Waste Water Monitoring in Snack Production

THE CHALLENGE OF WASTEWATER IN FRIED SNACK PRODUCTION

The fried snack industry faces a significant financial and environmental burden from managing and disposing of wastewater. During the essential cleaning of frying equipment, water inevitably becomes contaminated with **dispersed fats and oils**. As these contaminants build up, the water's effectiveness as a cleaning agent rapidly declines, rendering it unusable and necessitating costly disposal. This not only incurs direct disposal fees but also represents a loss of a valuable resource.

THE SOLUTION: CONTROLLED WASTEWATER REUSE WITH REAL-TIME MONITORING

A compelling solution lies in the **controlled reuse of this wastewater**. By implementing systems that allow for the intelligent recycling of cleaning water, companies can dramatically reduce operating costs. This approach decreases the volume of fresh water required for cleaning and minimizes the amount of contaminated water needing expensive treatment and disposal. Beyond the financial benefits, embracing controlled reuse significantly lessens environmental impact by conserving water resources and reducing pollutant discharge. It's a win-win scenario that transforms a significant operational challenge into an opportunity for both economic savings and environmental stewardship.

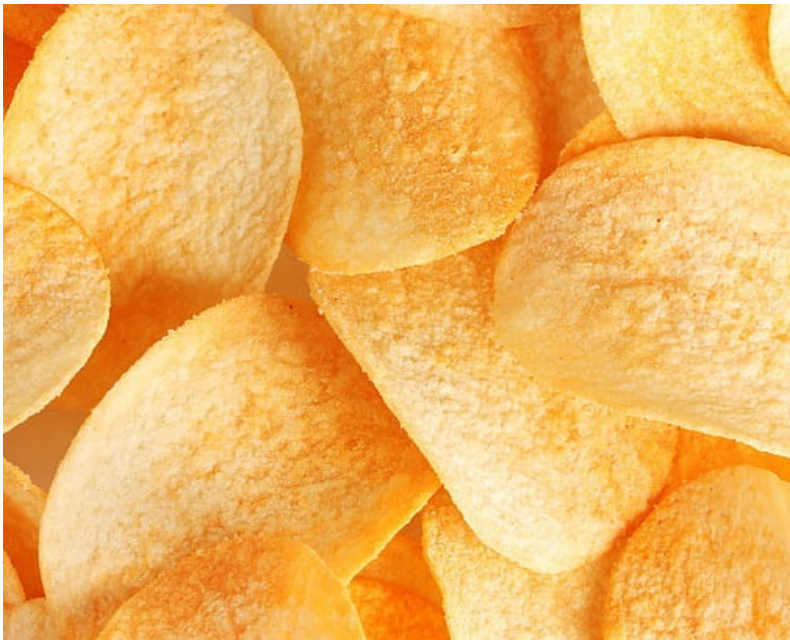
To achieve optimal wastewater management, it's crucial to **measure the concentration of emulsified fat in the water in real-time**. This enables companies to reuse the water until it reaches a maximum limit of **700 mg/L of dispersed fat**, at which point it must be disposed of. This strategy offers several key benefits:

- **Maximizes Water's Washing Potential**: Extending the usability of the water means companies can get the most out of each batch before disposal, optimizing resource utilization.
- **Reduces Disposal Costs**: Avoiding premature discharge directly cuts operational expenses by lowering the volume of wastewater that needs treatment and disposal.
- **Improves Operational Efficiency**: Continuous monitoring eliminates the need for frequent manual sampling and analysis, streamlining the cleaning process and freeing up labor.

REAL-TIME MONITORING WITH POLISPEC NIR SPECTROPHOTOMETER

To implement this controlled reuse strategy, a **Polispec NIR spectrophotometer** was installed inline within the wastewater recovery circuit. Utilizing **Near-Infrared (NIR) spectroscopy**, this system performs real-time analysis to detect the characteristic absorption bands of dispersed fats in water.

This NIR technique is highly effective at identifying the unique chemical bonds in fats, ensuring accurate measurement even in complex emulsions.



CONCLUSION

Inline NIR spectroscopy is an essential tool for wastewater fat content analysis in the fried snack industry. The ability to monitor dispersed fat in real-time allows for optimal water usage, significantly reducing operational costs and ensuring effective cleaning of equipment. This innovative approach not only benefits the environment through resource conservation but also substantially enhances a company's efficiency by streamlining the wastewater management process.

POLISPEC NIR

Polispec NIR is a robust and compact industrialized spectrophotometer that integrates reflection measurement optics (also configurable for transmission or contactless applications). Designed for both manual use and for in-process installation, it is made with special technological devices such as to make it highly performing in terms of sensitivity, operating dynamics and signal cleaning.

These qualities make Polispec NIR suitable for analyzing very different matrices, from the most reflective to the most absorbent, without the need for different versions of the instrument for each application area.

- Real Time Measurement: Emulsified oils content reported in real time
- Accurate Control: Real time measurement allows for diversion of soiled wash water
- Detection: Identify cleaning cycle end point through measurement rather than timed cycle. Increases confidence in cleaning performance and effectiveness
- Increased Uptime: Cleaning end point detection possible in real time rather than through timed cycle increases plant uptime by allowing faster turnaround
- Cost Savings: Maximum utilization of wash water leads to reduced makeup and treatment costs

GET IN TOUCH

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