



PACO

WORLD

Our International Wire&Mesh Magazine for Existing and Prospective Customers

No. 23 2014

If SMEs Were to Go Into Politics...

Dear Reader!

Unity, freedom, brotherhood, justice, care, help for the needy, good health, prosperity and dignity are just some of the noble goals that politicians have written on their banners over the course of time! However, when it comes to proving a point and showing who is in charge they tend to be ruthless, hostile to the economy, anti-social, environmentally harmful and deprivors of civil liberties.

Take for example Crimea: seizure of territory in a way that is completely contrary to international law with disadvantages for companies and employees on both sides as well as for investors, the markets and the global economy in general. Or the example of Japan: officially playing down a nuclear catastrophe that was probably even more devastating and had a greater impact than Chernobyl, with the wrecked livelihoods of many farmers and fishermen. Not to mention the unforeseeable health risks for humans, animals and plants in the years to come. And once again the effects on the economy: Japanese companies have to submit themselves to the Geiger counter and their customers around the world have lost their confidence in them. Unfortunately, there is no end in sight!

And what about things in our own backyard here in Germany? The energy turnaround, lowering of retirement to 63, the new Berlin airport that has already burnt billions without a plane taking off? Politicians make decisions, and the economy, the companies as well as their employees and families have to bear the consequences.

With all respect to democratic elections: if SMEs were the politicians many of the things that have a negative effect on the world would never happen. This might be different with big corporations where a degree of ruthlessness is seen as a way of securing profits – as is the case with genetically engineered maize, medicines with doubtful effects, and the collection and misuse of private data from the internet etc. SMEs on the other hand – and particularly family companies – only have one chance of success: performance with responsibility. Far away from power and far away from making false claims. Why will this always have to be the case? Quite simply: because any form of dishonesty towards customers, final users or their own staff could quickly mean the end of any SME.

Best regards

Peter Ruppel
Managing Director



PACO Shows its Commitment to Made in Germany – With an Official Seal!

As one of the first companies in Germany and the only one in their field, PACO has obtained the certified proof of origin “Made in Germany”. The TÜV NORD CERT not only looked at the PACO factories, but closely examined the downstream production processes right back to the suppliers and the regions from which they sourced their goods. The outcome: all PACO products and services have every right to carry the label “Made in Germany” – officially certified, signed and sealed by the TÜV (Germany’s leading technical inspection association).

Commitment to the location

Right from the outset, PACO was located in Germany. Within three years of setting-up the company, PACO chose a site in Steinau an der Straße as its central headquarters. This has remained the case for more than sixty years and will continue so on into the future. The trend followed by a number of companies of continually locating to places where it is cheaper to operate – in Eastern Europe, India or China – was never an option for PACO. The quality problems that were often encountered by moving production overseas says enough. Competitiveness through improvements in cost and price structures is only of secondary importance. The priority is always quality, which always has to include the quality of an operation’s innovation capabilities and customer orientation. If this quality is maintained, a company can remain

successful even if they are based in a location with higher costs – which inevitably also includes responsible cost management.

If we’re going to do it, we’ll do it properly!

The offer of the TÜV NORD of providing the certified proof of origin “Made in Germany” completely fulfilled the heartfelt desire of the PACO management. It offered the chance of communicating something that is characteristic for the company, but can no longer be taken for

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PACO celebrates: 50 years production in Herolz

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Mesholutions created by PACO



After approximately four months of examining, checking and auditing, the TÜV NORD awards the certificate "Proof of Origin Made in Germany" to Dipl.-Ing. Garvin Ruppel of PACO on behalf of everyone involved.



that maintaining close ties with your home location has to remain an ongoing process. Otherwise, things would come to a standstill, which would be a step backwards. On the contrary, strong local identification is a tool that can be used to help a company dynamically develop into the future.

Demanding requirements

Prior to the certification process, the TÜV NORD presented an extensive catalogue of criteria and requirements that had to be fulfilled.

It related to products and product ranges that were at least 50% made in Germany. At PACO, this is usually 100%. In addition, at least 50% of the depth of the value added to the items has to be provided inland. This has to be proved on the basis of average calculations taken across the last three corporate financial years. Also checked is the procurement policy that, wherever possible, should be underpinned by inland suppliers. In the case of PACO, these were first and foremost the wire suppliers that exclusively come from Germany and have become extremely close strategic partners. In the course of the certification, the company management is also extremely closely examined. The corporate philosophy should focus on the securing and strengthening of the production land. This means that the extent and frequency of new investments in local production facilities has to be at the right level.

Number of jobs, training opportunities

Another important criterion for the TÜV NORD testers is number of employees in the production countries and the ratio to those that work for the company abroad. Additionally a reasonable number of apprenticeships in Germany is called for, that these apprentices have a realistic chance of continued employment, and that the company has proof that they significantly invest in on-the-job training in the production country. Once again, PACO's employment policy easily fulfilled all of the required demands. After all, this is the first step in providing the quality promise "Made in Germany". And this doesn't stop PACO basing their success on putting together an international team. Somebody summed things up as follows: we are an international family of employees with a common working home PACO.

Setting a sign

Looking at things rationally, the decision of the PACO management to obtain the certificate "Made in Germany" makes complete marketing sense. In the face of the globalization of markets for metal wire cloths, filters and screening products, indicating that Germany is the country of origin is getting more and more important – as a clear sign for the highest quality. If prices are comparable, the label "Made in Germany" may provide the decisive edge for placing an order. But pecuniary benefits are not everything. The PACO commitment to „Made in Germany“ is a clear signal for the company's honest attachment to its home location – now and on into the future. At the same time, it can be understood as a pledge to the jobs, occupations and careers at PACO. And if certification means that one or the other extra order finds its way into our books, this all adds to the satisfaction of everybody responsible for the certification process.

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PACO Shows its Commitment to Made in Germany – With an Official Seal!

granted in our competitive market, as something special. As a manufacturer of technical products, we already have enough to do with certification that has

to be continually audited and kept up to date. Nevertheless, this additional certification is more than just a matter of fact proof of quality; it has a very high

emotional value. This meant that everyone involved found it much easier to take on the extra work and make the necessary investments. PACO is convinced

„Made in Germany“: From Warning Notice to Sign of Quality.

It's hard to believe that German companies once operated in a manner that we presently accuse far eastern companies of using! But this was the case: in the second half of the 19th century men with names such as Krupp or Hoesch travelled around the steel making areas of Great Britain systematically gathering information from the local specialists. After returning home, they copied the methods and products that they had seen. Knife and scissor makers from Solingen didn't even shy away from engraving "Sheffield Made" on their products and then selling their cheap copies at dumping prices. It is extremely understandable that British companies decided that they had to defend themselves. That is why parliament passed the Merchandise Act in 1887. This stipulated that all products that were imported from Germany had to be marked "Made in Germany", which at the time meant: "Be careful, cheap and substandard!" A label that held true when the law initially came into force was already outdated only a decade later. German companies increasingly began to compete on the basis of improved and then superior product quality. Customers in Great Britain, USA and other parts of the world quickly learned to value the "Made in Germany" marking – better and cheaper! This meant that the one-time warning notice has been turned into a sign of guaranteed quality that has become even more relevant and appreciated in our current globalized age.



PACO Quality Assurance: Laboratory CSI Using the Latest Testing Technology to Keep Track of Quality.

As fans of thriller blockbusters and the numerous crime series on TV very well know, the methods for the detection of crimes, i.e. human error, have been continually refined. The movement from matching fingerprints to DNA analysis was a quantum leap that opened up completely new possibilities for solving crimes. The same is also true with testing methods for quality assurance. More refined and innovative methods enable an exact diagnosis and evaluation of product perfection. To make sure that PACO customers can also benefit from this over 400,000 Euro has been invested in equipment for testing and analysis at our test laboratory in Steinau.

People and methods

Equipment and machinery can only do as good a job as the people that sits behind it. This truth particularly applies to quality assurance. That is why the range of equipment in the PACO test laboratory is extremely extensive: X-ray spectrometers, microscopy for particle size analysis, porometers, flow test benches, strength test apparatus, laser-based dimension testers, thickness and weight checking systems, optoelectronic edge sensors and much more. The team in the Steinau test laboratory that employ all of these systems now consists of four specialists that work full-time on quality assurance. They understand that training and further development is an essential part of their work, in other words, life-long learning. With their extremely sensitive devices and specialist knowledge, they carry out comprehensive tests on materials and filter media: material tests, strength tests, flow measurements, filter fineness designation and much more.

The complete spectrum of materials testing

In materials and quality testing, the experts differentiate between two main areas: destructive and non-destructive testing. As this would be too easy for such an important field of activity, the "conditionally destructive materials testing" has been placed in-between.

1. Destructive materials testing

To test the chemical and physical characteristics of materials and find out their performance capabilities they sometimes have to be destroyed or be at least superficially changed. This means that the material or component can no longer be used afterwards. The most important mechanical methods of destructive materials testing include:

- Bending and folding tests for metal wire cloths
- Peel tests e.g. for cloth laminates and metal fibre fleece
- Tensile tests to test the tensile strength and particularly the elasticity limits of wires and metal wire cloths

2. Conditionally destructive materials testing

The prerequisite for non-destructive testing is that the material or component has to have a certain minimum size or have a suitable surface structure. If the inside of a component has to be examined, the component has to be milled open, in

other words destroyed after all. And with hardness tests, harder materials come into contact with materials that are less hard so that the latter are deformed or suffer other slighter forms of damage. In the PACO laboratory, hardness tests are carried out according to Vickers, Brinell, Rockwell, Shore or Knoop.

3. Non-destructive materials testing

e.g. X-ray fluorescence analysis

In addition to other methods, PACO uses the non-contact and, consequently, non-destructive X-ray fluorescence analysis. Portable devices are deployed that also enable materials testing on-site.

The system works with low-energy miniature X-ray tubes that don't need radioactive excitation sources. This method is suitable for nearly all metallic applications and particularly for small geometries such as wires or cloths. All elements can be recognized and measured from titanium through gold to uranium, which in practice doesn't play much of a part.

The possible applications of X-ray fluorescence analysis range from quick tests for mixed up components through to detailed individual analyses of the chemical components of a material.

e.g. metallographic methods

To determine filter fineness, regardless of whether it is a PACO filter or a filter made by another manufacturer, the PACO test laboratory has a porometer test bench that can ascertain characteristics such as filter fineness or distribution of pores. Complementary to this, air or water mixtures are analyzed to find out the specific flow characteristics of the filter medium that is to be used.

In the course of the heat treatment of PACO filter media, particle size analyses are carried out. The metallography describes the qualitative and quantitative structure of each metallic material. The description of the structure provides information about the type and amount of structural constituents that are separated from each other by boundary surfaces (grain limits, phase limits). In addition, their geometric parameters (size, shape, distribution and orientation) as well as the real structure of structural constituents are defined.

e.g. microscopic methods

Within metallography, special microscopic methods are used that require an extremely high degree of prepara-

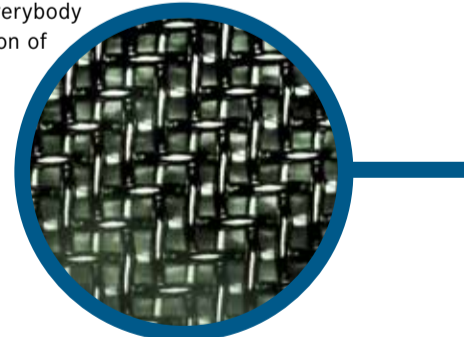
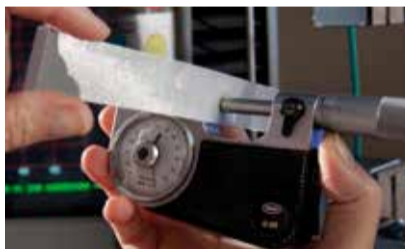
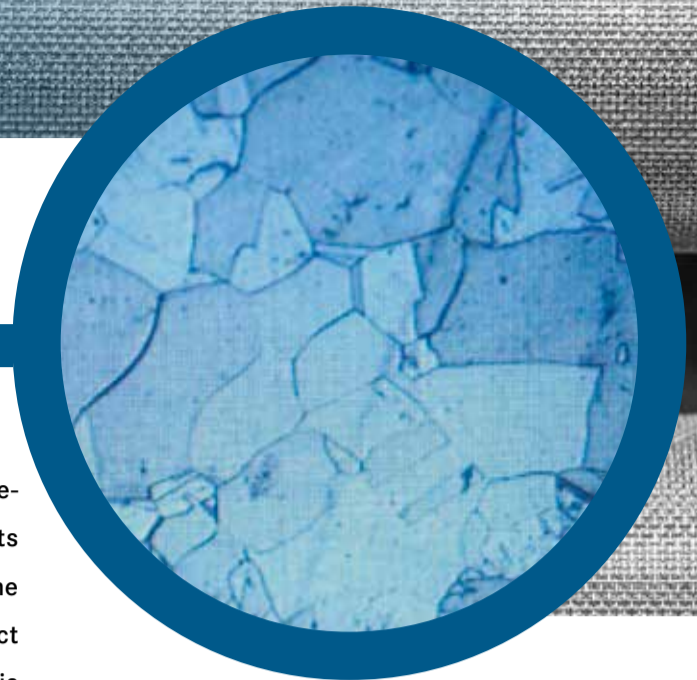
tion. Before the characteristics of the PACO metal wire cloths that have been changed by annealing can be microscopically reproduced, the following steps are required: separating of the cloth section, framing, fixing the sample in a ground section holder, bedding in plastic or epoxy resin (warm or cold), and mechanical section preparation (polishing) as well as contrasting.

e.g. contrasting

The differences in the reflectivity of the individual structural constituents of the metal are so minimal after polishing that contrasting methods have to be used. Examples of methods are etching (contrasting in solutions), thermal etching, ion etching, and application of interferable layers, relief polishing or also tests with materialography, light microscopy – GLW 7.

For customers and markets

The quality of our products and systems is the most valuable thing that we can offer our customers for their applications and markets. That is why quality testing and assurance are one of the PACO core competences. The necessary testing expenditure has consequently been continually increased throughout the years – within the limits of what is technically possible and financially acceptable. But equipment is only one side of the story, the required increase in expertise of those that operate it is the other. Material and quality testing as a whole and the metallographic sample preparation in particular require extreme caution and a lot of experience. On top of this, the team of specialists in the PACO testing laboratory are also highly motivated: quality is for them just as it is everybody else at PACO a question of honour.





50 Years PACO Herolz: “As a Family Company You Don’t Think in Years, But Generations.”

An interview with Peter and Klaus Ruppel,
Management of the Paul & Co. GmbH Metal Cloth Plant Herolz

PACO World: 50 years of the plant in Herolz, what does this anniversary mean to you?

Peter Ruppel: Klaus, would you like to start?

Klaus Ruppel: No, Peter, you can.

Peter Ruppel: Good. From the point of view of our company and that is of the greatest importance to me, 50 years of our plant in Herolz is a very big day for PACO. And not only because it is a tremendous achievement to see that a production operation can remain as competitive as it has for so long in an environment where it is continually facing increasingly tough competition. This should be a matter of course for us. The far more important achievement is that at the age of fifty years the factory in Herolz is playing a more and more important contribution to the future of the whole PACO Group. From a metal wire weaving mill that specialized in the coarser qualities, it has not only become a perfectionist in its field. Herolz has also established itself at the centre of

could see what his secret favorite Herolz has turned into. Today everything is only seen from a purely monetary aspect. But he really put his heart and soul into Herolz. That is why the workforce in Herolz had such a close relationship with him – and vice-versa. They would never let a bad word be said about the General, as they called our senior boss Wilhelm Ruppel. These days, however, we are in tune with the times and concentrate on teamwork. The hierarchies have become flatter and people work together more-or-less on the same level. The new management team in Herolz is the best example of this.

PACO World: As you have already broached on the subject: what does an anniversary like this mean for the workforce?

Klaus Ruppel: The workforce has every reason to be proud of a successful half a century at Herolz. A number have been working there for decades. Jürgen Klug, for example, our plant manager in Herolz; we have just said good-bye to him after 48 years of service. The people that were

And if someone is good at their job and has got the ambition to go higher, he or she will get all of our support. We have the capabilities and will send them to where they can best develop – from on-the-job training through to coaching, at home and abroad. This is true for Herolz just as much as it is for Steinau.

Peter Ruppel: This all goes to show that at PACO we truly are a family company. We are not run by managers, but by responsible persons from the owner’s family. This means that we feel that we are personally responsible for the company and the people that work there, so that we have a particularly high level of identification with our team of employees. And if this is mutual then we’re easily able to identify and develop our management out of our own ranks. This benefits both sides, the workforce and the company. And our customers, particularly the major ones, expect it of us. They went to be sure that with their supplier PACO they are going to be dealing with the same persons over a long period of time. They want to be able to rely on us beyond the current order on into the

tions. My brother Peter and I represent the second generation after the company founders. Our nephew Garvin Ruppel represents now and in the immediate future the third generation. It is hard to imagine anybody that has better prepared themselves for the tasks ahead – and is so dedicated to carrying on the family tradition. This means that things are very well set up for the future of the company.

PACO World: When you look back on fifty years of the Herolz plant, is there any achievement that you would particularly like to emphasize?

Peter Ruppel: The biggest achievement has to be that the company still exists and is more productive than ever before. This is in no way to be taken for granted. At the time that the plant in Herolz was set up there were 19 metal wire weaving mills in Germany and a further 25 throughout the rest of Europe. Today most of these are history. Our father, for instance, started his career at the metal weavers Ratazzi & May. He then set up his own company. And the company that he served his apprenticeship and formative years with, Ratazzi & May, a big name throughout the world of metal wire weaving with a 250 year tradition, handed over the production of their internationally acclaimed metal wire cloths to PACO on 1st January 1984.

Klaus Ruppel: We also took over all of the machines from Ratazzi & May. That was very sad as it brought it home that even that number of anniversaries are no guarantee for the continued existence of a company. It is simply not enough to have been good and competitive in the past and for the moment. Success or failure is decided tomorrow and the day after that. And Herolz is very well equipped for this. As we said earlier, we weave our coarser qualities there. But it would be a mistake to believe that coarse means less demanding. No, quality and precision have to be just as high and just as reliable as with finer cloths. In both cases, compared to our competitors, it is our highly developed production

50

Years PACO Herolz



our machine building operations. This is where remarkable developments such as our automated wide loom with a weaving width of three metres have come from. That is something that you won’t find anywhere else in the world.

Klaus Ruppel: Yes, and I have to think about how proud our father would be if he

around at the start and as things were getting up and running are now going off into retirement. The younger ones are following on from them and others are already taking their places in the starting blocks. Something that we are really pleased about is that we can make the generation change out of our own ranks. Our staff are our most important capital.

medium and long-term future.

Klaus Ruppel: Our conviction that we are a true family company is very credible in this respect. Our customers know that we are not after the quick order, but want a long-term working relationship. Just the same as we don’t think in terms of years or anniversaries, but in genera-

technology that makes the difference. Something that is now being continually developed for the future by the machine builders in Herolz.

Peter Ruppel: The technical innovations that come out of Herolz also benefit our factory in Steinau. Better and better

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quality while at the same time continuously improving production efficiency is the squaring of the circle that the staff in Herolz continuously achieve. And that provides the basis of the improved solutions for our customers as well as our own filter and sieve manufacturing.

PACO World: How important are anniversaries for customers? What do you think?

Peter Ruppel: In day-to-day business, events like this don't play much of a part. Or what do you think Klaus?

Klaus Ruppel: No, I don't think that it makes what we have to offer any more attractive or brings us in any extra orders. But as I have already said, money isn't everything.

Peter Ruppel: A new customer, of course, can take the view that being around for fifty years is of proof some kind of long-term market success. That increases the trust that they are in good hands and can develop a solid business relationship.

If business dealings continue for a longer period, you practically grow together. And this turns anniversaries into a kind of birthday party that makes your business relationship get even closer. Then you start to take things onto the level of a personal friendship. To get to know each other that well is always a good thing. At least that is what I think.

Klaus Ruppel: Me too. We shouldn't forget that it is an honour for us when customers take the time to follow our invitation and celebrate our anniversary with us. And when they bring their wives, it turns the whole occasion into a family event.

PACO World: Finally, a question about the future is one that we don't want to forget. How will things continue at the plant in Herolz?

Klaus Ruppel: The fight for survival among producers of metal wire cloths has become very intense. In particular, the competition from Asia is a big challenge for us. But if there is anyone that can rise to the challenge it is us in Herolz, with our innovative machine building team. Not forgetting, of course, the rest of the highly motivated workforce. Herolz is an integral part of the strategy for securing the long-term future of the complete PACO Group.

Peter Ruppel: We never want to reduce competition to just trying to be cheaper than others are. Our advantage is and remains our very high quality and the fact that we are very solution-oriented. Our product isn't the cloth or the filter, but the better solution that we offer. And that is something that our customers value worldwide. We will continue to remain in front when we carry on doing things that others can't do as well. And with its know-how, creativity and commitment, our plant in Herolz makes a very important contribution to our success.

POWTECH 2014, Nuremberg: PACO and SEPTEC Present an Eye-Catcher!



Not to be overlooked:
the new high-performance
R.I.S.E. ONE was the
star of the PACO booth.

The POWTECH is considered to be the leading international trade show for process technology, handling and analysis of powder and bulk solids. To be the talk of the show in such an environment means that you need to have presented something particularly spectacular. And this was certainly the case with the show package presented by PACO and its screening machine partner SEPTEC: the newly developed high performance screening machine R.I.S.E. ONE. Although it is based on the MAG 10, that was introduced approximately seven years ago, it now represents a com-

pletely revised and optimized machine generation. The special design produces a hitherto unreached acceleration of the screen cloth of approx. 40g! At the same time, the machine construction has to withstand the relatively low forces of approx. ca. 3-5 g. This unique performance characteristic becomes particularly noticeable compared to expansion shafts and conventional screeners when classifying moist materials or with extremely fine separation. An especially interesting and advantageous feature of the R.I.S.E. ONE is the coil-to-coil screen covering that enables fast screen changing times that are completely unrivaled. There was more than enough material for worthwhile technical discussions at the PACO-POWTECH booth. And the signing of a contract for the supply of a R.I.S.E. ONE screening machine immediately after the successful completion of the pilot test series was the icing on the cake for the convincing presentation made by the PACO and SEPTEC show booth team.



easyFairs SCHÜTTGUT 2014, Dortmund: Reunion Creates Business Associates.

Taking part as an exhibitor at the easyFairs SCHÜTTGUT trade show has a long tradition for us at PACO. The fact that this event concentrates on the processing, handling, transport and storage of bulk goods means that it is particularly interesting for PACO as a manufacturer of screening cloths and sieves. The further increase in the number of participants to approx. 5,000 meant that we had the chance of reaching a very large specialist public. This ensured that there was a lot of genuine interest and a number of high quality discussions. And just as much as we at PACO and the other exhibitors like

the show, it is also very popular among visitors, a number of whom find their way to our booth. This means that everyone involved has an extremely positive show experience. Over the course of time, it is an event that has brought a lot of visitors and exhibitors together so that they have become close business associates. At the SCHÜTTGUT 2014, there was an increase in visitors to the PACO booth of 18% compared to two years ago. A third of all visitors were new acquaintances. In other words, once again this year, the SCHÜTTGUT was an event worth taking part in for PACO.

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PACOMosaic

New: Technical Documentation BASICS 1 + 2 All About PACO Metal Wire Cloths and Filter Cloths

The infrastructure for PACO products and services has been further enhanced through updated information material. After the early release of the documentation "BASICS 3" about PACO screen printing cloths, two further documents have been added: BASICS 1 about metal wire cloths for sieves and filters and BASICS 2 about filter cloths.

Free delivery of new PACO product information: the technical documentation BASICS 1 for screen and filter cloths as well as BASICS 2 for filter cloths can be ordered free of charge as printed documents or downloaded as PDF files from the PACO web site, menu item Downloads.



data required for choosing the appropriate material is also provided. Finally, it contains helpful tips for efficiently making requests and placing orders.

BASICS 2: the perfect cloth for our customers

Filter cloths are filter media that have a particularly complex metal wire weave. Their versatility, precision, and cost-effectiveness means that they have become an integral part of filtering processes in industry, energy production and water treatment etc. The new product documentation BASICS 2 provides an informative overview even for the reader in a hurry. And for

BASICS 1:

all about the art of separation

PACO metal wire cloths provide the basis for countless screening and filtering applications in industrial processes. A claim that is also made by other manufacturers. The product documentation BASICS 1 shows that there are differences that have to be taken into account before making a decision for one product or the other. In addition, it contains background information about the various types of weave and cloth parameters. An extensive presentation of the important

those wanting to know more, it contains a lot of useful background information – from the available materials through to the various types of weave. It, of course, also includes the most important specifications in the form of clearly laid-out tables.

Steinau an der Straße: Sasaki Kizen – the Japanese Grimm

With their life's work of systematically collecting fairy tales and scientifically analyzing them, the Brothers Grimm have helped to write German literary history. That their work is also seen as an example for international literary studies can be



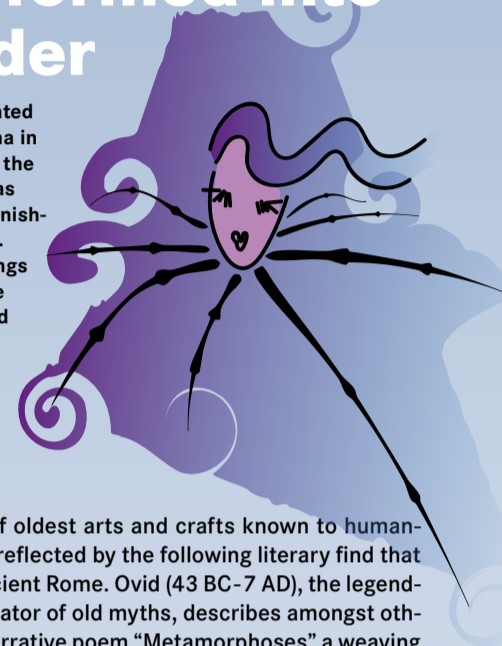
seen at an exhibition at the Brothers Grimm House in Steinau. It is dedicated to the Japanese folklorist Kizen Sasaki (1986-1933), who is also known in his homeland as the "Japanese Grimm".

It is a well-known fact that the Japanese have a penchant for German classical composers. That they are also interested in German fairy tales and how they have been preserved for future generations may, however, serve as a surprise for many. This has not gone unnoticed by the people responsible for the House of the Brothers Grimm in Steinau and was considered important enough to be the subject of an extensive exhibition. Through a cooperation with the Museum in the Japanese city of Tono, a number of attractive and astonishing exhibits have found their way to the Brothers Grimm town. Incidentally Tono, at the very north of Honchu Island, has lent its name to the "Tono Monogatari", the best-known collection of Japanese folk legends. Although Kizen Sasaki never had a natural brother to share his name with, he did have a brother in spirit, called Kunio Yanagita (1875-1962). He served as the publisher of the previously mentioned collection of folk legends. Whereas Kizen Sasaki died at a very young age, Kunio Yanagita went on to establish Japanese folklore as a branch of research and was the first holder of the corresponding chair at the University of Tokyo.

Bits and Pieces

Athena's Revenge: Why a Champion Weaver was Transformed into a Spider

Because she defeated the goddess Athena in a weaving contest the mortal Arachne was transformed as punishment into a spider. That's the way things could go under the ancient Greeks and Romans ...



Weaving is one of oldest arts and crafts known to humankind. This fact is reflected by the following literary find that dates back to ancient Rome. Ovid (43 BC-7 AD), the legendary poet and narrator of old myths, describes amongst other things in his narrative poem "Metamorphoses" a weaving contest between the goddess Athena) and the very human Arachne – a tale that has parallels with an ancient Greek saga.

"It was not only a joy to see the finished cloths, but also to watch them made: Arachne added so much beauty to her art. ... You could see she was taught by Pallas (Athena). Yet Arachne denied it, and took offense at the idea of such a teacher "Contend with me" she said, "I will not disagree at all if I am beaten"

... Immediately they both position themselves, in separate places, and stretch out the fine threads, for the warp, over twin frames. The frame is fastened to the crossbeam; the threads of the warp separated with the reed; the thread of the weft is inserted between, in the pointed shuttles that their fingers have readied; and, drawn through the warp, the threads of the weft are beaten into place, struck by the comb's notched teeth. They each work quickly, and, with their clothes gathered in tight under their breasts, apply skillful arms, their zeal not making it seem like work.

... The outer edge of the web (woven by Arachne), surrounded by a narrow border, had flowers interwoven with entangled ivy.

Neither Pallas, nor Envy itself could fault that work. The golden-haired warrior goddess (*Pallas Athena*) was grieved by its success. And as she held her shuttle made of boxwood, she struck Arachne three or four times, on the forehead. The unfortunate girl could not bear it, and courageously slipped a noose around her neck. Pallas, in pity, lifted her, as she hung there, and said these words, "Live on then, and yet hang, condemned one!" Departing after saying this, she sprinkled her with the juice of Hecate's herb, and immediately at the touch of this dark poison, Arachne's hair fell out. With it went her nose and ears, her head shrank to the smallest size, and her whole body became tiny. Her slender fingers stuck to her sides as legs, the rest is belly, from which she still spins a thread, and, as a spider, weaves her ancient web.

(From: Ovid, *Metamorphoses*, Book VI, 1 – 145)

√ Brilliant Minds

George de Hevesy – Father of X-Ray Spectroscopic Analytics

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.

The material and quality management team at PACO uses portable X-ray fluorescence instruments to check metal wires and metal wire cloths in the laboratory and in applications on site. The development of this extremely demanding material testing method into today's practical and extremely accurate procedure can be attributed to a long line of brilliant minds. Starting with Conrad Röntgen who discovered X-rays. Followed by others such as Henry Gwyn Moseley. He found that there is a systematic mathematical relationship between the wavelengths of discrete X-rays and the atomic numbers of the elements. On the basis of this discovery, George de Hevesy developed the theoretical basis of X-ray spectroscopy. He continued to develop his idea together with Dirk Coster at the laboratory of Niels Bohr in Copenhagen to produce a practical working process. In the course of their research into X-rays as an analytic instrument, George de Hevesy and his team at the University of Freiburg and, at the same time, Richard Glocker at the HFT in Stuttgart discovered the suitability of X-ray fluorescence as a non-destructive analytic process. George de Hevesy received the Nobel Prize for Chemistry in 1944.

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