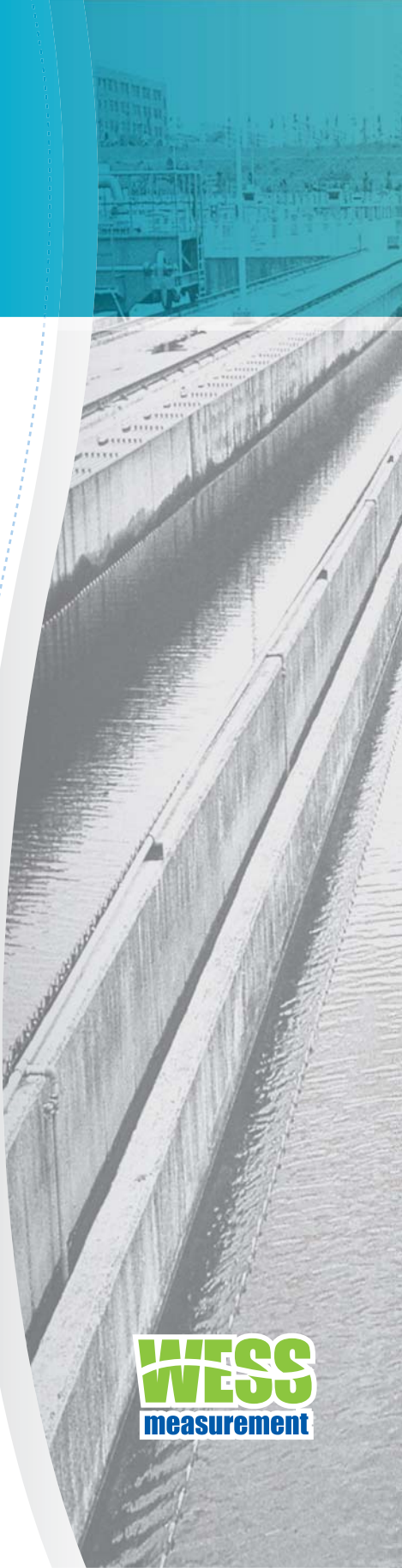




Ultrasonic Sludge Density Meter



ENV200 Series



Ultrasonic Sludge Density Meter

WESS
measurement

The **ENV200** is an ultrasonic instrument that measures the density of suspended solid in liquid. It consists of sensors, a controller, and a junction box. ENV200 with PCM (Process Condition Monitoring) algorithm measures not only the size of received signal which is often measured by conventional ultrasonic density meters but also changes in sound velocity and temperatures in the process. As it monitors operational status in pipe and then decides the validity of each measurement, it contributes to increasing stability and reliability of the measurement. The ENV200 utilizes the EEA (Envelope Energy Average) method that saves reception signal envelop and then calculates its energy, rather than using the reception signal's amplitude change. The ENV200 offers four types of sensors such as spool-piece, tank-mount, insertion and clamp-on type to accommodate all field demands at installation.

Product Features

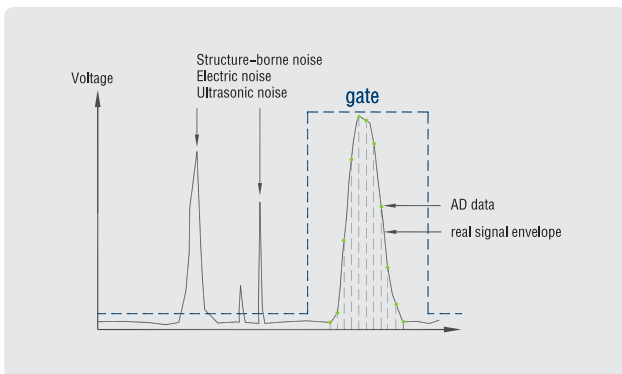
- Continuous measurement
- Process monitoring possible (run, stop, full, empty)
- 10,000 points Data Logging & Trend Mode
- EEAM (Envelope Energy Average Method)
- Various types of sensors

Application Industry

- Water, Wastewater treatment
- Food and beverage
- Chemical
- Mining

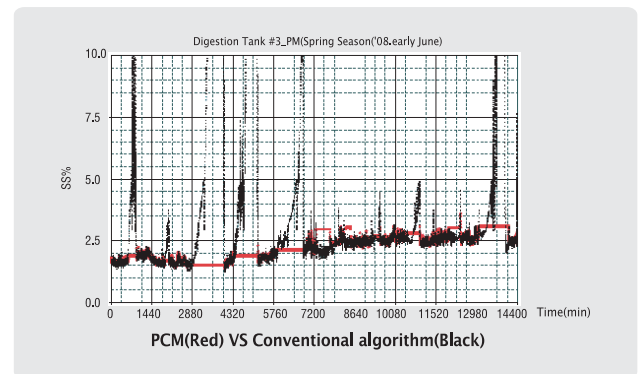
Measuring Algorithm

EEAM (Envelope Energy Averaging Method)



Conventional ultrasonic attenuation density meter just determines density with amplitude of received signals. Unlike this, ENV200 is able to measure changes of concentration in a more sophisticated manner by adopting the patented EEAM (envelope energy averaging method) which measures not only the amplitude of received signals but also observes the shape of signal. It takes all energy as envelope and then convert it into density.

PCM (Process Condition Monitoring)



PCM algorithm consists of SOS filter that measures sound velocity of measuring fluid (S.S. mixed water); tempfilter that measures temperature and signal filter that monitors quality of received signals. Operational status (process run/stop, pipe full/empty) is determined by the combination of SOS filter and Temp filter. Signal filter helps to decide the valid S.S. distribution. Since the PCM algorithm assimilates many measurements identifying changes of process condition (water status in pipe and S.S. distribution pattern), its intelligence is designed to measure only valid S.S. concentration. Consequently, the performance is much more reliable and accurate, compare to conventional measurement.

Product Specifications

Controller

Measuring Principle	Ultrasonic Attenuation and EEAM (Envelope Energy Average Method)
Mesuring Ranges	0~200,000mg/l (0~20%) Option 40%
Mesuring Mode	Process Mode, Real-time Mode
Self - Diagnosis	Sensor strength, Flow running/stop, Pipe in full/empty
Display	Graphic LCD (Density, Time, Pipe condition, Flow condition, mA, etc.)
Resolution	0.1% or 0.01%
Accuracy	±1% of FS or ± 2000mg/L
Repeatability	±1% of reading
Operational Temp.	-20 ~ 70°C
Outputs	mA Output : 4 ~ 20mA. norn. Load 250Ω (load range:100 ~ 750Ω) Relay output : 3 SPDT (5A, 250VAC) Digital Output : RS232(Standard) or RS485(Option)
Power Supply	Standard : 100 ~ 240V AC, 50~60Hz, ≤6W Option : 20~30V DC
Encl. Material	Body/Cover : Polycarbonate
Dimension	260(W) x 258(H) x 131(D)mm
Mounting	Hole center 153(W) x 273(H) mm (ø 8.2 x 4ea)
IP Rating	IP67
Saving Memory	Data Logging and Trend (Max. 400 days)
Certificate	CE



• C2-S

Sensor

Several sensor types enable field operators to fit their need in application. The sensor size is different from pipe diameter and density value.

• Spool-piece Type



• Tank-mount Type



• Insertion Type



• Clamp-on Type



Sensor

Material	S.S.316
Sensor Type	Spool-piece, Tank-mount, Insertion, Clamp-on
Length	Different from pipe size and density value
Frequency	1MHz ~ 1.4 MHz
Cable Length	10m(33ft), Max. 100m extensible (Junction to controller)
Operational Temp	-10 ~ 60°C (14 ~ 140°F)
Weight	Depends on pipe diameter and density
IP Rating	IP68
Cleaning	Option

Junction Box

Material	Aluminum
Oper. Temp	-40 ~ 85°C
Dimension	120(W) x 70(H) x 53(D)mm
Weight	450g
IP Rating	IP65, IP68(Option)
Mounting	Center hole 110(W) x 61(H) (M6x2pcs)
Electric Connection	-Probe : 2-pin waterproof connector -Controller : Cable (3 core)

Clamp-on type Density Meter

The **Clamp-on type** density meter doesn't need by-pass line or spool-piece(pipe section) when maintenance or replacement is required. As the clamp-on sensor can be mounted outside of pipe line even under flow-running condition, the user neither need to stop their process nor to consider the corrosiveness of liquid.

• No Maintenance

- No sensor cleaning is required for sludge adhesion on sensor surface
- No sensor replacement is required for wear and tear by flowing medium

• No Space and Tool

- No special equipments and tools are required during installation
- Can apply at limited space

• No Additional cost

- No additional water pipe line is required for sensor cleaning
- No by-pass line is required for maintenance

• No Limit on measuring medium

- Can apply to almost all types of sludge regardless of abrasion, and corrosion
- Broad application
 - Desulfurization process at power plant
 - Corrosive liquids of chemical plant
 - Wastewater plant of ready-mixed concrete or mining sector

Specification

• Controllers C2-S

Measuring Principle	Ultrasonic Attenuation and EEAM (Envelope Energy Average Method)
Measuring Ranges	0 ~ 200,000mg/l (0~20%)
Measuring Mode	Process Mode, Real-time Mode
Self-Diagnosis	Sensor strength, Flow running/stop, Pipe in full/empty
Display	Graphic LCD (Density, Time, Pipe condition, Flow condition, mA, etc)
Resolution	0.1% or 0.01%
Accuracy	± 1% of F.S. or ±2,000mg/l

• Sensor S2-C

Sensor Type	Clamp-on
Material	Body : S.S.316 Ultrasonic Head : Epoxy
Pipe Size	50A ~ 200A
Frequency	1MHz~1.4MHz

