

New thermoformer is big on space-saving



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Compact automation products from Mitsubishi Electric have helped create a revolutionary new space-saving thermo-packaging machine

Mitsubishi Electric has provided Riverside Medical Packaging with a highly compact integrated control solution based on the company's diminutive L-Series PLC supplied with servo control and safety modules, HMIs and an optional MELFA articulated arm robot. The new Shawpak branded cleanroom thermoforming packaging machines can now replace a packing line that may stretch out to 20m with a unit that is under 2m in length.

The cost advantages for operators is clearly significant, as the opportunity to increase production or re-purpose existing floor space is considerable. "The high cost of maintaining a clean room production environment increases the benefits and reduces the ROI when using one of our machines" comments David Shaw, CEO at Riverside Medical.

"The company has been involved in contract manufacturing and machine development on behalf of the medical industry for over 40 years, so we knew the market for a solution was there. Having developed the initial concept, we then turned to Mitsubishi Electric to help us develop our vision of a super compact design into a fast, efficient, robust and reliable machine."

The resultant Shawpak models are compact thermoforming sealing machines that can be loaded manually, or for additional speed and efficiency using an integrated Mitsubishi Electric robot. The main 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, along with the sealing film is indexed using precision servo control while the product and package manipulation uses suction.

The product to be packed is loaded on-top of the drum and ejected into a discharge conveyor underneath. The webs of packaging material, e.g. PET or polyethylene sheets, plus the forming, sealing and cutting stations are positioned around the drum. Thanks to the rotary format Shawpak machines start at only 1.5m long and can occupy less than 2m² of floorspace. This represents a reduction of up to 95% in the space occupied by a traditional form fill sealing (FFS) machine.

Ivor Rowe, Technical Manager at Riverside Medical confirms "a comparable FFS machine can be anywhere from 7 to 20 metres in length depending on the packaging process requirements, occupying a working space of up to 40 square metres. As a result, a given cleanroom space can fit 6 times more packing machines with a Shawpak design, increasing both productivity and throughput." The innovative rotary design of Shawpak also increases versatility and flexibility during packaging operations. Different forming drums with cavities of various dimensions are available. These can be easily removed and replaced in order 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 by other designs.

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. Ivor Rowe adds: "The traditional form fill sealing machines used in medical device packaging industries do not fit the modern requirements of plant flexibility, process optimisation and throughput. We believe our novel approach is a gamechanger that can revolutionise the sector."

On the crest of the innovation wave with a reliable partner

Such a revolutionary, automated piece of equipment needed state-of-the-art technologies to support it and, for Riverside Medical, Mitsubishi Electric's automation solutions were the obvious choice. David Shaw explains: "We relied heavily on Mitsubishi Electric to realise this project. As this was a completely new concept for us, we needed an automation solution provider that could deliver on the PLC, servo and indexing aspects, as well as providing a cost-effective robot integration package."

Mitsubishi Electric has been involved in the development of Shawpak since the initial planning stages, developing the strategy and addressing the project's challenges. The main one being the extended functionality required versus the restricted space available.

Stephen Thornton, Key Account Manager at Mitsubishi Electric, commented: "The size of the control panel in Shawpak is not only much smaller than in a traditional FFS machines, but outright one of the most compact we have seen. Hence the reason we suggested using the latest MELSEC-L Series PLC to provide a compact solution with optimal performance. While there isn't lots of IO to manage, (the components are connected via a CC-Link open control network) the PLC connects the Mitsubishi Electric's GOT2000 HMI operator terminal, MELSEC-WS safety system, MELSEC-L series simple motion module, the pneumatic valves, as well as controlling the six-axis MELFA RV-F series robotic arm.

Medical device packaging is only the first step

While Shawpak was initially developed for the packaging of medical products, other packaging industries can benefit from the solution, Ivor 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."

"The creation of such an innovative new FFS 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."

Image Captions:

Image 1: Thanks to the rotary format Shawpak machines start at only 1.5m long and can occupy less than 2m² of floorspace.

[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 highly compact integrated control solution based on the company's diminutive 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 latest 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 in order to pack objects of different sizes and shapes on the same machine.
[Source: Riverside Medical / Shawpak]

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Note to Editor: if you would like the text in another language please contact Carolin Heel at DMA Europa – carolin@dmaeuropa.com.

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With around 142,340 employees the company recorded consolidated group sales of 41.8 billion US Dollar* in the fiscal year ended March 31, 2018.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

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