

## Case Study

### Sandpiper pumps shine in chroming process

Sales Engineer Cory Jessop (WA)

Various pumps are used within the chrome plating industry but Sandpiper Poly/Teflon diaphragm pumps play a huge part in the process from start to finish. This case study outlines what Sandpiper Poly/Teflon diaphragm pumps are used for and why they are so important to the chroming process.

Sandpiper pumps are used because of their great versatility and the range of chemicals they can pump. The first step of the plating process is to fuel the bath with water followed by the addition of three different chemicals. They are chromic acid, sulfamic acid and reagent grade sulfu-



ric acid. These three chemicals are pumped into the water at different times depending on the product being chromed. The Poly/Teflon construction of the Sandpiper pump enables all three chemicals to be pumped into the tank at different times without even flushing the pumps. This cuts down the time and cost of chopping and changing pumps to suit the different chemicals.

Before proceeding to the next step, a certain amount of the liquid needs to be drained so the customer uses the Sandpiper Poly/Teflon pump for this process as well. When the liquid level is right, chromium metal is deposited on the metallic surfaces which are submerged in a chromic acid plating bath.

Since the method is electrolysis, two electrodes exist. The part to be plated is made cathodic by connection to the negative terminal of the rectifier and inert lead anodes are made electrically positive. When voltage is applied across the two, current flows through the solution and metal is

deposited. Actual rates of deposition for commercial parts range from .0005"/hour to .003"/hour. Proper control of various plating parameters result in bright, hard, adherent deposits.

Once the product has been chromed it must be removed from the bath but before doing this, the liquid solution must be cooled. The cooling system is fitted with one or more close-coupled, centrifugal pumps which are computer controlled enabling them to precisely match the cooling requirements.



The final step is the most dangerous as all the liquid solution must be drained from the bath and at this stage it is an extremely caustic solution. The safest way to remove it from the chrome bath is to employ the Sandpiper Poly/Teflon pump and pump it into drums.



The customer has ten different chrome baths and six Sandpiper PB1 Poly/Teflon pumps (which have been in operation for the past twelve years) as well as four 1" Poly/Teflon pumps (which have been in operation for the past four years).

These pumps are a very important part of the business and Kelair's customer would never move away from the Sandpiper product.

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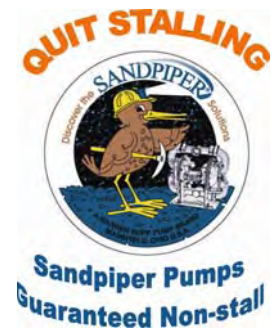
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### Sandpiper Features and Benefits

- Non-stalling guarantee
- Cross-drilled technology, to eliminate stalling
- ESADS (Externally Serviceable Air Distribution System, allowing repair of pump without removing from pipeline)
- Fully-bolted design provides a positive seal and reduces the incidence of leaks
- Lubrication-free, eliminates requirement for lubricators, reducing initial cost and maintenance cost

## Case Study

### Rainwater re-use keeping everyone happy at military dog training base

Manager Building & Fire QLD, Paul Hodgkinson

An Australian military dog training base houses about fifty dogs in kennels. Dog hygiene is of the utmost importance



and as part of maintaining this, a regular washdown is undertaken of the kennels using hose reels. Varying amounts of flow and pressure are required depending on how many hoses are used at any one time.



Kelair was approached to offer a system which utilised stored rainwater for use when available, and mains water supply when the rainwater storage tank was near empty. Any system offered must also be able to cope with the varying supply demands.

To meet the customer's specific requirements Kelair utilised the Kelair-Rainsaver™ system. The items supplied and system operation are as follows:

A single submersible Scuba pump is located in the underground rainwater tank and is controlled by a Hydrovar variable speed drive unit. The Hydrovar adjusts the rainwater supply by varying the speed the pump runs to meet the demand requirements. This is driven by how many hoses are being used at any one time cleaning the kennels.

When the tank water level gets to a low point, a float switch drops which switches off the Hydrovar unit and cuts the power to a solenoid valve allowing mains water into the supply line. When there is insufficient rainwater in the tank the whole system operates on mains pressure with no pressure boosting required.



As soon as the rainwater tank has sufficient water in it, the solenoid-operated valve disconnects mains water, the pump starts up again and the system operates on rainwater. The variable speed unit, cooling fans and all other circuitry are housed in the main control panel, which also has display lights so it can be seen which is being used, the tank water or mains.

The customer is very happy with the results and best of all is making the most of the rain.

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