



Liquid Ring Pumps *for the pharmaceutical industry*

BOC Edwards liquid ring vacuum pumps have been successfully used in the pharmaceutical industry for many applications ranging from freeze drying and vacuum filtering to drying and degassing processes.

In addition to our wide technology portfolio, applications expertise and safety first approach, BOC Edwards takes the time to understand your process and tailor make solutions to your specific requirements.



Freeze Drying

The majority of today's pharmaceuticals are dried using a freeze drying (lyophilisation) process. In this process water is removed by sublimation from the frozen state to maintain the product morphology, chemical integrity and solubility. Our liquid ring vacuum pumps help improve the turn around times by accelerating the drying rates and also, the process temperatures can be set at lower values helping to minimize product spoilage.



Vacuum Filtering

Our liquid ring vacuum pumps are ideal for filtering applications and have been used in rotary drum, disc, simple batch and horizontal continuous filters. In this simple application, the solids from the feed material are separated from the mother liquid to produce a filter cake; the air, saturated with vapor, is extracted with a liquid ring pump.

Our pumps are able to operate with a continuous flush of seal water and do not normally require protection from liquid and/or solids carried over from the vacuum vessels. They offer lower energy costs and faster response to process upsets that release large quantities of vapor to the pump.



Drying (Cone, Tray, Rotary)

After the filter cake is discharged from the vacuum filter, mechanical presses or centrifuges, heat sensitive pharmaceuticals are dried to very low moisture concentrations using a liquid ring vacuum pump. This process involves the removal of liquid from the solid by evaporation under vacuum to produce a dry cake. Our pumps have the ability to handle large amounts of condensate and will improve the drying times by fifty percent compared to heated-air dryers.



Degassing

The degassing process is essential to improve the quality of a pharmaceutical product, because it removes volatiles that might change the chemical and physical integrity of the product. Our liquid ring vacuum pumps are normally used in conjunction with molecular stills to remove the dissolved gases, and they provide the ideal solution for this operation because of their ability to handle big loads of saturated vapors. In this application our pumps typically operate at a vacuum range of 20 to 30 "Hg (abs) and the capacities can vary from 400 to 2000 cfm. Our team of engineers will help you determine the right size of pump needed for your specific application.

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