No. 25 2017

PACO WORLD

Our International Wire & Mesh Magazine for Existing and Prospective Customers

Editorial:

Business Populism

Is what appears to be a success story in politics also destined to become a success story in marketing? In other words, promising what most people want? The popular? Surely, this is a trend that is never going to happen in business? Wait a moment, populism in the market place is most likely the lowest price. This is something that everybody on the buying side wants. From their point of view, it is easy to believe that the best deals are the cheapest deals. Against this backdrop, a supplier may very easily start to question what they are doing: asking themselves, why am I letting myself into all of this? The way costs are structured in the emerging industrial nations simply cannot be replicated within the EU. This means that the others will always come out the cheapest.

In politics, the arguments against the populism of wishful thinking are fundamental realties and hard facts. Established politicians hope that the better informed their citizens and voters are, the more objective their decisions will be. With populism, however, a lot of emotion comes into play. The same also holds true when it comes to getting the cheapest deal. There is nothing better than rubbing your hands together with delight after getting the lowest possible price.

At PACO we think that there is something much better than this. For example, the good feeling of not just getting something cheap, but knowing that you have secured an excellent price/performance ratio. Including free benefits such as evaluating the needs of the customer, solution-orientation, support from development through to process engineering. Without forgetting: assured quality through to productivity, which after-all is completely invaluable.

Best regards

Peter Ruppel
Managing Director

A world best from Herolz:

40,000 Micro-Meshes over a Width of Three Metres – Seamless!

The above sentence alone contains three records: Nobody apart from PACO has built a loom for three metre wide materials! Never before have meshes with a size of 0.077 mm been woven next to each other across a width of three metres! And nobody until now has produced a 3,000 mm excess width cloth without intermediate seams – except of course PACO.

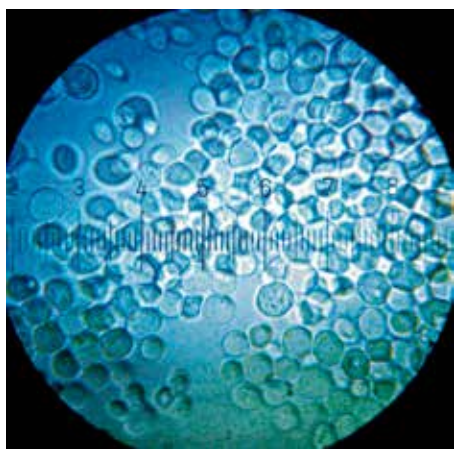
The yeast fungus – a dinosaur among the living cells

The most exciting thing about PACO metal wire cloths for filters, sieves and separators etc. is the wide variety of applications that they are used for. Among those are countless applications that deserve our special attention. So how about brushing up our general knowledge through a crash course in baking yeast? Let's read on:

Whoever asks about the origins of life will find that there is no way of disregarding the yeast fungus. It is a creature whose whole body consists of a single cell – as was normal in the days before Tyrannosaurus Rex und Homo sapiens. In addition, the yeast cell does not require a member of the opposite sex to reproduce itself, it does this all on its own by means of budding. Yeast cells nourish themselves from carbohydrates, particularly sugar. From this they extract energy for their own life and secrete gaseous carbon dioxide and fluid alcohol. The former enables bread and cake dough to rise and the latter gives beer and wine its full-bodied flavour – as well as its intoxicating effect. As the population that wants to be fed increases, so too does need for baking yeast. This was cultivated in large amounts in ancient times and is today produced industrially. Whereby what is special about the production of yeast is that it is all about the reproduction of a living organism.

Yeast production – reproducing cells on a large scale

Modern baking yeast production plants use large-scale fermenters – these are enormous vats that are two-stories high with a volume of up to 200,000 litres. In these vats, approximately 200 kg of pitching yeast is fed with molasses, other nutrients, trace elements and vitamins until the desired amount of baking yeast has grown – tons of it. This reproduction process is supported by an elaborate system of air supply, heat dissipation, cooling, separation of the yeast and nutrient solution (seasonings), washing of the yeast mixture and its renewed separation. At the end of this process, the baking yeast that has been produced is prepared for being apportioned into the appropriate portions or packages ready for sale. In addition, the yeast slurry is also put into voluminous rotary vacuum filter drums that use centrifugal force and a vacuum to extract sufficient water so that the baking yeast is turned into a dry substance that can be efficiently formed and packed. Nevertheless, all of the time during packaging, transport and storage, the yeast continues to be a sensitive living product that now practically has to "starve" (that is why baking yeast loses weight when it is stored on the cooling shelf or in the fridge at home). It is not until it gets into the dough that it will get the carbohydrates that are needed to metabolize until at a baking temperature in excess of 45°C the busy baking yeast cells will lose their appetite once and for all time.



A gram of baking yeast contains approx. ten billion yeast cells. That is why filter and separation cloths for the yeast drying process have to be particularly finely woven – across the largest possible width. The only metal wire cloth in the world with an aperture of 0.077 mm and a total width of 3,240 mm is produced at the PACO factory in Herolz.

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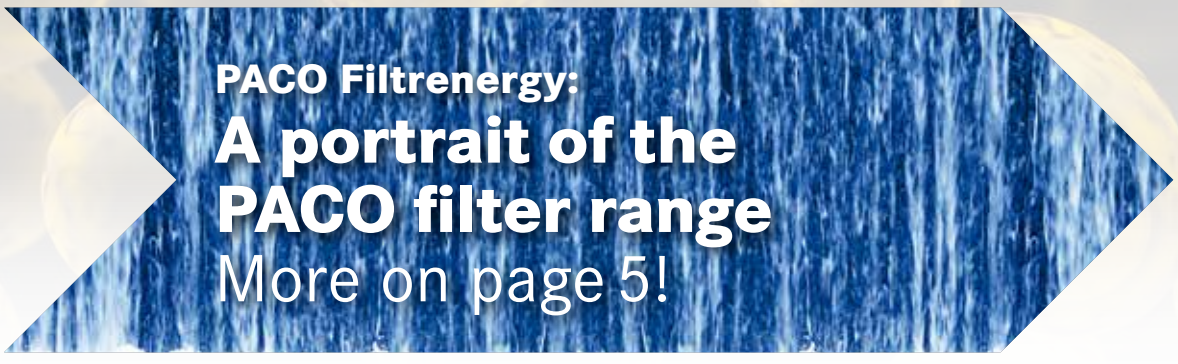
A world best from Herolz

PACO "Wide Loom" optimization of rotary vacuum filter drums

The rotary vacuum filter drums that are used in the production of yeast are essentially precoat filters. But instead of using the usual diatomaceous earth, they use potato flour. Metal wire cloth is used as the supporting fabric for the alluvial layers of starch. This should have the smallest possible mesh size and be able to be fitted into even the largest size drums without having to be pieced off or contain welding seams. That is why PACO as a provider of extra-wide ultra-fine metal wire cloths has come to the attention of companies that produce plant for yeast manufacturers. Firstly, there is no other company in the world that can supply a supporting and separation cloth with a width of 3000 mm. And secondly there is no one that can do this with a wire diameter of 0.05 mm and an opening of 0.077 mm for each mesh. This opens up completely new possibilities for the designers of vacuum drum filters. The large width saves welding seams that reduce the filter surface and make cleaning more difficult. Further to this, the extreme fineness of the mesh optimizes the quality and precision of the dehydration process.

PACO engineering makes the difference

When competing for customers, you are always at a tremendous advantage if you have a unique selling point that nobody else is able to offer. A position that is becoming extremely more difficult in the globalized market place. In the case of the ultra-wide and extremely fine metal wire cloth, the prerequisites for a distinctive product are provided by the company's own loom building team at the PACO plant in Herolz. This ambitious project required considerable planning and months of building. The innovative PACO-HD "Wide Loom" 3000 has now been in operation since 2011 and is doing its job dependably without unscheduled downtime. At the same time proving its extreme variability. The "Wide Loom" control system that has also been developed by a team of PACO experts, has been further refined without interrupting everyday operation. Originally developed for a mesh size between 0.10 mm and 1 mm, it is now capable of producing a fineness of up to 0.077 mm. This has paved the way for the implementation of an extra-wide cloth quality that cannot be found anywhere else in the world – and companies producing plant for the baking yeast industry coming to PACO.



PACO R&D-Report:

Energy from Biomass: With PACO A Clean Affair!

Energy production from renewable resources is one of the most important environmental concerns. Nevertheless fossil fuels continue to predominate. A situation that owes much to the mainstream nature of the required technical infrastructure – from the extraction through to the consumption. This means that the success of renewable energy is dependent on the provision of a similarly effective organizational and operational concept. That is why the contribution being made by our customer Holzenergie Wegscheid GmbH to extract energy from biomass is as equally promising as it is trailblazing.

The principle of "energy from wood" for small to medium sized cogeneration plants has been perfected by the PACO customer Holzenergie Wegscheid GmbH through their patented innovations. The hot gas filtration that is essential to the success of the system has been developed in close cooperation with PACO R&D.

Making gas from wood makes double the energy

Germany is one of the most heavily wooded regions of Europe. And wherever forests are economically exploited, you will always be left with waste wood. But are we really talking about waste? Rather more it is a valuable biomass that contains energy that can be economically and environmentally put to good use! The principle: the controlled burning (pyrolysis) of wood chips to extract wood gas as a fuel for combustion engines that generate electricity through turbines. At the same time the heat energy that is produced during this process is recovered and re-used. Doubling the use increases the efficiency!

During periods when mineral oil and gasoline – and even coal – were getting scarcer, attempts were made to extract gas from wood as a fuel for engines. For instance in the 1930s and 1940s the Soviet Union produced approximately 35,000 trucks with wood gas carburettor engines. And to this day a locomotive with a wood gas carburettor can be admired in the Bavarian train museum in Nördlingen. But museums are for past achievements: today, after much contemplation, the use of the renewable biomass wood as a source of energy has come back into focus. But with extremely high demands respecting environmental protection and air quality as well as economic viability.

PACO filter candles that have been specifically developed for use in compact cogeneration plants for the generation and utilization of electricity and heat from e.g. wood chips or pellets. High quality materials and meticulous processing ensure cost effectiveness and operational safety.

Future now: compact CHP cogeneration

The production of flammable gas from renewable resources is one of the advantages of Holzenergie Wegscheid cogeneration units. This is complemented by the double energy generation principle of combined heat and power (CHP). This enables the production of electrical power at the same time as heat energy which provides significantly higher utilization levels. Whereas at one time CHP was the preserve of large-scale systems for housing estates, municipalities and industrial plants, more and more system formats are now becoming available that are economically viable and of interest to small and medium-sized companies, hotels and even individual apartment buildings. The wood gas systems produced by Holzenergie Wegscheid are part of this trend toward compact CHP units. In particular forestry and agricultural operations that have the raw material wood on their doorstep as well as companies, hotels and residential units close to forests are set to benefit from innovative energy generation out of locally produced biomass. The Holzenergie Wegscheid units that are already in operation produce up to 120 kW electrically and 230 kW thermally. The MTU/MAN wood gas combustion engine in the reference system has been running uninterrupted since November 2012.

Common development target "efficiency & reliability"

In this day and age, the generation and utilization of energy without conservation of resources and responsibility to the environment is a fairly bad idea. That is why the developmental focus of the compact cogeneration unit was not only placed on a perfect energy efficient solution, but also on climate protection and environmental compatibility. At the heart of this is the cleaning of ash particles and fine dust out of the hot gas. The high temperatures (400 - 900°C) that occur during the production of the wood gas being one of the biggest challenges. To find the most suitable materials and design methods for hot gas filter elements that can effectively operate for long periods under such extreme conditions, an extensive series of tests was carried out. During these, specialists from Holzenergie Wegscheid and PACO worked closely together and ideally complemented each other – in the PACO laboratories and technical centre as well as in the test system at the customer's site. Numerous test runs resulted in filter elements that had the necessary filter fineness and separation grade as well as ensuring the required temperature resistance and quality of workmanship. The development also including an automatic self-cleaning function that uses compressed air to remove ash. This complete package of characteristics and capabilities guarantees long lifetimes for the hot gas filter and significantly contributes to the economic efficiency of the complete system.

Clear Space!

When space gets tight, there's no more room to grow. Do we close ranks? Or do we build for the future? These were the questions facing the PACO management. And the clear decision was to expand! This led to the largest expansion project that PACO has ever undertaken and implemented: the commissioning of plant 5 in Schlüchtern with 2,500 m² additional floor space for production, storage and teamwork.

The newly commissioned production area at the PACO plant 5 in Schlüchtern has more space than the third of an official FIFA soccer field. This creates sufficient room for up to 60 workplaces, two hundred metres of heavy-duty racks, dozens of production machines as well as space-intensive sieve screening.

Production Area!

2,500 m² Increase in PACO Production Area!

Plant 1 provided the impetus

PACO's chain of plants has developed step-by-step in line with the growth requirements of the company: plant 1 Steinau with fine cloth production and storage as well as packaging, plant 2 Herolz with medium and coarse cloth production and warehouse as well as mechanical engineering, plant 3 Steinau Im Poppen with packaging, sieve screening, coarse cloth warehouse, plant 4 Lich with process and filter system technology, and now plant 5 Schlüchtern with packaging, sieve screening, cloth warehouse. The logic behind this development is similar to that found in billiards: as things got too tight in plant 1, this cued the relocation of certain activities: weaving to plant 2 in Herolz and packaging to plant 3 Im Poppen. As conditions became too cramped there, this was the cue for plant 5 in Schlüchtern. But if expansion is only about creating additional space, this is entrepreneurially very short-sighted. It should also have something to do with streamlining the planning and production process – reducing manufacturing costs while retaining or increasing product quality. And at the same time providing the capabilities for increased vertical integration as well as optimum adherence to delivery schedules.

A hard time finding somewhere – but with a happy end

In Steinau itself there isn't much room for industrial expansion. This meant that PACO had to look in the neighbouring communities and a little further afield for somewhere to expand to. A suitable location was eventually found in Schlüchtern, which next to Steinau is the 2nd 'capital' of PACO's home region of Bergwinkel. This was the site of a 2,500 m² factory unit which was well suited for the needs of PACO, albeit with some effort. The flooring had to be completely recoated, the electrics fully modernized and all of the walls

thoroughly cleaned and repainted. Following this, plant and materials had to be moved and set down where needed. First of all a special heavy-duty racking system for the new cloth warehouse had to be installed. The shelves were then stacked with approx. 3,000 rolls of cloth – total weight approx. 160 tonnes! For the transport of the cloth and various small parts, more than 200 journeys between Steinau and Schlüchtern were needed. The machines were moved to Schlüchtern and re-installed with the assistance of a removal company that specializes in heavy loads. The responsible planning and organization team headed by Garvin Ruppel was pleased to report that the move had been successfully completed on schedule: after only eight weeks of organizing and relocating, plant 5 started work as a new member of the PACO Group.

The end is just the beginning

Although work has already commenced at PACO plant 5, additional time and further measures will be needed for the implementation of all of the planned functions. A key development is the optimization of the manufacturing process on the basis of the latest workshop and island production concepts. In addition new production technologies have to be perfected, such as laser cutting or the manufacturing of items that are to be used under cleanroom conditions. At the same time, plant 3 in Steinau (Im Poppen) has to be completely emptied, structurally renovated and modernized. This will then be the new home of the shops for stamping, spot welding and industrial cleaning that are currently located in plant 1. These developments will create the space in the main plant that is desperately needed for the expansion and further flexibility of the filter production activities. Beginning with development of new filter solutions, production of prototypes and small-scale manufacturing in a workshop environment. Through to the serial output of filter candles and filter disks in production islands. The space that is gained not only benefits processes, technology and machines, but it is also for the good of the staff including the increased capability of training additional apprentices.

Visit us online!
www.paco-filter.de

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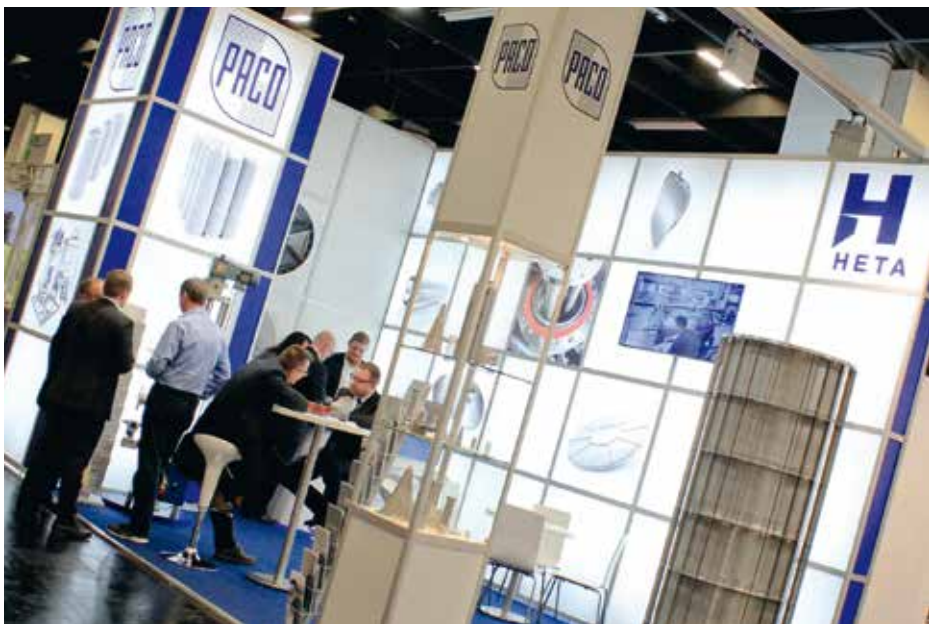
PACO and HETA at the “FILTECH 2016”

The FILTECH is the largest and most important event in the world for the filtration and separation branch. PACO and HETA were once again there as exhibitors. Our résumé: a number of interesting conversations, numerous requests and a multitude of new contacts.



One of the main attractions on the PACO and HETA stand at the FILTECH was a 2.40 m high screen cylinder with a diameter of 950 mm (on the right of the picture). Together with a rotating edge-type filter it not only attracted the attention of passers-by, it also drew visitors from far away to the stand.

Once every eighteen months…

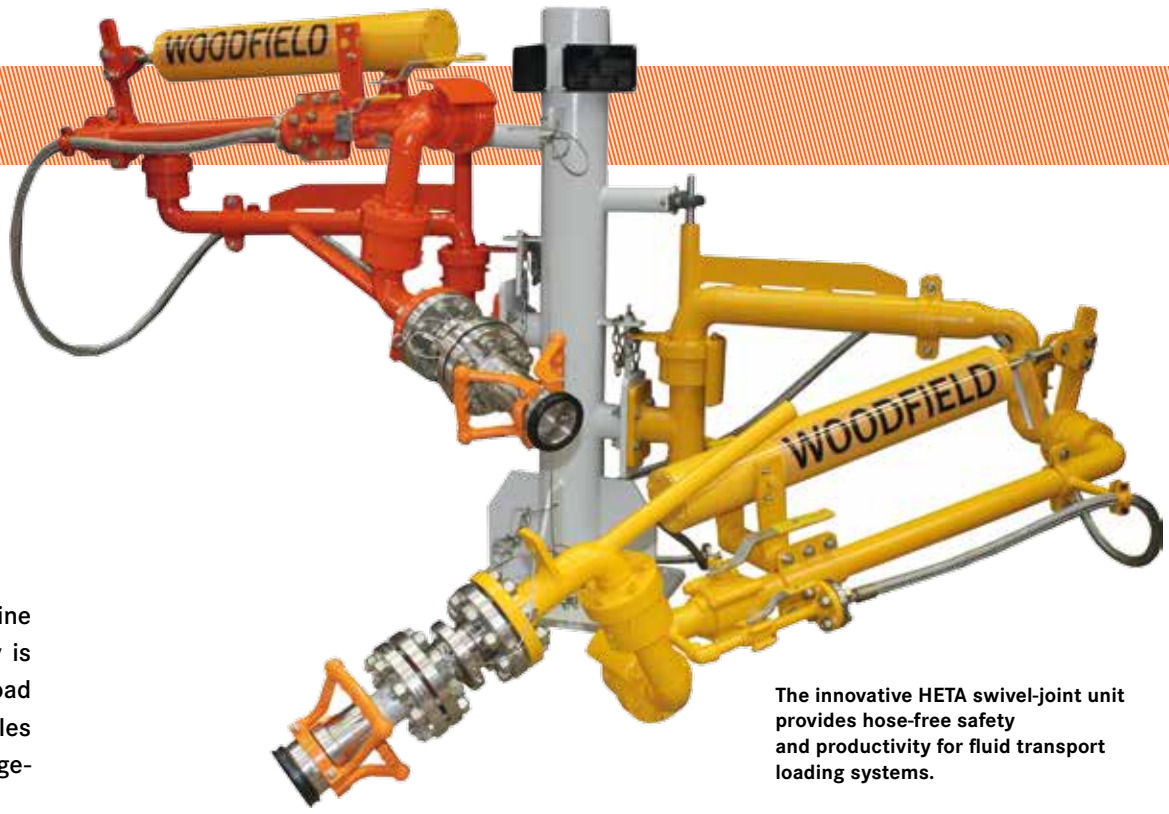
The FILTECH is the only show that doesn’t adhere to calendar years, but takes place every eighteen months. Whereas in 2016 it took place in mid-October, in 2018 it will already take place in March. Between these dates is 2017, the year in which the FILTECH, which was founded in 1967, would be able to celebrate its fiftieth anniversary. For PACO and HETA it was once again well worth exhibiting at this specialist show on a prominent corner stand. The team of six had plenty to do all of the time. New contacts could be made as well as existing ones intensified. Specially prepared information packs were handed out to all of our visitors – also digitally if preferred. In addition, numerous diaries were filled with follow-up appointments. Interestingly, before the show, the HETA staff said that FILTECH was more for the typical PACO clientele, whereas the PACO people were convinced that visitors would be more interested in HETA. At the end, however, both came to the conclusion that the show had been a success for everyone!

PACO World – Archiv *Live!*

This is now the 25th edition of PACO World, the International Wire & Mesh Magazine for Existing and Prospective Customers. The first edition appeared in December 2000, i.e. fifteen years ago. Whoever wants to have a look at this edition or any of those in-between can easily do this on the new PACO web site – under:

> paco-filter.de/paco-gruppe/paco-world

HETA – Making Sure Safety Won’t Get Lost in the Line



The innovative HETA swivel-joint unit provides hose-free safety and productivity for fluid transport loading systems.

As an expert for handling fluids in, for example, filtration, separation and pipeline systems, HETA is now offering hose-free solutions for loading arms. The key is an innovative swivel joint concept. Regardless of whether you are loading a road tanker, rail tanker or container – HETA hose-free flexibility for loading arms enables increases in the efficiency, safety and environmental friendliness of fluid management systems.

There’s much fluid to be loaded – but…

It’s easy to understand why millions of tons of various fluids are being moved by trucks, trains and ships. Petroleum, gasoline, heating oil, kerosene, and paint, but also milk, syrup, wine, fruit juice, and edible oils etc. are being transported all over the place – not to mention compressed gases, acids, alkalis and other fluid chemicals. Something that gains a lot less attention within this context, however, is the filling and unloading of the numerous tankers and containers that are required. But at exactly this point there is an absolutely problematic bottleneck in fluid management systems. This is often where unproductive capacity shortfalls, costly time losses and dangerous safety hazards occur.

HETA loading technology – the new flexibility without a hose

As is often the case, not just the problem, but also the solution is in the details. The conventional loading arm that is primarily used for the filling of tankers has a significant disadvantage: it inherently represents a makeshift solution. In case of damage or human error, its swivelling flexible hose is invariably prone to losses of fluid. The vertical load of the fluid in the hose is lifted, turned with centrifugal force and subject to spills during connection to the tank. The safety concept that HETA suggests instead of the conventional process is an increase in the flexibility of loading arms made from metal tubing through one or more swivel joints. In this way the flexibility known from hose systems can be retained without the risk of the inaccuracies, tension and damage that can occur during hose attachment with the risk of leakages or worse. Hosepipe loading is a thing of the past. The sure movement of the highest quality HETA 360° joint sets a new standard for technically safe, environmentally friendly and resource-saving fluid loading and unloading.

Engineering prowess and quality: typical HETA TECHYESLOGY

When HETA takes on a job, it is always with total commitment to the quality affirmative HETA TECHYESLOGY. This begins with the creativity and solution-oriented brainpower of the engineers and project developers. It is continued in the form of the highest quality materials and a production pledged to perfection. The swivel joints are made of aluminum, black steel or stainless steel (or special materials), and equipped with case-hardened ball races for leak-free and maintenance-free operation – everything is a product of leading-edge technology. The top or bottom loading arms with HETA swivel joints at their heart can be complemented with a wide-range of optional features and additional accessories: ground monitoring, overfill safety devices, automation, quick-change couplings, steam jacketing and much more.

User proximity through cooperation and high-level service

To increase market penetration of the innovative 360° swivel unit, HETA is closely cooperating with a leading manufacturer of custom fluid handling solutions: with Woodfield Systems International, Maharashtra, India with representatives in e.g. USA, Great Britain and Germany. In addition to loading arms, Woodfield Systems develops and produces other components for fluid handling systems: safety equipment, floating suction solutions, measuring and pumping skids as well as a wide range of services. As HETA filter technology is often used where fluids are transported and handled, the synergies between Woodfield Systems and various applications are always in close proximity to the process and the product.

> www.woodfieldsystems.com

Filtration & Separation with a Bit of Extra Commitment

A new publication featuring another PACO product range appeared ready for the FILTECH 2016: for the first time a brochure presents the complete spectrum of filtration and separation – together with the unique philosophy behind everything: the extra-large commitment with which solutions at PACO and HETA are developed and implemented. To represent this distinguishing state of affairs, a new word has been specially created: Filtrenergy.

The new brochure about PACO Filtration and Separation is available digitally or in print.

Digging deep to get the complete picture

Work started on the first ever overall brochure about the PACO filter and separation range with a very close look at all of the product presentations and technical documents that had ever been produced about this subject. This meant digging deep into the archives as technical documentation hasn't got an expiry date. In addition, it meant drawing on a wealth of experience that was much larger than initially anticipated. The next step was to get an overall picture of the extremely detailed information that had come to light. This involved defining and structuring the subjects, product classes and areas of application so that they can be easily communicated to the reader. And from a highly specialized point of view it was necessary to highlight the fundamental and overriding principles that characterize PACO and its filter range.

Making clear what is inside and behind everything!

The particular characteristic of PACO that customers and users often highlight is their high level of commitment to them. The interest in the problems faced by each customer, analyzing their exact needs, the thoroughness with which suitable solutions are defined and the purposefulness of their implementation. How can you express all of this – where possible, with one word? PACO Filterpower? No, too pompous. PACO Filtroledge, taken from the word knowledge? Maybe not, too complicated. What about: PACO Filtrenergy: Filtration plus full PACO-energy ahead! That's it! This well explains the extra commitment that is typical for PACO.

High quality images that open the eyes

Information and communication are tasks that work best when good arguments go hand in hand with clear images. That is why high quality photographs and descriptive illustrations play such an important part in the new brochure. The attractive images clearly reflect the perfection of the products and services that are being described. At the same time, the extreme complexity of the specialist fields and areas of application as well as the wide range of products and instruments are shown in a way that is easy to grasp. According to the principle: the best solution can always be recognized by it being specifically tailored for each respective case. This is illustrated by application examples ranging from mobility through to energy management, the automotive industry through to sources of renewable energy.

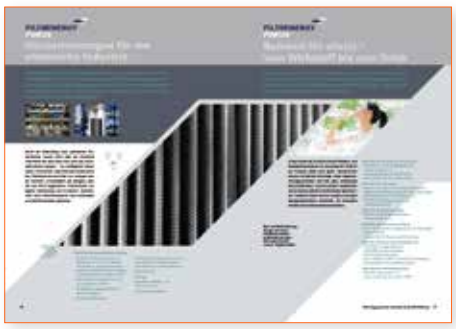
Analog and digital communication working as a team

These days a printed brochure is extremely old school? No way! A full-scale representation that can be held in the hand and can be taken in through a multitude of senses can still make a greater impression than something opened with a mouse click. But one medium does not exclude another. That is why the new PACO brochure is also available digitally. It can be easily downloaded as a PDF file from the PACO home page.

The new product brochure for Filtration und Separation was extremely well received at the FILTECH in Düsseldorf (see also page 6). The added performance and efficiency that it represents was gladly taken note of. And in numerous discussions with existing and potential customers on the PACO stand, the contents of the brochure were further diversified and substantiated. After all, personal communication in a specialist discussion is still the best way of understanding and being understood.

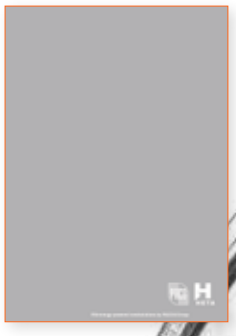
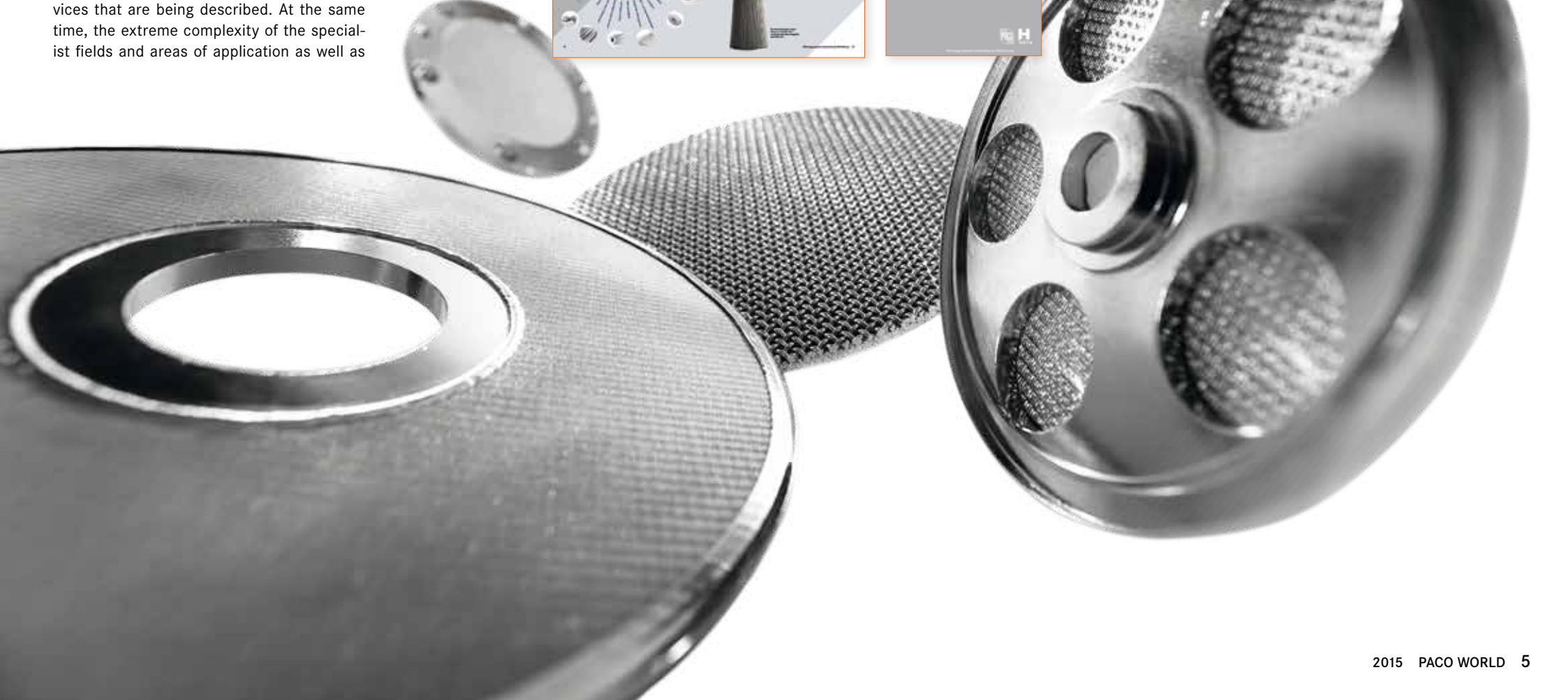










PACO mosaic
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Peter, Klaus and Garvin Ruppel – the second and now the third generation of management responsibility for the PACO Group as a globally operating family company.

The third generation comes forward!

Appointment of Garvin Ruppel as Director

On 01.08.2016 PACO gained a third director. Together with Peter Ruppel as overall director of the PACO Group, Garvin Ruppel is now director of the Paul GmbH & Co. KG. Klaus Ruppel is director of Paul & Co. Herolz GmbH. The three of them ensure the continuity of responsibility for the family company PACO – now into the third generation.

Taking responsibility – a matter of course in a family company

Wilhelm Ruppel, the company founder, encouraged his sons Peter und Klaus to take responsibility at a very early age. Maybe before they themselves even realized what was happening – for example when working during their holidays. Father Wilhelm never had any doubt that his sons would follow in his footsteps. Peter Ruppel succeeded him in 1989 after working seventeen years in the company. Klaus Ruppel has taken responsibility as a director since 2008. Even the third son Gunther Ruppel always remained within close proximity of his father, brothers and the family company. Firstly, as a very successful accountant. Secondly as a member of the advisory board of the group of companies. And thirdly as father of Garvin Ruppel, who has just assumed the joint responsibility of PACO in the third generation, following his appointment as director.

There is nobody better prepared

Garvin Ruppel (born 1981) graduated with a degree in mechanical engineering Dipl. Ing. (FH) from the Darmstadt University of Applied Sciences. In 2006 he started his career at PACO. This means that he has already celebrated his tenth anniversary working for PACO in 2016. He started out as an assistant to the company management and in the course of his tenure has taken over more and more responsibility by looking after important projects. In 2008, for instance he was responsible for the planning and implementation of a company-wide ERP system for inventory control, batch management and document creation.

Parallel to his tasks within the company he started an additional degree course in 2010 – once again at Darmstadt University of Applied Sciences. He completed this two years later with a Master's degree in Business Administration. This MBA ideally complements his technical management training and engineering degree. Incidentally, during this period he accomplished the feat of introducing a barcode assisted warehouse management system for cloths at PACO and managing the staff team Im Poppen plant. We also don't want to forget that since 2012 he has been in charge of custom fabrication at PACO. At the moment he is taking care of the move into plant five in Schlüchtern. Asked of his opinion about how prepared his nephew is to assume management responsibilities at PACO, Klaus Ruppel replied: "There is nobody that could be better prepared". We all wish Garvin Ruppel every success – personally and for PACO as a whole.

Bits and Pieces

The correct turn of the mouth:

It Pays to Smile – But only if it is Authentic!

In contrast to the cat, for example, the human can smile. And this in a number of different ways: weary smiles, cold smiles, tortured smiles – and not to mention mischievous smiles. The best of all is the authentic smile as has recently been confirmed by the Max-Planck Institute for Evolutionary Biology and the Toulouse School of Economics.

Raise the corners of your mouth, please!

The smile is something that is inborn to humans. Even as a baby we show it when we sleep. It might be the case that some of us lose it in the course of life. But whoever manages to keep their smile can be sure of lifelong benefits from it. The Austrian ethologist Eibl-Eibesfeld describes the smile as a means of mitigating strangeness and enmity, to the point of disarmament. We even talk about a disarming smile. It is safe to say that a smile will almost instinctively give our counterpart a sense of trust that will be understood as a signal of our willingness to cooperate. This just has to be the basis for successful communication! In other words, when you go to a job interview, sales discussion or staff appraisal meeting with a smile, it will most definitely be to your advantage. And won't cost you anything – simply a smile.

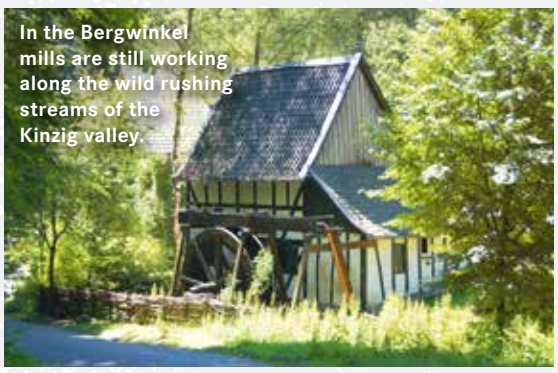
And don't forget the eyes

To make sure that a smile is well received and has the optimum effect, it is extremely beneficial when the smile figuratively comes from the heart. Such a genuine smile is referred to by psychologists as an authentic Duchenne smile. Duchenne identified the large cheekbone muscles as "muscles of joy" before, in the name of science, stimulating them with electric shocks. All of this allowed him to define the real smile as an interplay between the mouth and eye regions. Such a smile is essential if we want to be truly convincing to our counterpart. A false smile will generally be intuitively recognized and won't convince anybody. Whoever wants to authentically smile should, however, forget all of this and simply approach everyone that they meet in a friendly manner.

In and Around Steinau

The Bergwinkel: An Angle for the Wanderer to Enjoy

Where the Rhön Mountains, Spessart and Vogelsberg meet, the towns of Steinau and Schlüchtern together with the municipality of Sinntal form a geographical triangle – the Bergwinkel, which literally means an angle between hills. The friendly, if not to say idyllic, landscape of the upper Kinzig valley has proved itself to be popular for a long time. Initially for practical reasons,



In the Bergwinkel mills are still working along the wild rushing streams of the Kinzig valley.

as the important trade route between Frankfurt and Leipzig passed through here. Napoleon and his troops used it as it was the shortest way to Russia.

Today the Bergwinkel is a popular excursion destination for hikers, Nordic walkers, cyclists and mountain bikers. Those that prefere the flat can enjoy wonderfully quiet forest tracks and public footpaths. And for those, that like going up and down, there are the hills around the Kinzig valley, which can literally be quite "breathtaking". But the magnificent view from above into and across the valley will soon allow your pulse to recede to normal.

For hikers and cyclists that want to spend one or more days in the relaxing countryside, paths such as the Eselsweg (donkey path), the Vulkanradweg (volcano cycle path) or the premium footpath Spessartbogen (Spessart loop) that was opened in 2012 are popular destinations.

More information: www.bergwinkel-netz.de

√ Brilliant Minds

James Prescott Joule: From Electrical Resistance to Resistance Welding

There are scientists, researchers, mathematicians and other brilliant minds to which PACO is deeply indebted because their contributions positively influence the way that we carry out our day-to-day business. Theme related we would like to introduce our readers to them in a series appearing periodically in various issues of PACO WORLD.

Around the middle of the 19th century, electrical power was one of the most important subjects among physicists, engineers and inventers. That is why James, the son of the brewery owner Joule, wasn't interested in the beer business, but preferred to study mathematics and physics. After this he worked on electromagnetism which led him to discover that current-carrying capacitors will heat up. In 1840 he formulated Joule's first law which states that the power of heating generated by an electrical conductor is proportional to the product of its resistance and the square of the current. Not long after, on the basis of Joule's findings, Thomas Alva Edison was able to make the filaments in his lamps light up. A further consequence was ultimately the development of electric resistance welding (ERW). With this, electrically conductive parts are heated up by electricity until they reach their smelting temperature and are joined together by the application of pressure – through solidification of the molten metal, through diffusion or welding in a solid state. At PACO, ERW is one of an extensive range of indispensable welding technologies that we use in our production processes.

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All information in this edition of PACO WORLD has been carefully checked prior to publication. Nevertheless, we can make no guarantee for completeness, accuracy and up-to-dateness.

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Metallgewebe und Filterfabrik
Industriegebiet West
36396 Steinau a.d. Strasse
Germany
Telephone: 0 66 63 - 97 80

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