

# CASE STUDY

# CALCIMAX® 450

Safe, fast & cost-efficient neutralization and treatment of wastewater

## APPLICATION IN FOOD PRODUCTION

### INITIAL SITUATION

The wastewater of the production of potato specialties is treated in a flotation system. The flotote sludge are further processed in a downstream anaerobic reactor, the drain is discharged into a municipal wastewater treatment plant. The digestate from the anaerobic reator is dewatered in a centrifuge.

In order to comply with the prescribed limit values for COD, suspended solids (SS) and pH value in the effluent, caustic soda (50%) was used for neutralization prior to the flotation tank. The addition of coagulant and flocculant ensures a stable separation of suspended solids.

Significant fluctuations in wastewater quantity and quality pose a challenge for the operation of the flotation system, especially for controlling the pH value. Finely, dispersed starch strongly contributes to the proportion of fines in the wastewater.

The use of caustic soda resulted in the following situations and conditions:

- Strong pH fluctuations in the flotation tank (6.5 to 8.3)
- Increased fines in the effluent with consequent increased consumption of flotation chemicals
- Unstable flotote sludge
- Unstable digestate with negative effects on drainage

### TASKS

Replacement of the previously used caustic soda with the newly developed product **CALCIMAX® 450**, a highly concentrated, stabilised lime (45%), that does not settle for up to 3 months without stirring.

### RESULTS

**CALCIMAX® 450** convinced in plant operation with clear advantages over caustic soda:

Flotation:

- Flotation running stable, even at strong fluctuations in the inflow
- Minor pH fluctuations (6.6 to 7.9)
- Increase of total solids in the flotote sludge up to 30%
- Reduction in the amounts of coagulants (up to 45%) and pFM (up to 40%)

Sludge dewatering:

- Smooth operation of the decanter
- Shear-stable digestate
- Reduction of pFM up to 15%
- Reduction of FeCl<sub>3</sub> by more than 10%
- Increase of dewatering degree up to 10%

Operational safety:

- Easier to comply with the limit values
- Less pH drop from the outlet
- Up to 30% reduction of SS in the effluent

Occupational safety:

- Easier and safer handling compared to caustic soda
- Higher storage stability **CALCIMAX® 450** up to +5°C compared to NaOH +8 to +10°C
- No dangerous good



### KEY DATA OF THE PLANT

**Amount of wastewater:**  
293,000 m<sup>3</sup>/year

**Amount of flotote:**  
8,500 m<sup>3</sup>/year

**Amount of potatoes processed:**  
80,000 to/year

**Flotation plant:**  
Coagulants and flocculants (pFM)  
NaOH 50%

**Anaerobic reactor**

**Dewatering decanter:**  
FeCl<sub>3</sub> and flocculant (pFM)

### SUMMARY

„Would you recommend **CALCIMAX® 450**, and if so, why?“

Yes:

- lower consumption of flotation products
- higher operational safety in compliance with the limit values
- easier control of the flotation system or simpler troubleshooting
- Flotation runs more constantly even with strong fluctuations in the inflow“

(Responsible Head of Wastewater Treatment)

