



# PACO 4 BASICS 4

PACOPLATE

Metal Cloth Laminates

Multilayer Perfection!



**PACOPLATE:**

# Layer after Layer of Application Expertise

It doesn't matter how complex a demanding filtering task may be, the versatile PACOPLATE range will provide the needed solution. The basis is a product that combines PACO production skills in the form of a high-precision multilayer metal cloth laminate with the extensive process expertise of the PACO filtration engineering team.

PACOPLATE metal cloth laminates are available with a wide range of specifications – from standard qualities through to extremely specialized filter cloth concepts. Each laminate is configured according to the specific requirements of the individual application – to provide the needed filter fineness, flow characteristics and mechanical requirements etc. The various filter layers are permanently fixed to each other under pressure and at high temperatures (diffusion welding). This produces an extremely strong and porous filter medium that can be easily formed, cut-to-size and further processed. Con-

sequently, PACOPLATE can be found in a wide range of filter concepts – from, filter discs and filter cartridges through to hybrid process filter systems.

Sieve and filter elements equipped with PACOPLATE are used for demanding screening and filtering applications or for fluidization in a wide variety of industries. For example in chemicals, petrochemicals, pharmaceuticals, synthetic materials production, food and drink processing, the motor industry, machine manufacturing and water treatment etc.

**The PACOPLATE Materials:**

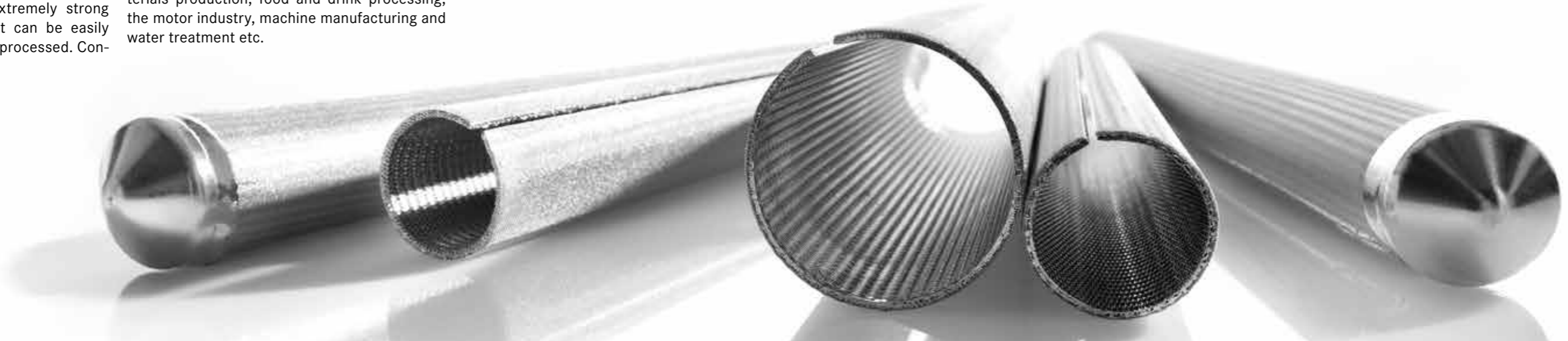
# Quality and Precision in all Layers

The quality of a sieve or filter medium becomes particularly evident when the application is extremely demanding – chemically mechanically or physically. That is why PACOPLATE- metal cloth laminates are exclusively made from the highest quality materials using a quality assured production process.

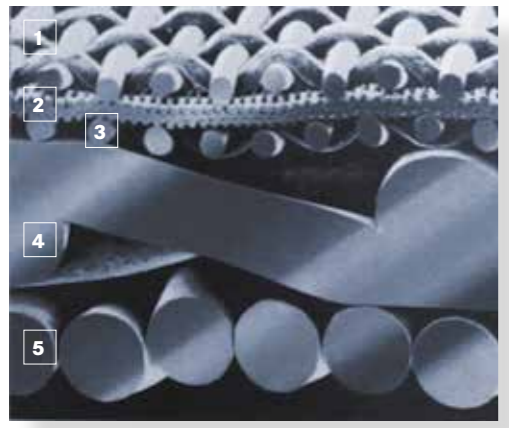
As standard, PACOPLATE media are made of stainless steel wire cloths of the quality standards 1.4301 (type 304) and 1.4401 (type 316). Whenever required, materials such as nickel chromium steel, nickel chromium molybdenum steel, heat resistant austenitic stainless steel or duplex steels can alternatively be used for the cloths. Additional supporting materials such as perforated plate and expanded metal are also available in the required material quality.

The lamination process, that uses a method of diffusion a number of times, produces a high-quality filter medium with exactly defined characteristics: pore size, pore distribution, porosity, permeability etc.

A PACOPLATE cloth laminate is a material that can be efficiently, and safely cut-to-size, formed, welded and further processed according to the exact needs of the final user.



**PACOPLATE – Standard configuration, five layers**



- 1** Protective mesh
- 2** Fine mesh cloth for particle control
- 3** Flow distribution plenum mesh
- 4** Filter weave, support layer 1
- 5** Filter weave, support layer 2

**PACOPLATE characteristics: outstanding**

- Precise pore size distribution and flow characteristics
- Defined filter fineness, assured even at high pressures and high temperatures
- Filter fineness 0.5 to 500 µm, nominal
- High differential pressures, e.g. up to 105 bar – even at high temperatures
- Reliable dimensional stability
- High specific volume flow rates
- Reusability of the filter elements
- Simple and cost-effective cleaning
- Long-term economic efficiency

**The PACOPLATE Parameters:**

# Made to Measure Performance Levels

Outstanding quality and performance characteristics can only be provided through highly developed production techniques. That is why PACO uses leading-edge technologies to manufacture PACOPLATE – checked and documented as part of a constantly audited quality management program.

PACOPLATE panels can be made up of two, three, four, five or significantly more layers of cloth with 12x64, 24x110 or 50x250 mesh. The standard quality is five layers. The base materials are plain or twilled weaves as well as various types of dutch weaves. It goes without saying that all of the cloths used are woven in PACO's in-house precision weaving mill.

The individual PACOPLATE material layers including the fine cloths with various geometries that are decisive for the filtration characteristics are provided with sintered bridges (flattening of the angled sections) through a calendaring process.

This processing step also fixes the desired geometry of the cloth openings to ensure that the required flow characteristics can be attained. Following this, diffusion is used to inseparably join the individual layers of material to each other at high temperatures and under pressure in a hydrogen atmosphere or vacuum.



Vacuum oven for PACOPLATE production, in which various cloth layers are repeatedly laminated to produce high quality composite materials. The final product is extremely efficient, easy to form and corrosion resistant. All functional characteristics such as pore size, distribution and flow characteristics are exactly and permanently fixed.

**PACOPLATE performance benefits: practice-oriented**

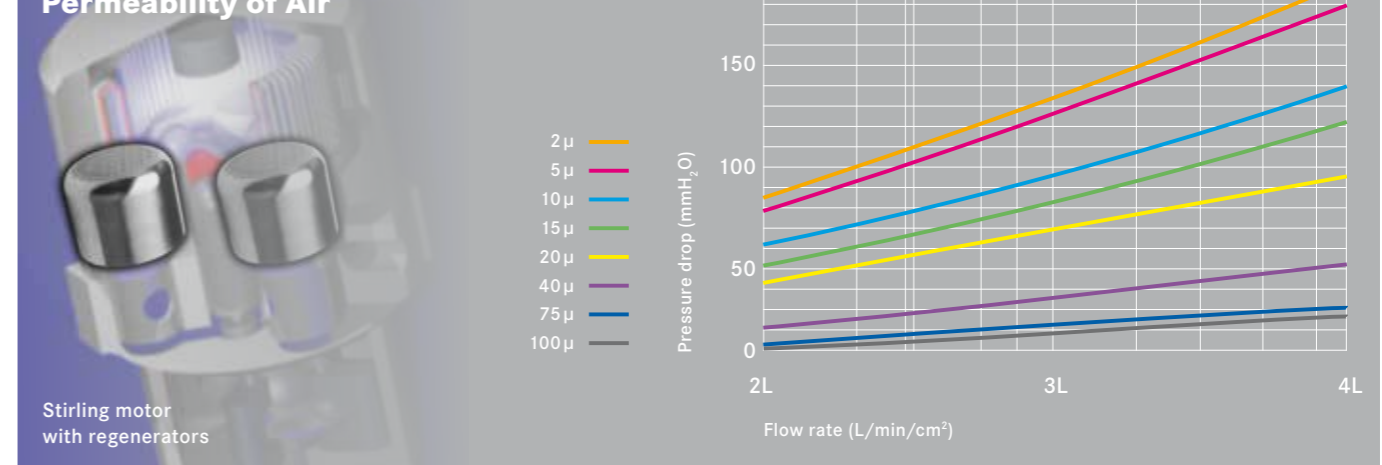
- High mechanical, chemical and thermal stability
- Resistance to corrosion according to material specifications
- Filtration free of foreign particles, no particle migration
- Abrasion resistance
- Individual arrangement of the sintered metal filter layer structure
- High dimensional flexibility for a variety of filter elements and filter discs
- Straightforward processing in all required shapes, sizes and configurations
- Excellent weldability
- Standard qualities permanently in stock for immediate delivery

**PACOPLATE standard cloth laminates, 5-layer Technical Data**

Specification Number	Particle control	Nominal ratings	Nominal thickness	Porosity in %	Air Flow L/min/cm <sup>2</sup>
4001814	400 x 2800	2	1,70	30	1,82
4001575	325 x 2300	5	1,70	31	2,33
4000521	200 x 1400	10	1,70	35	2,44
4004944	165 x 1400	15	1,70	32	3,05
4001484	165 x 800	20	1,70	40	4,55
4001650	325 x 325	40	1,70	32	6,90
4005035	200 x 200	75	1,70	32	8,67
4005032	150 x 150	100	1,70	34	9,12

Standard sizes: 600 x 1200 mm, 1000 x 1000 mm, 1200 x 1200 mm  
Other sizes are available on request

**PACOPLATE 5-Layer Typical Measurements for Permeability of Air**

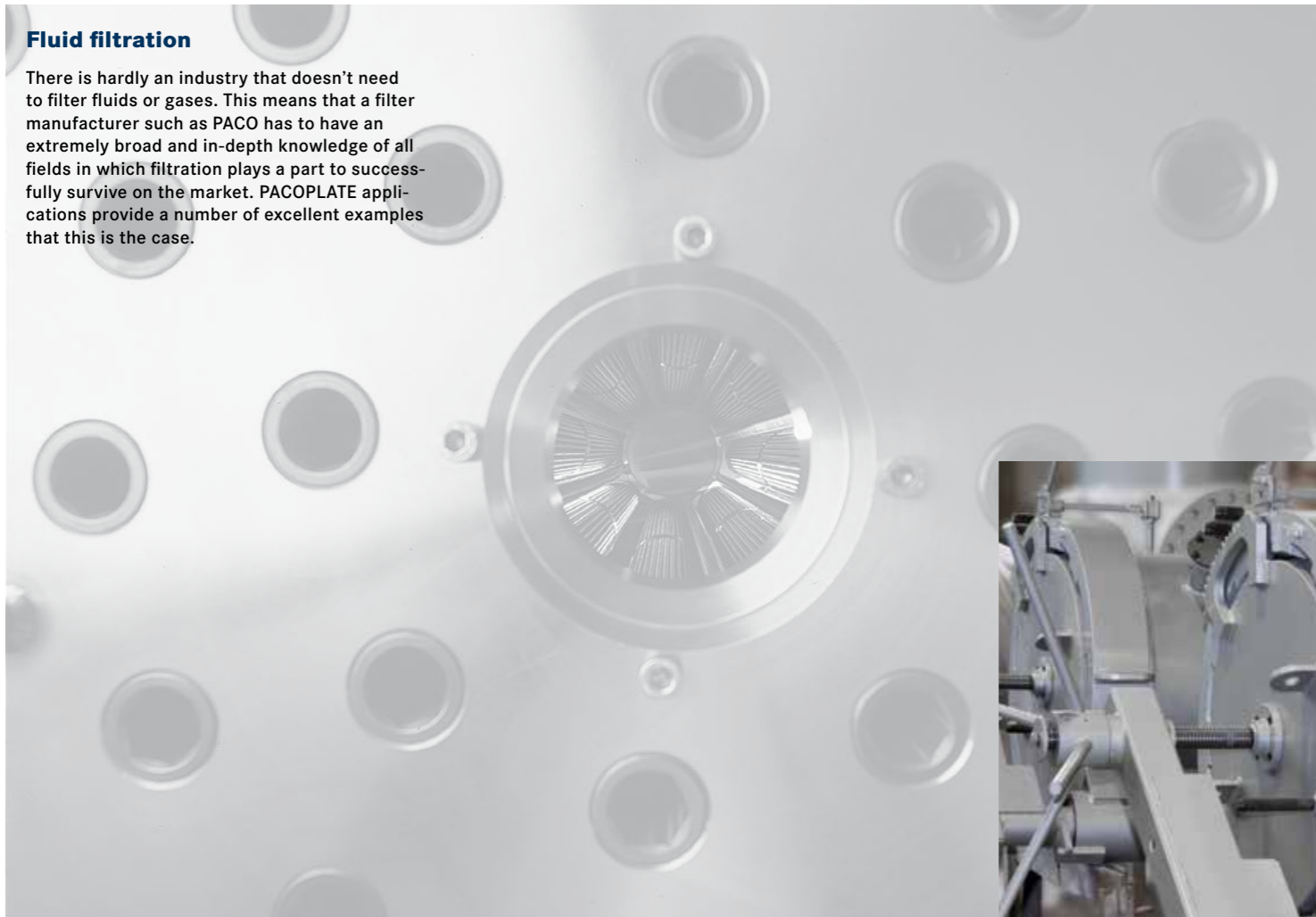


	Characteristics:	Applications:	Products:
<p><b>Short Profile PACOPLATE 2-Layer</b></p>	Two-layer construction. For use with low and medium pressure loads. Extremely low pressure losses. Very good backwash and cleaning characteristics.	Surface filtration, solid-liquid separation, dust collection. Optimally suited for CIP filters in the chemical and pharmaceutical industries.	Screens, ventilation filters, hydraulic filters, backwash filters, automatic backwash systems, cleaning baskets etc.
<p><b>Short Profile PACOPLATE 3-Layer</b></p>	Three-layer construction. Low pressure losses. Very good backwash and cleaning characteristics. High inherent rigidity.	Surface and deep-bed filtration, solid-liquid separation, dust collection, drying. Very well suited for CIP filters in the chemical and pharmaceutical industries.	Screens, ventilation filters, hydraulic filters, backwash filters, nutsch filters, cleaning baskets, filter drums, spray dryers and drying systems etc.
<p><b>Short Profile PACOPLATE 5-Layer and More</b></p>	Tailor-made solutions for a wide range of tasks. Exactly according to requirements, five or more layer designs of the PACOPLATE medium. Optimized flow, backwash and cleaning characteristics on the basis of the physical and process-related requirements.	Surface and deep-bed filtration, solid-liquid separation, dust collection, drying, regeneration.	Screens, ventilation filters, hydraulic filters, backwash filters, nutsch filters, cleaning baskets, filter drums, spray dryers and drying systems, cooling systems, regenerators etc.

**PACOPLATE Applications:**  
**Excellent Examples**

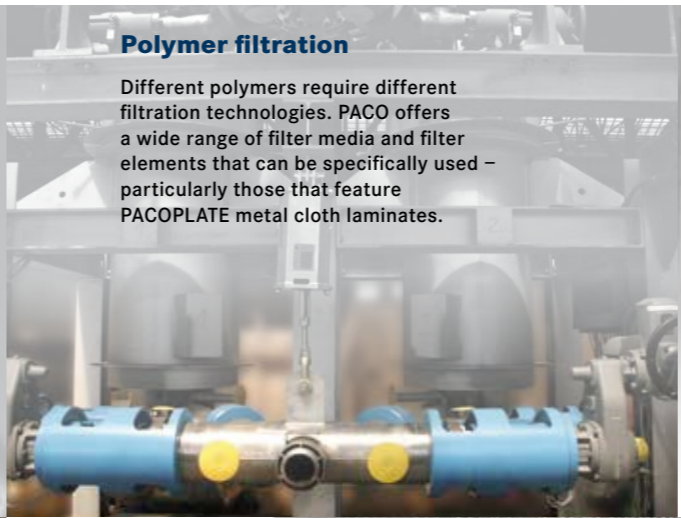
**Fluid filtration**

There is hardly an industry that doesn't need to filter fluids or gases. This means that a filter manufacturer such as PACO has to have an extremely broad and in-depth knowledge of all fields in which filtration plays a part to successfully survive on the market. PACOPLATE applications provide a number of excellent examples that this is the case.



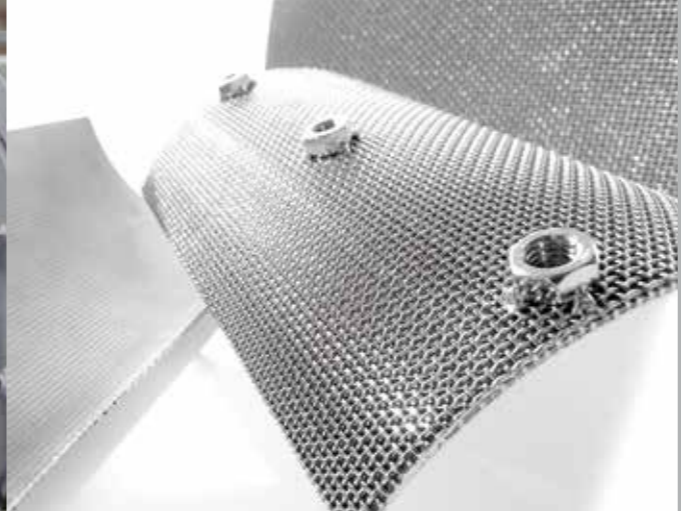
**Polymer filtration**

Different polymers require different filtration technologies. PACO offers a wide range of filter media and filter elements that can be specifically used – particularly those that feature PACOPLATE metal cloth laminates.



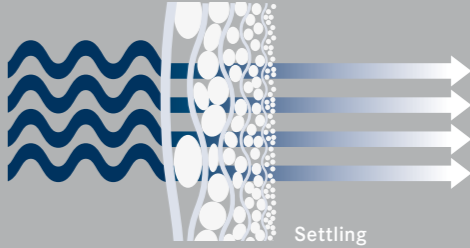
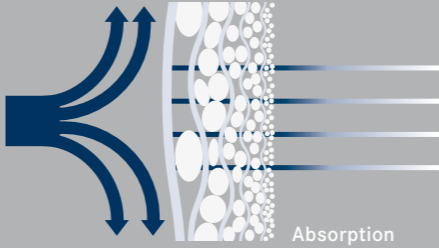
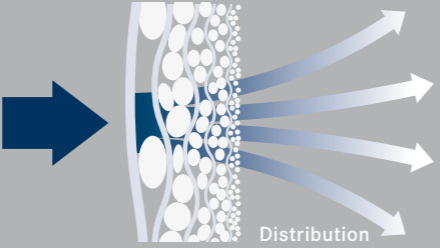
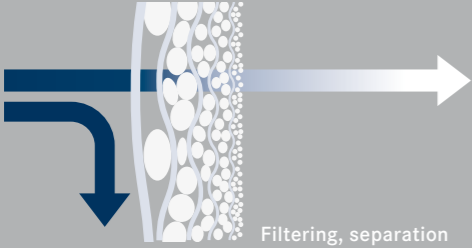
**Process filtration**

The removal of suspended particles from gases plays an important part in environmental and health protection as well as in countless industrial processes or for metrology. PACO and HETA Verfahrenstechnik, the specialist for filtration and separation systems within the PACO group, have extensive experience and expertise in providing suitable solutions based on metal cloth laminates.



**Gas and hot gas filtration**

PACOPLATE metal cloth laminates are the filtering medium of choice for gas filtration, particularly when they are to be used in environments with hot temperatures. The calendaring and multiple sintering process virtually fuses the layers of cloth together without them losing their original structure. The result is a filter medium with an exactly defined open pore metal grid that enables even the smallest particles to be separated from a gaseous medium.



**PACOPLATE Production:**

# Interdisciplinary High-Tech Team

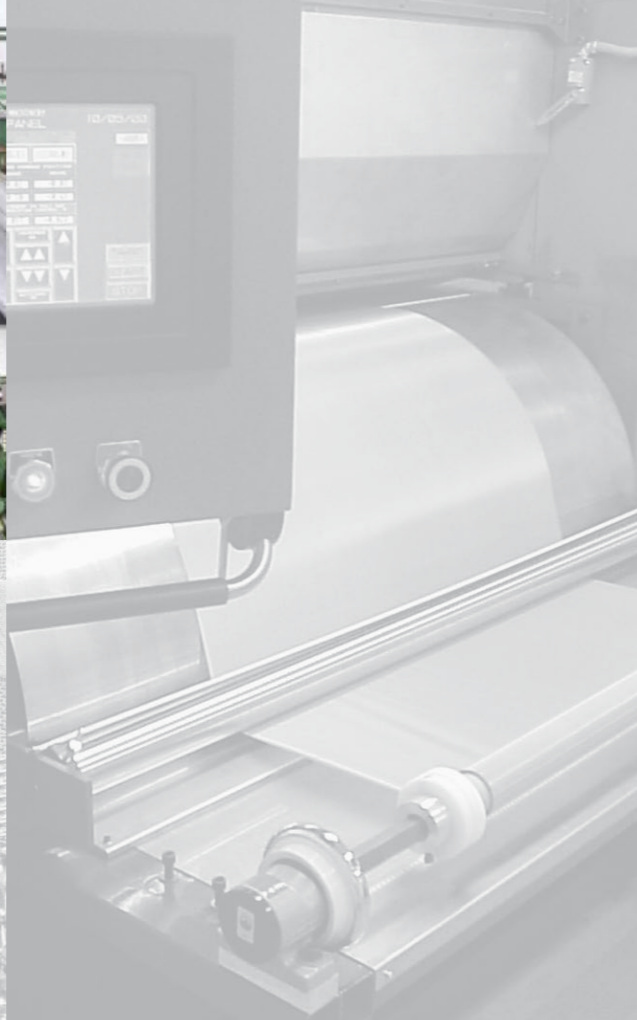
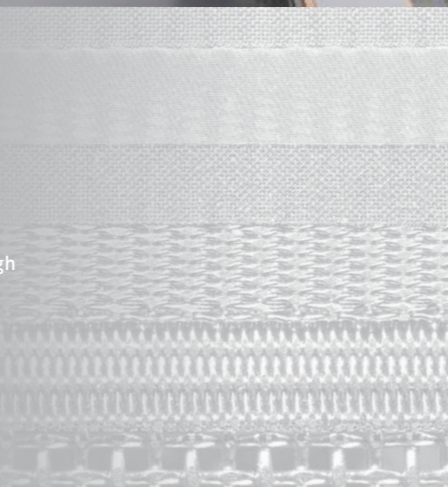
**1 >> Precision metal wire weaving mill**

PACO metal wire weaving mills are among the most efficient in the world. And what they weave is among the highest quality available on the global market. The secret to such success lies with in-house designed and built looms, the choice of the best wire manufacturers and the professional approach of the PACO workforce.



**>> 2 Cloth laminate design**

PACOPLATE is a composite material that is made up of two or more layers. The combination of protective layer, fine cloth, distribution layer, support layers and reinforcement materials is tailored according to the respective screening or filtration task. The correct choice is confirmed through extensive tests, measurements and trial applications.

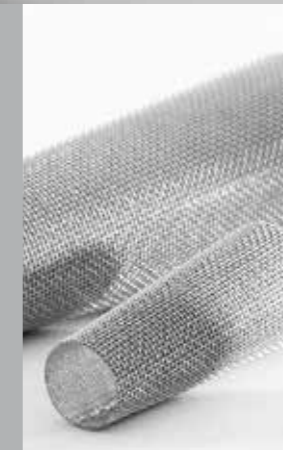


**>> 3 Calendering**

Calendering is the process in which the various layers of the PACOPLATE material are reduced in thickness to provide the porosity that has either been calculated or specified by the customer. Its compression forces are 2 x 200 t! It can reduce original thicknesses in the  $\mu$ -range.

**>> 4 Vacuum sintering**

The sintering of the various PACOPLATE material layers to produce a single composite material occurs in a voluminous vacuum oven at high temperatures. During this process, the particles of the different workpieces are mixed together through diffusion to produce an inseparable bond. And this all the more so as the treatment is frequently repeated in the vacuum oven.



**>> 5 PPACOPLATE finishing and assembly**

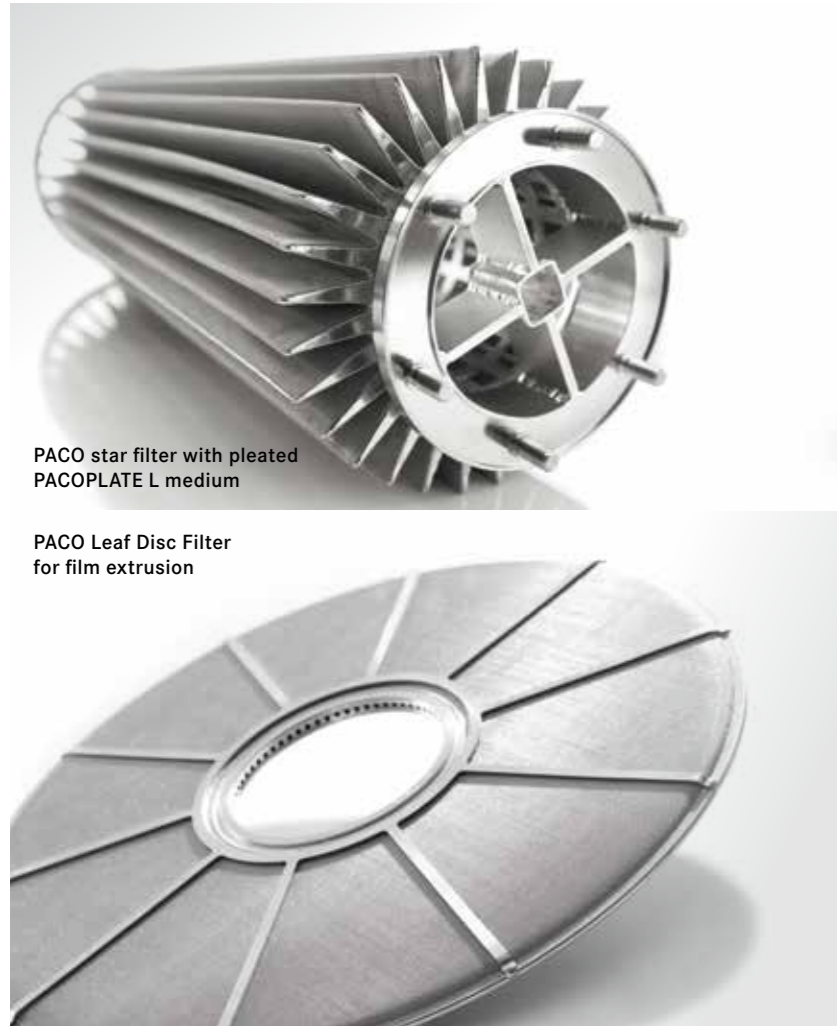
After being completed, the PACOPLATE panels measure 1,200 x 1,200 mm. After this, they can be further processed to produce exactly the required format: squares, rectangles, circles, ovals, asymmetrical shapes – or whatever is required. In addition, PACOPLATE parts can be easily formed, welded or finished and assembled just as required.



**PACOPLATE Product Diversity:**

# Precision for Safety and Productivity

PACO polymer elements with PACOPLATE candle filter sets



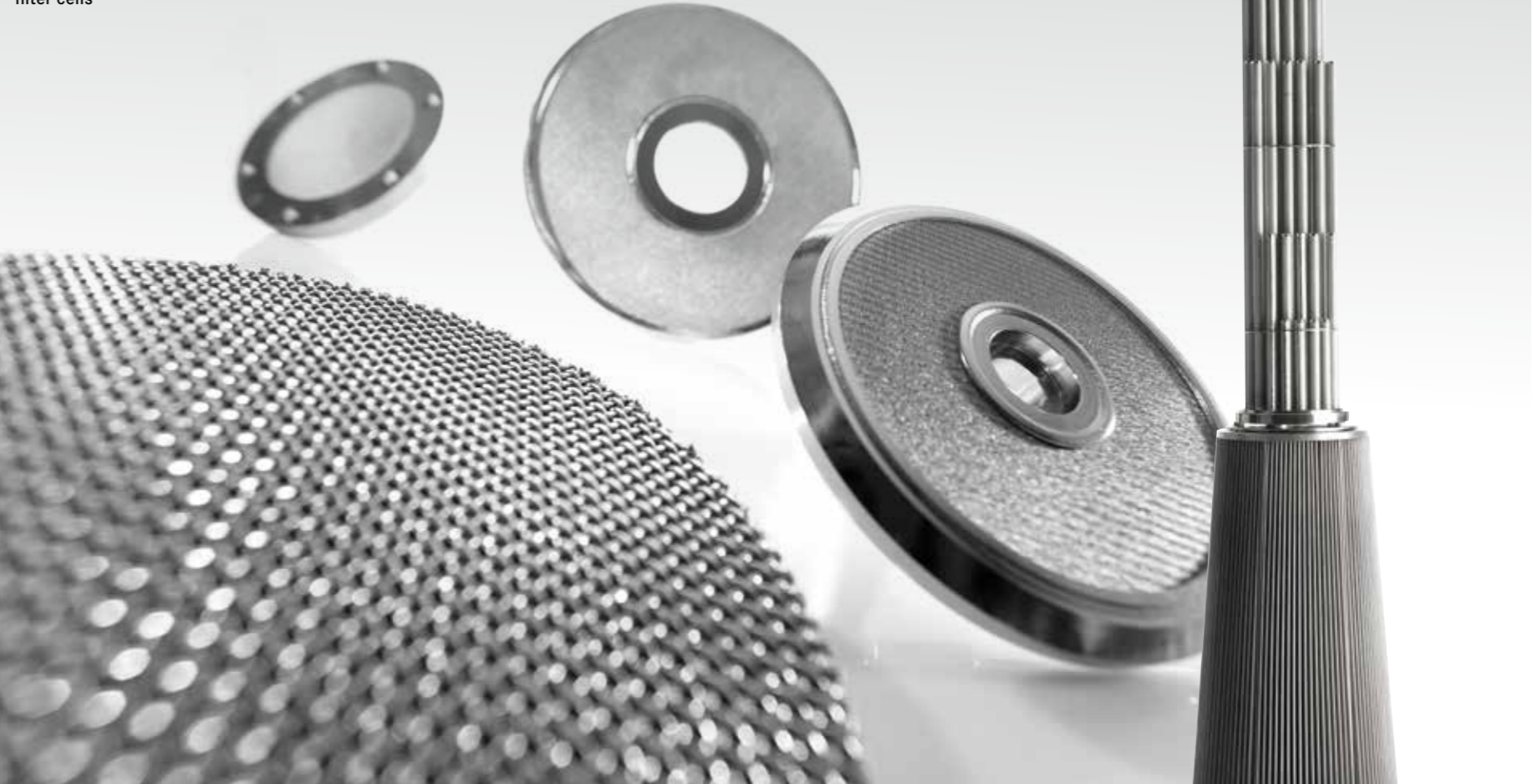
PACO star filter with pleated PACOPLATE L medium

PACO Leaf Disc Filter for film extrusion

PACOPLATE aeration pad



PACOPLATE filter discs, filter plates, filter segments, filter cells



PACOPLATE aeration pad



PACO fluidizing elements

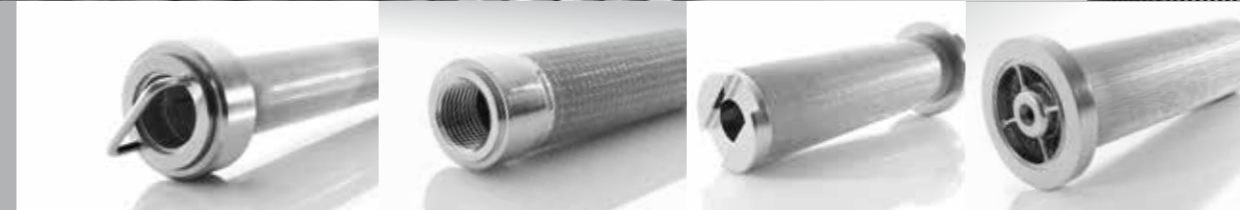


PACO quenching tube for central quenching

The particular strength of PACOPLATE metal cloth laminates is that they retain the filtering and quality attributes that have been attained through calendaring and lamination – regardless of what happens.

The high flexibility of PACOPLATE enables it to be further processed to sieves and filter elements of various geometries: cylindrical, conical, disc shaped, smooth or pleated. Even extreme radii are possible.

Joining techniques such as electron beam laser or WIG welding are optimally suited. This allows PACOPLATE metal cloth laminates to be processed and efficiently used in even the most demanding applications – from the solitary filter cartridge for spacecraft through to complex filter inserts for process gas purification. In between are innumerable applications that demand the usual day-to-day range of specifications respecting precision, safety and productivity.



PACO process filter element

PACO filter element

PACO filter element

PACO metal filter candle tandem filter element

**PACOPATE – Consultation:**

# Mutual Exchange of Expertise

PACO metal wire cloths and PACOPATE metal cloth laminates are the materials 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 expertise 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 expertise 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.

**We look forward to  
talking to you!**

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