

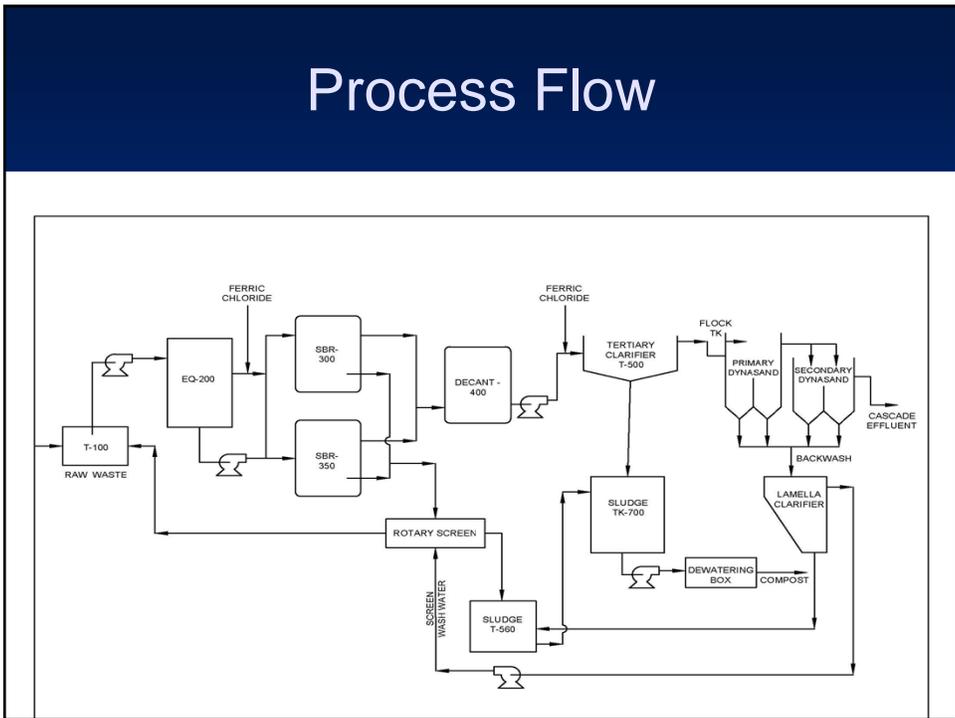
Sorrento Lactalis

Sorrento's Experience with Sand Filtration

John Prigge
May 24, 2011



Process Flow

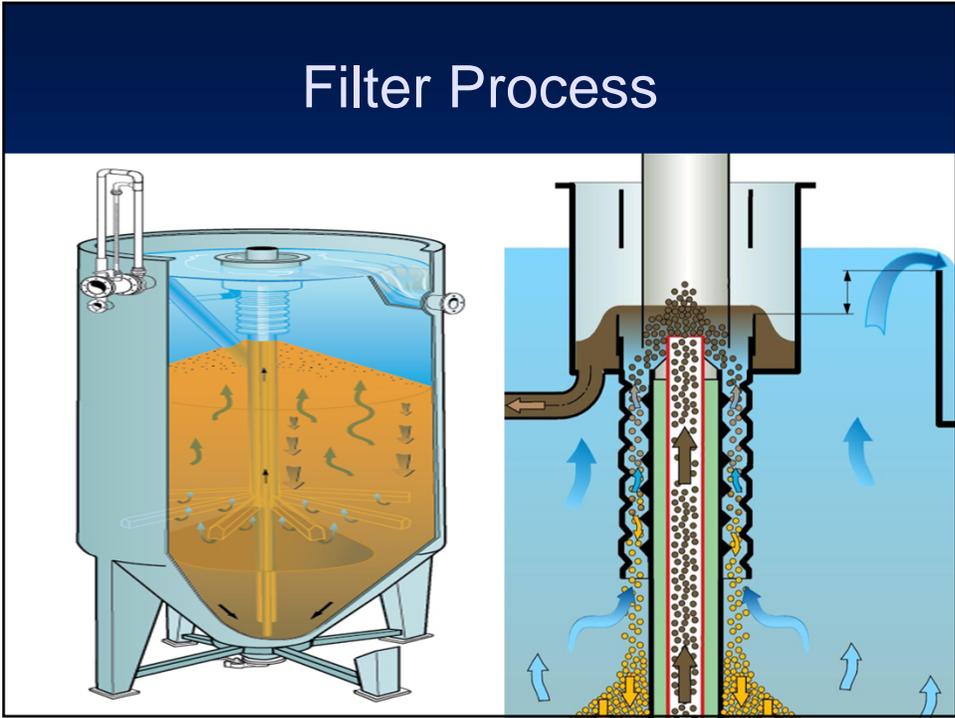


Sand Filtration

Parkson's Corporation
D2 Sand Filters

DynaSand D2 System

- Based on a modular design
- Each system consists of two continuous self cleaning Dynasand filters in series
- Each Dynasand filter is designed to serve a different function within the process
- First stage filtration uses a larger sand grain size to give it more solids handling capacity.
- The second stage acts as a polishing filter, utilizing smaller sand grain size and providing higher removal efficiencies.
- The third component to the Dynasand D2 system is a Lamella gravity settler . Which treats reject water from both filter stages
- This reject stream was converted as a reuse water source for the Rotary Drum spray nozzle system saving ~ 75k gals of well water per day. Reducing the hydraulic load to WWTP .



Process and Material Compatibility

Is it important to know how your process will effect the material your filter vessels are made of ?

YES

Filter Failure 2009 - 2010

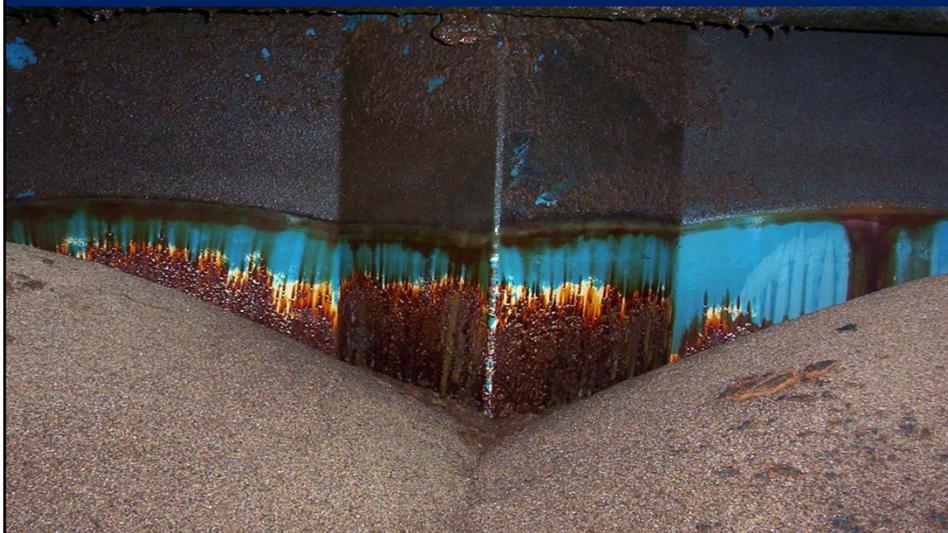
- November of 2009 Secondary filters began to show structural failure from internal pitting

Ruptured Vessel Due to Corrosion



MIC Corrosion

(Microbiologically Influenced Corrosion)



45% of each filter was corroded



Reconstruction of Filters

- April 10th RFQ'S were sent out to local vendors
- May 12th work began
- June 15th all lower sections of the secondary filters had been replaced.
- Cost ~\$125k

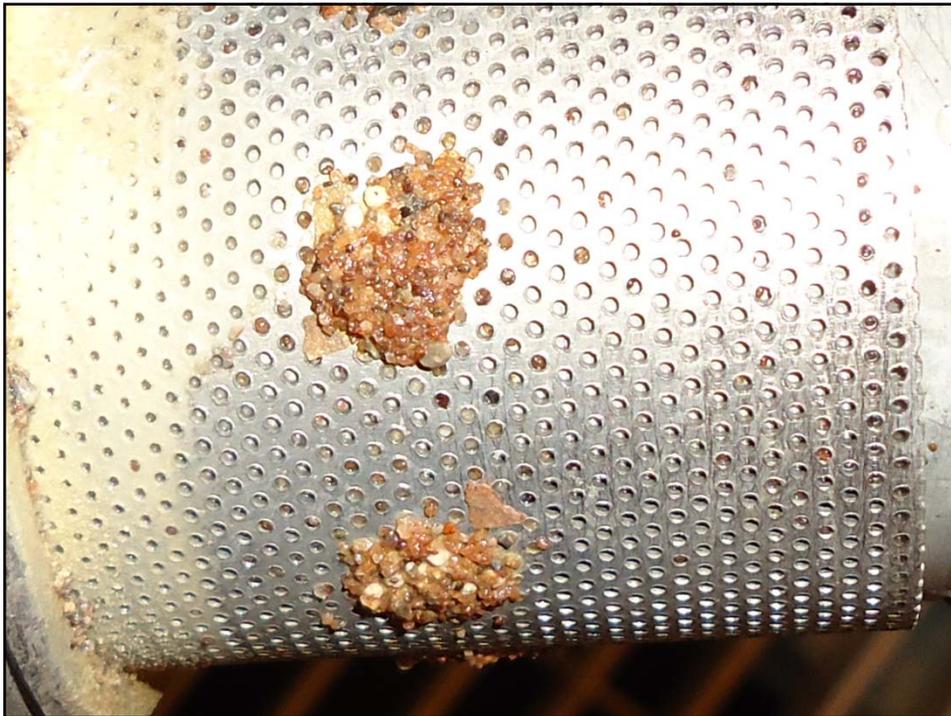


Maintenance

- Even though the sand filters are self cleaning ~ 6 hours per week are spent on maintenance of the air lift stations
- With Sorrento's clarifier effluent the sand filters can be subject to fouling because of a poor decant from the SBR's and subsequently periodic lancing may need to take place to remove solids.

Lift Station Maintenance

Pump Air Diffusers



Lift Station Maintenance

- Lift pump connections are subject to wearing as over time the abrasive sand thins the metal
- Sorrento has replaced both primary and secondary lift pump columns since initial installation.

The Good News

- Consistently meets our EPA requirements for phosphorus removal $<.07$ mg/l
- Low energy usage
- More forgiving to our pretreatment issues than other alternatives.

Analytical data

2009-2011

Filter Influent Analytical

- COD 50 mg/L
- pH. ~ 7.6 S.U.
- TSS 25.0 mg/L
- Total Phosphorous 0.20 mg/L
- Flow rate .76 to .95 MGD

Sorrento's Final Effluent Characteristics

- BOD <3.0 mg/L
- pH. ~ 7.26 S.U.
- Temp. ~ 25.5 Deg C
- TSS <3.0 mg/L
- Total Phosphorous <.04 mg/L
- Flow rate .52 to .76 MGD

Questions ?