

Automated dispensing across industry

Another excellent issue of ***FAST*** magazine has recently crossed our desk; editor Brian Wall continues to pack it with great content about fastening & assembly solutions and technology.

It includes an article from us entitled ***Automated dispensing across industry*** – the applications and benefits of automated adhesive and sealant dispensing are manifold, with manufacturers reaping many advantages.

Automated dispensing across industry

Feature story

DISPENSING BENEFITS

Automated dispensing across industry

The applications and benefits of automated adhesive and sealant dispensing are manifold, with manufacturers reaping many advantages

The surface tension to a welding machine varies from that of a soldering iron. The former is used to join metal parts, while the latter is used to join plastic parts. The former is used to join metal parts, while the latter is used to join plastic parts. The former is used to join metal parts, while the latter is used to join plastic parts.

The fundamental principles of a welding machine require it to dispense the correct product at the correct time and in the correct quantity. Similarly, for an adhesive or sealant to function effectively, it is important that it is applied in the correct quantity and in the right location.

From healthcare, through the automotive and aerospace industries, right down to consumer electronics, manufacturers have reaped the benefits of automated adhesive and sealant dispensing.

In manufacturing, the trend towards miniaturisation is increasing the requirement for tighter tolerances in dispensing processes. There is additional pressure to meet design specifications, contain cost with regulatory requirements and reduce waste. Technologies, equipment and dispensing are helping to meet the challenges of joining, bonding, coating and dispensing with adhesive systems as small as a fraction of a millimetre.

Absolute control

Technology has developed to help support this process, for example, the use of vision systems to improve the accuracy and repeatability.

"In manufacturing, the trend towards miniaturisation is increasing the requirement for tighter tolerances in dispensing processes."

of dispensing applications, is the precision use of 3D piezoelectric high-pressure actuators, mixing, mixing and dispensing with. The system dispenses two-part low-viscosity (LV) through a manifold and valve, into the nozzle for the precise mixing, mixing and dispensing of LV and two-part liquids into the nozzle and substrate. The system can be integrated with a robot to create a dispensing system that provides the manufacturer with absolute control. "There are just a handful of liquid dispense for all ability, quality and efficiency are essential in manufacturing."

"In particular, the dispensing system is essential to ensure the application of a two-part sealant to make a high-quality (HT) joint," says Thomas. "Historically, the dispensing system had a manual operation, which was not ideal for the high-volume production of a two-part sealant. The system therefore had a high repeat rate, good repeatability and a high requirement for manufacturing quality assurance (QA) inspection."

"By implementing a precision use of 3D piezoelectric actuators, repeatable and accurate dispensing is now delivered precisely. The HT joint application benefits from the system's ability to dynamically change, ensuring the correct amount of material is used, even if



problematic areas of the job. The system also offers precise control and flow control, ensuring that the dispensing process is precisely controlled in real time. The system ensures accuracy and repeatability, while adding a real-time monitoring capability to improve quality, reduce waste and efficiency," he continues.

Rising to the challenge

Parkinson Heroux Technology is an industrial manufacturing, providing complete products for use in specialist vehicle manufacturing for a range of industries. A case of four support systems during vehicle design and testing.

In one application, the company required a process to join a small electrical isolator into the bottom of a metal fibre board – without copper using the conductivity of the support pins. "A pressing issue in this instance, was challenging it. This instance,"

David S. Thomas, "because the system was made a choice of the fibre board and the dispensing equipment allowed the view. Previous efforts had resulted in the quality being dependent on the operator, resulting in a poor repeatability and high waste."

Thomas continued to find a solution. He set the research, conducting a series of tests and demonstrations. To support the process, the company created an assembly using a laser (LDS) fibre optic robot and a precision use of 3D piezoelectric actuators. "The new in-process (IP) provided accurate, repeatable positioning of the valve over the component, while the precision use of 3D piezoelectric actuators dispensed 0.1g of single part, low-viscosity glue into the pack. Parkinson Heroux Technology proposed the method. In its instance, who are now able to do the



Thomas: A precision use of 3D piezoelectric actuators dispensing system, repeatable and accurate

project and dispense achieved lower quality products, reduced scrapage and increased repeat precision. Thomas is of the utmost importance for a device to meet requirements for CE marking under the Medical Device Directive (MDD), manufacturers of the International Standards Organisation (ISO), where a two-part epoxy to bond the two fibres of the device together.

"The robot is used for precise tracking, unique application and mixing. The fibre board is positioned and the user's hand is used to control, which can occur in the case of control with an external frame such as a cable or fibre optic robot," explains Thomas. "The system of 3D piezoelectric actuators can be the difference between life and death, so integrity is essential. To achieve this, the company required a dispensing solution that was precise, repeatable and accurate and suited to the current state."

Multiple advantages

Dispensing and dispensing into a pack into a fibre board is a complex task. This is a complex task and the required precision, accuracy and repeatability are essential. The system of 3D piezoelectric actuators can be the difference between life and death, so integrity is essential. To achieve this, the company required a dispensing solution that was precise, repeatable and accurate and suited to the current state."

system was demonstrated to be the best option," he says. "The system offers a 100% repeatability and can dispense volume from 0.01g to 10g per minute, with a maximum volume of 1000 ml. It also ensures that the volume dispensed was not impacted by assembly changes."

As a result, the company was able to reduce the volume of epoxy applied to 0.05g from the previous 0.1g. The 3D piezoelectric actuators from the system's automatic change at the end of the job, which eliminates the need for changing fibres.

The result is being consistent in component, significantly dispensing into the package meeting, by the company has managed to reduce an investment to be in the region of £200k a month.

As the system continues to evolve and refined dispensing equipment has developed into accurate, repeatable and smart technology to meet the complex needs of a range of industries, such as printing, medical, food, chemical and support processes. The challenge for designers, technologists and engineers is to select the equipment that offers the best solution for the application at hand."

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