

# ***SONARtrac***<sup>®</sup>

## **Wastewater/Water Industry**



***CiDRA***<sup>®</sup>

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The SONARtrac VF-50 system presents a unique measurement solution for the variety of flow applications in the municipal water and wastewater market. By using a passive listening approach, our sonar flow meter is able to measure single phase and multiphase flows as well as slurries, with the same level of accuracy and performance. The SONARtrac clamp-on monitoring system installs directly on existing process lines, thereby eliminating process disruptions associated with installing other types of flow meters. The VF-50 is the only flow meter of its kind to provide accurate and repeatable volumetric flow measurements regardless of pipe material or process fluid.

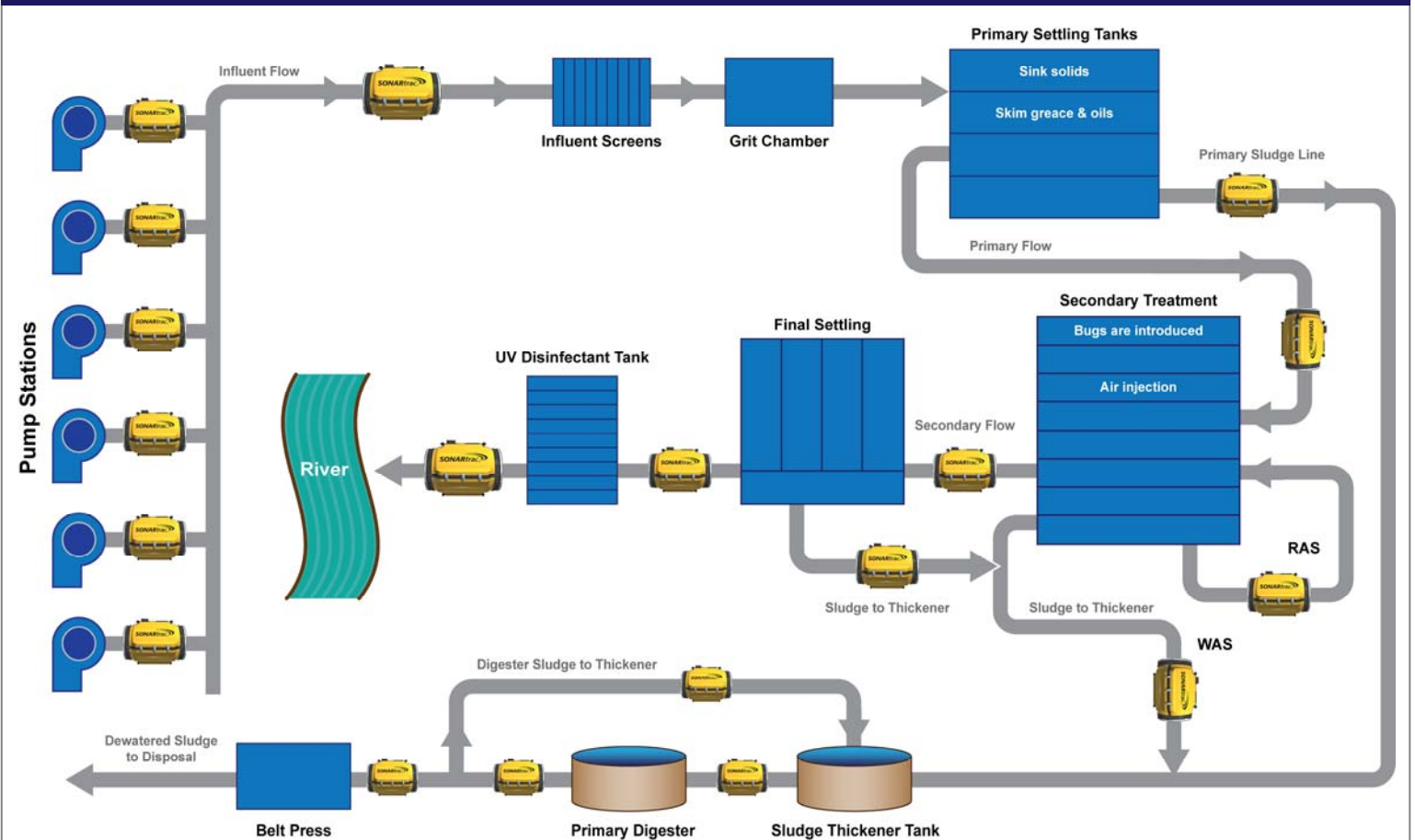
## Benefits:

- No process downtime required for installation
- No maintenance or recalibration required
- Reduces operational costs
- Lower total cost of ownership
- Improves process control
- Compatible with most pipe materials/schedules
- Can be installed in tight, remote locations
- Works in the presence of scale or entrained air

## Applications:

- Pump station flow
- Influent and effluent flow
- RAS and WAS flows
- Sludge Flow
- Clean water flows
- Water with solids

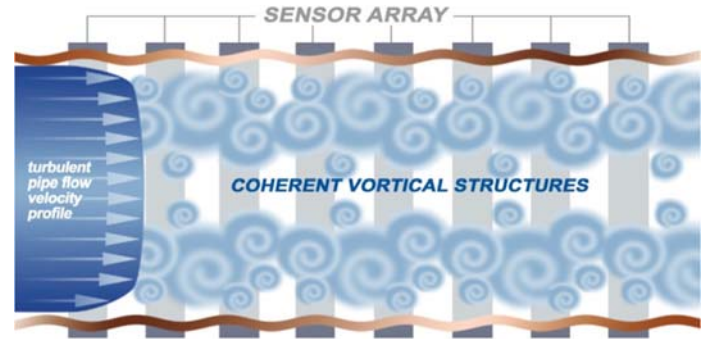
## Wastewater Treatment Process



# SONARtrac Measurement Technology– How It Works

CiDRA's patented sonar technology utilizes array processing techniques to measure volumetric flow .

The SONARtrac system measures volumetric flow rate by combining phase and frequency components of the turbulent eddies as they convect past the array of sensors.



The SONARtrac system's non-intrusive design includes:

Wrap-around sensor band



Lightweight environmental enclosure



Transmitter with digital signal processor



## How Does SONAR Technology Compare?

|   | CiDRA Sonar Flowmeter   | Electromagnetic Flowmeter | Ultrasonic (Doppler) Flowmeter                                  |
|---|---|---------------------------|---|
| Installs without process shutdown or pipe cutting     | yes   | no                        | yes   |
| Accurate flow measurement in complex pipes            | yes   | no                        | no  |
| Measurement of slurries (mag/ non-magnetic materials) | yes   | sometimes                 | sometimes   |
| Works on fiberglass pipes                             | yes   | yes<br>Needs flanges      | sometimes   |
| Continues working in presence of scale buildup        | yes   | no                        | no  |
|   | Accurate velocity measurement   |                           |   |
| Re-calibration and / or maintenance requirements      | none<br>No drift mechanism<br>Does not wear out                               | periodic                  | periodic<br>Requires reapplication of ultrasonic gel (couplant) |
| Can handle multiple pipe sizes                        | no<br>Universal transmitter<br>Sensor bands and covers are pipe size specific | no                        | yes<br>May be pipe diameter restricted                          |
| Works in presence of entrained air bubbles            | yes   | no                        | Low levels – yes<br>High levels - no                            |
| Capital cost  | Varies by pipe size<br>> small/medium magmeters<br>< Coriolis flowmeters      | Varies by pipe size       | > small magmeters<br>< large magmeters                          |
| Life cycle cost                                       | lowest  | varies                    | medium  |



# SONARtrac<sup>®</sup> Water and Wastewater Flow System Specifications

| Parameter   | Specifications   | Comments   |
|---|--|--|
| Pipe diameters  | 2" to 60"  | Metric and custom sizes available <sup>(a)</sup>   |
| Flow velocity range   | Liquid: 3 to 30 ft/s (1 to 10 m/s) <sup>(b)</sup>  | Some flow conditions may permit flow measurements below 3 ft/sec <sup>(c)</sup>  |
| Flow rate accuracy  | ±1.0% of reading <sup>(d)</sup>  |  |
| Repeatability   | ±0.3% of reading   |  |
| Sensor head   | Clamp-mounted onto the existing pipe section; designed for single, permanent installation<br>Certified to IP55                                     | 2"-36" Sensor Length—34.7" (91.4cm)<br>Over 36" Sensor— 51.2" (130.0cm)<br>Height within flange diameter of pipe<br>Lightweight (22 lbs./10 kg for 8" meter)<br>Stainless Steel designed to IP55 |
| Transmitter with integrated flow processor  | Programmable by keypad or PC interface<br>Self-diagnostics capability  |  |
| Operating Temperature Range:  |  |  |
| Transmitter   | -4°F to +140°F ( -20°C to +60°C)   |  |
| Sensor head process temp.   | -40°F to +212°F ( -40°C to +100°C)   | Inquire with CiDRA for temperatures outside these specified ranges.  |
| Sensor head ambient temp.   | -40°F to +140°F ( -40°C to +60°C)  |  |
| Storage Temperature Range:  |  |  |
| Transmitter   | -22°F to +176°F ( -30°C to +80°C)  |  |
| Sensor head   | -40°F to +185°F ( -40°C to +85°C)  |  |
| Cable between transmitter and sensor head   | PLTC or armored cable with one end connectorized   | Cable lengths up to 300ft (90m)<br>Enables internal logging of optional process parameters   |
| Analog input  | Two (2) 4-20 mA  |  |
| Analog output   | Two (2) isolated 4-20 mA current outputs   | One (1) with HART <sup>®</sup> protocol  |
| Digital outputs   | Pulse output<br>Alarm output   |  |
| Digital interfaces  | 10Base-T Ethernet<br>USB/Memory Stick<br>RS232 serial  |  |
| Communication interfaces  | Standard: RS232/485<br>Optional: MODBUS <sup>®</sup> RTU/ASCII<br>Optional: FOUNDATION Fieldbus <sup>™</sup><br>Optional: PROFIBUS <sup>®</sup> PA |  |
| Transmitter local display   | LCD with backlight   | Provides flow rate, system status, system diagnostics  |
| Data logging capability   | Yes  |  |
| Transmitter enclosure   | NEMA 4X , IP66   |  |
| Power requirements  | AC version: 100 to 240 VAC, 50/60 Hz, 25 watts<br>DC version: 18 to 36 VDC, 25 watts   |  |
| Area classification   | Class 1 Division 2, Groups A-D<br>Standard: General Purpose  |  |
| Altitude  | 5000 meters  | Certified for high altitude regions  |
| <sup>(a)</sup> Inquire with CiDRA for availability and specifications on sizes greater than 36". <sup>(c)</sup> Inquire with CiDRA for qualifying your application under 3 feet/second<br><sup>(b)</sup> Minimum flow can be application dependent. <sup>(d)</sup> Not upgradeable to include Gas Volume Fraction (GVF) measurement |  |  |

## Contact CiDRA

To speak with an applications engineer about CiDRA's SONARtrac systems or other CiDRA industrial process measurement solutions, call +1.203.265.0035 or visit our web site at [www.cidra.com](http://www.cidra.com).

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