IMI EUROPE

Digital Print Europe 2022

9-12 May 2022

Novotel Barcelona City Hotel | Barcelona |Spain

The strategic business and technical event for the inkjet industry

Inkjet Academy

Monday 9 - Tuesday 10 May 2022

Knowledge of the technology behind any industry is essential to its development. The Inkjet Academy covers the basic theory behind the many types of inkjet technology used today and aims to give your understanding of the industry an expert start. The course is presented by Dr Mark Bale of DoDxAct and Dr Tim Phillips of Catenary Solutions / IMI Europe.

The course will show you how printheads work, the materials used in their fabrication and the theory of their operation. You will also learn how inks are formulated and used, as well as about ink supply and support systems. The course examines how drops are formed, travel and behave on the substrate surface. Fundamental aspects of printer operation such as nozzle maintenance and print quality are also covered. Course topics include:

- Introduction to Inkjet
- Industrial Inkjet Printheads
- Inkjet Inks
- Inkjet Systems & Components
- Industrial Inkjet Markets
- Case Studies & Trends

Digital Printing Conference

Wednesday 11 - Thursday 12 May 2022

The IMI Europe Digital Printing Conference is the flagship strategic conference for the inkjet industry, trusted as a primary source of high value information by senior executives and commercial managers for over 20 years. This two-day event includes the following elements:

- Market briefings from leading analysts
- Updates and views from industry pacesetters
- Perspectives from key end users
- New technology introductions from inkjet innovators

As well as formal presentations, the conference programme includes panel sessions covering key topics, with the panels comprising and chaired by industry leaders.

Networking
The IMI Europe Digital Printing Conference gives you the opportunity to meet senior executives from within the inkjet industry as well as from companies using the technology or developing it for their use. With two networking lunches, an evening reception and additional refreshment breaks, there is ample opportunity to meet with key people.

Sponsor Exhibits & Forum
Event sponsors will have their products and technology on display in the breakout area and the Sponsors' Forum enables you to hear short presentations from sponsors on their company and latest news. If you are interested in becoming an event sponsor, please visit the sponsorship page on our website.

Inkjet Academy

Monday 9 – Tuesday 10 May 2022

COURSE FOCUS

The Inkjet Academy course covers the background to the inkjet technology used in today's applications and gives your understanding of the industry an expert start.

The course introduces the key types of inkjet technology and how they operate., then describes how printheads operate, with an overview of the key models in use today. You will learn how inks are formulated, the important materials used, and how inkjet inks behave in a printhead. The course also covers ink supply systems, software, motion systems and the integration of these components into an inkjet system.

Testing inks and systems is also covered, along with nozzle maintenance and print quality. The course then looks at some key applications from a market and technology point of view with instructive case studies, before looking at new and emerging areas.

Presented by Dr Mark Bale of DoDxAct and Dr Tim Phillips of Catenary Solutions and IMI Europe, the course provides an introduction to the technology for anyone entering the inkjet industry, while also being useful for those seeking a technology update.

Monday 9 May 2022

12.30 – 13.30 Registration
13.30 Course Begins

Introduction to inkjet

- Course overview
- Why use inkjet? Pros and cons
- Types of inkjet technology
- Continuous/drop on demand
- Thermal and piezo inkjet
- Ink technologies
- Evolution of inkjet markets

Industrial Inkjet Printheads

- Printhead selection
- Continuous Inkjet
  - Design and benefits
  - MEMS & Kodak Steam
- Thermal inkjet heads
  - Design Features
  - Adaptability & saleability of MEMS
  - Benefits & limitations
- Piezo inkjet heads
  - Design Differences
  - Benefits and features
  - Recirculation
  - MEMS and Thin Film
- Other printheads
- Printhead selection

Inkjet inks

- Inkjet ink design
- Inkjet ink requirements
- Drop formation
- Reliability and testing
- Dyes and pigments
- Dispersing particles in an inkjet ink

17:30 Session ends
17:30 - 18:30 Reception
Join us for beers, wines and good company!

Tuesday 10 May 2022

08:30 Session Begins

Inkjet Systems & Components

- Design for quality
  - System approach to integration
- Importance of substrate
  - Control of droplet interaction
- Ink supply
  - Key components & design
- Printhead Integration
  - Mechanical alignment / banding
  - Nozzle maintenance
  - Electronics & waveform
- Drying & curing
- Reliability
  - Latency effects
  - Minimising and mitigating mist
  - Missing nozzle detection & compensation
- Measuring success
  - Print quality metrics

12.30 – 13.30 Lunch
13.30 Session begins

Industrial Inkjet Markets

- Benefits of digital printing
- Industrial inkjet business model
- Barriers to entry and collaboration
- Market penetration data
- Instructive examples

Case Studies & Trends

- Multi-pass
  - Graphics requirement
  - Textiles specific
  - Printed electronics
  - Challenges remaining
- Single-Pass
  - Labels
  - Packaging
  - Décor
  - High Speed: demands & limitations
- Coatings & Effects
  - Ceramics & digital lines
  - Finishing, 2.5D and haptic
- 3D Printing / Additive Manufacturing
  - High viscosity & exotic materials

17:30 Course ends

COURSE LEADERS

Dr Mark Bale
Director, DoDxAct, UK

Mark Bale is a PhD qualified Physicist who started DoDxAct Ltd in 2017 in order to provide practical support to those developing technology for the industrial inkjet printing industry based on independent laboratory facilities. Specialising in print heads, inks and the optimisation of print process, Mark is recognised by leading vendors of inks, heads, printers and components as someone who can enable their technology in the market and support their customers to success. DoDxAct's clients list comprises start-ups to globally-recognised brands, spanning 4 continents with the common goal of getting the most out of their inkjet products or application.
After starting his career in Oxford and Cambridge University Spin-off companies Opsys and CDT, Mark got into inkjet by helping develop the process to print OLED displays, including the print strategy & metrology to optimise the uniformity. Mark then worked with Sun Chemical for over 10 years, ultimately leading a team that supported the integration of cutting-edge inkjet ink developments of all types into OEM customers of their SunJet branded and private labelled products.

Dr Tim Phillips
Founder & Director, Catenary Solutions, UK

Tim Phillips has extensive experience in challenging inkjet integration projects, spending eight years working at Xennia Technology Ltd, the leading inkjet solutions company that was acquired by Sensient in 2015. This involved working with a wide range of companies developing technology for new applications including textiles, ceramics, packaging, décor and functional material deposition for printed electronics and biomedical uses. Tim founded Catenary Solutions in 2015 to bring this knowledge of digital solution development and marketing to a wider audience, working with numerous companies in the inkjet industry since then. Tim is an experienced presenter of IMI Europe courses including the Inkjet Academy, Inkjet Ink Manufacturing & Digital Textile Printing courses..

IMI Europe Digital Printing Conference 2022

Wednesday 11 – Thursday 12 May 2022

The IMI Europe Digital Printing Conference is the flagship strategic business and technical conference for the inkjet industry, trusted as a primary source of high value information by senior executives and commercial managers for over 20 years.

This two-day event includes market and application overviews from key industry figures, as well as the latest technology developments from leading players covering printheads, printing systems, inks, software and other significant areas.

Conference Speakers

Jasmine Geerinckx | Unilin Technologies

Nick De Roeck | Hybrid Software Group

Marco Boer | IT Strategies

Jos Notermans | SPG Prints

Dr Simon Daplyn | Sun Chemical

Martin Duda | Meteor Inkjet

Stephen Anderson & Dahlon Lyles | Dyndrite

Ramon Borrell | Quantica

Dr Mark Bale | DoDxAct

Dr Tri Tuladhar| Trijet

Luca Rovacchi | Habasit

Dirk Imhof & Jürgen Bender | KRONOS

Holly Steedman | Integration Technology

Wednesday 11 May 2022

08.30 – 09.30 Conference registration

09.30 Conference begins

Cost effective high volume digital printing solution to print on décor paper for laminate production

Jasmine Geerinckx

Business Development Manager IP, Unilin Technologies

Digital printing has mayor key advantages over traditional gravure printing such as short set-up time, reduced stock, variable run-lengths and personalized printing with a limitless amount of design choices allowing fast following of trends.

During this lecture we will explore the different technologies and their economical and productivity solutions available in the laminate market using roll2roll digital printing solutions and texturing possibilities.

How to integrate inkjet into the Smart Factory

Nick De Roeck

CTO, Hybrid Software Group

Integrating inkjet printing into a Smart Factory requires a rethink in the software and hardware stack. If you're planning to do it you need to build in capability that can deliver everything from mass production to mass customization at the same cost as current print systems. You'll need a fully automated Digital Front End (DFE), connected to the rest of the production system via Industry 4.0 technologies like OPC UA, (the open standard for information exchange for industrial communication). This talk explains how to create the Smart Factory's print subsystem using AI to power its components.

Strategic Advisory Board

Tim Phillips
IMI Europe

Tracey Brown
Meteor Inkjet

Pete Saunders
Sun Chemical

Kurt Fischer
TCM

Holly Steedman
Integration Technology

Marco Boer
IT Strategies

IMI Europe Digital Printing Conference 2022

Wednesday 11 – Thursday 12 May 2022

Paper supply chain instability and its implications on the print industry

Marco Boer
Vice President, IT Strategies

Demand for direct mail, book printing, and other applications is surging as we slowly start to exit COVID. But there is a new challenge: paper supply chain instability. There isn't enough paper. The core roots to this crisis date back more than a decade, as demand for writing paper has been in decline for 10 years. Mills closed or where converted to packaging papers, driving up writing paper prices. Paper imports increased supply and mitigated price increases, but as COVID hit imported paper disappeared. This has let to less supply, and higher prices. This session will discuss when the supply chain can be expected to stabilize, and what it means for print providers and digital printer manufacturers.

Panel Session 1: Industrial printing - where next?

The panel will be chaired by a member of the strategic advisory board and include industry experts from the conference presenters.

12.30 – 14.00 Lunch

14:00 Afternoon session begins

Digital textile printing - what's next on the horizon?

Jos Notermans
Business Manager Digital Textile Inks, SPGPrints Group

Last year it was 30 years ago that former Stork (now SPGPrints) launched the first digital textile printer, running 1 square meter per hour. Since then we have gone through a lot of focus items (or buzz words?): printing speed, reliability, ink versatility, printhead warranties, single pass printing and recently terms like sustainability and near-shoring are the talk of the town. But what to expect for the years to come? New printhead technologies? Final breakthrough of pigment printing? Better match to conventional printing? SPGPrints will address the main trends they are seeing in this (hopefully) post-COVID period and how digital textile will develop over the next 3-5 years.

Digital textiles – market trends and strategies to meet the challenges of sustainability

Dr Simon Daplyn
Manager, Product Marketing, Sun Chemical Digital Printing

The textile industry has been under pressure to clean up its act for a number of years with many leading brands introducing sustainability commitments and standards to reduce the overall impact of textile decoration on the environment. In parallel, consumers are making more conscious decisions about how and what they buy. This leaves the brands and their downward supply chain with a decision pathway to manage in terms of material and technology selection to meet the demands of the market. This talk will look at the industry trends, the impact they have on printers, the challenges of sustainability and how digital printing is placed to meet them.

Industrial inkjet for direct to shape applications

Martin Duda
Technical & Commercial Consultant, Meteor Inkjet

The convergence of just-in-time logistics; in-line product customisation; and packaging reduction for environmental and cost reasons is presenting significant opportunities for bespoke, direct to shape industrial inkjet systems. With the evolution of inks, hardware and software, digital solutions previously considered out of reach are now a reality. This talk will cover

- The latest industrial inkjet trends and technological innovations for direct to shape applications
- Adding bespoke solutions to existing production lines
- Transitioning from analog (pad or screen) to digital (inkjet)
- Successes and challenges illustrated by real-world examples

Industrialising inkjet solutions in additive manufacturing

Stephen Anderson & Dahlon Lyles
VP Business Development / Application Engineer, Dyndrite

As Additive Manufacturing develops, machines become larger, evermore complex and consume increasingly large datasets. Likewise, the design freedoms afforded by AM are creating significant challenges for CAD and AM CAM. In short: AM hardware has surpassed the software. This leads to broken AM workflows, production bottlenecks and waste, which prevents AM from taking its rightful place as a mainstream production tool. Dyndrite GPU technology solves these issues to handle largest datasets at scale and speed and enable automated AM serial end production. This presentation shows how Dyndrite is working to deliver an optimized 3D CAD-to-inkjet printhead development environment empowering OEMs to quickly invent new, more innovative raster inkjet machines.

Panel Session 2: Textiles and sustainability

The panel will be chaired by a member of the strategic advisory board and include industry experts from the conference presenters.

17:40-18:10 Sponsors' Forum
Hear short presentations from the event sponsors.

18:10-20:00 Networking Reception
Join us for wine, beer, canapés and good company!

IMI Europe Digital Printing Conference 2022

Wednesday 11 – Thursday 12 May 2022

Thursday 12 May 2022

09.30 Morning session begins

A revolutionary new piezo inkjet technology and printhead capable of jetting extreme viscosity inks

Dr Ramon Borrell

CTO, Quantica GmbH

Innovative start-up Quantica has devised a new technology using a novel operation mode for piezo inkjet printheads aimed at removing the viscosity limitations of current commercial printheads. Subsequently, a printhead using the new technology has been developed along with the necessary sub-systems for integration in a printer. The new inkjet technology brings a combination of advantages, the most relevant being the capability to jet extremely high viscosity fluids, combined with very high productivity per nozzle, very wide drop size control, and the capability to jet fluids with high particle load and large particle sizes. A family of 3D printers for advanced applications is being developed using the new printhead. Multiple other applications in graphics, construction materials, additive manufacturing and microfluidics will benefit from the unique qualities of the new technology.

Adapting inkjet to manufacturing needs

Dr Mark Bale

Director, DoDxAct

The successful application of inkjet printing technology in a variety of decorative and functional manufacturing processes involves combination of materials optimisations and process development, often by combining inkjet with other techniques to create a hybrid system. Using selected examples taken from our broad project experience we look at some of the typical challenges involved, ranging from print head jetability, through the control of print output through surface treatment & chemistry to the tailoring of equipment design to achieve specific requirements.

Differences in complex rheological properties of jetting & non-jetting high viscosity inkjet inks

Dr Tri Tuladhar,

Director, Trijet

As the inkjet industry explores jetting of high viscosity and high solid loading inks, we find only limited high viscosity inks jet reliably well, whereas many others with similar bulk properties fail miserably. The complex dynamic properties of the ink are the key parameters affecting jetting behaviour. This has direct influence on printhead pumping capacity for drop ejection, in-flight jetting & break-up behaviour, meniscus damping profile post-jetting and ink channel re-filling capability. We will present complex rheological properties of inkjet inks at the timescale and geometry relevant to inkjet systems that identify subtle differences between 'good' and 'bad' inks. Understanding dynamic properties of inkjet inks will help to formulate reliable high viscosity inkjet inks and speed up waveform development.

Inkjet printing using belt-based substrate transport systems: key factors affecting performance and cost optimisation strategies

Luca Rovacchi

Innovation Business Case Owner, Habasit

Printing a substrate while transporting (and positioning) it using a conveyor belt has been done for a long time in the analogue printing world because of the numerous advantages of such a solution. Using the same transport advantages in the inkjet world is very desirable but involves a deep knowledge of such belt-based transport system in relation to the substrate to be printed. We will explore the key performance factors for the design of a high precision belt transport system as well as cost optimisation depending on the application.

12.30 – 14.00 Lunch

14:00 Afternoon session begins

Panel session 3: Covid, raw materials prices and other stresses

The panel will be chaired by a member of the strategic advisory board and include industry experts from the conference presenters.

Novel aqueous white pigment concentrate for inkjet applications

Dirk Imhof & Jürgen Bender

Manager Solvent Based Coatings and Inks & Market Development Manager, KRONOS International

White TiO2 pigments are used in various printing ink technologies and applications. The demand of TiO2 pigments for digital printing inks is significantly increasing, primarily focused on packaging and textile applications.
Moreover, we observe a need in the market place concerning optimized white pigments which fulfil the technical ink requirements such as an excellent storage stability level and highest opacity and whiteness in prints.
To answer these needs, KRONOS developed a novel white TiO2 pigment concentrate tailored for water-based inkjet technologies. The unique optimized TiO2 product exhibits a wide range of compatibility with various types of ink binders and additives and is complaint with Swiss Ordinance and Nestle guidance regulatory. In addition we will present the KRONOS´ stage-gate process that lead to this new product development from an idea to the final launch of KRONOS 9900.

The future is bright … the future is violet - LED curing technology in new markets and applications

Holly Steedman

Business & Technology Development Director, Integration Technology

UV LED curing technology is not a new concept in the printing world; it has been used extensively in wide format printing for many years now. However, there are still many opportunities for further adoption of LED. Take, for example, industrial printing, where LED curing is still being integrated into many applications: are there limitations? What are the reasons for the slow adoption?
We will also discuss the future of UV curing, including mercury lamps and the development of UVC, LED chips/diodes and how this will also shape the future of curing.

16:00 Conference ends

Upcoming IMI Europe Events

Inkjet Summer School 2022

4-8 July 2022

Novotel Gent Centrum Hotel| Ghent |Belgium

Inkjet Academy

Theory of inkjet technology

Monday 4 - Tuesday 5 July 2022

The Inkjet Academy covers the basic theory behind the many types of inkjet technology used today and aims to give your understanding of the industry an expert start. The course is presented by Dr Mark Bale of DoDxAct and Dr Tim Phillips of Catenary Solutions / IMI Europe.

Inkjet Ink Manufacturing

Manufacturing inks for performance & reliability

Wednesday 6 - Thursday 7 July 2022

This course covers the issues of inkjet ink design, development and testing, scale-up for manufacture and manufacturing itself. It also covers ink plant design and commercial considerations. Course leaders include Dr Chris Nicholas of Smart Chemistry UK and Dr Tim Phillips of Catenary Solutions.

Jetting Functional Fluids

Rheology, deposition, process & development

Thursday 7 - Friday 8 July 2022

In this course you can learn how to develop a functional printing application, including inkjet printhead selection, formulating an ink with functional materials and jetting functional fluids onto a substrate. The course is led by Printed Electronics Ltd.

Fluid Dynamics & Acoustics

How inkjet printing really works

Monday 4 - Tuesday 5 July 2022

The aim of this course is to couple the characteristics of droplet formation and landing, spreading and permeation to the acoustics of the fluidics of the printhead. The course leader is Prof Dr Frits Dijksman, University of Twente, Netherlands.

Selecting & Driving Printheads

Drive Electronics & Waveform

Wednesday 6 - Thursday 7 July 2022

This course covers everything you need to know about the hardware and software required for driving printheads, including printhead selection, screening algorithms and waveform optimisation. The course is presented by experts from Meteor Inkjet.

Digital Packaging Printing

Applications, technology and factory integration

Thursday 7 - Friday 8 July 2022

In this course you will learn about the key market and technological factors of importance for inkjet packaging printing. The key design and workflow aspects will be considered, as well ink and other technology requirements, and the integration of a solution into a factory environment. The course is led by Hybrid Software with further presenters to be confirmed.

Upcoming IMI Europe Events

Inkjet Ink Characterisation Practical Course

11-14 July 2022
Cambridge, UK

Held at the Meteor Inkjet Laboratory in Harston (near Cambridge), in partnership with Meteor Inkjet, KRÜSS, Malvern Panalytical and Trijet, the Inkjet Ink Characterisation Practical Course is the ideal way to learn more about key aspects of inkjet technology. Topics covered include rheology and surface tension measurements, particle and dispersion assessment, as well as drop visualisation and print quality analysis. The course is structured with lectures introducing the principles behind each topic, followed by hands-on demonstrations of the characterisation equipment. There is also the chance to bring your own samples and get them assessed in our open lab session.

Inkjet Winter Workshop 2023

January 2023
Location TBC

A selection of high quality 1.5 day technical courses on topics of interest within inkjet printing, including the world-famous Inkjet Academy. The IMI Europe Inkjet Winter Workshop is the ideal way to gain a more detailed understanding of a specific technology area, with six courses presented by experts in their field.

InnoLAE 2023

23-24 February 2023
Genome Wellcome Campus, Cambridge, UK

This conference programme highlights the most innovative and exciting aspects of large-area electronics - including printable, plastic, organic, flexible and bio- electronics. The conference is attended by researchers, manufacturers, equipment suppliers, integrators and users to explore this emerging technology and the development of products incorporating LAE. innoLAE attracts an equal balance of delegates from industry and academia, creating an important platform for supporting innovation, building collaborations and advancing the state-of-the-art.

Find out more on our website:
www.imieurope.com

IMI Europe Digital Printing Conference 2022

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KRONOS

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NETZSCH
Proven Excellence.

BÜHLER

TCM
TECHNICAL CONFERENCE MANAGEMENT

CATENARY SOLUTIONS
LINKING TECHNOLOGIES AND MARKETS

Venue

Digital Print Europe 2022 will be held at the Novotel Barcelona City Hotel in Barcelona.

The Novotel Barcelona City is a 4 star hotel in Barcelona's modern Diagonal business district, just a couple of minutes' walk from the metro. The hotel's rooftop terrace boasts panoramic views of the city and also contains an outdoor swimming pool and bar.

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The week at a glance

	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00
Monday 9 May						Registration	Inkjet Academy				Reception		
Tuesday 10 May		Inkjet Academy				Lunch	Inkjet Academy						
Wednesday 11 May		Registration	Digital Printing Conference			Lunch	Digital Printing Conference					Reception	
Thursday 12 May			Digital Printing Conference			Lunch	Digital Printing Conference