

# HIGHLY VISCOUS PHARMACEUTICAL PRODUCTS



Emulsion of two different phases is usually used for the production of highly viscous pharmaceutical products such as gels, creams and ointments. One of the phases contains mineral oils or silicone, while the other is usually aqueous and is where thickeners, stabilisers, preservatives, etc. are dissolved.

The active ingredients are added to one of the above described phases or afterwards depending on the specific application.

The final product is highly viscous, that makes it hard to manipulate once the transfer process is complete, and it leads to the loss of product.

## I Common problems following the transfer process

Comparing with the low viscosity products, that after the transfer process can be drained down by means of simple mechanical set-ups (sloped pipe assembly), part of a highly viscous product remains inside the pipe, that leads to substantial losses of the transferred product that usually presents a considerable economic value.

It leads to a greater consumption of cleaning products and a considerable increase of the cleaning time, as all the residual products must be removed. It also increases the amount of waste product sent to the sewage treatment plant, if there is, as well as the treatment plant costs.

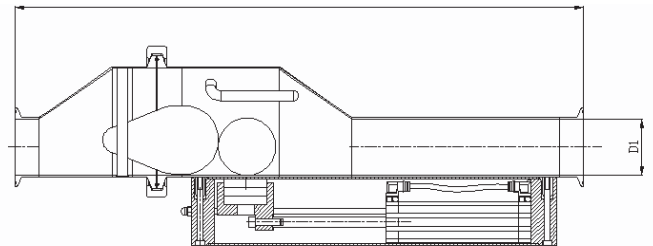
## I Solution by INOXPA

In order to minimise all these problems and especially to recover the final product, INOXPA offers its product recovery system designed for the pharmaceutical industry (STERIPIG) in compliance with the EHEDG specifications as it provides a high recovery rate of the product after the transfer process and reduces CIP/SIP time and the amount of the chemical agents used for cleaning.

## I Description of the solution

The STERIPIG system comprises a launcher, a receiver and a sphere. The launcher as well as the receiver consists of a pneumatic piston - which, unlike the food industry version, does not come into contact with the product, an inductive position sensor, two diaphragm valves and a divert bypass valve.

The launcher and the receiver have larger diameters allowing the product to pass through while the sphere is inside; the diaphragm valves are used to distinguish between the product and propellant, while the multiway valve enables the entry of the propellant and its drainage.



Sphere or PIG

The core of the sphere is magnetised and is detected by inductive positioners in the launcher and receiver; it is coated with an elastomer that is compatible with the product to transfer (e.g. silicone, EPDM or Viton). It is designed with a diameter slightly larger than that of the installation piping to ensure watertightness during the product recovery process.

It is possible to install 1.5D bends (common for this type of industry).

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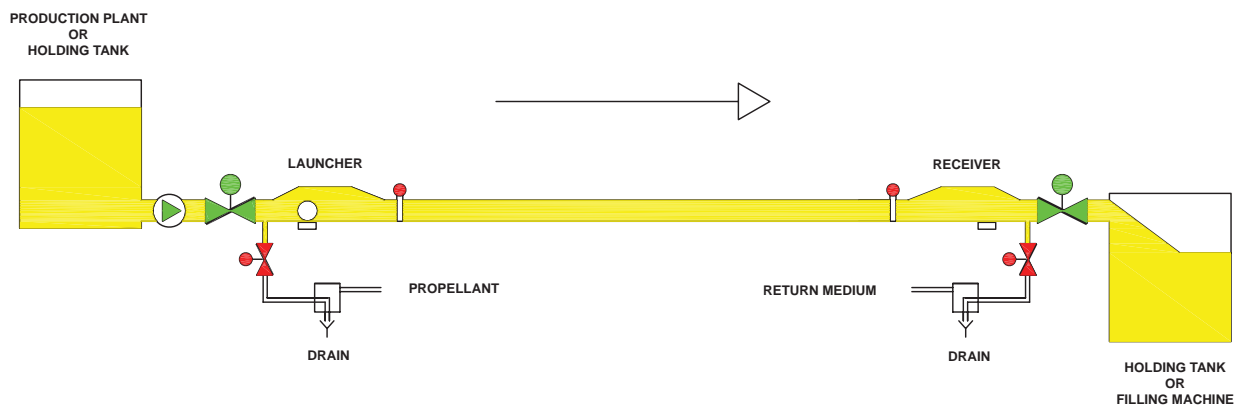
## Typical process

The process is started by stopping the transfer pump and closing the product inlet valve at the launcher.

The ball is put to the launch position and is driven by a propellant (normally compressed air or treated water) to the receiver. The sphere recovers the product by driving it to the outlet.

When the sphere is detected by the inductive sensor of the receiver, the piston attracts the ball and removes it to let the fluid pass through. At this stage, it is recommended to start the CIP process.

On completion of the cleaning process, the sphere returns to the launcher "drying" the pipeline and leaving the installation ready for the next production process.



The distinctive feature of the design of the INOXPA system is that it can be used in installations with 90° bends. It is a completely sealed system with no dead legs, thus, any contamination is prevented. All parts in contact with the product are made of AISI 316L stainless steel with a  $Ra \leq 0,5 \mu m$  internal surface finish.

## Other recommendations

It is advisable to install inductive sensors at various points of the installation in the case of very long pipelines and/or large pipe diameters to enable the adjustment of the propellant pressure (normally compressed air).

If it is possible to release the sphere from a common launcher to various receivers, it is advisable to implement the option of two spheres. The first one is used to select the receiver and the second one to drive the product out.

We recommend that you consult our technical sales department to ensure correct set-up of the STERIPIG product recovery system.

