Compact 4C Series from CUGHER integrates print quality control

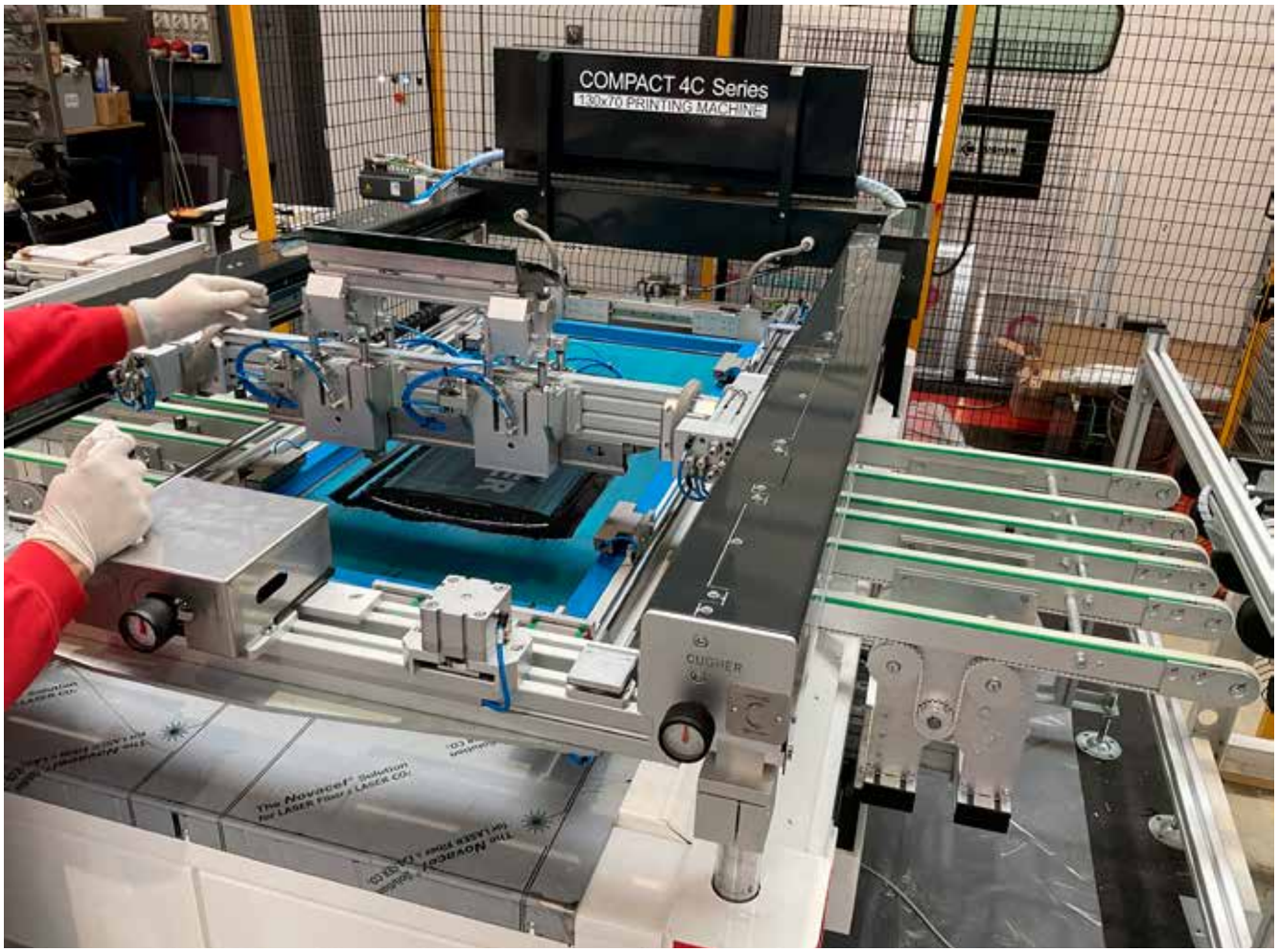
CUGHER GLASS recently gave a heads-up for the presentation at Glasstec of its latest innovation, namely the Compact 4C & QVS. Designed to revolutionize the world of printing on square and rectangular glass, this series is engineered for glass manufacturers who are after both reliability and high performance. Ensuring consistent productivity, it stands out for its ability to process glass of varying sizes.

COMPACT 4C: VERSATILITY AND HIGH PERFORMANCE

A key innovation of Cugher's new Compact 4C series is that it can handle larger glass sizes as compared to the base model - all while maintaining unaffected printing performance. Indeed the print module, equipped with the Cugher E2E (Edge to Edge) system, allows for the kind of edge-to-edge printing that's only achievable through screen printing.

ADVANCED FEATURES AND PRINTING PRECISION COMPARED TO BASIC MODEL

The Compact 4C has been equipped with the following features:
Frame washing and extraction that won't lose registration coupled with rotation of the printing carriage for squeegee and scraper replacement are just some of the innovations designed



to improve operational efficiency and reduce format setup times. The printing phase is highly precise, with a tolerance between pieces of +/- 0.08 mm. All printing parameters, from pressure to squeegee and scraper speed, are set through the operator panel - making machine setup extremely fast.

EFFICIENCY AND QUALITY ALL IN ONE MACHINE

The Compact 4C is not only swift and precise but also extremely efficient. It can process up to 550 pieces per hour for glass sizes of 1150x700 mm - making it ideal for high-volume production in shorter times. Additionally, the machine can be integrated with innovative vision systems for quality control - both for glass and print, thereby ensuring high and consistent standards.

A COMPETITIVE ADVANTAGE

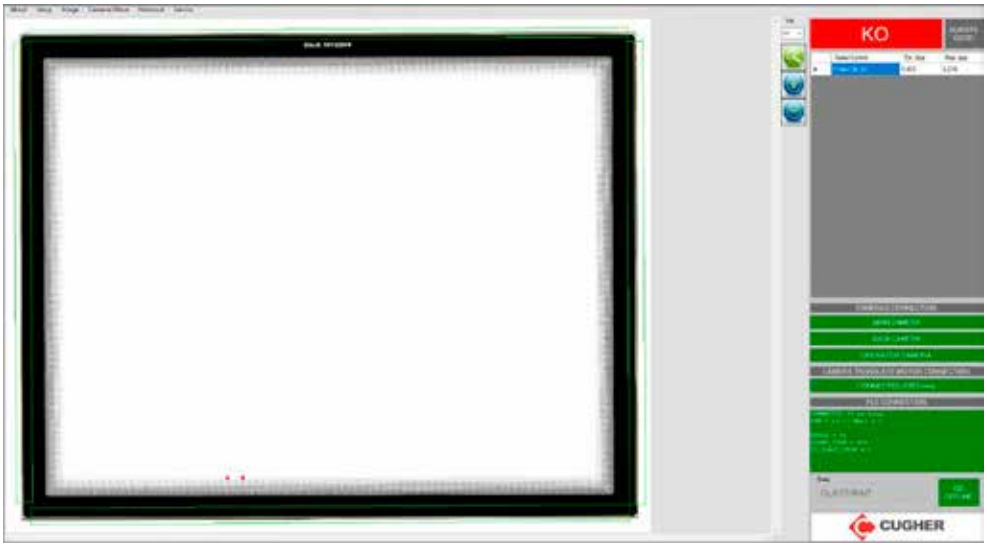
One of the main advantages is its extraordinary flexibility offered at an incredibly affordable cost. This means customers can achieve exceptional results while saving at the same time. The Compact 4C transforms production processes efficiently and economically.

MACHINE VERSATILITY

The machine is ideal not only for the home appliance sector but also for all industries requiring printing on rigid materials and symmetrical shapes. Indeed with this machine, users can undertake any production challenge with both ease and precision.

TAKING PRODUCTION TO THE NEXT LEVEL

With this system, print quality control (PQVS) is integrated into the machine such that every detail of the print is monitored with precision - thereby ensuring flawless results while minimizing waste. The PQVS (Print Quality Vision System) is an automated system for print quality verification on glass - suitable for both



screen printing and digital printing. Designed for use in automotive, home appliance and architectural applications, it can also ensure print quality on other rigid materials, both transparent and opaque, such as polycarbonate or aluminum. Various sensitivity zones can be defined across the glass surface, allowing for higher sensitivity settings in specific areas like logos, barcodes and other critical elements. All areas of the glass get inspected and compared with the tolerances specified in the glass inspection recipe.

KEY FEATURES

- Installation

The system can be installed at the centre of the precision conveyor belt, provided there is sufficient space for both the cameras and illuminator. The system is available in four standard sizes (1000-1300-2000-2600 mm).

- Technical specifications

The system offers a resolution of 80µm (300 DPI) @2600mm and can accurately verify the quality of the design, detecting circular spots as small as 0.15 mm². It can identify: 'Stains' or 'spreading' of design details caused by excess ink in screen printing. Discoloured spots, holes or missing parts of the design. Different sensitivity zones can be defined across the entire surface of the glass, allowing higher settings in specific areas such as logos and barcodes. An additional optional metrological control is available to measure the distance between the print and the edge of rectangular glass.

- Automation and quality control management

PQVS software can communicate with the printing machine's PLC, so sending predefined signals to activate specific functions. Defective areas and captured images can be displayed on a high-resolution 42" monitor (optional). The operator can navigate the entire glass surface and, if necessary, zoom in on selected areas to analyze image details.

QUALITY CONTROL

Once acquired, the image is analyzed using a specially-designed and created inspection recipe that's established during initial setup. Image processing is handled by a dedicated computer system. The system automatically divides the reference image of the glass into such specific areas as 'Near the Edge', 'Print Spots', 'Black' and 'Clear Glass'. For each of these areas, the operator can set different defect tolerance levels - allowing for precise quality control tailored to the various parts of the glass. With an additional software option, metrology algorithms can be used to measure and verify the external dimensions of the glass. This includes checking the width, height as well as the positioning and diameters of holes - ensuring that all measurements precisely meet the design specifications. Here, in all its machines, Cugher strives as always to drive superior printing quality that will also achieve total control over the production process.

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