

**BOPP**  
**HYDROGEN**



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**«THE ART OF SWISS PRECISION»**



## BOPP – World Leaders in High-Tech Meshes



Head Office in Zurich

G BOPP + Co AG, based in Switzerland, is one of the world's leading producers of precision woven steel mesh used in the most diverse applications. Established in 1881, we have developed from manufacturers of coarser meshes to producers of high tech fine meshes, some with wire diameters of less than 0.015mm, around a quarter of the diameter of a human hair.

Close cooperation with countless customers in diverse fields including filtration, sieving, chemical industries and design means that we can offer a valuable and comprehensive range of experience in every sphere. This knowledge and experience, based on practical applications, trials and improvements, has resulted in convincing solutions for many different projects and has had a lasting effect on many processes.

As manufacturers of precision woven mesh, BOPP offers a comprehensive portfolio of products for businesses operating across the entire hydrogen circuit, covering generation of renewables, electrolysis, transport and storage through to fuel cells.

Today, we offer more than a decade of experience and knowledge in the most diverse sectors around the theme of hydrogen, and are established providers of comprehensive solutions. We now deliver many finished products manufactured to individual customer requirements, integrated directly into the manufacturing process, rather than simple rolls of material.

Our engineering department is always pleased to advise on the right choice of material together with component design, using prototypes to carry out detailed analyses to optimise the end product. Where required, we can also provide you with external expertise and certifications.

**We primarily weave and produce using the following materials. Other options are available on request.**

- Stainless steel DIN 1.4301 and 1.4401
- Stainless steel DIN 1.4306 and 1.4404
- Hastelloy
- Nickel
- Aluminium
- Titanium
- Avesta
- Copper
- Bronze



## BOPP – Additional Services

As well as enjoying an international reputation for the highest quality mesh products, BOPP also specialises in further processing its materials. Mesh is fabricated into finished

components to individual customer specifications, which can then be integrated directly into your own manufacturing processes.

### Coatings

**Our coatings are designed to enhance performance whilst protecting against other external influences.**

- Hydrophobic and oleophobic with HC8
  - Angle of contact up to 145°
  - Temperature resistance up to 200° C

### Thermal Treatments

**Using the processes listed below, mechanical material characteristics such as hardness, elasticity and formability can be optimised for further processing.**

- Optimised processability
- Variable degrees of hardness and formability
- No loose wires
- Stress relieved annealing

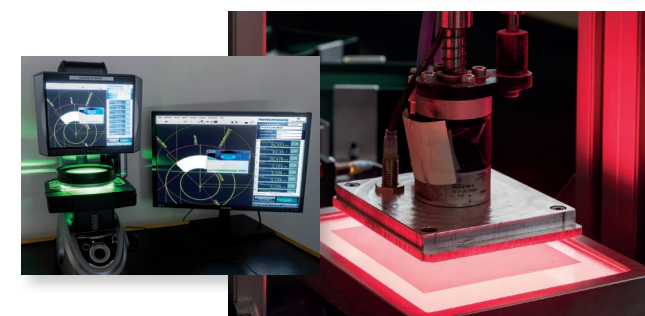
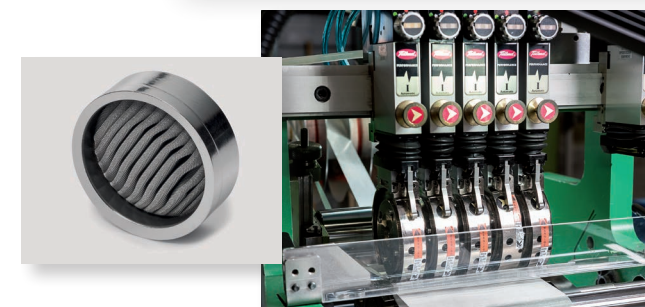
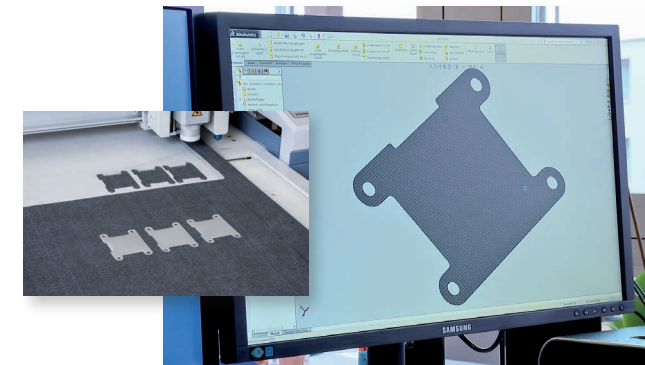
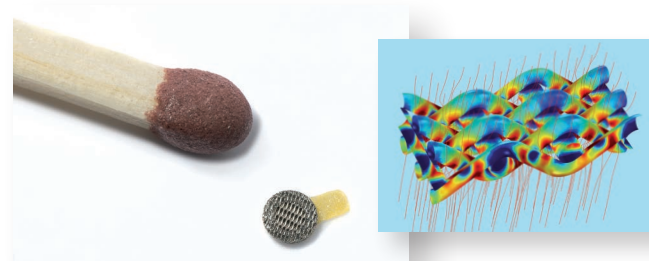
### Calendering

- Strips or entire rolls
- Surface structure properties
- Customer-specific realization

### Partnerships

**We can carry out further processing in partnership with various reputable converters worldwide known for work including:**

- Insert molding
- Pressure sensitive adhesive strips
- Component assembly
- ...and many others



### Engineering

**We are happy to provide assistance with selecting the right mesh specification in terms of material properties, geometric form and component design using:**

- Demand analyses
- Materials recommendations
- Design suggestions
- Technical drawings
- Cost calculations
- Production engineering

### Fabrication

- Precision cutting & die cutting
  - Perfectly cut edges and angles
- Forming, bending, drawing and edge binding
- Welding, soldering, bonding
- Prototypes, one-offs
- Efficient volume production
- Process orientated packaging
- Pleating

### Quality Control and Measurement

- Customer-specific quality checks
- Production of measurement protocols
- Certification, records



BOPP – Products

BOPP manufactures a comprehensive range of fine wire meshes incorporating specific properties for the most diverse applications. For more challenging filtration applications, we sinter multiple layers of mesh using heat and pressure to provide multilayer filter laminates.

Our precision woven steel meshes are supplied in roll form or as fabricated products manufactured to individual customer specifications.

Twilled dutch weave

Specialist meshes for filtration with five pore levels



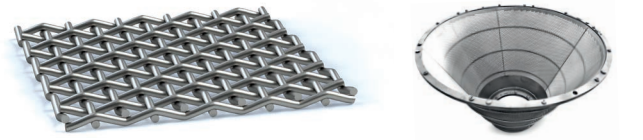
Betamesh-PLUS

The premier choice for traditional filtration applications



Square Weave Mesh

First class flow rates with minimal pressure loss



Robusta

Our solution for challenging mechanical demands



Duplex

Good flow rates and enhanced wear resistance



Plain Dutch Weave

Our balanced all rounder for diverse applications



Absolta

An extremely porous filter laminate developed for high flow capacities



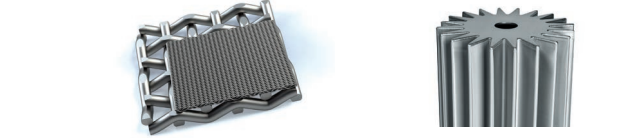
Poremet

A five layer filter medium with exceptional filter fineness



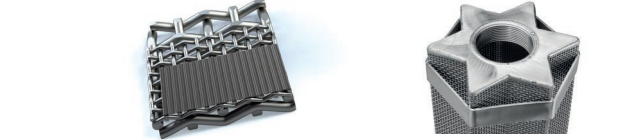
Topmesh 2

Increased stability due to a combination with a support layer



Topmesh 3

Three mesh layers for harsh industrial applications



Poreflo

Exceptional performance for fluidisation applications



The key to performance filtration: choosing the right mesh

We divide our meshes into single layer and multi-layer materials. Each individual product has its own unique strengths.

|                            |                     | Separation effect | Low pressure loss | High flow rates | Backwashability | Stability | Loadbearing | Porosity | Spot welding | Roll seam welding | TIG plasma welding | Resistance welding | Annealing | Stamping | Cutting | Bend radius | Pleating |
|----------------------------|---------------------|-------------------|-------------------|-----------------|-----------------|-----------|-------------|----------|--------------|-------------------|--------------------|--------------------|-----------|----------|---------|-------------|----------|
| Single layer filter meshes | Twilled Dutch weave | ++                | ○                 | ○               | +               | +         | -           | -        | ++           | ++                | ○                  |                    | ++        | ++       | ++      | ++          | ++       |
|                            | Plain Dutch weave   | ++                | +                 | ++              | ++              | ++        | -           | ○        | ++           | ++                | -                  |                    | ++        | ++       | +       | ++          | ++       |
|                            | Betamesh-PLUS       | +++               | +++               | +++             | +++             | ○         | -           | ++       | ++           | ++                | -                  |                    | ++        | ++       | ++      | ++          | ++       |
|                            | Betamesh R          | +                 | ++                | +++             | +++             | ○         | ○           | ++       | ++           | ++                | -                  |                    | ++        | ++       | ++      | +           | ○        |
|                            | Robusta             | +                 | +                 | ++              | ++              | ++        | ○           | ○        | ++           | ++                | -                  |                    | ++        | ++       | +       | +           | ○        |
|                            | Duplex              | ++                | +                 | +               | ++              | ++        | ○           | ○        | ++           | ++                | -                  |                    | ++        | ++       | ++      | ++          | +        |
|                            | Square weave mesh   | ○                 | ++++              | ++++            | ++++            | -         | -           | ++       | ++           | ++                | -                  |                    | ++        | ++       | ++      | ++++        | +++      |
| Multi-layer laminates      | Poremet             | ++                | -                 | -               | ○               | ++++      | ++++        | -        | ++           |                   | ++                 | ++                 |           |          | ○       | ○           | -        |
|                            | Absolta             | ++                | ○                 | ○               | +               | +++       | +++         | ○        | ++           |                   | +                  | -                  |           |          | ○       | -           | -        |
|                            | Topmesh 2           | ++                | +                 | +               | ++              | ++        | +           | +        | ++           |                   | ○                  | ++                 |           |          | ○       | +           | ++       |
|                            | Topmesh 3           | ++                | +                 | +               | ++              | ++        | ++          | +        | ++           |                   | +                  | -                  |           |          | ○       | ○           | +        |
|                            | Poreflo             | ++                | -                 | -               | -               | +++       | +++         | -        | ++           |                   | ++                 | ++                 |           |          | ○       | +           | -        |



# Seven good reasons to choose BOPP

The power to innovate at BOPP is based on decades of experience. Alongside exceptional product characteristics in the most diverse sectors, we also excel in terms of fundamental attributes and qualities.

1

**Quality**  
We always maintain strict compliance with industry specific weaving standards. What's more, we have created our own in-house standards alongside each of these, which demand far more than the officially accepted values in terms of challenges and tolerances.

2

**Experience**  
Thanks to in-house research and development and valuable feedback from our customers in diverse industrial sectors, we have acquired an enormous wealth of experience, which is used in consultancy as well as product development.

3

**Cost Efficiency**  
We continue to find new ways to increase our production efficiencies with a simultaneous increase in quality standards.

4

**Reproducibility**  
We maintain a process orientated approach to ensure optimum reproducibility.

5

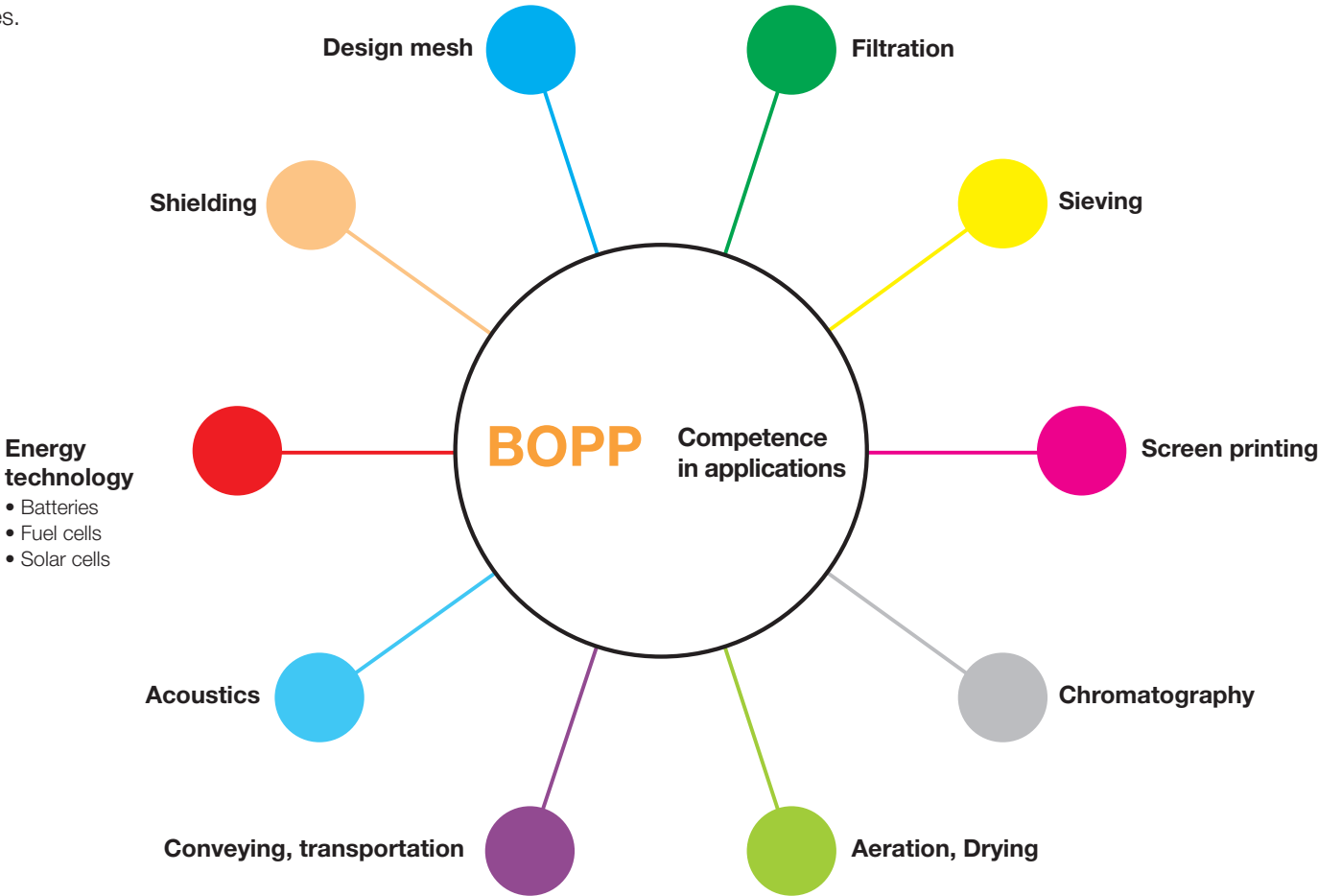
**In-house Wire Drawing**  
We are the only fine wire weavers to operate our own fine wire drawing plant. This means we can ensure reliable delivery schedules and maintain quality procedures totally independent of third party input.

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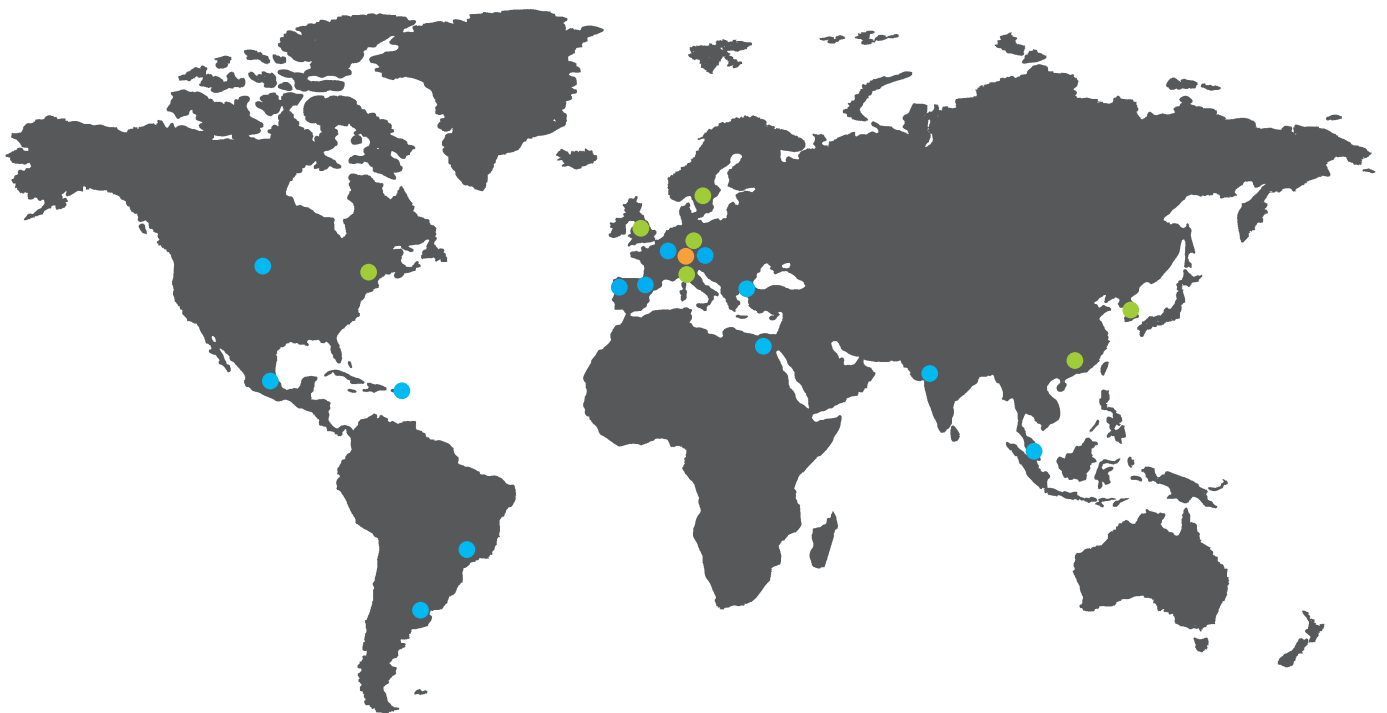
**Security**  
We manufacture in a trade-friendly and commercially stable environment, and are therefore able to guarantee above average levels of product availability, supported by extensive stockholding. In addition, the BOPP Group operates three separate production facilities, providing higher levels of process security in the supply chain.

7

**Protecting the Environment**  
Our manufacturing plant complies with modern standards in terms of energy use and environmental sustainability. We are active participants in programmes to improve energy efficiency, and a member of Cleantech organisations.



## The BOPP Group



- Headquarter
- Subsidiaries
- Representatives/Agents

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