

A close-up, black and white photograph of a metal wire mesh, showing the intricate pattern of the wires and the diamond-shaped openings. The mesh is slightly out of focus, creating a sense of depth.

# PACO 1 BASICS

Metal Wire Cloths  
for Sieves  
and Filters



**PACO:**

# The Art of Separation

Sieving and filtration technology have been essential to the development of a wide variety of industrial processes. As straightforward as the fundamental principle of operation may be, the demands placed on the technology today are extremely complex. Whereby qualitative performance characteristics such as precision, reliability and fail-safe operation are as equally important as the economic advantages such as price/performance, lifetime and efficient regeneration. These constantly increasing demands mean that sieving and filtration have been continuously refined to become a processing art – not least due to the extensive contribution of PACO.

**Precision cloth plus application intelligence**

PACO's origins and core expertise are in the production of high precision metal wire cloths. Uncompromising quality assurance from the incoming goods inspection of the component wires through inline checks to the 100% final testing of all cloths provides the dependable basis for high quality sieve and filter products as well as excellent sieving and filtration results. This is complemented by a price/performance ratio based on the latest production techniques as well as automated looms that are designed and built by PACO. As a result PACO has established its place among the group of the world's leading manufacturers of precision cloths for sieving and filtration. Closely linked to this is the enormous experience gained from applications throughout all branches of industry as well as presence on most of the world's markets.

PACO offers you both:  
 high quality metal wire cloths  
 for sieving and filtration as  
 well as application-related support.

But the decisive reason that PACO products are constantly chosen despite fierce global competition is the level of customer support that further enhances the cloth, filter and sieve hardware. This includes application consultancy, targeted innovations and the joint development of specific solutions between PACO and PACO customers. The result of such close cooperation is a constant flow of solutions that are pragmatically keyed to day-to-day practice with an insight into the exact requirements of each individual application. This ensures advances in processing technology and economic benefits through improved production output that, in turn, provide competitive advantages for our customers together with their users and clients.

Make full use of both: the extensive range of PACO cloths for sieving and filtration and the specialist PACO support for application technology and innovation.

**The Materials:**

# Always the Needed Quality

Corrosion, acid, and heat-resistant steels

Material	Code according to EN	Material no. according to EN	US standard according to AISI	Size range
DIN 17470 DIN EN 10088-3 DIN EN 10095	X 6 Cr 17	1.4016	AISI 430	0.015-2.00 mm
	X 5 CrNi 18-10	1.4301	AISI 304	
	X 2 CrNi 19-11	1.4306	AISI 304 L	
	X 10 CrNi 18-8	1.4310	AISI 301/302	
	X 5 CrNiMo 17-12-2	1.4401	AISI 316	
	X 2 CrNiMo 17-12-2	1.4404	AISI 316 L	
	X 2 CrNiMo 18-14-3	1.4435	AISI 316 L	
	X 3 CrNiMo 17-13-3	1.4436	AISI 316 L	
	X 2 CrNiMo 18-15-4	1.4438	AISI 317 L	
	X 2 CrNiMoN 17-13-5	1.4439	-	
	X 3 CrNiMo 18-12-3	1.4449	-	
	X 2 CrNiMoN 22-5-3	1.4462	-	
	X 1 NiCrMoCu 25-20-5	1.4539	AISI 904 L	
	X 6 CrNiTi 18-10	1.4541	AISI 321	
	X 6 CrNiNb 18-10	1.4550	AISI 347	
	X 3 CrNiCu 18-9-4	1.4567	AISI 304 Cu	
	X 6 CrNiMoTi 17-12-2	1.4571	AISI 316 Ti	
	X 8 CrAl 20-5	1.4767	-	
	X 15 CrNi 20-12	1.4828	AISI 309	
	X 15 CrNi 25-20	1.4841	AISI 314	
X 12 CrNi 21-25	1.4845	AISI 310 S		
X 16 NiCr 30-20	1.4860	-		
X 12 NiCrSi 36-16	1.4864	-		

Non-ferrous metals

Material	Code according to EN	Material no. according to EN	US standard according to AISI	Size range
Brass DIN EN 12166	CuZn 10	CW501L	C 22000	0.04-2.00 mm
	CuZn 15	CW502L	C 23000	
	CuZn 20	CW503L	C 24000	
	CuZn 30	CW505L	C 26000	
	CuZn 36	CW507L	C 27000	
Bronze DIN EN 12166	CuZn 37	CW508L	C 27400	0.02-2.00 mm
	CuSn 14	CW450K	C 51100	
	CuSn 5	CW451K	-	
	CuSn 6	CW452K	C 51900	
Copper DIN EN 13602	CuSn 8	CW453K	C 52100	0.04-2.00 mm
	X3CrNiMo 18-12-3	1.4449	-	
Nickel DIN 17740	E-Cu 58	2.0065	-	0.04-2.00 mm
Aluminium DIN EN 573-3	Ni 99,2/Ni 99,6	2.4066	N0 2200	0,04- 1,00 mm
	EN AW-5019 (AlMg5)	3.3555	5056 A	0,04- 1,00 mm

Special materials

Material	Code according to EN	Material no. according to EN	US standard according to AISI	Size range
Inconel 600	NiCr 15 Fe	2.4816	N0 6600	0.04-1.00 mm
Inconel 601*	NiCr 23 Fe	2.4851	N0 6601	
Inconel 625*	NiCr 22 Mo 9 Nb	2.4856	N0 6625	
Incoloy 825*	NiCr 21 Mo	2.4858	N0 8825	
Nickel-Chrom	NiCr 80 20	2.4869	Nichrome	

Finishes: Mechanical strength to Tolerance to  
 DIN EN 12166, DIN EN 10088-3, DIN EN 10270-3  
 ISO 4782, DIN EN 10270-3, DIN EN 13601

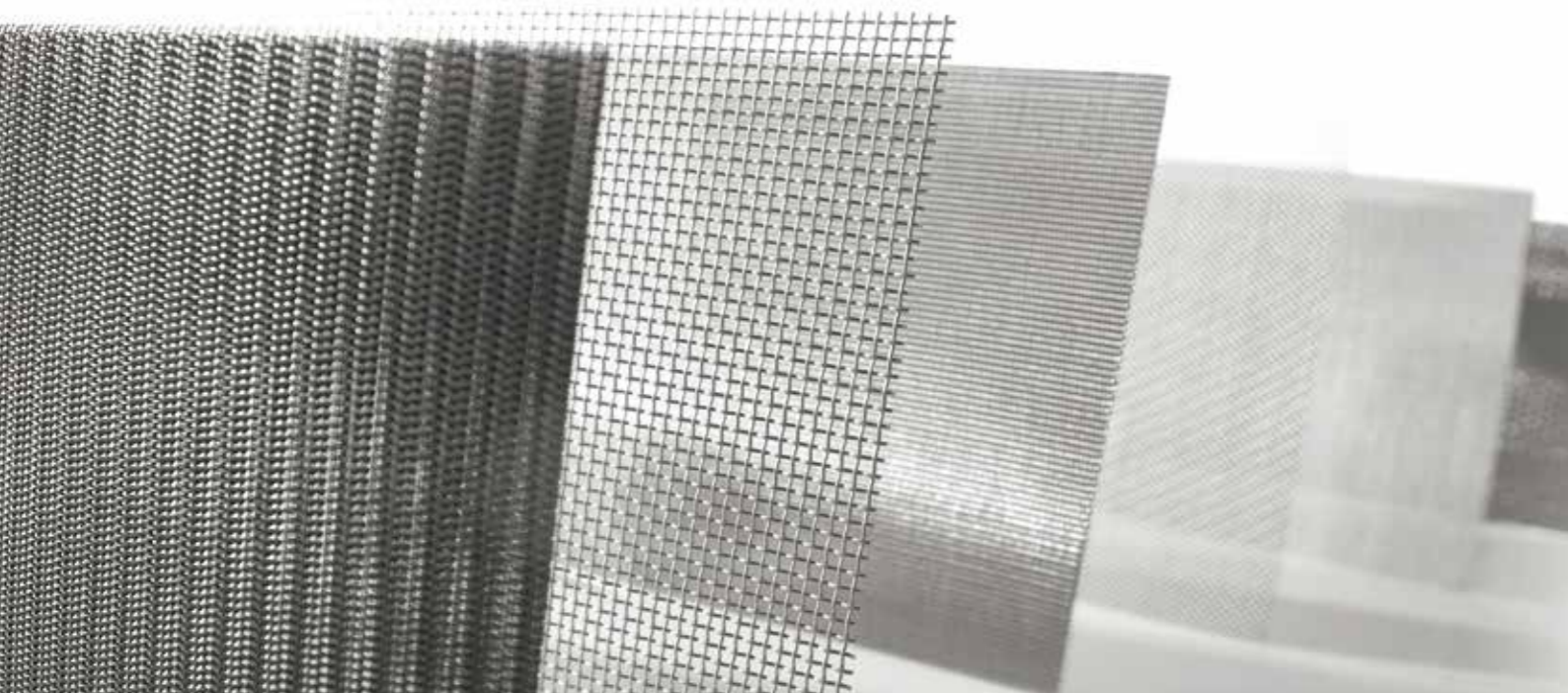
Other materials on request

The material that provides the basis for the application-specific quality of PACO metal wire cloths for filtration and sieving is the purpose-selection of the component wires. PACO covers a wide variety of user requirements with an extensive range of metal wires.

The most important groups of materials are:

- **Steel**  
bare, tinned, zinc-coated, painted
- **Stainless steel**  
chromium steel, nickel chromium steel, nickel chromium molybdenum steel, heat resistant austenitic stainless steel, duplex steels
- **Non-ferrous metals**  
nickel, aluminium, copper, brass, tin bronze, MONEL metal
- **Special materials**  
e.g. titanium, niobium, vanadium, gold, silver, platinum, hastelloy

We are pleased to provide information about the material that is most suitable for your particular application on request or through a personal meeting with our specialists.

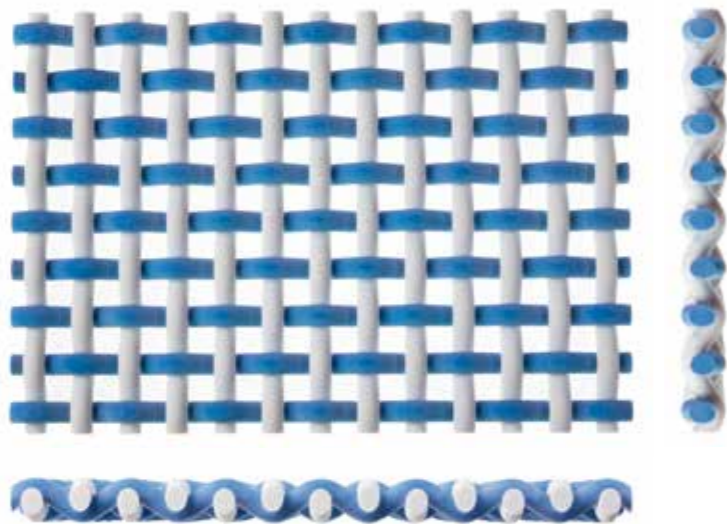


**The Weaves:**

# Always the Perfect Surface



Each cloth gets its characteristic structure and required cohesion from the weave that interlaces the warp and weft threads in a particular way. Throughout the centuries, or to be more precise millenia, of weaving history a few fundamental types of weave have proved themselves to be the most suitable. Although there appears to be an extremely wide variety of weaves, most are in some way related to one of the classic weaves: plain, twill or satin. The most important types of weave for PACO metal wire cloths are the following:

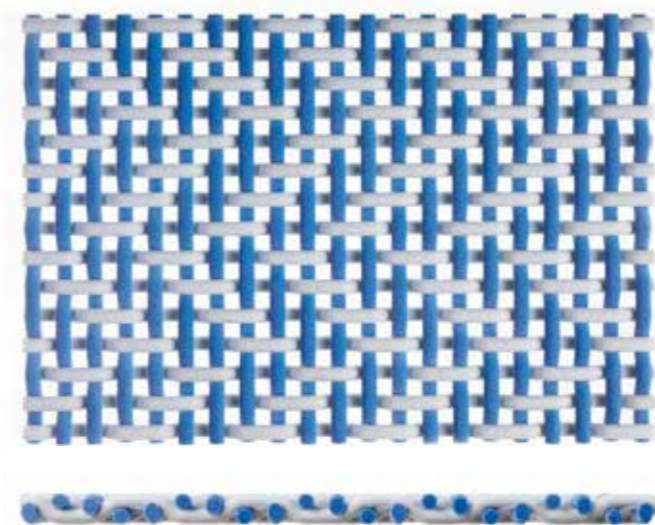
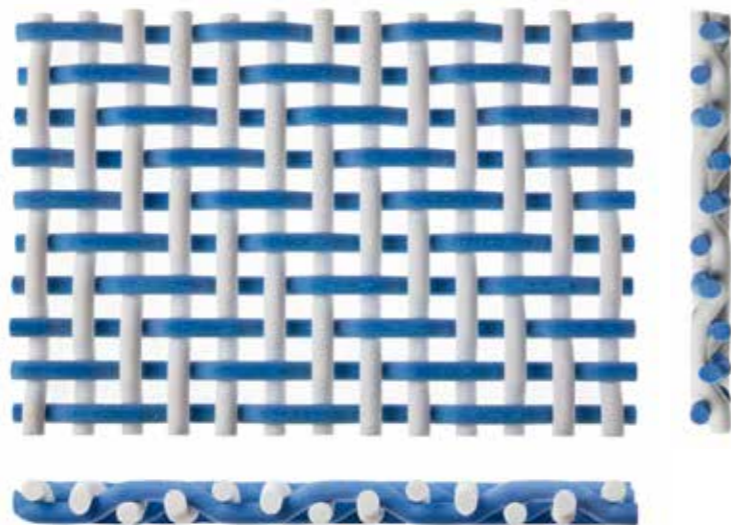


**Plain or linen weave**

The linen or, as it is often known, plain weave is the original type of weave. As a development of braiding, the lengthwise (warp) and crosswise (weft) threads are interwoven into each other. The weft thread undulates to alternately pass above and then below the warp thread. In this way the threads fix each other so that a weave with an extremely exact width of opening can be produced.

**Twilled weave**

The twill is a weave that can be produced in a wide number of variations. With the standard version, two warp wires are woven over and then under a pair of weft wires in such a way that there is an offset of one thread between the rows. This weave is mainly chosen when the wire is so thick in relation to the aperture that it would not stand up to the distortion of the weaving process on its own. Use of the latest weaving technology ensures a stable weave. The diamond shaped openings of the mesh produce the typical diagonal pattern weave.

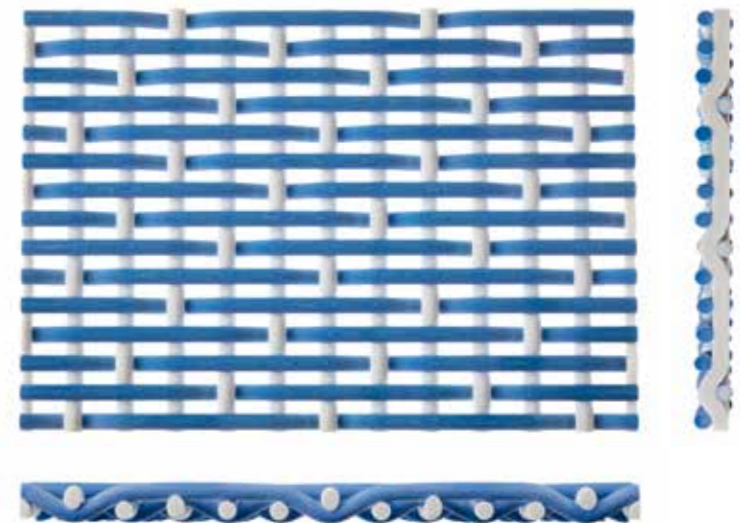


**Herringbone twilled weave**

Herringbone twilled weave is a type of weave that is often used for filtration. It was developed to prevent the distortion that can occur when a conventional twilled weave is removed from the loom. The extremely precise production techniques used by PACO ensure that there is no measurable change in the size of the mesh openings even at the corner points of the zigzag pattern. This makes it the cloth of choice whenever precise directional stability (perpendicularity) is required without any form of preparatory mechanical stretching.

**Five heddle twilled weave (satin weave)**

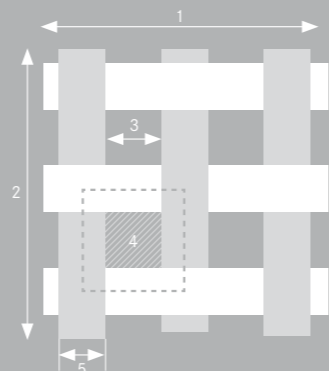
With this type of weave, every fifth warp wire alternately passes over and under the weft to produce a long or rectangular mesh pattern. The outstanding feature of a five heddle twilled weave is its particularly smooth surface structure (satin effect). This is extremely beneficial for filtration as, for example, it enables filter cake to be easily removed. At the same time, the open underside has exceptionally good de-watering efficiency. The weave provides high flow rates in conjunction with top mechanical quality.



It is a well-known fact that every cloth consists of openings. Less well-known is that these openings play an extremely important role in determining the character and performance of the cloth. A single mesh can be as large as a square centimetre. But a square centimetre of PACO metal wire cloth can also contain 64,000 meshes! Between these two extremes there is an infinite number of mesh solutions which are exactly defined and characterized according to their intended purpose within a sieving or filtration application.

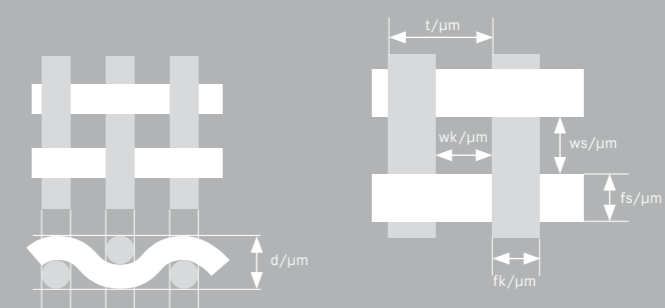
**Cloth Parameters**

1. Amount of wires per cm in warp direction
2. Amount of wires per cm in weft direction
3. Opening
4. Open area %
5. Wire diameter



**Important cloth characteristics:**

- Mesh shape (square mesh, long rectangular mesh, wide rectangular mesh)
- Wire thickness (warp wire, weft wire)
- Mesh count/inch (Mesh)
- Aperture
- Open sieve area
- Tension value (with sieves)



- $d/\mu\text{m}$  = Mesh thickness
- $t/\mu\text{m}$  = Division
- $fs/\mu\text{m}$  = Wire thickness (weft)
- $fk/\mu\text{m}$  = Wire thickness (warp)
- $wk/\mu\text{m}$  = Wire thickness
- $ws/\mu\text{m}$  = Aperture





**Certitude:**

# Always Exactly to Size and Standard

All PACO metal wire cloths are manufactured according to the international standard ISO 9044 which means that they fulfil most requirements that various applications place on them. In addition, when needed, specific quality and supply agreements can be made. Whatever the case, the quality that has been agreed with the customer is systematically controlled and documented by PACO.

**Information for enquiries and orders**

- Intended use
- PACO part number / order number
- Wire cloth material (material number)
- Required weave (where required)
- Nominal aperture or number of meshes per cm<sup>2</sup> / inch (mesh)
- Wire diameter
- Post weaving process / finish (if required)
- Required amount: cloth width and length, amount of pieces / rolls
- Type of packaging
- Where available: send sample, drawing or sketch
- For subsequent orders: previous roll label or order data from earlier contract

**Packaging / post-processing**

- Cutting-to-size
- Cutting-to-length
- Punching
- Calendering / compressing
- Stretching
- Annealing
- Sintering
- Cleaning
- Welding
- Soldering
- Pleating
- Stamping
- Deep drawing
- Forming
- Coating
- Painting etc.



**QA policy, certification**

PACO has set itself the challenge of being the global market leader for total quality solutions. This is substantiated through state-of-the-art processing techniques, test procedures and a highly skilled workforce. The quality, safety and environmental management systems at PACO are implemented and certified on a process-oriented basis according to the latest EN ISO 9001:2008. In addition, as a supplier for the Ariane5, PACO is also certified according to the Assessment Standard EN9100 for the aerospace industry.



Sophisticated testing technology on an extremely precise base together with experienced technicians ensure reliable quality control.

**Delivery formats**

PACO metal wire cloths for sieving and filtration can be supplied, as required, in various formats:

- Rolls
- Pieces
- Strips
- Shaped pieces
- Circular blanks
- Screen bottoms
- Filters etc.

The quantity supplied can be anything from a one-off through to a large batch.

**Consultation:**

# Mutual Exchange of Know-How

PACO metal wire cloths are the material that “Mesholutions“ are made of: application solutions that improve quality, processing throughput and cost-effectiveness. To ensure that these objectives are constantly obtained, it is essential that there is an extensive exchange of know-how between the specialists at PACO, PACO global sales partners and users of PACO products around the world.

**With motivation and identification**

Whenever you ask a PACO customer what they appreciate most about working together with PACO, most of them say: the personal interest in the needs of the customer and unconditional identification with mutually agreed solutions. That is why PACO is always willing to pass on the practical knowledge that they have gained through their own experience as well as providing the resources needed to develop beneficial new solutions. At the initial meeting, the exact problem is analyzed and a concept for a specific solution is defined. This solution is developed by the PACO R&D team with the assistance of external research institutes, whenever required. The findings are then tried and tested at the PACO technology centre as well as by the customer on-site. Throughout this process, a mutual exchange of know-how ensures that the

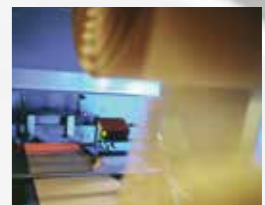
needs, wishes and objectives of the customer remain firmly in focus – from the initial idea through to the final implementation of another successful PACO Mesholution.

**Always close to the customer**

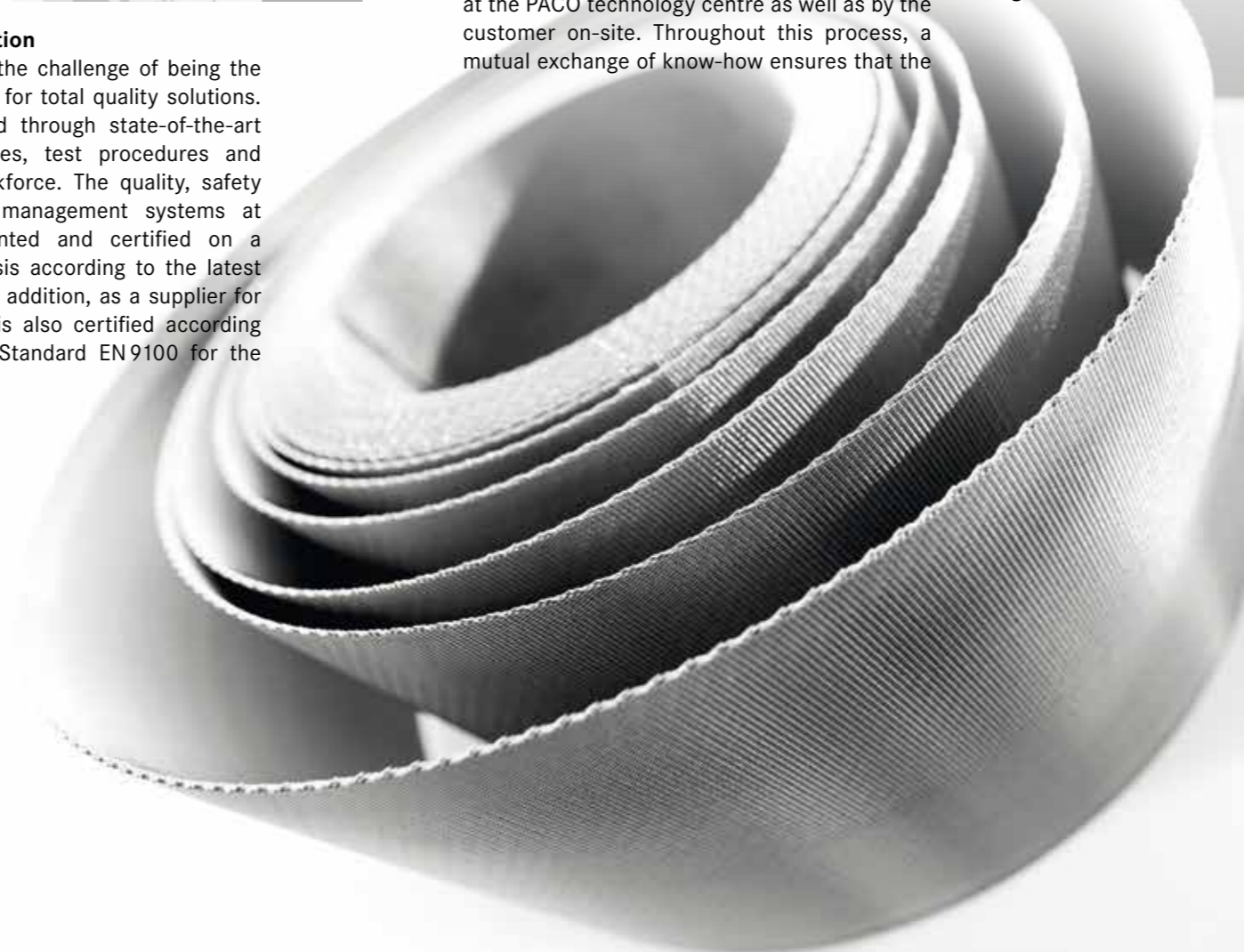
With production plants and a dense network of sales partners in Germany and throughout Europe, PACO is always very close to home. Further afield, representatives in over 80 countries from the Middle East to China and from Indonesia to North and South America ensure close customer proximity on a global scale. This network of partners for markets and users provides all that is needed for a high level of service and ongoing support for all of our customers throughout the world.



PACO employs welding systems designed and built by the in-house mechanical engineering team for the production of its filters – for example, to produce extremely long filter elements (up to 4.200 mm).



The annealing of metal wire cloths between 750°C and 1200°C serves to optimize and stabilize their physical characteristics. This is carried out at PACO through fully-automated continuous annealing lines.



**The Range:**

# From Cloths Through Elements to Complete Systems

You can talk to PACO about everything: whether it is the need for a specific metal wire cloth, interest in a semi-finished product or component or the desire to develop a complete system. In each case you will find a listening ear, willingness and commitment to cooperation and a high level of problem-solving expertise.

**The PACO Group – a force for all-round expertise**

PACO has been a committed global player at the forefront of the development of high precision metal wire products and applications for over sixty years. The company's cloth developments have supported technical advances and innovations in a number of industries and branches and have even made some applications possible in the first place. PACO production plants set the standard for the quality of metal wire cloths, sieves and filter products. And with its

subsidiary HETA, the PACO Group can offer the full-range of services of a globally-recognized manufacturer of complete filtration systems for demanding applications in a wide range of industries such as power generation, oil and gas production, chemicals, pharmaceuticals and vehicle manufacturing. That is why PACO is always one of the best addresses whenever you need sieving and filtration advice and assistance.



**Whether cloth or complete solution: we look forward to talking to you!**

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