

PrintValley unites experts in advanced printing technology

TAKING THE LEAD IN THE WORLD OF PRINTING

Research consortium PrintValley aims at creating new printing platforms, for instance targeting printing as a chip and display production technology. Among the 23 parties involved are major companies, smes and knowledge institutes. Participants OLED Technologies and Validus Technologies are two examples of Dutch high-tech companies using inkjet technology for groundbreaking new applications. These and other participants can give the Netherlands the lead on the world printing market, says Marcel Slot, director of technology planning & partnerships at consortium-leader Océ.



Mariëtte Koekoek, Validus: 'A consortium like PrintValley increases the chances of bumping into an application of inkjet printing you didn't know existed.' Photo: Bureau Lorient Communicatie

by Wouter Klein Ikink

Many Dutch organisations are working on inkjet technology, Slot says: 'Multinationals, smes, universities and research institutes all have r&d programmes and developments in this field. There is much knowledge, but it was very fragmented. To create synergy, we formulated a common vision on the future of inkjet technology and printing technologies in general.' As a consequence Océ set up the research consortium PrintValley (see box). Research within PrintValley is divided in several technology domains and organised in corresponding work packages. Slot: 'We also defined fourteen business carriers, real-world applications PrintValley is working on. We expect to make demonstrators for each carrier within two years.' The overall aim is to create concrete applications, says Slot: 'Examples are rapid manufacturing, new generations of 'green inks' and

production technologies for solar cells, displays, packaging, security features and full-colour e-readers. For that, we must upgrade existing graphical printing technologies to industrial technologies. Some examples of improvements are faster printing and the possibility to print different types of materials on different substrates. For most applications, the period to realisation will be two to five years.'

UNIFORM LAYERS

OLED Technologies in Eindhoven has defined one of the business carriers in the PrintValley consortium. It builds single line manufacturing units for organic light emitting diode (OLED)-displays. 'These units use very precise inkjet technologies to deposit OLEDs on glass substrates', says ceo Jerry Hillman. 'Our production lines can produce three inch displays. Very soon we will produce five and seven inch displays – currently the most popular format around – and eventually we'll move on to tele-

vision displays.' OLED Technologies' manufacturing units produce very thin displays. Hillman: 'Furthermore, they don't use backlights, their viewing angles are extraordinary and they're very bright. Their light emission gives them a hypnotic quality.' OLED Technologies has been involved in PrintValley from the beginning. Hillman: 'Sometimes we hire people from other companies within PrintValley, sometimes we support other companies within the consortium. The PrintValley partners help each other express themselves and come up with new, creative ideas.' One of the technical challenges that OLED Technologies faces is the throughput on its production lines. Hillman: 'Currently that is about two minutes per display. We need to deposit uniform layers of OLEDs on the surface. The larger the surface, the harder it gets. We don't want the time per display to increase. This means we have to overcome some engineering and process challenges.'

HIGH PRECISION AT HIGH SPEEDS

PrintValley is an ecosystem of companies co-operating according to the open innovation-philosophy, Slot says: 'Participants want to communicate openly, sharing knowledge and challenges and seeking competences and technologies.' Business developer Mariëtte Koekoek at PrintValley-participant Validus Technologies in Eindhoven agrees: 'Moreover, a consortium like this increases the chances of bumping into an application of inkjet printing you didn't know existed.' Validus Techno-

'To create synergy, we formulated a common vision on the future of inkjet technology'

logies develops security marks for brand protection using inkjet technology. As counterfeiters keep finding new ways to imitate brand products, companies like Validus have to innovate continuously. Koekoek: 'Participating in PrintValley is an excellent way to speed up innovation. It enables us to have an open dialogue about technology with other, larger companies with inkjet expertise. Without PrintValley, we would probably not end up at the same table.' Validus' contributions to the consortium lie in the application field of security, Koekoek explains: 'We have specific expertise on printing with various types of liquid crystals on different substrates. We co-operate with part-

ners that operate in the area of security, such as Joh. Enschede in Haarlem, the company that prints Euro bills and other security documents.' Validus is looking for solutions to technical challenges in security printing, says Koekoek. 'Precision is an example of such a challenge: security marks have to be printed at 1,200 dots per inch (dpi).' Standard office or household inkjet printers are able to print at that resolution, but it is only achievable at very low printing speeds. Koekoek: 'The shape of the ink drop is also an important aspect of security inkjet printing: if you want sharp images, you don't want drops to spread out like a Rorschach blot. They need to have the right viscosity. These and other challenges can be tackled faster by stimulating open dialogue between companies and knowledge institutes operating in the same technology area.'

NANOSCALE EXCELLENCE

Market opportunities for digital printing are enormous, says Slot: 'The printing industry's worldwide revenue is 650 billion dollars'. Ninety percent of that consists of analog printing. At the same time, the existing market for industrial printing is expected to grow rapidly in the near future. The Netherlands have an excellent track record in the area of high-tech

manufacturing and is well equipped to develop 'printing for manufacturing' as a new high-tech production industry.' A grand consortium like Print Valley is essential to build on and expand this record, says Slot: 'We can take the lead on the world market for graphical and industrial printing, but we have to make a joint effort. PrintValley is unique in size and scope.' American Jerry Hillman agrees: 'Many people don't know how extraordinary the Netherlands are in printing. There are many companies, large and small, developing cutting edge technologies, especially on nanoscale.' Slot: 'We are confident that PrintValley will make a difference. In the near future, we will make significant progress in printing technology and development of new applications.'



Validus Technologies develops security marks for brand protection using inkjet technology. Photo: Bureau Lorient Communicatie

PrintValley participants

Participants in the PrintValley consortium are Océ, Stork Prints, DSM Neoresins, Philips Applied Technologies, NXP, Joh. Enschede, NTS Group, Demcon, Sioux, OTB Solar, OLED Technologies, Bruco, Mechatronics Partners,

Validus Technologies, Liquavista, InnoPhysics, Beltech, CCM, Reden, Kriya Materials, TNO, TU Delft and TU Eindhoven. In total, they dedicate 190 FTE to the consortium.

links

www.oce.nl
www.validus-technologies.com
www.oledtechnologies.org