NORDINKRAFT
The quality guard

ULTRASONIC TESTING EQUIPMENT

WORLDWIDE SALES AND SERVICE

CONTENTS

INTRODUCTION OF NORDINKRAFT NDT GROUP 2-3

EMATEST-PL 4-5
SYSTEMS FOR AUTOMATIC ULTRASONIC IN-LINE EXAMINATION OF PLATES

NORDISCAN-PL 6-7
SYSTEMS FOR AUTOMATIC ULTRASONIC OFF-LINE EXAMINATION OF PLATES

EDDYSPOT 8-9
SYSTEMS FOR AUTOMATIC NON-CONTACT DETECTION OF HARD SPOTS

NORDISCAN-PI 10-11
SYSTEMS FOR AUTOMATIC ULTRASONIC EXAMINATION OF PIPES

NORDISCAN-BB 12-13
SYSTEMS FOR AUTOMATIC ULTRASONIC EXAMINATION OF BARS AND BILLETS

NORDISCAN-RAIL 14-15
SYSTEMS FOR AUTOMATIC ULTRASONIC EXAMINATION OF RAILS

ALUTEST-BB 16-17
SYSTEMS FOR AUTOMATIC ULTRASONIC EXAMINATION OF NON-FERROUS BARS AND INGOTS

ALUTEST-PL 18-19
SYSTEMS FOR AUTOMATIC ULTRASONIC EXAMINATION OF NON-FERROUS PLATES AND INGOTS

SONAFLEX 20-23
MULTIPURPOSE TEST ELECTRONICS UNIT

NKD-019 “ULTRASONIC” 24-25
PORTABLE EMAT THICKNESS GAUGE

GEOMETRIX-PL 26
AUTOMATED LASER GEOMETRY MEASUREMENT SYSTEM FOR PLATES, STRIPS AND SLABS

NKE-PCS-5000 27
PLATE SURFACE CLEANING SYSTEM

CONTACTS & YOUR LOCAL REPRESENTATIVE 28

INTRODUCTION
OF NORDINKRAFT NDT GROUP

General Introduction

Nordinkraft NDT-Group is an alliance of companies with over 30 years of theoretical and practical experience in the design, development and production of innovative, solutions based, fully automated and in-line nondestructive testing systems and equipment for industrial automatic inspection of:

- Plates, strips and ingots
- Welded and Seamless Pipes
- Bars, Billets and Rails
- Components for Automotive and Aerospace Industries

Nordinkraft is a vertically integrated organization who works with our clients from initial concepts to innovative solutions, initiating developments, production of ultrasonic testing equipment, and performing worldwide sales and service.

Key Technology

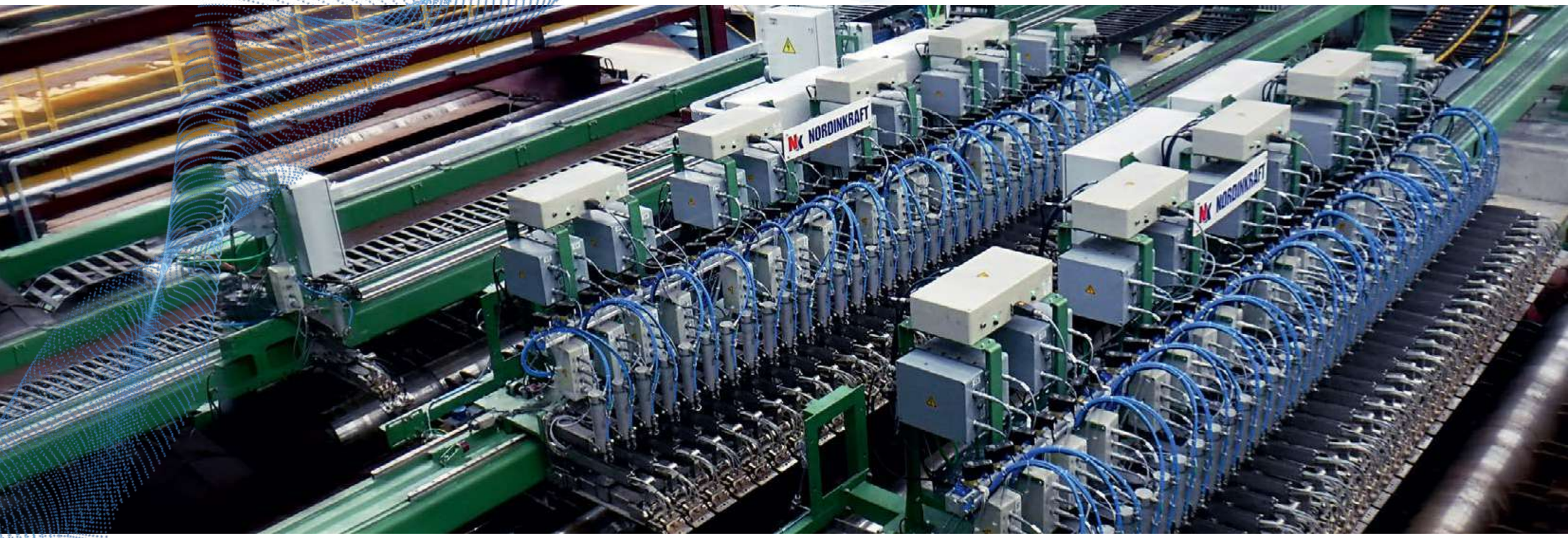
The perfect combination of research on the one hand and the practical implementation of cutting-edge technology on the other, has established Nordinkraft as a global leader in the non-destructive testing of materials in the production cycle. Nordinkraft's impressive range of testing solutions encompasses a wide spectrum of industrial applications. Amongst our global clients are metallurgical companies (i.e. manufacturers of pipelines, planes or construction steel), as well as manufacturers of electronic components for the automotive industry, all of whom have to meet strict international standards. During the 30 years of its existence, the name Nordinkraft has become a synonym for cutting-edge testing systems which are characterized by quality, efficiency and economic viability.
There are four key technologies of the ultrasonic method for examination of materials most commonly used based on specific application, successfully developed, and industrially applied by Nordinkraft NDT-Group:

- EMAT- Electro Magnetic Acoustic Transducer technology non-contact ultrasonic examination
- Phased-Array technology
- Conventional technology using piezo-probes application
- Eddy Current technology

Nordinkraft NDT-Group is the leader in these technologies due to tremendous developments and efforts made by our scientists and engineers, along with high financial investments.

Quality Management System

Nordinkraft AG's management system complies with all requirements of DIN ISO 9001: 2015.
We strive to meet or exceed the unique needs and expectations of our clients to become their most reliable development partner. In order to meet these high-quality standards and to secure the long-term constancy of the quality of our products and services, the concept of quality is integrated into the daily work of all employees.
Our products, processes and procedures and our management system are continually developed in the daily work process in order to meet market and customer requirements.



EMATEST-PL

Systems for Automatic Ultrasonic In-line Examination of Plates

The EMATEST-PL is an innovative, fully automated, and in-line, nondestructive testing system. EMATEST-PL performs material condition assessments in metallic plates, coils, welds, skelp, etc., using Ultrasonic, EMAT and/or Eddy current methods. 100% of production is inspected, providing valuable information for grading, quality inspection requirements, and process control data nearer to the process to reduce scrap rate caused by process related errors. EMATEST-PL utilizes our advanced, intuitive, and operator friendly software for generating test results, displayed in the form of a defect map, in real time mode, and simultaneously saves the results on a local or external drive for further evaluation and analysis.

The EMATEST-PL series achieves multiple inspection tasks:

- Detection of internal imperfections in rolled plates, ingots, and slabs such as: laminations, non-metallic inclusions, porosity, shell, sponge, etc.
- Detection of surface and sub-surface defects
- Precise wall thickness measurement

Main Ultrasonic Testing Parameters

- Test Sensitivity:
  - For internal imperfections: equal to FBH 2*
  - For surface imperfections: equal to notches 0.2 mm x 10 mm (D x W)
- Wall thickness measurement accuracy: ± 0.05 mm
- Testing Speed: up to 2 m/s

  *Depending of material to be tested

Type of Applied Multichannel Ultrasonic or Eddy Current probes

- Non-contact array probes, based on the EMAT
- UT phase array probes
- UT probes with the array of piezo-crystals
- Eddy Current probes

Typical Specification of Plates to be Tested:

- Width: 100 mm – 6000 mm
- Length: from 3000 mm
- Thickness Range: 3 mm – 350 mm
- Material: carbon steel
- Surface Temperature: up to 600 °C

Ultrasonic Testing Standards:

Density of Ultrasonic examination, test procedures, acceptance criteria, data processing and representation adhere to multiple international and local standards such as: GOST 22727, SEL 072, ISO 12094, API 5L, ASTM 435, ASTM 578, DNV-OS-F101, EN10160, JIS0901, JIS0801, ISO10893, ISO3183

Testing and acceptance criteria can be customized based on client specific needs and new standards.

watch our product video.

NORDISCAN-PL

Systems for Automatic Ultrasonic off-line Examination of Plates

The NORDISCAN-PL series Scanners are intended for fully automated off-line ultrasonic examination of body and edges of plates, coils, slabs, and ingots. NORDISCAN-PL systems are designed to perform fully automatic high performance inspections of flats outside of the production line on a charging table. The system utilizes our advanced software and displays the defect map in real-time mode, and simultaneously saves the results on a local or external drive for further evaluation, re-evaluation and analysis.

The NORDISCAN-PL series achieves multiple inspection tasks:

- Detection of internal imperfections in rolled plates, ingots, and slabs such as: laminations, non-metallic inclusions, porosity, shell, sponge, etc.
- Detection of surface and sub-surface defects
- Precise wall thickness measurement

Main Ultrasonic Testing Parameters

- Test Sensitivity
  - For internal imperfections: equal to FBH 2*
  - For surface imperfections: equal to notches 0.2 mm x 10 mm (D x W)
- Wall thickness measurement accuracy: ± 0.05 mm
- Capacity of Testing: 200 s (calculated for plate 4 m x 12 m)

*Depending of material to be tested

Type of Applied Multichannel Ultrasonic or Eddy Current probes

- Non-contact array probes, based on the EMAT
- UT phase array probes
- UT probes with the array of piezo-crystals
- High-resolution 2D or 3D Laser profilers

Typical Specification of Plates to be Tested:

- Width: 1000 mm – 6000 mm
- Length: from 1000 mm
- Thickness Range: 3 mm – 350 mm
- Material: carbon steel, stainless steel, aluminum, titanium, cooper and alloys
- Surface Temperature: up to 250 °C

Ultrasonic Testing Standards:

Density of Ultrasonic examination, test procedures, acceptance criteria, data processing and representation adhere to multiple international and local standards such as: GOST 22727, SEL 072, ISO 12094, API 5L, ASTM 435, ASTM 578, DNV-OS-F101, EN10160, JIS0901, JIS0801, ISO10893, ISO3183.

Testing and acceptance criteria can be customized based on client specific needs and new standards.

watch our product video.

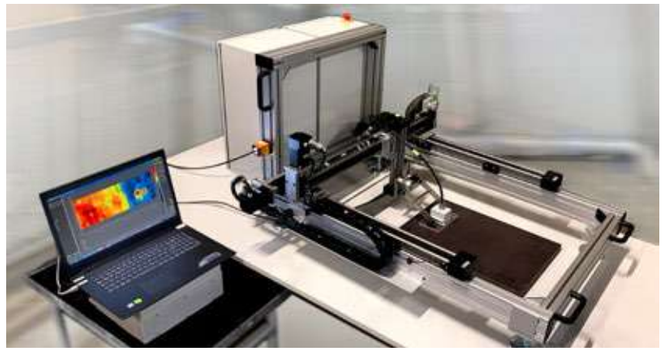
Photos are given for reference only.

EDDYSPOT

Systems for Automatic Non-Contact Detection of Hard Spots

Hard Spots are areas with irregular hardness normally occurring on the production line from the hot rolling process of plates, also referred to as bruises. These areas of local hardening variances become a source of mechanical stress after forming plates into line pipes (LSAW or HSAW). Being invisible by the conventional UT or X-ray methods Hard Spots might cause the occurrence of small microcracks under the constant and in-process cyclic loads that pipelines experience, which are caused by dislocations and slip bands creating potentially expedited fatigue, cracking and failure ending catastrophically in leaks or explosions.

Detection of hard spots at the early production stage can save a lot of money, working hours, and most importantly, the environment, human lives and livelihoods. After recognizing the market need for an efficient tool for reliable and high-capacity inspection of Flats for detection of Hard Spots, Nordinkraft have actively engaged in new solutions and product developments in this area and now introduce EddySpot – first in the world system for automatic non-contact detection of Hard Sports.



Depending on the testing task, we apply several basic configurations of EddySpot:

- **EddySpot-Desktop** – single-probe desktop automatic scanner intended for examination of the material properties for the research and development lab purposes. EddySpot-Desktop is the perfect instrument, which allows fast and "human-factor-free" acquisition of test result as a X-Y plot.

- **EddyScan-PL** – System based on application of NORDISCAN-PL mechanics but equipped with a set of our patented Eddy Current probes for reliable off-line inspection of plates for Hard Spots.

- **EddySpot-PL**– System which uses the configuration of EMATEST-PL as a basis but instead of lines of EddyCurent probes we apply lines of EMAT Ultrasonic probes. EddySpot -PL is the most sophisticated system intended to perform in-line examination of plates for HardSpots at speeds of up to 2 m/s. Both sides of the plate can be tested simultaneously.

Typical Specification of Plates to be Tested:

- Width: 100 mm – 6000 mm
- Length: from 100 mm (for EddySpot Desktop)
- Thickness Range: unlimited
- Material: carbon steel and its alloys
- Surface Temperature: up to 600°C

Main Testing Parameters:

- Reference Test Sensitivity: Hard Spots down to 10 x 10 mm are reliably detected
- Testing Speed: up to 2 m/s
- Type of Applied Probes: Patented Multichannel EC probes

watch our product video.

NORDISCAN-PI

Systems for Automatic Ultrasonic Examination of Pipes

NORDISCAN-PI is our common platform for all Tube and Pipe inspection applications. Modular designs allows the use of UT (Piezo), Phased Array, UT Arrays, Eddycurrent, and EMAT technology depending on the specific tasks needed for our clients. Nordinkraft has practical experience in development, design and implementation of complex equipment for automated ultrasonic testing of all types of tubes and pipes, from very large diameter to very small diameter welded products to seamless, cold drawn and centrifugally cast.

NORDISCAN-PI equipment can be used in the production line of any modern pipe plant and perform in-depth and effective ultrasonic inspection of Weld zones and HAZ, Pipe Ends, Full Body inspection, surface and subsurface, ID and OD, ovality and thickness. Additionally, we offer our NORDISCAN-PL plate inspection system to inspect Skelp prior to welding for laminations and edge inspection to ensure the weld zone is of high quality. Finally, we offer our SONAFLEX-WSP scarf removal and monitoring tool to ensure ID and OD weld scarfing process is functioning correctly and eliminates waste by detecting a broken scarf removal tool quickly and accurately.

The NORDISCAN-PI series addresses multiple inspection tasks:

- Examination of Pipe body
- Examination of Both Pipe Ends
- Examination of Weld Seam and HAZ
- ID, OD, Mid wall and surface Examination
- Wall thickness measurement
- Weld Seam profiling and Scarfing Quality Monitoring

Type of Applied Multichannel Ultrasonic or Eddy Current probes:

- Non-contact array probes, based on the EMAT
- UT phase array probes
- UT probes with the array of piezo-crystals
- Eddy-current probes
- Weld seam tracking, visual, video

Typical Specification of Pipes to be Tested:

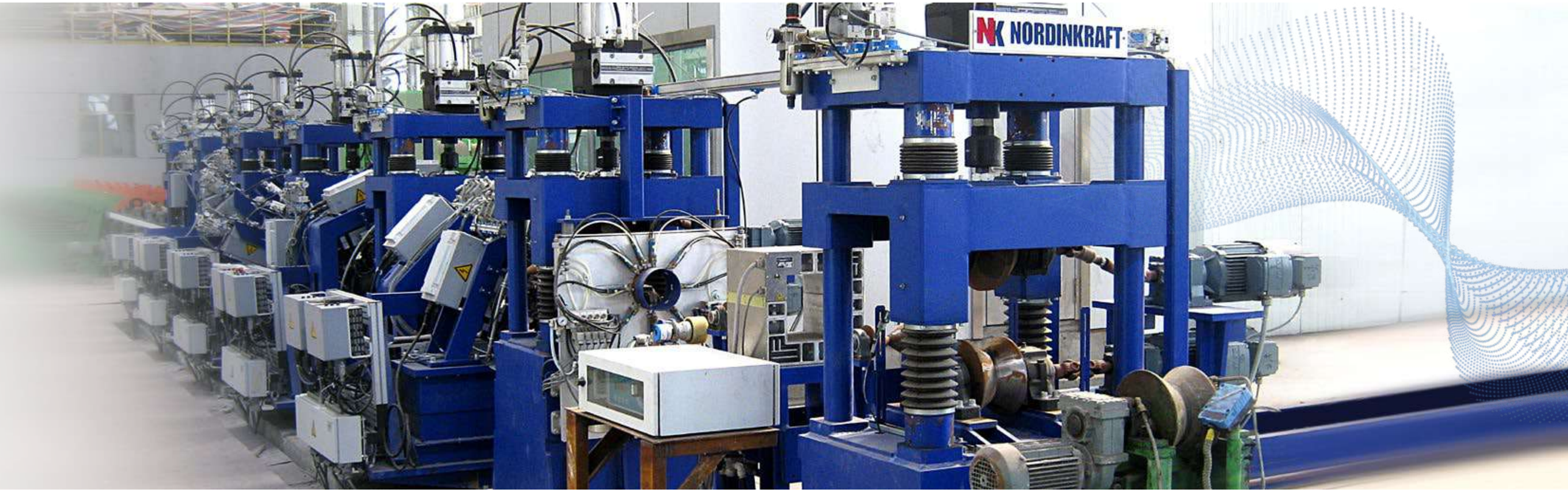
- Type or Pipes to be Tested:
  - Seamless, ERW, Line Pipes (LSAW, HSAW)
- Diameters: 10 mm – 1520 mm
- Thickness: 0.4 mm – 60 mm
- Material: carbon steel, stainless steel, aluminum, titanium, cooper and alloys

Ultrasonic Testing Standards:

Density of Ultrasonic examination, test procedures, acceptance criteria, data processing and representation adhere to multiple international and local standards such as: GOST-R 52079-2003; API Spec 5CT (Ed. 9), ISO 11960 2004, API 5L (Ed. 44,2008); ISO 3183; GOST 10705-80; GOST 20295-85; GOST R 52079-2003; GOST R 53366 2009; ISO 9303; ASTM E213, etc.

Testing and acceptance criteria can be customized based on client specific needs and new standards.

watch our product video.



NORDISCAN-BB

Systems for Automatic Ultrasonic Examination of Bars and Billets

NORDISCAN-BB systems are intended for examination of bars, billets, and other more complex profiles. Depending on the testing task, we apply two basic configurations of NORDISCAN-BB:

• For examination of bars of small diameters, billets, profiles, and rail we are applying a “pass-through” configuration based on providing a dedicated immersion tank with the probes submerged in it. Efficient seals on the input and output ensure minimal loss of water and continuous inspection capability. Such configuration is nearly invisible to the production line with testing speeds up to 2 m/s, and with the application of phased-array methods provides increased flexibility for different test objects and tasks.

• The “gantry” configuration of NORDISCAN-BB is used for testing large diameter round bars. In this configuration, the measuring module with a set of ultrasonic transducers moves along the length of the product being inspected from above the bar, along the bar length while the bar is rotating below, providing efficient 100% scanning in a helical pattern.
Regardless of the configuration, installations of the NORDISCAN-BB series are equipped with various types of ultrasonic transducers which significantly expands the potential installation locations possible and endless tasks can be solved.

The NORDISCAN-BB series achieves multiple inspection tasks:

- Detection of inner defects, like shrink holes, insulation, blowholes, inclusions, etc.
- Detection of surface and sub-surface defects

Main Ultrasonic Testing Parameters

- Test Sensitivity:
  - For internal imperfections: equal to FBH 0.4*
  - For surface imperfections: equal to notches 0.2 mm x 10 mm (D x W)
- Testing Speed: up to 2 m/s

*Depending of material to be tested

Type of Applied Multichannel Ultrasonic or Eddy Current probes:

- Non-contact array probes, based on the EMAT
- UT phase array probes
- UT probes with the array of piezo-crystals
- Eddy Current probes
- High-resolution 2D or 3D Laser profilers

Typical Specification of Bars to be Tested:

- Diameters: 5 mm – 1000 mm
- Length: from 1000 mm
- Material: carbon steel

Ultrasonic Testing Standards:

Density of Ultrasonic examination, test procedures, acceptance criteria, data processing and representation adhere to multiple international and local standards such as: ISO 18563, AMS2154, EN 10308; EN 10228; GBT 4162, GBT 5777, SEP and GOST family standards.

Testing and acceptance criteria canbe customized.

watch our product video.

NORDISCAN-RAIL

Systems for Automatic Ultrasonic Examination of Rails

Another Innovative new development from Nordinkraft, The NORDISCAN-RAIL is our platform of Ultrasonic inspection systems designed for the detection of internal and surface defects in Railroad rails which inspects the head, web, and foot using our state-of-the-art Ultrasonic Phased Array and EMAT probes.

These systems open a new chapter in Nordinkraft's history by entering the Rail inspection business. This is made possible due to the forward-thinking professionalism of our engineers, discipline of our managers, and deep trust of our Customers.

Depending on the testing task, NORDISCAN-RAIL can be provided in to three different configurations:

- **NORDISCAN-RAIL-E.** The system is intended for the detection of internal defects in rails head, neck, and foot using our state-of-the-art EMAT probes in pass-though and echo modes.
- **NORDISCAN-RAIL-S** – first immersion UT system for detection for the examination of rail surface. Overall configuration of this system is based on "pass-through" concept, applied previously for NORDISCAN-BB, it means that rail will pass throng the water tank with the set of phased array probes intended for 100% coverage of the rail surface. No more static and rotating EC probes, no more water jet probes – no wasting of time for re-adjustments.
- **NORDISCAN-RAIL-I** – also immersion system for detection of internal imperfections in rail (head, neck, and foot), with the highest accuracy, reliability and on the speed up to 2 m/s.

Upon the Customer request NORDISCAN-RAIL systems can be supplemented with additional peripheral systems for high-precision measurement of geometric dimensions of control objects as well as marking, sorting, and packaging.

Typical Specification of Rails to be Tested:

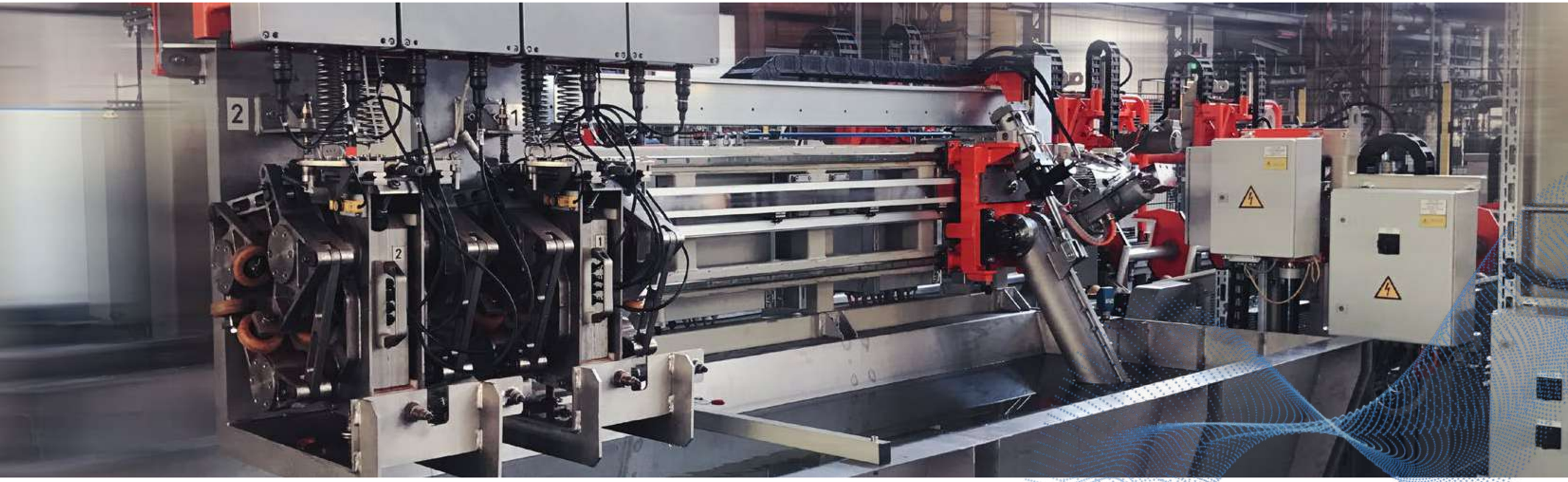
- Type of Rails*: P50, P65, P75, OP50, OP65, 60E1A1, 54E1A1, 54E1A2, 49E1A2 49E1, 49E2, 54E1, 50E6, 60E1, 60E2
- Material: carbon steel and its alloys

* Other Rail types can be addressed upon request

Ultrasonic Testing Standards:

Density of Ultrasonic examination, test procedures, acceptance criteria, data processing and representation adhere to multiple international and local railway standards such as: GOST R 51685-2013 и GOST R 55820-2013, AREMA and EN-standards.

watch our product video.



ALUTEST-BB

Systems for Automatic Ultrasonic Examination of Non-Ferrous Bars and Ingots

ALUTEST-BB series systems are designed for automatic ultrasonic testing of bars and billets made of aluminum, titanium, copper, and other Non-Ferrous metals. Like the NORDISCAN-BB series, ALUTEST-BB systems can be delivered in two different configurations: "Pass Through" and "Gantry". Unlike the NORDISCAN-BB, however; the UT probes of ALUTEST-BB are designed to meet the most stringent standards of the aerospace industry such as:

EN2004-2, AMS 2630, prEN4050, ASTM D857, EN2004-2, BAC 5439-3 (Boeing), NADCAP, ASTM B594, ASTM E2375 – 08 (2013), IGC 04.25.116, ABP 6-5232 (Airbus).

Nordinkraft actively cooperates with top suppliers of equipment for the aerospace industry and non-ferrous metallurgy, therefore ALUTEST-BB systems can be supplemented with additional peripheral systems that provide: automatic measurement of conductivity, analysis of metallurgical structure, and high-precision measurement of geometric dimensions of control objects as well as marking, sorting, and packaging.

Thus, the basic set of ALUTEST-BB equipment can be expanded to become a Turnkey, fully integrated "Acceptance control line" according to the individual requirements of our Customers. Nordinkraft, as a single-source supplier can handle all of these integrated control needs.

The ALUTEST-BB series achieves multiple inspection tasks:

- Detection of internal imperfections in rolled plates such as: laminations, non-metallic inclusions, porosity, shell, sponge, etc.
- Detection of surface and sub-surface defects

Main Ultrasonic Testing Parameters

- Test Sensitivity:
  - For internal imperfections: equal to FBH 0.4*
  - For surface imperfections: equal to notches 0.2 mm x 10 mm (D x W)

  *Depending of material to be tested

Type of Applied Multichannel Ultrasonic or Eddy Current probes:

- UT phase array probes
- UT probes with the array of piezo-crystals
- Eddy Current probes

Typical Specification of bars to be Tested:

- Diameters: 5 mm – 1000 mm
- Length: from 1000 mm
- Material: stainless steel, aluminum, titanium, cooper and alloys

Ultrasonic Testing Standards:

Density of Ultrasonic examination, test procedures, acceptance criteria, data processing and representation adhere to multiple international and local standards such as: AMS-STD-2154, NADCAP, BSS7055 (Boeing), EN2004-2, AMS 2630, prEN4050, ASTM D857, EN2004-2, BAC 5439-3 (Boeing), ASTM B594, ASTM E2375 – 08 (2013), IGC 04.25.116, ABP 6-5232 (Airbus)

watch our product video.

ALUTEST-PL

Systems for Automatic Ultrasonic Examination of Non-Ferrous Plates and Ingots

ALUTEST-PL series systems are intended for fully automatic ultrasonic and eddy current examination of plates and slabs made of non-ferrous metals such as: aluminum, titanium, copper, etc.

The generall configuration of ALUTEST-PL systems is similar in concept to the configuration of NORDISCAN-PL scanners. However, unlike the NORDISCAN-PL, the ultrasonic and eddy current probes of ALUTEST-PL are designed to meet the most stringent standards of the aerospace industry such as:

EN2004-2, AMS 2630, prEN4050, ASTM D857, EN2004-2, BAC 5439-3 (Boeing), ASTM B594, ASTM E2375 - 08 (2013), IGC 04.25.116, ABP 6-5232 (Airbus).

The key elements of ALUTEST-PL scanners are the use of blocks of multichannel piezoelectric transducers, phased arrays, allowing you to confidently detect the smallest defects, down to FBH 0.8 mm in slabs of up to 800 mm thickness. The highest positioning accuracy of the acoustic units is ensured using of well-known industrial manipulators.

At our Customers' requests, the base set of ALUTEST-PL equipment can be expanded with various subsystems to provide automatic measurement of conductivity, high-precision measurement of geometric dimensions, as well as drying and marking, post-inspection.

The ALUTEST-PL series achieves multiple inspection tasks:

- Detection of internal imperfections in rolled plates, ingots, and slabs such as: laminations, non-metallic inclusions, porosity, shell, sponge, etc.
- Detection of surface and sub-surface defects
- Precise wall thickness measurement

Main Ultrasonic Testing Parameters

- Test Sensitivity:
  - For internal imperfections: equal to FBH 0.4*
  - For surface imperfections: equal to notches 0.2 mm x 10 mm (D x W)

  *Depending of material to be tested

Type of Applied Multichannel Ultrasonic or Eddy Current probes:

- UT phase array probes
- UT probes with the array of piezo-crystals
- Eddy Current probes

Typical Specification of Plates to be Tested:

- Width: 1000 mm – 6000 mm
- Length: from 1000 mm
- Thickness Range: 3 mm – 800 mm
- Material: carbon steel, stainless steel, aluminum, titanium, cooper and alloys

Ultrasonic Testing Standards:

Density of Ultrasonic examination, test procedures, acceptance criteria, data processing and representation adhere to multiple international and local standards such as: AMS-STD-2154, NADCAP, BSS7055 (Boeing), EN2004-2, AMS 2630, prEN4050, ASTM D857, EN2004-2, BAC 5439-3 (Boeing), ASTM B594, ASTM E2375 – 08 (2013), IGC 04.25.116, ABP 6-5232 (Airbus).

Testing and acceptance criteria can be customized based on client specific needs and new standards.

watch our product video.

SONAFLEX

Multipurpose Test Electronics Unit

"SonaFlex" is a unique intelligent ultrasonic testing system with flexible hardware architecture. The basic Platform can easily be configured to generate all possible types of ultrasonic waves for various general purpose of specific lab and industrial applications. The SonaFlex allows you to create relatively small NDT-systems or for performance of various lab tests.

Typical Areas of Application :

- Internal, surface and sub-surface defects detection
- Precise wall thickness measurement
- Material properties evaluation

Type of Applied Multichannel Ultrasonic or Eddy Current probes:

- Non-contact EMAT array probes
- UT phase array probes
- UT probes with multiple piezo-crystals
- Eddy-current probes

Basic Parameters of "SonaFlex"

- SONAFLEX can be adjusted in order to achieve precise technical goals and fulfil the customer's requirements
- Up to 3 frequencies within one unit ranging from 0.5 – 7.0 MHz
- Different types of sensors can be used to generate and receive acoustic signals over diverse parameters
- Up to 16 independent channels may be implemented
- Single – or multi-channel transducers based on EMAT or Piezo technology, singe element or phased array are applicable for the platform
- Multiple I/O's to external systems provided to allow easy integration

EXAMPLES OF NDT SYSTEMS BASED ON SONAFLEX

SONAFLEX-PL-M (aka "RIDER")
Set of Equipment for Mechanized Off-line Ultrasonic Examination of Plates, Strips, and Ingots

The RIDER is a Manual Trolley System with our sophisticated, PC-based, and flexible SONAFLEX platform. It examines quality of plates and slabs using ultrasonic waves (UT-test) and/or Eddy Current (EC-test) – according to all modern norms and standards.

SONAFLEX-FSW
Set of Equipment for Ultrasonic Examination of Friction Stir Welds

SONAFLEX–FSW is an unique intelligent set of innovative test electronics and probes for ultrasonic examination of Friction Stir Welds. SONAFLEX–FSW is designed to detect discontinuities and assure homogeneity of the material. It also determines the coordinates of defects (cracks, pores, and lack of penetration, inclusions, and other discontinuities, the dimensions of which exceed the maximum permissible values). Friction stir welding welds from 4 to 40 mm can be inspected by scanning, using acoustic units, equipped with modern ultrasonic transducers.

SONAFLEX-WTM
Set of Equipment for Mechanized Non-Contact Ultrasonic Examination of Motor Blocks

SONAFLEX – WTM is an ultrasonic thickness system designed to measure wall thickness on cylinders of combustion engines, even with different metal alloys, during serial production. The Main use of SONAFLEX – WTM is measuring the remaining wall thickness of cylinder sleeves, which are built in engine block for enhancement using Non-contact EMAT sensors to obtain precise measurement according to pre-set parameters.

SONAFLEX-WSP
Set of Equipment for Automatic Non-Contact Scarfing Quality Monitoring

SONAFLEX-WSP based on a state-of-the art EMAT NDT technology performs in-line inspecting of scarfing quality. Scanning and building a profile of the scarfed surface, SONAFLEX-WSP can detect over/ under scarfing, tool breakage or wear alarm operator when replacement of tool is required. Knowing the scarfing quality is required to maintain Weld line tolerances, which can effect product meeting requirements. In many pipe mills: the first point at which the operator can observe scarfing quality is after the cut-off. This may result in large amounts of scrap, or expensive rework of the pipes, all preventable by using SONAFLEX-WSP.

MORE EXAMPLES OF NDT SYSTEMS BASED ON SONAFLEX

SONAFLEX-WELD (aka "ROBOCON")

The SONAFLEX product range is completed with the new availability of field service applications. Our SONAFLEX-WELD (aka "ROBOCON") tool is an invaluable addition to the SONAFLEX series and accurately follows weld line via onboard sensors to provide totally wireless and tether-free weld inspection without frames or guides. The fastest scanner to deploy in the NDT field inspection industry, the "ROBOCON" is fully self contained with onboard ultrasonic electronics, microprocessor, couplant supply tank and drive system to inspect longitudinal or circumferential welds on pipelines or other vessel types.

Using Bluetooth and Wi-Fi, the inspection is performed with minimal operator involvement. Our "Gyro-Encoding system" accurately maintains position data and works with weld tracking sensors to assure maintained position on weld seam while scanning. Being battery operated, it boasts a 4 hour battery life in typical applications and has a fast change battery system to allow the inspection to proceed with minimal delays.
The "ROBOCON" is the answer to the NDT field service industry's needs of minimal setup for an inspection and rapid weld inspection at competitive rates to differentiate the inspection service lab from their competition. Our "ROBOCON" is also designed to accept further modular accessories to permit use with EC, MFL, Vision and other techniques as your needs mature. "ROBOCON" should be the only scanner you need!

SONAFLEX-LiquidCore

SONAFLEX-LiquidCore highlights one of the main advantages of EMAT technology – the absence of water coupling. This makes high-temperature material testing possible. Sonaflex-LiquidCore allows material temperatures up to 1200°C (test object) which is necessary as the SONAFLEX-LiquidCore is intended for examination of blooms coming directly off the continuous casting line.

The main task of the SONAFLEX-LiquidCore is determining the location along the length where the presence of a liquid core is in the cast bloom. Knowing the exact position (end) of the liquid core end is extremely important to choose the correct position of cutting the bloom to avoid liquid metal losses which lead to equipment damage, material scrap rates and reduced lifespan of production lines.

SONAFLEX-LiquidCore continuously monitors supplied blooms for the presence of liquid the core, and continuously updates to operator or mill control system where solidification has occurred along the length thus preventing any risk for personnel or equipment.

SONAFLEX-Mini

Wireless, Powerful, Compact, Portable – designed for multiple field applications! The SONAFLEX MINI is a portable, multifunctional, Ultrasonic flaw detection and Non-Contact Wall Thickness Measuring Gauge. The device consists of a low profile, battery operated, compact electronics module and tablet PC. The SONAFLEX-Mini is fully wireless using Bluetooth and Wi-Fi communication. The full system is portable, with a convenient and customized "Go-Bag" to quickly answer needs in any field inspection requirement. The tablet PC is equipped with our sophisticated UT and positioning software with a convenient and easy to use HMI interface.

Available UT-probes:
- EMAT probe for both wall thickness measurement and detection of flaws
- TOFD probes
- Conventional UT probes (angled beam probes, normal beam probes, RT-probes)
- 16-channels Phase Array probes

Allows for A, B, C and S scans using our gyro single encoder for building B-scans and C-scans

Main tasks:
- Precise Non-Contact wall-thickness measurement with up to 15mm lift-off!
- Weld Seam Inspection (UT TOFD, Phase Array, conventional angle beam and normal beam procedures)
- Countless other industrial applications

Test object temperature of up to + 650 °C.

SONAFLEX-GrainSize

Knowledge of grain size in steel alloys is an especially important metallurgical data point. Grain size can affect materials' strength, ductility, and performance under machining and forming, bending, welding, etc. While ASTM E112 has specific requirements for subjectively calculating grain sizes and patterns, Nordinkraft has a novel approach to this task which can allow monitoring of grain size across a product's batch run using our SonaFlex-GrainSize system.
The SonaFlex-GrainSize is designed for high volume, in-line or discrete testing of materials and components: flats, sheets, rails, coil, bars, plates etc. providing precise evaluation of the materials' grain size, ideally covering the full discrete production batch of material.

Testing is performed without direct contact with the material to be tested. No couplant is required.
The equipment is robust, accurate, simple, reliable, can be easily integrated into a production line, without limitations to apply the device in any industrial or field environment.

Typical Range of grains measured are from 20µ to 350 µ. Testing Speeds – up to 20 m/s make this solution capable of keeping up with the most modern high-volume productions lines.

NKD-019 “ULTRASONIC”

Portable EMAT Thickness Gauge

A convenient, compact, sophisticated and innovative field instrument, the EMAT Wall Thickness gauge NKD – 019E «UltraSonic» can be used to measure the thickness of components, pipes, vessels and other metal objects – easily and precisely.

The gauge enables measurements to be taken at a vast range of surface temperatures, going from -20 to ±720 degrees Celsius. As a rule, a plastic coatings, paint or limescale on the surface do not affect the results of measurements.

The unique properties of this gauge are caused by the clever use of the principle of electromagnetic-acoustic transduction (EMAT), allowing ultrasonic waves to be generated and received in metal objects without direct contact or the use of couplant. In fact, the gap between the material being tested and the electromagnetic acoustic transducer in the gauge can be as high as 4mm.

Typical Areas of Application :

- Metalwork Industry
- Power and Atomic Energy Industry
- Aerospace Industry
- Construction of transport and machinery
- Ship building and reparatory

Gauge Functions:

- Non-contact Thickness measurement of aluminium, ferromagnetic and stainless steel products. Thickness can be taken without a couplant and even if the surface of the test object is rough, dirty or covered with scale
- Gauging corrosion, erosion, and wear and tear
- Characterization of mechanical properties
- Detection flaws of 2 mm or lager

Key advantages of NKD-019 «UltraSonic»

- Intuitive, easy-to-use interface
- Able to measure objects with an extremely high surface temperature (up to 720 °C)
- Able to Transmit and receive ultrasound waves without the use of a coolant and at a distance of up to 4 mm
- Even units with insulation covers, corrosion or a rough surface can be tested non-destructively
- Precision to ± 0.05 mm
- Wave speed automatically optimized to test object temperature
- Measurements can be recorded for future analysis

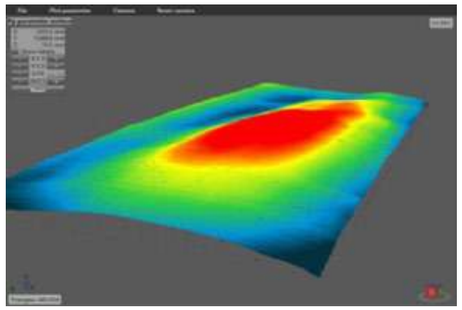
Technical Characteristics of NKD-019 “UltraSonic”:

- Weight of the deice (with batteries): 1430 g
- Weight of transducer: 178 g
- Overall dimensions (LxWxH): 274 x 168 x 36 mm
- Power Supply: batteries AA type, 8 pieces
- Operation time at brightness of 50%: 12 hours
- Temperature range whilst in operation: -10 °C up to + 50 °C
- Temperature range of the test object: -20 °C up to + 720 °C
- Measurement units: mm, in
- Measurement range: 1.5 – 100mm
- Precision: ± 0.05 mm
- Resolution with the single measurement: 0.01 mm
- Distance to the test object: up to 4 mm
- Transmission rate: 4MHz
- Type of ultrasonic wave: transversal
- Gain: 80dB
- Dead band at 4 MHz: max 4 microseconds
- Pulse repetition frequency: at least 150 Hz
- Languages Available: English, German, Russian

watch our product video.

GEOMETRIX-PL

Automatic Laser Geometry Measurement System for Plates, Strips and Slabs



Equipment for Non-contact, Automated, Geometric Measurement of the Length, Fatness, Width, Thickness and Camber "GEOMETRIX-PL", is designed to work in the technological flow of production of plates, sheets or slabs of steel, aluminum, brass, copper, etc.
The inspection of the material is carried out in a noncontact manner, in dynamic mode, directly on the process line on the existing mill roll line. This is made possible by the use of a modern measuring system, which includes precision mechanics, sets of laser 2-D profilometers, a calibration station, and a computer management system that implements extremely efficient algorithms for processing information flows.

System Essentials

- Measurement mode is automatic
- Determining the maximum deviation from flatness of any type (concave, bulge, undulation, squareness), defined at a given meter of length or width of the sheet: ≤ ±1 mm/m
- Determining the width of the product in the given part: ≤ ±1 mm
- Definition of Camber, defined on one run meter of the edge: ≤ ±1 mm/m
- Definition of Plate Thickness
- Measuring the speed-length of the roll: laser contactless
- Work mode: continuous, designed for three shifts

NKE-PCS-5000

Plate Surface Cleaning System

Our NKE-PCS-5000 Plate Surface Cleaning System is intended for high speed, in-line removal of dirt, dust, scale, and other foreign particles from the top plate surface. Fully automated surface cleaning is performed at speeds of up to 2 m/s, keeping up with the most advanced production lines.
Reliable cleaning of plate surfaces are achieved applying our patented method based on uniform and consistent application of cutting edge methods including:

- Specialized brushes, designed to break up loose scale, removes blisters and fragments from the plate surface.
- Suction Nozzles for "fine" cleaning of the plate surface and removal of brush removed residues.

NKE-PCS-5000 is easily integrated into the plate production line. Installation and commissioning of the system is quick and easy, while performed under the supervision of our specialists, taking less than one week. Interruptions to the production line and processes is minimal due to the well thought out design.

Key values:

- Cleaning in fully automatic mode, at working speed of roller conveyor
- Wide range of plate dimensions can use same system
- Short lead times and rapid integration in the production line
- Automated operation and low maintenance, with minimal consumables costs
- Protecting costly Ultrasonic sensors made easy
- NKE-PCS-5000 is an excellent addition to any ultrasonic Plate Inspection system

watch our product video.

CONTACTS

NORDINKRAFT AG
Schauinslandstr. 16
75196 Remchingen
Germany

Tel.: + 49 72 32 – 31 33 5-0
Fax: + 49 72 32 – 31 33 5-199

E-mail: info@nordinkraft.de

YOUR LOCAL REPRESENTATIVE

Russell Fraser Sales Pty Ltd
Unit 10 / 1-11 Burns Road, Heathcote NSW 2233 Australia
Ph: +61 2 9545 4433 Email: rfs@rfsales.com.au Website: rfsales.com.au

You can find the full list of our partners
on our ***website.***

YOUR QUALITY GUARD.

NORDINKRAFT AG
Schauinslandstr. 16
75196 Remchingen, Germany

Tel.: + 49 72 32 - 31 33 5-0
Fax: + 49 72 32 - 31 33 5-199
E-mail: info@nordinkraft.de