



WANNER
Hydra-Cell[®]
Seal-less Pump Technology

Case Study

Pumping abrasive glues in particle board process

A familiar problem - An unconventional solution.
The Gravejo (Poland) plant of particle board manufacturer Pfleiderer was too frequently replacing high-pressure pumps on its production lines – giving concern over potentially disruptive pumping problems in the early stages of board manufacture. Pfleiderer solved it when gear pumps were replaced by seal-less Hydra-Cell pumps.

The pumps play an essential part in the main continuous production process - delivering resinous glue to nozzles where it is sprayed on to the wood fibres. The problem faced by Pfleiderer is familiar to plant engineers throughout the board industries and beyond, wherever abrasive materials have to be pumped at high pressure.

Most pumps capable of delivering these pressures rely on dynamic seals and are potentially vulnerable to excessive wear. In this case the pumps originally installed were gear pumps, chosen for their high pressure capability. The resin had to be pumped at 80 bar pressure to the spray nozzles.

But soon the gear pumps ran into difficulties. There were problems with mechanical seals, which began to leak. Moreover the pumps were not easy to clean. Particles of hardened resin became trapped between closely meshing gears and damaged them. A pump and gearbox on one system had to be replaced three times within months.



Pump code: G35XKSGHFECA

There was no confidence that other gear pumps or piston-type pumps would do better, but the Hydra-Cell distributor was able to suggest an alternative positive displacement pump: one of unconventional design, which the customer at that time had not encountered. It was the Hydra-Cell G35.

It offered an unusual combination of features. It could operate continuously at the high pressures required, but unlike the alternative types under consideration its design is seal-less. The drive mechanism is totally isolated from the pumped liquid by flexible hydraulically balanced diaphragms, which also perform the pumping action. There would be no problems with seal leakage or hardened resin.

Customer - Pfleiderer

Pfleiderer is one of the numerous Hydra-Cell customers who have appreciated the practical benefits of our seal-less pump technology and subsequently shared their experience with us.



G35 pumping glue at Pfleiderer



Pfleiderer engineers were interested to learn that the pump could handle abrasives and solid particles up to at least 500 microns, as well as chemicals, corrosives, viscous liquids and thin non-lubricating fluids – and that it could also run dry without damage.

Six months after the first G35 was installed, and no problems having been reported, Pfleiderer bought a second G35 for the same application. Working at 80 bar, and driven economically by 18.5 kW motors, each of these pumps delivers resin to the spray bar nozzles at 100 l/min.

Encouraged by their performance, Pfleiderer subsequently installed the smaller Hydra-Cell G10 pumps on another system, pumping ammonia nitrate. On this application the pumps replaced a larger, more expensive piston diaphragm pump – delivering the required flow smoothly, with less pulsation than the original pump.

A year later none of the Hydra-Cell pumps had needed repair or replacement. Routine maintenance was limited to an oil change every 6 months and an annual precautionary check on valves and diaphragms. Whenever they needed replacing, the work could be carried out within 2 hours without taking the pump out of line.

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