



## United Dairymen of Arizona reduce product loss in their processing facility

### Industrial processing

s::can's spectro::lyser monitors the COD in the waste water stream of UDA's dairy process plant in Tempe, Arizona. This results in lower product loss and decreased wastewater charge by the municipality.

### United Dairymen of Arizona (USA)

#### Parameters monitored:

- COD
- TSS
- Fingerprint

#### Facts & Figures

**Company/Institution:**  
United Dairymen of Arizona

**Location:**  
Arizona (USA)

**Application:**  
Industrial processing

**s::can Partner:**  
s::can USA

**Key Products installed:**  
spectro::lyser  
moni::tool

**Return on Investment:**  
< 2 months

### Background

United Dairymen of Arizona is an agricultural milk marketing cooperative incorporated in 1960. UDA's modern manufacturing facility can process 10 million pounds of milk per day and produces several dairy products like nonfat dry milk, cream, butter, skim milk, condensed skim milk and lactose powder.

Product loss represents a large cost for dairy processing plants. During cleaning cycles and maintenance, product is sometimes routed to the drain due to a process change or human intervention. This does not only result in loss of valuable product, but also in COD spikes in the sewage system, which affects the rate a dairy is charged by the municipality. A real-time method of measuring product losses in the effluent can therefore result in a very short return on investment (ROI).

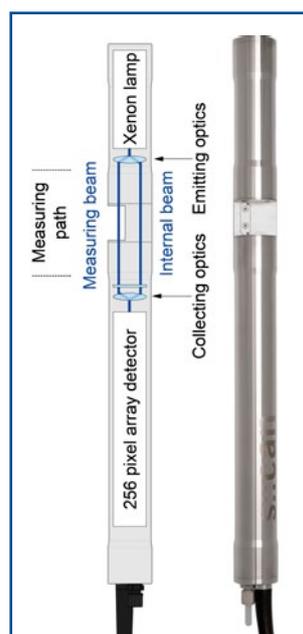
### s::can's solution

To improve product retention and reduce effluent COD it is necessary to understand the contributions of different process streams to the effluent. The s::can spectro::lyser was installed to monitor these various streams in a combined wet well. The spectro::lyser is a submersible UV-Vis spectrophotometer that can convert the raw absorption "fingerprint" of the waste stream into a COD value. The spectro::lyser was combined with s::can's moni::tool, an advanced event detection system that can alert the user to abnormal chang-

es in the effluent composition. With s::can's proprietary algorithms the event detection system can be trained to recognize different process streams (i.e. skim milk, whole milk, 2% cream, etc.).

By sampling each of the process trains and reviewing the data, UDA and s::can determined the differentiation between the streams based on the UV-Vis fingerprint. This information enabled UDA to determine that there were opportunities in the process for significant improvements, which would ultimately produce a higher quantity of a sellable product rather than sending the product to the Wastewater Treatment Plant.

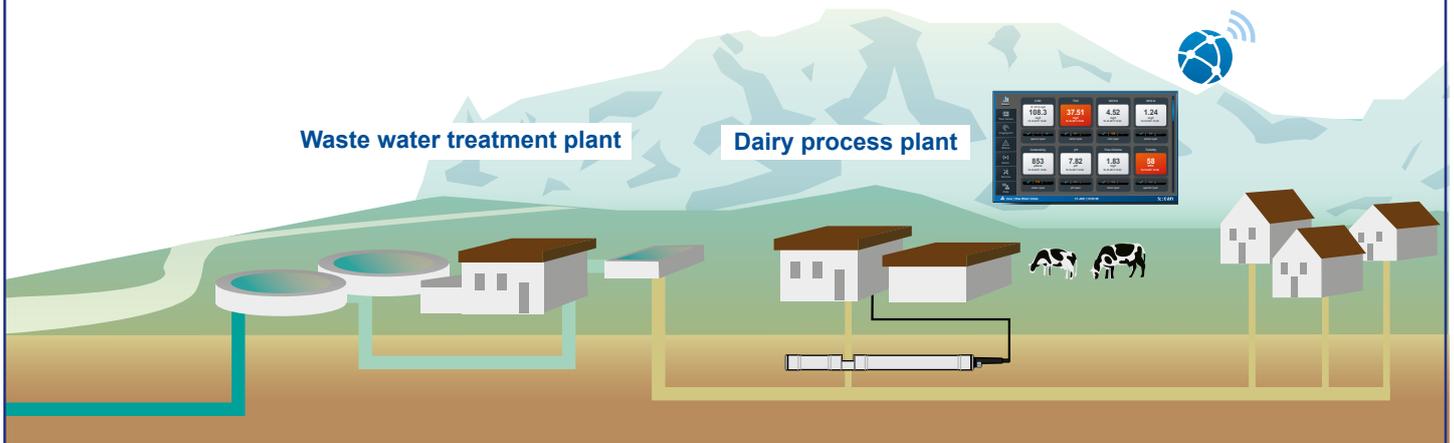
By monitoring these events in the wastewater stream, UDA was able to instantly act on an event alarm and pro actively optimize their procedures resulting in significant cost savings.



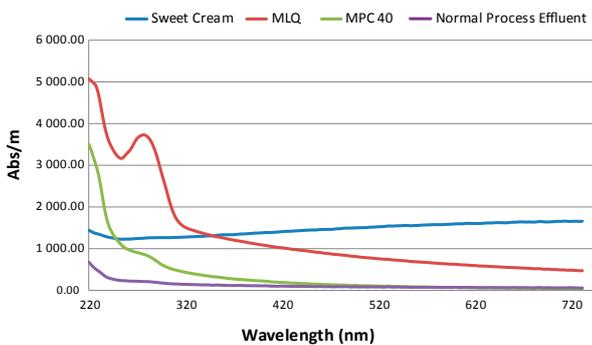
**“A single event detected by the spectro::lyser has the potential to pay for several of these units. We do not only save money on lower product loss, but also on (chemical) treatment and municipal charges.”**

Ben McClellan  
(Environmental Compliance Manager UDA)

## Process Schematic

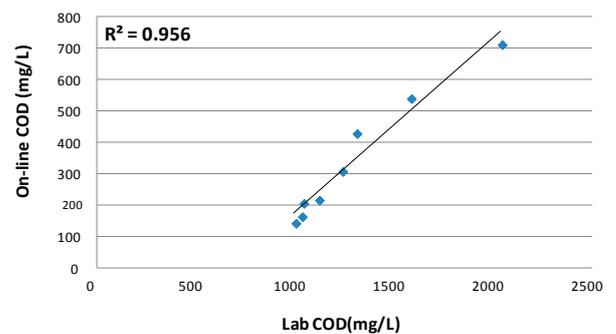


### s::can spectrolyser UV-Vis Fingerprints of Different Dairy Process Effluents



The different dairy products and process effluents have clearly distinguishable spectral fingerprints. This makes a very efficient process control possible resulting in significant cost savings.

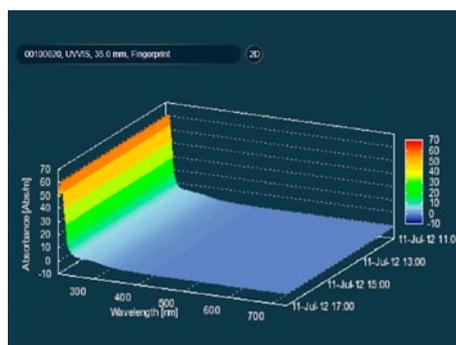
### COD Correlation spectro::lyser and Lab



Lab analysis shows, that there is a high correlation between the measurement results from the spectro::lyser and the lab results.



The s::can spectro::lyser™ is a fully submersible UV-Vis spectrometer that measures light absorbance between 220 – 720 nm. s::can's proprietary algorithms analyze and decompose the spectral data to provide measurements for many wastewater parameters including: nitrate, nitrite, COD, BOD, TSS, and dissolved H<sub>2</sub>S. There are no moving parts in contact with the water and no reagents are used, resulting in almost no operating costs.



s::can's event detection system continuously analyzes the spectral fingerprint to detect changes in the water composition. The system responds to deviations of parameters compared to the original fingerprint. moni::tool incorporates an advanced learning system for its alarms that includes user feedback and gradual composition changes (e.g. seasonal variations).



By monitoring product loss at the production facility of the United Dairymen of Arizona, s::can helps to increase the efficiency of the plant and reduce waste. s::can is the world technology leader for submersible online spectrometer probes, water protection systems and event detection software. More than 4500 s::can monitoring systems are in use worldwide for drinking-, environmental-, waste-, and industrial water applications.