Miniature contrast sensors in a flexo printing press
Edale and SensoPart: a successful new format

Speed and accurate differentiation of even the lowest contrasts are essential for detection of printing marks on continuous material. Edale, the leading UK manufacturer of flexo printing presses, amongst other machinery, found that SensoPart’s miniature contrast sensor fulfilled both requirements when it came to replacing the standard sensors it previously used, saving not just space but also halving the costs.

The task
The Flexo printing press FL-3 from the UK manufacturer Edale is principally used for printing labels and flexible packaging applications. Around 15 contrast sensors control the printing and die cutting processes on continuous paper or foil by identifying crop and registration marks on the material. The standard size contrast sensor (55 x 75 x 30 mm³) previously used by Edale had to be replaced due to discontinuation of the product. Edale needed an alternative sensor with identical performance data but a more compact, less obtrusive design for more flexible installation in the press.

The solution
The recently launched miniature contrast sensor FT 25-RGB from SensoPart fulfilled each of these requirements: measuring just 34 x 20 x 12 mm³, it is approximately only a fifth of the size of the previous sensor and its performance data is identical or superior. Thanks to multi-colour analysis – the sensor automatically selects the optimum emitter colour (red, green or blue) for the given contrast – low or difficult contrasts, such as yellow printing marks on a white background, can be reliably detected.

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Fig. 1: Around 15 contrast sensors control the printing and die cutting processes in a FL-3 flexo printing press from UK manufacturer Edale.
Precise positioning even with a high web speed
Due to the extremely high web speed of up to 200 m/min, the printing mark detection did not just have to be absolutely reliable but also very fast. This proved to be no problem for the FT 25-RGB which has a high switching frequency of up to 25 kHz. It also has a short response time of 20 µs and a minimum jitter of 10 µs which guarantees accurate positioning and precise die cutting of the continuous material. The bright light spot with a sharp, oblong-shaped contour (1 x 4 mm²) and a high depth of field (± 3 mm) enables reliable detection of a variety of printing marks on different materials, even with web flutter.

Customised “teach-in”
The characteristics of SensoPart’s miniature contrast sensor were clearly convincing. However Edale requested one modification: that it would be possible to operate the new sensor in the same way as the old one. SensoPart therefore created a customised single teach software to adapt the FT 25-RGB to the familiar operating concept of the old sensor previously supplied by another manufacturer. As the 15 or so sensors in each machine have to be reset with each format changeover, this flexible SensoPart service makes life much easier for Edale’s customers. The “teach-in” process is carried out dynamically via a control cable as the sensors are mounted in areas that are difficult to access.

Easy exchange from large to small
The printing press manufacturer Edale was also interested in the mounting adapter MZ F25 from SensoPart’s accessory range as it enabled an easy exchange from large to small sensors without the need for special holders (fig. 2). The focal position and electrical connections are identical. The adapter was used where sufficient space was available, whilst elsewhere the FT 25-RGB was mounted directly above the web using the mounting component MBD F 25ST, also available as an accessory (fig. 3). In addition, the mounting component enables easy tilting of the sensor for reliable detection of printing marks on reflective surfaces.

Fig. 2: Exchange from large to small: the miniature contrast sensor FT 25-RGB is compatible with the usual standard design in respect of mounting and connections, requiring no modification to the printing press.

Fig. 3: By using the mounting component MBD F 25ST, the contrast sensor can be fitted closely to the process, i.e. directly above the web. The dovetail enables accurate, fine adjustment even in tight installation conditions.
Better performance at less cost
This much smaller sensor with identical or superior performance data came at no extra cost to Edale. On the contrary: the cost of purchase combined with savings achieved through the flexible mounting concept reduced costs by approx. 50 per cent—a welcome spin-off from the change by Edale. The compact size of the RGB contrast sensor also allows for greater design flexibility for future machine generations. Antony Neaves, Edale’s Senior Buyer, is entirely satisfied with the choice of the SensoPart product: “Miniature contrast sensors are tailored precisely to our needs. Their small size means they can be fitted discreetly into our machine and we are extremely satisfied with their performance thus far.”

Conclusion: the time is right for a size change
The automation solution described here shows that the still commonly-used standard size contrast sensors are now outdated as their performance is equalled or even exceeded by the latest miniature sensors, such as SensoPart’s FT 25-RGB. These miniature sensors are fast and accurate and are a match for even challenging printing mark applications. A retrofit of existing machines poses no obstacle and the small sensor design offers greater design flexibility for future machine generations.

FT 25-W/-RGB in detail
- Space-saving miniature design (34 x 20 x 12 mm³)
- Oblong-shaped light spot (1 x 4 mm²) with sharp contour and high field of depth (± 3 mm) for easy sensor alignment and reliable detection of even the smallest printing marks
- Automatic selection of optimum emitter colour (RGB diode)
- High switching frequency (up to 25 kHz)
- High positioning accuracy due to short response time (20 µs) and minimum jitter (10 µs)
- User-friendly “teach-in” (either dynamic, static or external via control cable)
- Process quality communicated by “speaking” light spot
- Multi-purpose mounting accessories: mounting adapter, mounting component, dovetail clamp

FL-3 in detail
The FL-3 is a high productivity, cost efficient label and flexible packaging press. Edale’s priority when designing the FL-3 was to create a press tailored specifically to the label market; with the scope to venture into flexible packaging applications should customer demands change. With this press, Edale have not over complicated the design, the FL-3 does what it is built to do, and does it well, ensuring a rapid return on investment.

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Further information

About Edale

Edale are the UK based manufacturer of web fed printing presses and converting machinery specialising in four dedicated market sectors; Flexographic Printing, Digital Printing, Commercial Security and Speciality Converting Solutions.

Edale design and manufacture all machines at their purpose built Head Office in Hampshire, creating value for clients by combining technical expertise and engineering experience with an in-depth understanding of customers’ products and processes. By providing innovative and profitable solutions for customers needs, Edale reduce machine downtime, material wastage and increase machine profitability.

With Edale you can be sure of high quality parts and workmanship alongside innovative, bespoke and upgradeable solutions.

You can find out more here: www.edale.com

About SensoPart Industriesensorik GmbH

The German sensor manufacturer SensoPart develops, produces and sells sensors for industrial applications and has a subsidiary in Burton on Trent for the UK market. The main focus is on optoelectronic sensors, particularly laser sensors, which are used in so many industrial applications, and high-performance vision sensors for the detection of objects, colours or data matrix codes.

The past years have been marked by a strong growth in turnover and the regular launch of new, innovative products. SensoPart has received several distinctions for its work and has been awarded the German Sensor Application Prize several times.

Further information can be found online under: http://www.sensopart.com.

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