

Glass Bottle Manufacturer Success Story

Region: Turkey

Sector: Glass Forming and Manufacturing

Benefit: Energy savings of 35%

A Turkey-based glass manufacturer producing flat glass, glassware, glass packaging and chemicals, including soda-chromium compounds.

Challenge:

Every day at one of our customer's glass furnaces 400 tonnes of glass are formed into nearly 8 million glass containers through a continuous high-speed process running round the clock. Molten "gobs" of glass flow from the furnace directly into moulds at a rate of 80 per second, where compressed air is used to blow the glass into its final shape while the vacuum helps form the precise external dimensions of the jar or bottle.

Plant engineers in one site were looking to improve efficiency and reduce the environmental impact of their production equipment and asked Atlas Copco to recommend a modern alternative to their traditional oil-injected rotary vane vacuum technology with the goal of minimizing the total life cycle costs of their vacuum system. As the furnace operates 24/7, any downtime of forming machinery is costly, so any equipment would have to be robust and reliable enough to cope with the risk of lubricating the oil or particles that might be sucked into the vacuum line.



Solution:

Proposing the GHS 3800 VSD+ oil-injected screw vacuum pump with nominal 55kW-installed motor and integrated Elektronikon® control system, Atlas Copco predicted better process control and reduced energy consumption than the previous 75kW vane pump. This was possible thanks to the unique principle of GHS VSD+, which generates a vacuum in the axial direction down the length of two synchronized screw profiles. Unlike radial compression principles, the screw mechanism is not dependant on centrifugal forces and

avoids the frictional losses of sliding vanes, resulting in efficient performance that varies proportionally with rotational speed of the pump. The on-board control system monitors the vacuum level in the process and automatically adjusts the speed of the pump to deliver optimum efficiency and a reliable vacuum.

The oil-injected screw element features solid screws and oversized bearings and avoids the mechanical wear associated with radial principles while class leading oil separation and conditioning helps keep the pump running smoothly 24/7. Atlas Copco was pleased to offer reduced maintenance requirements on the new vacuum system when compared to the existing machines.



Outcome:

The GHS 3800 VSD+'s self-optimizing variable speed control has been demonstrated to operate on this site at average rotational speeds between 40% and 70% of the maximum speed. This has been backed up by an energy audit confirming average energy savings of 35%. Maintenance costs have also been reduced thanks to longer service intervals and fewer interventions, making for significant reduction in the total life cycle cost of the vacuum system. Additional piece of mind comes from knowing that in case of emergencies, Atlas Copco's international network of dedicated service technicians will be on hand to help.