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## 1 - WHAT IS DTG PRINTING?

If you plan to get successful with a textile printing business, you should definitely have a look at DTG. Direct to garment printing (DTG) is the main big alternative to screen printing. DTG is also known as digital textile printing and ink-jet textile printing.

Comparable to your paper printer at home, you print images in high resolution directly onto the T-Shirts. Printers utilize white ink, so it's possible to print on light, dark and colored garments.

DTG is one of the fastest growing areas in textile printing. It's already mind-blowing what you can do with this technology if you are willing to put in the effort. The learning curve is steep. It's not easy, but the results are worth it. You will need to know how to work with graphics, how to operate the machines involved in the process, and how to perform the necessary maintenance tasks. It may be overwhelming in the beginning, but the effort will pay off.

With this Ebook, we want to give you a short overview of DTG printing and how you can benefit from this technology.

### **NOTE:**

For the simplicity of reading, we talk about printing on T-Shirts only. But usually, you can print not only on T-Shirts but also on garments like sweaters, hoodies, sleeves, baby and children T-Shirts, dish towels, in some cases even on shoes and hats. So whenever we talk about T-Shirts, it is synonymous for all the other types of garments.

### **DISCLAIMER:**

There are numerous manufacturers of DTG equipment which differ greatly in their processes. Therefore, there is no „one size fits all“, but the underlying processes are more or less the same. Our aim with this Ebook is to give you a solid overview of the technology. Please make sure to get a thorough process explanation from the manufacturer of your DTG printer before buying!

## 2 - WHY SHOULD YOU CHOOSE DTG PRINTING?

### PRINT WITH FEWER RESTRICTIONS

The main benefit of this printing technology is the types of design you can print and how fast you can print them. Since all colors are mixed with CMYK inks, you can use all colors that are within the printable color range (gamut) in every single design. You are not limited to a handful of colors, you can go crazy with your designs. You can print photos and gradients - only your imagination is the limit.

### WORKFLOW INTEGRATION (DIGITALIZATION)

DTG is a digital technology and therefore it can be seamlessly integrated into your workflow. If you, for instance, run an online shop, you may be able to connect your shop directly to your printer and make your life much easier. Also, with Industry 4.0 and the Internet of Things around the corner, DTG opens up many options for disruptive business ideas.

### CUSTOMIZATION / SMALL RUNS

With direct to garment printing, you can make each print unique. With this, you or your customers can customize every single T-Shirt and you are also able to offer small runs of prints at a competitive cost.

### CAN REDUCE COSTS

Compared to screen printing, you don't need to invest any time and money upfront, like making color separations and screens or mixing the paste.

### ENVIRONMENTALLY FRIENDLY

DTG is rather environmentally friendly and generates less waste. Additionally, some inks are certified for e.g. GOTS and Oeko-Tex.



## 3 - HOW DOES IT WORK?

In a regular DTG printing process, there are four steps:

### PRETREATMENT

You need pretreatment to print with white ink, which is necessary for dark and colored fabrics. Without pretreatment, the white ink will not stay on the garment and fade away.

On white garments (or light colored garments), pretreatment is optional, but it may enhance the vibrancy and sharpness of your prints.

Today, there are several pretreatment options available:

- Separate application before printing: You can do this manually with a spray gun or buy a pretreatment machine. Usually, after applying the pretreatment, you need to dry the garments in a tunnel dryer and/or flatten the garment in a heat press to put the cotton fibers down.
- Buy pretreated T-Shirts that are ready to print on: We believe that this will be the future. There are already a few promising options on the market.
- Integrated application: Some industrial printers can apply the pretreatment directly inside the machine during the printing process.

### PREPARE THE GRAPHICS

Next, you have to prepare the graphics for printing.

Basically speaking: You need to have files in the correct size, at a high resolution and on a transparent background (to print on dark and black garments).

DTG printing is WYSIWYG (What you see is what you get). So if you send a bad quality design to the printer, you will get a bad quality print!

Unfortunately, it is not very common to receive ready-to-print graphics from the customers and you will need to have the correct tools to handle these graphics and adjust them accordingly.

For some DTG printers, you will need an additional RIP Software. This software translates the image file into an actually printable file that the printer can use.



## PRINT

Load the T-Shirt and print. This is really the easiest part of the process.

As a first step, the white underbase is printed.

As a second step, the colors are printed on top. The colors are mixed with cyan, magenta, yellow and black inks and can generate all colors within the printable gamut (range of colors).

Tip: Some manufacturers offer additional ink colors to enhance the range of printable colors.

## CURE

After printing, the garments need to be cured in a tunnel dryer and/or a heat press. Curing times and the equipment you need varies strongly between manufacturers.

To test if your garments are properly cured, don't forget to perform a wash test. We will release a separate Ebook on this topic soon. It's like Maggi always said: „You only know if a print is good after you washed it!“ It may look amazing when it comes out of the printer, but when all the ink is gone after the first wash, the customers will not be very impressed with the print.



**STEP 1:  
UNDERBASE**



**STEP 2:  
COLOR LAYER**



**FINALIZED  
PRINT**

## 4 - WHAT ARE THE „DOWNSIDES”?

### YOU NEED A CONTROLLED ROOM

DTG printers (especially the inks) are more sensitive to environmental conditions, mainly to humidity and temperature levels. This means you will need to place your printer inside a room where you can control the environment.

The room also needs to be clean and dust free.

### PRINTABLE MATERIALS

Whereas there is a wide range of printable materials, you may need to test this on a case to case basis. Usually, DTG printers use pigmented waterbased inks. They work very well on cotton and many other materials. But some fabrics like polyester, blends or coated fabrics can be very challenging, especially when you want to print with white ink. Please talk to your manufacturer, they should be able to give you more information on their material compatibilities.

### HEIGHT LIMITATIONS

The distance between the printheads and the substrate is very low (a few millimeters). That means that the garment has to be absolutely flat. There can not be any elevations like seams, buttons, pockets or zippers.

### LARGE RUNS

If you have large runs of the same design, screen printing may be more cost-effective.

### COLORS

You are limited to the colors within the printable gamut, which can differ between garments, garment colors, processes like pretreatment and inks. Many colors are simply not available at the moment, like real neon colors. In terms of color correctness and hitting specific shades like Pantone, we believe that there is lots of research going on at the moment and we are sure that this will be possible soon.

### LEARNING CURVE

There is a lot to learn when you start with DTG printing because there are many different factors that influence each other and the final printing result. Good training for the operators, sales force and designers is a must have.



ORIGINAL DESIGN



PRINT ON COTTON



PRINT ON POLYESTER



PRINT ON POLYESTER

## 5 - WHAT DO YOU NEED TO START?

The bare minimum you need to start a DTG printing business is the following:

- Printer (see Chapter 6)
- Heat press and/or tunnel dryer
- Clean and controlled room
- Knowledge and training for everyone involved in the process

Depending on the printer, you may also need a RIP Software and pretreatment equipment.



## 6 - WHICH DTG PRINTER IS THE RIGHT ONE FOR YOU?

The range of available DTG printers options in the market, nowadays, is quite huge. Basically, you can have a printer that will (almost) perfectly fit all your needs. There are printers for all production outputs available, from small „tabletop“ printers all the way to massive mass production work-horses.

However, choosing the ideal printer for your business should not be a difficult task.

We can give you a few tips on what to consider:

- Output: Are you a small print shop or do you run large production batches?
- White and dark/black t-shirts ratio: Printing on dark T-Shirts takes more time and uses more ink, so the costs are much higher.
- Print area range: Which sizes do you need to print on? Usually, manufacturers have several platens in different sizes available.
- Warranty and availability of technical support
- Maintenance and spare parts
- Environmental conditions necessary to run the printers
- Printable materials (see Chapter 4)
- Consumables: Some printers need various fluids like capping fluids, flushing liquids, special cleaning supplies for the printheads (wipes) etc. The cost for these can add up quickly.
- Pretreatment costs
- Waste management
- The lifetime of the print heads

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## 7 - CONCLUSION

In a nutshell, DTG printing is a fast and clean way to have colorful designs printed on high resolution. Obviously, different materials will require different inks and procedures.

We strongly believe that DTG printing can be an excellent addition to any print shop.

We are obviously very excited about all the options this technology can offer. And, we are even more curious about the current research and future possibilities. We will keep you informed! Make sure to visit our blog [www.dtgmerch.com](http://www.dtgmerch.com) regularly to stay up to date.

See you around!

**PS: Subscribe to our newsletter and get all upcoming Ebooks and news delivered directly into your mailbox.**

## ABOUT US

We help others to be successful with the two things we are passionate about: DTG (Direct to Garment) Printing and T-Shirt Design. We have had the experience that the many individual steps in the entire process as well as optimizing it all is difficult to understand at the beginning.

That's why we offer training as well as many resources on our website (many of them are free to download).

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