



Flatbed Imaging Systems

MADE IN GERMANY

Company Overview

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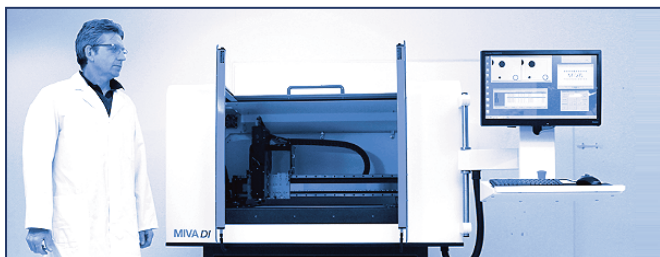
MADE IN GERMANY

MIVA Technologies GmbH

is a German company dedicated to development, production and customer servicing of flatbed imaging systems. Our aim is to establish a lasting and constructive relationship with our customers by offering fast, cost-effective production and service solutions.

Through technical innovation and by upgrading software and hardware if required, we can optimise exposure speed, accuracy, resolution and reliability affordably. A wide range of system sizes (7.5cm to 6m) and resolutions (3000dpi to 128000dpi) coupled with closed-loop high positional accuracy, low investment and service costs, have been realised to-date.

MIVA flatbed imaging systems have been servicing worldwide markets for over twenty five years.



MIVA Technologies Chief Executive Officer, **Robin Pagan** has been responsible for many technological developments in the field of graphic data processing, multi axis positioning systems and high resolution digital projection and has thus greatly contributed to the quality and affordability of Direct Imaging systems, Maskwriters and Photoplotters today.

The company produces a wide range of machine sizes, user selectable resolution with industry standard graphics data compatability, allowing MIVA imaging systems to be flexible in serving a correspondingly wide range of applications in industrial production and research environments. Examples of our customer applications are:

PCB production, hybrid production, chemical milling, optical backplanes, LCD panel making, mobile phone antennae, car manufacture, precision etching (watchmakers), thick film lithography, fluidics, sensor design, high frequency applications, chrome mask manufacture, linear and rotational encoders, precision graphics and other printing applications.

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MIVA Technology

Flatbed

All MIVA systems are flatbed, allowing exposure of panels, film, glass or chrome plates and eliminating any deformation of the medium during imaging. The medium is held in place during the imaging procedure and the area of the plot is exposed by one or more projectors mounted on a moving X-Y-Z table which moves in a plane parallel to the film. Because of this, the projected pixel size and therefore the line width or structure size is stable over the plotting area.

Light source

MIVA Direct Imagers and Maskwriters use a Dual Wavelength Semiconductor light source pair in the imaging projector. This allows exposure optimization of our customer's preferred photoresist type. For increased DI throughput, multi-head systems are available, also as an in-field upgrade. MIVA Photoplotters and some of our Maskwriters use a different light source, a Xenon flash lamp. All MIVA light sources are guaranteed for three years, regardless of imaging throughput.

Resolutions, speed and imaging structure size

It is important to note that on all MIVA imagers the minimum structure size is directly related but not equal to the projected spot or pixel size. This is because a line or structure is constructed from several pixels which are placed slightly offset to one another. For example, on the MIVA 2610DI, a Direct Imager working in 10.000 dpi mode, the specified minimum structure size is not 2,54 microns (the pixel raster size) but is specified by us at 25microns, because MIVA imagers generally use at least 10 pixels to realise our defined minimum structures in high quality. Resolutions currently available range from 3000 dpi to 128000 dpi.

Size

The maximum media size is obviously determined by the imager bed size. The minimum media size however is an important factor in reducing media wastage and is either unlimited or very low (approximately 3" x 3") depending on media type. Media can be used in standard sizes or cut to size before imaging. For maximum plot sizes of each machine, please refer to the product overview on this site. Custom size imagers can be built on request to meet exceptional customer specifications. Several custom MIVA imagers have been installed worldwide to-date. The largest plotter, now working in the UK, has a plotting area of 3m x 1.1m. The largest Direct Imager, operating in Germany, has a maximum media length of 6 meters.

Environment

MIVA DI: We recommend to operate MIVA Direct Imagers in standard yellow safelight conditions. This avoids pre- or post-exposure of resist-coated panels or UV films.

MIVA Photoplotters or Maskwriters: A room with media-appropriate safe lighting is required for loading and unloading of films or masks. During exposure the imager is light tight and normal working lights can be switched on.

Software

Netlink - Windows compatible queue manager.

Netlink runs from any PC on the same network as the plotter. **NETLINK** allows MIVA imagers to be operated remotely via a local area network. **NETLINK** also allows plot queues to be easily set up for many different types of photoresist, or other imaging media. It does this by setting up the imager automatically to work with the medium currently being exposed, thereby reducing the chance of operational errors, and minimising the operator's workload. A numbering or coding system for imaged panels or films can also be set up in **Netlink**.

MIVA Bitmap Interpreter - for imaging of PostScript, TIFF und PCX data formats.

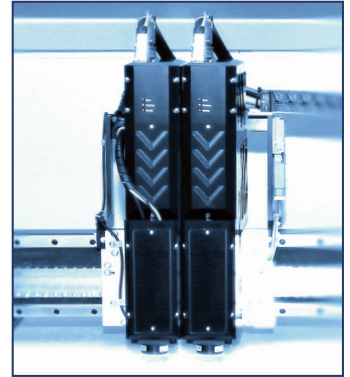
The MIVA Bitmap Interpreter allows imagers to expose bitmap data using data sources in various data formats, currently supported are:

- PCX (1 and 8 bit)
- TIFF (Uncompressed and Packbits format)
- PostScript

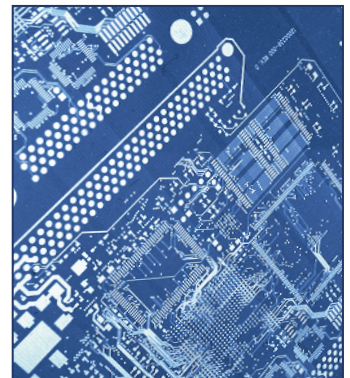
Imager driver and input data formats

The MIVA standard Imager driver is dedicated to imager control and input data rasterization. Driver upgrades are available on request and are free of charge in the guarantee period or as part of a service contract.

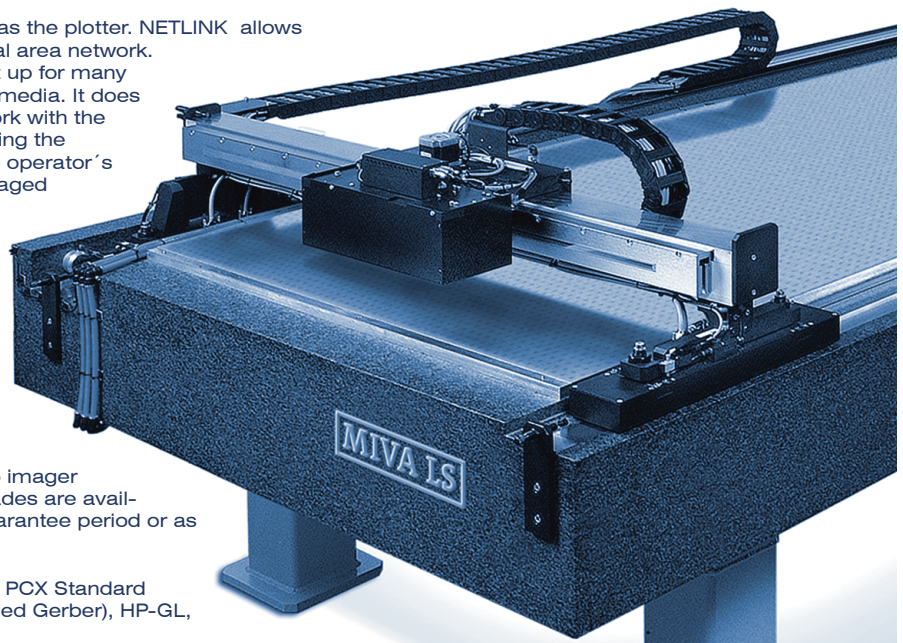
Optional input data formats are: PostScript, TIFF, PCX Standard
input data formats are: Gerber, RS-274X (Extended Gerber), HP-GL, Fire 9000.



MIVA Multi-Head Options



MIVA PCB Production Example



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MIVA Technology Advantages Are:

All MIVA Direct Imagers are granite based, linear motor driven, exposure head up-gradeable, closed loop positioning systems and use a dual wavelength, UV semiconductor light source, giving low power consumption with high exposure energy. Maximum exposure area is 26" x 30", minimum exposure area is under 4"x4". Investment cost, service costs and running costs are low, performance (speed, resolution, media flexibility) is high and can be further improved as and when required by the customer. MIVA Direct Imagers are manufactured in Germany

• **Fine:** Structures min 40µm@5000dpi, 20µm@10000dpi or 10µm@20000dpi.

• **Robust:** Granite flatbed Sieb und Meyer controlled Linear Motor XYZ Table.

• **Fast:** 500/300/120 double sided Panels 18" x 24" per day regardless of fill-factor.

• **Faster:** Multihead optional, also as upgrade.

• **Reliable:** UV Light Source 3 year guarantee regardless of usage.

• **Accurate:** Positioning resolution 100nm, absolute 5µm, repeatability 2µm over bed area.

• **Gentle:** Top/Bottom Layer Machine Vision Registration without drilling or punching holes.

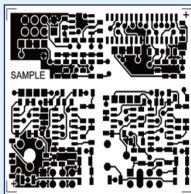
• **Automatic:** Automatic loading and unloading as option.

• **Multimedial:** Photoresist coated panels, UV film, soldermask, ceramic, phototooling film/glass, all media 0,05mm to 12mm thick.

• **Flexible:** Global (full area) or partial (zoned) scaling in X and Y direction.

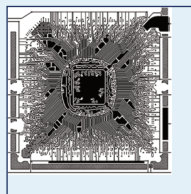
• **Sharp edged:** Steep resist flanks over full area thanks to telecentric exposure optics.

• **Edge control:** Dual Wavelength Control allows resist flank optimisation.



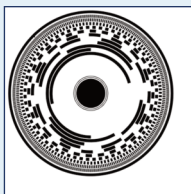
PCB production

MIVA Direct Imagers are designed to meet the varied needs of the PCB industry and although technological improvements have allowed us to address other market sectors, the PCB industry remains our biggest customer. Quality, speed, accuracy, compatibility, customer service, reliability and a fair price for new machines and maintenance are what the industry demands, and what MIVA Technologies offer.



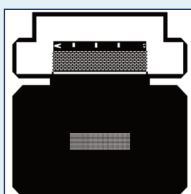
Fine line artwork

MIVA imagers offer a wide range of imaging resolutions (from 3 000 dpi to 128 000 dpi) Each single machine has three internally switchable resolutions. MIVA imagers at the high end of the resolution spectrum are logically slower than low resolution machines but offer customers the capability of imaging very fine lines and structures. The quality of the smallest structure size offered by any imager is determined firstly by the size and continuity of the minimum projected spot size and the accuracy of the imager mechanics which position the spot incrementally while exposing the film. MIVA imagers have one of the smallest spot sizes available on the market (minimum is 0.8 microns) and can therefore construct very fine lines of high quality and with high continuity.



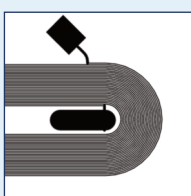
Precision graphics

The positioning accuracy of all MIVA imagers is controlled dynamically during plotting by 1,0 micron or 0.1micron resolution linear positioning encoders which operate in a closed-loop system ensuring correct pattern positioning over the whole plot area. If necessary, plot data can be pre-stretched or pre-contracted in 1,0 micron increments in each axis within the plotter before exposure. For customers working in unstable temperature environments, a temperature compensation function with an in-built sensor improves dimensional stability at higher or lower temperatures. Stability of structure sizes is inherent in the projector system and is governed by the fixed-size DMD or LCD matrix in the projector head and the highly stable light source.



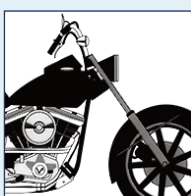
Chemical milling

For standard photo-chemical milling applications a high degree of back-to-back registration accuracy is required when considering the use of film envelopes used to image both sides of the product simultaneously. Single sided applications such as electroforming require excellent edge quality and feature size control and can make use of glass plates mandatory for some applications. Some advanced chemical milling applications such as LIGA may require chrome masks which can be cost effective in many cases where nanotechnology is being applied to everyday life (10 micron long metallized marker tags used as mixing indicators in the pharmaceuticals industry, for example). MIVA imaging technology is available down to 128000 dots per inch or more, allowing affordable feature/space distances of less than 5 microns - this type of structure may not be required in every application but gives the user the capability to expand his operations to new applications now reaching the marketplace. Chemical milling companies using a MIVA imager range from mask makers in the UK to watchmakers in Switzerland.



Glass and chrome masks

For very high media stability and when very small structures with high edge definition are required, glass or chrome masks must be used. ReSolution and Chrome class MIVA imagers are designed for use with flexible and rigid plot media, with resolutions up to 128000dpi offering very high edge definition and continuity with structure sizes down to 4,0 microns on small and large scale glass and chrome masks.



Printing applications

Postscript compatibility makes the plotter a useful tool in straightforward realisation of silkscreen masks for general printing applications.

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