reaching a total of 34 metres in height. But this record is set to be broken as soon as construction of the 'Roots' building in Hamburg is complete, as this will extend to a height of 65 metres to make it almost twice as high as SKAIO. Nevertheless, it still isn't enough to challenge the undisputed leader of them all. The highest 'plyscraper' to date, as wooden high-rises are known, is the Mjøstårnet building in Brumunddal, Norway, which stands 85.3 metres tall.

Efforts are underway worldwide to trump this record and redefine the limits of what is possible. The Japanese timber construction materials giant Sumitomo Forestry is currently pushing the boundary furthest and hoping to treat itself to a special reward in recognition of its 350th anniversary in 2041: By the time this special occasion comes around, the W350 plyscraper with an impressive height of 350 metres is set to be completed in Tokyo. It's an ambitious undertaking given that the challenges inherent in the construction of high-rise buildings per se are exacerbated by the relatively new timber construction method in this sector. The higher a structure is, the more susceptible it is to damage from external influences such as wind or earthquakes. This means that it must offer sufficient stability on the one hand, but also a certain flexibility on the other in a bid to withstand both forces in equal measure. It is not only the material itself that matters, but also what holds it together. As demanding as this task may be, it is definitely worth mastering given the sustainability effects that can be achieved with this construction method.

Everybody's talking about sustainable timber construction

This is also the opinion of Toni Rüegg, Managing Director of Jowat Swiss AG, who sees great ecological potential in load-bearing glulam: "As things stand today, there are still a number of materials that can be substituted with wood, particularly when it comes to building construction." He is also convinced that "timber construction is the most appropriate alternative against the ▸

backdrop of the ongoing climate debate." After all, conventional construction with concrete is anything but efficient by today's standards when it comes to resources: the raw material sand, which is needed for the production of the sought-after materials, is increasingly running out. What's more, the production of these building materials releases large amounts of the greenhouse gas CO_2, thereby contributing to the ongoing issue of climate change. Trees, on the other hand, bind CO_2 during their growth, which remains in the wood as long as it does not rot or burn. One cubic metre of timber used contains around one tonne of CO_2, meaning a significant contribution can be made to saving on greenhouse gases. The finished building also offers advantages in terms of energy, since the wood has a positive influence on the humidity in the room and thus makes a positive contribution to creating a healthy indoor climate. It therefore goes without saying that apartments and offices in these wood-based buildings are in high demand.

"It is clear from the growth rates of the global cross-laminated timber industry that sustainable construction really is what everyone wants right now," asserts Toni Rüegg. "At Jowat Swiss AG, we have long been committed to the further development and optimisation of load-bearing glued timber construction and are proud to be actively involved in its growth going forward."

Experience and innovative spirit

The one-component polyurethane adhesives (PUR) from Jowat, for example, make a significant contribution to expanding the structural possibilities of timber construction. The adhesive experts really have surpassed all expectations with the innovative Jowapur® 681.10-681.60 product series, which was showcased at Ligna 2019. The formulations are each tailored to different requirements of load-bearing timber construction, allowing them to be used in a whole host of different processes from lamination to finger jointing of engineered timber. It is not only the effortless handling of the ready-to-use adhesives that is crucial, either; the optimised waiting/pressing time ratio of up to 1:1 affords an effective increase in production capacity thanks to the associated time savings, thereby meeting the increasing demand for timber elements in the construction industry. The high-performance adhesives also notably demonstrate their advantages in impressive free-form constructions, where

This is no longer a pipe dream: Wooden high-rises such as 'Roots' in Hamburg are set to become more prevalent.
© Garbe Immobilien-Projekte GmbH

Jowapur®
681.10– 681.60
1-C PUR Prepolymer

- Adjusted process times for more efficient work.
- Free from formaldehyde and solvents; emission-free and odourless when cured.
- Certified according to EN 15425:2017.
- High adhesive strength for optimum product safety.

The highest plyscraper in Germany: The SKAIO in Heilbronn is home to offices and living spaces.

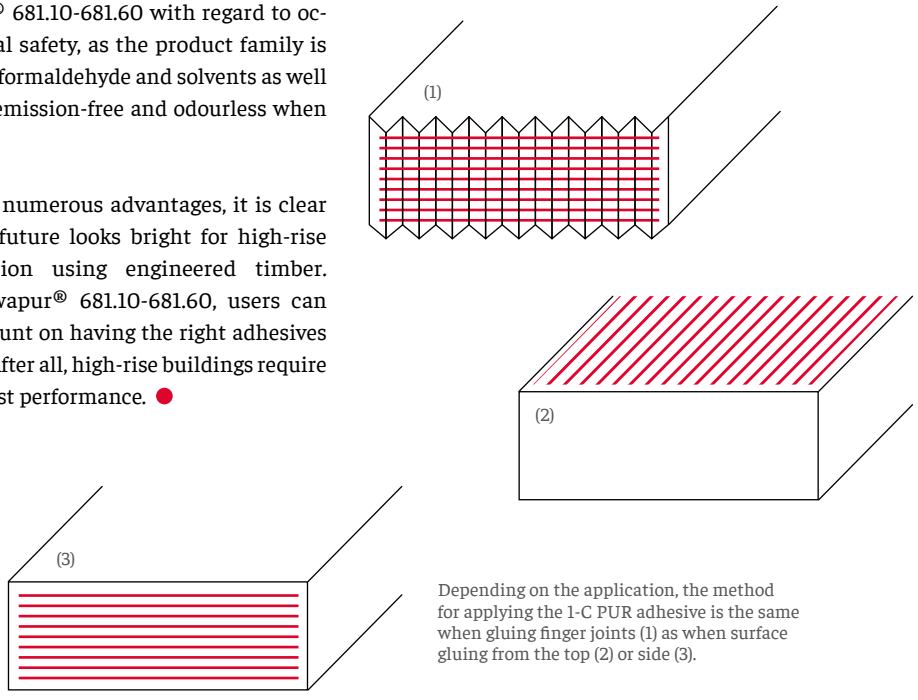
it is crucial for adhesive joints to be stable under high tension. As for the rheological product properties, these are also incredibly impressive thanks to the uniform wetting of the substrates to be bonded. When exposed to moisture from the air and the timber, the adhesive cures reliably and is allowed to develop its full adhesive power. The Jowapur® 681.10-681.60 series is certified to EN 15425:2017 and approved for European load-bearing glued timber construction. This means that solid structural timber, glued laminated timber and cross-laminated timber can all be manufactured for building construction.

The small but subtle difference

The products are also mixed with specially developed fibres that fulfil several important functions with regard to bonding load-bearing components. In this way, they contribute to a homogeneous adhesive joint by reducing foaming – an advantage that not only minimises soiling of the equipment, but also contributes to the stronger adhesive strength of the end product.

Particularly in finger jointing, the fibres contained prevent the glued finger joints from slipping apart in the production process to achieve a more stable end product. And when it comes to load-bearing glulam, the fibre-reinforced adhesives offer a decisive advantage. Users can also benefit from Jowapur® 681.10-681.60 with regard to occupational safety, as the product family is free from formaldehyde and solvents as well as being emission-free and odourless when cured.

Given its numerous advantages, it is clear that the future looks bright for high-rise construction using engineered timber. With Jowapur® 681.10-681.60, users can always count on having the right adhesives at hand. After all, high-rise buildings require the highest performance. ●



Depending on the application, the method for applying the 1-C PUR adhesive is the same when gluing finger joints (1) as when surface gluing from the top (2) or side (3).

Sustainable or not?

Sustainable, bio-based or maybe biodegradable? Aren't they all just the same? The topic of sustainability has given rise to a vocabulary all of its own, but the terms are far from synonymous. Here, Jowat sheds some light on the world of green language.

Bio-based plastics
These are made from renewable raw materials such as cellulose or vegetable oils rather than petroleum. Bio-based raw materials also form the basis of the Jowatherm® GROW product range.

Biodegradable plastics
Under certain conditions, these plastics can be decomposed by enzymes, fungi or bacteria. This degradation usually takes place in industrial plants, but not in domestic compost. Bio-based plastics are not automatically biodegradable, and biodegradable plastic does not necessarily have to be bio-based.

Bioplastics
Another term for bio-based, biodegradable, or biodegradable and bio-based plastics.

Bluewashing
Glossing over corporate social activities with reference to the UN Global Compact. Nevertheless, there are no binding agreements and independent controls for compliance with the Global Compact.

Chemcycling
Chemical recycling of plastic waste. Intended to facilitate the recycling of even mixed or contaminated plastics.

Cradle to cradle
This describes a consistent closed-loop system of a biological or technical nature in which raw materials are returned to their origin and waste is avoided.

Cradle to grave
Materials are only used once and end up as waste in landfill or incineration.

Landfill
Long-term or final storage site for waste.

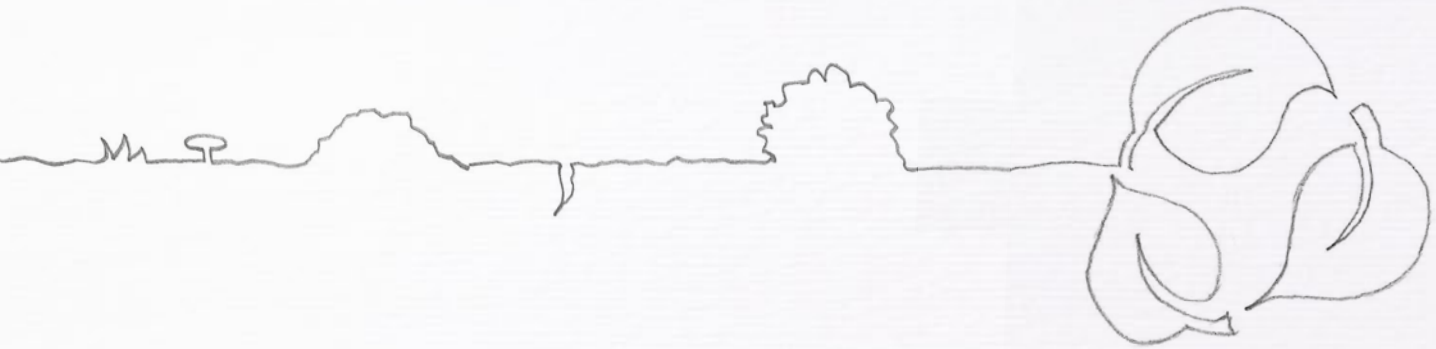
Design for recycling
Packaging is planned and designed so that it can be recycled in the best possible way after use. This is done, for example, through the use of mono-materials or the possibility of easily separating different materials.

EN 13432
European standard for the successful degradability of a product in water bodies or compost.

EN 14995
European standard with test scheme and specifications for assessing the compostability of plastics.

Fossil raw material
Natural carbon deposits stored in the earth in solid (coal), liquid (petroleum) or volatile form (natural gas).

Greenwashing
PR methods aimed at giving a company an environmentally friendly and responsible image in the public eye without sufficient basis.



Compostability
The ability of a product to rot and decompose under certain conditions. This is usually possible under conditions of industrial composting, where conditions are different from those in home compost (featuring higher temperatures, for example).

Circular system
Products are disposed of or recycled in such a way that they can be reintroduced into the production process, for example in the form of recyclate.

Macroplastics
This term refers to large plastic parts measuring 200 to 500 millimetres in size. This mainly covers plastic waste from the beach or from industry.

Mesoplastics
These are plastic parts measuring 5 to 200 millimetres in size.

Microplastics
This term refers to plastic particles of no larger than 5 millimetres in size. Microplastics floating in the sea are a particular problem, as plants and animals absorb the plastic. Microplastics can also enter the human body through the food chain.

Sustainability
Describes the long-term effect of an action. In the recent past, it has primarily been seen an action principle for resource or environmental conservation.

Ecological footprint
This term refers to the biologically productive area on earth that is necessary to sustain a person's lifestyle and standard of living. This refers to land that is needed for the production of food or the provision of energy, as well as for the decomposition of waste produced or for binding released carbon dioxide.

PE
Abbreviation for polyethylene, the most commonly used plastic worldwide (mainly for packaging).

PP
Abbreviation for polypropylene, a thermoplastic. Its properties are similar to those of polyethylene, but it is somewhat harder and more heat-resistant.

PO
Abbreviation for polyolefins. These plastics are characterised by their strong chemical resistance and electrical insulation properties.

Primary microplastics
Industrially produced plastic particles whose loss is consciously accepted or caused by carelessness. These include microbeads in cosmetics or plastic pellets.

PU/PUR
The abbreviation for polyurethane. Serves as casting resin, (textile) fibre, polyurethane varnish or adhesive, but most often used as foam.

Recyclability
The recyclability of a product or packaging is defined by the existing sorting and recovery infrastructure, the material composition and the possibility of separation.

Recyclate
Material obtained from recycled products and reused in the production process.

Secondary microplastics
Arises during the use phase due to abrasion or weathering. If plastic waste such as packaging, plastic bags or bottles ends up in the environment and fragments there, it is classified as secondary microplastic.

UN Global Compact
A worldwide pact concluded between companies and the United Nations to make globalisation more social and ecological. It focuses on upholding and strengthening human rights (see page 10).

Today for a tomorrow worth living

The 17 global sustainability goals known as the Sustainable Development Goals (SDGs), were set out by the United Nations back in 2015 to define the framework for a humanitarian future: a future free from poverty and hunger, with access to education and medical care for all.

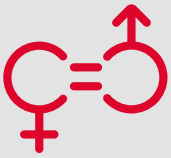
In order to substantially bring this mandate to life by the target date of 2030, a concerted effort is required by governments, business, science and civil society. Jowat meets this responsibility by anchoring the SDGs in its own sustainability strategy, which is based on a variety of economic, ecological and social aspects. This makes it possible to both manage and measure the positive impacts of the core business against the UN goals.

1 No Poverty

2 Zero Hunger

3 Good Health and Well-Being

4 Quality Education



5 Gender Equality

6 Clean Water and Sanitation

7 Affordable and Clean Energy

8 Decent Work and Economic Growth

9 Industry, Innovation and Infrastructure

The aim of all this is to achieve resilient infrastructure as well as sustainable industrialisation with a broad impact. Innovations are not just encouraged, they're expected.

10 Reduced Inequalities

Inequalities within and between countries are to be reduced or eliminated. Aside from financial aspects, this also concerns access to education.

**»Sustainability means:
Can we continue the way we do today in the long run?
If the answer is no,
then it's not sustainable.«**

Anselm Görres,
Ecological-Social Market Economy Forum

11 Sustainable Cities and Communities

Cities and villages are to be made more inclusive, safer and sustainable through measures such as giving preference to timber construction methods.

12 Responsible Consumption and Production

13 Climate Action

14 Life Below Water

The oceans and seas must be preserved and used sustainably, avoiding threats such as overfishing or pollution of the waters.

15 Life on Land

Protecting and restoring ecosystems such as the rainforests is essential, as is a more sustainable approach in general.

16 Peace, Justice and Strong Institutions

17 Partnerships for the Goals

Further information on the UN Sustainable Development Goals and suggestions for action for everyone can be found at www.17sustainable-developmentgoals.org or via the QR code.

IT'S WHAT'S ON THE INSIDE THAT COUNTS

Lightweight construction is more in demand than ever. From modern furniture construction and professional trade fair stands to the short-term construction of functional emergency shelters, there is hardly anything that cannot be brought to life with VOMO's lightweight construction elements. They are versatile, functional and extremely lightweight, and the secret is hidden inside...

»Ever since the company was founded, Jowat has been our most important supplier.«

Mario Reinke,
Head of Purchasing and Costings at
VOMO Leichtbautechnik GmbH & Co. KG

If the lightweight elements are exposed to high loads, a frame made of solid wood or MDF slats gives them additional stability.

Klemens Mormann and Johannes Voß arranged a Christmas present all for themselves back in December 2001, as they set up their own business and founded a company for lightweight construction elements with paper honeycomb cores. Over the years, a handful of employees and 400 square metres of production space has grown into a 25-strong team that brings customer wishes to life in the blink of an eye, and its range is continually expanded. The exhibition wall systems that made up the core of their company at the outset were soon followed by furniture, sliding doors and exhibition elements based on their tried-and-tested construction method, making for the comprehensive lightweight construction portfolio they have today.

Stand construction made easy

VOMO Leichtbautechnik GmbH & Co. KG is based in the German municipality of Laer, not far from the Dutch border. The product range offered by the family-owned company never fails to impress customers not only with its variety, but also with its whole package of advantages. The elements are easy to transport, quick to assemble and can even be reused. This concept has not only proven itself in trade fair construction, but has also become an established method for exhibitions in galleries and museums. In crisis situations, VOMO lightweight elements are even suitable for setting up safe temporary shelters or medical testing stations and hospital wards.

At first glance, the lightweight elements from the VOMO range appear to be completely normal laminated wood-based panels. But the secret of the lightness and versatility is hidden beneath the MDF top panel, which conceals a honeycomb structure made of paper, similar to the honeycombs of a beehive. This structure reliably holds the elements together while also keeping the panel light: a clear plus compared to solid wood panels. For additional stability, the lightweight panels are given a frame of solid wood slats.

VOMO & Jowat: a strong team

Having the right adhesive is indispensable for this type of production, and VOMO has always relied on Jowat SE in this regard: “Ever since our company was founded, Jowat has been our most important supplier when it comes to adhesives,” affirms Mario Reinke, Head of Purchasing and Costings at VOMO. The products used for surface bonding of the composite elements account for the largest share of the adhesives used. A dispersion adhesive is required for this area, which has the longest possible open time during the assembly of the elements and requires a short pressing time at low temperatures. VOMO has found the perfect product in the form of the Jowacoll® 103.15 PVAc white glue, which it uses every day in its production process. The dispersion adhesive corresponds to stress group D3, meaning it makes the elements more resistant to short-term exposure to water or higher humidity. The Jowatherm® 280.50 EVA hot melt adhesive is used for high-quality edgebanding, which is particularly impressive on account of its precise application and strong adhesion.

Shared values, common goals

The lightweight construction company is in a position to set up its own production processes to meet customer requirements if ▸

The Jowacoll® 103.15 dispersion adhesive from Jowat is one of the most important materials and used on a daily basis.

Lightweight slabs meet heavy equipment: The massive press ensures that all components hold.

What is a Appretur?

With the help of the Jowapur® Appretur, the properties of wood and paper materials can be significantly improved, with benefits including:

- Hydrophobisation, reduction of water absorption
- Increased tensile and flexural strength
- No fibre build-up with moisture
- Reduced swelling

required at short notice. Its success story is based on a flair for innovation, a scrutinising eye on every heavyweight, and a reliable hand on every project – all in all, a partner whose values fall perfectly in line with those of Jowat SE. Both companies strive for top results. VOMO Managing Director Klemens Mormann can't speak highly enough of the cooperation with the adhesives experts: "We appreciate not only the Jowat products themselves, but also – and especially – the expert support provided to optimise the gluing processes!" The short delivery times, adherence to delivery dates, and flexibility of the Detmold-based company are yet further reasons why VOMO has been swearing by Jowat for 20 years now. "We know we can always count on Jowat's support – especially when we're faced with special challenges or approaches to solutions," shares Klemens Mormann.

In this way, Jowat not only accompanies the continuous further development of processes and makes corresponding modifications to the products, but the adhesive experts are also on hand to provide advice and support during trials and test series at VOMO. One example of this is the optimisation of board properties achieved with the help of Jowat's Appretur. This not only increased the moisture resistance of the panels, but also strengthened their load-bearing capacity: The tensile strength is over 40 percent higher than before, and in the field of lightweight construction, this development is a real breakthrough!

Plans for the future underway

Sustainability is a top priority at VOMO, which is why, when designing the lightweight elements, real emphasis is placed on making them suitable for repeated use. Trade fair construction, for example, benefits from this concept, as it allows an exhibition stand to be dismantled into its individual elements and transported directly to its next location. On average, a VOMO exhibition stand is used for over five years – significantly longer than exhibition walls and furniture made from other materials. The concept also represents a viable and sustainable option for exhibition spaces and stage sets that have to be moved from one place to another. What's more, the lower transport weight also results in a significant saving of CO_2.

For VOMO, sustainability is not just about protecting environment and limited resources – it's also about planning for the long term and optimising every last step in the process chain. With this in mind, VOMO is constantly on the lookout for ways to make production more sustainable in every respect. The expertise of its adhesive partner is also indispensable in this regard: with the Jowatherm® 280.50 hot melt adhesive for example, an edgebanding adhesive is already in use today, which reduces contamination and thus waste quantities thanks to its optimised non-stringing tendency and clean application. Looking to the future, the company plans to continue to strive for joint successes with Jowat SE, as Klemens Mormann affirms: "We are pleased to have Jowat by our side as a competent and efficient partner."

So light and yet so functional: The paper honeycombs are the heart of all VOMO lightweight panels.

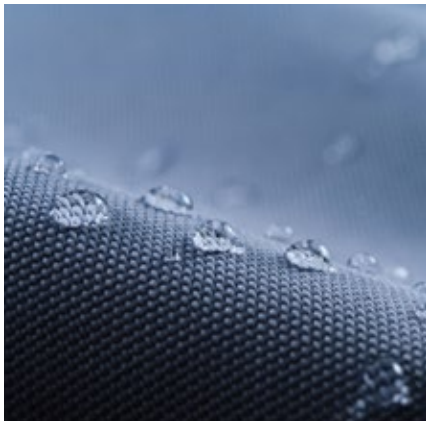
News from the world of adhesives

The world is changing and Jowat is right at the heart of the action: new ideas, pioneering products and enthusiastic plans are set to have a significant impact on the adhesives industry. When it comes to progress and innovation in bonding, you can always count on Jowat to be involved.

SME AS THE BACKBONE

Christian Kullmann, President of the German Chemical Industry Association (VCI) visited Jowat in Detmold to assess the impact of Covid-19 on German Mittelstand companies in the chemical industry

On his tour of notable enterprises in East Westphalia, VCI President Christian Kullmann also paid a visit to Jowat in Detmold. The team, led by Managing Director Ralf Nitschke, showed the VCI delegation around the House of Technology and presented a selection of the Jowat work processes. A notable topic of the visit was the impact of the Covid-19 crisis on the sector, but the conversation also turned to the intended reduction of bureaucracy within the industry. After all, Christian Kullmann sees small and medium-sized enterprises as the backbone of the economy and the chemical industry in Germany. “The chemical industry sets the standard for resource efficiency and productivity.” Innovations and state-of-the-art processes are needed to really make the most of both competencies.



NEW BLOOD FOR GROW

Part of the textile industry attaches particular importance to the sustainability of its own products. With Jowatherm-Reaktant® GROW, Jowat offers a solution that also makes laminating processes ‘greener’.

Jowatherm-Reaktant® GROW 631.20 is the first reactive polyurethane hot melt adhesive based on bio-based raw materials. The new adhesive formulation adds another industry sector to the existing GROW range of hot melt adhesives for the packaging industry. The possible applications range from mattress and upholstery cover production, and the production of medical textiles, protective clothing and cleaning textiles, right through to textile laminations in the automotive industry. In addition to its resource-saving composition, the impressive hot melt adhesive also has a soft-touch feel and high wash resistance. The DIN-certified proportion of bio-based raw materials in this adhesive is over 20 percent.

GOING ABOVE AND BEYOND

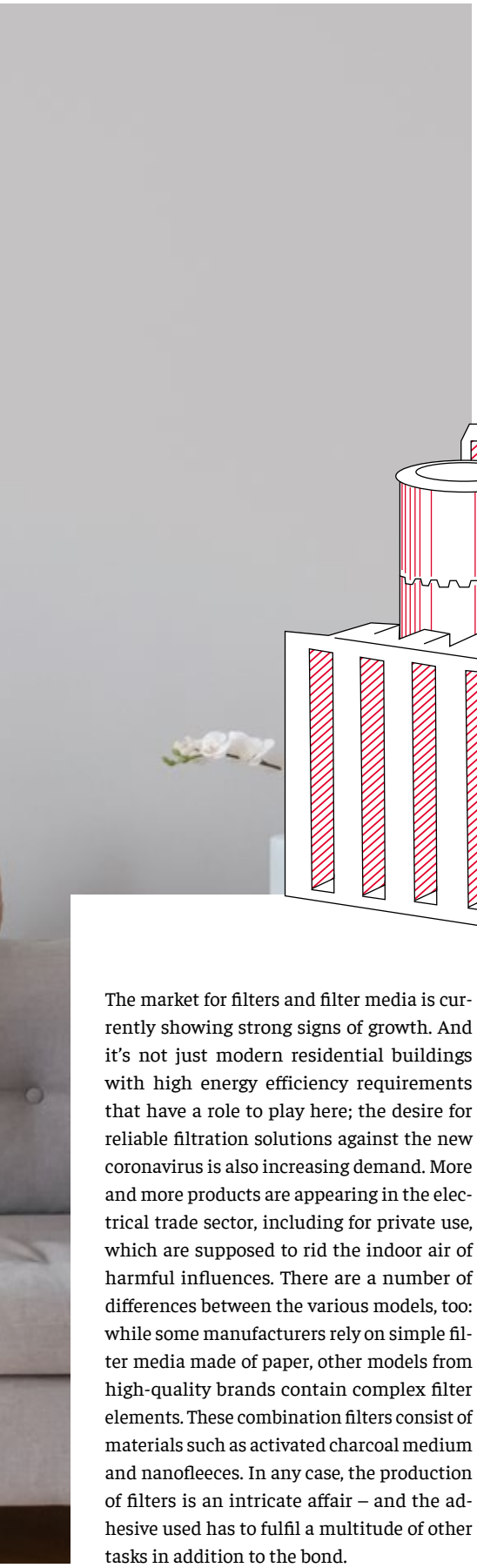
He once helped Jowat gain a foothold overseas, but now it’s time for authorised signatory Armin Erb to retire: a true Jowat SE veteran. After 40 years at Jowat, he leaves behind a great legacy.

Armin Erb laid the foundations for Jowat in North America before later taking over the management of today’s Technical Support & Service (TSS) in Detmold. Having dedicated a total of 40 years to Jowat, the time has come for him to hang up his hat. Ina Benz is following in his footsteps and taking over the management of the department, which Armin Erb really made his own over the years. As a chemical engineer, he joined Jowat in 1980 and assisted in setting up the Mexican production facility before heading the lab, production and application technology of Jowat Corp. (USA). He had been stationed in Germany since 1994 and will leave a lasting legacy in Detmold – which includes the House of Technology, whose construction he supervised as project manager.

It's not just in industrial environments that the benefits of air filters are becoming increasingly relevant – modern living spaces are turning to them, too.

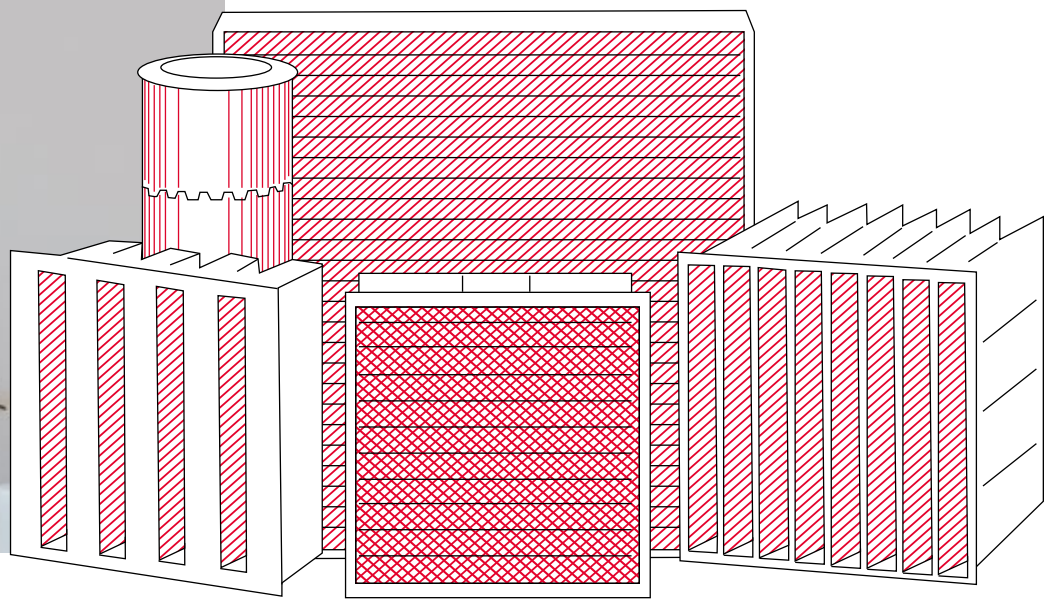
A medium with a future

Filters for ventilation systems in residential buildings and industry are a frequently underestimated part of everyday life. But their impact should not be disregarded: they not only support the ongoing implementation of hygienic measures to contain the novel coronavirus, but they are generally of value whenever the aim is to make indoor air healthier for people. And while they may sound simple from the outside, the inside actually houses a complex structure.



»Effective ventilation systems with the right filter systems are perfect for reducing the viral load.«

Dr Thomas Caesar, Director of Global Filtration Technology, Freudenberg Filtration Technologies SE & Co. KG



The market for filters and filter media is currently showing strong signs of growth. And it's not just modern residential buildings with high energy efficiency requirements that have a role to play here; the desire for reliable filtration solutions against the new coronavirus is also increasing demand. More and more products are appearing in the electrical trade sector, including for private use, which are supposed to rid the indoor air of harmful influences. There are a number of differences between the various models, too: while some manufacturers rely on simple filter media made of paper, other models from high-quality brands contain complex filter elements. These combination filters consist of materials such as activated charcoal medium and nanofleeces. In any case, the production of filters is an intricate affair – and the adhesive used has to fulfil a multitude of other tasks in addition to the bond.

Building filters for treating indoor air bind together minute particles such as fine dust, pollen or smoke particles. But pathogens such as bacteria or viruses can also be removed from the air with the help of filters, which is why building filters have become relevant for combating the novel coronavirus. Manufacturers such as Freudenberg Filtration Technologies offer filter media that can help to reduce the virus load in indoor air and thus minimise the risk of infection.

A multi-layered medium

The HEPA filters used for the filtration of building air are known as depth filters. These are divided into the filter classes EPA (Efficient Particulate Air), HEPA (High-Efficiency Particulate Air) and ULPA (Ultra-Low Penetration Air). They keep indoor air clean and thus ensure healthy air in environments such as offices and production halls. Synthetic materials like glass fibre fleece are used as the basis for depth filters. Additional lamination with further filter media may be required to achieve improved product properties such as higher stability or increased filtration efficiency. For optimum filter performance,

Filter production is characterised by a high material input; in fact, several kilograms of adhesive can be processed in a single filter.

the largest possible surface area is needed in a small space, as Jowat product manager Michael Dressler explains: "The filter medium is pleated for this purpose and fixed with a hot melt adhesive. This maximises the filter area within the available space." Adhesives such as Jowatherm® 262.30 based on ethylene vinyl acetate (EVA) are optimally adapted to the pleating process with a suitable open time as well as high initial strength. In addition, the hot melt adhesives are strong when cooled down, while also being flexible enough to allow for safe handling of the filter elements. For easy installation and replacement of the filter media in the ventilation systems, they are fitted with frames made of wood, metal or plastic.

Residential filters on the rise

Modern buildings are increasingly being equipped with efficient thermal insulation. What brings many advantages from an energy point of view can cause problems with reduced air exchange in rooms: The risk of mould formation due to incorrect or insufficient ventilation, for example, is high. For this reason, new and renovated buildings are increasingly being equipped with controlled living space ventilation (KWL), which supplies sufficient fresh air and makes manual shock ventilation redundant. Filters are installed in the ventilation systems to prevent exhaust fumes and pollen from outside from entering the room. These prove a worthwhile addition both in large cities and in the countryside. The filters used in KWL, however, are often the minimalist and less expensive version made of folded filter paper. The systems used in industry to clean exhaust and supply air, on the other hand, are much more complex.

Filtration of the highest quality

In industry and especially in medicine, emissions and contaminants in the breathing air have to be continuously extracted to maintain high hygienic standards and ensure occupational safety. This doesn't just apply to the production of medical products or electronic items where cleanliness determines the quality of the end product: reliable filtration of the room air also has a major impact in laboratories and operating theatres. Aerosols from the air containing particles of fungi, bacteria, viruses, pollen or airborne dust are removed to maintain the clinical cleanliness of the premises. Standardised cleanrooms use HEPA particulate air filters to remove particles smaller than one micrometre in diameter. In the manufacture of HEPA filters, most of the subsequent total weight of the building filters comes from the adhesive used. "A large filter element can easily contain up to six kilograms of adhesive," explains Michael Dressler. It is therefore not unusual for a filter manufacturer to get through several tonnes of adhesive each year in the production of HEPA filters. Michael Dressler shares the assessment that filter production will become even more relevant in the future. After all, building filters not only contribute to energy-efficient living, but also to occupational and hygiene safety. Jowat is currently focusing its own research and development in this area more than ever before. "Close and cooperative contact with our customers is what allows us to consistently develop our innovative adhesives further in line with the latest market requirements and needs." ●

What does 'pleating' mean?

i Pleating refers to the folding of a filter medium – often fabric or paper. The aim is to create the largest possible surface area of the medium in a small space. The use of adhesives allows the folds to hold their shape.

Filters with these dimensions are primarily used for industrial exhaust air filtration.

OPENING DOORS WITH OPTIMISED BONDING

Within just a few years, ALBO Türen GmbH has grown to one of the leading specialists for wooden doors. The company combines traditional craftsmanship and innovative manufacturing processes to achieve outstanding results. But of course it wouldn't be possible without adhesives from Jowat.

ALBO Türen GmbH was founded back in 2007 in Ense, North Rhine-Westphalia, as a specialist in doors for interior use. What started out as a team of four employees has now grown into more than 20, each of whom makes a vital contribution to the company's success. In return, ALBO considers itself responsible for maintaining the health and safety of all employees to the best of its ability. This includes reducing employee contact with emissions from adhesives containing diisocyanate to avoid possible irritation or respiratory illnesses (see interview on p. 20). "The decision to use Jowat's monomer-reduced (MR) hot melt adhesives was an obvious one for us," emphasises purchasing manager Sonja Stöber. "After all, these make a significant contribution to occupational health by keeping our colleagues fit and well, which is very important to us."

Craft meets high-tech

The Jowat adhesives are used in applications such as coating the door blanks with HPL laminate or real wood veneers. ALBO has been purchasing several hot melt adhesives and the associated cleaners from Jowat for some time now. But what's new is that it is now using Jowatherm-Reaktant® MR 609.93 for some processes. The conversion to the non-hazardous adhesive took place in 2020, and quite smoothly too without any fluctuations in quality. As for the transition to other new Jowat products, this is already well underway: Thorsten Albers from Jowat's technical sales department is already working hard with his colleagues on converting ALBO's bonding processes further still.

Faster to the finish

The door manufacturer also benefits from innovations at the process level, as production manager Matthias Kurth reveals. "The initial strength of the adhesive is higher than the one we had before, so we can achieve the desired result more quickly when bonding veneers." This process stage has a special history at ALBO, as certain types of veneer were initially difficult to bond. Together with Jowat, the bonding process was examined in detail so that all shortcomings could be successfully remedied. Even the bonding of metal and leather as a special embellishment on the doors is no longer a problem these days. "Jowat has been our competent adhesives partner for years," Matthias Kurth summarises. "Ever since we founded our company, our business relationship has always felt like a partnership."

This fruitful cooperation looks promising for the future, too, as ALBO continues to expand its range of decors. And with an experienced adhesives expert like Jowat by your side, the door should also be open for new ideas.

All systems go: The processes at ALBO's production facility run faster than ever thanks to new adhesives from Jowat.

It's a topic that Ina Benz knows inside out: the Head of Technical Support & Service has been advocating the increased use of MR adhesives for years.

From Timm Schulze's point of view, only good things can come of switching to monomer-reduced adhesives, which is why he is encouraging customers to use the new and improved alternatives.

SCHOOL'S OUT FOR THE MR CLASS

Diisocyanates are chemical substances used in the production of polyurethanes. As monomers, they can be hazardous to health, which means they have to be labelled appropriately. A new restriction is intended to provide greater protection for users in future and also affects the way PUR hot melt adhesives are handled. Ina Benz (Head of Technical Support & Service) and Timm Schulze (Senior Assistant to the Managing Director Sales and Marketing) from Jowat clarify what commercial and industrial users of the products concerned can expect.

Diisocyanates play an important role in the application of PUR hot melt adhesives, but they have to be handled correctly to avoid a negative impact on health. Incorrect handling can result in acute irritation or even permanent damage to skin and mucous membranes, and respiratory diseases such as asthma can also be triggered.

For this reason, diisocyanates have been re-evaluated and restricted by the EU Commission. In August 2020, the European Chemicals Agency (ECHA) finally published a restriction on products containing diisocyanate that only allows them to be processed with a training certificate.

Why is the regulation necessary?

Timm Schulze: Isocyanates are used in the production of polyurethane, which can be found in foams, mattresses, lacquers, plastics and adhesives. The finished end product is completely harmless, but the emissions of the monomeric diisocyanates are not, and these may be released during use. The size of these monomers allows them to enter the body through the skin or the air we breathe, where they have a toxic effect. This can result

Fancy going back to school? Clever adhesive users can avoid this by simply switching products.

in contact allergies, mucous membrane irritations or even chronic respiratory diseases.

What does the restriction mean for Jowat?

Ina Benz: As manufacturers of these adhesives, we label the containers as hazardous if their content of monomeric isocyanates – i.e. diisocyanates – exceeds 0.1%. As of August 2023, these products can only be used if all those involved have completed the appropriate training. We also have to make this clear with the appropriate labelling from February 2022.

What changes for the users?

Ina Benz: There are a number of requirements to be met by the customers. Everyone involved in dealing with these adhesives has to have the appropriate training – even the HGV and forklift drivers – and this training has to be refreshed at regular intervals. It also has to be provided whenever new employees start with the company, and so the whole thing can be expensive and time-consuming.

What does Jowat recommend?

Ina Benz: We have been offering monomer-reduced (MR) adhesives as an alternative for almost 20 years now. Our customers can use these without having to demonstrate that they have taken part in any training. We now supply equivalent MR alternatives for many applications in which PUR hot melt adhesives are used. Our task is to advise the customer on their product selection and accompany the safe changeover.

Is it essential for customers to change adhesives?

Timm Schulze: The options are either to take part in the mandatory training or switch to monomer-reduced adhesives. The second option is much easier. We help customers with the conversion to MR adhesives and are also on hand if an application should require adapted or newly developed formulations.

»Customers need to make early decisions.«

Ina Benz,
Head of Technical Support & Service

»Switching to MR adhesives is the easiest solution.«

Timm Schulze, Senior Assistant to the Managing Director Sales and Marketing

Ina Benz: The alternatives are available and we at Jowat have been ready for a long time. Yes, it's an adjustment, but it has to be done. After all, people have to handle these adhesives, and they need to be protected. This is why customers need to decide early on which path they intend to take so that they are well prepared come August 2023. ●

Award-winning corporate governance

The Covid-19 crisis has shaken the global economy and the consequences will be felt for years to come. For a large, internationally operating enterprise to handle this crisis successfully, it requires strategic thinking and operational action. These strengths shown by Jowat SE have now been formally recognised, as 2020 saw the Detmold-based adhesives expert proudly presented with the Axia Best Managed Companies Award.

As the Covid-19 pandemic and the associated containment measures continue to cause problems for many companies, and some of them are looking to the future with real concern, Jowat SE can set a positive example. Awarded with the Axia Best Managed Companies Award, the adhesive manufacturer is one of the Mittelstand enterprises that know how to impress their customers with vision, innovative strength and a sustainable management culture. And when you think of it like that, it's little wonder that the company is looking to the future with confidence in spite of the circumstances.

The award is an international seal of quality for successful enterprises, and is awarded annually by the auditing company Deloitte GmbH, the business news magazine 'Wirtschafts-Woche' and the Federation of German Industries (BDI). All Mittelstand family businesses headquartered in Germany with an annual turnover of at least 150 million euros are eligible to apply, provided they can demonstrate sustained positive economic development over the past few years.

Dr Benedikt Brüggemann (Deloitte), Dr Christian Terfloth (Jowat SE), Ralf Nitschke (Jowat SE), Lena Maurer (Jowat SE), Gerald Thier-Jörg (Jowat SE) and Martin Henzler (Deloitte) came together for the awards ceremony at the House of Technology in Detmold (from left to right).

> **»Jowat impressed us with its first-class corporate governance.«**
>
> Lutz Meyer, Partner & Head of the Mittelstand Programme at Deloitte

Impressive on every level

The application process involves several stages of participation, starting with an online questionnaire in which participants outline their position in four categories: Strategy, Productivity & Innovation, Culture & Commitment, Governance & Finance. A shortlist is then determined based on the submitted applications and interviews are held with the participants. From these finalists, a panel of experts with representatives from business, science and the media eventually selects the winners who will receive the award. Companies have to demonstrate that they excel in all subject areas if they are to impress the discerning panel of judges, and Jowat SE really did shine in every respect. "As one of the

award winners, Jowat impressed us with its first-class corporate leadership, outstanding innovative strength, long-term strategic planning, and solid governance structures," sums up Lutz Meyer, Partner and Head of the Mittelstand Programme at Deloitte. "This means Jowat not only represents a benchmark for excellently managed Mittelstand enterprises, but also symbolises the future of Germany as a hub for business." In addition to the adhesives experts, other well-known companies such as the pharmaceutical group STADA Arzneimittel AG and the manufacturer of cleaning equipment Alfred Kärcher SE & Co. KG were among those honoured in 2020.

The prestigious award was presented at a small gathering in accordance with the applicable Covid-19 regulations, which saw the Jowat Board of Directors meet with the Deloitte delegation at the House of Technology in Detmold. As a member of the Board of Directors of Jowat SE, Ralf Nitschke is delighted to receive an award in this context: "We see this as recognition of Jowat's innovative strength and our aim to always develop optimal solutions for our customers that are as sustainable as possible."

An excellent network

The award gives Jowat SE exclusive access to the global network of outstandingly managed medium-sized companies. This network includes award winners from more than 20 different countries, offering an excellent opportunity to forge new bonds and promote informative exchange. "The internationality of the Axia Best Managed Companies programme is what makes it so special," explains Markus Seiz from Deloitte. "This also creates completely new opportunities for our German award winners to expand their network." The aim is to form a globally operating network of successful companies from which all participants benefit. Particularly in times of crisis, affiliations such as this are more important than ever.

Having had its strategic alignment formally recognised in this way, Jowat is looking to the future with optimism. "The world is volatile, uncertain, complex and ambivalent. Adapting to this and consistently taking on these challenges as an organisation is going to be a key factor," observes Dr Christian Terfloth from the Jowat Board of Directors. "We want to provide adhesive users with the best possible support in terms of technology, service and advice, so that strong bonds deliver exactly what we promise."

Greener's always great

Everybody's talking about sustainability right now. It's what companies aim for when developing many of their products and packaging, although there are only a few adhesives on the market that currently hit the mark. Dr Felix Starck, Head of Development in the Thermoplastic Hot Melt Adhesives department at Jowat, is one of the people who would like to change that. He presents promising possibilities for adopting a more environmentally friendly and resource-saving approach with the right choice of adhesive.

Dr Felix Starck
Head of Development of
Thermoplastic Hot Melt Adhesives

Dr Starck's focus is on the development of hot melt adhesives for the furniture and packaging industries.

Countless cardboard boxes are made of recycled materials, and carrier bags made of old PET bottles are already business as usual for today's consumers. But what do these 'green' materials have in common with their conventional counterparts? In many cases, they have to be bonded. And here – at least in most cases – the adhesives used are made from fossil raw materials. Even if adhesive bonding only accounts for a small part of the process flows, the sustainability concept should not end here. After all, in 2019 alone, more than 14.7 million tonnes of adhesives were industrially processed worldwide, much of it for packaging and furniture manufacturing*. This is why anyone looking to be consistently sustainable and environmentally-friendly way in their operations really cannot afford to lose sight of this step in the process.

Growing enthusiasm for GROW

Dr Starck from Jowat is delighted that an internationally successful furniture group, to name just one example, is aiming to make greater use of bio-based adhesives. This is because the Head of Development of Thermoplastic Hot Melt Adhesives is certain: "If one global player pays attention to sustainable bonding, others – including smaller companies – will soon follow suit." This is exactly why Jowat has been focusing on developing the most sustainable adhesive solutions possible for years.

Jowat forms part of the solution

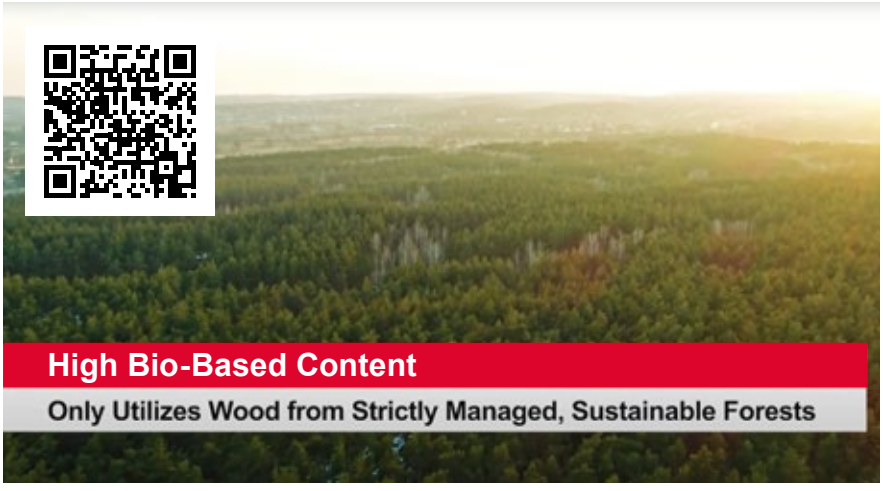
With the Jowatherm® GROW product range, which was introduced in 2019, the Detmold-based company can boast a product that contains up to 45 percent bio-based ingredients. In comparable formulations, this proportion is usually only a few percent. "No hot melt adhesive contains more bio-based raw materials while offering the same performance as a petroleum-based adhesive," asserts Dr Starck, highlighting the advantages of the innovation. "The adhesive is just as reliable as usual, but with Jowatherm® GROW, our

customers are using a much more resource-efficient product." Jowat wants to be part of the solution and not create new problems. This is why the adhesive experts from Detmold attach great importance to the fact that the raw materials are exclusively waste or by-products from other industries and that there is no competition with the food industry.

Jowat relies on a by-product from paper production in the form of with crude tall oil. The polymers and resins that can be obtained from this are ideally suited to adhesive production, and can be used to produce the same polymers found in petroleum-based formulations. What's more, the company is currently examining the increased use of polylactic acids, starch esters and thermoplastic starch, from which entirely new polymers – and thus also new types of adhesives – can be developed. Production of these, however, is more complex and requires new formulation expertise, as Dr Starck notes. "This is precisely why intensive development work and market observation are particularly important in this segment."

»Ongoing research is particularly important.«

Dr Felix Starck,
Head of Development of
Thermoplastic Hot Melt Adhesives



Better safe than sorry

Users are not only opting for a product with a lower petroleum content when they use bio-based adhesives; since Jowatherm® GROW 853.20, for example, is already processed at a temperature of 120 to 150° Celsius, the energy required to process the adhesive is also lower than for conventional hot melt adhesives. "In this way, companies are also making a contribution to increasing occupational safety. Users are exposed to fewer hazards with lower working temperatures," adds Dr Starck. Anyone who wants to optimise their bonding processes holistically and make them more sustainable is therefore already killing several birds with one stone with Jowatherm® GROW.

Looking at the long term, there is another advantage too in that the bio-based adhesives are optimised with regard to their thread tension behaviour. The particularly sharp tear-off facilitates clean application of the adhesive and thus minimises contamination of products and equipment. This means there are fewer rejects in production and less cleaning is required. With all these contributions to be made, it is easy to see how adhesive users can make bonding that little bit 'greener' every day.

Would you like to learn more about the bio-based adhesive Jowatherm® GROW? Scan the QR code for more information.

*Source: ceresana.com

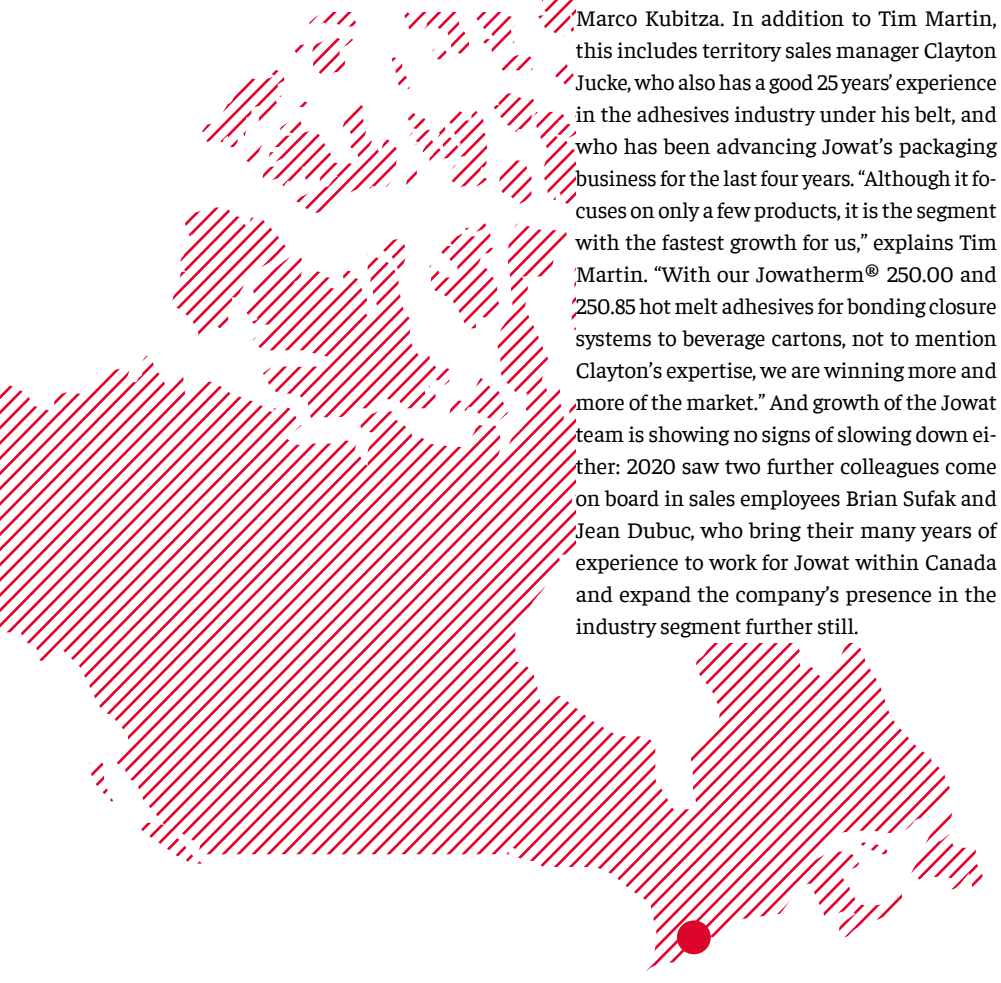
SO FAR, YET SO NEAR

Jowat Canada Ltd's customers may be thousands of miles away in this vast country, but the team has been working closely on the present and future needs of its adhesive applications for 19 years. This is evidenced by factors including the partnership that worked on technology change in the field of edgebanding, as well as the company's talent for improvisation.

Canada is home to more than ten percent of the world's forest cover, so it's hardly surprising to note that the woodworking industry is relevant to the Canadian economy.

Spanning almost 10 million square kilometres, Canada is the second largest country on earth in terms of area after Russia and almost 28 times the size of Germany. At the same time, its population density is one of the lowest in the world with a good 37 million inhabitants, which is why it may sometimes be more likely to run into one of the numerous bears than a real Canadian – particularly in the northern regions. So how does a team of just a few people manage to reach the country's widely dispersed customers for industrial adhesives?

"Most Canadians are easy to lure with maple syrup. It's sticky too, but certainly sweeter than our products," jokes Tim Martin, who can look back proudly on a quarter of a century of experience in the adhesives industry. He has been national sales manager at Jowat Canada for eight years and describes his sales strategy as follows: "To develop the market, we first concentrated on the big cities and then trained the distributors spread across the country in a very targeted way. By systematically sharing our adhesive knowledge, we have empowered our partners to represent Jowat products with focused expertise and the confidence to go with it. This approach not only allows us to successfully manage the distribution business in Canada today, but also to grow it for the future."



Focused industry experience

This 'we' refers to the team of Jowat Canada Ltd. under the leadership of Managing Director Marco Kubitza. In addition to Tim Martin, this includes territory sales manager Clayton Jucke, who also has a good 25 years' experience in the adhesives industry under his belt, and who has been advancing Jowat's packaging business for the last four years. "Although it focuses on only a few products, it is the segment with the fastest growth for us," explains Tim Martin. "With our Jowatherm® 250.00 and 250.85 hot melt adhesives for bonding closure systems to beverage cartons, not to mention Clayton's expertise, we are winning more and more of the market." And growth of the Jowat team is showing no signs of slowing down either: 2020 saw two further colleagues come on board in sales employees Brian Sufak and Jean Dubuc, who bring their many years of experience to work for Jowat within Canada and expand the company's presence in the industry segment further still.

The sales office is located in Mississauga, Ontario. Canada's sixth largest city is located west of the metropolis of Toronto on Lake Ontario, through which the border with the United States runs. Distribution warehouses are located just around the corner in Brampton, Ontario, and in eastern Drummondville, Québec. The team also works closely with the team in the US state of North Carolina to allow it to offer wide-ranging technical support. More than 800 kilometres away, Frances Ma and Crystal Stowell support their Canadian colleagues with their commitment and wide-ranging expertise in all aspects of products and applications.

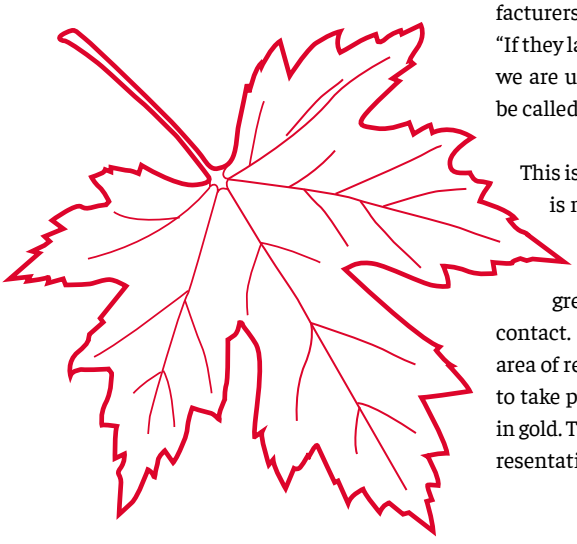
Making quality advances together

Despite sometimes being incredibly far away from customers, the cooperation between the teams is characterised by one thing in particular, and that's their ability to take a close look at specific applications and their associated requirements. By way of example, a manufacturer of cabinet doors located on the other side of the country had difficulties for years with the 'orange peel effect' that created an uneven surface on its high-gloss fronts. Given the high quality standard for which the producer is otherwise widely known, this situation was in urgent need of a solution.

> »We are the first adhesive supplier to be called in to provide customer support.«
>
> Tim Martin,
> National Sales Manager, Jowat Canada

Together with the customer, the Jowat team analysed their laminating process in detail and eventually advised them to go with Jowatherm-Reaktant® 609.40. This was recommended as the production of high-gloss fronts is a demanding adhesive application, and the suggested PUR laminating adhesive is specially optimised for processes such as these. "A universal adhesive is only suitable for high gloss lamination to a limited extent," explains Tim Martin. "Our adhesive, for example, is processed at a lower temperature than the product our customer was using before. This alone can prevent the orange peel effect." It goes without saying that the enthusiasm was huge when the first flawless furniture parts came off the laminating line.

Since then, the cabinet door manufacturer has repeatedly relied on Jowat's expertise, for example in the progressive switch to PUR hot melt adhesives as a state-of-the-art solution in the field of edgebanding. After extensive testing of various products directly on the job, the Jowatherm-Reaktant® 608.00/.01 formulation finally came out on top. What's more, the colourless, thin 'zero joint' meant further quality advances could be achieved with the unfilled PUR hot melt adhesive.



Technological change in edgebanding

As in this case, Jowat is assisting numerous customers across Canada with the shift in technology surrounding edgebanding. The formerly established procedure involving the roller application of EVA adhesives is gradually being replaced by the precisely metered application of PUR or PO hot melt adhesives with the slot nozzle. The result is a much more delicate and cleaner bond than before, which allows permanent high-quality joints to be created in aesthetically pleasing zero-joint quality. "We are extremely well networked and cooperate closely with Canadian manufacturers of edgebands," reports Tim Martin. "If they launch new edgebands on the market, we are usually the first adhesive supplier to be called in to help support their customers."

This is an opportunity that the Jowat team is more than happy to take. After all, in spite of the physical distance, the Jowat Canada employees attach great importance to direct customer contact. In countries like Canada where the area of responsibility is vast, the opportunity to take part in trade fairs is worth its weight in gold. That's something that all industry representatives can agree on, having had to miss many essential trade fairs due to the Covid-19 pandemic. With this in mind, leading suppliers in the woodworking machine sector joined forces to organise a suitable replacement event in the form of the Woodworking Technology Days in October 2020. These were, of course, held in compliance with strict hygiene measures, and as the only adhesive manufacturer present, Jowat seized the opportunity to showcase its range. "In light of the present situation, this was the only major event in Canada in 2020 where the industry could exchange views on the latest developments and technologies," notes Tim Martin. And it wasn't just the suppliers who were excited by the event: plenty of potential customers were only too happy with the opportunity to take part in some lively discussions on the latest developments and technologies in laminating and edgebanding.

Fortunately enough, social distancing and working from home have not prevented the experienced Canadians from continuing to maintain their usual close relationships with partners and customers. After all, Territory Sales Managers Brian Sufak and Jean Dubuc, who joined during the 2020 pandemic year, have not even met their two other colleagues in person yet. Yet this doesn't detract from their sense of belonging. "The four of us all pull together well in spite of the circumstances," explains Tim Martin, adding with a wink: "After all, we Canadians are used to overcoming distances." ●

Marco Kubitza heads up Jowat Canada Ltd. as Managing Director. US colleagues Frances Ma and Crystal Stowell (left to right) provide cross-national support.

Clayton Jucke and National Sales Manager Tim Martin at the Woodworking Technology Days (above, left to right). Brian Sufak and Jean Dubuc keep in touch with their colleagues primarily through digital channels.

THE NAME'S BEAM – NEW BEAM

The trend towards the use of renewable energies has been on the rise for some time and shows no signs of slowing down. In a bid to optimise the manufacturing processes of solar cells for electricity generation in terms of both quality and costs, enterprises like Jowat have been conducting research to increase the efficiency of even small work steps. One of these research projects is called 'New Beam' and is intended to have a lasting impact on the production of solar wafers with the help of new bonding processes.

Around the world, not only is the general demand for energy increasing, but also the demand for green electricity. In 2019, for example, more than 40 percent of the electricity generated in Germany came from renewable sources such as solar energy. This is news that has led to global competition in recent years, including price wars in the photovoltaic industry. Today, many companies have shifted their production of solar modules to Asia in order to keep costs as low as possible. This trend is also emerging in the complex, material-intensive production of wafers: the extremely thin silicon discs that form the basis of solar cells. Billions of wafers are sawn from solid silicon ingots every year. As part of this process, the ingot must always be attached to the workpiece carrier, known as the beam, which in turn has to be fixed to the sawing device. Both processes are usually carried out by bonding with a two-component epoxy resin adhesive applied by specially developed robots. From both a cost and manufacturing perspective, it would be advantageous at this point to rely on a technology that facilitates the joining of a workpiece and carrier without the use of expensive and high-maintenance robots, as well as with the help of a non-reactive, purely thermoplastic hot melt adhesive.

Small step, big effort

The consortium of the three Fraunhofer Institutes 'IFAM' (Bremen), 'CSP' and 'IMWS' (both Halle, Saale) with the companies PV Crystalox Solar Silicon GmbH (Erfurt) and Jowat SE has set itself the goal of developing a technology that will sustainably replace the previous process. In addition to a new type of plastic base beam, the focus here is on a new adhesive system. It should be able to reliably withstand the stresses of the sawing process, but be easy to remove afterwards. The original idea was to add an additive developed by Fraunhofer

»A significant step forward for reducing time and resource consumption.«

Elmir Velispahic,
Jowat Research Services

*Source: statista.com

Sustainable energy production: Solar energy enjoys increasing popularity among private households and in the economy since years.

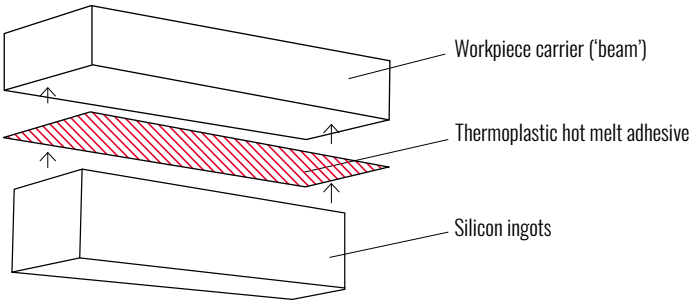
IFAM to the adhesive which, when a DC voltage is applied, enables adhesive weakening and simplified dissolution of the bond. Since an important step in the further development of wafer production is the fast and trace-free removal of the adhesive, this forms yet another research focus of the Jowat team led by Dr Hartmut Henneken and his colleague Elmir Velispahic. The adhesive experts went one step further and worked on a system that can replace the previous 2-C adhesives, but can be removed with less technical effort.

Sustainable (dis)solution

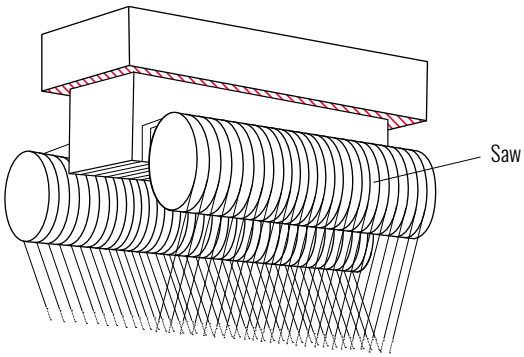
The Jowat team has succeeded in developing two thermoplastic hot melt adhesives that can be used in wafer production. Neither adhesive requires the use of robots, and they bridge the gap between reliable adhesion that withstands the mechanical stress of the sawing process and easy removal from the solar wafers without leaving any residue. "It is impressive that these hot melt adhesives can withstand such forces while still being easy to detach from the highly fragile wafers," says Dr Hartmut Henneken. The adhesive, which was specially developed for the diamond saw process, can be easily dissolved with the help of water. In the slurry process, a suspension of abrasive particles is used during sawing, which leads to a different load on the adhesive joint and required an alternative. The hot melt adhesive developed for this purpose cannot be completely removed with water, but it can with the help of a cleaning solution developed by Elmir Velispahic. "This is a significant step forward in terms of reducing time and material consumption," he explains. "In the long term, the new developments will also have a positive impact on the manufacturing costs of solar wafers."

Promising prospects

The use of the newly developed hot melt adhesives is not only cheaper than the previous method with the two-component epoxy resin, either; while it was not actually part of the required objective, the newly developed adhesives themselves are also particularly sustainable, as the formulations are based on over 40 percent renewable raw materials. The project, which was funded by the Federal Ministry for Economic Affairs and Energy, came to an end in summer 2020 after almost three years – and with promising prospects. Based on the knowledge gained, Jowat is now developing the new hot melt adhesives further until they are ready for mass production. And when the time comes, nothing should stand in the way of the market launch of the promising formulations together with the New Beam. ●



To keep the ingot in place, it is fixed to the beam with adhesive.



The adhesive reliably withstands the mechanical and thermal stresses of the wire sawing process.

Once the sawing process is complete, the silicon is in slices of around 200 micrometres thick.
Source: Fraunhofer CSP

Supported by:

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

Kjörís is one of the largest employers in the small town of Hveragerði and is known all over Iceland for its ice cream brands.

ICELAND THE ICE CREAM LAND

When we talk about Iceland, we immediately think of the bitter cold. But if we're talking about the Icelandic company Kjörís in Hveragerði, we don't necessarily mean the climate, but rather the ice cream produced there. Packaging the ice cream is no simple task – temperatures below freezing are a challenge for many adhesives. So it's a good thing they can rely on the expertise of Jowat.

Iceland is a fascinating country with unique natural conditions and intriguing contradictions. This is where cold glaciers meet fiery volcanos and icy plains meet rocky coastal regions... And despite the cold climate, the Icelanders love ice cream: It is consumed at every time of day or year – numerous ice cream shops are open all year round and even until late at night. The production and sale of ice cream is a lucrative business in the small island nation.

The adhesive used on the packaging of frozen products such as dairy ice cream, lollies and sorbets needs to be able to withstand particular challenges. As well as process speeds, it is mainly the low temperatures during the storage of these sweet treats that can really put the adhesive to the test – temperatures as low as -40 °C are not uncommon. Kjörís is all too familiar with these demands – the family-owned company has over 50 years of experience in manufacturing and selling ice cream. The company was founded by mechanical engineer Gylfi Hinriksson and dairy technician Hafstein Kristinsson. Starting out with just five employees, the company now has 55, with up to even 70 working at Kjörís in the labour-intensive summer season.

Ice cream for every need

Kjörís manufactures and sells ice cream in its home country of Iceland. They mainly produce one to two-litre containers, multipacks with lollies and soft serve ice cream. In addition to the frozen dairy products, the range also includes sauces, chocolate and other confectionary that can be used as toppings for their creamy soft serve ice cream. Be it for independent sellers or large-scale ice cream shops, Kjörís offers the perfect solution for every ice-cream need.

The second-generation family-owned company is headquartered in Hveragerði, a small town east of Reykjavík, which is famous nationwide for its hot springs. They not only attract tourists and wellness holidaymakers to the community of 2,600 residents, but also have an important job – Iceland relies solely on renewable energy for its power generation. Electricity is generated exclusively from hydraulic, wind and geothermal power. This means Kjörís also only uses "green" sources of energy for its own production. The water that is used is taken from the immediate

The second generation of Kjörís management: Guðrún Hafsteinsdóttir, Valdimar Hafsteinsson, mother Laufey Valdimarsdóttir, Sigurbjörg Hafsteinsdóttir and Aldís Hafsteinsdóttir (left to right).

surroundings – from nearby springs or from the River Varmá running through Hveragerði.

Top service

The Icelandic ice cream manufacturer lives by high quality standards: It only uses selected ingredients for its own-brand frozen specialities, thus creating the basis for top-quality products. This aspiration is continued in the packaging of the products – they do not even compromise on the adhesives used. After all, not only do films and cardboard containers need to make their contents appealing, they also need to protect them reliably from external influences. Their search for an appropriate adhesive led the family-owned company to Jowat SE: The partnership with the adhesive experts began in 2020 as Kjörís was looking for new hot melt adhesives and enquired at Jowat Scandinavia in Malmö, Sweden. "We were having difficulties with the hot melt adhesives by another brand we were using," summarizes Guðrún Hafsteinsdóttir from the Kjörís management. "Without delay, Jowat sent us adhesive samples that worked immediately. We experienced quick and excellent service!"

From Iceland for Iceland

Today, the family-owned company relies on Jowat-Toptherm® 851.10 as a hot melt adhesive. The multi-talent is not only known for its high level of heat resistance, but also for its excellent low-temperature flexibility and clean application. Thanks to the selected adhesive, not only can Kjörís reliably seal the multipacks of popular ice cream flavours like "Vanillu Flaug" (roughly "Vanilla Flyer" in English), but can also increase the rate of production. Once the vanilla ice cream with chocolate glaze is in its packaging, the delicious treat can leave the company and make its way to retailers. This is because the majority of the ice cream manufactured by Kjörís is sold and consumed in Iceland. Only a small portion of the ice cream they produce is exported to other countries. Another island nation, the neighbouring Faroe Islands, is also an important customer. Be it by plane or by ship across the Norwegian Sea, the ice cream specialists master the journey there – thanks to reliable packaging with high-quality adhesive. ●

Sticking together in times of crisis

Time and again throughout its history, Jowat SE has proven that it holds together as a family business even in difficult times, that it is up to the most diverse challenges, and that it can handle such challenges with ever more creative ideas. A few examples spring to mind to illustrate the ingenuity of the adhesive manufacturer.

A stitch in time

The story begins in the post-war period. A great sense of relief was sweeping through the country and people celebrated life again – each in their own way. What was striking, however, was that for the ladies in particular, fashion became an expression of their new-found joie de vivre. Silk stockings, which flattered the legs and set them off particularly beautifully, were very much in demand at the time – in keeping with Parisian chic. The only downside of the fashionable celebratory mood was that the must-have of the hour was in incredibly short supply. An alternative had to be found. Jowat recognised the need, reinvented itself, and created 'Flora Summer Stocking' – a tincture a woman could use to paint silk stockings on her legs, including the popular calf seam of the day. There were no limits to the imagination, and only rainy weather could threaten

Tights or Flora Summer Stocking? The illusion is perfect.

Disinfectant with virucidal effect became a sought-after commodity in the fight against Covid-19 in 2020.

Valuable goods: Within a short time, Jowat had several pallets of disinfectants in stock.

to thwart the formula for the fashionable new concept. Nevertheless, the product proved extremely popular – to the point of gaining cult status even – and represents a real example of Jowat's creativity.

Stick, stick, hooray

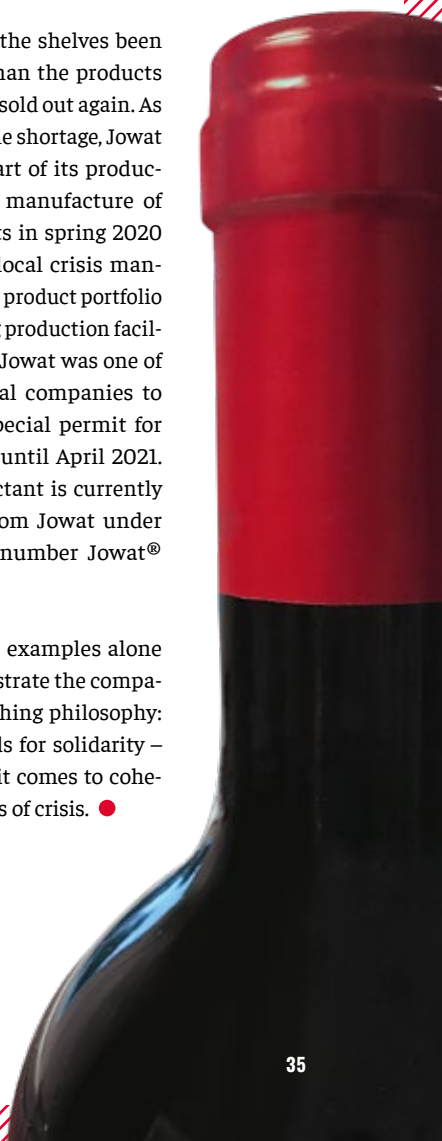
Jowat's resourcefulness in responding to the challenges of scarcity can be seen in another occasion from days gone by, which was also related to celebration in the broadest sense. It was back in a time when people were finally toasting life again after the end of the war, and so wine and sparkling wine were of course not to be missed. After all, even back then, fruit of the vine and bubbles were the drinks of choice for very special occasions – and if the end of the war wasn't the biggest cause for celebration then what was?

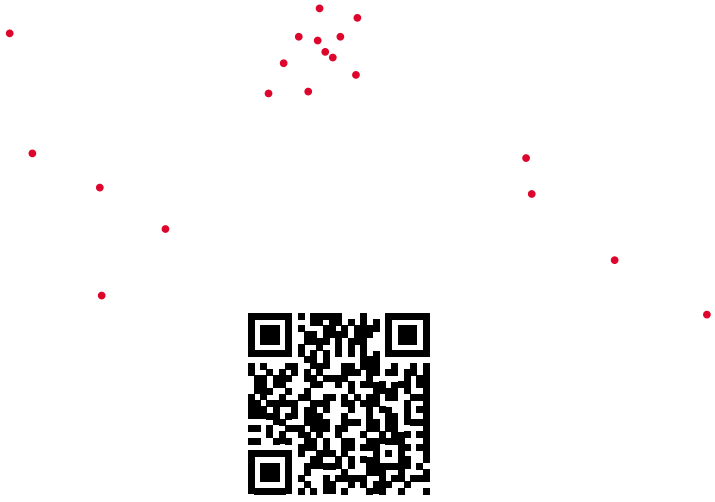
Wine and sparkling wine bottles were usually sealed with tinfoil coatings to preserve the drinks so that they could be enjoyed without hesitation even after a long period of storage. The material for the covers, however, was scarcely available at the time, so Jowat set about developing an alternative solution. The result was an acetylcellulose-based dip varnish, which the company christened 'Jowat Kapselfix'.

Making the switch

In times of the Covid-19 pandemic, too, the importance of products for specific needs becomes more acute than ever – particularly when these suddenly become scarce due to a rapid increase in demand. Disinfectants, for example, are in greater demand than ever before. At the beginning of the pandemic, people were desperate to find the hygiene item that would help minimise the risk of infection with the coronavirus; all too often, however, they encountered the familiar sight of empty shelves in their pharmacies and supermarkets. The demand was so great that no sooner had the shelves been restocked than the products had already sold out again. As a result of the shortage, Jowat switched part of its production to the manufacture of disinfectants in spring 2020 to support local crisis management. Its product portfolio and existing production facilities meant Jowat was one of the chemical companies to receive a special permit for production until April 2021. The disinfectant is currently available from Jowat under the article number Jowat® 940.02.

These three examples alone serve to illustrate the company's overarching philosophy: Jowat stands for solidarity – even when it comes to cohesion in times of crisis. ●





Jowat connects.

Jowat Klebstoffe

Jowat SE
Ernst-Hilker-Strasse 10–14
32758 Detmold, Germany
Telephone: +49 (0) 52 317 490
www.jowat.com · info@jowat.de