



Chemflo® 10 in Dissolved Air Flotation (DAF) Application

Industry Background

Dissolved Air Flotation (DAF) systems are widely used in industrial water and wastewater treatment for the separation of suspended solids, oils, and other contaminants from liquids. DAF technology is instrumental in industries such as food processing, chemical production, paper manufacturing, and municipal wastewater treatment, where high levels of contaminants and solids make traditional filtration less efficient.

In a DAF system, air is dissolved into the water under pressure and then released at atmospheric pressure in a flotation tank. The air forms microbubbles that attach to suspended particles, causing them to float to the surface for easy removal. The process requires a reliable, corrosion-resistant pump capable of handling pressurized flows without compromising fluid integrity.

The Challenge

One wastewater treatment plant faced issues with their existing pump in the DAF system, including inconsistent flow rates, frequent maintenance requirements, and corrosion due to the chemically aggressive environment. The plant needed a solution that would:

- Maintain a steady, pressurized flow rate of air-saturated water.
- Provide corrosion resistance to handle high levels of dissolved solids and potentially aggressive chemicals.
- Offer durability and low maintenance costs to reduce downtime.
- Meet the plant's strict environmental and regulatory standards.

The Solution: MP Pumps Chemflo 10

After a thorough evaluation of the plant's requirements, MP Pumps recommended the Chemflo® 10 pump. Known for its reliability in corrosive environments and high-efficiency flow management, the Chemflo 10 offered several benefits to address the plant's needs.

The Chemflo 10 pump is made of 316 stainless steel, which offers excellent corrosion resistance, making it ideal for handling chemically aggressive solutions found in many DAF applications. Additionally, the pump's closed-coupled, end-suction centrifugal design ensured a consistent flow rate and high operational efficiency, crucial for producing the microbubbles necessary for effective separation.



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Implementation

The Chemflo 10 was installed in a pressurized air-water mixture line of the DAF system. This line circulates a portion of treated water, injecting air under pressure to create the microbubbles that facilitate contaminant separation.

Key adjustments made during installation included:

- **Optimizing Flow Rate and Pressure:** The pump's settings were calibrated to meet the specific flow and pressure requirements of the DAF system, ensuring effective microbubble formation.
- **Corrosion Protection:** The 316 stainless steel construction allowed the Chemflo 10 to withstand the chemically aggressive conditions, reducing the likelihood of corrosion and degradation over time.
- **Monitoring and Control:** A feedback loop was integrated to monitor pump performance, with sensors to alert operators of any deviations in flow rate or pressure, thereby preventing downtime.

Results

Following the installation, the wastewater treatment plant observed the following benefits:

- **Improved Efficiency:** The Chemflo 10 maintained a steady flow rate with reduced energy consumption, enhancing the DAF system's separation efficiency and reducing operational costs.
- **Reduced Downtime and Maintenance:** The plant noted a significant drop in maintenance needs due to the pump's corrosion-resistant materials and robust design. This also reduced associated labor costs and unplanned downtime.
- **Enhanced Contaminant Separation:** With a consistent flow rate and optimized pressure, the DAF system produced smaller, more effective air bubbles, leading to better separation of contaminants and an overall increase in water quality.
- **Long-Term Cost Savings:** The Chemflo 10's reliability and reduced maintenance frequency resulted in lower lifecycle costs, making it a cost-effective solution for the plant's DAF system.

Conclusion

The Chemflo 10 pump by MP Pumps demonstrated its suitability for demanding DAF applications, providing high efficiency, reduced maintenance needs, and corrosion resistance in a challenging wastewater treatment environment. This case illustrates how investing in the right pump technology can lead to substantial operational improvements, reduced costs, and greater environmental compliance for industries relying on DAF systems for water treatment.

Key Benefits Summary

- **High Efficiency:** Consistent flow and pressure for optimal microbubble formation.
- **Corrosion Resistance:** 316 stainless steel construction for longevity.
- **Low Maintenance:** Reduced downtime and lower long-term costs.
- **Operational Reliability:** Robust design suited for industrial applications.

The MP Pumps Chemflo 10 provided a robust, cost-effective solution, enabling the plant to enhance its water treatment efficiency while minimizing environmental impact.

