

Six times more thermoforming packaging machines can fit into the same space

Ratingen, Germany 14th of June 2019

The new Shawpak thermoforming packaging machine developed by Riverside Medical Packaging allows manufacturers to replace a 20m long packing line with a single unit under 2m in length. A compact integrated control system developed by Mitsubishi Electric is key to optimising the machine's performance while keeping within a small target size envelope.

Based in Derby in the East Midlands, UK, Riverside Medical Packaging has been a leader in contract manufacturing and machine development for the healthcare industry for over 40 years. From facilities specifically tailored for the manufacture of medical packaging and products, the company develops intelligent and innovative solutions for producing, packaging and sterilising single use medical devices.

The reduced footprint of the new machine can release a large amount of valuable floor space in clean-room production environments, offering significant cost and productivity advantages to operators. "The Shawpak helps customers reduce the cost of maintaining a cleanroom production environment and to maximise their return on investment," comments David Shaw, CEO at Riverside Medical Packaging. The Shawpak offering a compact size and flexible layout that enables it to be configured in many ways to suit customers' individual requirements. Thanks to a rotary format, Shawpak machines start at only 1.5m long and can occupy less than 2m² of floorspace. In extreme cases they will occupy just a small percentage of the space required by an alternative traditional form fill sealing (FFS) line. Ivor Rowe confirms: "A comparable FFS machine can be anywhere from 7m to 20m in length depending on the packaging process requirements, occupying a working space of up

to 40m². As a result, a given cleanroom space can fit six times more packing machines with a Shawpak design, increasing both productivity and throughput.”

The Shawpak models are compact thermoforming sealing machines that can be loaded manually, or for increased speed, by an integrated robot. The key innovation is the forming, packing and sealing process which is now carried out on a drum, rather than a linear conveyor system. The rotary motion of the drum and the precision indexing of the sealing film are synchronised using Mitsubishi Electric servo control, while the product and package manipulation uses suction.

The product to be packed is loaded on top of the drum and the finished packet is ejected into a discharge conveyor underneath. The webs of packaging material (such as PET or polyethylene sheets) plus the forming, sealing and cutting stations are positioned around the drum.

In developing the machine, the management team was confident that the market for such a product existed, but knew that the automation package would be a key part of the development. “As this was a completely new concept for us, we needed an automation solution provider that could supply not only the PLC, servo and indexing systems, but also a cost-effective robot integration package,” says David Shaw. “Having developed the initial concept, we turned to Mitsubishi Electric to help us develop our vision for a highly compact design into a fast, efficient, robust and reliable machine,” he continues. “We relied heavily on Mitsubishi Electric to realise this project.”

Mitsubishi Electric was involved in the development of automation for the Shawpak machine right from the initial planning stages, developing the strategy and addressing the project’s challenges. These included delivering the extended functionality in the restricted space. Stephen Thornton, Key Account Manager at Mitsubishi Electric, comments: “The size of the control panel in the Shawpak is not only much smaller than in a traditional FFS machine, but one of the most compact we have ever seen. For this reason, we suggested using the MELSEC L-Series PLC to provide a compact solution with optimal performance.”

The PLC is configured with a MELSEC Simple Motion module and MELSEC-WS safety modules, and connects to a Mitsubishi Electric GOT2000 operator terminal. There is also the option of a MELFA articulated arm robot for loading, which makes it

possible to improve productivity while maintaining a controlled environment in the cleanroom more easily. This, too, is controlled via the PLC. All components are connected via a CC-Link open control network.

Increased versatility and flexibility

The new rotary design of Shawpak increases versatility and flexibility during packaging operations. Different forming drums with cavities of various dimensions can be supplied. These can be easily removed and replaced to pack objects of different sizes and shapes on the same machine. In addition, the new concept ensures that every piece of packaging material is used, reducing the amount of waste from cut packaging material experienced using other designs.

While the Shawpak machine was initially developed for the packaging of medical products, other packaging industries can benefit from the solution, as Rowe explains: “We believe Shawpak could have a big impact on the food and beverage sector, electronic service components or anywhere else with stringent hygienic requirements.”

Speaking about the relationship with Mitsubishi Electric, he adds: “The creation of such the machine would have not been possible without the support from Mitsubishi Electric and its range of industry leading automation solutions. We look forward to continuing to work together on Shawpak and future projects that will provide cutting-edge solutions for the packaging industry.”

To learn more about this project, watch the video case study here:

<https://youtu.be/p1NZoMg3qBw>

Image Captions:



Image 1: By using a Shawpak model, cleanrooms can fit six times more packaging machines into one space. Increasing both productivity and throughput.

[Source: Mitsubishi Electric Europe B.V.]



Image 2: It is possible to further improve productivity on the factory floor as well as maintaining a controlled environment in the cleanroom more easily by adding a robotic arm for loading.

[Source: Mitsubishi Electric Europe B.V.]



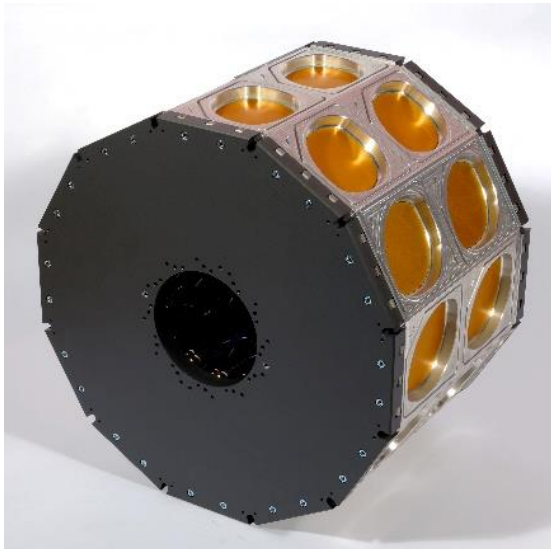
Image 3: Mitsubishi Electric has provided Riverside Medical Packaging with a compact integrated control solution based on the company's L-Series PLC supplied with servo control and safety modules, HMIs and an optional MELFA articulated arm robot.

[Source: Mitsubishi Electric Europe B.V.]



Image 4: Due to the small footprint of the Shawpak machine, Mitsubishi Electric suggested using the MELSEC-L Series PLC to provide a compact solution with optimal performance.

[Source: Mitsubishi Electric Europe B.V.]





Images 5+6: Different forming drums with cavities of various dimensions can be easily removed and replaced to pack objects of different sizes and shapes on the same machine.

[Source: Riverside Medical / Shawpak]

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Press contact:

Mitsubishi Electric Europe B.V.

Monika Torkel

Media Relations - Factory Automation EMEA

Mitsubishi-Electric-Platz 1

40882 Ratingen, Germany

Tel: +49 (0)2102 486-2150

Mob: +49 (0)172 261 4824

Monika.Torkel@meg.mee.com

de.linkedin.com/in/Monika-Torkel

www.xing.com/Monika_Torkel

PR agency:

DMA Europa Ltd.

Philip Howe

Europa Building, Arthur Drive, Hoo Farm Industrial
Estate, Kidderminster, Worcestershire, UK

Tel.: +44 (0)1562 751436

philip@dmaeuropa.com

www.dmaeuropa.com