

# ADVANTAGES OF SCREEN PRINTING OVER DIGITAL PRINTING

## Intrinsic Benefits and Broader Options

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Screen printing is evolving and thriving in the 21<sup>st</sup> Century, steadily expanding to new markets and applications, as it continues to prove its unmatched versatility among commercial and industrial printing processes. Combining the highest available image quality with precision engineering and control, today's screen printing equipment is used for a wider range of materials and operations than any other printing technology.

Flexible and dependable, screen printing remains the dominant mass-imaging technology. Despite some advances in digital printing technology in certain sectors of the industry, the adaptability and cost effectiveness of screen printing, particularly in production environments, ensure its continued viability. At the same time, researchers and engineers are constantly developing new uses for screen printing technology in emerging industries. From limited-edition artistic serigraphy to high-volume industrial image reproduction; from

colorful t-shirts, jackets, and hats to printed circuit boards and biomedical sensors, the many inherent advantages of screen printing signal new opportunities for growth and continued dominance within the printing industry.

For commercial printers balancing cost and quality considerations, screen printing provides significant advantages in four key areas: quality, durability, versatility, and profitability.

Screen printing delivers quality. Modern screen printing equipment and materials provide printers with a broader color palette and superior color saturation. Thicker application of ink to substrate means more pigments than digital imaging, resulting in richer, more vibrant colors. Screen printing also allows the introduction of custom colors and special effects into the printing process.

Screen printing provides durability. Heavier ink coverage in the screen printing process results in outstanding image durability compared to digital printing. Coatings and additives can be introduced to inks to enhance resistance to UV rays, moisture, chemicals, and scratching so that screen-printed images can be used outdoors and in other harsh or extreme environments without fading or wearing.

Screen printing offers versatility. Screen printing processes are adaptable to a much wider range of substrate materials than digital technology, including fabrics, glass, wood, metals, and many high-tech materials. A greater variety of inks is available to printers, including metallic and unique specialty inks. Screen printing is favored for most forms of high-volume graphic print production.

Screen printing propels profitability. Because of the consistency and stability of the screen printing process, it is preferred for large quantities and long production runs. Moreover, the reliability of the

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proven technology makes screen printing more cost-effective than digital, which beyond its color palette, substrate, and size limitations may require frequent costly software and equipment updates.

When weighed against the current limitations and ongoing evolution of digital printing technology, these factors combine to make a convincing case in favor of screen printing for any operation where image quality and consistency are important.

## **QUALITY** **A Broader Palette**

The time-tested process of screen printing has perfected the precise application of ink to an infinite variety of substrate materials from paper, plastic, and textiles to glass, membranes, and aerospace alloys. Modern engineering has enhanced these venerable methods to consistently produce the highest-quality images, designs, and decorations in busy production environments.



Screen printing is widely recognized as yielding the best color results of any commercial printing process. Unlike the limited 4-color CMYK palette used in digital imaging, screen printing uses high-quality inks of various formulations and viscosities, depending on the specific application. Thicker and repeated coats of ink are applied directly to the substrate, with more pigments resulting in much greater vibrancy in color and hue, and overall superior color saturation.

This means the capacity to print complex designs with better repeatability and a much broader range of available tones. Screen printing also achieves superior results to digital printing when reproducing colors on dark backgrounds.

Additives and specialty inks may also be used to create textured designs and a range of other artistic and special effects that are not available with digital technology.

## **DURABILITY** **A Lasting Impression**

The heavier ink coverage that produces superior image resolution and more attractive colors also makes screen-printed graphics much more durable and resilient than digital imagery. For this reason screen printing is favored by printers for materials that will be subject to outdoor, industrial, or other harsh environments.

A wide variety of additives can be introduced to the screen printing process to make the resulting graphics resistant to moisture, UV rays, heat, chemicals, abrasion, and other possible environmental conditions and hazards. There is no need in screen printing to apply a separate polyurethane clear coat as is required in digital applications, and the screen-printed images can last for years without suffering substantial environmental degradation.



### VERSATILITY

#### Material Considerations



Perhaps the greatest contributing factor to screen printing's massive expansion and dominance of the industry in the 20th Century was its adaptability to a seemingly endless variety of substrate materials and manufacturing processes, and the same unparalleled versatility continues to fuel the growth of screen printing in the 21st Century as well.

"Some of the most exciting recent developments are in printing on 3D objects," according to Bryan Green, National Sales Manager at A.W.T. World Trade, Inc., a leading manufacturer of screen printing presses and equipment. "Designers and marketers are constantly coming up with new applications, and screen printing machinery continues to adapt to these challenges by delivering reliable high-performance solutions."

Whether it is plastic, metal, glass, or wood surfaces; natural or synthetic fabrics; large-format or three-dimensional, screen printing technology can be applied to the process to achieve quality, predictable, cost-effective results where other processes can't perform. Indeed many materials are simply not available to digital printers as the technology has not been sufficiently developed. For example, problems with ink migration and a more limited range of substrates are among the primary reasons that digital technology accounts

for less than 2% of the \$1 trillion worldwide textile printing market.

Screen printing principles are applicable to a range of equipment including horizontal and vertical presses, rotary and cylinder presses, small manual setups and large scale fully automatic systems with multiple processes and components. No matter what your printing needs may be, screen printing offers reliable and efficient solutions for any specific application.

### PROFITABILITY

#### Proven Performance

Modern screen printing is a mature technology based on well-known and highly-evolved analog principles. The stability and dependability of screen printing equipment, systems, and processes make them more cost-effective than digital for large manufacturing facilities engaged in long runs or complex graphics reproduction jobs.

"The primary reason that screen printing remains the dominant technology in so many market sectors is its reliability," says Michael Green, president of The A.W.T. World Trade Group. "The stability and practical advantages of screen printing make it attractive for high volume production and long runs, where consistent quality is essential."

From a production management perspective, maintenance, repairs, replacement parts, and new components are much more economical and simple to implement or install in comparison to digital

technology, which is subject to frequent software and hardware updates and rapid platform obsolescence. This increases output, accelerates adaptation timelines, and reduces downtime for screen printing systems.

Machinery costs are lower than digital, and maintenance is simpler with no CMYK cartridges to replace and no print heads to purge and clean

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after each job. Additionally, mixing custom inks yields superior opacity and allows for better image quality.



For these reasons, screen printing machinery and components retain their original value better and are more attractive for resale than used digital equipment which can quickly become obsolete with each new hardware development or the latest software update.

### CONCLUSION Continued Viability of Screen Printing

To remain competitive in today's marketplace, commercial printers must minimize costs while maintaining high quality and image repeatability over long production runs. The color vibrancy and superior durability of screen-printed graphics make them effective in a range of applications where digital images yield less satisfactory results.

Flexibility and dependability are vital considerations in any expansion or equipment purchase. Printers want years of uninterrupted service from their machines, and they want equipment that can easily and efficiently adapt to

new and even unforeseen market demands. Unlike rapidly-changing digital hardware and software, screen printing is a mature, proven technology that delivers reliable results with the widest possible range of materials.

Today's screen printing machinery and materials outperform complex and expensive digital systems for most graphic production applications. State-of-the-art engineering means ultra-precise registration and process control. Systems can be customized to fit operational specifications.



An ancient technology perfected over thousands of years, screen printing's longevity and ubiquity is well-earned. But even today, screen printing is continuously evolving to meet market demand and fill developing market opportunities. For the foreseeable future, there are numerous commercial and industrial printing applications for which screen printing will continue to be the optimal process, both in terms of cost and of quality.

*For more information on screen printing equipment, supplies, or parts, contact A.W.T. World Trade at 773.777.7100 or email [sales@awt-gpi.com](mailto:sales@awt-gpi.com)*

