# NDT Technologies Inc.

ERW Seam Weld Inspection with AutoTrack

The **ERW Seam Weld Inspection with AutoTrack** provides automated, semi-automated or manual control over the ultrasonic inspection process of the straight seam weld on ERW pipes. This compact stand-alone system is easily integrated into your existing inspection processes.

AutoTrack is NDT's inc. proprietary solution for real-time tracking of deviations in the location of the longitudinal seam weld and continuously aligns the inspection probes over the seam weld.

The system uses reliable, accurate and proven technologies based on NDT Inc's 30 years of experience designing and installing inspection solutions for industrial ERW pipe manufacturers.
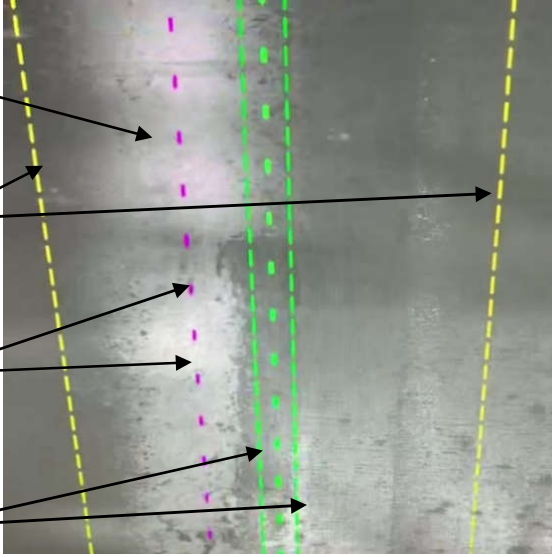

(4) Arched Guide Rail

(5) Servo Motor

(3) Smart Camera

(2) Probe Carrier

(1) Probe Block & Probes
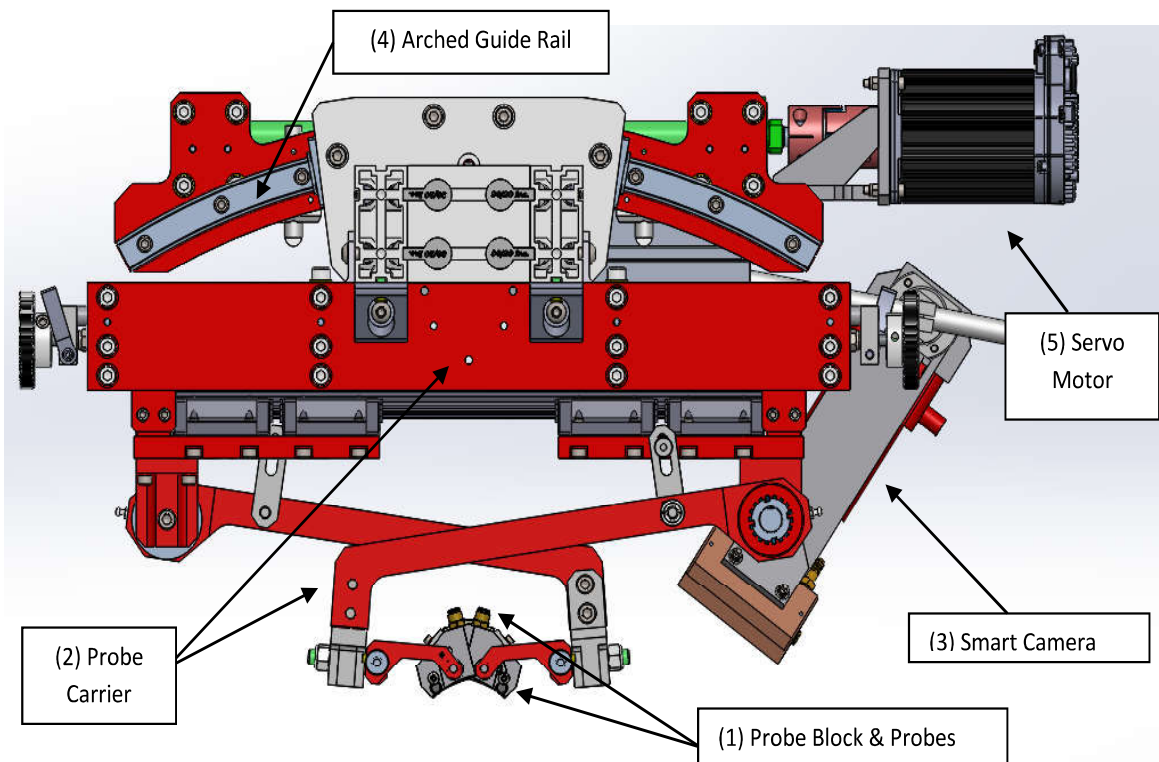
System Components	Basics of System Operation
(1) Probe Block & UT Probes	1. Seam weld on ERW pipe is placed at test position (12 o'clock).
(2) Probe Carrier	2. **Smart Camera (3)** is configured and aligned so the seam weld reference line is visible in camera's field of view.
(3) Smart Camera	3. **AutoTrack** scans the pipe surface to identify the location of weld seam reference line.
(4) Arched Guide Rail	4. **AutoTrack** image processing routine will continuously track the weld seam reference line during the inspection process.
(5) Servo Motor Drive	5. **AutoTrack** sends a digital signal to the PLC when the reference line moves or deviates from its initial position.
(6) PLC & Inter-Communication Hub (not shown)	6. **Inter-Communication Hub** controls the **Servo Motor (5)** to move the **Probe Carrier (2)** on the **Arched Guide Rail (4)** to align the **Probes (1)** over the seam weld.

ERW Seam Weld Inspection with AutoTrack

Reliable, accurate and proven technologies

Operating Characteristics	Software Characteristics
• Accommodates all types of ERW pipes. • Compatible with all pipe surface finishes. • Accommodates all pipe diameters & UT probes. • Designed for industrial manufacturing. environments with an IP-67 rated Smart camera. • Inter-Communication Hub provides interfaces for 2 joysticks, PLC, servo motor and Smart camera. • Ethernet connectionfor real-time camera image display and data storage.	• Real-time image processing of 45 FPS. • Electronically controlled variable focus camera lens for easy setup. • Software and image processing routines run in Smart camera – no PC required. • Configurable camera & tracking parameters. • Storage/retrieval of AutoTrack setups, eliminating pipe change over delays. • Multiple operating modes.

Parameters & Operating Modes		
Camera parameters[1]	Exposure, gain and focus	Digital values used to maximize the quality of images captured by the camera.
Tracking parameters[1,2]	Threshold parameter - Minimum intensity of the seam weld reference line. Region of InterestXLeft, XRight parameters - Area between yellow lines scanned by AutoTrack. Purple Line - Axis of seam weld reference line detected by AutoTrack. Tracking Zone –Center Offset Area between dotted green lines.	
Operating Modes	Manual Mode	Operator uses a joystick to manually control position of the probe holder.
	Automatic Mode	AutoTrackis active, tracking the reference line (purple line) and keeping it in the Tracking Zone with the controlled servo motor which moves the probe holder.
	Semi-Automatic Mode	AutoTrack is active. The operator can also use the joystick to override AutoTrack and manually position the probe holder.

(1) Multiple setups of camera and tracking parameters can be defined and recalled to accommodate di erent pipe diameters and pipe surface finishes.
(2) PC viewer program is available for real-time display of camera images and tracking lines.