



Bellstar Instruments Inc.

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PMEASURE SYSTEM (Ultrasonic Pipe Wall Thickness Measurement System)

Functions

- Best solution for raw material saving and product quality control
- Online wall thickness/ diameter / concentricity / ellipticity measurement and control
- Super high resolution/ applied for multi-layer tube measurement

Structure

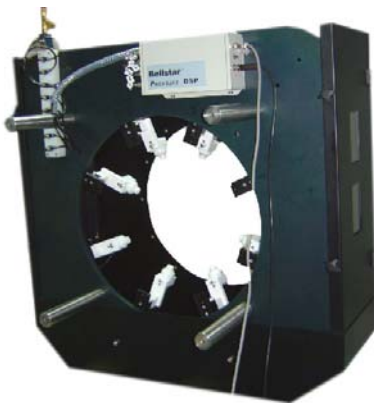
This system is mainly composed of scan box, DSP and MCS.

Technical Index

- Accuracy of wall thickness measurement: $\pm 0.001\text{mm}$
- Accuracy of concentricity: $\pm 0.1\%$
- Accuracy of diameter and ellipticity: $\pm 0.05\text{mm}$

Options

- Small trough, which is for installation of scan box (apply for P-MEASURE 125 or below)
- Trough support
- Soleplate of support (only for P-MEASURE 63 and P-MEASURE 125)
- High speed beyond pre-setting value checking software
- Ultrasonic diameter measurement
- Media water pressure clean and stable system, apply for all kinds of bad industrial circumstances.



PMEASURE Ultrasonic Scan Box

Scan box is the core component in ultrasonic pipe measurement system that in accordance with the conditions and circumstances required. It is mainly used for transducer fixation, centring of the measured, seal and isolation of media, and so on. Its characteristics are:

- Simple installation
- Flexible structure (has different pertinency)
- Easy to maintain
- Convenient adjustment

Product Model: PMEASURE63

PMEASURE SYSTEM Besides above-mentioned characteristics, PMEASURE scan box also has the function of media feedback and compensation, and it considered much more about the change of circumstances.

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Fixation Series Scan Box - (FMSR)

- Fixation series ultrasonic scan box has fixed type ultrasonic DSP, can measure the diameter and wall thickness of pipe within a series of range.
- All PMEASURE scan box support the measurement of multi-layer tube with different range of measurement in each layer.
- The quantity of transducers can be 4 or 6 or 8 or 16 or upon customer’s request.
- On the two ends of the water tank there have sealed circle, which can be installed in the spraying tank or on the outside of the tank.
- With bubble filter and water cleaner in the water tank.

Scan Box Type:

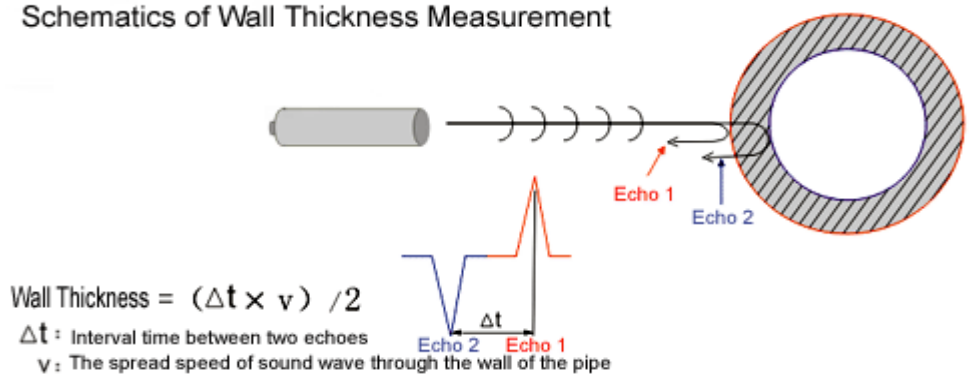
OD Range (mm)	OD Range (mm)	Scanner Hatch Size (mm)
PMEASURE12-F	3-12	20
PMEASURE20-F	5-20	25
PMEASURE63-F	3-63	68
PMEASURE125-F	20-125	145
PMEASURE250-F	90-250	280
PMEASURE450-F	160-450	480
PMEASURE630-F	250-630	660
PMEASURE800-F	400-800	850
PMEASURE1200-F	600-1200	1250
PMEASURE1600-F	800-1600	1650

Whirl scan box (RMSR) / rotation scan box (RRMSR)

Whirl scan box/rotation scan box can meet different demands from customer.

Principle of Ultrasonic Measurement

Schematics of Wall Thickness Measurement



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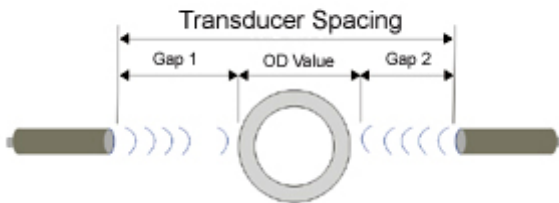


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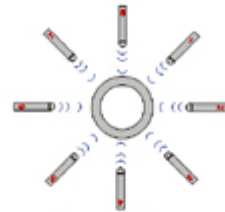
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Schematics of Diameter Measurement



Schematics of Eccentricity/Ellipticity Measurement



Through many points wall thickness measurement to obtain eccentricity and ellipticity value.



PMEASURE DSP

PMEASURE Unique Ultrasonic Technology

Signal auto-snap technology, makes the process of measurement much simple. It is well known that among all kinds of ultrasonic technology, it is necessary to dispose the ultrasonic wave, and the measurement system should know the position of the proper echo in the waveform. The unique wave auto-snap technology of PMEASURE DSP is a kind of unusual technology in the world that has the capability of quick auto-setup and auto-tracking.

Technology Advantages

- ✓ Auto-search
PMEASURE DSP can find and distinguish hybrid wave quickly.
- ✓ Auto-setup
PMEASURE DSP can interpret ultrasonic waveform quickly and identify proper echoes and auto-adjust signal plus.
- ✓ Auto-tracking
PMEASURE DSP “locks” onto the proper echoes and tracks them as the product moves.
- ✓ Highest Accuracy and repetition
In the past, every transducer should be set up independently, and thus there may exist potential mistakes or manual setup mistakes in the ultrasonic system; and when conditions of the product or process change, the manual setup is not apply for signal processing. While auto-snap technology does not exist such problem, it can always keep high consistency with the changes, thus providing higher accuracy of average wall thickness and concentricity measurements.
- ✓ Unique auto-setup technology provided without operator involved;
- ✓ Easy to obtain highest accuracy and repetition of ultrasonic, and meanwhile DSP optimizes the measurement value of every time;

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- ✓ Report change of wall thickness in short term with option of deviation check and can improve the repetition through speed and temperature compensation;
- ✓ Flexible installation options, include being embedded the water tank, drencher tank or being installed in the independent tank provided by BELLSTAR;
- ✓ Integrated to PMEASURE DSP through the communication protocol of RS-232, Device Net and Profibus.



PMEASURE MCS

Combined geometry size measurement instrument and lots of I/O inputs & outputs, the system assists users to produce high-quality pipe and provides all information and control capability to ensure the stability of the production. From the start of the machine to the final quality test, every step is of great assistance to improve the technology and quality of the products.

PMEASURE MCS

MCS of PMEASURE

Performance	Parameters
Quantity of scanner can be connected with	No Limitation
Table display	Have (can display multi-layer)
Statistics	Multi-channel
Trend Chart	Multi-channel
Print Output	Have(defined by user)
Data Record	Have(defined by user)
Communication Mode	RS232/485 and other kinds of Communication mode
Ethernet Network Link	Have (10/100BaseT)
Alarm Output	Have
Product Recipe	Have (no limitation)
Security	3 Degrades
Long-distance Display Output	VGA
I/O	According to requirements to allocate integrative type or I/O independent module

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