

# Electronics, software, tools and services for industrial inkjet printheads


## Robust, cost-effective solutions

With a track record of reliability and a reputation for technical expertise, Meteor helps customers realise the potential of industrial inkjet


- printhead drive electronics for systems of any size or complexity
- powerful data path and application software
- tools and services to evaluate and optimise printhead/fluid combinations
- world-wide sales and support from concept to production

CERAMIC TILES  
 SIGNS & DISPLAYS  
 PACKAGING  
 COMMERCIAL PRINT  
 LABELLING  
 PRODUCT DECORATION  
 TEXTILES  
 FUNCTIONAL & 3D

### Supported printheads\*




GMA SG600  
 Samba  
 StarFire SG1024  
 Galaxy  
 Nova  
 Polaris  
 Q-Class  
 S-Class




S3200  
 S1600  
 S800  
 I3200




KM1024i  
 KM1280i  
 KM1800i  
 KM1024  
 KM1024a



KJ4A-0300 KJ4B-1200  
 KJ4A-AA KJ4B-QA  
 KJ4A-RH KJ4C-0360  
 KJ4A-TA KJ4B-YH  
 KJ4B-0150  
 KJ4B-1200-016SR  
 KJ4B-0300



GH2220 MH2620  
 MH5220 MH2820  
 MH5420 MH2420  
 MH5440 MH2610F  
 MH5221F MH2810F  
 MH5421 MH2910  
 MH5421F MH5441  
 MH5421MF MH5320  
 MH5340



RC1536  
 1024GS  
 508GS

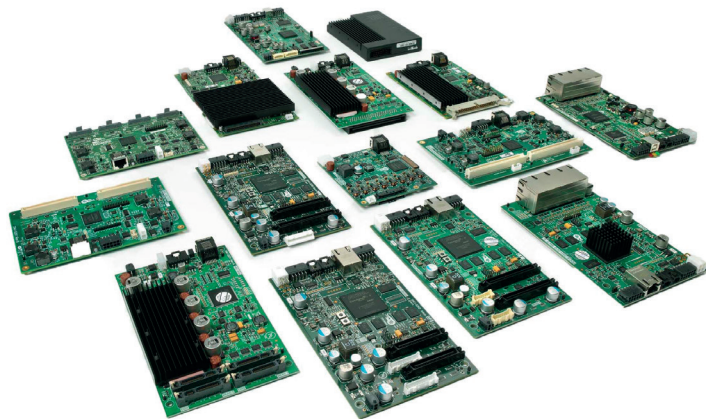


CF1  
 CF1L  
 CF1XL  
 CF3  
 CK3



2001GS12C 2002  
 2001+ Nitrox Core  
 2001+U Nitrox Pro  
 1003U Nitrox Elite  
 1003C  
 1003AMp  
 1003AMx

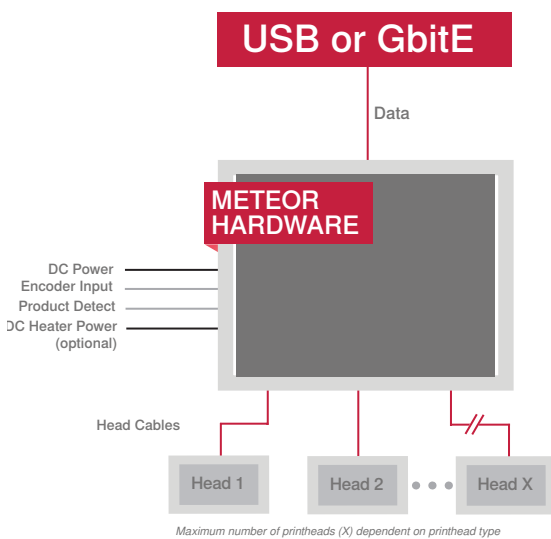
\*List not exhaustive. Company and product names are trademarks or registered trademarks of their respective companies.



Meteor understands the commercial realities of industrial inkjet systems and supports customers from development, through prototyping, into mass production with regionally based sales and support in Europe, mainland China, Asia Pacific and the Americas.

## Electronics

Meteor electronics are powerful, flexible and scalable. The same architecture is used from prototype through to production.



## Software

- Application-specific Digital Front Ends for single-pass and scanning
- Software Development Kits to facilitate bespoke solutions
- Best-in-class print calibration and nozzle-out compensation
- Fastest embedded RIP (optional) and screening on the market



## ALSO FROM METEOR

drop optimisation systems • evaluation kits • waveform development services

Meteor Inkjet Ltd is a leading independent supplier of industrial inkjet electronics, software, tools and services. Working closely with all major industrial inkjet printhead manufacturers, Meteor offers production-ready solutions to print system builders world-wide.



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## Software

With a track record of reliability and a reputation for technical expertise, Meteor helps customers realise the potential of industrial inkjet.

Developed and tested by an experienced team of software, electronics and systems engineers, Meteor's extensive suite of software provides a complete toolset for building printers from the ground up while reducing development time and risk.

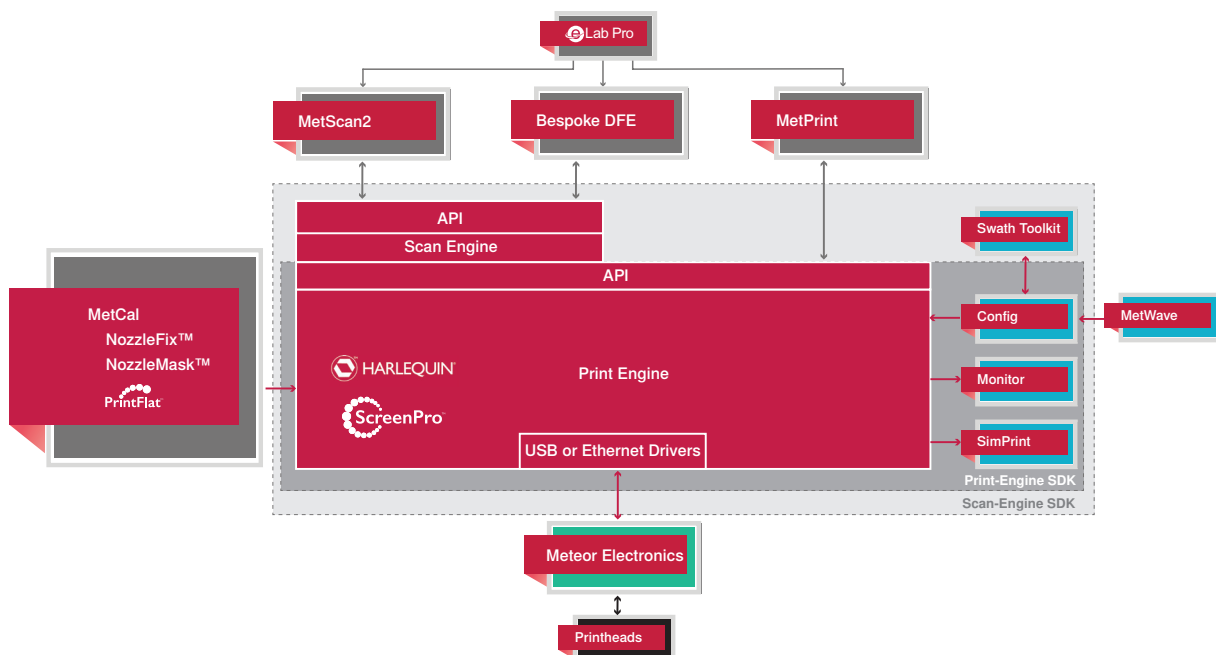


### Functionality

- ready-to-use Digital Front Ends for single-pass and scanning systems
- Software Development Kits to facilitate bespoke solutions
- image screening powered by ScreenPro™
- integrated Harlequin® RIP
- automation of PrintFlat™
- NozzleFix™ and NozzleMask™ technologies
- industrial inkjet RIP solution: eLab Pro

### Benefits

- solutions for all major industrial inkjet printheads
- ground-breaking print calibration and nozzle-out compensation
- fastest RIP on the market
- optimised print quality through advanced image screening techniques
- world-wide sales and technical support from concept to production



## Extensive suite of software with many functions

|                            |   |
|----------------------------|---|
| <b>MetPrint</b>            | Digital Front End for single pass printers with application-specific features for ceramic tile, product decoration, labelling, packaging and textile printers   |
| <b>MetScan</b>             | Digital Front End for scanning applications with support for 3D printers  |
| <b>RIP</b>                 | Integration of Harlequin, the world's fastest RIP for printing a wide variety of native file types including PDF  |
| <b>eLab Pro</b>            | Complete, scalable, customisable RIP solution for Industrial Inkjet applications  |
| <b>Screening</b>           | An embedded implementation of ScreenPro, a multi-level screening engine that corrects inkjet print imperfections such as streaking or mottling at ultra-high speed  |
| <b>MetCal</b>              | <p>Wizard-driven software that runs Meteor's exclusive nozzle-out compensation technologies, NozzleFix and NozzleMask; and automates the use of PrintFlat.</p> <ul style="list-style-type: none"> <li>• NozzleFix for single-pass or scanning systems eliminates single pixel streaks from clogged or failed nozzles by using good nozzles to counteract poorly performing adjacent nozzles.</li> <li>• NozzleMask significantly improves scanning system throughput by concealing undesirable effects of missing nozzles, thus requiring fewer passes to achieve high print quality.</li> <li>• PrintFlat is a powerful tool which creates a unique calibration screen for each individual printer and works together with ScreenPro to remove repeatable artefacts due to variations in performance within a printhead, in the stitch area between printheads, or from wear on the printheads.</li> </ul> |
| <b>Utilities and Tools</b> | <p>SimPrint: image data format verification<br/>           Monitor: intuitive PrintEngine GUI<br/>           Config: text files for system configuration including printhead layout<br/>           MetWave: printhead waveform editor</p>   |

NozzleFix and NozzleMask are trademarks of Meteor Inkjet Ltd.  
 Harlequin, PrintFlat and ScreenPro are trademarks of Global Graphics Software Ltd and may be registered in certain jurisdictions.

### ALSO FROM METEOR

V1.3

printhead drive electronics • drop optimisation systems • waveform development services

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# eLab Pro Industrial Inkjet RIP

Meteor takes digital printing of labels, packaging and books to a new level with eLab Pro, a scalable industrial inkjet RIP solution in a complete, plug and play package.

Powered by Harlequin®, the world's fastest RIP, eLab Pro works seamlessly with Meteor's inkjet printhead drive electronics and software offering an attractive, intuitive graphical user interface with the ability to command the RIP directly from the print controller or printer Digital Front End.

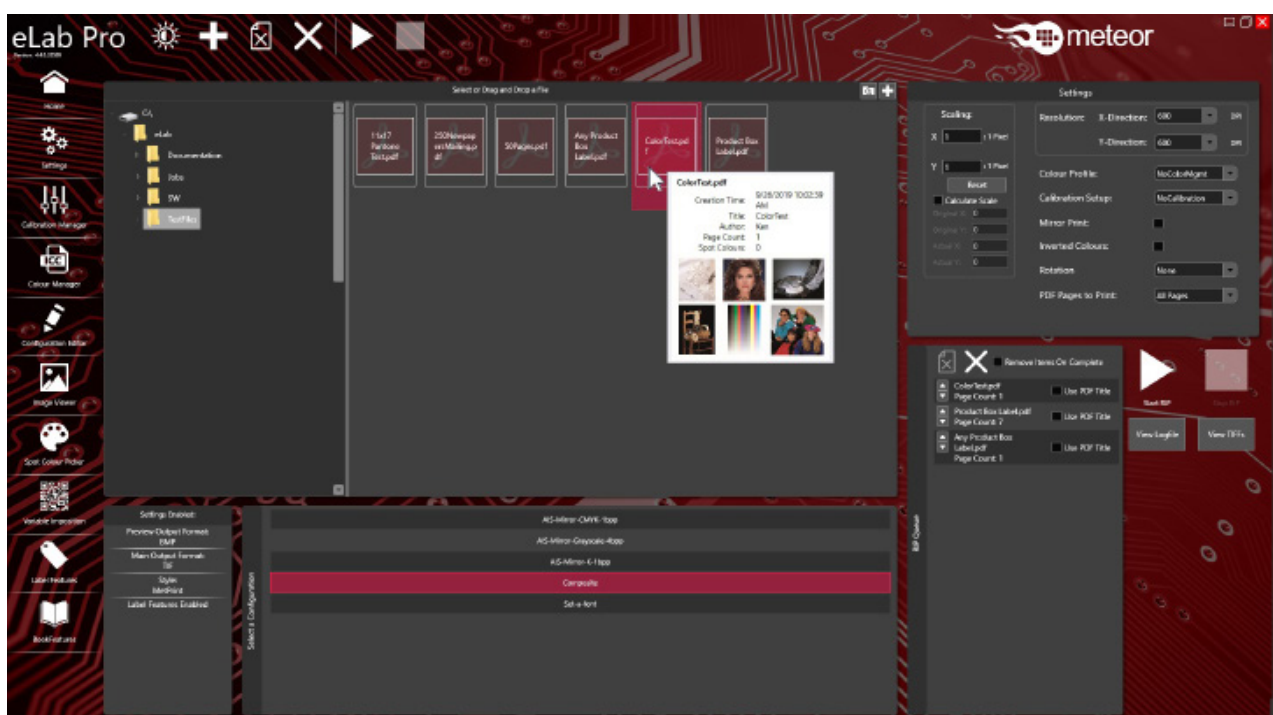


## Functionality

- Integrated Harlequin RIP
- Multi-level screening
- Comprehensive set of ready-made configurations
- Intuitive Graphical User Interface
- Built-in ink limiting and colour management tools
- For use on any PC with Meteor electronics

## Benefits

- Fastest RIP on the market
- Specifically designed for industrial inkjet
- Significant reduction in system development time and risk
- Painless RIP configuration
- Optimised print quality through advanced screening and sophisticated colour management techniques
- Handle variable data with ease



## Industrial inkjet RIP solution in a complete, plug and play package

|   |  |
|---|--|
| <b>For Development or Production Environments</b> | Reduce the time it takes to get a new inkjet system to market.   |
| <b>Customisable User Interface</b>                | Integrate the ready-to-use interface or build a customised interface tailored to specific requirements.              |
| <b>Integrated Harlequin® RIP</b>                  | Use the world's fastest RIP to convert PDF graphics to the raster format suitable for delivery to inkjet printheads. |
| <b>Advanced Inkjet Screens™</b>                   | Mitigate common inkjet print quality issues including mottling and streaking.  |
| <b>Reduced Cost of Computing Power</b>            | Operate on the same PC as MetPrint or any DFE running Meteor's Print Engine.   |
| <b>Ready-made Configurations</b>                  | Access a comprehensive set of RIP configurations or create bespoke configurations using an intuitive editor.         |
| <b>Variable Data Imposition</b>                   | Incorporate variable data at high speed.   |
| <b>Built-in Colour Management</b>                 | Achieve spot colour compensation with ease.  |

Harlequin and Advanced Inkjet Screens are trademarks of Global Graphics Software Ltd and may be registered in certain jurisdictions.

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V1.0

printhead drive electronics • drop optimisation systems • waveform development services

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# MetCal for Print Calibration & Nozzle-Out Compensation

With a track record of reliability and a reputation for technical expertise, Meteor helps customers realise the potential of industrial inkjet.

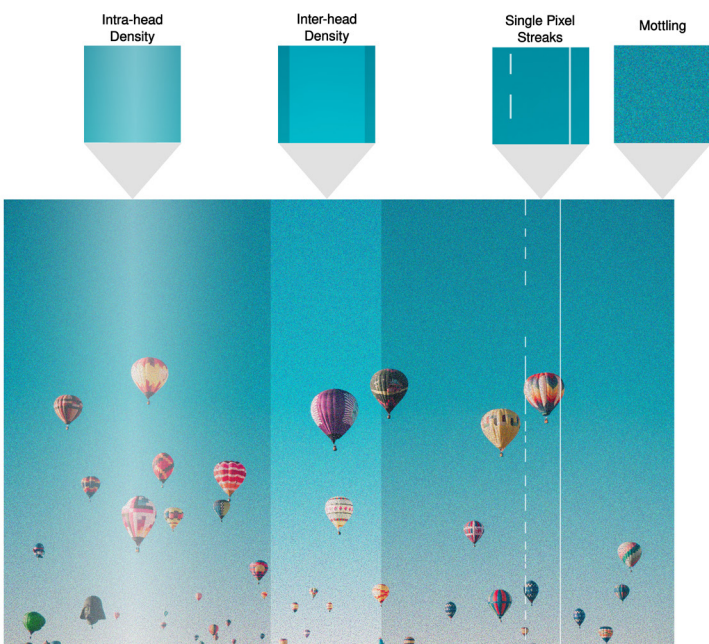
Meteor's MetCal simplifies and automates printer calibration and nozzle-out compensation resulting in improved print quality for high-speed, single-pass systems and increased efficiency for scanning systems.

## Functionality

- unparalleled nozzle-out compensation using NozzleFix™
- automation of PrintFlat™ to mitigate print artefacts caused by variation within a printhead or between printheads
- image screening powered by ScreenPro™
- seamless integration with Meteor's PrintEngine, MetPrint and MetScan2
- NozzleMask™ for scanning printer efficiency

## Benefits

- easy-to-implement printer calibration to dramatically impact image quality
- elimination of single pixel streaks from clogged or failed nozzels
- no more banding from stitching problems, ink supply vagaries or printhead crosstalk
- less streaking and mottling through advanced image screening techniques
- reduction in system down-time due to print quality issues
- efficiency boost for scanning systems

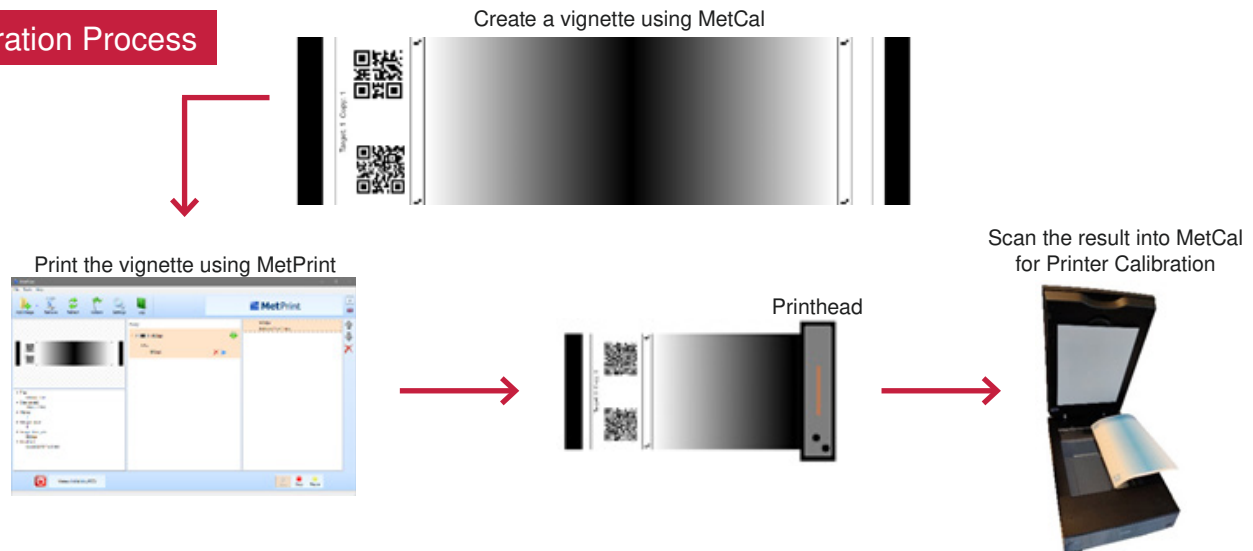


without MetCal



with MetCal

## Calibration Process



## MetCal enables unparalleled image quality, calibration functionality and printer efficiency

MetCal is a tidy package of wizard-driven software that runs Meteor's exclusive nozzle-out compensation technologies, NozzleFix and NozzleMask; offers an integrated version of ScreenPro; and automates PrintFlat.

- **ScreenPro** is a multi-level screening engine that corrects inkjet print imperfections such as streaking or mottling at ultra-high speed. Used with Advanced Inkjet Screens™ ('Mirror' for non-absorbent media such as plastics or metal and 'Pearl' for absorbent substrates such as paper and board), common inkjet print quality challenges are significantly improved in most cases. The Integrated version of ScreenPro is an extension to Meteor PrintEngine and can be configured by MetPrint.
- **PrintFlat** is a tool that creates a unique calibration screen for each individual printer and works with ScreenPro to remove repeatable artefacts due to variations in performance within a printhead, in the stitch area between printheads, or from wear on the printheads.
- **NozzleFix** nozzle-out compensation for single-pass or scanning systems eliminates single pixel streaks from clogged or failed nozzles by using good nozzles to counteract poorly performing adjacent nozzles. Deviated or missing nozzles are identified to the Meteor datapath and switched off while nearby nozzles apply compensating fluid in the same or different colour planes resulting in seamless correction.
- **NozzleMask** significantly improves scanning system efficiency by concealing undesirable effects of missing nozzles thus requiring fewer passes to achieve high print quality.

NozzleFix and NozzleMask are trademarks of Meteor Inkjet Ltd.

PrintFlat, ScreenPro and Advanced Inkjet Screens are trademarks of Global Graphics Software Ltd and may be registered in certain jurisdictions.

## ALSO FROM METEOR

V1.2

printhead drive electronics & software • drop optimisation systems • waveform development services

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# Workflow DFEs for Industrial Inkjet

With a track record of reliability and a reputation for technical expertise, Meteor helps customers realise the potential of industrial inkjet. Meteor's Digital Front End (DFE) software solutions help to automate and simplify print system operation.

**MetPrint™** is a fully configurable click and play DFE suitable for prototyping and production.

**eLab Pro™** is a complete RIP solution for industrial inkjet applications incorporating the Harlequin™ RIP and including colour management capability.

**Stepz™** is a full step-and-repeat variable data editor developed by HYBRID SOFTWARE.

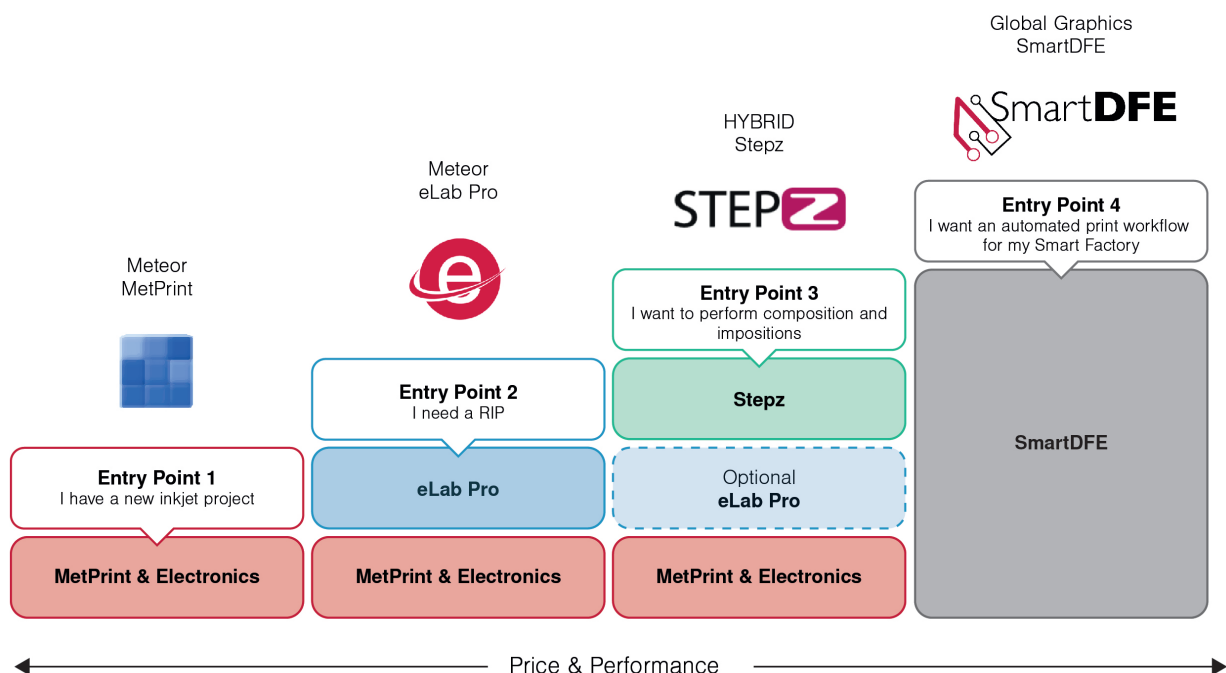
**SmartDFE™**, co-developed by the Global Graphics Group of companies, is a complete print workflow solution for a fully-automated Smart Factory.

## Functionality

- Seamless workflow from job creation to production
- Full VDP layout editor
- Rasterization and screening direct to the printhead datapath
- Inter-head density compensation at production speed
- Installed on a single PC running Windows 10

## Benefits

- Solutions for all major industrial inkjet printheads
- Ground-breaking print calibration and nozzle-out compensation
- Fastest RIP on the market
- World-wide sales and technical support from concept to production
- Cost effective, flexible solutions



# SmartDFE

SmartDFE™ brings the creation of print-ready PDF files, job workflow automation, RIPping, screening, and optimised image quality together with data driven directly to the printheads at high speed.

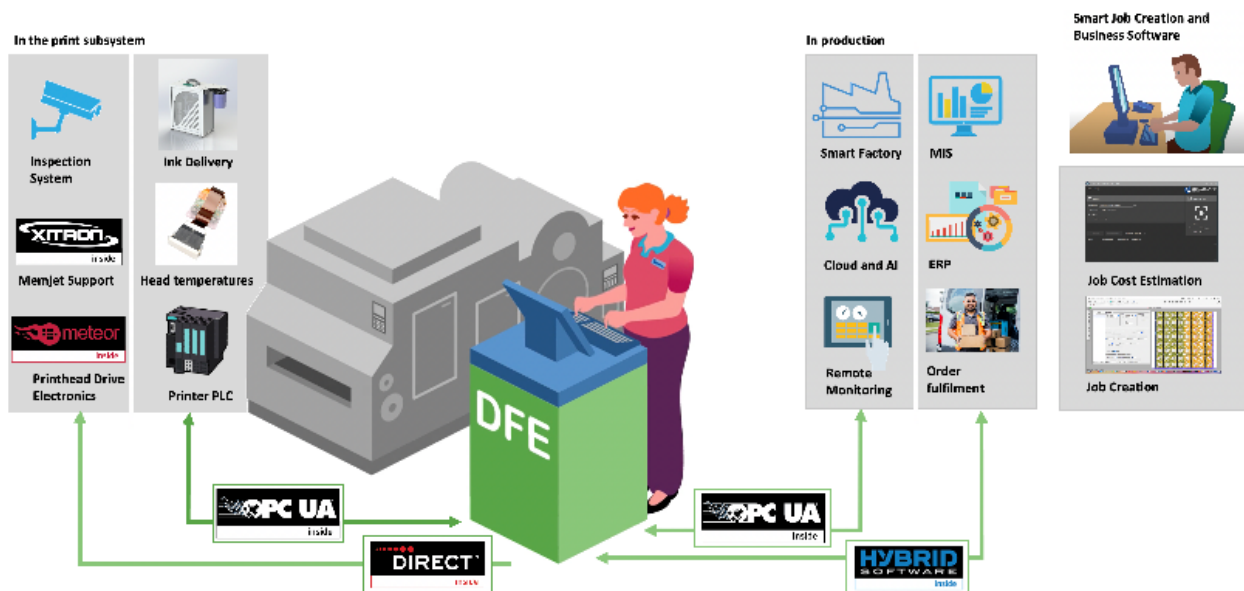
Co-developed by Meteor Inkjet, Global Graphics Software, HYBRID Software and Xitron, SmartDFE transforms the role of the digital press in the smart print factory of the future. SmartDFE for labels and packaging comprises PDF editing, layout, and automated Variable Data Printing with HYBRID Stepz and CLOUDFLOW, job cost estimation and production controls that connect to the Smart Factory using OPC UA (Open Platform Communications Unified Architecture), rasterization and screening using Harlequin Direct™ sending completed image data directly to the printhead via datapaths from either Meteor for industrial inkjet printheads or Xitron for Memjet technology.

## Functionality

- Automated Variable Data Printing
- Complete control of the print workflow
- Rasterization and screening direct to the printhead datapath
- Input for inspection, QA, press maintenance and stock control
- Colour management control
- Ability to create, load and save printer configurations

## Benefits

- Complete package from job creation to driving printheads
- Maximised performance with the Meteor datapath
- Cloud-based data collection hub using artificial intelligence to power DFE components



Harlequin is a trademark of Global Graphics Software. Stepz and CLOUDFLOW are trademarks of Hybrid Software. SmartDFE is a trademark of the Global Graphics Group.

## ALSO FROM METEOR

printhead drive electronics • drop optimisation systems • waveform development services

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## DropWatching Systems

Meteor DropWatchers evaluate and optimise printhead and ink combinations using production-ready electronics that can be transferred straight to manufacturing.

Allowing visualisation and characterisation of drops in flight while adjusting waveform parameters using live feedback, Meteor DropWatching Systems are:

- from the leading supplier of industrial inkjet printhead driving solutions
- essential tools for waveform characterisation and development
- available for all major industrial inkjet printheads



KONICA MINOLTA



KYOCERA

RICOH



TOSHIBA  
Leading Innovation

XAAR

### Easy to use

- PC-based software with the intuitive and familiar Meteor interface
- Straightforward printhead mounting and alignment
- Simple calibration
- The ability to annotate drops in flight with associated setup parameters

### Cost Effective

- Standard Meteor drive electronics for lab results that are directly applicable to the production environment
- Interchangeable printhead mounts and drive electronics
- Optional ink supplies (from simple syringe to recirculating)

### Small Footprint

- A compact package for lab environments where space is at a premium
- Tools that are driven by a single windows 10 PC

### Real-Time Analysis

- Live editing of waveform shape, voltage and grey level
- Double-strobe drop velocity and volume measurement with report-oriented data capture
- Direct observation of nozzle crosstalk and duty cycle
- Overlays for calibrated measurement at user defined throw distances

## Printhead Evaluation Kit

Kit contains\*:

- 2064 x 1544 GigE camera, 3-axes mount, optics and high power LED strobe
- Live waveform editing and drop visualisation software
- DropWatcher Control Unit (DCU)
- DropWatcher Interface Unit (DIU)
- Printhead-specific Head Driver Unit (HDU)
- Printhead-specific head mount
- Detachable waste fluid reservoir
- Power supplies and cables

Optional extras:

- Drive electronics and mounts for additional printheads
- Ink supplies (from simple syringe to sophisticated recirculating)

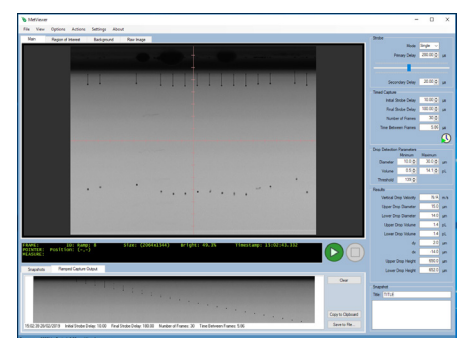
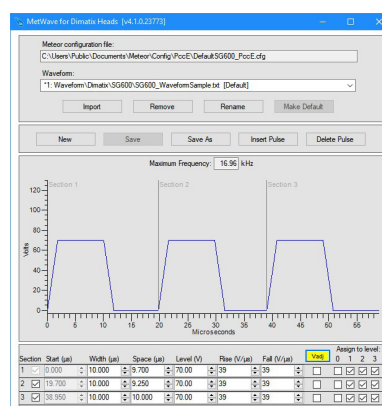
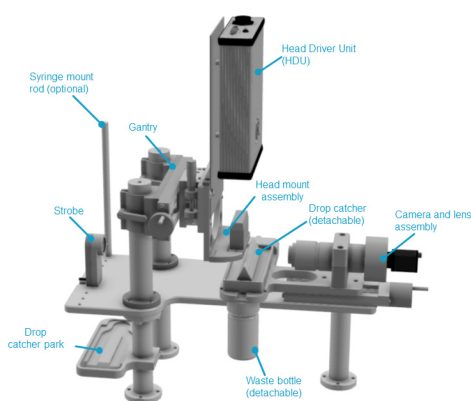


DIU and DCU



Mounts for all major printheads

\* Printheads available directly from printhead manufacturers. Contact Meteor for referral. Excludes Windows 10 PC, ink, printhead and vacuum extraction.



## ALSO FROM METEOR

printhead drive electronics • software

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# Waveform Development Services

From training, to waveform development to extended reliability testing, Meteor's committed team of technical specialists offer a tiered collection of tools and services for ink characterisation, print reliability analysis and waveform evaluation/optimisation.

- from the leading supplier of industrial inkjet printhead driving solutions
- essential tools and services for waveform characterisation and development
- available for all major industrial inkjet printheads



|  | Waveform Development Service <sup>1</sup> | Fluid Characterisation Service <sup>1,2</sup> | Enhanced Waveform Reliability Testing <sup>1,2,3</sup> | Training |
|--|---|---|--|----------|
| Evaluation of drops-in-flight at Meteor's UK facility using state-of-the art tools                       | ✓   | ✓   | ✓  |          |
| Determination of drop volumes at various print frequencies for a particular fluid/waveform combination   | ✓   | ✓   | ✓  |          |
| Mapping of drop volume and velocity vs drive voltage and print frequency                                 | ✓   | ✓   | ✓  |          |
| Image generation of drop and ligament formation sequences  | ✓   | ✓   | ✓  |          |
| Characterisation of physical properties of a fluid to aid in reformulation efforts                       |   | ✓   | ✓  |          |
| Fluid rheology analysis to understand viscosity profiles, surface tension, particle size and density     |   | ✓   | ✓  |          |
| Evaluation of open time and latency effects  |   |   | ✓  |          |
| Assessment of jetting reliability, fluid build up and misting  |   |   | ✓  |          |
| Print reliability testing using standard images as well as customer-provided application-specific images |   |   | ✓  |          |
| Introduction to waveform development techniques specific to the printhead architecture of interest       |   |   |  | ✓        |
| Training to use Meteor DropWatchers including system setup and software application procedures           |   |   |  | ✓        |

<sup>1</sup> Printhead, ink, flush and MSDSs provided by customer.

<sup>2</sup> To protect confidentiality and intellectual property, Meteor performs no compositional analysis on customer's ink. Fluid analysis is performed under NDA.

<sup>3</sup> Real-world performance is influenced by environmental conditions and fluid/substrate interactions.

## ALSO FROM METEOR

printhead drive electronics • software • dropwatching systems

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