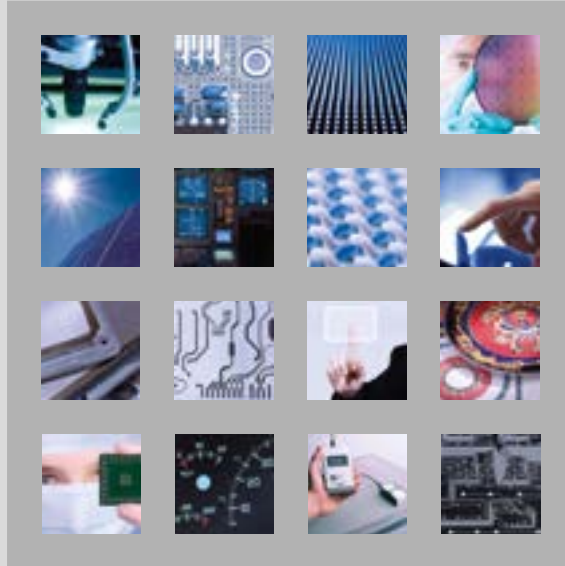


# PACO SMART MESH



Choose the avenue  
to increased revenue.



# PACO SMART MESH

Choose the avenue  
to increased revenue.

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## Screen printing today – the persistent innovator

PACO's own automated looms are constantly driving forward the quality and cost-effectiveness of PACO screen printing cloths.



PACO SMART MESH means:  
Persistently taking  
the innovative capabilities  
of screen printing  
to new levels.

### Screen printing – a PACO speciality

Without screen printing a lot of the things that we take for granted today – from the internet through to solar power – would simply not be possible. PACO has been promoting the innovative potential of screen printing since the company began. Something that we've been doing with the conviction that screen printing always helps established processes be produced with ever improving quality on an increasingly cost effective basis. And that the innovative capabilities of screen printing have to be unreservedly supported and continually taken to new levels.

### Steel wire – the leading material

Screen cloths used for technical screen printing have to reliably retain their dimensional accuracy and precise printing properties throughout their working lifetime. On top of this are a number of other demands on quality that can only be fulfilled by screen cloths made from stainless steel wire. At PACO, precision cloths for screen printing are one of our specialities. PACO is now one of the top three manufacturers of stainless steel screen printing cloths in the world.

### PACO Smart Mesh: gets things going

With screen printing applications in electronics or other high tech fields, the screen printing cloth serves as a motor for innovation that enables new solutions to be developed – such as PACO Smart Mesh. In addition PACO leads the way in optimizing your metal wire cloths for screen printing. With the support of some of the best wire makers coupled with the advances in our own automated loom building operations, PACO is continually expanding the capabilities of screen printing.

#### PACO Smart Mesh world record no.1:

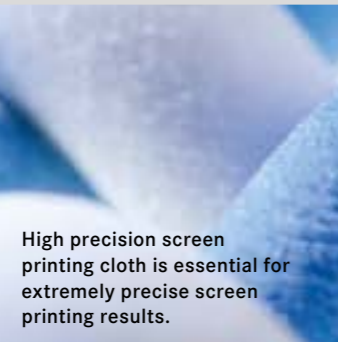
Production of a 500 mesh cloth from 0.019 mm thin stainless steel wire for the finest lines. In its time this was a performance highlight that, for the first time, meant 40.000 meshes per cm<sup>2</sup> with a mesh size of 0.032 mm as well as a controlled cloth thickness of 44-46 microns.

#### PACO Smart Mesh world record no.2:

For a long time the PACO ED 18/45 metal wire cloth with a calendered cloth thickness of 25 microns and a tolerance of +/- 1 micron over a width of 122 cm was the thinnest screen cloth ever to be put into production. This set the standard for further developments – particularly at PACO.

## Three crucial factors for screen printing success: the mesh, the mesh and the mesh

The capability of making screen printing cloths from the thinnest metal wires has to be matched by their constant availability. PACO has both the necessary production capacity as well as the inventory.



High precision screen printing cloth is essential for extremely precise screen printing results.

### Screen printing cloths – as powerful as their material

The early screen printers used silk gauze for their templates.

These days, however, stainless steel cloth is the material of choice for state-of-the-art technical screen printing. From the outset, PACO concentrated on continually developing their expertise in wire and mesh to create and optimize steel wire cloths for high precision screen printing. Throughout the years this know-how has evolved into one of the most extensive and, at the same, sophisticated ranges of screen printing cloths on offer in the world.

### The PACO Smart Mesh family

At one time the PACO repertoire developed in step with the demands of the market. And then came new technological and manufacturing skills that enabled PACO to become real front runners, showing the way forward:

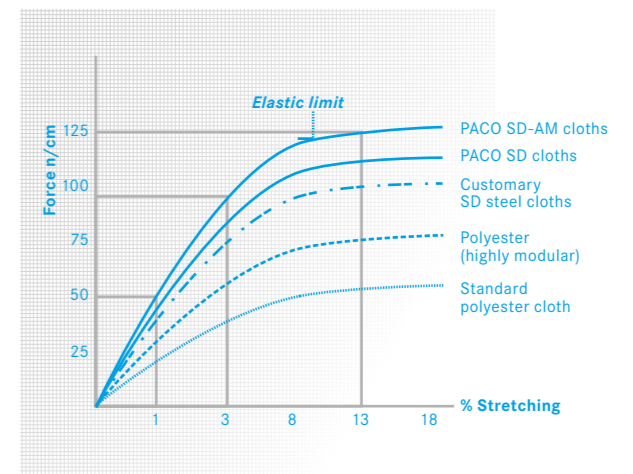
Ever thinner wires with a more and more precise weave and finish.

The results are screen cloths that can be fully put into practice: successful, reliable and economically beneficial.

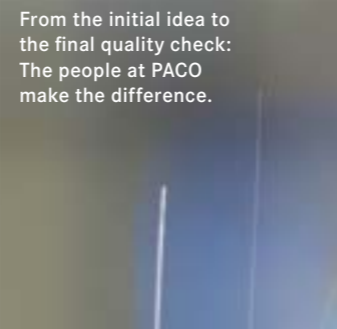
- PACO SD
- PACO ED
- PACO SD-AM
- PACO Solar Mesh

### Next generations on their way

As the applications for technical screen printing keep on growing, there is a constant need for new and better solutions. That is why the screen printing specialists in the PACO R & D team continue working hard to develop new types of cloths and even better cloth specifications. The result is a constant increase in the Smart Mesh family that helps PACO screen cloth users to put new products and projects into practice that are just as competitive as they are profitable.



The smart way  
to meet the needs of you  
and your customers



From the initial idea to the final quality check: The people at PACO make the difference.

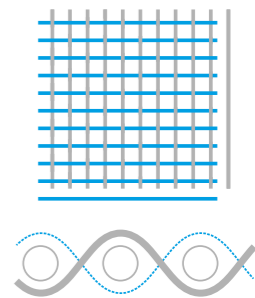
leading edge measuring equipment and highly precise measuring techniques that ensure that PACO screen printing cloths keep to the defined specifications respecting composition and performance to successfully provide the promised PACO Mesholutions.

The screen printing specialists in the PACO R&D and PACO application technology teams keep up to date with the latest developments and trends regarding the use of screen printing in industry and high tech applications.

For our customers and customer's customers etc.

PACO's experience shows that our close relationship with our customers is just as important as their closeness to us, not just as a supplier, but also as a partner for solutions. The effective communication of requirements on one hand and technical possibilities on the other plays a crucial part in finding the best possible solution for a specific job. In this way PACO-Mesholutions not only benefit our customers but also their customers and customer's customers, all the way down through the line to the final consumer.

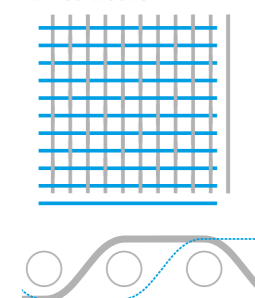
Plain or linen weave



#### Certified quality management

Throughout the supply chain, the common basis for the effective implementation of screen printing products and solutions is assured compliance with quality standards – downstream as well as upstream. That is why PACO has been certified according to the relevant national and international quality management standards for a number years. These include particularly stringent approvals such as certification through the aerospace company EADS in accordance with the Assessment Standard EN 9100.

Twilled weave



#### PACO R&D: from cloth to solution

To begin with, a screen cloth is just a means to an end. But once the job in hand has been thoroughly analysed and exactly defined, it can be specified according to individual requirements. Following this, the cloth has to be expertly mounted in a suitable frame. And finally, the careful preparation of the stainless steel cloth is a crucial part of making the necessary

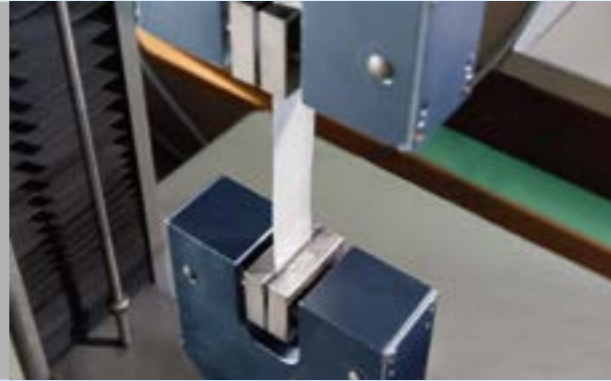
template, whereby factors such as cloth tension, viscosity of the ink or paste as well as squeegee pressure and speed all contribute to optimum screen snap-off characteristics. PACO supports each stage of the development process with advice and advanced application technology.

#### Extensive quality control

As every modern screen printing application is absolutely dependent on the quality of the printing results, the quality of the printing technology itself has to be fully assured. That is why PACO has implemented a total quality management program: 100% control – from incoming goods inspection through to final testing. This is complemented with

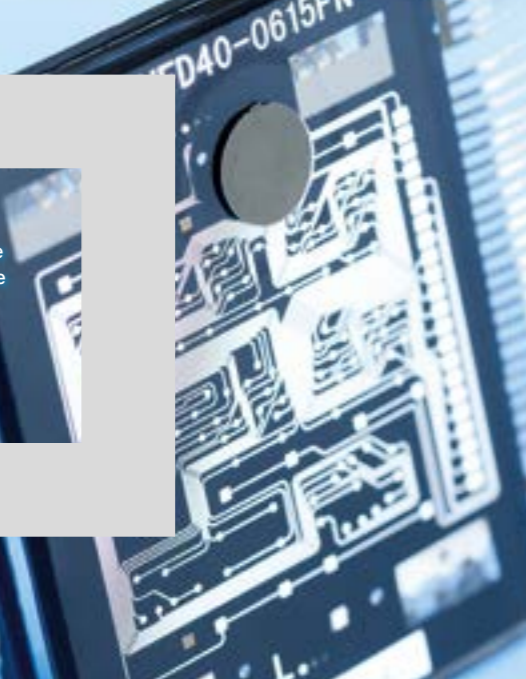
## PACO SMART MESHolutions for

### Electronics & IT



PACO SD and SD-AM cloths provide high screen tensions with extremely low expansion and minimum tension losses.

PACO screen printing cloths – reliably setting the pace for innovative developments.



#### Special case: thickfilm electronics

Thickfilm technology with its high viscosity pastes are a special case in Electronic Printing. PACO offers special cloths that enable a uniform and extremely precise layer thicknesses.

Pastes that can be optimally processed are e.g.:

- dielectric and barrier plate paste for PDP
- photosensitive solder resist inks on organic substrates
- insulation pastes on ceramic substrates
- photosensitive polyamide pastes on semiconductor wafers

Without question, the quantitative and qualitative highest demands on Smart Mesh solutions are made by the manufacturers of electronic products and components. They are continually looking at ways of expanding the capabilities of screen printing technology. New applications continue to be added to the examples listed here:

- Semiconductors
- PCB: printed circuit boards
- FPC: flexible printed conductors
- SMD soldering paste printing
- MLCC: ceramic capacitors
- Resistors
- Chips
- Processors
- RFIDs
- FED: flat screen displays
- LED: light emitting diode displays
- LCD: liquid crystal displays
- PDP: plasma screens

## PACO SMART MESHolutions for

### Foils & Displays



Whether at home or at work – there is hardly an area of life in which you won't encounter a membrane keypad. Their high mechanical stability, resistance to moisture and dust, resilience to chemicals and mechanical wear have meant that membrane keypads have become almost indispensable.

One of the pioneering technologies that enabled this global conquest is technical screen printing with its wide range of possibilities and cost-effectiveness. Whether it has been printing conductive circuits, layers of adhesive or graphic designs, screen printing has fulfilled all of the demands placed on it.

PACO provides dedicated cloths and specifications for this purpose. These cloths have a particularly large screen openness that is particularly suitable for printing with pastes that have a high viscosity or tendency to stickiness and, consequently, enable large ink or paste application layer thicknesses of between a few and a number of hundred microns.

The correct orientation for foils & displays starts with the screen printing cloth.



#### Usual substrates for membrane keyboards:

- Polyester (PET)
- Polyethylen (PE)
- Polycarbonate

#### Inks and pastes:

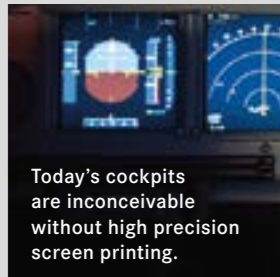
- Silver conductive paste
- Resistor pastes
- Adhesives
- Carbon and insulation inks

#### Typical examples for foil printing:

- TP: touch panels
- Membrane keypads for machines, pushbuttons etc.
- Operating panels for remote controls, consumer electronics, mobile telephones, portable computers, office devices etc.
- Scales
- E-paper: electronic paper

# PACO SMART MESHolutions for

## Cars & Planes



Today's cockpits are inconceivable without high precision screen printing.

# PACO SMART MESHolutions for

## Energy & Environment

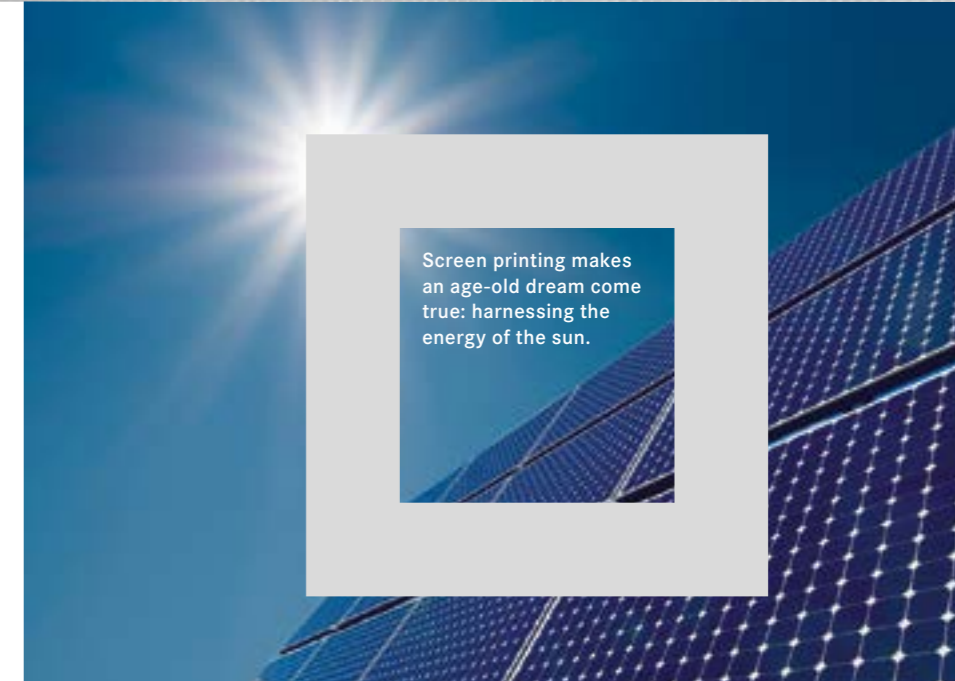
The technology for generating electrical power from solar energy has moved out from Germany across the whole world – to the rest of Europe as well as into Asia. And the stainless steel wire screen printing cloths that PACO has specially developed for the photovoltaic industry have found their way around the globe at the same time. Our sales partners in Europe, China, South Korea, Indonesia and India are all supporting the manufacturers of photovoltaic systems in their area.

**PACO screen printing cloths for solar technology applications are characterised by:**

- High quality wires and high precision mesh
- Uniform, clean surface quality
- Exact thickness control of the screen printing cloth
- Application-specific calendaring for tight thickness tolerances
- Very high tension values and abrasion resistance
- Resistance against mechanical and physical stress
- Reliable reproducibility
- Long lifetimes

**The advantages of the high cloth quality are:**

- High quality metallic coating of the wafer
- Very high printing quality through excellent ink and paste flow as well as
- Controlled application of ink or paste
- Exceptional tensioning characteristics
- Optimum register accuracy
- Very good snap-off behaviour
- Exact printing at maximum printing speeds
- High wafer efficiency



Screen printing makes an age-old dream come true: harnessing the energy of the sun.

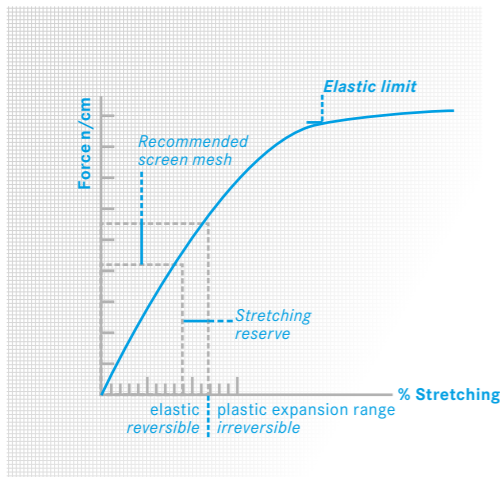
Three screen printing processes are required in the production of solar cells: electro-plating, printing the conductor network on the front, printing the silver solder strips on the rear.



In the motor and aircraft industry, screen printing has established itself as a multi-disciplinary technology. It is used for electrical and electronic components as well as a wide variety of printed membrane keypads, instrument dials or decorative elements. PACO screen printing cloths can be encountered almost anywhere among suppliers for the car, truck and bus manufacturing industry. This coverage is complemented by contributions for aerospace companies.

Typical screen printing applications in the motor and aircraft industry:

- Electronic components for on-board computers, operating and control systems
- Instruments for the dashboard and cockpit
- Control panels
- Operating elements
- Optical guidance systems
- Decoration



# PACO SMART MESHolutions for

## China & Glass



Two screen printing processes are primarily used for the decoration of glass and china objects: direct printing and indirect decal printing. With the latter method, the decoration is printed on coated transfer paper and then, with the application of heat or water, transferred onto the china or glass. A third process works with vinyl stickers.

As full of tradition as the printing of glassware and china plates may be, modern ceramic and glass printing places extremely high demands on the required accuracy, precision and cost-effectiveness.

PACO has been closely following developments in ceramic and glass printing since the company was founded, themselves always making sure that progress remained ongoing. The results obtained with PACO screen printing cloths for ceramic and glass printing are among the best in the world, with maximum register accuracy, high resolution and exact application of the ink or paste.

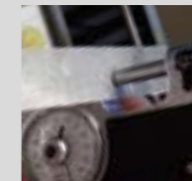
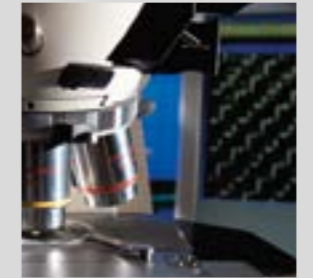
The basis for superior printing results are the special properties of PACO screen printing cloths:

- High quality wires and high precision mesh
- Strong weave binding
- Uniformity of the weave (no streaking)
- Large open screen area
- High elasticity limit
- Excellent snap-off characteristics
- Exact register accuracy
- Long lifetimes

The particular cost-effectiveness of PACO screen printing cloths is ensured through long lifetimes, easy to process printing frames and templates as well as the economical use of printing pastes, particularly when these contain valuable gold.

# PACO SMART MESH

## More freedom for your ideas!



The wide range of types and specifications of PACO Smart Mesh-cloths provide the optimum basis for reviewing "proven" methods as well as developing new and innovative solutions – PACO Mesholutions.

PACO cloths make their mark on your current applications by contributing to the qualitative optimization of results, providing increased lifetimes and, above all, improved cost efficiency.

In other words, they take you down the avenue to increased revenue!

If you have new wishes or suggestions for innovative screen printing solutions, things definitely look promising for you with PACO Smart Mesh. Our screen printing specialists like accepting a challenge to put your ideas for a suitable PACO Mesholution into practice. This is then developed to perfection together with your system specialists. To ensure success, our technical team develop and test the solutions under exact production conditions in your plant.

PACO know-how covers the whole world of technical screen printing just as much as it does all global markets. In what ever way and wherever you are looking for optimization or innovation for your screen printing applications: PACO know-how transfer is never far away. Use the close proximity to your PACO representative or the possibilities of keeping in touch with PACO online.

[www.paco-online.com](http://www.paco-online.com)

New solutions need experience just as much as creativity. PACO Mesholutions give us the best examples of this.





Quality is good. Quality control is better. Only the best possible results count at PACO.



Steinau production plant I



Steinau production plant II



Herolz



HETA, Lich

PACO has a total area of 37.900 m<sup>2</sup> for manufacturing and storage at its four production plants in Germany.

## Quality first

PACO is one of the world's leading addresses when it comes to metal wire cloths and, in particular, screen printing cloths made of stainless steel wire – this applies equally as much to the quality as the quantity.

In our main factory in *Steinau an der Straße* in the heart of Germany as well as in our other production plants we use automated looms designed and built by our own mechanical engineering group to produce 1.2 million metres of metal wire cloth per year. The high production capacity is matched by our extensive inventory capabilities. The advantages for our customers are ease of supply, short delivery times and fast solutions.

## The right frame

The high screen tensions required for screen printing place huge demands on the screen frames. Apart from the right choice of material – usually aluminium – it is extremely important to choose the most suitable profile. The frame size also has to be closely matched to the printing job. The perfect interaction between screen cloth and frame is absolutely essential to obtaining optimum printing quality, productivity and cost-effectiveness.

## Screening and template production

Another PACO service is the screening of screen printing frames. As nobody knows our metal wire cloths better than we do, we use the most suitable screening techniques – including the required measuring technology.

The screened PACO screen printing frames are then prepared in the best possible way for the production of the screen printing templates. The metal wire cloths are thoroughly cleaned and degreased to provide the correct adhesion properties for the various films and emulsions that are used.

## In-house machine building

An important guarantor for the quality of PACO screen printing cloths is the mechanical engineering group at PACO that designs and builds our own automated looms. The weaving of metal wires, that are sometimes thinner than a human hair and sometimes a number of hundred microns thick, places particular demands on the weaving equipment. By developing and building our machines in-house and continually optimizing the production techniques that we use we provide the means of constantly improving cloth quality.

## PACO core skills

Screen printing is one of the core skills at PACO. Others are the production of metal wire cloths in general, filter cloths including laminates made of metal wire cloths and fleeces, filter manufacturing as well as screening cloths and sieve making.

**PACO  
SMART  
MESH**

Our support and service:  
yours for the taking!

Our 48 tonne  
calendering machine can  
reduce a 45 micron metal  
wire cloth to half a hairs  
width: 25 microns.



**PACO  
SMART  
MESH**

Global  
communications

#### Come and join us!

Whoever has worked with PACO at any time knows that our advice and support is never very far away. We like to make the wishes and challenges of our customers our own. As this is an integral part of our way of thinking and working, it is extremely likely that we will always find a practical and beneficial solution to your production needs.

#### Know-how exchange and consultation

As PACO is in some way at home in almost every industry, our engineers, technicians, application consultants and R&D team have gained extensive process knowledge – particularly in industries that employ screen printing. Tell us what you need and the solution that you

have thought of and we provide our know-how and potential for creating solutions – from the optimum choice of specifications through to on-site technical support.

#### Metal cloth finishing and packaging

We prepare and ship our metal wire cloths to our customers just as they need them:

- Special cleaning / coating for specific applications
- Calendering according to specifications
- Cutting to size as required – Kind to the material, exact to size, as batch or one-off

#### Sales and partner network – online

PACO are represented wherever PACO products and services are demanded. Our worldwide sales and service networks means that you are never very far from the best possible PACO Mesholutions.

#### Find your local PACO partner:

[www.paco-online.com](http://www.paco-online.com)

#### All contact addresses – direct

You can also reach the PACO headquarters and our specialists directly:

**E-Mail:** [info@paco-online.com](mailto:info@paco-online.com)

**Internet:** [www.paco-online.com](http://www.paco-online.com)

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