Optimizing Plant Extract Product Transfer from Filter Press Sheets by using **Fristam's FP Centrifugal Pump**

A Few Highlights of the Case Study

One of our clients from a bio-pharmaceutical company was experiencing difficulties with its current belt-driven pump system for transferring plant extract liquids through filter press sheets. The system was inefficient, needed to be maintained regularly, used lots of energy, and did not have good hygiene standards. Additionally, there were issues with inconsistent flow and pressure during production.

To resolve these challenges, the company replaced the existing system with the Fristam FP Centrifugal Pump, a system that ensured stable flow, decreased power consumption, enhanced hygiene, and reduced maintenance. The change resulted in greater production efficiency, decreased operational expenses, and reduced downtime.

Where the Problems Began?

The client was utilizing a belt-driven pump system for transporting plant extracts for further processing. The system, however, had several issues:

- **Hygiene & Cleanability Issues:** The previous pumps were not CIP-compatible and needed to be manually cleaned, increasing the likelihood of contamination.
- **Seal Failures Regularly:** The gland-type seals often failed, causing leakage of the product and high maintenance.
- **High Power Consumption:** The pumps used 37 kW motors and tremendous power, causing operational costs to shoot up.
- **Space Consuming System & Maintenance Issues:** The system took up too much floor space, was hard to maintain, and was time-consuming.
- **Flow & Pressure Discrepancies:** The pump was unable to provide constant flow and pressure, resulting in losses in production and impacting the efficiency of the filter press sheets.

The client was looking for a modern, energy-saving, and hygienic pumping system to address these issues while providing smooth and consistent product transfer.

Research & Insights

The Fristam team visited the client's site to learn about the existing configuration and review the issues. They carried out a comprehensive evaluation by:

- Visually inspecting the inefficiencies in the operation of the previous system.
- Taking product samples for the analysis of viscosity and density.
- Comprehensively identifying high-cost factors, such as high power usage, maintenance charges, and lost time.

Our research revealed that the filter press sheets were extremely pressure-sensitive and could be harmed if subjected to too much force. Bearing this in mind, Fristam had to come up with a gentle yet effective pumping solution that would be able to provide a consistent flow without increasing operational expenses.

Finding the Right Solution

Following the findings of the research, our team first thought of using a Twin Screw Pump but then decided on the **Fristam FP Centrifugal Pump** as the best solution. The FP series was selected due to its capacity to:

1. Provide a constant flow and pressure to avoid filter press damage.
2. Save 50% of power using an 18.5 kW motor compared to the previous 37 kW motor.
3. Be completely CIP-compatible, providing hygiene and ease of cleaning.
4. Need little maintenance, removing seal failure, and expensive downtime.
5. Reduce floor space, as the new system took up 65% less space than the previous pumps.

By switching to Fristam’s FP Centrifugal Pump, the client was able to achieve increased efficiency, lower costs, and improved hygiene compliance.

Implementation

The Fristam team collaborated with the client to ensure a smooth implementation. The steps included:

1. **Pump Selection:** Selecting the FP Centrifugal Pump with the appropriate flow rate and pressure rating.
2. **System Integration:** Fristam offered an entire system, comprising:
    - Pump with control panel
    - Variable Frequency Drive (VFD) for speed and pressure control
    - Pressure regulation system for filter press sheet protection

3. **Trial Run & Performance Monitoring:** Fristam installed the pump on a trial basis, and the client tracked its reliability and efficiency over time.

Challenges & Solutions

1. **Pressure Sensitivity of Filter Press Sheets:** Fristam fitted a pressure regulation system to eliminate excess pressure buildups and prevent damage.
2. **Customer Restraint from Investing in Latest Technology:** For building trust, Fristam provided a free trial, which enabled the client to observe benefits directly before making the entire purchase decision.

Measurable Impact & Results

After implementing the **Fristam FP Centrifugal Pump**, the client experienced **significant improvements** in efficiency, cost savings, and production output.

Before and After Comparison

Parameter	Before (Old System)	After (Fristam FP Pump)
Power Consumption	37 kW per pump	18.5 kW per pump (50% reduction)
Production Yield	Inconsistent due to flow issues	35% increase in yield
Maintenance Costs	₹2-3 lakh/month	Almost ₹0 (No breakdowns)
Cleaning Process	Manual, time-consuming	Fully CIP-compatible, reducing downtime
Space Occupied	Large, bulky system	65% smaller footprint

Key Achievements

1. 60% energy savings
2. 35% improvement in product yield
3. No maintenance costs
4. Enhanced hygiene with CIP capability

Lessons Learned

1. **Providing a Complete System is Critical:** Offering a pump with a control panel, VFD, and pressure regulation system guarantees peak performance.
2. **Trial Runs Facilitate Resistance Overcoming:** Allowing customers to test the solution before complete investment enhances trust and provides a hassle-free transition.

3. **Power Efficiency Ensures Cost Savings:** Saving 60% of power had a functional impact on cost savings as well as production efficiency.

The Way Forward

Fristam’s FP Centrifugal Pump effectively resolved the client's problems regarding efficiency, hygiene, and maintenance. After the successful run, the client opted to replace all four of their existing pumps with our FP Centrifugal Pumps. The new installation has optimized their production process, saved them money, and eliminated downtime, establishing a new standard for efficiency in plant extract transfer. With its sanitary design, CIP compatibility, and energy efficiency, Fristam’s FP Centrifugal Pump has established a new benchmark for bio-pharmaceutical liquid transfer applications.