MasoSine Pumps
APPLICATION BRIEF

WATSON MARLOW MasoSine

Lipstick Manufacture

Less Wear, Less Maintenance

The challenge

Manufacturing lipstick – which contains waxes, oils, alcohols and pigments – poses a real challenge to engineers. The production process is a complex one: it involves grinding pigments to a fine powder and then suspending these into the oil/wax mixture.

Many types of pumps are not comfortable with the abrasive nature of powder pigments and wear is a common problem, typically to components such as rotors, shaft seals, gears and bushes. Such parts require regular replacement at a typical cost in excess of four figures.

As a result, lipstick manufacturers seek a pump that is designed to withstand the abrasive nature of suspended solids such as powder pigments; a pump that can deliver low total lifetime costs and increased uptime and productivity.

Lipstick Manufacture

A major international

cosmetics manufacturer had tried many different pump types on the lipstick recirculation loop from the holding kettle to the mould filling machine. Flow was around 7.5 litres per min (2 gallons per minute) and temperature 82°C (180°F) . Over several years and after many different trials the customer had ended up with a small gear pump. Four lines were in operation, each with its own recirculation pump. The customer had to replace the mechanical shaft seals, gears and bushes every 3-4 months at a cost of around £1500 per set.

The customer replaced all four gear pumps with MasoSine pumps, now well into their second year of service and have not required any replacement parts.

Watson-Marlow...Innovation in Full Flow

The solution

MasoSine pumps provide a solution to many of the technical challenges involved with lipstick production. MasoSine's patented sinusoidal technology uses low cost liners and scrapergates that can be changed easily when they eventually become worn. What's more, these parts are a fraction of the cost of the normal casing, cover-plate, and rotor impeller/gear used in conventional pumps. As a result, total lifetime costs add up to 30-50% of the cost of a similar sized positive displacement pump.

The MasoSine pump is built around a single rotor, which also provides users with significant benefits over other positive displacement pumps used in the production of lipstick, most of which rely on two rotors, equating to twice the cost and twice the potential for wear and maintenance. Furthermore, most positive displacement pumps have the shaft seal mounted in a small cavity in the rear of the casing – many have two shafts and two seals. This seal is not fully accessible to the flow of the product, which means there is no stagnation and sedimentation, resulting in a concentration of abrasive material around the seal and shortened seal life. The MasoSine pump seal is in an open cavity that is fully exposed to the flow through the pump, resulting in extended seal life.

Customer success

At a major international cosmetics manufacturer, MasoSine ran trials with the SPS 1 model pump over a period of several months to monitor the wear rate and establish a lifetime and cost analysis. The test ran for nine months without the pump ever being touched. There was some small wear but absolutely no degradation in the performance, and no seal leaks. Had there been a need to replace parts it would have cost no more than £400 per pump, that's a quarter of the cost of replacement parts for the gear pump. Needless to say, the customer replaced all four gear pumps with MasoSine pumps, which are now well into their second year of service and have not required any replacement parts.

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