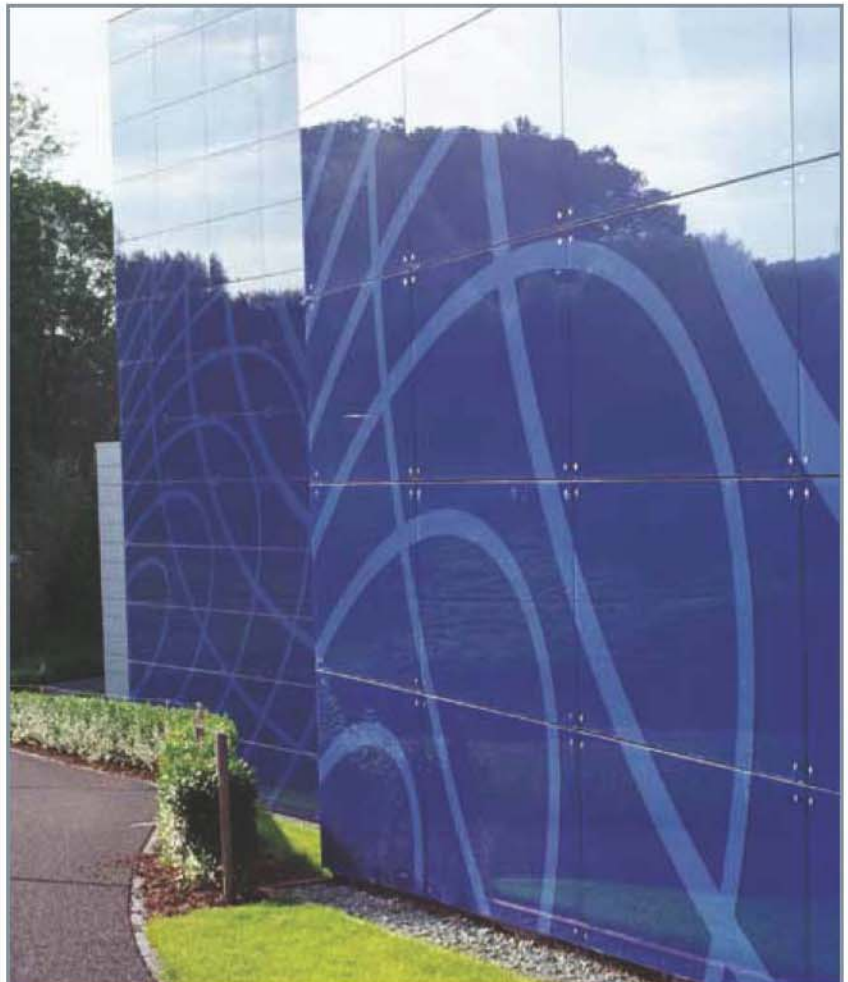
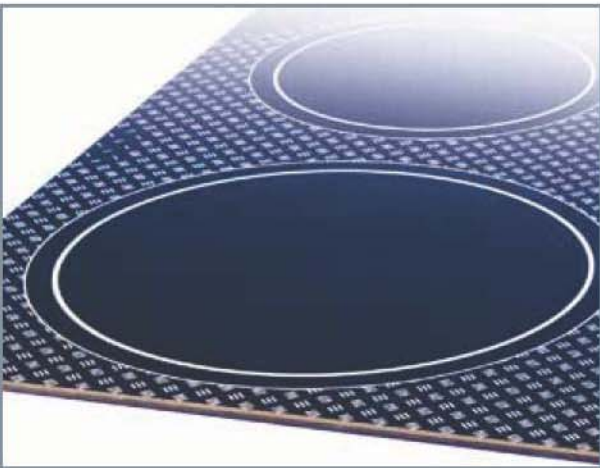


PRINTING SOLUTIONS

THIEME



SCREEN PRINTING ON GLASS





Printing solutions from THIEME – a class of its own

Screen Printing on Glass

Thieme manufactures modular machinery and system concepts that are ideal for single-color and multi-color flatbed screen printing on glass.

From the stand-alone solutions to complete printing lines, Thieme offers all of the necessary system components for customer specifications. In order to ensure maximum quality in the development of screen printing systems, the customer is consulted by Thieme during the whole course of the project: from the design to customer service, to installation and complete parts support.

The "all-round" program offers flexible machine systems for all the fields and requirements of the glass screen printing sector. Due to different features of the machines, it's possible to choose the ideal system for the specified application.

Allrounder



Glass is an extremely important material for design and construction on interior and exterior building applications. Glass for large-format exterior facades and for small formats, e.g. mirror tiles for interior use, are printed using screen printing technology.

Architecture



The most common glass applications are for refrigerators, ceramic oven tops, oven windows and control panels, flat screens and computer screens. Screen printing improves the appearance and functionality of all these items.

Appliance/
Technical
glass



Auto manufacturers use screen printing to print on windshields and rear windows. In addition to covering the automotive panel's outside edge, automotive producers also use screen printing to apply functional layers such as defrost grids and antennae.

Automotive



The Allrounder

The “all-round” program offers flexible machine systems for all the fields and requirements of the glass screen printing sector. Due to different features of the machines, it's possible to choose the ideal system for the specified application.

Semi-Automatic Screen Printing Machine

**THIEME
1000
1000 S**



- + For the printing of glass panels with parallel edges, symmetrical and asymmetrical glass shapes
- + With parallel lifting of print head
- + With moving printing table for easy loading and unloading
- + With patented THIEME print head with automatic squeegee pressure alignment
- + Available with various machine options like brush cleaning device, automatic glass alignment, anti-drip unit etc.

The semi-automatic screen printing machine THIEME 1000 is available in the following printing sizes:

570 x 770 mm 1000 x 1400 mm 1420 x 1860 mm
770 x 1070 mm 1220 x 1660 mm

The semi-automatic screen printing machine THIEME 1000S for large and heavy glass panels is available in the following printing sizes:

Format width [mm]: 1250 / 1500 / 1700 / 2000 / 2500
Format length [mm]: 2000 / 2500 / 2800 / 3000 / 4000



Features



CleanPrint „to the edge“

Intermediate printing device for the removal of excessive ink on the screen when printing panels with a tolerance of 0 to the panel edge (option).



Squeegee swing-up mechanism

The optionally available 90° squeegee swivel unit with integrated drip channel makes it easier to change the squeegee.



Printing table

Optional table attachment for the middle-centering for THIEME 1000 S/3000 S with integrated ejector pins for an easy unloading of the glass panel.

¾-Automatic Screen Printing Machine

THIEME 3000 S



- + For the printing of glass panels with parallel edges, symmetrical and asymmetrical glass shapes
- + With parallel lifting of print head
- + With moving printing table for easy loading
- + With belt transport integrated in the printing table
- + With transfer conveyor between printing machine and glass dryer (optional with 90° conveyor)
- + With patented THIEME print head with automatic squeegee pressure alignment
- + Available with various machine options like brush cleaning device, automatic glass alignment, Anti-drip unit etc.

The ¾-automatic screen printing machine with manual loading and automatic unloading is available in the following printing sizes:
550 x 750 mm, 750 x 1000 mm, 1250 x 2400 mm, 1700 x 2700 mm.
Special format sizes are available on request.



Architecture

The printing of architectural glass requires specific solution integration. Particularly in the field of architectural glass we find a wide range of sizes, shapes and thickness. The huge range of formats and batch sizes mean that machine concepts are required to be highly streamlined and flexible.

**THIEME
3000 GS
LS/LM**



- + Modern PLC control allows flexible operation in semi-, $\frac{3}{4}$ - and full automatic mode
- + Wear-resistant printing table with blow air support for easy alignment of the glass
- + With patented THIEME print head with automatic squeegee pressure alignment
- + Movable print head to the rear either partial or over full format size to ensure good accessibility to the printing table for manual loading, positioning and print inspection
- + Screen cleaning position 450 mm above the printing table (Optional up to 1000 mm possible)

Are available in the following printing sizes:

Format width [mm]: 2000 / 2500 / 3000 / 3300

Format length [mm]: 4000 / 4500 / 5000 / 6000 / 7200 / 9600

Special sizes on request.



Features



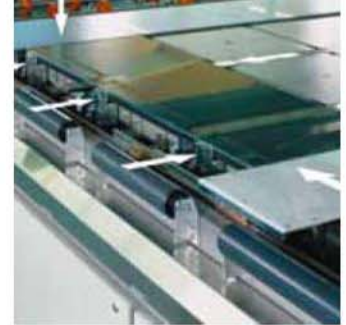
Printing head

The print head can be moved away to the rear and ensures very good accessibility for manual loading, positioning and print inspection. It is available with partial (1,2 m) move or with a move over the full format size.



Printing table

The printing table is divided into individual segments and consists of high-precision aluminum plates with a wear-resistant top coating. Blow air nozzles in the printing table support the glass with an air cushion allowing an easy positioning of the glass panels.



Positioning system (Option)

The printing machine can optionally be supplied with a full automatic positioning system. It is available for lateral (fixed edges) or centered positioning.



Programmable front mask (Option)

Programmable front mask for flexible positioning of the printing image on the glass panel. motives auf der Glasscheibe.



Intermediate Paper Printing Station (Option)

An intermediate paper printing station can be placed behind the printing machine to remove remaining ink out of the screen by performing an intermediate print onto paper. It allows the printing of different format sizes and drilled holes in changing positions without additional taping and cleaning of the screen.



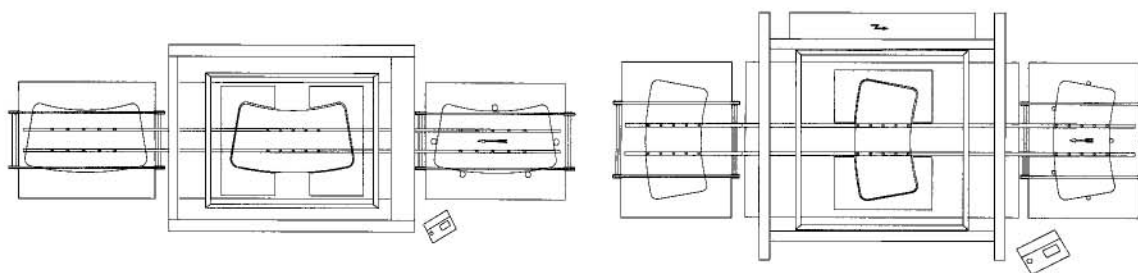
Automotive

The technical and optical demands on screen printing for the automotive industry have changed. In order to meet these increased demands, systems are required which offer absolute reliability in terms of reproducibility and production security. In addition electrical conductors and rear window heating applications must be printed consistently without distortion.

THIEME 3000 GS AM



- + For full automatic printing of windshields, back- and sidelites
- + Designed as in-line printing machine for the integration into fully automated production lines.
- + Equipped with shuttle transport system with integrated vacuum sections for fast and precise glass transportation
- + With high precision positioning of the glass panels
- + Short set up times with fully automatic teaching of the glass alignment system
- + Automatic screen alignment via CCD-camera system (optional)
- + With patented THIEME print head with automatic squeegee pressure alignment



The THIEME 3000 GS AM can be supplied as a short edge or long edge system.

The THIEME 3000 GS AM is available for all common automotive glass sizes.



Features



Walking beam transport system

The glass is transported from the centering station to the print station and from the print station to the machine outlet. The walking beam is equipped with vacuum to achieve high transport speeds and precise registration.



Printing table

The table surfaces are hard-anodized and supported on a solid frame. The exact levelling of the table within tight tolerances is ensured. As required, vacuum sections can be switched on via the control system to suit the glass format. As an option, the printing table is also available with a stainless steel surface which allows easy attachment of magnetic masks.

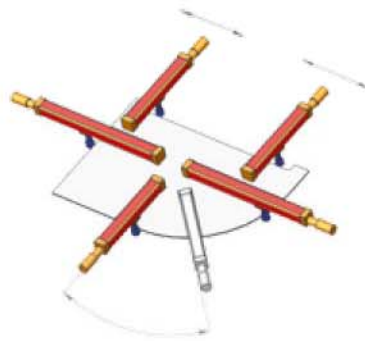
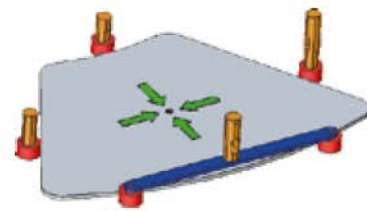


Centering station

The glass is positioned accurately by an automated positioning system before it is transported into the printing station.

Centering

For the positioning of symmetrical glass. Glass tolerances are aligned to ensure registration repeatability.



Freely programmable registration via servo axes

For positioning of asymmetrical and symmetrical glass, the programmable axes allow for flexible positioning of the glass anywhere within registration station, with different aligning methods.



Appliance / Technical Glass

In the production of appliance glass, oven, microwave windows, refrigerator shelves or gaming machines are decorated or marked for different functions using the screen printing technology.

In the production of technical glass like thin film solar cells, glass displays from touch panels to large size flatbed screens screen printing is used to apply decorative and functional coatings.

Appliance

THIEME 3000 GS



- + Modular ¾ and fully automatic machine design consisting of pre-centering, printing and transfer station
- + To be operated as single colour machine or for the integration in a multi-colour printing line with up to 6 colour stations
- + Automated glass alignment with high accuracy to the theoretical center of the glass panel or to fixed reference edges.
- + Short set up times with automatic set up of glass alignment system
- + Automatic screen alignment via CCD-camera system (optional)
- + With patented THIEME print head with automatic squeegee pressure alignment
- + Available with various machine options like brush cleaning device, automatic glass alignment, anti-drip unit etc.



Features



Delivery station

For the delivery of the panels to the dryer with integrated light table for print inspection.



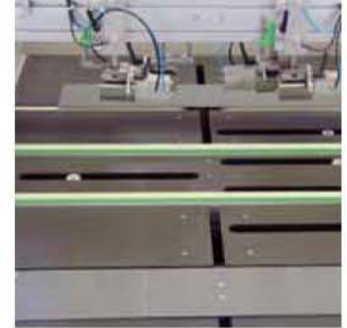
Screen Compensation System (Option)

The stretch of the image is caused by the squeegee process which is compensated by the mechanical screen compensation system. During the squeegee stroke the screen frame is moved against the printing direction by an adjustable distance.



Centering

THIEME's specially designed positioning unit carefully moves the glass into the proper position, resulting in highly accurate and reproducible printed images. Depending on the customer's needs, the glass can be aligned to the theoretical center of the glass or to fixed reference edges.



Technical glass

THIEME 3000 GS



- + Special glass transport and alignment system for thin glass down to 1 mm
- + Automated ink-/past dispensing systems
- + Full machine enclosure with solvent evacuation system and/or air conditioning
- + MES interface for the transfer of all process data and machine conditions



Features

High-end quality products require flexible machine systems which can be adapted to the individual requirements of our customers.

The standardized components of the THIEME machines offer a high production consistency and lower production costs.

High-quality requirements are engineered by the well-designed features of our machines.

Features



THIEME – PLC control system with Touch-Screen

The PLC control system provides quick set-ups, reproducible working results and increased working safety. This substantially reduces production costs. The PLC supports the precise mechanism of the screen printing machine and informs the operator on its current operating status.



Screen frame clamping

The pneumatic clamp of the screen frame is controlled from the operating panel. This clamp consists of adjustable, pneumatic clamp units which are designed to ensure that the screen is reliably held in position even if the pressure falls.



THIEME squeegee mechanism

The switch over from print to flood and vice versa takes place pneumatically. The sensitive squeegee pressure control with automatic parallelism is pneumatic. The squeegee and flood bar angle are infinitely adjustable via crank. The squeegees can be fitted or removed using the quick release locking mechanism.



Screen fine adjustment

The precise fine adjustment of the screen can be made via three micro spindles in the range of +/- 10 mm.



Peel off

The peel stroke is adjustable for adaptation to different print parameters. The peel start point can be adjusted over the whole squeegee path.

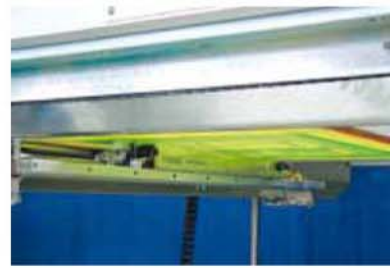


Options



THIEME Solvent Cleaner

The solvent cleaner applies solvent on the screens underside to open blocked mesh. The image can be optionally cleaned by THIEME's patented Clean-Print device.



Anti drip unit

During the flood cycle ink can drop from the squeegee into the open screen providing print streaks. With the anti drip unit, the squeegee and flood bar are overlapping to ensure that no ink is dripping onto the open mesh.



Magnetic masks for stainless steel print table

As an option, the printing table is also available with a stainless steel surface which allows, the easy attachment of magnetic masks.



90° print beam swing up

The 90° swing up of the print beam with integrated dripping pan enables the changeover of the screen without removal of squeegee and flood bar and allows an easy change of squeegee and flood bar



Laser positioning system

Laser system to help setting up the screen frame. The laser is positioned over the glass edge before inserting the screen and will show this edge position on the screen.



Full automatic screen alignment system with CCD-cameras

The screen is automatically adjusted by 3 step motors controlled by 2 CCD-cameras which are focusing on two registration marks which are exposed in the screen beside the image.



Wandres Cleaning Unit

Cleans the glass surface debris by means of a scratchless brush system utilizing anti-static technology.



+ System Partners

THIEME offers modular machine and system concepts for single or multi-color flatbed screen printing. Minimum set-up times, centralized control system for the function of the complete line and precise positioning of the glass even at high hourly throughputs are just some of the features which are important to THIEME.

+ Transport system

Transport systems that are adapted to the customer's specific needs ensure rapid transfer and precise positioning of the glass.



+ Transport Conveyors

Inlet, outlet, 90 degree transfer, etc..



+ Washing / Coating

THIEME is skilled at integrating washing and/or coating systems into the overall line concept.



+ Storage systems

THIEME designs customized concepts that include the customer's needs for glass accumulators (stackers).

In the development of high-precision, high-performance screen printing systems for industrial production, THIEME is known as the leading provider and development partner for complete solutions. THIEME offers modular machine and system concepts for single or multi-color flatbed screen printing. Minimum set-up times, centralized control system for the function of the complete line and precise positioning of the glass even at high hourly throughputs are just some of the features which are important to THIEME.

+ Print station

THIEME screen printing technology utilizes high-quality, precise engineering.

+ Stored-program controller

Users can store machine programs and parameters for specific jobs in the system's memory.



+ Control stations

Project-specific solutions for monitoring production quality.



+ Drying

A drying configuration with optimized performance and energy features is an essential component of a complete screen printing system. Furthermore, a modular design permits different drying and cooling technology, facilitating variable integration into a variety of production lines.

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