6th largest utility finds benefit measuring polymer with FLEXIM

Case Study: Polomer delivery system at large municipal WWTP
Location: JEA – North Florida

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Agenda

1. Customer and Case
2. Application Description
3. FLEXIM Solution
4. Customer Benefits

Why measure polymer?

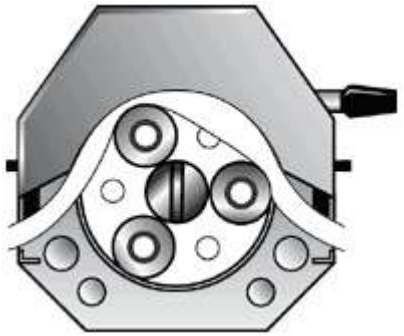
Polymer is a flocculant and is necessary in wastewater treatment; it greatly reduces sludge volume in the process.

A dosing pump delivers the Polymer at a know volume; typically to a full basin of sewage.

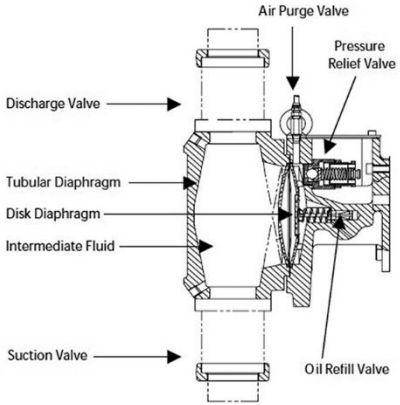
Polymer delivery pumps

The dosing pump measures volume by counting the number of strokes or pump cycles and assumes a predetermined volume per stroke. It's really more of an estimate than a known volume.

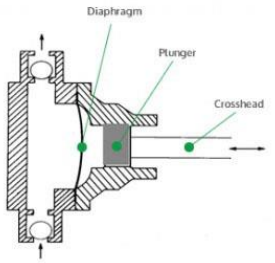
Peristaltic – hose pump



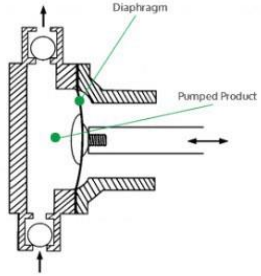
Hydraulically activated - oil



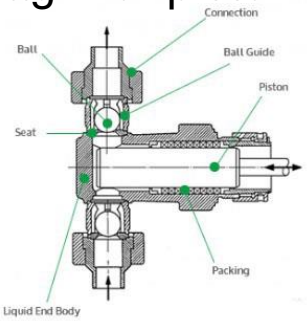
Mechanically driven – diaphragm or piston



Hydraulic Diaphragm Liquid End



Mechanical Diaphragm Liquid End



Piston Liquid End

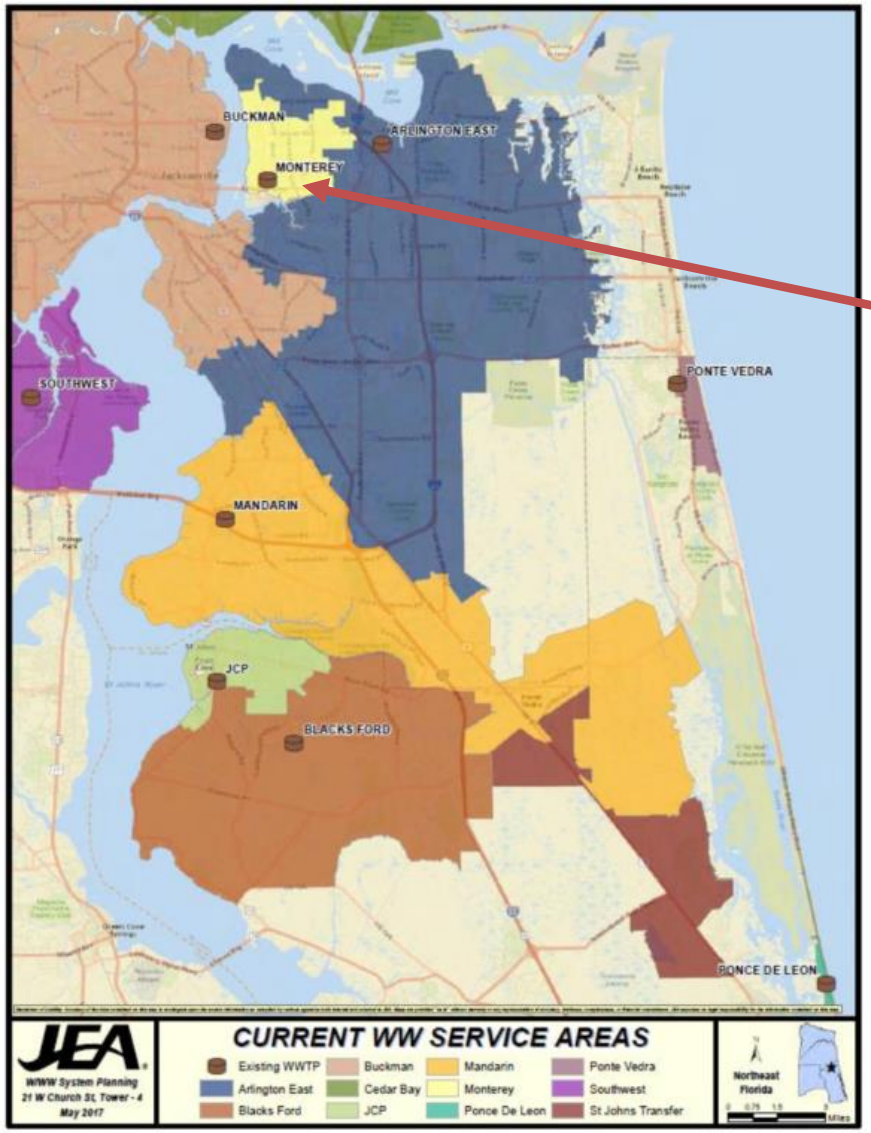
How to measure Polymer

Regardless of the dosing pump selected, it's a tough measurement.

- **Pulsating flow**
- **Small lines**
- **Wide range of velocity**
- **Very low flow conditions**
- **Very thick viscous fluid**

FLEXIM is a very good choice for these applications.

JEA Service Area



There are 12 Wastewater treatment plants servicing Northeast Florida

The test location was the Monterey plant just over the St. Johns river from downtown.

Josh Williams is the plant manager and was using a thermal flow switch to ensure flow from his dosing pumps.

Actual flow measurement was desired.

The problem was on the very low end the flow is 0.02 ft/sec

Application Description

This was a temporary setup to inject polymer and to test the FLEXIM meter. A simplex metering skid delivers the polymer from a tote. The flow range was from 0.02 to 1.0 GPH.

CDM, CDQ, GSM were tested with varying results.

The FLEXIM meter performed well with P transducers.

The XLF version was selected due to the very low velocity.

FLEXIM Solution

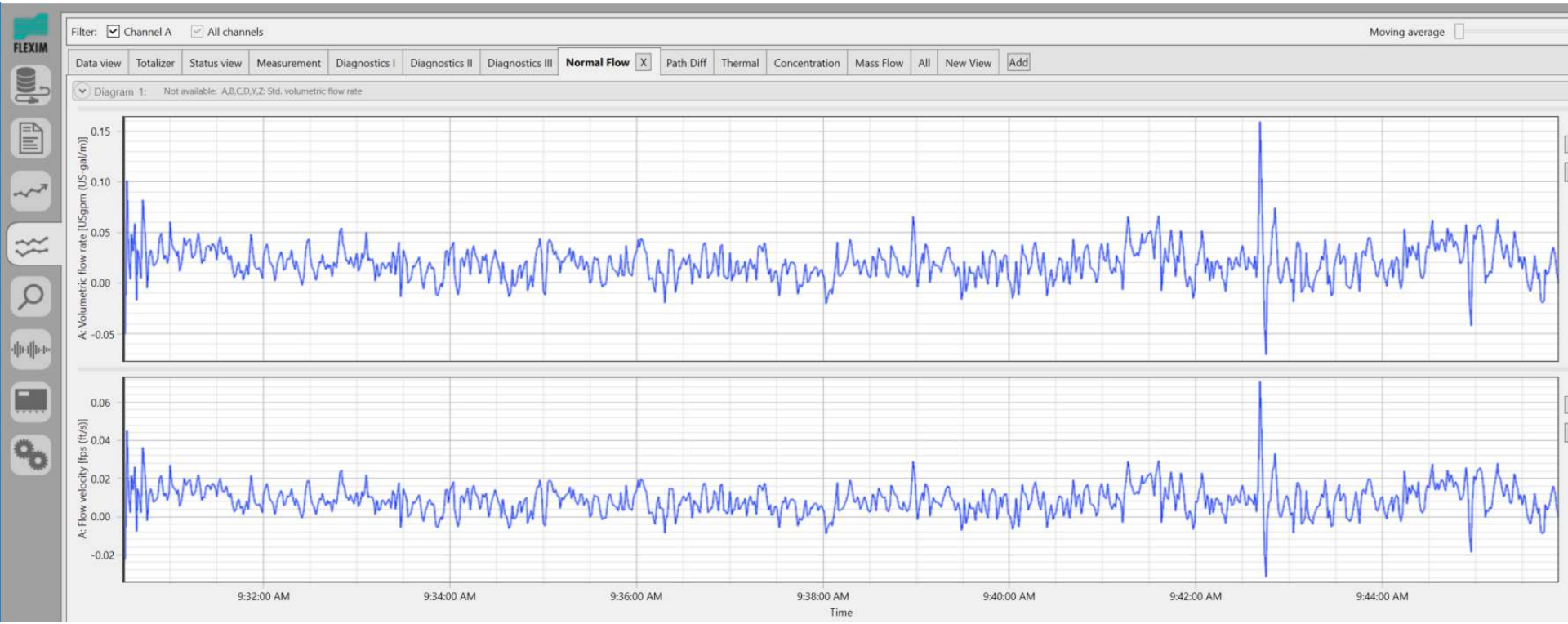
XLF meter

Physical quantity	Unit	A
Transducer serial no.		CDP1NZ764614

Parameters

Physical quantity	Unit	A
Measurement task		Volumetric flow rate
Function		n/a
Measuring point		1
Outer diameter	inch	1.315
Pipe wall material		PVC
Pipe wall thickness	inch	0.179
Pipe wall roughness	inch	0.000
Roughness	inch	0.000 (Typical)
Fluid type		Liquid
Fluid		Other fluid
Fluid temperature	°F	60.08
Fluid pressure	psi(a)	14.50
Fluid sound speed	m/s	1650.00
Fluid c range		Auto
Fluid viscosity	cSt	20.50
Fluid density	lb/ft³	67.300
Compressibility coefficient of gas		n/a
Cable length	ft	0.00

FLEXIM Solution



The results of the flow test were in line with the expected values despite pulsating flow and very low velocity.

Customer Benefit

Polymer dosing can now be done accurately

- Excelent Polymer Activation
- Accurate, Repeatable Polymer Dosing across the entire range
- Accurate information about the process
- Minimize Waste
- Cost savings by not overusing polymer
- No moving parts and nothing to clog
- External to the process
- Robust metering solution: no maintenance
- Proven reliability