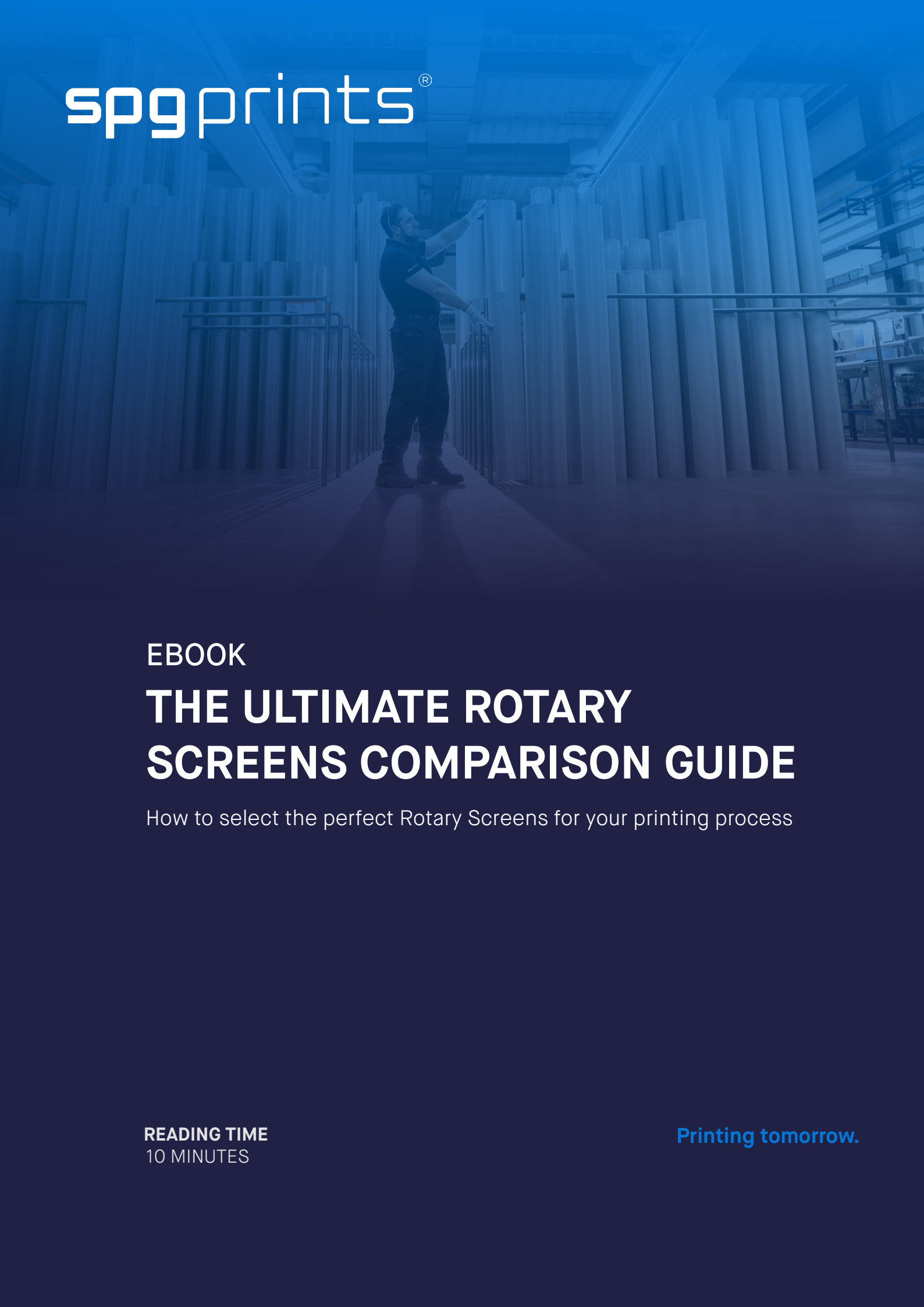




spgprints®

EBOOK

THE ULTIMATE ROTARY SCREENS COMPARISON GUIDE

How to select the perfect Rotary Screens for your printing process

READING TIME
10 MINUTES

Printing tomorrow.

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INTRODUCTION

In Rotary Screen Printing, the screens you use can truly make the difference. For example:

1. The screens mesh can make a huge impact on the definition you can print.
2. The open area, and therefore the amount of paste you apply, impacts the micro equality a lot.
3. Several designs and fabrics create a moire effect, which can be avoided using the right screen.
4. The stability of the screens impacts how long your screen can run.

These are just examples of how the perfect screen can impact your printing process and designs. But how do you find that perfect match?

With a rotary screen that perfectly fits your printing process and designs, the quality your customers are looking for is within reach. To meet these and other requests from you and your customers, you can select several screens, each with its own advantages and applications.

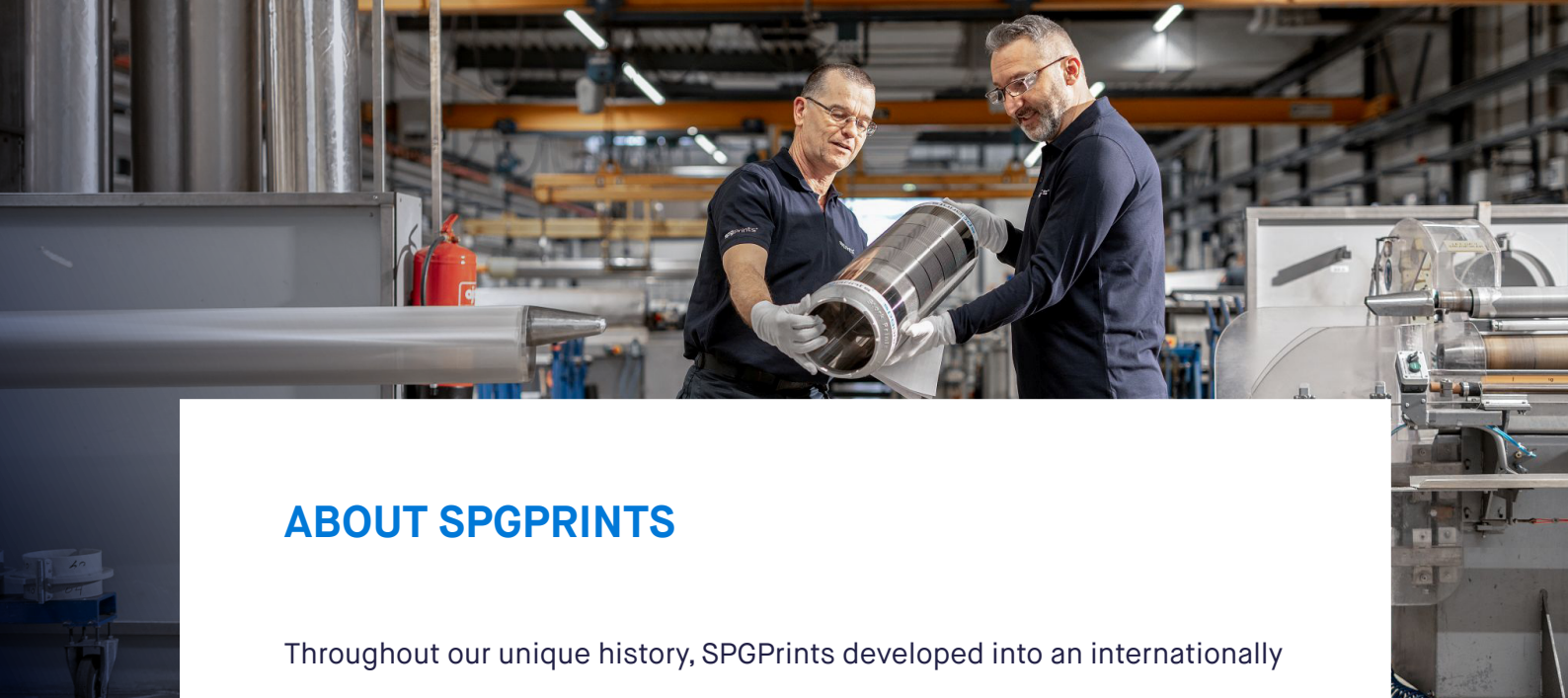
Do you need more stability in your printing process?

Thicker screens provide you with that stability. Is the highest definition possible essential for your designs? In that case, you need rotary screens that reach more dots per inch.

To help you in the process of rotary screen selection, we've created this Comparison Guide. It is separated into various designs: Flat tones, Geometric designs, Halftones and special designs, like challenging camouflage designs or printing on fleece.

Is your question about rotary screens not answered in these chapters?

Please reach out to us [here](#) - we'd love to help you!



ABOUT SPGPRINTS

Throughout our unique history, SPGPrints developed into an internationally acknowledged authority in textile printing, dedicated to bringing color to the world. In recent years, our unique rotary screen printing concept allowed us to move beyond textile printing and offer solutions for labels, banknotes, COVID-19 testing strips, and more. And while still a distinct leader in rotary printing, we have also become a pioneer and a key player in the market for digital printing. In 1991 we were the first in the industry to launch a digital textile printer. Not much later, we started producing ink for all leading digital technologies.

Over the years, we have been awarded over 300 patents, and we have built an international network in more than 100 countries. These days our focus on innovation is as strong as ever, with taking care of our planet as a constant priority. We take pride in putting our customers first, letting their ambitions inspire us, and deploying our expertise, resources and network to help them to achieve their goals. Our solutions are designed to empower customers worldwide in all stages of the printing process; from pre-press to printing, from textile to industrial – and beyond. That is the global impact of a global player.

CHAPTER 1: PRINTING HALFTONES

THE CHALLENGES THE CHALLENGES OF PRINTING HALFTONES

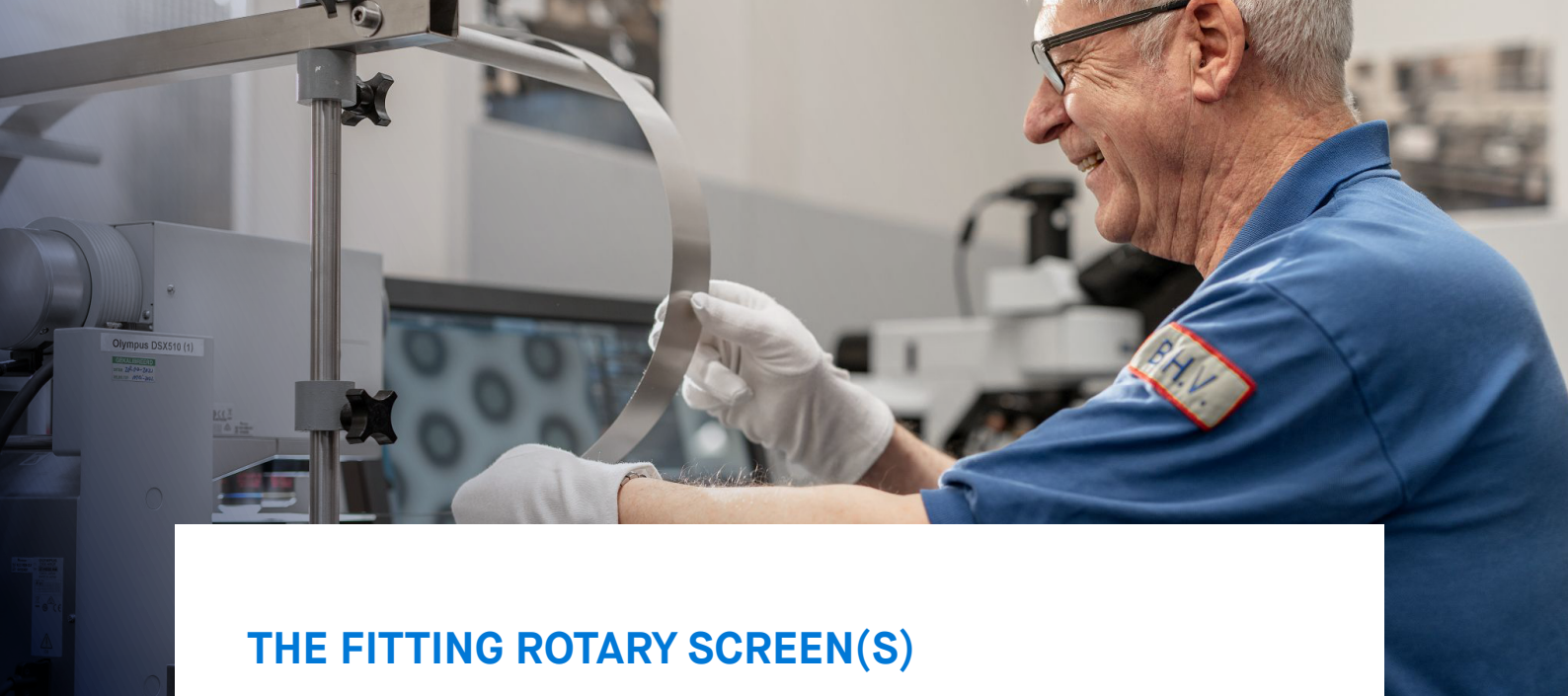
Halftones are inseparably linked to eye-catching designs for fashion or home decor. However, they come with three well-known challenges.

The first one is indisputably the moiré effect, which is caused by interfering patterns in lines and dots. Secondly, insufficient resolution can cause many problems, as fluent gradients of colors can get disturbed with visible dots and dithering effects. The third challenge relates to the engraving process of rotary screen printing. For the desired outcome, the engraving curve has to perfectly match the perceived tones of colors with the tone values the designer intended.

The right screens can counter these halftone printing challenges and delight your customers even more. But how do you select the right screen for this job? In other words: How do you take the lead in halftone printing?

In short, the perfect rotary screen for halftone designs:

- ✓ Has the optimal resolution for the job at hand
- ✓ Has the right engraving curve for the desired colors
- ✓ Has a grid that does not interfere with the design or substrate, to avoid moiré effect



THE FITTING ROTARY SCREEN(S)

With the Nova165 screens, you take the extra step to rise above average. The Nova screens take the openness of the screen to a new level by using the smallest possible conical dam shape. The Nova165 guarantees to improve your halftone printing by providing an easy upgrade. You don't have to change your printing process, but the Nova165's higher mesh count and the innovative Nova-shape lead to significant improvements.

For even more fluent and crisp gradients in your halftones, the Nova195HD screens provide an extra upgrade. This screen achieves outstanding quality in halftone printing by offering the highest possible resolution. The Nova screens' unique dam shape allows for a higher resolution due to the ability to provide more holes per inch, making half-tone printing as precise as can be.

Combining the optimal screen with the correct engraving technology ensures you get the most out of your halftone designs.

Technical Comparison - Rotary Screens for Halftone Designs



Figure 4. Examples of Halftone Designs (Left = Penta 125, Right = Nova 195ED)

Technical specifications

	Penta125	Nova165ED	Nova195ED
Packaging unit	10 or 20 pcs	10pcs	10pcs
Repeat	640mm - 1018mm	640mm - 1018mm	640mm - 1018mm
Mesh	125	165	195
Thickness	100 µm	115 µm	115 µm
Open Area	15%	19%	19%

CHAPTER 2: PRINTING GEOMETRIC DESIGNS

THE CHALLENGES OF PRINTING GEOMETRIC DESIGNS

Geometrical designs need to be sharp and straight around the edges, especially with curved shapes and circles. This makes it exceptionally challenging to meet customers' expectations and match the artwork of the designs. *Success is in the details.*

Great designs can look poor in print due to a couple of reasons. Lack of resolution and inconsistent application of printing paste can be causes, as well as the inability to match the right screen with the features of the fabric.

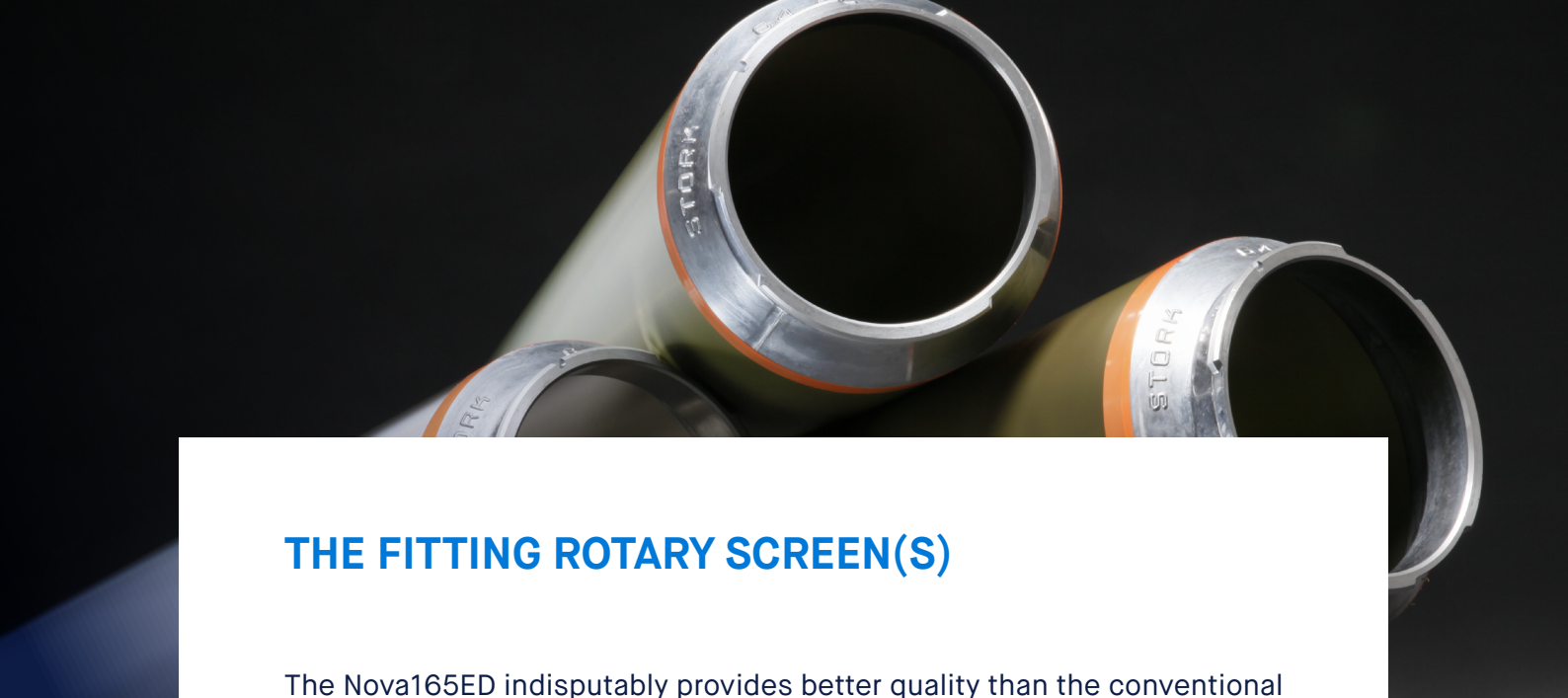
Fine lines and shapes require more accuracy. Especially for designs with a raster or striped patterns, the moiré effect is likely to occur. This effect happens when two linear patterns interfere with each other and create an optical illusion, shown below. Many factors influence the printed quality of geometrical designs. Upgrading your rotary screens can improve your printed quality and customer satisfaction.



Figure 2. Micro design printed with a conventional high mesh screen, showing moiré

In short, the perfect rotary screen for geometric designs:

- ✓ Has to apply printing paste consistently and precisely
- ✓ Should counter moiré effects
- ✓ Has the right definition (mesh) - the more holes, the finer the print

The image shows three rotary screens, which are cylindrical metal frames used in screen printing. They are arranged diagonally across the top of the page. Each screen has a silver-colored metal rim and a greenish-yellow body. The word 'STORK' is printed in silver on the rim of each screen. The background is dark and out of focus.

THE FITTING ROTARY SCREEN(S)

The Nova165ED indisputably provides better quality than the conventional Penta screens regarding geometric designs. Nova screens have the smallest possible conical dam shape, taking the screen openness to a whole new level. This higher open area ensures less printing pressure is required, and an even transfer of the printing paste to the fabric is possible.

To take geometric artwork a step further, the state-of-the-art Orta195ED is the screen of choice. This rotary screen features a three-dimensional structure on the printing side, enabling the paste of adjacent holes to flow together and easily cover the textile substrate. The square-shaped hole geometry offers more possibilities to arrange the raster angle. This effectively counters undesired moiré effects.

Printing lines and geometric designs with the Penta125, becomes harder when the lines get finer. This ultimately results in lines which are faded and interrupted. With the Orta195, the prints can get much finer without interruptions or moire effects, enable designers to make designs that can go into very high detail.

Technical Comparison - Rotary Screens for printing Geometric Designs

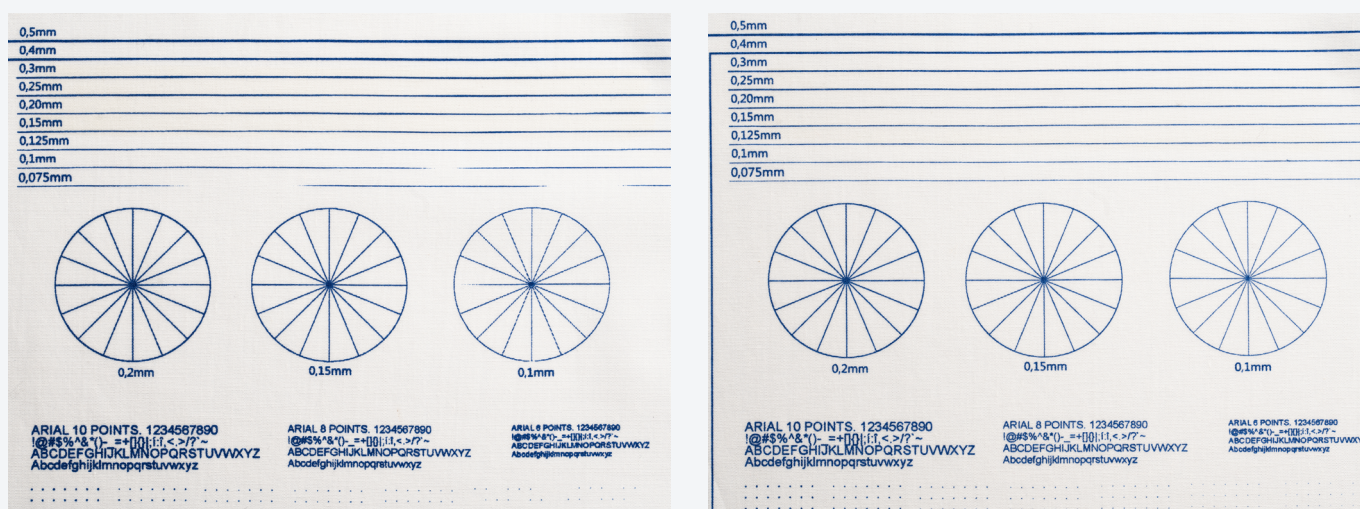


Figure 3. Examples of Geometric Designs (Left = Penta 125, Right = Orta 195)

Technical specifications

	Penta125	Nova165ED	Orta195
Packaging unit	10 or 20 pcs	10pcs	10pcs
Repeat	640mm - 1018mm	640mm - 1018mm	640mm
Mesh	125	165	135
Thickness	100 µm	115 µm	115 µm
Open Area	15%	19%	16%

CHAPTER 3: PRINTING FLAT TONE DESIGNS AND BLOTCHES

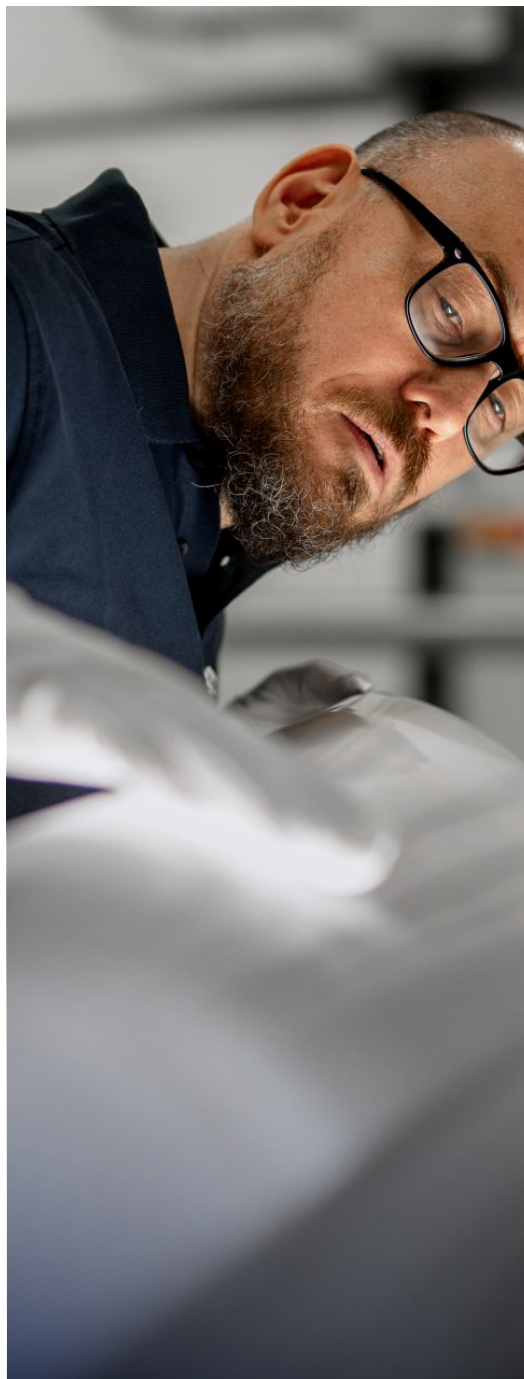
THE CHALLENGES OF PRINTING FLAT TONES

With flat tone printing, it is quite challenging to achieve perfect micro-evenness in every shade of color. Any deviation during printing, such as wrinkles in the screen or unequal open area in the screen holes, will lead to inconsistent application of the paste to the fabric. This will result in unevenness and centre selvedge variation of the colors.

The consistency of printed flat tone designs is also greatly impacted by the fibre structure and penetration of the paste. To cover the fabric sufficiently with paste, the open area of the screens must be fitting. Right open-area screens are a vital factor for printing the best possible flat tones and blotches. This avoids hole blockage, offering the highest evenness of the ink paste. On the other hand, too much open area will cause spots on the fabric.

In short, the perfect rotary screen for flat tone designs:

- ✓ Should be wrinkle-free
- ✓ Must have the right amount of open area





FINDING THE RIGHT ROTARY SCREEN(S)

In producing high-quality flat tones, there is more to it than just the mesh count. The right open area in the screens is crucial.

The Nova165ED provides better quality flat tones with just a simple upgrade from the standard Penta screens. Nova screens take the screen openness to a whole new level by introducing the smallest possible conical dam shape. The unique dam shape allows for a higher open area, leading to less printing pressure and an even transfer of the printing paste to the fabric. In addition, the higher mesh count of the Nova165 offers the ability to create flat tones with much sharper edges, compared to the Penta125.

The top of the line is the Nova135ED screen. To print high-quality flat tones and especially the blotches in your design, this screen is most suitable. It takes this upgrade even further due to the optimal open area, ensuring the evenness of your flat tones is maximized. This all-around screen is an excellent upgrade to a better printing result without changing the printing parameters too much.

On the sample printed with the Penta125 screen, white threads of the fabric are still visible and tonal variations of the blue can be seen. On the fabric printed with the Nova135ED, shown on the right, the micro evenness of the color is much better and improves the looks of the printed fabrics very much.

Technical Comparison - Rotary Screens for Flat Tone Designs

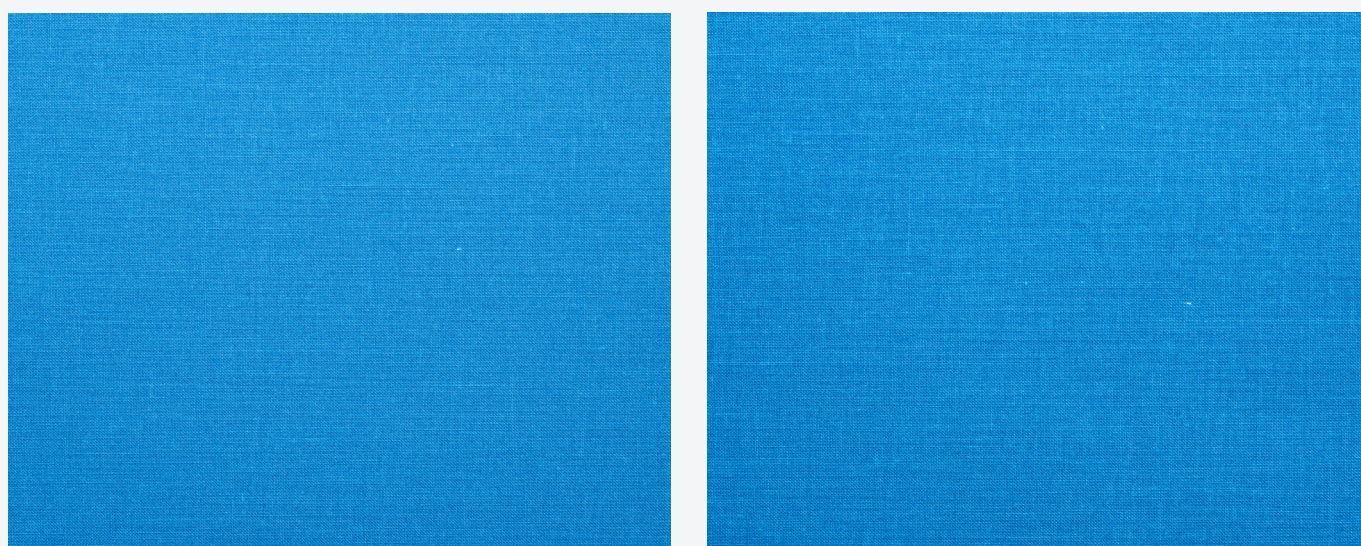


Figure 1. Examples of Flat Tone Designs (Left = Penta 125, Right = Nova 135ED)

Technical specifications

	Penta125	Nova165ED	Nova35ED
Packaging unit	10 or 20 pcs	10pcs	10pcs
Repeat	640mm - 1018mm	640mm - 1018mm	640mm - 1018mm
Mesh	125	165	135
Thickness	100 µm	115 µm	120 µm
Open Area	15%	19%	22%

CHAPTER 4: PRINTING NICHE PRODUCTS

MEET OUR SPECIAL SCREENS

4.1 CAMOUFLAGE PRINTING

Printing camouflage designs or other blotches is often challenging for printing companies. In terms of coverage and fitting, these are some of the most demanding designs out there. Today's designs often also include raster separations and small dots. Most of the time, these designs must be printed in long runs, asking for high resistance and blockage-free running of the rotary screens. The surface needs to be homogeneously covered by printing paste, generating an even shade of the printed blotches.

Considering these challenges, using common screens with standard specifications will not give the best possible printing result. Screens used for fashion or home-textile printing have a comparably lower open area, not perfectly matching the abovementioned requirements.

This is why camouflage designs require a specially designed screen with a superior wall thickness for long runs and a high open area for easy transfer of printing paste. The Special Textile Screen ST135 has all these specifications and allows fine raster printing.

Read more about Camouflage Printing
and Special Textile Screen ST135.

Discover the ST135





4.2 EFFECT PRINTING

Special effects on textiles are generally created with special pigments. The challenging factor here is that these pigments are often much wider and taller in size than standard pigments used for textile printing.

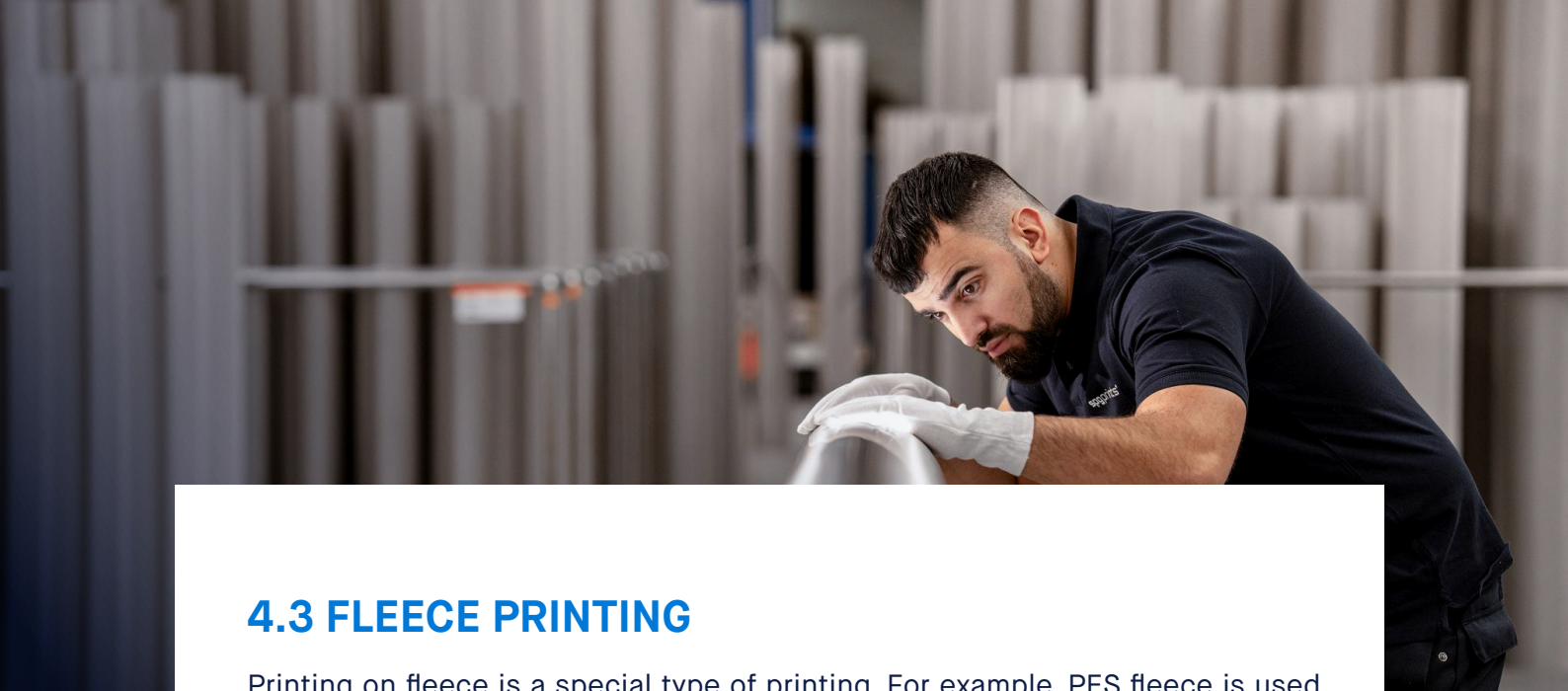
This is why Effect Printing with such pigments requires screens that allow the transfer of bigger particles to the fabric. Screens with too small holes may function like a filter and cause bigger particles to be left behind. The special effect won't be printed properly. In other cases, like with a magnetic rod, particles might be squeezed together and form bigger particles. This will result in stripes on the printed image and blockage of the screen.

A screen prepared for such special pigments is not in the normal range of textile printing screens. A wider hole diameter is required, but it must still be narrow enough to prevent the uncontrolled release of printing paste. Finally, applying a coating on the screen for engraving must be possible.

Specifically for these requirements, two different Effect-screens have been added to our Rotary Screens portfolio. Both have the same mesh size but distinguish themselves in the open area and hole size. Which screen fits your printing process best depends on the particle size and concentration of the pigment.

Read more about Effect Printing and the corresponding special screens

Discover Effect Printing →



4.3 FLEECE PRINTING

Printing on fleece is a special type of printing. For example, PES fleece is used for sportswear and blankets a lot, as its voluminous yarns and the pile structure create a warming effect, even surpassing wool. However, printing on voluminous fabrics requires a higher quantity of paste add-on to reach the desired printing effects. Because of this challenge, screens that are not available among the common range of rotary printing screens for textiles are necessary.

In the past, printing companies compensated for this lack of suitable screens by using high printing pressure in combination with low printing speed. However, this puts a lot of mechanical load on the screens, causing wrinkles and screen breakage. Doing this, the lifetime of screens will be much lower, and downtime will happen more frequently.

Our screen experts developed a special screen with a high open area in combination with a mesh size that perfectly matches voluminous fabrics such as fleece or terry towels. This screen has a higher wall thickness than standard textile screens, allowing the printer to apply the necessary printing stress without causing the screen to be wrinkled or damaged.

[Read more about Fleece Printing and Special Textile Screen ST90 here](#)

[Discover Effect Printing →](#)



4.4 LONG RUN PRINTING

Nowadays, the textile printing industry is characterized by high flexibility and short run lengths. However, big brand owners with successful designs may still ask for high quantities of printed textiles. Run-lengths of ten-thousands of meters ask a lot from the material properties of rotary screens.

In the long run, the rotary textile printing process causes heavy mechanical stress on the rotary screen material. This might result in loss of flexibility and wrinkles in the screens. This means they must be re-made and replaced - a costly process requiring a new screen to be engraved. Additionally, the exchange of screens causes downtime, and there is the risk of faults with every change in process parameters.

That's why we treat Long Run Printing as a separate application which requires special screens. Our experts developed a solution to avoid the problems mentioned above. The 125 mesh screen has extraordinary stability and a much higher wall thickness of 150 microns. In practice, this results in triple durability compared to the regular 125 mesh screens. This screen comes packed as a single screen in sleeves instead of the common boxes with 10 or 20 pieces.

This special screen possesses the highest standards in stability and fitting, matching the requirements of long runs and printing accuracy.

[Read more about Fleece Printing and Special Textile Screen ST90 here](#)

[Discover Effect Printing →](#)

SUMMARY | THE SCREEN SELECTION PROCESS

The rotary screens you use for your textile printing process genuinely make the difference. But how do you select the rotary screen that fits your printing process best? In this Comparison Guide, we explain how the challenges of various types of designs impact this selection process.

Simply put, there are three factors involved:

- ✓ Definition of the screen (the mesh) - important for fine prints, like Geometric Designs
- ✓ The amount of open area - important for printing flat tones and blotches
- ✓ The grid and its match with design/substrate - important for halftones and avoidance of moiré

For example, for flat tones (**Chapter 1**), it is essential to achieve micro-evenness and prevent the inconsistent application of paste to the fabric. This is why the Nova135ED, with an optimal open area and maximal evenness, is good for top-of-the-line flat tones and blotches.

Geometric designs (**Chapter 2**) need to be sharp and straight. Lack of resolution and inconsistent application of printing paste can make great designs look poor in print. The Orta195ED tackles these challenges with a three-dimensional structure on the printing side and a square-shaped hole geometry. This also counters undesired moiré effects, resulting in the finest designs that are pleasant on the eyes.

Halftones (**Chapter 3**) also come with well-known challenges. For the most fluent and crisp gradients in your halftones, the Nova195 is the screen of choice. It achieves outstanding quality by offering the highest possible resolution.

Lastly, there are the special screens, each solving its own unique challenges. **Chapter 4** focuses on screens for Camouflage Printing, Effect Printing, Fleece Printing and Long Runs - and the screens that solve their specific problems. Every screen mentioned in this Comparison Guide has its own advantages and applications, all meant to meet specific requests from you and your customers. The rotary screen that perfectly matches your printing process is within reach.

Do you want to discuss your opportunities or challenges with one of our screen experts?

[Request a One-on-One](#) and gain more insights on how to optimize your printing process!



GET IN TOUCH WITH SPGPRINTS

One-on-One with a screen specialist

Are you ready to take your textile printing to the next level?

Whether you already know which screen best suits your printing process or you're still looking for the perfect match - our rotary screen experts are happy to help!

Schedule a One-on-One and gain insights on
optimizing your printing process

Let's make an appointment →



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