CHEMICAL MANUFACTURING PLANT

Tapflo UK works closely with a range of Chemical Manufacturing customers to produce safe, robust pump solutions for a variety of chemical substances. Our experience and technical knowledge ensures that we create the best solution to help each customer.

Chemical Manufacturing Plant Pump Solutions:

At Tapflo UK, we only work with the most reliable equipment and partners. We were contacted by one of our UK distributors who was looking for a well-made Diaphragm Pump solution which provided the end-user with feedback and precise control functionality. The distributor's customer, a Chemical Manufacturing Plant had contacted them to assess the problems they were having with their existing pump systems and see whether there was a way of improving the reliability of the equipment, reduce downtime, spares costs and simplify the operation whilst retaining flexibility due to varying changes in demand from their production lines.

Their current system was a complex, electrically-driven, multi-headed diaphragm pump dosing system which was costing them approx. £10'000/year per pump system on maintenance contracts as well as over £800.00 per diaphragm on their main product feed heads. Due to the complexity of the pump system downtime was also lengthy, costing the chemical manufacturing plant thousands of pounds every time they needed to do any maintenance on the pumps. The pumped, problematic, fluid was a low-temperature monomer which acts as a coagulant which proved to be an issue for both mechanically sealed and mag drive pumping technologies therefore a diaphragm pump was the obvious solution. However, standard diaphragm pumps, at the capacities that the customer was wanting to pump at, require a lot of compressed air to operate and would also require fairly complex control gear to integrate into their central control system to modulate the pumps to maintain an accurate feed to their production lines.

Equipment Supplied:

The LEAP & Pulsation Dampener were also supplied with metal works ETOP Digital Proportional Control Valve w/ Digital Display & 4-20 mA Signalling

- ✓ **LEAP-420STT Low Energy Air-Operated Double Diaphragm Pump**
- ✓ **Fluid:** Low-Temperature Monomer (-5ºC)
- ✓ **Pump Body:** Cast Stainless Steel 316
- ✓ **Pump Centre Block:** Aluminium
- ✓ **Connections:** 2" Female BSP (swivel through 180 degrees)
- ✓ **Diaphragms:** PTFE no nut clean face
- ✓ **Volume per Stroke:** 2300ml
- ✓ **Max discharge pressure:** 8 bar
- ✓ **Max Air Pressure:** 8 bar
- ✓ **Valves: PTFE Flow Rate:** 570 litres p/min (-15% for PTFE diaphragms)

DT420ST Tapflo Pulsation Dampener:

- ✓ **Body Wet Side:** Cast Stainless Steel 316L
- ✓ **Body Air Side:** Polypropylene
- ✓ **Connections:** 1 1/2" BSP Female
- ✓ **Diaphragm:** PTFE no nut clean face
- ✓ **Max discharge pressure:** 8 bar G
- ✓ **Max Air Pressure:** 8 bar G

Check out this link to find more:
LEAP Pumps

Solution & Support Offered:

Further to our distributor's comprehensive initial site visit and report on the existing installation, the end-user was recommended to replace the existing pump with a LEAP Pump, Pulsation Dampener and Digital Proportional Control Valve. These types of pumps have several unique and patented features which were perfect in resolving the end-users issues with their existing unit.

LEAP Pumps allow full control and feedback of the pump digitally, enabling the end-user to monitor the pump's operation and control the performance accurately via a 4-20 mA signal, whilst retaining all the intrinsic benefits of a standard air operated diaphragm pump. An electrical feedback signal is provided from the LEAP control module, triggered at the end of each stroke of the diaphragms, thus allowing for external monitoring of the pump performance within the main process control system. When being used in conjunction with the digital proportional control valve, the pump is able to be controlled as if it was fitted with an electric motor and inverter system, providing seamless performance control via a 4-20 mA signal.

Additional benefits of the electrical feedback are:

- ✓ **Batch dispensing:** Simply counting the strokes of the diaphragms and stopping the pump after the required volume has been dispensed.
- ✓ **Dry Running:** By analysing the frequency of the pulses you can monitor whether the pump is dry-running or not. When the pump starts to dry run the frequency of the pulses will increase.
- ✓ **Dead Heading:** When the frequency of the pulses slows down or stops this means that the pump has deadheaded, indicating closed valve operation or a blockage in the pipework.
- ✓ **Flow Monitoring and Reduced Pulsation:** Accurate flow monitoring is crucial for process optimisation. Traditional diaphragm pumps often generate pulsating flows, making them incompatible with Coriolis Flow Meters. However, the Tapflo UK LEAP Pump exhibits significantly fewer pulses, enabling seamless integration with pulse feedback devices. This results in real-time flow monitoring with enhanced accuracy, eliminating the need for costly pulsation dampeners.
- ✓ **Energy Efficiency and Cost Savings:** Air-operated diaphragm pumps are notorious for their high energy consumption. However, the LEAP Pump was specifically designed to address this issue. By minimising air consumption and operating at ultra-low start-up pressures, the LEAP Pump drastically reduces energy waste. For instance, a standard 2" AODD pump running at 150 l/min @ 1 bar discharge pressure would cost approximately £1843.20/year to operate. By switching to the LEAP Pump, our specific end-user achieved annual savings of £652.64 per pump, significantly reducing their energy costs. Streamlined Maintenance and Extended Lifespan: The LEAP Pump boasts a streamlined design with approximately 70% fewer parts compared to other diaphragm pumps. This simplified construction reduces maintenance requirements, lowers spare parts costs and enhances the lifespan of wear components. With only three key parts requiring regular inspection and replacement (ball seats, balls and diaphragms), the Tapflo diaphragm pump offers both cost-effective and time-efficient maintenance procedures. The LEAP Pump further enhances this advantage by incorporating an advanced Air Valve technology with a life expectancy exceeding 200 million cycles. Replacement of the air valve can be easily performed without removing the pump from the pipeline, minimising downtime and maintenance costs.
- ✓ **Client Success:** A specific end-user faced costly maintenance contracts, extended downtime and expensive spare parts for their existing pump systems. By transitioning to the LEAP Pump, they gained control over their maintenance process, significantly reducing downtime and lost production costs. They also achieved a 50% reduction in spare parts expenses, contributing to substantial overall cost savings. The LEAP Pump's reliability and efficiency empowered the end-user to maintain their pumps independently while benefiting from improved system performance.
- ✓ **Tapflo's Commitment to Support:** Tapflo UK, in collaboration with our distributors, provides comprehensive assistance and support throughout the commissioning and installation of the LEAP Pump. Our commitment extends beyond product delivery, as we offer site visits, troubleshooting and system appraisals to ensure optimal pump performance and customer satisfaction.

Check out this link to find more:
LEAP Pumps