

» CUSTOM CHEMICAL DOSING PUMP SYSTEM

Tapflo UK was approached by an existing customer who is a global leader in sustainable technologies, to provide a Chemical Dosing Pump solution for an upcoming project.

- ✓ **Customer:** Global Science & Chemical Company
- ✓ **End-User:** Fine Chemicals & Catalysts Division
- ✓ **Enquiry Received:** October 2019
- ✓ **Order Placed:** February 2020
- ✓ **Order Dispatched:** May 2020

Chemical Dosing Pump Solution:

Initially, a PTL Low-Pressure Peristaltic Pump was offered, along with the option of an Air Operated Diaphragm Pump (AODD), both would have met the original specifications for flow and head. Unfortunately, without further protection, a hose or diaphragm failure would allow the aggressive process media to leak into the surrounding environment and cause a potential hazard to operators. It was therefore deemed necessary to increase the specification of the solution to put protection measures in place to protect the pump, the environment, and the operators.

The agreed solution was to design a bespoke Peristaltic Pump system which would allow a variable flow for multiple duties and have more than enough protection in the event of a hose rupture. Tapflo UK worked to modify a PPA Corrosion Resistant Peristaltic Pump to meet the needs of the customer. The pump was specifically designed for corrosive and hazardous applications within the water treatment industry. The key design features of this range meant that the pump perfectly lent itself to our customer's application.

Unlike standard Peristaltic Pumps which feature painted metallic casings (usually Aluminium or Cast Iron),

the PPA range features includes:

- ✓ Manufactured from Carbon impregnated HDPE enabling the casing to withstand corrosion in the event of a hose rupture.
- ✓ Double sealing between the casing and the gearbox to ensure that there are no leakages into the environment and the drive end is also protected.
- ✓ The roller assembly has also been upgraded to be corrosion resistant as it features Nylatron Rollers and is HPENC (high phosphorus electroless nickel coated).
- ✓ Painted with anti-corrosion coating featuring Primary and Final Polyurethane. Acryl-Epoxy, 150

As a result, the PPA Corrosion Resistant Peristaltic Pump provides a reliable Chemical Dosing Pump solution, ensuring maximum corrosion resistance, increased safety and reduced costs by eliminating the replacement of unnecessary spares for the customer.

The final solution was a bespoke PPA13 Pump which was ATEX Eexd IIB T4 Rated, inverter controlled and fitted with an ATEX rated Hose Rupture Detection Sensor with additional cooling and an oversized motor. This ensured that the customer had a wide flow and pressure envelope to work with, as well as a pump which provided the perfect protection against its application to meet safety requirements.

Check out this link to find more:

[Custom Chemical Dosing](#)

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Application Details:

The application requirements of this customer guaranteed a Chemical Dosing Pump was necessary, below are the details given to Tapflo UK by our customer.

Discharge: Horizontal 10m, vertical 5m.

Fluid/s: Various chemicals, but most notably Allyl bromide, Phosphoric Acid, HCL & CIP fluids.

Flowrate: Variable dosing & filling rates, with high accuracy requirements.

- ✓ **Dosing: Chemical**
In aliquots of 0.2-1L
- ✓ **Charging: Chemical**
97L total charge
- ✓ **Charging: Chemical**
75L total charge
- ✓ **Charging: Chemical**
17L total charge
- ✓ **Dosing: Chemical**
In aliquots of 0.2-1L

ATEX Rated & had to be protected in the event of hose rupture

PPA13 Solution:

The unit was also fitted with a range of [Peristaltic Pump accessories](#) to support the needs of the customer for their Chemical Dosing Pump solution.

- ✓ Rated Capacity: 56 l/hr @ 23 rpm
- ✓ Max Discharge Pressure: 4 Bar
- ✓ Max Solids Passage: 3 mm ø
- ✓ Accuracy: ±0.5%
- ✓ Max Suction Lift: 9 m
- ✓ Duty Class: Rated for Continuous Operation

In-line Pulsation Dampener:

- ✓ PTFE Inserts & FKM Hose, Multi-Layered & Polyamide Reinforced.
- ✓ Reduces pulsation up to 90%, allowing for accurate reading of flow rate. Also reduces stress on pipework and pump flanges caused by vibration & water-hammering effect.
- ✓ Surrounded by compressed gas (Air or Nitrogen), the fluid enters the inline dampener, and the thick-walled, reinforced rubber hose dampens the pulsation of the fluid. Only the inserts and hose material are in contact with the liquid, allowing for optimal resistance. The inline design allows for easy installation to any system.

Hose Rupture Detection Sensor:

- ✓ ATEX Rated capacitive sensor fitted to the back of the bespoke PPA13 pump. Provides Signal to the PCS, alerting the operator of a hose rupture & switching off the pump.

Features and Benefits of the Solution:

- ✓ **Oversized Motor – 0.25kW ATEX Zone 1 IIB T4 Rated motor.** Provides additional cooling to the unit. More cost-effective & space-efficient than an additional external cooling fan.
- ✓ **Electroless Nickel Plated Coating – All metallic parts coated with an Electroless Nickel plating.** Provides resistance to the most aggressive chemicals, preserving the working life of metallic parts.
- ✓ **Enclosed Casing** – Prevents spilling of harsh chemicals onto the floor or other pump components.
- ✓ **Leak Channel System** – Prevents leaking chemicals from entering the gearbox & motor section.
- ✓ **Our Signature Hose – Multi-layered & Polyamide Reinforced.** Tested and proven to last up to 30% longer than other manufacturers, thanks to the multi-layering & reinforced design of our hoses. The most important part of a Peristaltic Pump to consider when it is the only wearing part!

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