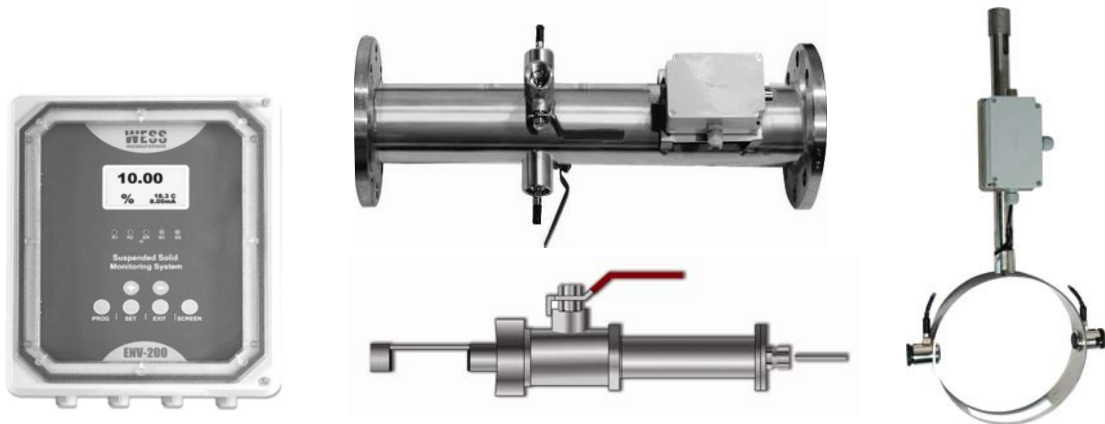


Ultrasonic Sludge Density Monitoring System



The ENV-200 is a non-contacting ultrasonic instrument that measures the density of suspended solid in liquid. It comprises 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 observes changes in sound velocity and temperatures in the process. As it monitors operational status and water status in pipe and then decides the validity of each measurement, it contributes to increasing stability and reliability of the measurement.

The ENV-200 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. ENV-200 offers three types of sensors, such as spool-piece, tank-mount, and insertion type to accommodate all installation and application field demand.

Benefits

Automates sludge discharge

Reduces the amount of polymers used in the dewatering process

Product Features

- Continuous measurement
- No flow detection possible
- 10,000 points Data Logging & Trend Mode
- EEAM(Envelope Energy Average Method)
- Various types of sensors
- In-situ measurement and calibration

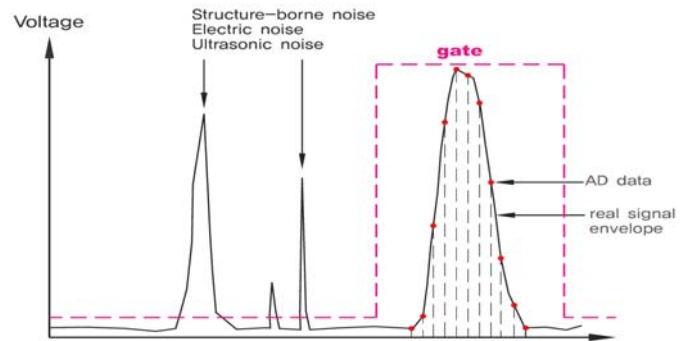
Application Industry

- Water, wastewater treatment
- Pulp and paper
- Food and beverage
- Chemical
- Mining

Measuring Algorithm

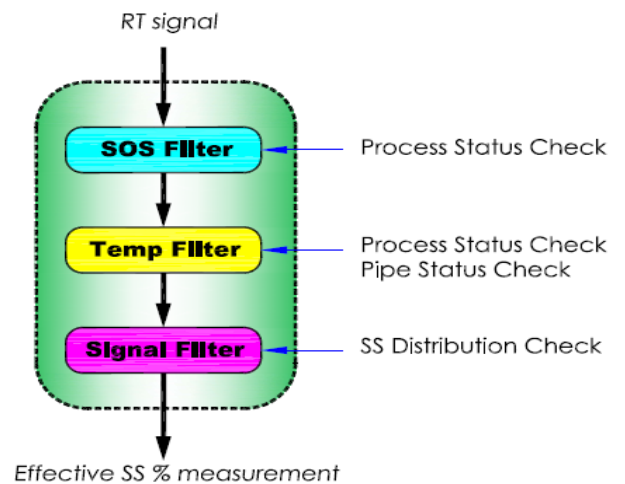
EEAM

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. As the ENV200 is sensitive to changes in process, it contributes to increasing stability and reliability of the measurement

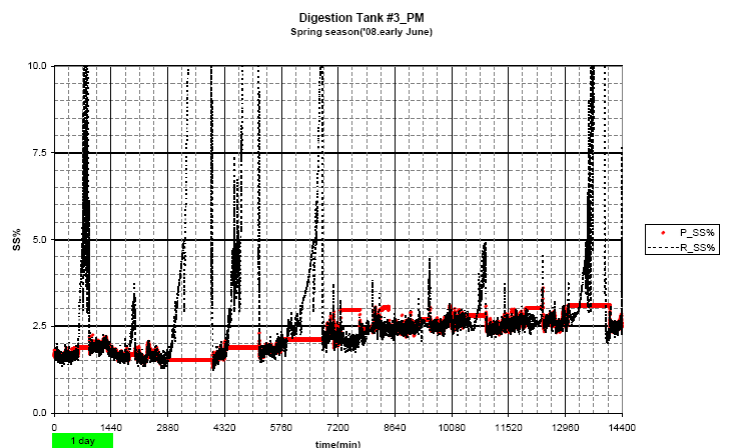


PCM(Process Condition Monitoring)

PCM algorithm consists of SOS filter that measures sound velocity of measuring fluid (S.S. mixed water); temp filter that measures temperature; and signal filter that monitors quality of received signals. Operational status (process run/stop) is determined by the combination of SOS filter and Temp filter. Signal filter helps to decide the valid S.S. distribution.



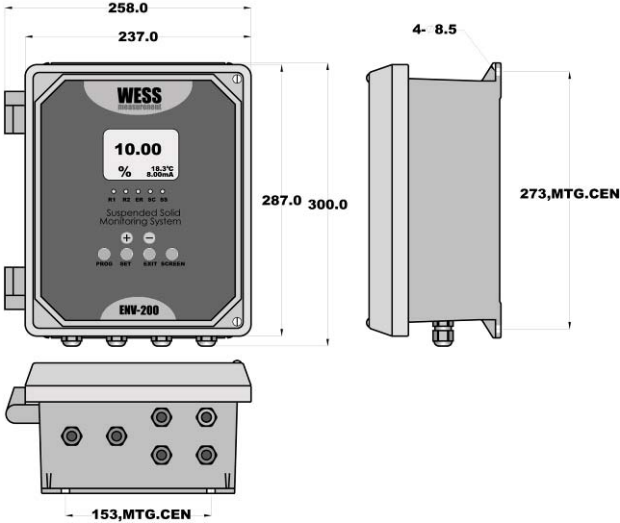
Since the PCM algorithm assimilates many measurements identifying changes of process condition (water status in pipe, and S.S. distribution pattern), its intelligence is designed to measure only valid S.S. concentration. Consequently, the performance is much more reliable and accurate, compare to conventional measurement



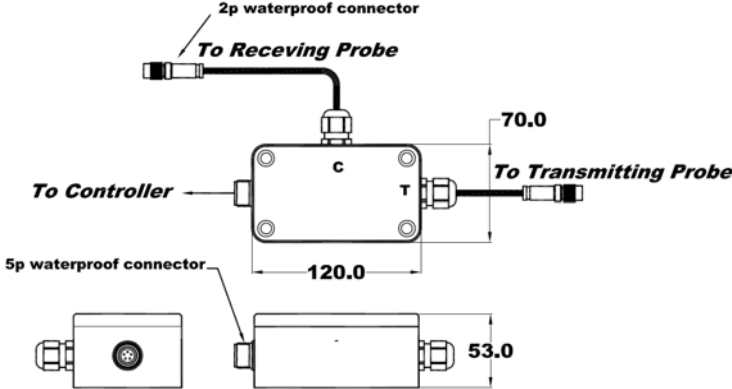
PCM(Red) VS Conventional algorithm(Black)

Product Dimensions

Electronic Device



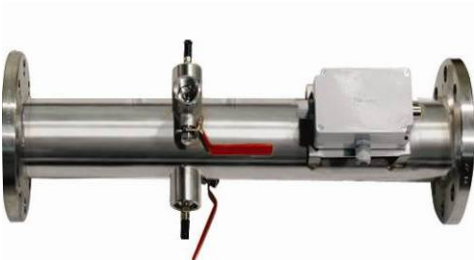
Junction box



Sensor Types

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

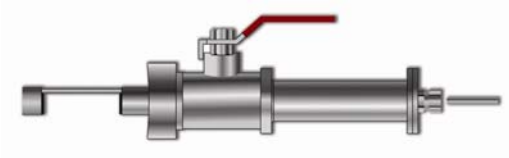
Spool-piece Type



Tank-mount Type



Insertion Type



Product Specifications

Electronic

Measuring Principle	Ultrasonic Attenuation and PCM(Process Condition Monitoring)
Measuring Ranges	2,000 ~ 200,000mg/l (0.2 ~ 20%), 400,000mg/l(option)
Measuring Mode	Process Mode, Real-time Mode
Display	Density, Time, Pipe condition, Flow condition
Resolution	100mg/l (0.01%)
Accuracy	± 5% of reading or ±5000mg/l, whichever is greater
Repeatability	± 1% of reading
Operational Temp.	-20 ~ 60°C(-4~140°F)

Outputs

Current Output : 4~20mA, nom. Load 250Ω (load range : 100 ~ 750Ω)

Relay Output : 3 SPDT(5A, 250VAC) – “ER” “R1” “R2”

Digital Output : RS232C(Standard) or RS485

Power Supply

Standard : 100 ~ 240V AC, 50~60Hz, ≤6W

Option : 24V DC

Encl. Material	Body/Cover : FRP Window : Polycarbonate
Dimension	237(W) x 291(H) x 138(D)mm
Mounting	Hole center 153(W) x 273(H) mm(Ø 8.2 x 4ea)
Weight	3 kg
IP Rating	IP67
Certificate	CE

Sensor

Material	S.S.316
Sensor Type	Spool-piece, Tank-mount, Insertion
Length	Different from pipe size and density value
Frequency	1MHz, 500kHz
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.	-10 ~ 80°C(14~176°F)
Dimension	120(W) x 70(H) x 53(D)mm
Weight	450g
IP Rating	IP65, IP68(Optional)
Mounting	Center hole 110(W) x 61(H) (M6 x 2pcs)
Electric Connection	
Probe	2-pin waterproof connector (20m, 65ft)
Controller	5-pin waterproof connector (30m, 100ft)

Ordering Code

ENV-200 Ultrasonic Sludge Density Meter

ENV-200	CODE	DESCRIPTION
Controller	C2S	ENV200, AC100~240V(Standard)
	C2SD	ENV200, DC20~30V
Sensor	S2S2	Spool-piece type(2 Sensors)
	S2S4	Spool-piece type(4 Sensors)
	S2T	Tank-Mount type
	S2I	Insertion type
	S2C	Clamp-on type(available in 2009)
Pipe (Spool-piece only)	D_XXX	DIN Standard, XXX mm= Diameter
	J_XXX	JIS Standard, XXX mm= Diameter
	A_XXX	ANSI Standard, XXX mm= Diameter
Option	C2_XXm	Additional cable extension in meters
	R24	RS-485 (RS232 is provided as standard)
	JT8	Junction box IP68(for spool-piece and insertion)
NOTES*	*EX) C2S-S2S2-D_100 Standard AC powered controller with 2 sensor spool-piece type, pipe diameter DIN 100mm	