

PACO

WORLD

Our International
Wire&Mesh Magazine
for Existing and
Prospective Customers

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Bad Times. Good Times.

Dear Reader!

Financial crisis – global economic crisis: hardworking industrial companies around the world are suffering due to developments that they were neither to blame for nor could they have done anything about. Now they are having to battle with the consequences. However, it's no use just sitting back and complaining about the unfairness of it all – that's not going to bring anyone any further. This is a phase of global economics that will bring about a selection process from which only the fittest in each branch will survive.

PACO has always aimed to be a world market leader in terms of quality – for products as well as for service. This has increased our market share and financial power, which is a considerable advantage when times get rough. On top of this, difficult periods such as the current one motivate us to want to be even better. In other words, bad times can have their good sides. The realisation of this and the desire to do something about it for the benefit of our customers will help us to continue to progress. At the same time, our customers are experiencing first hand that they can depend on us in every situation. And this is the foundation on which a successful future is built.

Best Regards



Peter Ruppel
Managing Director



Green High Tech Cleantech – A PACO Market for the Future Today

International economic institutes are predicting cleantech to be the economic branch that will experience the most dramatic world-wide growth in the coming decades. They are already talking about a “Green New Deal” for example within the context of the “United Nations Environment Programme (UNEP)”. The deal being that investment in the environment will lead to sustainable development of global and regional economies. In practice, this means that regardless of whether we look at the motor or aerospace industry, energy or water utilities, microelectronics or IT, transportation, building industry or property management, waste disposal or recycling, noise prevention and healthcare: every sector is in need of clean and efficient solutions. And not only to ensure the survival of the planet, but also for companies to secure their own value-creation potential.

PACO is already successfully helping with the application of cleantech in various fields. And the spread of its commitment is continuously growing in close cooperation with customers around the world.

PACO and Cleantech – a long relationship

Close examination shows that cleantech is already inherent to PACO metal wire cloths. This starts with clean production methods that are both friendly to the environment and kind to health. For instance, instead of lubricants, environmentally compliant emulsions are used in the production of the cloths. This means that ecologically problematic substances, such as solvents, can be avoided during the subsequent cleaning steps. Also the ways in which the

finished cloths are frequently used, such as for screening and filtering, often provide more than purely functional or economic advantages. Fundamental functions such as separating good from bad, clean from contaminated and dangerous from harmless have the potential to be ecologically beneficial too.

This is rounded off by the fact that PACO is dedicated to the ongoing development of cleantech to provide clean high-technology through continually more precise and finer separating solutions. The result is the creation of a synergistic process that is becoming more and more dynamic. In most cases, we closely work together with our customers to satisfy their increasingly demanding needs and desires. Cleantech products and solutions already account for more than 20% of PACO sales.

Clean water, clean air

A classic application for PACO metal wire meshes is wastewater treatment in sewage plants. Coarse substances are screened so that the purification process can move onto the next stage. This is where PACO products such as fine filters come into their own. Another field in which PACO cloths make their cleaning contribution is the harvesting of rainwater. In waste incineration plants, PACO filters are used for flue gas treatment. They not only have to reliably hold back fine dust that is possibly contaminated with dioxin, but also withstand high temperatures and offer long lifetimes.

Finally PACO solutions for air pollution control are used whenever exhaust gases and dusts are to be filtered. This is necessary throughout a number of industries, in air conditioning, in mining and a number of other areas. Special cloths for diesel soot filters are a

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Photo © Michal Krakowiak – istockphoto.com



Cleantech – A PACO Market for the Future Today

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further PACO contribution to clean air and health protection.

Development and conservation of resources

An important aspect of cleantech is to push up the level of utilisation of material and energy resources so that as little as possible remains unused. In oil production, for example, spectacular oil gushers such as that seen in the Hollywood film "Giants" starring James Dean are most definitely the exception. The reality in this day and age to an ever increasing extent is off-shore oil production – i.e. oil rigs in the open sea. The wells are drilled thousands of feet deep into the sand formation in

the sea bed. Whereby the sand places particular demands on the oil producer. Working closely together with plant manufacturers, PACO has specifically developed special cloths that even more efficiently exploit deep sea wells. In particular, these are metal wire cloths that are subsequently treated to obtain optimum physical performance characteristics. These media, that are placed between filter and sieve, are known in the trade as "Expandable Screens". They are shipped from PACO as semi-finished goods that are further processed by the plant manufacturer to produce the finished tube segments. The development of "Expandable Screens" is considered in the branch as setting a new standard for sand control in the oil production

industry. An example of how electrical energy can be saved, is the self-cooling party beer keg, for which PACO supplies an extremely fine long mesh metal wire cloth for a special valve.

Alternative energy

The goal of becoming increasingly independent from fossil fuels provides one of the most important incentives for innovation in our time. And, once again, PACO is at the leading edge of this development. High precision PACO screen printing cloths, for example, are used as stencil carriers, thereby playing a major part in increasing the efficiency of solar cell and photo-voltaic technology. For a solar cell to produce electricity from short-wave sunlight, silicon

wafers – in other words, thin semiconductor discs – have to be doped and metal plated. The last step is carried out using a screen printing technique in which extremely thin aluminium or silver contacts are applied. Absolute precision is essential for the perfect operation of the solar cell. That is why PACO has further developed its screen printing cloths and, with the "SD-AM" grade, sets new standards regarding register accuracy, coating thickness precision, practicality of use and lifetimes.

Another primary area in which PACO is helping with the development of alternative energy is the fuel cell. This consists of electrodes that are separated from each other by a membrane or an electrolyte that serves as an ion conductor. The electrode plates are coated with a catalyst made of platinum or palladium. Once again, the extremely precise PACO screen printing cloths that are used make an important contribution to the quality and performance of fuel cells. The subject of fuel cells will be dealt with in depth in a future issue of PACO World.

The continuous expansion of the production area and service infrastructure makes sure that PACO is well prepared for growth in the sieve and re-screening market.



Platform for an ever-growing product range

The 500 square metre extension that was only completed a few months ago brings the total available production area at PACO plant II to 2,350 square metres. For the most part, this extension benefits the screen stretching unit. It considerably increases the capabilities of producing a broader spectrum of complete, ready-to-clip screens. A major focus of production at PACO are tensioning screens which have hook strips fixed to two opposite sides of the screen section in either a side tensioning or end tensioning configuration. Additionally, screen sections with plastic or textile surrounds, either with or without metal eyelets are also produced. Our aim is to offer the corresponding screen lining for each type of screening machine. This includes differences in the shape of the clamping seam, edge overlaps, threaded tension rods and notches as well as plastic surrounds and/or plastic strips integrated in the screen bottom to serve as the support. In this context, we don't want to forget eyelet insets, tube sections or rubber lips for lateral sealing.

Optimum conditions for re-screening services

PACO's re-screening service once again benefits from this latest increase in production area: taking the tightness out of the space situation makes sure that there is more room to work in. This is more important than ever as the screens can have a diameter of up to 3,000 mm, obviously meaning that they need a lot of space. Apart from producing new screens, the stretching unit also re-screens used screens. The service is completed by PACO offering suitable logistics with specially-equipped and correspondingly-dimensioned delivery vans to pick up the used screens and deliver them back to the customer once they have been re-screened.

Diameter up to 3000 mm

PACO Plant II, Steinau A Leap Forward in Screen Stretching Capacity

It's not only people that grow with the magnitude of their tasks. This also holds true for PACO plant II in Steinau's "Im Poppen" industrial estate. After the production area was increased by 400 square metres only last year, the stretching unit has now been allocated a further 500 square metres of working space. This was preceded by careful planning as well as quick and efficient building work.

Increasing demand – increasing investment

Screening applications are a continually growing specialist processing field. This has, among other things, resulted in an ever increasing range of screening machines being available. Which, in turn, means that PACO as a leading manufacturer of screening cloths, sieves and screens is continuously facing new challenges. Our motivation here is not simply our ambition,

we also see it as our duty to provide the screening machine manufacturers among our customers the exact solutions that they need. For this, we have to offer more than just suitable cloths. We also need to constantly increase footprint, machine inventory and headcount to match ever-increasing customer demand. That is why our Steinau plant II that specialises in screen cloths and sieves has, once again, had to be expanded.

International Tourist Guide Day 2009 at PACO: Kourou, We Don't Have a Problem!

Over the two decades that it has been in existence, the international tourist guide day (ITGD) has become an established event around the world. In Germany it is the day in which the general public is invited to take a fresh and different look at what various towns and regions have on offer. This includes visiting well-established companies in the region, such as PACO. Our company headquarters and plant I in Steinau

was an important station on a guided tour through the town. This began at the museum in Steinau and finished in the industrial estate at PACO under the motto "from the museum into outer space". The last part of the name referring to the fact that PACO is a supplier for the Ariane 5 produced by EADS Astrium. Klaus Ruppel, a member of the PACO management team, welcomed the chance to personally talk to the

numerous guests about PACO's contribution to the successful satellite launching rocket that is "Made in Europe" and frequently leaves from the spaceport in Kourou (French Guyana) on its journey into outer space. It didn't matter how many – in part, imaginatively costumed – visitors were there and how many questions they asked – for the tourist guides at PACO this was all no problem!



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PACOPATE® Cloth Laminates Demanding Filtration Needs Complex Solutions

In filtration there are a growing number of especially demanding applications that require particularly high quality solutions. As a result, filter media are coming to the fore that in the past would have been dismissed due to their comparatively high prices. This is an area in which PACO has experienced at first hand significant changes: PACOPATE® cloth laminates with their precise filtering accuracy, high flow rates and excellent regenerative characteristics in combination with high mechanical loading capability being increasingly demanded by existing and potential customers.

Sintering – a very special combination

Normally PACO filter media is made up of metal wire clothes with one of a number of different weaves – anything from smooth plain dutch weaves through to heavy-duty dutch twilled weaves. Although the high quality of the weaves ensure exact adherence to filter separating values, the warp and weft threads are not physically attached to each other. If, however, the cloth has to withstand high mechanical loads or very high pressures, sintered filter elements such as PACOPATE are better suited.

According to a technical lexicon, sintering is the "strain hardening and densification of fine grained products, whereby the particles are pressed together through surface tension." It enables the fabrication of stable strain hardened semi-finished and fully-finished products with avoidance of the fluid phase, i.e. without melting. The strength of the metallic cloth laminates is attained through the formation of sinter necks between the individual metal wires through surface diffusion at temperatures just below the melting point.

PACOPATE® top quality in the premium segment

PACOPATE cloth laminates are composite materials made up of anything from two to a number of hundred layers of metal wire cloths. Filter thicknesses of up to 100mm and more are possible. The stainless steel cloths are

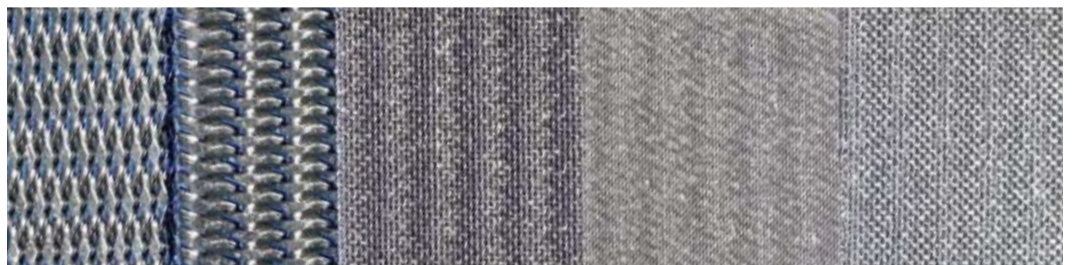
usually made of the standard materials 1.4301 (T304) and 1.4401 (316). Custom solutions for specific application requirements are also available.

Among the sintered metal wire cloths on offer, PACOPATE distinguishes itself through its outstanding quality. Such competitive advantages begin with the basis materials that are used, PACO metal wire cloths. This is then enhanced through perfect production technology – starting with the precisely controlled sintering process through state-of-the-art welding and joining technology to the precision processing of the completed cloth laminates to produce cylindrical or conical filter elements. The standard length is 1200 mm, with longer filter elements available when welded joints are used. The outer diameter for straight-forward cylindrical products begins at 14 mm with almost no limit as far as maximum size is concerned. Filter accuracy ranges between 1 µ and 200 µ. Typical product characteristics include excellent flow capabilities, the ability to withstand high mechanical loads, resistance to chemicals, ease of processing, high inherent rigidity, reliable wear resistance, high thermal loading capability (up to 600°C), good contaminant retention as well as ease of cleaning, for instance through back-washing.

A range tailored to the application

Filter products with PACOPATE metal cloth laminates have a large variety of different uses in a wide range of industries. The chemical and pharmaceuticals industry, food processing and paper making are at the forefront of the typical applications. Biotechnology, water treatment and gas filtration are other important fields. But we also don't want to forget plastics manufacturing and the agronomic industry. Further to this are specialist applications such as cake filtration, fluidized bed technology, fluidization, desiccation and loosening.

The extent and scope of the potential applications for PACOPATE cloth laminates is continually increasing. PACO has been a partner to leading equipment manufacturers for a long time, working hand-in-hand to conceive and develop effective solutions. Filter media and filter elements are planned



and implemented on a purpose-specific basis in full accordance with the characteristics of the individual process. Finally, a total quality management program employing the latest control mechanisms goes along way beyond ISO requirements to ensure the high production quality of PACOPATE-solutions.

PACOPATE® metal cloth laminates have between two and a number of hundred layers of protective cloths, filter cloths and support cloths that are firmly joined to each other.

Show Report Nitra 2009: It Was Worth It – Despite the Economic Crisis

The countries in Eastern European are markets with a future for PACO that have to be captured and cultivated even in economically difficult times. That is why PACO exhibited its products at the International Engineering Fair 2009 in Nitra (Slovakia). This trade show provides its visitors with presentations in five main areas: Eurowelding (welding technology), Cast-Ex (foundry technology), Chemplast (plastics and chemicals), EMA (electrical and automation technology) as well as Stavmech (building services).

PACO was represented by a spacious and effectively lighted show stand that emphasised the quality and aesthetics of the filter products that were being predominantly displayed. Apart from PACO, a number of national and international exhibitors presented an interesting selection of their work: new machines, tools, equipment and

technologies. This meant that the visitor received an informative, but at the same time useful, overview of the innovations and trends of the various branches. Nevertheless, the exhibitors had to swallow a bitter pill: the fair was not able to free itself from the effects of the global economic crisis. A drop in demand meant that the expectations of most of those exhibiting goods were not fulfilled. Despite this, Slovakia and its neighbouring states remain a market with exciting medium and long term prospects for PACO.

The exhibition stand at the NITRA 2009 in the International Exhibition Center Agrokomplex with Mathias Gilges, PACO sales specialist from Steinau and Mr. Kozak from the local PACO distributor LUKAN BB, S.R.O.



**PACO.
EXPORT.REPORT.**



A DUOPHON Telephone Conference Set consists of a control unit, the voice box, 2 microphones and a power supply unit. It can be upgraded with an additional loudspeaker and up to six microphones.

DUOPHON Telephone Conference Set Aesthetics, Showing-Off Innovative Technology.

Good looks are a sales argument that always carries a lot of weight. In the case of the DUOPHON Telephone Conference Set, the high quality metal wire cloth from PACO plays an important part in wordlessly communicating quality and innovative technology.

Telephone conferences – a growing need

In economically critical times, companies start taking a long hard look at how they can effectively cut costs. Communication has always been a significant cost factor. At the same time, however,

something that is indispensable if internal and customer relationships are to be established and nurtured. This is where telephone conferences come in as an efficient and cost-effective solution. Until now, their acceptance was often hindered by technical compromises and shortcomings such as the ever-present risk of feedback. Something that made simultaneous verbal intercommunication difficult. This should now be a thing of the past: the DUOPHON Telephone Conference Set offers a high-quality solution on the basis of the latest technology.

Full duplex all around

Every technology has its own specialist terminology. For instance, the capability of simultaneously being able to listen to each other speak is referred to in conference technology as "full duplex". It is something that requires a certain level of electronic complexity in the form of a set of "acoustic scales" as well as a noise filter to absorb echoes and suppress background noise. As the central active loudspeaker emits the sound radially, i.e. circularly, everybody sitting around the conference table is clearly able to hear what is being said. The final touch is put on the aesthetic design by high quality PACO metal wire cloth. This not only looks good, but also protects the electronics inside the box.

Bits and Pieces:

(Good) Intentions

To think about ourselves, what we have achieved and – better still – what we have not yet achieved and, consequently, what we deem to be desirable is something for which the right time can always be found. Particular at times when the world at large adopts a stance of despair and despondency. It's comforting to know that 100 years ago, people were no different. This is proved by the example of a young man that knew how to combine his good intentions of becoming "poet laureate" with a pragmatic will to survive. Today, similar stories are most likely being produced on countless laptops every day. To ease the understanding of the following search for good intentions, we have brought the slightly antiquated terminology up to date by adding a few modern examples:

"I will dip the goose quill (use the keyboard) into the black flood (as a word processor). I will write a novel (a few blogs will also suffice). Beautiful, genuine people shall promenade at the height of life (Paris Hilton, Brad Pitt or similar), upon their open faces, the freedom shall be reflected (their phenomenal bank balance).

No. I will write a lyrical poem (send a rhyming SMS to Suzy). My soul I will bed on velvet green flannel, and my solitudes will stridently thence withdraw... (I'll channel hop the TV shows and enjoy my six pack).

No. I will write a ballad (twitter a bit). The hero shall fight with giants on a bloomy meadow (the Klitschkos in Las Vegas), and when the rays of the moon fall on the beautiful princess (she has just won American Idol: The Search for a Superstar), then ...

I will dip the goose quill into the black flood (see above). I will write to my uncle that I need money. (no comment).

The piece "Intentions" was written in 1907 by Kurt Tucholsky (1890 – 1935), journalist, author and most important German satirist of his time.



PACO's Short Guide to Manufacturing



Work at PACO is characterised by a variety of different production techniques. We present the most important of these in a series that is appearing periodically in various issues of PACO WORLD:

8. Sintering – Strong Results at High Temperature and Pressure

Simply stated, sintering is a type of baking process: fine materials are combined together at high pressure and/or temperature to form a strong whole. At PACO these are metal wire cloths of a similar or differing directional fineness that are pre-treated to obtain sintered bridges.

The art of sintering is to compress and harden the materials being used without the materials going through a fluid phase – i.e. without melting. Classic examples of this are the production of earthenware, stoneware or porcelain. Modern applications include a wide range of extremely challenging uses. PACO applies sintering technology to special products for processing gaseous or fluid media that have to fulfil particularly high performance requirements respecting lifetime, process pressure and flow volume. This typically includes uses in fields such as the chemical industry, medical engineering and pharmaceuticals. And sintered PACOPLATE composite cloths are also in demand wherever good flow characteristics are required to assist with the acceleration and movement of granulates or powders.

Steinau an der Straße: Pottery with a Long Tradition.

Something that younger people won't remember is that there were times when there was no such thing as plastic or polymer! Back then, the most important material for kitchen and household products for everyday use was clay – the jug would keep being taken to the



© Vertriebsbüro Steinau

well until the day that it broke. This was the case in Steinau an der Straße too, so that over the centuries the town developed into a centre for the craft of pottery making in the state of Hesse as well as in Germany as a whole. This fact was documented as far back as 1391 and in 1864 there still were 40 pottery workshops in Steinau. The pottery making tradition has been kept alive in the town until this day and master potters are pleased to demonstrate their skills in forming this age-old material. A Steinau speciality is the production of screw-top pots out of clay, i.e. both pot and lid have a thread. This speciality is still being produced today by master craftsmen.

The museum in Steinau features a large number of artistically important as well as unusual pottery products from the region. In addition, the vaulted cellar of the museum contains a fully-equipped

pottery workshop complete with its own oven. Anybody that is interested can, under the guidance of an experienced potter, make pots of their own. Whether as a souvenir or an unusual piece of "Do It Yourself" – Steinau invites everyone to come to the town and keep alive an age-old tradition.

Imprint

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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