

## IR TEMPERATURE SENSORS CLEVERLY CLOSING THE QUALITY GAP BETWEEN INDUSTRIAL INKJET PRINTER AND PRODUCTION SPEEDS

A global technology company focused on print and advanced materials & chemicals was set to come up with a revolutionary new inkjet-based digital printing press, to once and for all close the quality gap with offset at production speeds.

### New industry standard

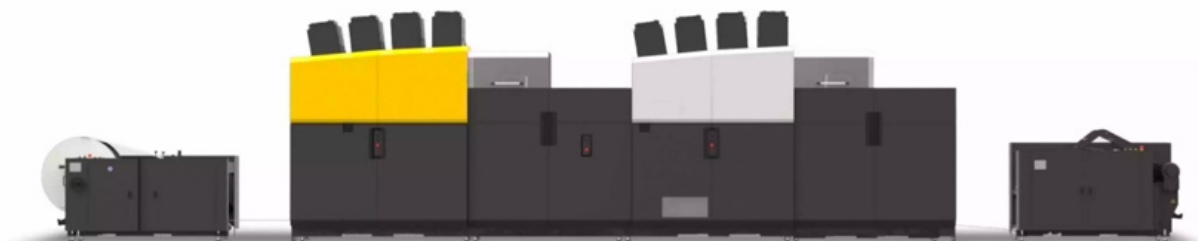
This multinational focused to take inkjet to the next level in a clever way, putting the bar extremely high by their specification of

- delivering offset-like quality
- at a consistent speed of a mind bubbling 150 mpm/500 FPM
- on glossy paper
- with high ink coverage
- variable print and to make it even more spectacular,
- at the industry's lowest cost of operation

behind an inkjet printer. This ink is known to be highly water sensitive meaning they need time to dry out. If any water comes into contact with the ink before drying, it will cause smudges and therefore impacts the high-quality print considerably

- Its bleeding effect: ink carried sideways will cause blurred effects on some papers. From the capillary action, the ink will be diverted from the location it should be printed.
- Expensive ink usage

One by one, the engineers embraced the technology challenges. They used a revolutionary new writing system which employs high-precision placement of smaller, perfectly round, satellite-free drops to produce the highest inkjet image quality available in the marketplace today. Next to that they engineered to maximize productivity by printing across a broad range of substrates using the industry's most versatile,



### Disadvantages of inkjet printers

Let's look at the inkjet printers. It is common knowledge that they have strong advantages like a very high-quality print, not only for pictures but also text. The challenges they are facing in today's printing market are outweighing the advantages as

- Too low speed: the majority of inkjet printer were designed for low volume printing, suffering of slow speed. Printing large documents enforces considerable long waiting times which even worsens if the documents are colored. Laser printers are much faster
- Smudging: a type of ink called aqueous ink is used

highest quality and cost-effective water-based inks. And as a game-changer they used Exergen's AutoSmart MA infrared temperature sensors in 6 different zones to safeguard the drying process of the ink and speeding up the printing process considerably.

"We have a very longstanding relation with this technology printing giant", said Bart van Liempd, Large Account Manager within Exergen Global. "When we heard about their challenges we were able to bring in our AutoSmart Micro Temperature solution with Airpurge, based on our Speedboost methodology."

## AutoSmart MA temperature sensor solution and Exergen's Speedboost

Exergen has derived a mathematical model to describe the thermal processes that allows a customer to maximize the speeds of their processes. Infrared temperature measurement methods of production processes are limited to material surfaces, and thus have a serious limitation in thermal process monitoring, particularly when considering speed increases. To overcome this limitation, a heat balance equation is derived in which the material surface temperature data is combined with other non-contact temperature data to calculate the internal temperature of the product, which in turn is used to optimize control to increase speeds.

The model results are in agreement with experimental data in several industries, where hundreds of actual installations of such non-contact systems are successfully increasing production speeds. The method

can be extended to any thermal process and was used with this particular inkjet printer installing 6 AutoSmart sensor solutions in the drying installation of large infrared heating systems. These solutions provide unprecedented accuracy of 0,1°C (0.2°F) by custom calibration over a very specific range providing two unique advantages:

1. an accuracy that is 10 times better than standards on infrared sensors with the same output,
2. a repeatability error of  $\pm 0,01^{\circ}\text{C}$  (0.02°F).

The ultimate advantages of this clever infrared solution are supporting the revolutionary inkjet technology upgrade:

- increased speed; 150 mpm/500 FPM
- high quality (no smudging or bleeding, therefore less waste)
- resulting in lowest cost per printed sheet

