

Online production optimisation and control of heating pipes by revolutionary new technique



# TwinEye-MXS

Next generation of the well known TwinEye product

**Important news!**

Detects thickness and dimension of the PE jacket pipe.

- Quickly and accurately!



FORCE Technology's new advanced measuring system for online inspection of central heating pipes provides the manufacturer with a new range of options for optimisation, control and documentation of the production.

The new measuring system, **TwinEye-MXS**, is based on FORCE Technology's many years' experience with design and construction of advanced non-destructive measuring systems for industrial pipe manufacturing companies.

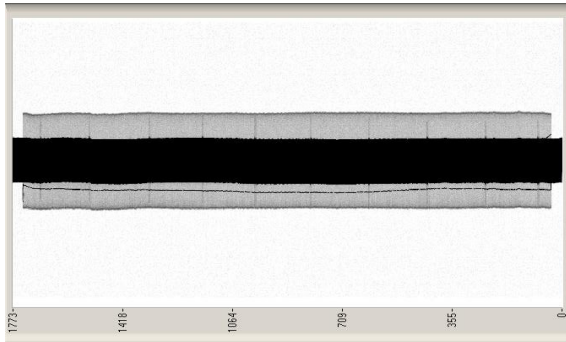
## Applications

**TwinEye-MXS** is designed for non-destructive on-line control of all parameters of importance related to batch or continuous production of insulated pipe systems. The instrumentation detects, relative to centre of pipe jacket, the exact position of carrier pipes and alarm conductors. The instrumentation detects also the thickness and circumference of the

PE jacket pipe as well as the density of insulation foam. **TwinEye-MXS** provides, by X-ray vision data covering the entire pipe length, a complete documentation for each pipe unit produced.

## Advantages

- The measuring system ensures uniform production quality
- All measurements are non-destructive and done on-line
- The measuring system provides continuous overview of the position of internal pipes, alarm conductors, foam density, dimension of the jacket pipe and pipe ends
- 100% automatic documentation of the properties of each pipe unit can be established
- The scanner measurements are used for optimisation of production and saving raw materials
- The measuring system replaces a number of manual operations.



Top view showing alarm wires, carrier pipe and distance holders relative to the jacket pipe.

## Description

**TwinEye-MXS** is a self-contained measuring system to be installed at the production line. The installation position can be set on the roller path or after extrusion and cooling of the pipe units. The most vital units of the instrumentation are housed in a cabinet. **TwinEye-MXS** uses the most recent well-documented knowledge within X-ray technology and detector systems.

The instrumentation using standard PC-technology makes integration in the company's local network quite simple. PC-monitor and keyboard can be mounted either in the cabinet or be placed in a control room together with other production control facilities. The monitor screen picture shows:

### *During pipe scanning:*

- Coordinates of the carrier pipe relative to the jacket pipe
- Eccentricity of the carrier pipe
- Graphical cross sectional presentation of carrier pipe position
- Cross sectional position of alarm conductors, if any.

### *After termination of pipe scanning:*

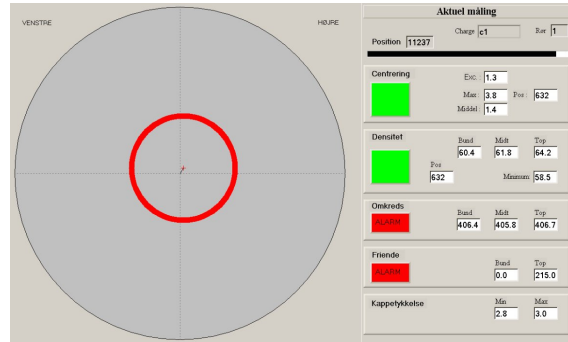
- Data of the entire pipe scanning
- Graphical top view of relative positions of carrier pipe and jacket pipe in the full pipe length
- Graphical top view of the position of alarm conductors relative to carrier pipe and jacket
- Visual alarm and/or external alarm if limit values have been exceeded
- Automatic saving of data in a quality control library locally or via LAN.

## Documentation

**TwinEye-MXS** uses data from a product library of product specifications and limit values as a reference to evaluate conformity of each inspected pipe unit. The system labels the inspected pipe units with a running identification number that also serves as the reference to all measurement data saved in the quality

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Screen display for running pipe scanning showing a cross sectional graph of carrier pipe position. In the top right side actual data on eccentricity is displayed. Data on positions, foam density and jacket pipe dimension from the pervious completed pipe scanning are displayed in the right side of the screen display.

control library. The library also contains X-ray pictures of the conditions that released non-conformity alarms. **TwinEye-MXS** ensures that pipe conditions at the time of manufacturing are completely traceable.

## System adjustment

The measurement system is adjusted to conform to specified user needs concerning screen display layout, documentation, inspection positions, product specifications and data storage.

## Calibration

The extensive software package includes functions for automatic calibration and programs to guide system calibration procedures.

## Specifications

Pipe diameter:	Up to Ø315 mm
(Larger diameters on request )	
Position of carrier pipe:	< 1 mm
Position of alarm wire:	< 1 mm
Thickness of jacket pipe:	0.2 mm
Length of free end	
approximately:	1 mm
Foam density:	± 2 kg/m <sup>3</sup>
Detection frequency:	100/sec.
Linear pipe speed:	0 - 0.5 m/sec.
Circumference	< 0.5%

## Extensions

**TwinEye-MXS** can be extended with features for detection of plugs in carrier pipe joints. The instrumentation can be interfaced with a pulsreflectometer system for inspection of alarm conductors.



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