

inside acat

■ Newspaper for customers, friends and employees

BONDSTAR®

ACAT Dry Strength Technology
Is gaining ground

POWER SCREW

ACAT AS 800 S especially for bio-waste

DRY STEAM TECHNOLOGY

New ways of odour elimination

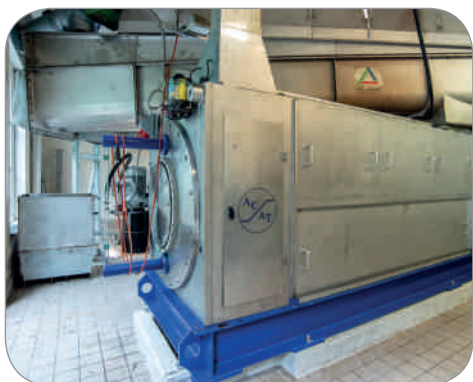


Applied Chemicals International Group
Technical Service is our Success

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Ecosorb®: With the dry steam technology, we are breaking new ground in the elimination of odours.

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PHOTO: CLEMENS SCHILDBERGER

Manfred Zabl

Dear friends of our company!

An exciting and challenging year in which almost all economic sectors have been able to record a strong upturn, is coming to an end. After 10 difficult years the financial and economic crisis of 2008 seem to have been overcome and there is hope of a lasting stabilization of the economic situation. But economy is defined exclusively by financial gain, and so again it makes use of questionable methods of the early years of this millennium. It can only be hoped that in recent years the leading players have gained experience so and that they will pay more attention to sustainability than to the „fast money“. Hope dies last. Economic experts are not tired of emphasizing that the events leading to the economic crisis in 2008, will certainly not happen again. But

something else will happen and the next crisis will come for sure. But let us now enjoy the new upswing and let us hope that the dark prophecies come true only in the distant future.

The 27th edition of „inside acat“ deals with the paper industry, which has undergone tremendous changes over the past few years. The paper producers had to face new challenges because of the tense raw materials situation and the change of the customer needs. Today, the increasingly digitized households are getting information faster electronically than on printed paper, and also leisure reading is available faster and more convenient on screens and tablets. Therefore, fewer magazines, newspapers and books are produced. Likewise, the demand for printing paper has decreased significantly. In contrast, online shopping is experiencing an enormous boom and the associated delivery requires proper packaging materials. The demand for packaging material is increasing rapidly and the raw material „waste paper“ is becoming scarcer. In addition, the quality of the waste paper is getting worse by frequent recycling. For all these problems, the long-suffering papermakers must find a solution.

This trend had been foreseeable for quite some time. Therefore about seven years ago our company has started to develop a highly active and very effective dry strength agent, prepared only shortly before use. It has been optimized in many trials and for several years it has been operated with great success. Meanwhile, this groundbreaking technology is patented and therefore we would like to publish it in this issue of our company magazine for the first time. We believe that we have found a solution to many problems such as strength, smooth running, speed increase and increase in production quantity. We would be pleased to contribute to increase the efficiency of your company as well and to help you to solve urgent problems!

In this sense I wish all readers of our company magazine an exciting and interesting reading, and after beautiful and relaxing holidays a happy and successful 2019!

Manfred Zabl
CEO Applied Chemicals International Group

IFAT 2018 – REVIEW:

ACAT At The World's Leading Trade Fair For Environmental Technology



The key facts of IFAT 2018 at a glance

- 3,305 exhibitors from 58 countries
- 142,472 visitors from 162 countries
- 260,000 square meters of exhibition space

MUNICH - At the world's leading trade fair for environmental technology, 3,305 exhibitors presented forward-looking technologies, innovations as well as tailor-made strategies and adapted solutions for the respective market needs.

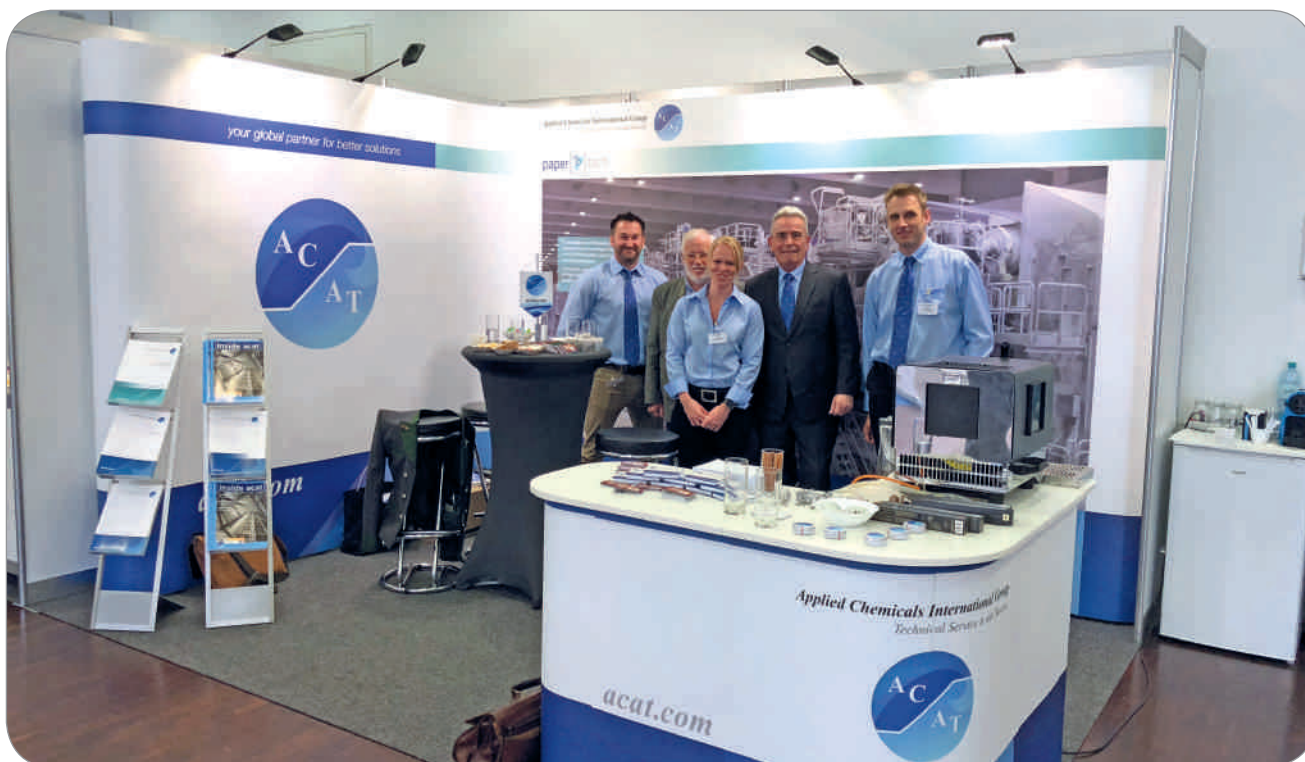
Also this year ACAT experienced a great deal of success at the trade show and we were able to impress customers and prospects with our new booth design and with the presentation of a MAP model (MAP process for the

separation of magnesium ammonium sulphate).

16 teams and 32 players participated in the traditional ACAT kicker tournament. The delicious finger food was a legally allowed "doping" to satisfy the small hunger.

We thank you for your visit and we look forward to the next IFAT in Munich, which will take place from 4 to 8 May 2020.

Susanne Durst



PAPER & BIOREFINERY IN GRAZ

ACAT was there again

GRAZ - This year's Paper Conference was focussed on „disruption“ and the enormous impact of pioneering innovations. The progressive digitisation is changing markets and people at breakneck speed. Companies relying on new and, above all, the right technologies can secure significant competitive advantages. Never before success strategies have been more interconnected, more versatile, more innovative and more global.

„Destruction – use the challenge as an opportunity!“ – But how do you do that? Well-known speakers discussed this exciting guiding principle from different perspectives.

But there was one constant: ACAT was back with its own exhibition stand, where our visitors enjoyed pretzels and beer. We concluded the first day of the congress in pleasant company with a first-class catering at the old university, the unique jewel in the historic heart of Graz.

The next PAPER & BIOREFINERY conference will take place from 5 to 6 June 2019. It's best to enter this date in your calendar already now!

Text: Susanne Durst



PHOTO: GRAZ TOURISMUS TOM LAMM

BONDSTAR® – ACAT Dry Strength Technology

AUTHORS:

**NURI KERMAN UND
DAVID NOWAKOWSKI**

For decades, dry strength agents have been known in paper industry and literature. They can be both natural and synthetic products. Examples are especially starch or products based on polymers. ACAT BondStar® products are mainly based on polymers and they work by an interaction of aldehyde and hydroxyl groups. The strengths develop already in the press section and they are developing completely during drying. The massive bonds strengthen the sheet structure opening new possibilities and tools for papermaking. The BondStar® products made their breakthrough during the last few years.

In recent years, especially the graphic paper sector has suffered considerably from sales losses, and this development is still ongoing. Continuous efforts are made to produce a low cost product for the market. To achieve this, even cheaper alternative fibers are sought or the amount of filler is increased. More and more dry strength agents must be used to achieve the necessary strength and printability properties of the final product, and therefore also our BondStar® dry strength products are requested. They are available as a commodity in various concentrations. In addition, we offer an on-site technology, where the production of the most cost-effective product takes place in the paper mill on site.

ACAT has specialized in this on-site technology and on its base we have developed the BondStar® range. Mostly new projects start with laboratory work laying the foundation for a successful machine trial. If the customer is convinced of the technology on the machine, a customized plant will be constructed. After the instal-



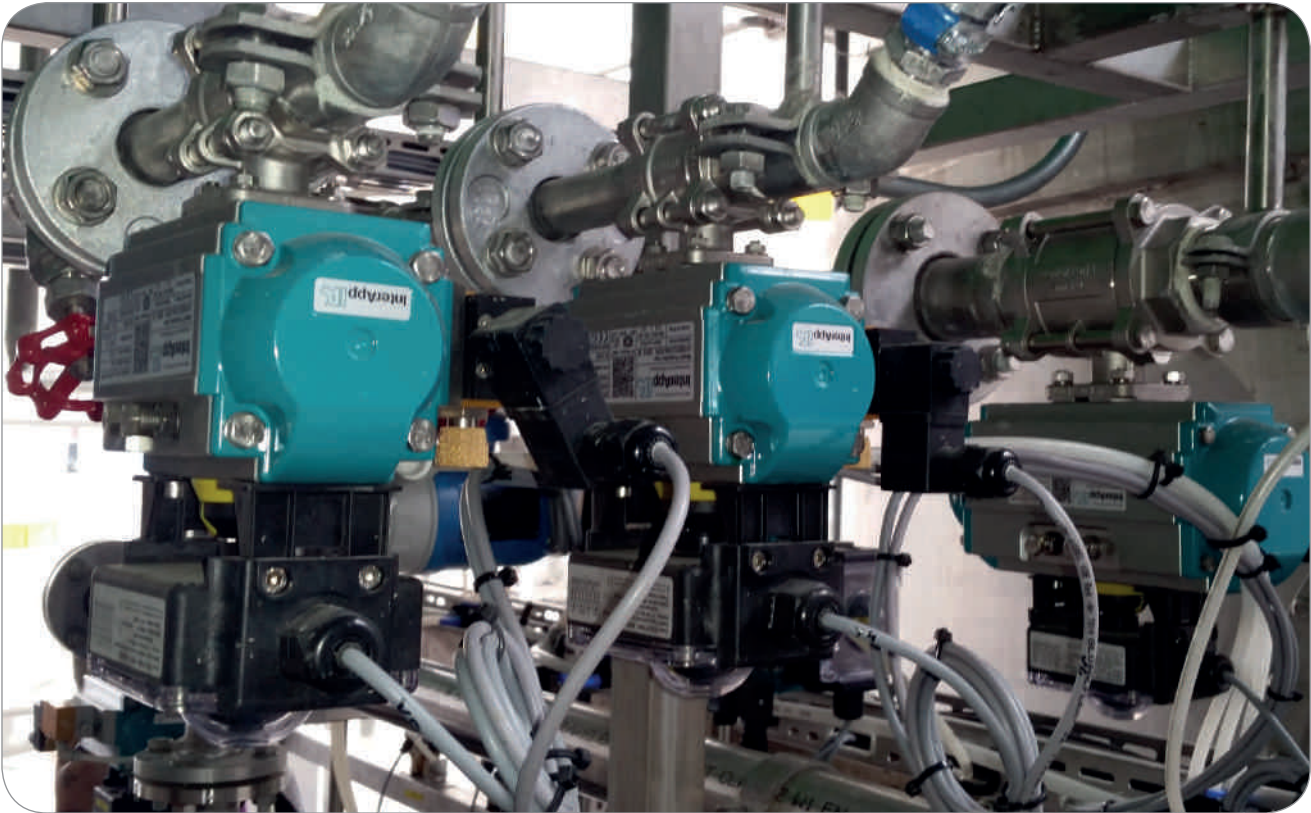
Figure 1: Project schedule

The paper production has changed rapidly and digitization is an ongoing process. The increase of waste paper and the decreasing share of fresh fiber are a real challenge for the paper industry. Today, global and political influences play an increasingly important role in the procurement of waste paper. Naturally, this has an impact on quality and prices. In the packaging sector it is tried to produce the best possible end product with the lowest fiber quality. But that does not always succeed. However, to achieve a better quality, it is possible to stabilize the end product in terms of strength with the ACAT dry strength agents.

lation of the plant engineering, the application will be further optimized, also in terms of cost-effectiveness. State-of-the-art monitoring and maintenance systems guarantee a reliable application. In terms of logistics, we work with the utmost foresight and with telemetric monitoring

LABORATORY WORK - THE BASIS FOR SUCCESS

Before we recommend a paper machine trial, we often start our work in the laboratory of the customer. We simulate the type of paper and the customer's pro-



cess to determine in advance whether our BondStar® dry strength agents can meet the expectations and the effects that can be expected on the paper machine later. Of course, the results of the laboratory tests must convince the customer of our product. In the laboratory we can reproduce many types of paper on the sheet

former and we can simulate the process of mixing and adding of the additives. We test the laboratory produced test sheets on strength parameters and also on some printability properties.

The most common test methods for the strengths are: breaking load, breaking stretch, breaking length,



Figure 2: Rapid Köthen sheet former (Source Frank PTI)

SCT / RCT, bursting pressure, ply- bond strength and CMT. As an example for the increase of the ply-bond strength with BondStar®: we couch two wet lab sheets and this way we are simulating a double- or multi-layer paper machine. For the printability tests we closely work together with our customer and, among other things, we check the Dennison wax test, IGT, smoothness and roughness. An example of this could be the use of BondStar® to increase the amount of filler. It is important to comply with the printability requirements. For example, the use of too much filler would cause problems on the offset blankets. The ash can be better fixed within the paper by using BondStar®.

THE MACHINE TRIAL WITH BONDSTAR® – ANOTHER MILESTONE

If the laboratory tests convince the customer and he agrees to a paper machine trial, we will organize the suitable equipment and the raw material. We have developed two methods to carry out a paper machine trial.

The first method is very simple and it is used for short tests lasting up to two days. We take the locally produced BondStar® from one of our customers and deliver the product to the trial customer via IBC container or

tank truck. The product is applied in the paper mill with the appropriate dosing technology.

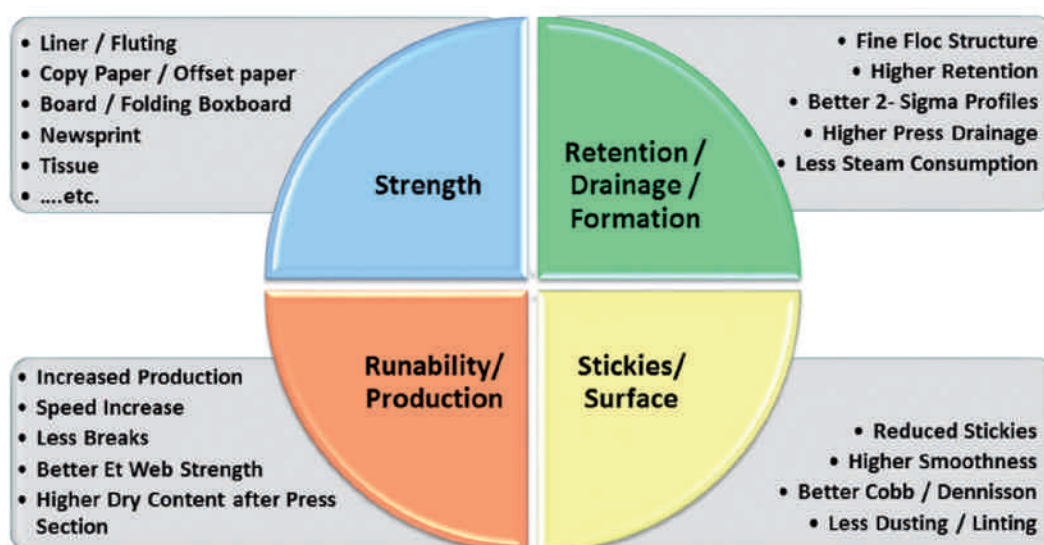
The second method is more complex. A manual BondStar® unit is installed, which is continuously supervised by ACAT employees throughout the trial. In this case BondStar® is freshly made on-site. With this system a trial over several days is possible and it is the only method for long term trials. It offers more flexibility, but it requires a large amount of personnel.

All the time the machine trial is supervised by ACAT specialists and accompanied by the respective production management and the machine operators. Thanks to our numerous experiences we know exactly the screws we have to move on the paper machine, to make the trial a success and to exclude losses or damages.

For many customers not only strength or printability properties are important, but increasingly the efficiency of the paper machine should also be optimized. BondStar® is the ideal product for the papermaker. It offers some exciting possibilities, as the graph (Figure 3) shows.

The manufacturers of packaging papers expect from BondStar® the increase of strength, but sometimes in addition it can also increase production and improve runability. The runability is defined as the machine run without breaks and disruptions.

Positive Effects of BondStar® Products:



Applied Chemicals Application Technology

Figure 3: Effects BondStar®

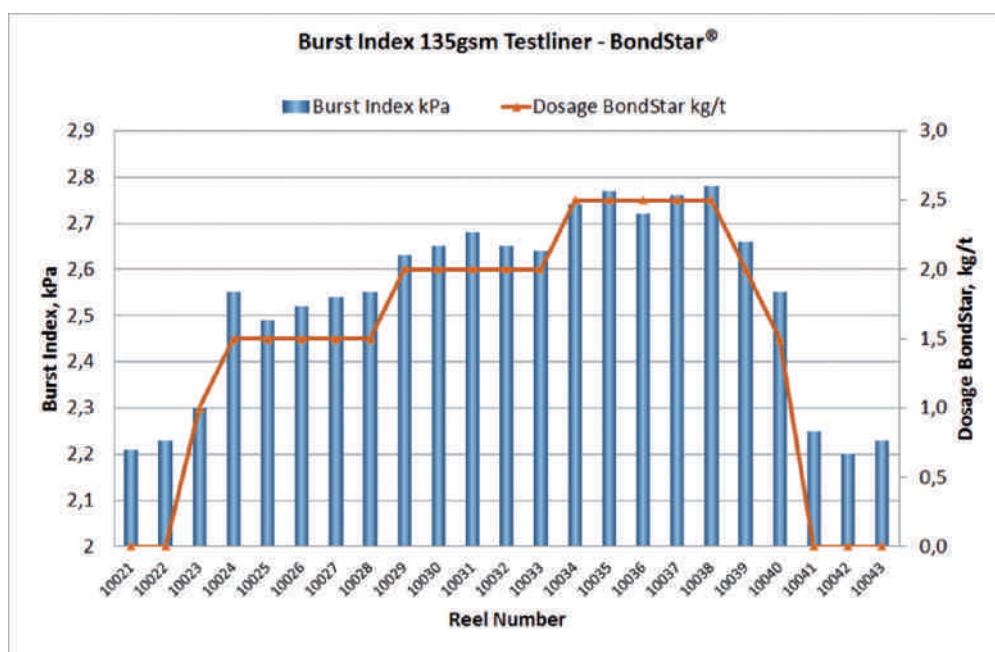


Figure 4: BondStar® results on a modern packaging machine (bursting pressure + 19%)

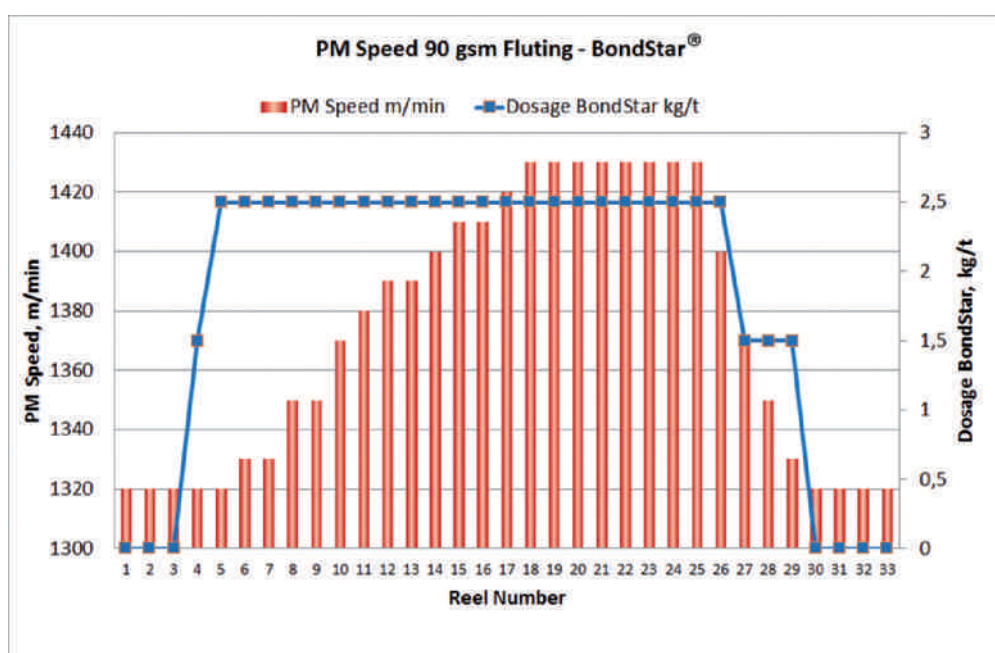


Figure 5: BondStar® speed increases on a modern packaging machine

The runability is particularly in demand for low basis weights. Dry strength agents, such as BondStar®, can significantly improve the production process using an ever deteriorating quality of waste paper resulting in stagnant strengths and increasing ash contents. In addition, BondStar® is often used to meet or to achieve the desired specification. Thus, very effectively lowers the costs of complaints and often new customers can be attracted.

Soon after the addition of BondStar®, the first positive effects are to be seen and the improved strengths and surface properties are measurable in the laboratory. This gives the papermaker the opportunity to quickly influence the quality parameters. As a side effect in clean cycles retention increases and drainage improves and accordingly the specific steam input to dry the paper decreases. As a result, the draws in the dryer section can be loosened and the machine run can be

improved. BondStar® offers the opportunity to perform faster grade changes to higher grades without intermediate grades.

The producer of graphic paper expect very different results from the use of BondStar®. Their focus is on cost optimization and on the substitution of expensive raw materials with cheaper substitutes. One example is the sector of offset papers: here it is requested to increase the amount of filler while maintaining the printability and strength properties. Using BondStar®, it is possible to increase the amount of filler up to 34% while adhering to all parameters.

The use of BondStar® often causes an increase in retention and drainage as a side effect. At the same time, the formation can be slightly improved. By using more fillers, a better drying can be achieved. BondStar® is relatively neutral within the system and it is compatible with various commercial chemical additives. This gives the customer great confidence, because he does not have to adapt his system to BondStar®, or he cannot or he does not want to adapt it. For example, there is no negative influence on optical brighteners, on various sizing agents, retention aids or dyes.

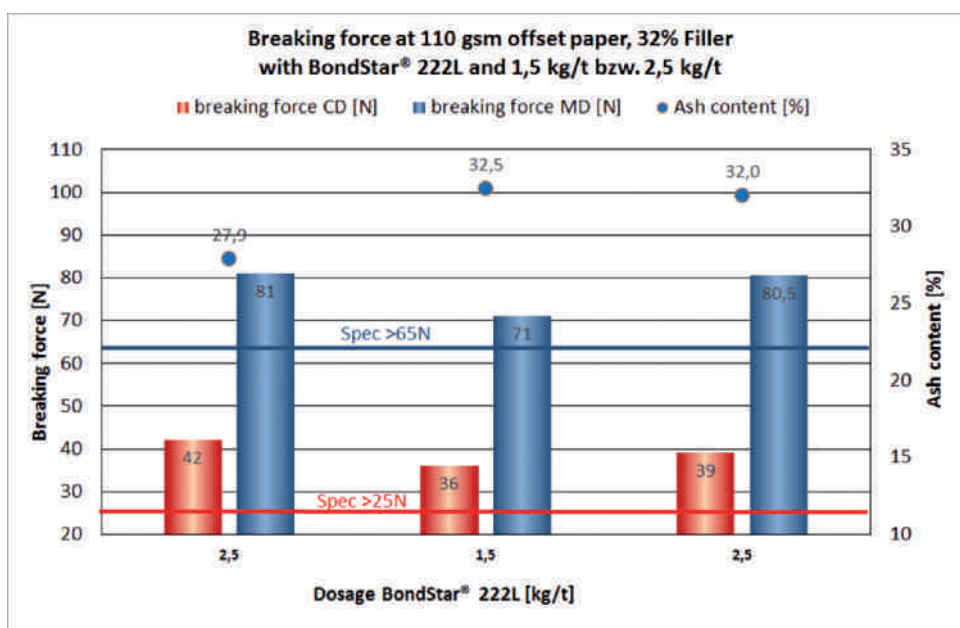


Figure 6: Example BondStar® test with natural offset (breaking force)

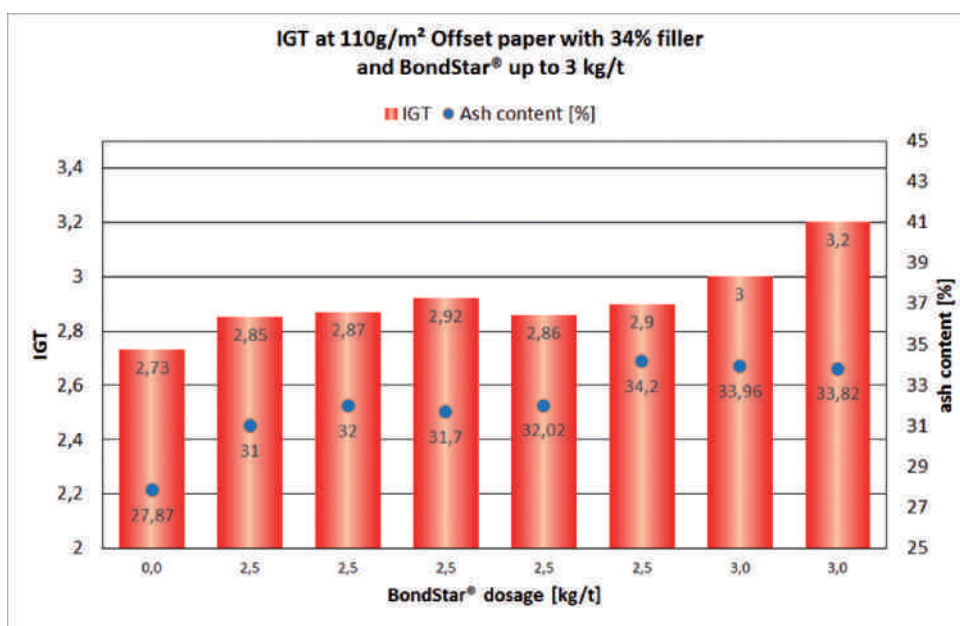


Figure 7: Example BondStar® test with natural offset (IGT)

INSTALLATION OF PLANT ENGINEERING - TAILOR-MADE SOLUTIONS FOR EACH CUSTOMER

After the successful paper machine test, the project planning of the plant engineering and its installation takes place. ACAT has its own mechanic workshop in Austria and all necessary facilities to build customized BondStar® units.

Before project planning, the ideal place for the installation of the system is determined together with the customer. With CAD plans, ACAT can draw the units in 3D into the planned location and present it to the customer in advance. When installing a system, many factors must be considered, such as the unloading of the raw material and the proximity to the dosing point. Usually the installation and commissioning of the BondStar® equipment takes not more than five working days.

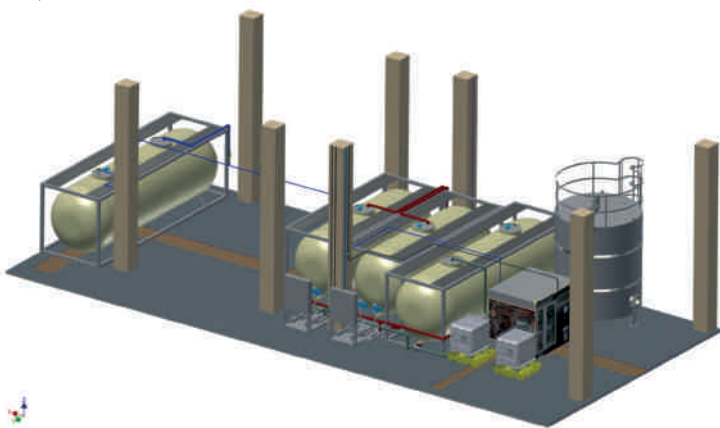


Figure 8: Example of a BondStar® system for a modern packaging paper machine with raw material storage

START-UP AND OPTIMIZATION

The equipment is put into operation by the ACAT start-up team. The product is supported both technically and technologically by the employees of ACAT for a longer period of time. During this time continuously the mill staff are trained and together they are optimizing the dosages and the product. During the start-up phase you get a feeling for the required dosages and for the ideal logistics timing of the raw materials. After some time, the customer often controls the BondStar® by himself. Whenever BondStar® is needed, he starts the pumps. The units are always on standby and produces automatically when needed.

AFTER SALES SERVICE – CONTROL OF LOGISTICS

Regular visits and the maintenance of the system technology are part of the ACAT service. Via various telemetric services, we are able to monitor, control and maintain the equipment worldwide. In consultation with the customer, it also handles the entire raw material logistics.

BondStar® - Raw Materials Logistics: Own Inventory Management System



ACAT MeasureStar



Figure 9: Logistics tool ACAT MeasureStar

BONDSTAR® – WORLDWIDE

ACAT is the world leader in BondStar® on-site production of synthetic dry strength agents because of its many years of experience. ACAT is represented with this technology from the USA to China. We look forward to new projects and we are really excited to see where the next trip will take us to.

Globally Growing BondStar® Activities



ODOR ELIMINATION WITH THE DRY STEAM TECHNOLOGY



It is well known that Ecosorb® eliminates odours very well - and it works always reliable. In contrast to this, the application situations at customer sites are very different. Often, the question arises: How do I spray Ecosorb® and does the entire surrounding get wet?

AUTHOR:

KENAN ENGERINI

But do not worry! The devices spraying Ecosorb® are also very different and they are individually adapted to the application. Many companies prefer wet spraying, but ACAT often recommends the dry steam technol-

ogy, known as VPS (= Vapour Phase System). The liquid Ecosorb® is split into small molecular particles and sprayed as dry vapour into the air. Vapour spreads out very evenly and it also penetrates into holes and cracks, and therefore it is the best form of application for the fight against odours!

The principle of the Vapour Phase System is very simple: A pump sprays Ecosorb® at high pressure into a pipeline and a large fan presses the product into an air

flow at a rate of 1200 m³ / h through defined holes. The result is dry air enriched with Ecosorb®! The advantage is obvious: No water supply, no freezing of nozzles and no wet floor!

ACAT GOES ONE STEP FURTHER!

The VPS system has proven itself several times and it is in use already worldwide. But is that really the end of the story? No, it is not, because ACAT goes one step further: the future belongs to the oscillation!

Oscillation is a technique evaporating solutions with the help of vibrations, and the resulting vapour is evenly distributed also in large halls. Thus oscillation is a modified and improved vapour phase system. Pumps and nozzles are no longer necessary for this technique.

Vibrating lamella put Ecosorb® in motion. The resulting heat evaporates Ecosorb® and it is distributed in the areas to be treated.

The exact amount of Ecosorb® needed can be precisely adjusted (in ml / h) with a control device, which is additionally equipped with an anemometer allowing the system to adapt to wind direction and wind force. The touch screen panel has various functions that can be activated and deactivated and a timer to control the needed operating times.

That's the theory. And the future has already begun! Currently a municipal company is testing the oscillation system for the treatment of bio-waste and green waste. The sludge drying plant is equipped with the latest sludge recirculation technology - and now also with the state-of-the-art ACAT odour treatment technology. ○

ACAT recommends the dry steam technology, the so-called Vapor Phase System VPS. But ACAT goes one step further: The future belongs to the oscillation technology, which is currently running in trial operation.





SKYVELL & THE VPS PROFESSIONAL At The Civil Defence Museum Zurich

Odour neutralisation with the VPS Professional System and the ACAT Skyvell products - soon to be seen as an informative „live product report“!

AUTHOR:

LORENZ DYCKE

Glossy brochures and commercials are an indicator for the investment propensity of manufacturers and they expect these investments to give rise to significant transactions in the near future. But for the users of the products, they are not always the most important thing. We considered that maybe a „live report“ showing the use of our product as a film would be much more interesting for the customer, according to the motto „from customer for customers“. Why do we not show with a report how the application of the products works in reality? The idea for a „product report“ on site was born!

Due to our good relationships with our customers, we gained knowledge of the use of Skyvell products in a very special place from the company Graf Facility Services: Civil Defence Museum in Zurich.

Founded in 1972, Graf Facility Services stands for high quality cleaning work and it has been successfully using Skyvell products and the VPS Professional System already for some time.

THE CIVIL DEFENSE MUSEUM ZURICH

The round bunker from World War II has a total of three floors and it is eleven meters deep underground. Originally it was supposed to offer protection to about 100 people. In 1964 it was renovated and opened to the public as a museum. Since then, the guests have been appreciating the loving care of the unique building by the Civil Defence Zurich.

PROFESSIONALS AT WORK - THE SHOOTING

Already in spring of 2018, the preparations for the shooting started and finally on 25 September it was called „Roll it!“ We got support from Susanne Durst our colleague from Vienna, who has experience with shooting. She operated the VPS Professional device during the reportage. The division manager of Graf Gerry Graf Junior also agreed to take part personally, because he is convinced of the Skyvell products.

DIRECT QUOTE OF GERRY GRAF JUNIOR

The personal statement of Gerry Graf about the use of our products: *“We use the VPS Professional System, for example for crime scene cleaning, compulsive hoarder apartments and building cleaning. So far, we had mostly used ozone devices, but we did not get satisfactory results. In addition, ozone is a highly toxic irritant gas harmful to all living organisms. The only good and safe solution we know is the use of Skyvell together with the VPS Professional System. Compared to the ozone device, the VPS Professional can be used in the pres-*

ence of humans and therefore the treated area can be entered immediately after treatment.”

THE VPS PROFESSIONAL SYSTEM

The VPS Professional System was developed for the application of the natural odour remover Skyvell. It is a dry dispersion system and it distributes tiny dry-vapour particles throughout the entire space to be treated. The particles penetrate deep into the materials and combat all kinds of bad smells on all surfaces, in the air and in textiles. Now we are working on a new model, the third version, and we will launch it as soon as possible. We will implement a lot of customer feedback and we will make many improvements.

We are sure that the film made in Zurich about the real use of our products will give our customers the opportunity to see how our products can be used efficiently and sustainably. The cooperation with the Civil Defence Zurich as well as with the company Graf Facility Services was great and we are looking forward to the completion of the film!



Hollywood-style: Cameraman Gabriel discusses various scenes with Beat Jud from the Civil Defence Zurich.

COLOURSTAR® – COLOURANTS FOR A COLOURFUL WORLD

Colours offer a variety of design possibilities and they beautify the world we live in. Our pigments, dyes and preparations in solid and liquid form offer the highest reliability and colour consistency in all application areas.

PHOTO: CHRISTINE NESTLER-KENZIAN



AUTHOR:

ALEXANDER FRANK

With our pigments, dyes and preparations, we can cover the entire range of industrial applications: in the plastics, paint and varnish, agricultural, building materials, food and feed, writing and artist sectors. Dyes are colouring substances. Unlike pigments dyes are soluble in application media, such as water, oils or solvents. The main applications are the dyeing of textiles, paper and leather. Pigments are defined as colourants existing as fine particles and they are virtually insoluble in the application medium. They are used for paints, varnishes and plastics. In the pharmaceutical and food industry, however, the term dye is used for both pigments and soluble colourants. Dyes are easy to use, but it takes some effort to com-



mercially use pigments. Usually the particles must be pre-dispersed to break up and disperse the agglomerates. Furthermore, dispersants and wetting agents are needed to wet the particles and to prevent separation from the application medium. To facilitate the complicated preparation for the consumer, often highly concentrated pigment preparations are distributed, which have to be adjusted to the individual application of the customer. For plastics, it is possible to produce so-called master batches, in which the desired pigment or even mixtures of several pigments are incorporated into a binder matrix. The granulated pigment concentrates can be added very precisely during processing to achieve the exact and reproducible colour hue. Only

in powder coatings pigments can be used without preparing. However, they are often combined with one or more fillers to be able to dose them more easily.

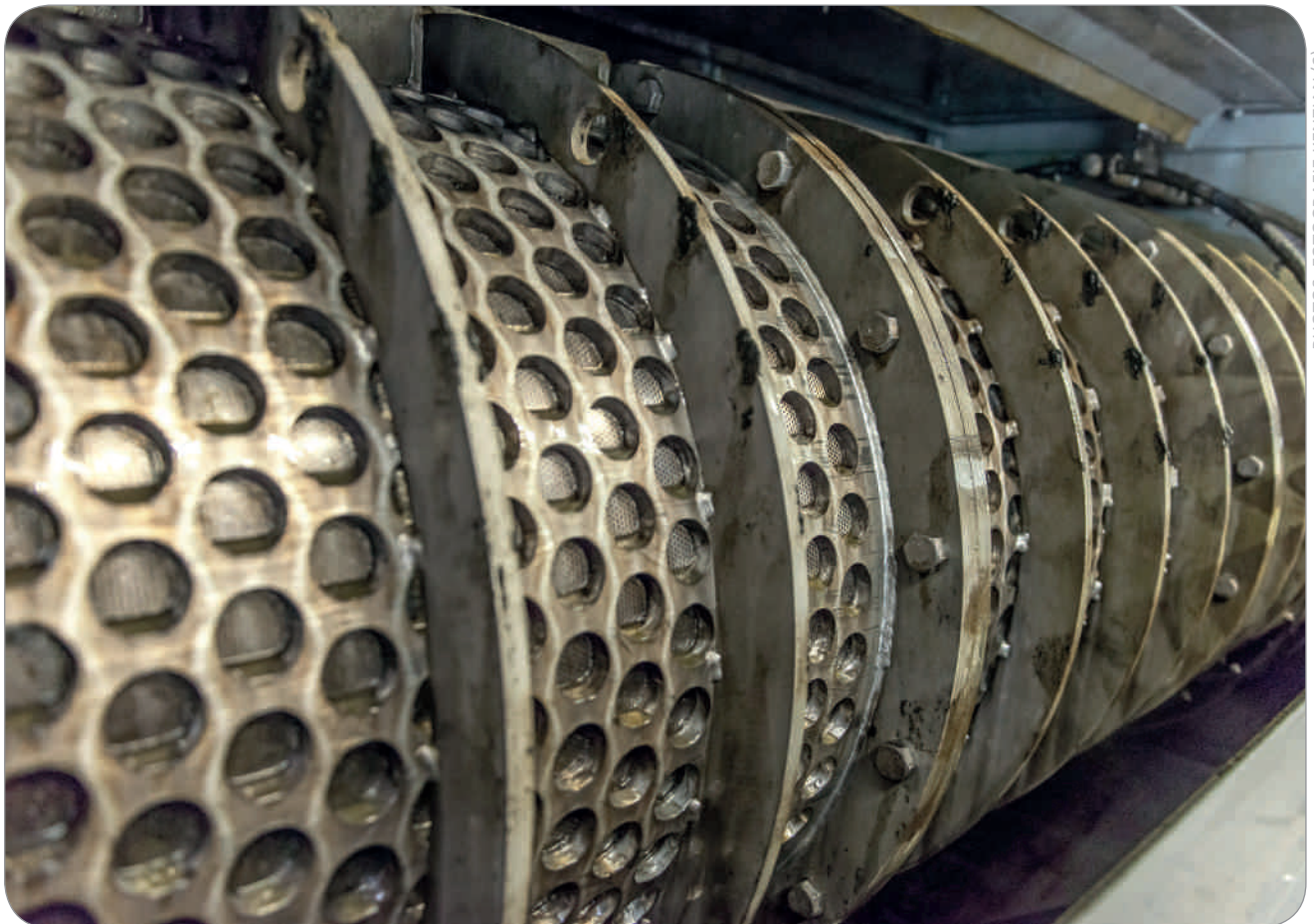
We supply pigments and dyes in liquid form and for aqueous applications APEO- and VOC-free. We also have universal pastes for solvent systems and aqueous systems in our product range. We offer pastes for epoxy, polyester, silicone and PU resins. Powders and dyes in powder form, also in dust-free or in pre-dispersed form, are available for many applications.

We are happy to advise you on the possibilities of delivering the tailor-made product for your application!



A NEW "POWER-SCREW" ESPECIALLY FOR BIO-WASTE

With the new AS 800 S screw press designed for the Salzburger Abfallbeseitigung GmbH, ACAT has moved into new areas of dewatering technology.



PHOTOS: FOTOGRAFIE KENZIAN (2)

AUTHOR:

CHRISTIAN KOZANDA

For more than 20 years the Salzburger Abfallbeseitigung GmbH (SAB) in Bergheim belonging to the environmental protection plants in Siggerwiesen, has been operating a chemical-biological plant, a mechanical biological treatment plant and a bio waste treatment plant for 51 contracting communities in the Austrian state of Salzburg.

Since 1993 the screw press has been in operation in the organic waste fermentation plant (dry fermentation with a current throughput of 26,000 t bio waste). The plant was outdated and its capacity was too little for the fermentation residues. Therefore, at the beginning of 2017, it was decided to purchase a new plant with approximately 55kW of drive power and a capacity of 20m³ / h input (sludge-like digestate with a maximum of 60 ° C and a pH value of about 8.3).

Due to the expected high wear in the dewatering of fermentation residues and the experience with the existing plant, the screen plates and the screw had to

be made in duplex stainless steel. Also ease of maintenance and high operational reliability were required and evaluated in the tender review.

The ACAT Anlagen- und Maschinentechnik GmbH was able to convince with its technical solution, the Austrian production facility and the references. In July 2017 we received the order for the delivery, installation and commissioning of the ACAT screw press type AS 800 S.

The screw press type AS 800 S for the dewatering of fermentation residues is a completely new machine concept for screw presses. This was necessary because the torques and forces in the drainage of fermentation residues are much higher than in sewage sludge dewatering.

Comparing the drive powers, the difference is particularly evident: 55kW for fermentation residues dewatering in contrast to 3kW for a same size standard sewage sludge plant.

Because of the required forces, the cones at the discharge cannot be adjusted with compressed air, but with a separate hydraulic power unit.

The proportion of structural material in the fermentation residue is high, so a sealing lip is no longer necessary with this type of application, but it needs specially drilled (twice offset holes) thick-walled screen plates.

Based on our experience in similar applications, we decided to coat the worm shaft completely with tungsten carbide ensuring the highest wear resistance, and

this has already been confirmed in practice after several months of use.

After passing the factory acceptance test in our production in St. Andrä-Wördern near Klosterneuburg the screw press was delivered to Bergheim on 5 June 2018. The machine was installed immediately and commissioning was carried out by our technician Ing. Dietmar Strecker on June 14, 2018. After only three hours of operation the required discharge TS value was reached. Since this time the system has been running. The performance test and the formal takeover took place without any problems on 10 July 2018. Practice has shown that the throughput quantities are much higher than the required ones.

For the realisation of this new development and for the joint implementation as well as for the trust placed in us, we would like to thank the Salzburger Abfallbeseitigung GmbH, in particular the Managing Director Mr. Günter Matousch, the Operations Manager Ing. Stephan Löcker and the entire team!

With this project, we were able to move into new areas of dewatering technology. It is particularly pleasing that immediately afterwards we received an identical order from the planning office RAB GmbH for the waste management company Mustankorke, Finland. We view this order as a confirmation of our new technology.



FLAT FINE SCREEN WITH AN INTEGRATED SCREENINGS WASH-PRESS: The Original With Hydraulic Drive – Is Prevailing!

AUTHOR: CHRISTIAN KOZANDA

In the summer of 2017, the Abwasserverband Raum Friesach – Althofen operating the wastewater treatment plant Mölbling with a capacity of 32,000 p.e, decided to invest in a new plant because of the high level of wear on the perforated plate screen and the washing press. The maximum feed flow from the mixed sewer system is 550 l / s. After detailed examination of all technologies available on the mar-

ket the decision was made for the ACAT flat-fine screen Typ FFR 2.5, manufactured by Werkstoff + Funktion Grimmel Wassertechnik. The major reasons for this decision were the two screening units of the wastewater treatment plant Spittal an der Drau, which has been operating without any problems despite the extremely high proportion of sand and stones since 2005.

The flat fine screen is characterized mainly by its robust hydraulic drive and the fact that there are no more moving parts in the wastewater ensuring that the problems with the perforated plate screen, built in 2010 do not occur any longer.

In the spring of 2018, the new

screen with 4 mm gap width, an integrated screen washing press and a completely new control system was installed. Since then, the system has been running without any problems and has immediately achieved the required throughput.

The new flat fine screen rake has an extremely high separation efficiency, so the existing old return sludge screen has become inoperative.

We look forward to a further good cooperation with the AWW and we would like to thank the managing director Mr. Reinhard Ebner and his team for the smooth implementation and the long-term cooperation!



ACAT IRON ALUMINUM MIXTURES

For Various Applications



PHOTO: SPIOLA

AUTHOR:**VINCENZO CARCO**

ACAT not only supplies polymers and machines for industrial and municipal sewage treatment plants - but also iron- and aluminium-containing mixed products. The AluStar® products are well known for their lasting effect. For three years now we have been specializing in metal salt mixing products. We combine the properties of iron II, iron III and aluminium to a very effective aid for the treatment of wastewater. Our standard products are called AluStar® 4020, AluStar® 4050 and AluStar® 4060. The products are very different and they are ideal for the precipitation of phosphates and for the control of H₂S. We are pleased to produce another product for your individual requirements.

ALUSTAR® 4020

- Precipitation of phosphates, pre- or simultaneous precipitation
- Prevention of the formation of H₂S
- Formation of stable flakes
- Improvement of the settling properties in the secondary clarification
- Prevention of bulking and floating sludge
- Optimisation of biological wastewater treatment
- Elimination of turbidity in the supernatant

- Reduction of total undissolved substances at the outlet of the treatment plant

ALUSTAR® 4050

- Precipitation of the phosphates, pre- or simultaneous precipitation
- Prevention of the formation of H₂S
- Prevention of bulking and floating sludge
- Stable flocculation
- Conditioning of sludge
- Control of filamentous bacteria
- Due to the high aluminum content this product is especially suitable in winter

ALUSTAR® 4060

- Precipitation of the phosphates, pre- or simultaneous precipitation
- Prevention of the formation of H₂S
- Acute and preventive treatment of bulking and floating sludge
- Improvement of the sedimentation properties and reduction of sludge volume index
- Control of filamentous bacteria

The above-mentioned characteristics of our products should help you to choose the suitable product and of course we are happy to advise you on site. ●



STRONG WOMEN - STRONG ART

Women In The Visual Arts

The ACAT Art Calendar 2019, designed by a woman, presents the work of four female artists and it should give to ALL of us new IMPULSES in the coming, hopefully successful New Year.

AUTHOR: **GERTRUDE MITTERBÖCK**

By the end of the 19th century, women were generally excluded from the academic artistic education. Therefore, they did not have an official access to art education. For a long time the genuine talent for creative activities of women has been denied. Nevertheless, there were women working artistically. But often they had to learn the necessary skills in private lessons, or they were represented in the arts and crafts. For a

long time the typical training opportunities for girls have been limited to dancing, drawing and making music. The aim of this training was that being a married woman they were able to organize the private life and to represent the family externally.

Very often the term "women in art" was equated with "the portrayal of women in art". Until the 18th century, the art world was dominated by men. At that time the general opinion was that women and art are incompatible. As late as the 19th century, new opportunities opened up slowly for women. But although women



Picturesque: strawberries, melon, lime by Ursula Rentsch (left), painting by Melitta Progsch (above)

were no longer officially forbidden to study at the major academies, they were denied access. Unbelievable but true: only since 1960 also women have been part of the art scene and this was partly due to the growing women's movement.

WOMEN CONQUER THE ART WORLD

Women started to break with the existing conventions with all their strength and without doubt and fears. But talent alone was not enough. It took a lot of courage and perseverance to prevail against the male colleagues. Female artists had a hard time and often they were mocked as "paint women"

The first abstract picture was painted by the Swedish artist Hilma af Klint (1862-1944) in 1906. She turned away from realism and became a pioneer of abstract art. However, an abstract picture of her was only publicly exhibited 20 years after her death, and her works were not internationally recognized until 1980. Soon afterwards the first female artists dared confidently

say: "My profession is female artist." Today, women are in the majority at the art performance classes of the academies and at smaller exhibitions.

There are many different women, there are many different artists, but there are also many different types of arts. Now women are having more influence than ever before. They are managing successful galleries. Women are represented in prestigious galleries around the world in solo exhibitions and / or group exhibitions, and their works are receiving high prizes. More and more women are being placed on the list of the 100 most influential people in the international art world. Nevertheless, the opportunities for women and men in the art world are still unevenly distributed.

I plead for the equality of man and woman and I am pleased that women will continue to seek and to go their own way courageously. But I think that these own, self-determined ways of women should not be a campaign against men. The dignity and rights of women should be respected 365/366 days a year.



Last brushstroke by Monika Amrein

Good art moves the world.
Good art sets new impulses.

The calendar 2019 designed by a woman with selected works by four artists is supposed to give us ALL new impulses. Impulses coming from the images and sayings should show each of us a new path, impulses that he / she maybe likes to follow or impulses stimulating her/his thoughts. Unknown paths often offer new and exciting experiences. If one becomes aware of new

experiences, maybe one would come out strengthened. Impulses showing a way let us become open "something different".

Paths are made by walking (Franz Kafka)

What would the people of the earth be without woman? They would be scarce, almighty scarce.
(Mark Twain)

PASSION BETWEEN RUST AND CHROME – Fascination For Classic Cars Or Having A Screw Loose?

They need tons of gasoline, offer only a few comfort and have no driving aids. Nevertheless, many people cannot escape their magic. What fascinates millions of people around the world about the old vehicles? In this article Roland Welz describes his own experience with classic cars.



AUTHOR:

ROLAND WELZ

It's rare to meet people driving to work or to shops in a vintage car every day. But who turns to his modern car after parking and rushing to the bakery, the dry cleaner or to the office? At least we take a second look on the brand new vehicle we are owning only a few days.

In contrast, classic cars are like the paintings of old masters, like rare jewels or fine furniture. They evoke admiration and they trigger unexpected happiness. They are relics of a bygone era, they show the zeitgeist of their

time and they are cultural assets. This is especially the case with the tail fins spaceships from overseas, or even perhaps from another planet? Never again there will be such a beautiful thing like this wonderful car or the three-wheeled bubble car and the Goggomobil. Does a "Knutschkugel" (BMW Isetta) corresponds again to the spirit of our time? Driving an old Mini is a lifestyle, today even more than at the time.

If you have two left hands, it might become too expensive - but I prefer screwing myself. According to the insurance companies, the average classic car costs approximately 20,000 euros, and thus it is not more expensive than a newer compact car. Nevertheless, the opinion persists that owning a classic car is a very

expensive hobby and only rich people can afford it. According to a VDA study (Verband der Automobilindustrie e.V., Germany), this is mainly due to the fact that the media usually only report on particularly exotic and extremely expensive vehicles. "Auction results and speculative profits with the so-called 'garage gold' play a major role. This one-sided view distorts the picture and in the long term it could 'adversely affect' the society's attitude to classic cars and their owners," the study says.

I am a biologist with an affinity to technology and already at a very young age I discovered my love for old vehicles. I have noted that if I carry out the necessary repairs on my vehicle myself, my moped will work more reliably, and additional, I will save money also. I've always done well to do it that way! As it is appropriate for a down-to-earth Swabian I bought my first old Benz, a 1977 Mercedes 300 Diesel, after my schooldays. Till today, I have been captivated by the quality, the self-explanatory technology of German engineering and the fascination of repairing old vehicles.

Therefore, daily I drive "mei heilix Blechle (my holy sheet of iron)" decelerated and with great pleasure and due to the ever-increasing traffic volume and the ubiquitous speed limits I can still participate in the traffic well and safely. Of course, as a safety specialist, I have also dealt with the safety-related developments of these vehicles, such as crumple zones, safety belts

and ABS. I am particularly fascinated by the so-called chrome liners from Mercedes-Benz of the late 1960s, 1970s and early 1980s series w108, w107, w123 (and w126). Later on only plastic cars were produced.

As mentioned at the beginning, a recurring topic is the fuel consumption and the associated emissions of old cars. Therefore it is recommended to buy new vehicles. But how much energy is needed for the production of a vehicle? Does a new acquisition really make sense concerning energy balance? Certainly not! About 40% of the energy consumption of a car life (mileage about 200,000 km) are needed for the production - and of course, it is needed only once! If the vehicle is driven 400,000 km, it will consume twice 60% fuel and once 40% production energy. Therefore buying a new car after driving it 200,000 km 60% fuel and two times 40% production energy are consumed for 400,000 driven kilometres. A naive assumption?

Usually, women are less interested in cars than men. But if I could not share my enthusiasm for the old vehicles with my girlfriend, it would not be so great. She is technically gifted and she actively supports me in the repairs, and it can happen that together we are lying under a car. She likes accompanying me to the vintage car meetings and there we enjoy the aesthetic rarities and curiosities made of sheet metal and chrome, and we remember the good old days.



DO NOT LET ANYTHING DISTRACT YOU!

Multitasking and driving? No thanks! Distraction is one of the most common causes of accidents! If you sit at the wheel of a vehicle, mobile phones & Co. have to have a break!

AUTHOR: ROLAND WELZ

Driving a car, you should focus all your attention on the traffic. This is not always easy, because of the numerous possibilities of distraction. Often Inattention and distraction cause traffic accidents.

We want to show the reasons for a distraction and how to prevent traffic accidents. The consequences are not only mental suffering and material damage, but also workplace failures and additional organisational efforts.

NON-OCCUPATIONAL ACCIDENTS IN SWITZERLAND

Every year more than one million people are injured in road traffic, in doing sports, at home and during leisure time.

ACCIDENTS IN ROAD TRAFFIC (2017 SWITZERLAND)

- About 82,000 injured people
- 3654 seriously injured
- 230 killed

POSSIBLE CAUSES

- Inattention / distraction (29%)
- Priority disregard (26%)
- Speed (19%)
- Alcohol (10%)
- Vehicle operation (11%)
- Intake of narcotic / drugs (3%)

COMMON CAUSES OF DISTRACTION

- Distraction by stimuli outside the vehicle (e.g.: attractive panoramas, eye-catching people, advertising)
- Conversations with passengers
- Eating and drinking
- Smoking
- Telephone calls
- Operation of vehicle instruments (e.g.: Navi



- and entertainment media (radio, CD..)
- Grabbing for a moving object.

SO YOU ARRIVE SAFELY AT YOUR DESTINATION

That's what you should think about before you drive:

- Set Combox or Airplane mode on your phone
- Select your favourite radio station, insert a CD or connect your music player
- Program your navigation device.

This should be noted while driving:

- Keep eye on the traffic. Refrain from distracting activities.
- No phone calls. Also talks with hands-free car kit are distracting!
- Do not read or write messages.

→ Stop your car in a safe place when you have to do something distracting!

Source: bfu – Beratungsstelle für Unfallverhütung, Switzerland

ACAT CHRISTMAS DONATION

Also this year we are supporting an aid organization on behalf of our customers and our partners. Water is an important issue in our area of activity as well as in society and it needs to be improved in many countries of the world.

PHOTO: HELVETAS/SIMON B. OPLADEN



AUTHOR:

PER O. BJÖÖRN

The Applied Chemicals International Group continues to benefit from an economically and politically relatively stable environment and from a high level of usable infrastructure, which are part of the foundation of our company's success. We have to be thankful for that and we do not want to take it for granted.

An organised and functioning water treatment and the nationwide constant supply of drinking water are a matter of course for us. But looking around the world, we have to realise that not everywhere there are such good conditions for supplying the population with water. This year the ACAT Christmas donation should help to provide and improve the access to running drinking water also in remote places of this world. Clean water strengthens people and societies and thus leads to more stability.

This year, the donation made by the ACAT Group on behalf of its clients and partners goes to the aid organisation Helvetas, which attaches great importance to

the human right to water and sanitation. The organisation supports the poorest people in the world not only in their efforts to build wells and latrines. Helvetas takes a comprehensive approach and promotes also the fair distribution of water resources, the sustainable management of water supply, the efficient irrigation of fields and the improvement of hygiene practices. Thanks to the support of Helvetas over the past five years, more than two million people have gained access to clean water and sanitation.

The founding of Helvetas dates back to 1955. Supported by the then Swiss government, the Swiss relief organisation for non-European areas (SHAG) - the later Helvetas - was launched. In the 1970s, there was an expansion and professionalization, making Helvetas one of the largest Swiss aid organisations today.

We are aware that our Christmas donation is just a "drop in the bucket," but, "steadily dripping wears the stone!"

We hope that this year's Christmas donation meets also your approval. We thank you for the successful business relationship and we wish you and your families a peaceful and contemplative Christmas! ●

THE PHASE WATER IN TCM: SEASON WINTER

Winter is the time of peace and silence, but also of the cold. In order to withstand external influences, now our body is requiring a lot of heat and energy. "Saving and preserving" is the motto of the Traditional Chinese Medicine (TCM) for our body in winter.



PHOTO: CHRISTINE NESTLER-KENZIAN

AUTHOR:

SUSANNE DURST

HOW CAN WE SAVE & PRESERVE OUR FORCES IN WINTER?

First and foremost, it is important to warm the body and to provide it with sufficient energy. Soups and stews are ideal for picking up nourishing ingredients, especially if they contain root vegetables.

In winter especially the functional circle kidney / bladder needs our special attention. The kidneys house our essence and they are responsible for growth and reproduction. Therefore it is important to keep the back and kidney area warm at all times!

The corresponding taste is salty, the colour is black or dark.

In winter, you should regularly eat the following foods that boost your kidney energy:

- **Spices:** fennel seeds, coriander, turmeric, cinnamon, cloves, cardamom, fenugreek, anise
- **Vegetables:** fennel, spring onion, radish, cabbage, cabbage, pumpkin, leeks, parsnips, beetroot
- **Power soups** from bones, meat and fish
- **Stewed meat / fish dishes** with vegetables (lamb, chicken, deer, beef)
- **Hearty,** well-seasoned stews with cabbage or cabbage and root vegetables
- **Legumes** such as lentils, beans and chickpeas
- **Dried fruits:** apricots, dates, figs, raisins, lingonberries and cranberries
- **Nuts:** hazelnuts, walnuts, black sesame, Maroni!!
- **Soy sauce** „Tamari“ and miso seasoning
- **Cereals:** spelled, oat flakes, long grain rice, rye
- **For sweetening:** rice syrup and barley malt.

Please turn over! On the next page you will find a simple recipe to try out.

KIDNEY BEANS WITH BROCCOLI IN RED SAUCE (for 4 People)

Ingredients:

Earth: 2 tbsp oil, 1 pc cinnamon bark, 1 tbsp butter, 1 pc. broccoli.

Metal: 1 onion, 1 garlic clove, 1 small piece fresh ginger, 1 cardamom pod, 1 teaspoon ground cumin, $\frac{3}{4}$ teaspoon ground coriander, $\frac{3}{4}$ teaspoon garam masala, 1 bay leaf.

Water: 1 can of cooked kidney beans (about 480 g drained weight), salt, 250 ml of water.

Wood: 250 gr of tomato puree, 3 tbsp chopped parsley or coriander

Fire: 1/2 teaspoon turmeric powder

Preparation:

Drain beans and rinse well, drain. Peel onion, garlic and ginger and chop finely. Cut broccoli into small florets.

Brown bay leaf, cinnamon bark, cardamom pod in oil over at medium heat for about 5 minutes until the bay leaf is browned. Add onion, ginger and garlic and sauté until they are light brown. Sprinkle the ground spices, add the broccoli and fry for a short while. Stir everything well and mix in the tomato puree, salt.

Cook without covering and steadily stirring at high heat for about 5 minutes until the liquid evaporates and the sauce thickens. Add the beans with about $\frac{1}{4}$ l of water, cover it and simmer for about 10 minutes at low heat that the beans can adsorb the aroma of the sauce.

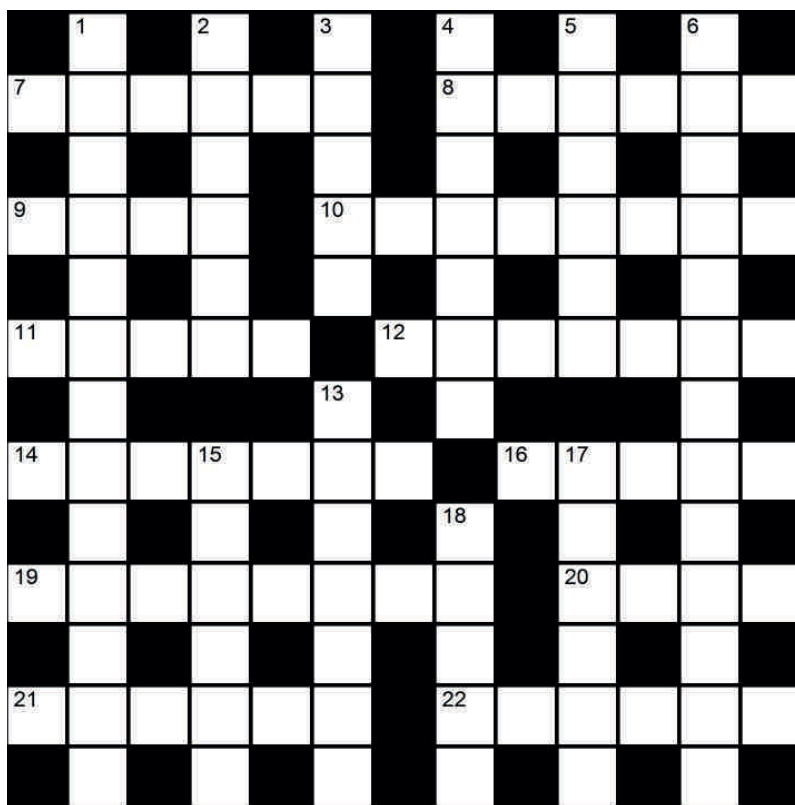
Stir in the butter and simmer again at medium heat for about 5 minutes. The sauce should stick to the beans. Sprinkle lusciously with parsley or coriander leaves.

As a side dish I recommend basmati rice.

Effect according to TCM:

Strengthens kidney Qi and Yin, transforms moisture / humidity, strengthens blood and regulates bowel movements.

BRAIN WORK AND MENTAL EXERCISE

**Across:**

- 7 Europe,
- 8 Edison,
- 9 Odds,
- 10 Delicate,
- 11 Unite,
- 12 Twosome,
- 14 Old-time,
- 16 Adult,
- 19 All right,
- 20 Oath,
- 21 Lessen,
- 22 Shadow.

Down:

- 1 Duodenal ulcer,
- 2 Dorset,
- 3 Tends,
- 4 Yellows,
- 5 Circus,
- 6 Contemplation,
- 13 Imagine,
- 15 Thrust,
- 17 Doodad,
- 18 Stash.

ANNIVERSARIES

Gergely Fehér: 10 Years

10 years seem long but short. This year marks Gergely Fehér's tenth year with the ACAT Budapest Group.

During the time he has worked with us he has significantly contributed to our group's success, particularly in the area of sales and services. Gergely serves our customers efficiently and in superior style. We thank you for your enduring loyalty and diligence.

Congratulations on the 10 years anniversary and we look forward to the future together!

BO

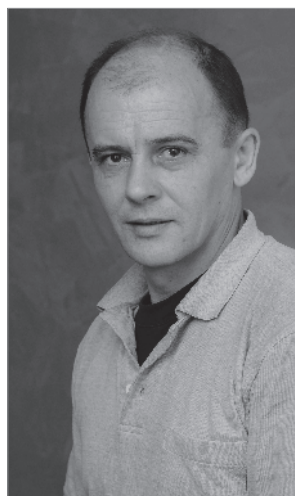


Mato Miskovic: 10 Years

For more than 10 years, Mato has been delivering IBC containers to our customers. He pumps over products, he cleans and maintains our equipment. In addition, he lovingly takes care for our garden, our buildings and cars. Whatever does not work, Mato can repair it. There's nothing he cannot do.

MME – stands for Mato makes everything.
Mato, thank you for your great commitment.

ES



Gabriele Nicole Horak: 15 Years

For 15 years Mrs. Gabriele Nicole Horak has been the back office of the chemtech division. Her area of responsibility includes order processing, sample organisation, and many administrative activities. Since last year she has been also responsible

for the international distribution business. She restores order to the chaos caused by the field service team sometimes and she keeps the overview even in difficult situations Gabi, as we are allowed to call her, is very reliable and she has a high level of commitment and flexibility.

In her private life she does sports, she loves animals and she is a Vespa driver. Gabi likes taking pictures and she loves sunflowers. Gabi Horak supports me a lot as an assistant of the divisional management and I would like to thank her on behalf of the entire team very much for her commitment and her great team work.

FR



PHOTOS: CHRISTINE NESTLER-KENZIAN



Sabine Spieler: 15 Years

Despite 15 years of service at ACAT, our dear Sabine is the „youngest“ member of the environmental technology department.

Before joining our team, she gained valuable experience in our plant engineering departments, both in paper and environmental engineering, in processing and, of course and in the „popular“ quality assurance department.

Hopefully, this universal genius will be so happy to work at our department so that I can congratulate her on her 20th anniversary also. Thank you for your commitment, dear Sabine!

ES

ANNIVERSARIES

Theo Weinbrenner: 15 Years

For 15 years Theo Weinbrenner junior has been a member of the ACAT family and he always demonstrates strong commitment to the company. At your workplace in Scheibbs, you maintain and develop the competence of technical plant engineering, so that it is always up to date. As a result, you have contributed a significant part to our guiding principle „Technical Service is our Success“ and you have supported our company philosophy. You strive hard to ensure that the plant construction is flexible and innovative to be able to respond to individual customer requirements too. In addition, you ensure that the production of odor neutralization always has the purest mountain water available. We thank you for that. Theo, please continue to be solution-oriented and willing to compromise, because we want to go the common path for many more years and I hope that we will experience together many more successful and beautiful moments.

POB



Paula Ignatescu: Retirement

Since 19 years Paula Ignatescu has been working at ACAT. She was responsible for the difficult market of Romania, which she managed successfully. With a high degree of commitment Paula Ignatescu represented the ACAT product portfolio in this highly competitive growth market.

Paula always made herself conspicuous by high willingness to learn and thirst for knowledge. Although she brought up two children, who are now grown up, she was always fond of traveling and zest for action.

Unfortunately, now Paula is leaving us and she is entering her well-deserved retirement. Maybe her retirement will not be very quiet because she already has a grandchild who needs to be cared for.

I would like to take this opportunity to thank her for the excellent cooperation and I wish her on behalf of the entire team above all health and many more beautiful years to come.

FR



WELCOME BABY!

Hooray, Jannik Franz Rauch is born!



Günter, Babsi and Marilena Rauch were very happy: On 24th July baby Jannik Franz was born! He weighed 3870 grams and was 51 centimetres tall and he is a lovely bundle of joy. Meanwhile he has grown and he is the pride of dad, mom and his big sister. The ACAT family congratulates and wishes all the best for the future!

RESOLUTION OF MENTAL EXERCISE FROM ISSUE 26



NEWCOMERS

Doris Fischer

„She is back again! “ Since 1st July Doris Fischer has been strengthening our accounting department again. After maternity leave she returned to work for 10 hours a week. It's not that taking care of her now two-year-old daughter Sonja would not be an effort. But Doris would like to do her former job at least twice a week. Again she has taken over the payment processing and she will work also on various declarations and evaluations concerning accounting.

We are pleased to welcome Doris back to the ACAT family and we hope that together we will manage many exciting tasks and challenges.

HR



PHOTO: CHRISTINE NESTLER-KENZIAN



Thomas Srienzen

Since 1 June, Thomas Srienzen has been supporting the ACAT papertech division. Mr. Srienzen has completed trainings as an industrial electrician and mechanics well as a paper technician and he has gained a lot of experience in paper coating. In his

free time, which presumably will become even scarcer, Thomas Srienzen prefers devoting himself to electronic music, he also composes himself.

In the future, Mr. Srienzen will mainly support our customers in Styria and Lower Austria and he will assist them whenever necessary.

We wish him a lot of joy and success for the new and exciting challenges to come! Welcome to the team!

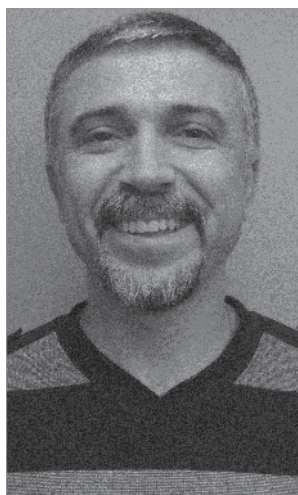
ROS

Vasilije Andric

On August 1, Vasilije Andric started working as an electrical engineer in the papertech team. He will support our increasingly important plant construction in Scheibbs / Austria. Vasilije is 41 years old and he has many years of practical experience in the field of electrical engineering.

Already in the first days he impressed his new work colleagues with his keen perception and his natural way of dealing with people. We are happy that we have been able to win him for our team, because he is a great asset. Vasilije Andric is father of three children and his hobby is football, both as an active athlete and as a fan. Welcome, Vasilije!

NK



Monika Brandner

Since September Monika Brandner has been our new team assistant. She is supporting us with great motivation in all administrative and accounting matters at the Technik Center Scheibbs.

Monika is only 25 years old and she successfully passed the maturity exam at the HLW Steyr for cultural and congress management. In her free time, she uses her

organizational talent as the head of a folk dance group. With her analytical and purposeful way Monika Brandner was familiar with her area of responsibility already in the first few weeks and she effortlessly carries out the work assigned to her.

We look forward to a long cooperation and exciting challenges, welcome, Monika!

WT

NEWCOMERS

Thomas Schwind

After decades in a leading position in the purchasing and logistics of a major chemical company, Thomas Schwind looked for a new challenge and he has found it at the ACAT office in Vienna! He probably did not expect such a great challenge! Immediately he had to take part in our new "attractive" IT logistics and accounting project, where there is no dry eye left. It's not exactly an SAP conversion - but it comes very, very close to it.

With a lot of peace and experience, one topic after the other is processed and the psychology of change is cultivated! Thomas also quickly assumed the first responsibilities in sales support and in the support of our partner companies. As a result, he will assist the purchase department. Mr. Schwind, we are very happy that you are enriching the ACAT family and we hope for many years of working together! There are many things to be done, which are not visible from the outside - but it is well known that for a machine to run, the gearbox needs oil!

MZ



PHOTO: CHRISTINE NESTLER-KENZIAN



Uschi Polt-Fischer

Uschi is finally back! There is really no need to introduce her, because for decades she has been a mainstay of the logistics of our

paper division in Vienna. Everybody knows her and she is very popular! Of course, standard deliveries are not an issue for her and she quickly handles even difficult tasks. Only miracles take a little longer! But she has already performed some of them.

Uschi Polt-Fischer was one of those who have shaped the company from the very beginning. After more than two decades soon after her wedding she decided to take a family break to see how her little boy is growing up. It seems that over the years, a part of her heart has stayed with us. Now, we are proud and happy to announce and to celebrate her return!

In our company there is a hard-to-explain special „spirit“ allowing a very open discussion culture without ignoring the hierarchies. Each of us can say what he thinks and he can voice his opinion - without beating about the bush. When Uschi expresses her opinion, everyone listens - especially me!

Every successful company needs bright minds with a lot of motivation, enthusiasm and dedication. But it also needs a soul she vigorously is strengthening again!

Uschi - thank you for being with us again, and we look forward to the next 28 years of working together!

MZ

Adrian Napoli

I am pleased to announce that at the beginning of September the Swiss Water Department (1EW1) welcomed a new employee. Adrian Napoli is a lab technician and he also supports the sale. His daily work is to prepare and to carry out experiments in the laboratory, as well as to assist Giuseppe Forleo with customer deliveries, filling and refilling, maintenance and heavy work. Adrian enjoys spending his spare time with music, he



assembles single parts into samples. In the kitchen of the shared apartment he shares with his brother, he is the chef.

We wish Mr. Napoli, as well as the new 1EW1 team a good start and a lot of fun at work.

VC

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- Wetting and Dispersion Agents and Additives
- Thickeners and Rheology Additives
- Mineral Flame Retardants
- Pigments and Fillers
- Agricultural Products
- Binder



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- Odour Control Aids and Application Systems for Several Industries and Commercial Applications
- Leading-Edge Technology to provide continuous on-site Odour Monitoring and Dispersion Modelling
- Biochemical Products and Compost Additives



Complete solutions for mechanical wastewater and sludge treatment

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- Screw Pumps
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- Bentonites and Flocculants
- Dry Strengths Products
- Ferric and Aluminium Salts
- Defoamers and Deaerators
- Odour Control Aids
- Machinery and Equipment

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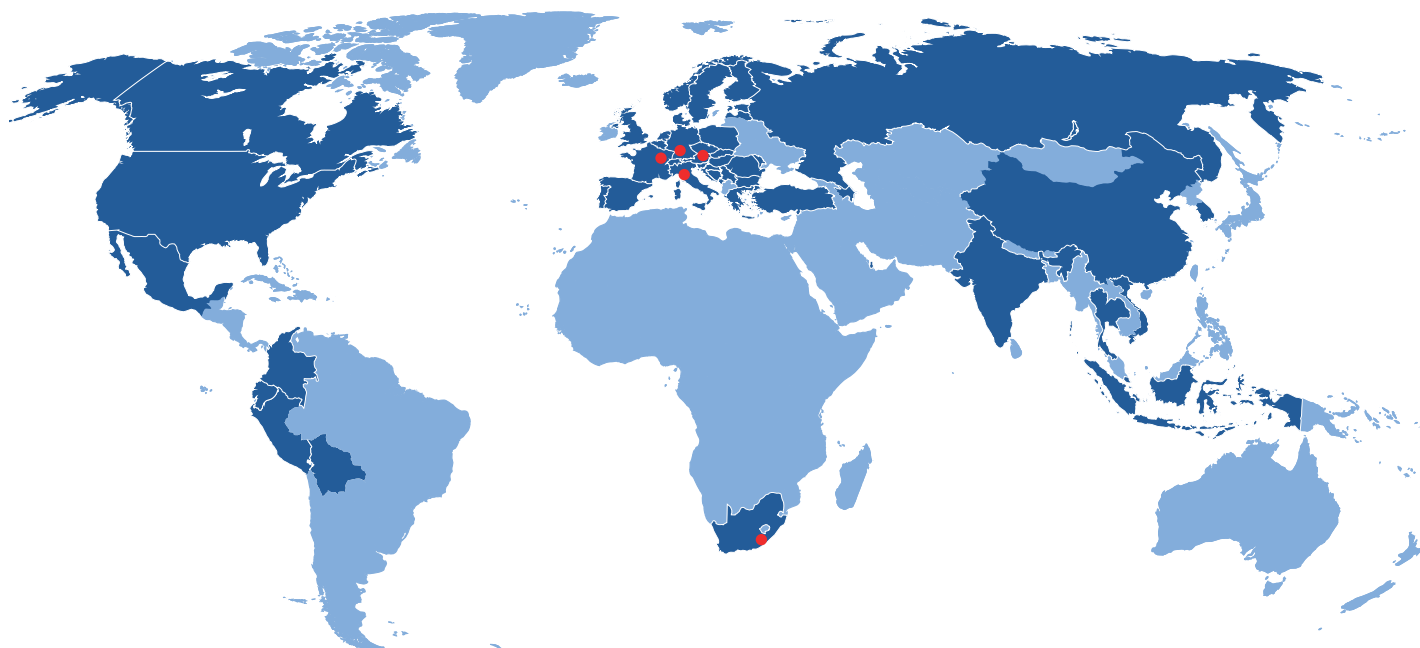
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Asia, Pacific

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