To effectively remove solids and COD from wastewater with flocculation-flotation systems, chemical dosing is required. Iron chloride is added to coagulate the water into small particles. By neutralizing and adding a polymer these small particles grow into larger flocs. These flocs can be separated by using a flotation system (DAF).

The dosage of chemicals (like Nijhuis i-FLOC) represents the largest part of the yearly operational costs. The designed capacity of the chemical dosage is based on the peak load of COD in the wastewater at the end of each day of production, to ensure the effluent limits are always met.

However, the chemical dosage is not designed on the real-time fluctuations of COD in the wastewater. In practice the COD load in the buffering tank increases during production hours and decreases during cleaning.

By using an intelligent online dosage control system these costs for coagulation, flocculation and neutralization (FeCl₃, NaOH and polymer) can be greatly reduced.

Nijhuis has designed the “i-DOSE” system to comply with the requirements to optimize the flocculation-flotation process and reduce chemical dosage costs. Nijhuis will take into consideration investment costs, operational costs, local requirements and reliability to offer the most suitable and intelligent online dosage control for your wastewater.

**APPLICATIONS**
- New or existing flocculation-flotation systems with;
- A COD based dosing philosophy combined with a fluctuating COD load.

**CUSTOMER BENEFITS**
- Optimized process by intelligent dosage control system:
  - Reduced chemical cost.
  - Prevention of exceeding discharge limits by online monitoring.
- Real-time control of the production process:
  - Spill control (possible breakdowns in production process).
  - More insight in daily trending.
- Maximize environmental compliance of the Nijhuis DAF system.
- Robust measurement and control system.
The set-up of the **i-DOSE system** is based on the typical characteristics of wastewater. The system is typically being applied to flocculation-flotation systems to control, in real time, the dosage of chemicals and **reduce chemical consumption cost**. Depending on the fluctuating COD load in the wastewater, the right measurement and analysing system can be selected.

i-DOSE SYSTEM, AN EXAMPLE
Nijhuis has successfully executed an online dosage control system for a cattle processing company in the Netherlands. In close consultation with the customer, Nijhuis has designed a reliable online dosage control system which is resistance to the pollution and corrosion in the wastewater to measure the COD load.

Results:
- Total flow was 100 m³/h.
- Return on investment: 1 - 1.5 year.
- Stable performance during 5 month trial.
- Effluent quality remains similar compared to system without online chemical dosing.

![Diagram](image-url)