

Raleigh Water's Wastewater Operation





Raleigh Water

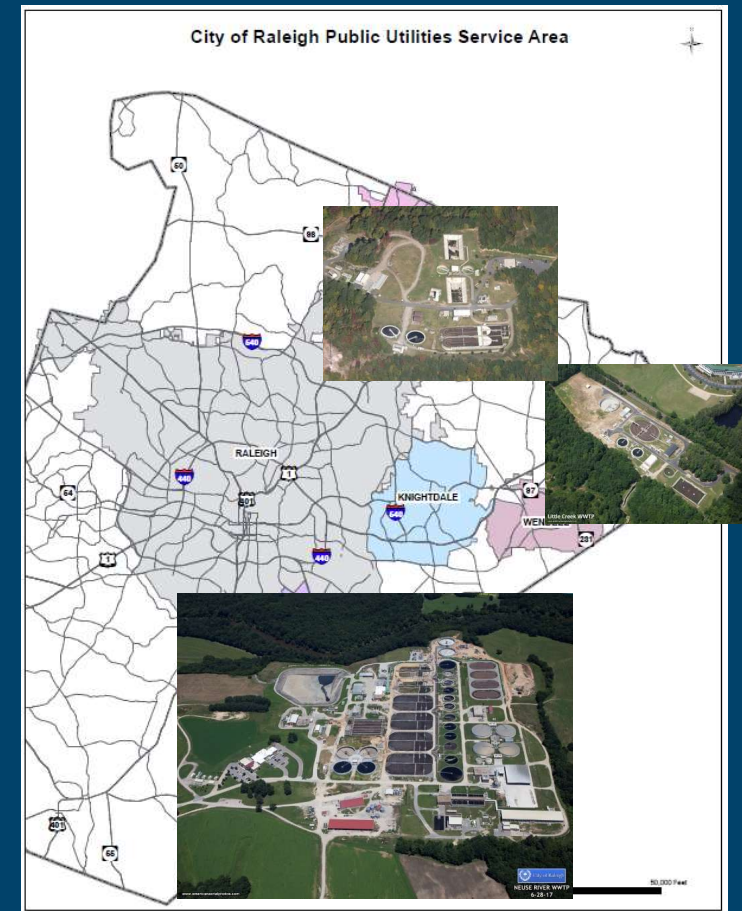
*Serving people of Garner, Knightdale, Raleigh,
Rolesville, Wake Forest, Wendell, and Zebulon.*





City of Raleigh Wastewater System

- Service population over 650,000 people
- Over 2,500 miles of pipelines
- 132 pump stations
- Three (3) Resource Recovery Facilities (RRFs)
 - 2.2 mgd Little Creek RRF
 - 3.0 mgd Smith Creek RRF
 - 75 mgd Neuse River RRF





New Process Uses Innovative Technology for Advanced Anaerobic Digestion

- **Thermal Hydrolysis Process (THP)**” acts as “pressure cooker” to condition solids for enhanced digestion
 - Achieves more solids reduction
 - Generates more biogas
 - Pasteurizes solids





Key Components

- Reuse existing GBTs for WAS thickening
- Blended sludge screening
- Centrifuges for dewatering upstream of THP
- Single THP Train (184,000 dry lbs / day)
- Closed loop sludge cooling
- Two 2.2 MG mesophilic anaerobic digesters
- Clean gas to meet pipeline injection standards
- New BFPs + existing centrifuge for post dewatering

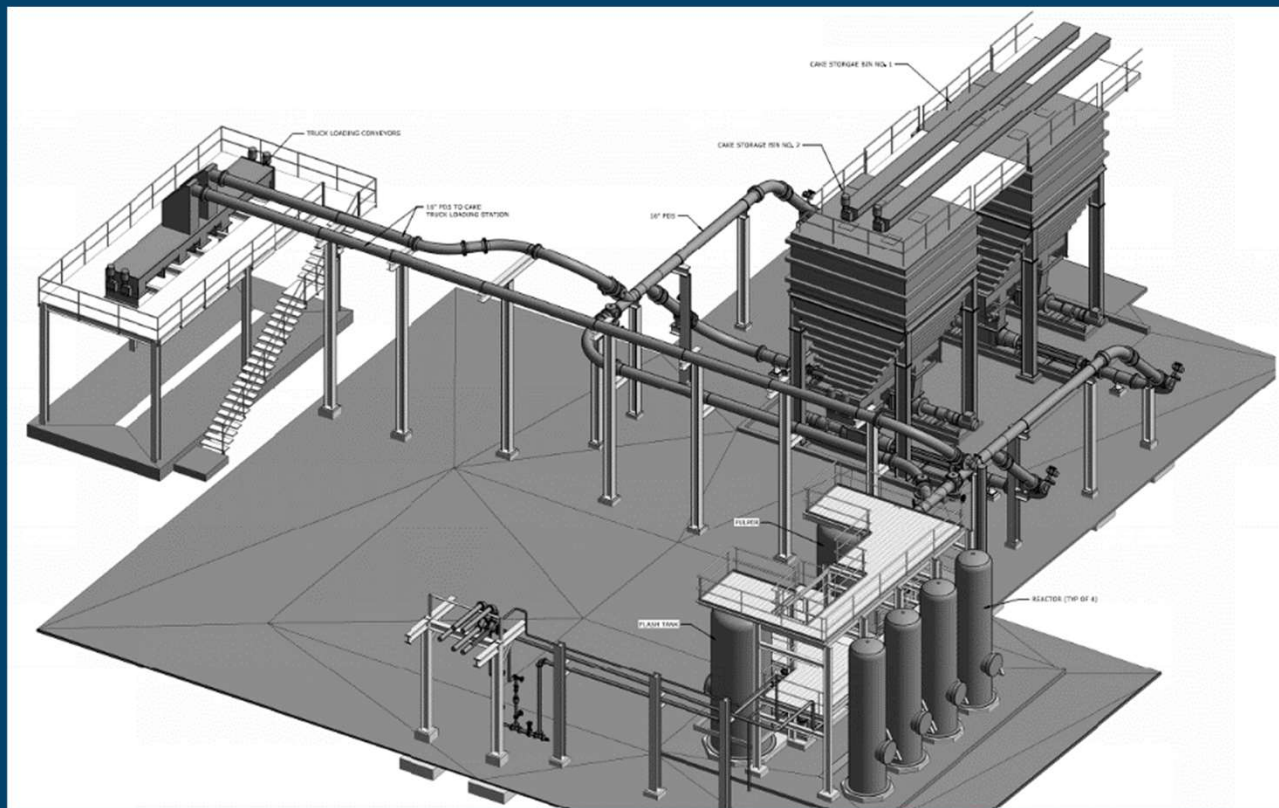


Sludge Screening





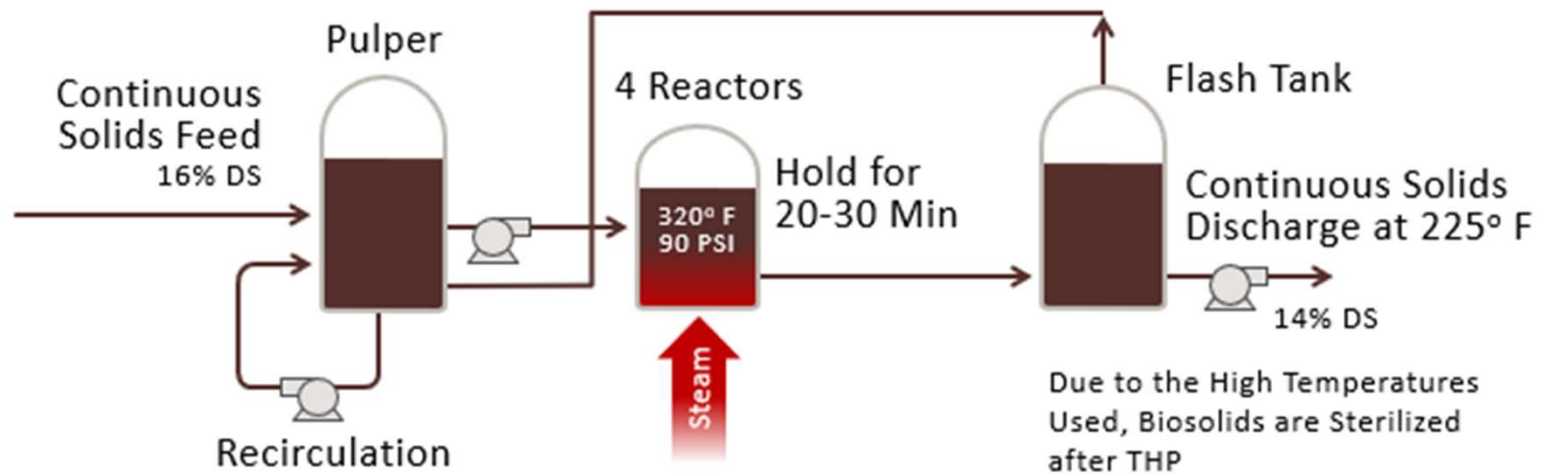
Cake Bins, Cake Load Out, THP



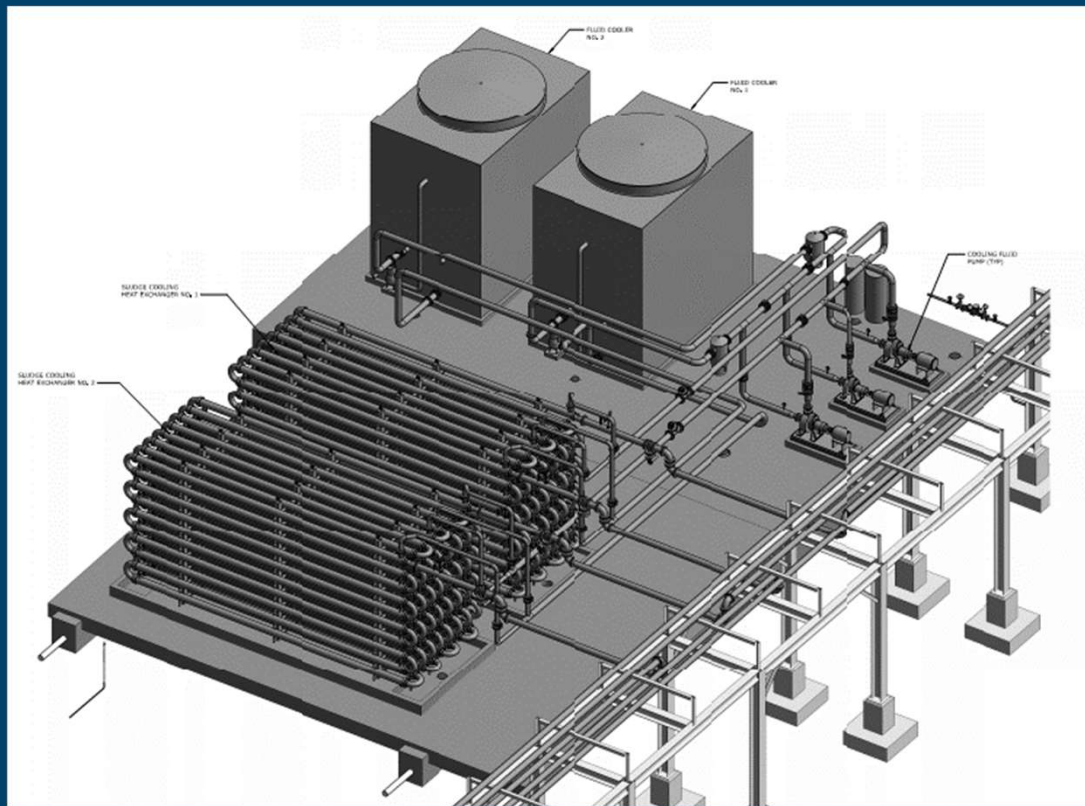


How does THP work?

How Does Thermal Hydrolysis Work?



Cooling of Digester Feed after THP





Anaerobic Digesters



CITY OF RALEIGH PUBLIC UTILITIES
NEUSE RIVER RRF - BIOENERGY RECOVERY PROJECT
DIGESTER CONTROL COMPLEX



Cambi Startup.....

- Engage early
- Designate Key Personnel
- Take advantage of training
- Use your resources
- Patience





Operational Lessons learned

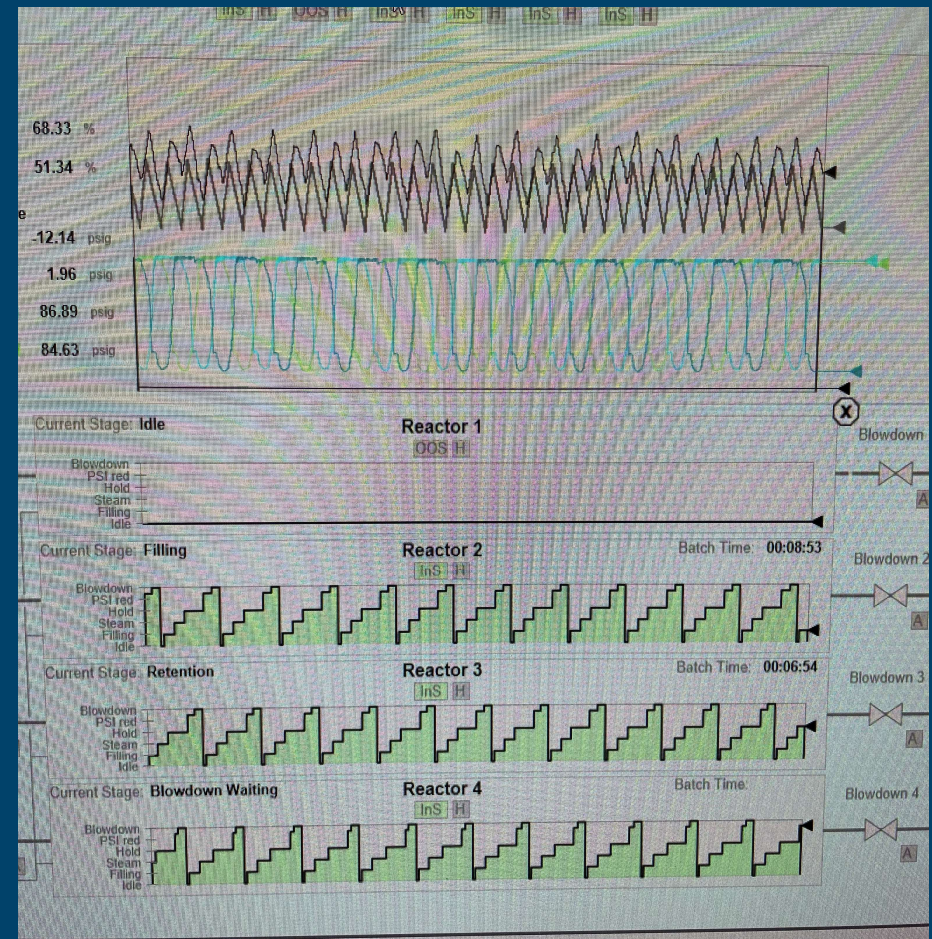
- Slow and steady wins the race!
- Consistency
- Small adjustments
- Secondary Outlet

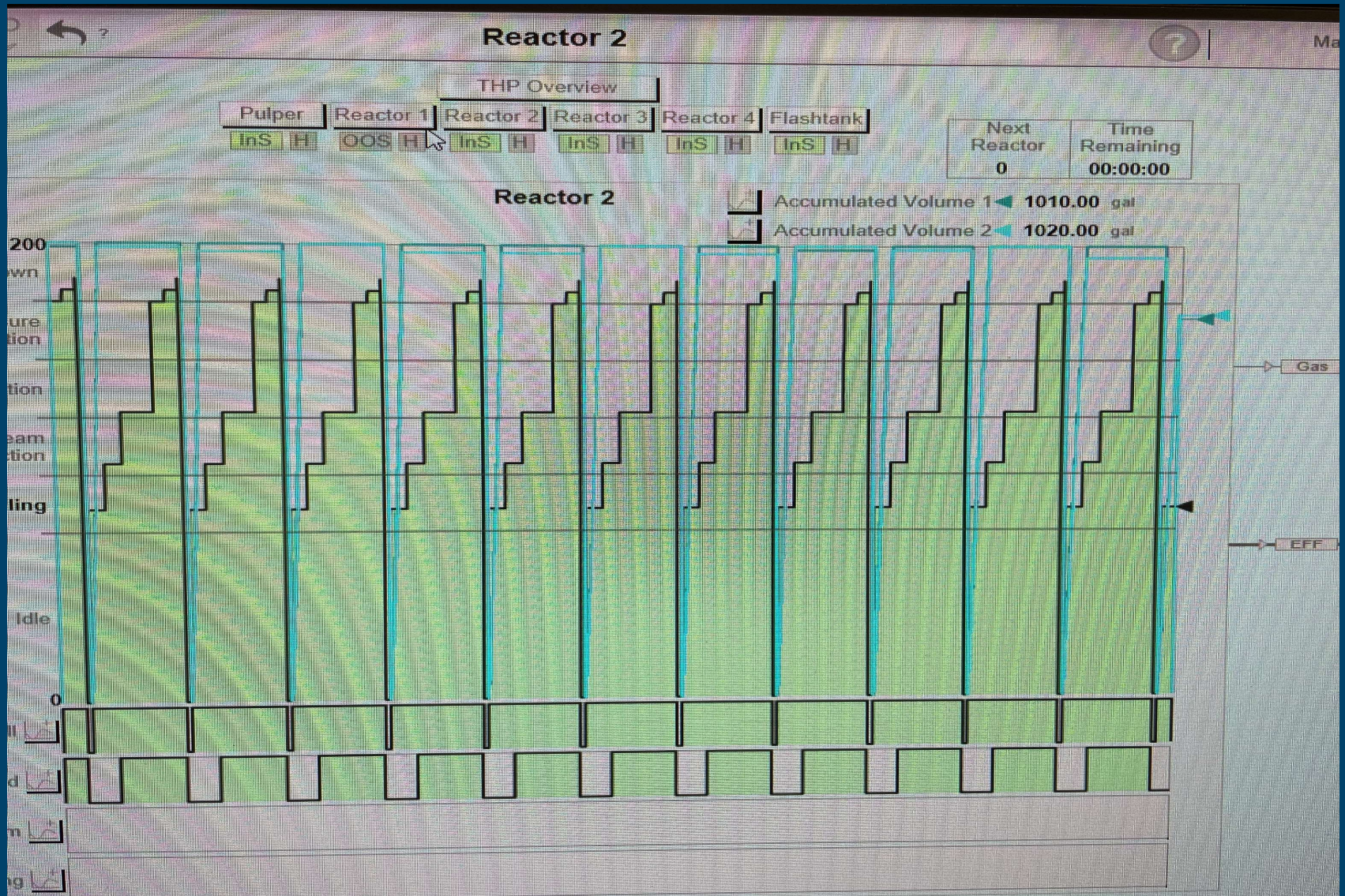




Operational Lessons Learned

- Integration with SCADA
- Cold and Windy
- Class A Compliance Records
- Pump Access













Maintenance lessons learned:

- I&C heavy
- Support from Cambi
- Yearly Shutdown
 - More prep the better
 - Parts on hand
 - Use your resources









Results Achieved!!!!

- Better than expected reduction
- Class A results
- Less trucks leaving
- Simplified compliance testing
- Increase in polymer
- Happy end users





Thank you

Questions?