

## AUTOMATED ULTRASONIC TESTING SYSTEM FOR DETECTION OF INTERNAL FLAWS IN RAILS



- Automated detection in rails head, rails web and rails bottom at welding industry environment.
- Each inspected rails is automatically tested, evaluated and in case detection of flaw automatically stop the conveyer.
- Testing technique – ultrasonic contact technic, pulse-echo method
- Inspection time 0,2-0,5 minutes / part for 100% inspection of rail length.

### Basic specification

Dimensions :

- Outer size 1680 x 1070x530 mm
- Mass 700 kg

Power supply :

- 230V, 50Hz , 1,3kW

Tested parts:

- rails type UIC60, R65, S49
- testing after flattening and brushing
- rail length up to 25m

Main control and other features:

- automatic mode / manual movement
- adjustable speed of probe placing on and out of rail
- control ny PLC automatic machine
- signalization of flaws – optical and acoustic

Manipulation - upload / unload

- crain hoist systém controlled by NDT operator

Productivity

- up to 100 km of rails / year (1shift)

Place of installation	ZaRS (Rails Weld shop ) Vrútky (Slovakia.)	Contact to the users plant	Ing.M. Tonhauser Sales delegate
Year of installation	2003	tel.:	(+421) 43 4222035
		fax:	(+421) 43 4222045

# REFERENCE FILE

## AUTOMATED TESTING INSTALLATION FOR DETECTION OF SURFACE AND SUBSURFACE FLAWS FOR CYLINDER BARS



- Automated detection of surface and subsurface flaws in bars at metallurgy industry environment.
- Each inspected part is automatically scanned, evaluated and documented by printed report with flaws mapping
- Testing techniques - ultrasonic immersion scanning
- Inspection Time 0,3- 1,0 minute / part for 100% surface inspection

### Basic specification

- |  |   |
|--|---|
| <p><b>Dimensions :</b></p> <ul style="list-style-type: none"> <li>• outer size 2500 x 750x750 mm</li> <li>• mass 1000 kg</li> <li>• water reservoir 120 l (thermostatical controled)</li> </ul> <p><b>Power supply :</b></p> <ul style="list-style-type: none"> <li>• 3x400V, 50Hz , 3kW</li> </ul> <p><b>Tested parts:</b></p> <ul style="list-style-type: none"> <li>• casted bars up to diam 320x 100</li> <li>• testing after machining</li> </ul> | <p><b>Main controls and other features :</b></p> <ul style="list-style-type: none"> <li>• automatic / preselect scanning / manual scanning</li> <li>• adjustable rotation and scanning speed</li> <li>• signalisation of flaws - optical and acoustical</li> </ul> <p><b>Manipulation - upload/ unload</b></p> <ul style="list-style-type: none"> <li>• crane hoist system controlled by NDT operator</li> </ul> <p><b>Productivity</b></p> <ul style="list-style-type: none"> <li>• up to 60 000 t per year ( 2 shifts)</li> </ul> |
|--|---|

<b>Place of installation</b>	ALCAN (Alcoa Group ) Decin (Czech Rep.)	<b>Contact to the users plant</b>	Dipl.Ing.P.Slezakova Head of NDT Dept
<b>Year of installation</b>	1999	<b>tel.:</b>	(+420) 412 508 513
		<b>fax:</b>	(+ 420) 412 510 228

**REFERENCE FILE**



# t. rota

**UT FLAW and DIMENSIONAL SYSTEM  
FOR ROTARY HEAD and ROTATING TUBE**



- Real Time WT/OD/ID
- High Resolution, up to 1 $\mu$ m
- High Accuracy, up to  $\pm$  2 $\mu$ m
- Min OD 6.0mm & WT 0.4mm
- WT/OD/ID Analogue Output 12 bits
- 20 KHz PRF
- Min Flaw Depth 5% or 10% WT
- Easy Integration in line
- Example with NUKEM Rotary Head
- Based on Standard USPC3100 Cards



## ***t-rot*** TECHNICAL SPECIFICATION

---

High Precision Tube UT Testing Systems for in-line High Speed Flaw detection and Dimensional Measurements of OD, Thickness and ID with Rotary Head or Rotating Tube Techniques

### ***t-rot*** 4F

---

4 USPC3100LC single channel ultrasonic PCI cards firing in parallel at 20 KHz PRF:

- 2 channels for longitudinal flaws Internal/External in CW and CCW
- 2 channels for transversal flaws Internal/External in CW and CCW
- Flaw size:
  - . Min 0.07mm depth and 1.5mm long
  - . 5% or 10% of thickness according to diameter range and Standards to be applied
- 16 BNC Analogue Outputs 0-5V, 2 per Flaw Gate:
  - . One updated at PRF rate
  - . One with adjustable time delay up to 10ms
  - . Rejection with linearity upholding
- 8 BNC Alarm Outputs Go/No-Go, 1 per Flaw Gate

### ***t-rot*** $\mu$ 3D

---

3 USPC3100LC single channel ultrasonic PCI cards firing in parallel at 5 KHz PRF:

- 2 channels with transducers at 180° for water gap and tube thickness measurement
- 1 channel with reference transducer-target set for water Velocity/Temperature compensations
- Real time calculation of OD and ID
- Tube size:
  - . Min Diameter 6.0mm
  - . Min Thickness 0.4mm subject to transducer performance
- Measurement Resolution of USPC3100LC card: better than 1 $\mu$ m in steel
- Measurement Accuracy:  $\pm 2\mu$ m subject to Rotary Head performance
- 3 BNC Analogue Outputs for OD, Thickness and ID:
  - .  $\pm 5V$ , 12 bits
  - . Output Range: 4V/mm, 2V/mm, 1V/mm
- 3 BNC Alarm Outputs for OD, Thickness and ID

### ***t-rot*** 7F $\mu$ D

---

Complete Flaw and Dimensional System with 7 USPC3100LC PCI Cards into One Computer and identical performances as above.

SOCOMATE maintains the right to modify the specifications at any time and in whatever manner in order to improve their performances

Z.I. – 8 Rue des Abbesses – 77580 CRECY LA CHAPELLE – France  
 Phone +33 16463 8109 – Fax +33 16463 6021  
[www.socomate.com](http://www.socomate.com) – email : [contact@socomate.fr](mailto:contact@socomate.fr)

