



# MsS Multiple Frequency Sets

## Enhanced Detection Capabilities

Different frequencies can detect different types of defects. Lower frequencies are good for finding larger defects over long distances, while higher frequencies are better for detecting smaller defects. This means you can catch more issues, from big to small, in one go.

## Improved Defect Sizing

The use of multiple frequency sets refers to operating the MsS system at various center frequencies, typically ranging from 16 kHz to 250 kHz. Using various center frequency sets provides increased resolution and higher sensitivity for evaluating defect sizes and the nomenclature of defect. This proves crucial for deciding and confirming if a pipeline needs repair or is in acceptable condition.

## Detailed Advantages of Multiple Frequency Sets

### 1. Enhanced Detection of a Wider Range of Defects

- ✓ Higher frequencies, like 128 kHz or 250 kHz, are better suited for smaller defects, offering higher resolution but with reduced range. Where lower frequencies, like 16 kHz or 32 kHz, are better suited for larger defects with a longer examination range. This dual capability ensures comprehensive defect detection.

### 2. Improved Accuracy in Defect Sizing

- ✓ Analyzing responses at multiple frequencies provides a more comprehensive dataset for defect characterization. MsS GIM software can analyze up to 8 data sets at different center frequencies (e.g., 16, 32, 45, 64, 90, 128, 180, 250 kHz), enabling better estimation of defect size by correlating wave amplitude and arrival time with defect dimensions.

### 3. Flexible Inspection Parameters for Varied Conditions

- ✓ Multiple frequency sets allow for tailoring the inspection to specific needs. Lower frequencies are ideal for long-range ultrasonic testing (LRUT) for covering longer distances, whereas higher frequencies are used for corrosion under insulation (CUI) medium-range ultrasonic testing and increasing sensitivity.

### 4. Enhanced Data Interpretation and Reliability

- ✓ The use of multiple frequencies provides a comprehensive dataset, which can be analyzed using advanced GIM software by implementing threshold setting and ultrasonic images (rf data plot, video data plot, spectrogram plot) at different frequencies.



## MsS Multiple Frequency Sets

Frequency Range (kHz)	Primary Application	Notes
16 - 32	Long-range inspection, large defect detection	Reduced attenuation, suitable for buried or insulated pipes
45 - 64	Medium-range, general defect screening	Balances range and resolution, common for initial surveys
90 - 128	High-resolution, small defect detection	Ideal for CUI, PMI, reduces geometric feature interaction
180 - 250	Detailed analysis, microscale damage	High sensitivity, used for confirming findings, shorter range

