
CDR Pumps UK Ltd | Making the right choice...

# The QUANTM® Leap

The industry of tomorrow isn't expensive, hard to learn or a burden.

It's smart, simple, cost-effective, clean and environmentally responsible.

**Many manufacturing sites continue to rely on air-operated diaphragm pumps, despite the significant energy costs associated with producing compressed air. With rising pressure to reduce energy costs and meet sustainability targets, the QUANTM® electric diaphragm pump is proving to be an highly efficient solution.**

## How a UK Manufacturer Saved Almost £1 Million in Energy Costs

A national cardboard manufacturer who relied heavily on air-operated diaphragm pumps for continuous production of starch-based corrugating adhesives across multiple sites approached us with a challenge:

- Reduce their energy usage and associated costs
- Reduce the cost of maintaining their pumps and prevent recurring problems with exhaust icing (caused by moisture in the pump) and air valve wear

They had limited visibility of their true operating costs since they produced as much compressed air as was needed for running the pumps.

## Advantages and Limitations of Compressed Air Driven Pumps

Air-operated diaphragm pumps (AODDs) are widely used across UK manufacturing sites due to their ability to handle fluids with a wide range of viscosities and temperatures. They offer good suction lift, can generate high discharge pressures and are capable of handling solids. They can also stall safely under pressure, and dry run for short periods without damage.

However, AODDs also have several disadvantages:

- Poor energy efficiency– AODDs typically operate at just 10-15% efficiency
- High operating costs – compressed air is expensive to produce
- Exhaust icing – caused by moisture in the air supply
- High noise levels
- Wear from extended dry running
- Higher maintenance requirements – numerous moving parts increase maintenance frequency and downtime
- Additional control equipment – external controls are required for remote pump operation

## Energy Savings and Improved Efficiency with the QUANTM Electric Diaphragm Pump

Initially, we conducted a controlled trial at one of our customer's sites, replacing a single AODD with a like-for-like QUANTM electric diaphragm pump. This allowed us to measure real-word performance and obtain live data comparing the air consumption of the AODD with the electrical usage of the QUANTM pump.

## Significant Energy Savings

Comparing the air consumption at the inlet of the AODD and the kilowatt usage of QUANTM was an important step towards demonstrating the energy-saving potential of QUANTM.

**Trial Results:**

| | **Single AODD** | **Single QUANTM** |
|---|---|---|
| Annual Energy Use (kWh) | 47,813 | 5,880 |
| Annual Energy Cost | £10,041 | £1,235 |
| Energy Reduction | | **88%** |
| Annual Saving | | **~£8,800** |

Energy costs were calculated using a conservative £0.21 per kWh. Air consumption calculations didn't factor in any potential leakage or inefficiencies stemming from the compressor, so could well be even higher.

## Scaling the Impact

Following the successful trial, **seven** air-operated diaphragm pumps were replaced with equivalent sized QUANTM pumps. The transition was seamless since the QUANTM units have a similar footprint.

We continued to monitor live data to measure real-time kWh usage at the supply point. The results continued to demonstrate significant improvements in energy efficiency, with average savings of 7.5 kWh per pump.

## Straightforward Installation

Replacing the air-operated diaphragm pumps with QUANTM units was simple and straightforward. QUANTM fits within the same system footprint as an equivalent AODD with minimal modification.

## Operational Efficiency

As well as providing over **80% energy efficiency**, QUANTM delivered wider operational benefits including:

- No exhaust icing – having eliminated the need for compressed air
- Lower noise levels
- No dry running issues – due to automated priming
- Reduced maintenance requirements – due to fewer moving parts
- Improved reliability and reduced downtime
- Integrated controls with 4-20 mA input and output capabilities – enabling remote operation
- 'Plug and play' technology

## Multi-Site Installation

We ultimately supported the installation of **96** QUANTM pumps across 11 UK manufacturing sites.

**In the first year alone, this saved our customer £980,000 in energy costs.**

## The Outcome

By switching to QUANTM electric diaphragm pumps, our customer achieved significant energy cost savings while improving operational efficiency. The reduction in $CO_2$ emissions has also helped them operate more sustainably.

**At CDR Pumps, we work closely with customers to understand their application before recommending the most appropriate solution. In this case, the QUANTM electric diaphragm pump delivered significant energy savings, improved efficiency, and long-term operational value.**

**If you're evaluating pump efficiency on your site, contact the CDR Pumps (UK) Ltd team on 01933 674777 or sales@cdrpumps.co.uk to discuss whether QUANTM is suited to your application.**