

SEEING THE LIGHT

Automating screen preparation can save time and money. Advocating CTS exposure, Andreas Ferndrigger introduces a flexible new LED concept that caters for up to four wave lengths



Andreas Ferndrigger is CEO and Owner of SignTronic

For the majority of companies, 2020 – dominated by the global Covid-19 crisis – was demanding and a real challenge. Whilst the number of incoming orders suffered a serious slump, they needed to find a way of keeping the costs under control and reducing them – a juggling act that required an unprecedented amount of flexibility.

In many sectors, this situation made visible the importance of streamlined processes, automation and 'state-of-the-art' technology. Nevertheless, there are still many non-automated areas which, now as before, are burdened with complicated, time-consuming and therefore expensive processes. In the screen printing industry, screen preparation is unfortunately one of the areas where automation has long been neglected.

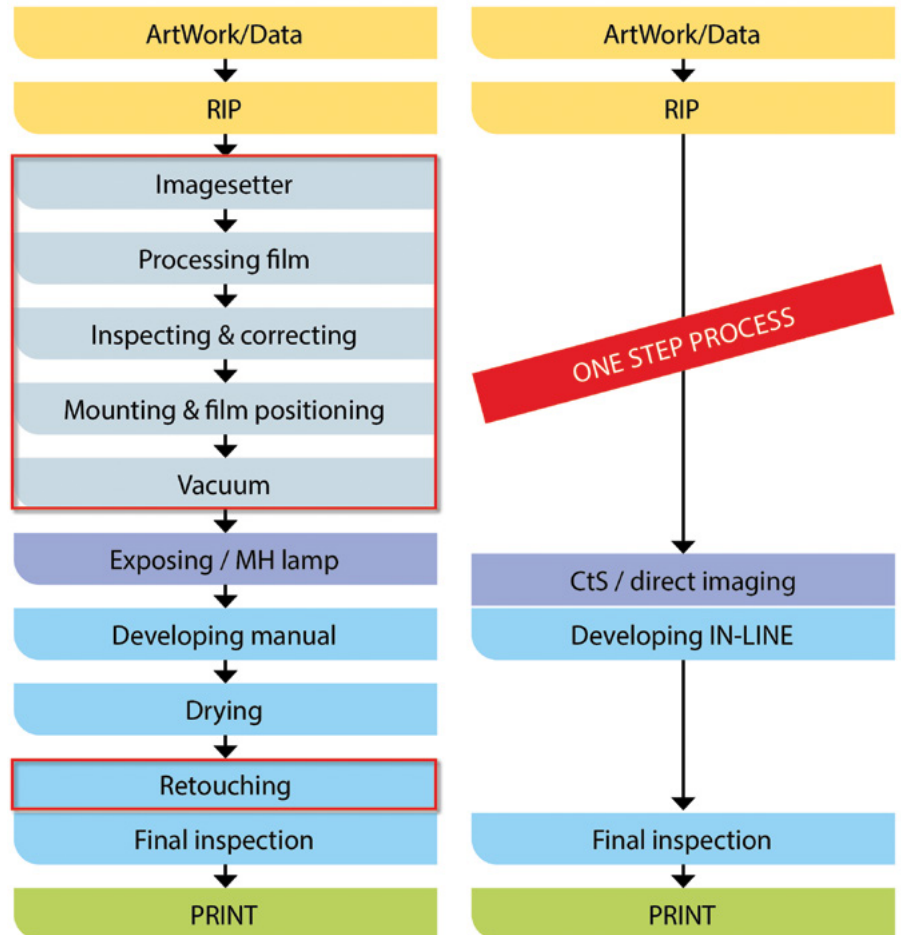
SIMPLIFYING SCREEN PRINTING

The solution approach 'simplify screen printing/screen making!' is no advertising slogan but an absolute imperative in order

“Using the CTS direct exposure method, several of the process steps required for screen preparation can be deleted without replacement”

to enhance economic efficiency and to follow the trend towards a greater flexibility.

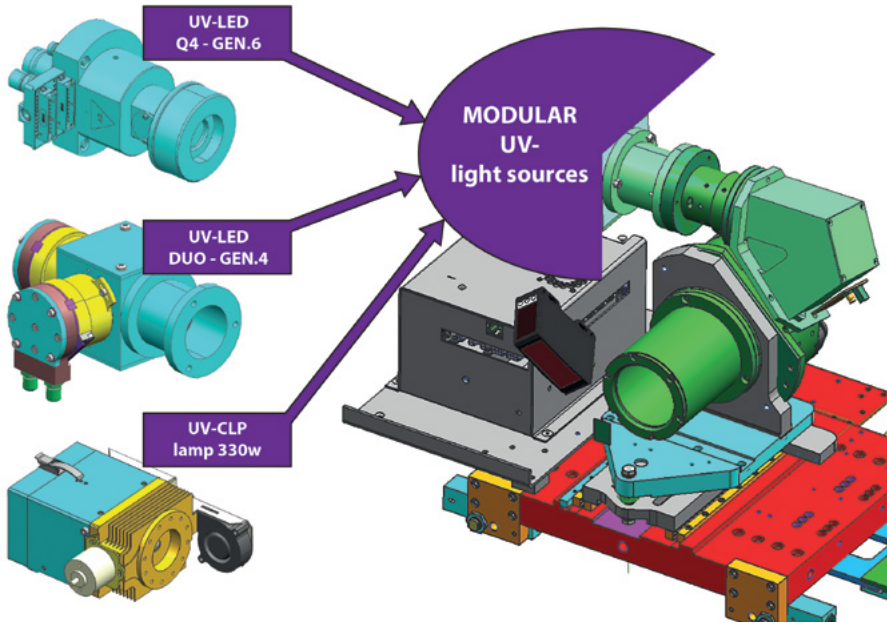
The computer-to-screen (CTS) direct exposure technology enables the user to achieve enormous savings. The traditional method, which consisted of first producing



Overview of the screen-making process with conventional vs CTS direct exposure. This diagram illustrates the differences between the two methods (processes marked in red can be eliminated without replacement)

	UV Light Source	DMD-Technology	Zeiss Optics / Resolution
UV-Lamp	CPL 350 – 450 nm 	XGA 0.7" – Discovery 4100 	1270 dpi
	UHP 350 – 450 nm (525 nm) 		2400 dpi
UV-LED	DUO 385 & 405 nm 	1080p 0.95" – Discovery 4100 	1610 dpi
	Q4 365 / 385 / 395 / 405 nm 		3040 dpi

SignTronic's modular CTS concept enables the user to combine various modules of computer-to-screen technology



The StencilMaster CTS direct exposure unit – one concept; three different UV-light sources

not just the use of the new CTS direct exposure technology, but also the need to take into account the huge differences and requirements that have to be considered for the various screen printing applications.

MEETING ALL REQUIREMENTS

There is probably no other printing procedure that relies on so many different parameters; the printing screen needs to address a great many requirements. For one thing, there is the wide variety of sizes to be considered, as well as the selection of the mesh itself: polyester (white or yellow), steel mesh, as well as the various gradations between very coarse and extremely fine mesh. This leads us to the next decisive parameter, which concerns the coating material, where the printer has the choice between direct emulsions, capillary films or pre-coated meshes (PCF). Then there are the various raw materials such as Diazo, SBQ/Fotopolymer or DualCure, which function with different wave lengths. This means that the UV light sources need to be adapted to the new exposure system. Desired colour application/ink system and different coating thicknesses also have to be taken into account. For practical purposes, barely any of the alternatives are possible, from almost no emulsion application up to several hundreds of microns EOM (Emulsion Over Mesh).

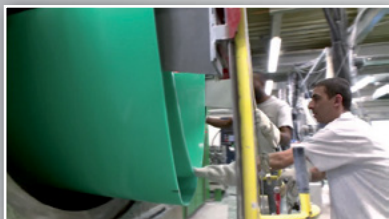
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the films and then in copying the material, involved considerable costs for material (film, chemical products, etc.), energy and staff.

The main advantage of the CTS direct exposure method is the fact that several of the process steps required for screen preparation can be deleted without

replacement. This results in reduced personnel expenditures as well as handling costs, an elimination of error sources, lower production costs, shorter reaction times, increased flexibility, reproducible results and – best of all – improved printing quality.

However, the decisive factor here is

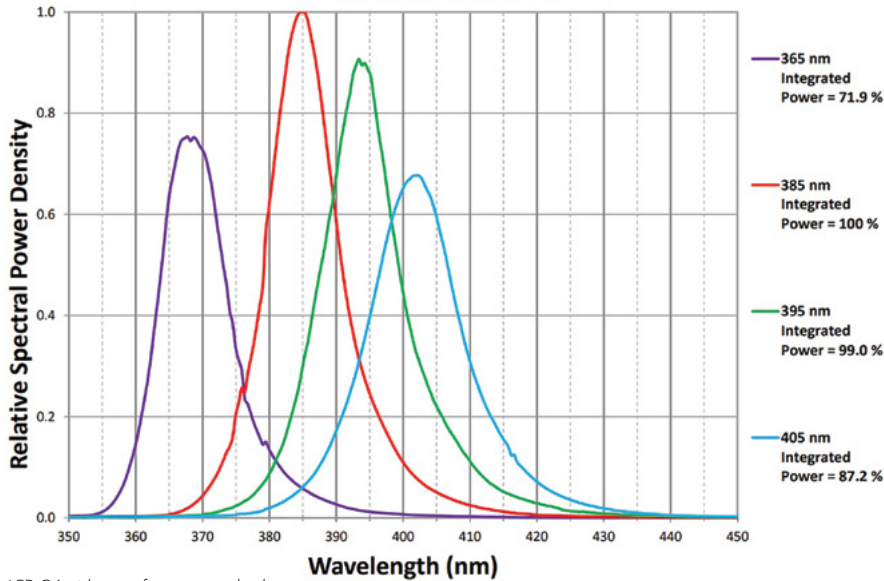


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LED Q4 with up to four-wave technology

SUMMARY

A combination of several main parameters results in the required UV light output and therefore the exposure speed per printing screen:

- Type and characteristics of the mesh
- Type and characteristics of the coating
- Coating thickness (overall thickness of mesh and coating EOM)

MODULAR CTS CONCEPT

For these reasons, and in order to offer the optimal solution for all the requirements and wishes, SignTronic has developed the modular CTS concept. This flexible and modular concept enables the user to combine various

essential modules of the CTS technology:

- UV light sources in various outputs (watts) and wave lengths (nm)
- DMD micro-mirror chip from TI and different sizes (digital micro-mirror device)
- Zeiss optics and various resolutions of 1270, 1609, 2400 and 3040dpi)

UV-LED Q4

In addition to existing UV light sources (UV-CPL high power lamp and UV-LED DUO), SignTronic is now in a position to offer a new UV-LED light system to be used in combination with the company's StencilMaster Generation 4 CTS direct exposure unit: UV-LED Q4.

This powerful and flexible LED concept can be adapted to customers' requirements.

In practical terms, this means:

- Equipment for up to max. 4 different wave lengths (365, 385, 395 & 405nm).
- Maximum output comparable to a CPL high-performance lamp.

"SignTronic's new powerful and flexible LED concept can be adapted to customers' requirements"

- Ability to equip all the LEDs with the same wave length (e.g. only 405nm).
- Two sizes for the DMD_4100/0.7 or DMD_9500/0.95, as an option.
- Freely selectable equipment with a maximum of 18 LED (Die Bins) is possible.
- Every wave length can be individually switched on and switched off (which enables the printer to select the adequate wave length in function of the particular coating materials).
- Output of the LED light source is continuously adjustable between 10–100%.
- With a performance of 90%, a minimum life span of 7000hrs can be expected.
- Simple and rapid stand-by operation.
- A closed cooling circuit with water cooling and a powerful chiller is part of the delivery standard.

"Every wave length can be individually switched on and switched off"

- Uncomplicated service and replacement of the UV-LED light source. Every customer is in a position to safely replace the LED assembly themselves, without problems and in a very short time.
- Old LED assemblies are refurbished and can then be reused.

INSTALLATION IN AUSTRIA

At the beginning of 2021 a StencilMaster equipped with the latest UV-LED Q4_FHD with a resolution of 1609dpi and an exposure cover of 30.3mm (more than 2 million micro-mirrors function at the same time) was installed in Austria.

This new system STM-2316 has been designed to cater to screen sizes of up to 1800 x 2800mm and is used by a service provider to handle a wide range of different customer requirements. ■

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Installation of StencilMaster STM-2316 in Austria earlier this year