Case Study: Enhancing Hot Ghee Transfer in Dairy Processing with Fristam High-Temperature Lobe Pumps

A Few Highlights of the Case Study

In dairy processing, handling hot ghee comes with a unique set of challenges. Ghee, being a viscous and temperature-sensitive product, requires gentle and reliable transfer to preserve its texture and quality. A prominent dairy processor was struggling with their existing setup, using locally made gear pumps that frequently failed due to leakage, flow inconsistencies, and maintenance issues.

Where the Problems Began?

The client was using gear pumps to transfer hot ghee at a viscosity of ~20 cp and temperatures reaching 130°C. The required capacity was 10 m^3/hr at 4 bar pressure. However, they faced ongoing problems:

- Inconsistent flow rates
- Frequent leakages
- Increased downtime due to frequent repairs
- Quality degradation of ghee due to shear

These issues led to slower production rates and higher maintenance costs, directly impacting operational efficiency.

Fristam's Intervention: Research & Insights

The client reached out after experiencing repeated issues with their gear pump systems. A site visit was conducted by the Fristam team, where we assessed the existing installation and gathered detailed operational parameters. It became evident that the gear pumps were not designed to handle the high temperature and sensitive texture of hot ghee efficiently.

Based on these insights, Fristam proposed a tailored solution: replacing the existing gear pumps with FL 100 L High-Temperature Lobe Pumps specifically designed for such applications.

Finding The Right Solution

Fristam's FL 100 L High-Temperature Lobe Pump was selected for its ability to handle viscous products at high temperatures with gentle product handling.

Why the Lobe Pump Worked Better:

- **High-Temperature Rotors:** Designed to withstand up to 130°C, ideal for hot ghee.
- **Gentle Handling:** Maintains product integrity without damaging the texture or causing emulsification.
- **Leak-Free Operation:** The robust seal design eliminated the leakage issues the client faced.
- **Hygienic Design:** Fully CIP/SIP capable, ensuring compliance with dairy hygiene standards.
- **Durability:** Minimal wear and long service intervals reduced unplanned downtime.

After a successful trial and explanation of the long-term benefits, the client agreed to replace all 6–8 existing gear pumps with Fristam lobe pumps.

Implementation Strategy

Despite the initial hesitation due to the higher cost compared to local gear pumps, Fristam presented a compelling case by calculating the total cost of ownership, which included:

- Maintenance expenses
- Lost production time
- Product waste

Once installed, the lobe pumps required minimal intervention, with consistent performance across all ghee transfer lines.

Results and Impact

The replacement led to immediate improvements:

- **80% increase in ghee production rate**
- **Significantly reduced maintenance downtime**
- **Improved product quality due to smoother transfer**
- **Higher equipment reliability, leading to increased operational efficiency**

Moreover, the client reported higher user satisfaction and improved ROI over time.

Before vs After: A Clear Upgrade

Feature/Parameter	Before (Gear Pump)	After (Fristam Lobe Pump)
Flow Consistency	Irregular, with frequent issues	Steady and controlled
Maintenance Frequency	High, with frequent breakdowns	Low, robust construction
Product Quality	Sometimes compromised	Maintained, texture preserved
Production Downtime	High	Very Low
Overall Production Rate	Low	Increased by 80%

Lessons Learned

- **What Worked Well:**
  The customer appreciated the engineering strength, hygiene compliance, and consistent performance of Fristam's pumps. The key takeaway was that investing in quality

equipment pays off in the long term, even if the initial cost is higher.

- **What Could Improve:**
  While the customer was satisfied with the results, they noted that delivery timelines for high-temperature rotors could be improved for quicker turnaround in future projects.

Future Outlook

This successful installation has opened new doors. The client is now planning to implement Fristam pumps across other ghee production lines and new dairy projects. The outcome also gives Fristam the opportunity to promote its high-temperature lobe pumps to other dairies with similar needs.

The Way Forward

Fristam's High-Temperature Lobe Pumps proved to be the right solution for handling hot ghee transfers in the dairy sector. They ensured consistent product flow, minimal maintenance, and excellent product integrity.

This case reinforces the value of choosing high-performance, application-specific pumping solutions, especially in a sensitive, fast-paced industry like dairy.

With proven results, Fristam is well-positioned to be a trusted partner for any dairy or food manufacturer seeking efficient, hygienic, and durable pump solutions for high-temperature applications.