

# Ultrasonic Phased Array Systems

## For Rail Wheel Inspection



*Shown above is a Krautkramer test fixture*

## Economical ultrasonic phased array systems save time and money in rail wheel inspection

### **Cut changeover downtime to just seconds**

- Rapid, reproducible, PC controlled setups
- No adjustments of individual probes or mechanical fixtures
- Less operator intervention

### **Eliminate system and test failures**

- Electronic beam steering requires no moving scanning parts that could fail and cause costly shutdowns
- Arrays are sized and shaped to fit any wheel size

*\*Systems can be supplied to meet AAR and/or customer specifications*

### **More consistent test accuracy & documentation**

- Entire test area is electronically scanned for a complete, uniform test and increased defect detectability
- Electronic scanning and focus provide full test coverage
- Software captures a permanent record of test

Contact your local Krautkramer Sales Rep or visit [www.krautkramer.com](http://www.krautkramer.com) for more detailed information.

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# Custom designed wheel inspection systems to meet user requirements and mandated test criteria

Some recent, expensive derailments have been attributed to wheel failures. This has led the AAR, rework facilities, and wheel manufacturers to increase wheel scrutiny, particularly with regard to shattered rim failures caused by porosity or inclusions. The inspection standards adopted in the late 1960's are under review and new inspection criteria are being developed. Automated inspection systems are increasingly being adopted by wheel manufacturers and rework facilities to meet the following criteria:

- Improved defect sensitivity
- Better defect detection
- Increased volumetric coverage
- Reduction in signal-to-noise ratio
- Consistent and repeatable inspection
- Less operator intervention and computer compatibility

The Krautkramer ultrasonic phased array systems provide all of the above in a versatile package that can be supplied in a variety of configurations:

- Electronics only – for interfacing with existing mechanical handling systems
- Electronics plus mechanics – for replacing existing mechanical systems or new installations
- Operator free systems\* – allow systems to run unattended and operators are alerted to any defect indications
- Operator controlled systems – where operator input is considered essential
- Automatic wheel size recognition and system configuration is an option that can be installed at system installation or later during the life of the system if desired.

These benefits are provided by the Krautkramer wheel inspection systems which can be interfaced to existing computer networks to provide documented inspections for all wheels in your facility. If this is not required, standalone systems can record and retrieve inspection data for individual wheels, providing documented inspection details. All systems provide up to 90% tread inspection with increased defect detectability.

\* Operator input is required for initial calibration only

## Specifications

### Number of elements in a standard system

256

### Max number of elements to fire as one group

32

### Max number of group firing sequences

256 Controllable features per firing sequence

### Delay per element

0 to 2.5 microsecs in 2.5 nanosecond steps

### Start element

Programmable

### Group size

Programmable

### Pulser voltage

65 volt into 50 ohms negative spike

### Amplifier bandwidth

.025 – 12 MHz

### Max PRF

20 kHz

### Pre amplifier gain

± 10 dB in 0.1 dB steps

### Digitization resolution

50 MHz

The above details are based on previously supplied systems. Because Krautkramer designs and manufactures all phased array components, we are able to offer custom solutions to users and application requirements.

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