Keeping Cool: The Pressure of Temperature-Sensitive Logistics

In an exclusive interview with Richard Harrop, Product Director at Topa Thermal, *PMPS* discovers some of the solutions coming to market for temperature-controlled logistics, and the existing challenges that must be overcome

***PMPS:* What are the main challenges that exist for temperature-sensitive delivery?**

Richard Harrop: If you are involved in pharma logistics, there are many things under your control. You can control when your products leave the warehouse, and you can work with your logistics provider on how they get them to the airport, for instance. However, you can't control all of the in-between moments. These unforeseen hold-ups of the payload along the way continue to be a mainstay of cold chain delivery challenges.

In addition, there is the lack of cold chain service consistency or parity between regions and continents. For example, one country may be able to guarantee a temperature-controlled warehouse, but another may not have the facility. Added to this are increasingly long delivery times and higher costs, as well as increased border sensitivity and border complexity.

Undeniably, the pharma cold chain had to adapt and mould around the ramifications of Brexit and the demands and challenges of the COVID-19 pandemic, and now, more than ever, there is a market expectation of receiving something very quickly, particularly at consumer level. The challenge now is how the logistics infrastructure will meet these growth demands of the pharma cold chain. We are already experiencing airlines bringing older, less-efficient aircraft out of 'retirement' to support the ever-growing demand, and these older aircraft pose both size and efficiency challenges versus the distribution models built around more efficient vehicles.

What is the biggest opportunity for improving pharma temperature-controlled logistics?

Topa Thermal has built its reputation on a considered approach, listening carefully to our customers, and producing design-orientated solutions. For us, the biggest opportunity for improving pharma temperature-controlled logistics comes from understanding the compromises our customers need to make when choosing the best cold chain packaging. For instance, our new packaging line was developed to broaden the choice of pre-qualified packaging options, not only through differing sizes but also by covering multiple qualification levels, allowing our users to select truly fit-for-purpose solutions.

In the same way, we also need to pay particular importance to maximising payload volume for our customers. Traditionally, passive thermal solutions have run behind active alternatives in this area. Over the last 12 months, however, we have carried out a lot of development work, understanding how we can offer the payload volumes of active solutions while still providing the protection and availability benefits that come with a passive solution. Our latest innovation achieves payload ratios equal to 'next-gen' active solutions – it gives the opportunity for customers to not be bound by one purchasing decision alone, and broadening their choice.

Integrated and customised solutions are being introduced across pharma and biopharma. What benefit can these have for companies and their products?

For us, finding the right thermal packaging solution is all about understanding your 'world' and your particular logistics challenges.

As the whole industry moves towards ever-increasing efficiency and speed to market, pre-qualified solutions enable that to happen. Pre-qualified solutions are traditionally all about offering options that are suitable for the majority of your situations, but, for other times, they won't be totally appropriate and compromises will need to be made.

We feel that customers shouldn't have to compromise. We undertake three levels of qualification for every pre-qualified solution so that customers who don't have the time to carry out their own qualification can quickly integrate a complete packaging line into their organisation, confident that they are not paying for every other user's distributional challenge.

For example, one of our customers is using our pre-qualified packaging line with four different integrated sizes. Since we've qualified them to three different scenarios, they can use the same shipping system configuration, whether they are using an established route or they need to organise a late Friday afternoon sample delivery, for instance.

Customised packaging solutions are also being introduced and can cost-effectively bring project benefits to your entire logistics strategy, particularly when part of a fully optimised distribution strategy.

For us, a custom approach works best when all stakeholders are involved and are thoroughly invested in the project, so we evaluate your complete distribution, from manufacture to last mile, and optimise your packaging solutions accordingly. In addition to receiving a packaging system that performs at the required temperature, distribution, and duration, our customers are finding further project benefits. These include reduced shipping costs, packaging material cost savings, simplified packing process, reduced packing time, as well as significant CO_2 reductions.

What are three key opportunities for streamlining packaging in the biopharma cold chain?

Firstly, as pharma companies continue to become more aware of the new risks and challenges of their product's logistics lane, they will begin to make smart decisions and onboard new packaging that looks at their distributional challenges as well as their durational ones. This gives them increased choice and opportunities for their operations.

Our team always focus on four core areas:

1. Distributional challenge
2. Material choice
3. Cost
4. Environmental impact

Secondly, the race to find the most environmentally conscious and sustainable solutions must be approached in a 'smart' way. New solutions and methods need to prove themselves to be efficient or sustainable as required. It is not just about a product being sustainable before it leaves the factory; the entire logistics strategy needs to be looked at. There is not one single answer, and every supplier is offering a different option. From both a service and constructional level, there is not a 'one size fits all' solution or magic bullet. You need to consider every solution in terms of your specific world.

Thirdly, bulk distribution continues to play an ever-growing role, and airlines and logistics providers continue to take a higher level of interest in the distribution of biopharma products than they ever have before. However, you need to find the highest level of efficiency when moving products in bulk and understand all the limitations. You need to work with your packaging provider in order to maximise your payload efficiency through international distribution.

For us, we continuously assess how we can give the highest level of efficiency for bulk products, and have recently introduced a solution that can deliver a 25% increase in shippable payload. Within our packaging development team, the first rule of bulk distribution packaging is that our products are not the bulk part!

What considerations must pharma and biopharma companies make when distributing via the cold chain?

Cold chain distribution is often about risk management and mitigation, and how you approach dealing with each of these will determine your level of distributional

success, as well as how much you end up spending. Trying to figure this out alone will rarely result in uncovering the full picture, but working hand-in-hand with providers, to create a joined up holistic approach, continues to prove itself to be the optimal route.

Currently, there are also huge pressures on the logistics environment, and the physical act of distribution is becoming increasingly expensive. It is, therefore, now more important than ever to maximise your distribution and squeeze the last drop of efficiency out everything.

What innovations are helping to improve the capability to tackle these considerations?

Optimised pallet solutions can help to tackle these pressures. Designed with input from airline and logistical industries, integrated systems like these can optimise distribution efficiency.

Equally, the growth of track-and-trace technology – certainly in the field of reusable solutions – comes with clarity of asset management and live product temperature and environment updates. For example, it allows us as packaging providers the opportunity to develop solutions that are even more suited to your world.

Temperature-controlled logistics is subject to environmental challenges. What can the industry do to improve this outlook in the next 5-10 years?
The industry can address the environmental and sustainability challenges it faces on several fronts. Firstly, we need to continue working on projects at a material science level, to bring in the next-generation bio-plastic products and move away from petroleum-based products.

Secondly, there are already many new solutions being developed and launched across 2022-23 that will use up to 50% fewer plastic products. New plastic tax rules in the UK, for instance, put many companies in a position where they must now look at how much plastic they bring into their organisation. We can only expect similar schemes to be implemented around the world. Things such as this will serve as a 'stick' to drive further environmental efficiencies.

However, the reality is that petroleum-based insulation like expanded and extruded polystyrene and polyurethane are still some of the most effective insulators in the industry in terms of price and performance, and although some eco materials are nearing their performance levels, we are not quite there yet. Added to this, it is often the case that the truly eco-beneficial materials come at an increased price due to their manufacturing scale vs that of the more established petrochemical-products. To mitigate this, we are again making sure that the alternative materials we onboard at Topa not only offer a like-for-like performance level, but also offer new benefits that could not be achieved with traditional plastics and serve to further challenge some of our customers' thermal distribution compromises.

Finally, by increasing freight optimisation and creating more thermally efficient solutions that fit the actual challenge, you can make significant environmental savings. If everyone is doing that, it can mean one less truck on the road or one less plane in the sky.

As Product Director at **Topa Thermal**, **Richard Harrop** leads the product development and marketing teams at Topa Thermal, working to ensure the most effective thermal packaging solutions are brought to market. With a career in the thermal packaging industry spanning 20 years, his energy and enthusiasm for all things temperature control is infectious. So much so you can almost see PCM running through his veins!

"It shouldn't be the burden of the customer to make compromised choices or settle for an 'almost right' thermal packaging solution."