

CXS PUMP GIVES RELIABLE AND FLEXIBLE SOLUTION TO THE PROCESS INDUSTRY

A reliable and flexible solution in a chemicals processing application

Adama (formerly Makhteshim Agan) is a world leader in the manufacture of branded off-patent crop protection speciality chemicals with more than 50 subsidiaries in 45 countries across the globe. They offer a wide range of products that protect crops against destructive weeds, insects and fungi, helping farmers and growers increase production by minimising yield losses. The focus for Adama is improving food security worldwide by developing effective and innovative products that are produced to the highest standards. This is alongside the challenge they face in continually improving manufacturing techniques and minimising downtime in harsh agrochemical applications, where vacuum is often a critical part of the process.



KEY FACTS

Customer	Adama
Region	Israel
Sector	Industrial Vacuum - Chemical

BENEFIT **50,000€ annually cost of ownership savings (compared to steam ejectors)**

CXS CHEMICAL DRY SCREW VACUUM PUMP

1. Challenge

Adama had traditionally used steam ejectors on an evaporation process that had a phenol condenser ahead of the pumps. They moved to Edwards dry pumps, which gave them the expected benefits of no effluent generation, clean and flexible vacuum and a lower cost of ownership. They knew and trusted the dry system well, however, they were experiencing issues where liquids were solidifying in pumps resulting in unwanted downtimes. After unscheduled stops, the phenol (with a melting point of 41°C) sometimes solidified in the pump, which could result in damage to the pump or “cold seizures” when restarts were attempted. Maintenance costs remained above expectations as the liquid slugging and subsequent cold seizures could not be eliminated without expensive pipework changes. It was also important to the customer that the pump could handle a variety of processes, operating at different temperatures and pressures.

2. Solution

Following a review of pumping options Edwards were chosen to install a CXS chemical dry discrete tapered variable screw pump on the basis of its flexible operation, and capability of handling some liquids and solids, plus its ease of recovery without damage if it became seized. Unlike some other screw pumps, the CXS does not have a cantilever rotor design or an end compression plate and the result is superior solids handling as material is not compacted during the cool down phase, thus minimizing the risk of cold seizures within the pump. The low installed power, high efficiency motor also helps to avoid damage when the pump is restarted with material in it. Furthermore, the CXS pump has a built-in energy saving mode that minimises power consumption when vacuum is not required but can maintain a pre-set minimum temperature so that it is available for immediate use. This is better than switching off between batches as it saves warm-up time (20 to 30 minutes) and further reduces the potential for cold seizures and associated pump damage when restarting.

3. Main Benefits

Due to the superior liquids and solids handling capability of the CXS dry screw pump and its ability to avoid cold seizures Adama have been able to eliminate the original problems they had experienced at that point of their process. There has been no downtime due to pump seizures and they report an increase in vacuum performance and flexibility of the process plant. It was also important that the pump should be quiet, as it is situated just outside the plant room, and even with the plant room doors wide open on a hot day, the pump can barely be heard. They are also benefiting from the long service intervals of up to 5 years for the CXS, which together with its low utilities consumption and reliability bring an unrivalled low cost of ownership. The average annual saving for total cost of ownership for CXS compared to steam ejectors is over €50,000.

Eliezer Britshtain, Pilot Manager at Adama confirms the reliability and flexibility of the CXS pump. “The vacuum system is required for on-off operation for the pilot plant at a variety of temperatures and pressures, and the pump still starts every time. We went to dry vacuum because of the stricter Israeli environmental regulations. With one pump, we get high and low process pressures. We would have to have had a highbred system if we used wet pumps. No problem with the Edwards CXS dry pump. This saves investment money as well as running costs. We have met our targets.”

Since the CXS was installed in January 2013 in Adama, it continues to deliver clean, reliable, flexible vacuum with no routine maintenance. CXS dry vacuum pumps are now in operation worldwide, providing highly controllable, high performing vacuum equipment that allows processors to minimise running costs and reduce environmental impact.

