COGNITO™

CASE STUDY

Sealless EODD Pump Improves Paint Transfer Efficiency and Cuts Energy Use

Our customer, a leading Indonesian manufacturer of high-quality decorative paints Our customer, a global manufacturer of paints and coatings, operates high-volume production lines for water-based paint applications. Their process depends on steady flow, controlled pressure, and consistent filling performance to meet production targets.

However, limitations in their existing pump system created inefficiencies that impacted output and operating costs.

Discovering the Customer's Need

The customer relied on a 3" AODD pump that struggled to meet production expectations. System limitations and setup issues created performance gaps:

- Flow output limited to approximately 40 lpm, below required levels
- Discharge pressure requirements limited the ability to increase flow with the existing system
- Improper dampener installation affecting pressure stability
- High energy consumption due to compressed air dependency

The process required handling water-based paint at approximately 3,500 cP, making consistent transfer more difficult without affecting product quality.

To support production goals, the customer required a solution that could:

- Increase flow to meet filling line demand
- Maintain stable pressure for consistent output
- Reduce energy consumption from compressed air systems
- Support viscous, shear-sensitive fluid without degradation
- Improve overall process reliability

The Right Solution: Cognito's EODD Pump

Cognito recommended replacing the existing 3" AODD pump with a 2" electric operated double diaphragm (EODD) pump, paired with a properly configured dampener and variable frequency drive (VFD) system.

This approach addressed both equipment and setup limitations.

Key elements of the solution included:

- Sealless design to eliminate leakage risks
- Integrated dampener with continuous air supply for stable flow
- VFD-enabled control to regulate pressure and flow output
- Robust diaphragm design suited for viscous paint applications
- Removal of compressed air dependency

The result was a controlled and efficient system that improved performance without increasing pump size.

Customer Experience & Results

After installation and system correction, the customer saw clear improvements in both performance and operating cost. Flow output increased from 40 lpm to 80 lpm under improved conditions, with peak performance reaching up to 95 lpm at 8 bar. Notably, this was achieved with a smaller 2" pump, demonstrating more effective system utilization.

Correcting the dampener setup and applying VFD control played a key role in stabilizing pressure. This resulted in smoother, more consistent flow, which directly supported better filling line performance and reduced variability in operations.

Energy consumption dropped significantly after removing reliance on compressed air. The Cognito EODD pump operates at approximately 2,356 kWh per year compared to about 23,275 kWh for the AODD system, resulting in an annual reduction of roughly 20,920 kWh.

This reduction translated into meaningful cost savings. Annual energy costs decreased from about $7,680 to $777, delivering approximately $6,900 in savings each year.

Additional operational benefits included:

- Reduced maintenance due to sealless design
- Improved process stability for paint transfer
- Elimination of compressed air dependency
- A clear path to scale output toward 150 lpm with additional units

Overall, the upgraded system provided a more consistent and efficient approach to handling viscous, shear-sensitive paint while lowering total operating costs.

Competitive Analysis & Energy Consumption

Parameter	AODD Pump (3”)	Cognito EODD Pump (2”)
Flow Rate	Approx. 40 lpm (initial)	80–95 lpm (post-optimization)
Discharge Pressure	Up to 8 bar	Up to 8 bar
Fluid Type	Water-based paint	Water-based paint
Viscosity	Approx. 3,500 cP	Approx. 3,500 cP
Energy Consumption/Year	Approx. 23,275 kWh	Approx. 2,356 kWh
Operating Cost/Year	~$7,680	~$777
Compressed Air Requirement	High	None
Flow Stability	Inconsistent	Stable with dampener
Maintenance Requirement	High	Reduced
Total Cost of Ownership	High	Lower

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Higher Output, Lower Energy Use, and Stable Paint Transfer

By moving away from compressed air-driven pumps and correcting system setup, the customer improved both production output and cost efficiency.

Cognito's EODD pump provided consistent flow, reduced energy usage, and reliable operation for viscous paint transfer. Based on validated performance, the customer plans to implement additional 2" Cognito units to achieve the target flow of 150 lpm under optimized conditions.