DR SYSTEMS

# SCANRAY®
# Portable wireless digital radiography system

# Benefits of using digital radiography

## Cost-effectiveness and quick payback

Removing the need to use consumables and the X-ray film processor significantly reduces the cost of radiographic non-destructive testing. A single-time investment will allow great savings in the long run.

A flat-panel detector is by far more sensitive to X-ray radiation compared to films, which saves the life of the X-ray generator by reducing the required exposure time.

The high speed of obtaining results relative to other methods of radiographic testing allows a 2-10 times increase in labor productivity.

SCANRAY® series has a short payback period even with the small amounts of NDT.

## High level of information protection

Processing, storage and archiving of the received images is carried out in a secure digital DICONDE format. The ability to quickly transfer images over the Internet allows immediate analysis by specialists located in a remote office.

The exact date, time and GPS coordinates can be defined automatically and stored as a part of the data file to prevent confusion or fraud.

## Taking care of the personnel

Reducing the X-ray or Gamma source exposure time minimizes the radiation dose absorbed by the staff.

# Advantages of using SCANRAY® series

– A range of detectors with different sizes of the active area and pixel pitch created on the basis of a variety of matrix and scintillator technologies allows solving a wide spectrum of tasks in the field of industrial non-destructive testing;

– The high sensitivity of the detector and the wide dynamic range allow NDT even if the control object is in operation (product presence inside the pipelines, installed outer insulation layer, etc.);

– The detector can be powered by both AC and replaceable batteries;

– The included extra set of batteries allows performing NDT without stops for recharging;

– The system fully meets ISO/ASTM/ASME standards requirements and provides images of the highest quality;

– System components are protected from the influence of external factors such as direct ingress of moisture and dust, and have high mechanical strength during installation and transportation;

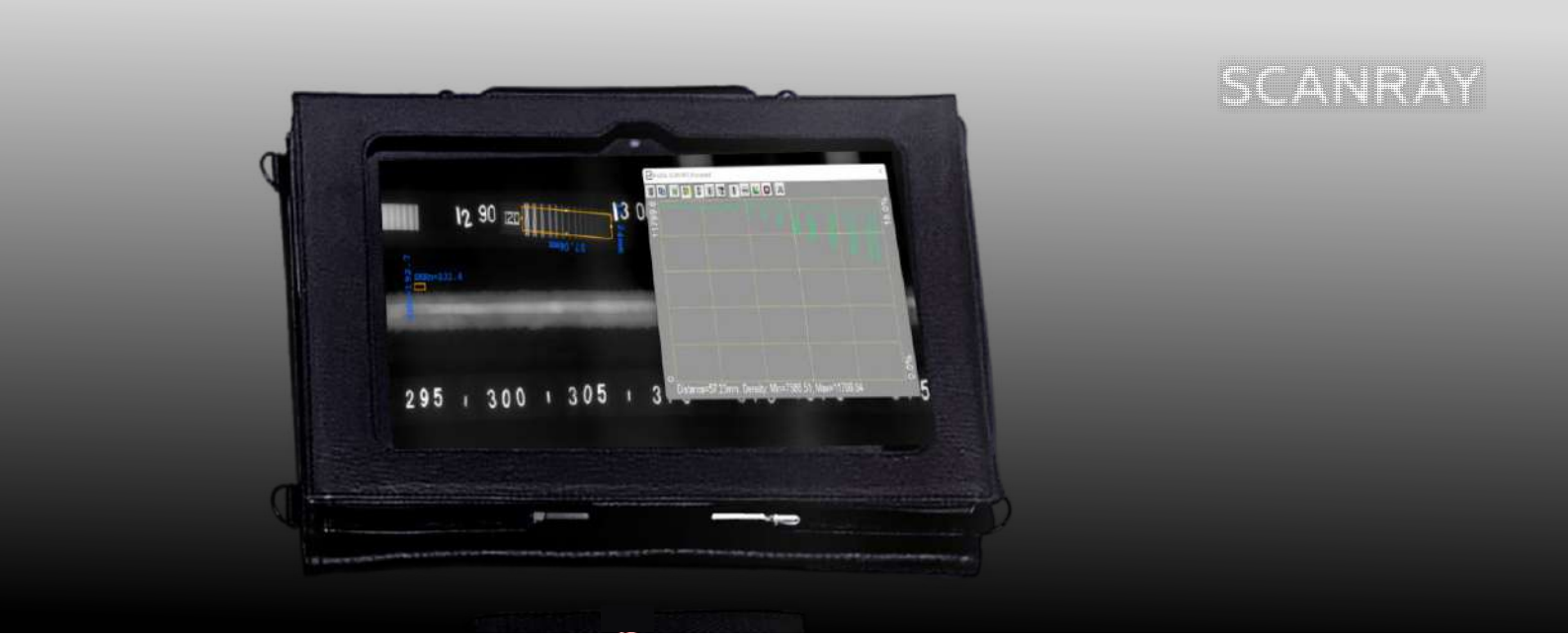
– A special protective cover dampens possible impacts when placing the detecting unit on the NDT object;

– Built-in X-ray sensor allows taking pictures automatically after the start of the exposure;

– Internal memory saves images when the connection to the operator's station (PC, tablet) is broken;

– The flat-panel detector can work with constant-potential and pulsed X-ray generators, as well as Gamma sources;

– Additional accessories can be used for quick and convenient positioning of the detector on the object.




# Digital radiography software DR-SOFT®

– SNR/$SNR_n$ automatic evaluation, $SR_b$ determination by duplex IQI according to ISO 17636-2;

– Construction of a density profile showing the levels of change in grayscale;

– Measuring the linear dimensions and area of defects, the distance between any points on the image;

– Combining the frames accumulated during the exposure to form a better-quality image;

– A built-in algorithm for stitching several images into one for convenience of viewing;

– Edit-protected DCM format allows storing up to 100 images in one file with 16-bit data representation (65536 grayscale);

– Module for digital marking of images;

– Image processing to improve the convenience of interpretation: changing brightness, contrast, gamma correlation either manually or using a set of readymade filters;

– Markers drawing (signs, text, arrows, etc.) and geometric image transformation (scaling, rotation, mirroring, fragment cutting, etc.);

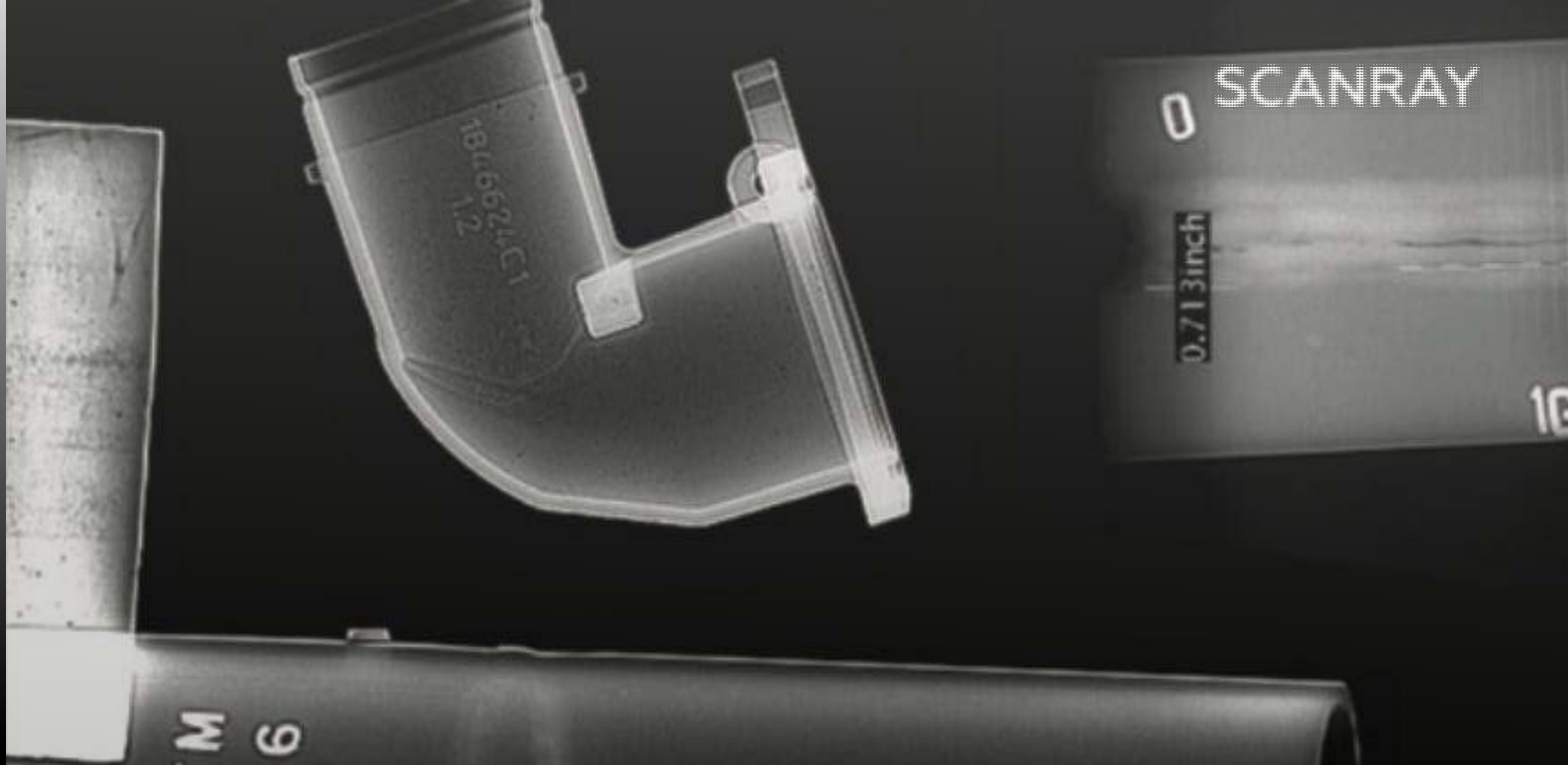
– Archive data storing in a secured DICONDE format with the possibility to export images to other formats (BMP, JPEG, TIFF);

– An intuitive interface will not cause difficulties in decoding and processing images, even for non-experienced specialists;

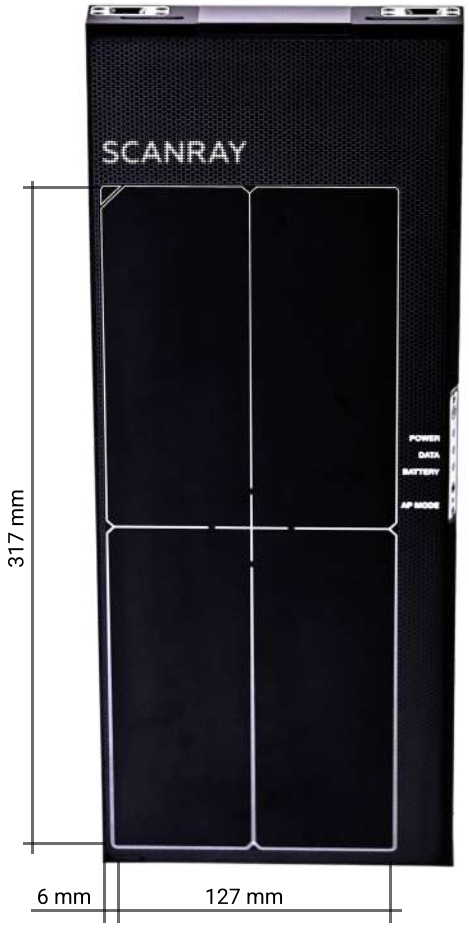
– The ability to import external regulatory databases to work with defects and generate reports filled out based on image processing according to a pre-created template.

# Technical specifications

| Portable digital ragiography systems | SCANRAY® 1230 | SCANRAY® 1723 | SCANRAY® 2329 | SCANRAY® 2532 | SCANRAY® 3643 | SCANRAY® 3643 PRO |
|---|---|---|---|---|---|---|
| Technology | a-Si TFT | IGZO TFT | IGZO TFT | a-Si TFT | a-Si TFT | a-Si TFT |
| Scintillator | Gadox | Gadox | Gadox | Gadox | Gadox | Gadox |
| Pixel pitch, μm | 124 | 75 | 75 | 124 | 140 | 99 |
| Pixel matrix, pixels | 1024 × 2560 | 2304 × 3072 | 3072 × 3840 | 2048 × 2560 | 2560 × 3072 | 3548 × 4316 |
| Image size, mm | 127 × 317 | 173 × 230 | 230 × 288 | 254 × 317 | 358 × 430 | 351 × 427 |
| Grayscale, bits | 16 | 16 | 16 | 16 | 16 | 16 |
| X-ray voltage range, kVp | 40 - 450 | 40 - 450 | 40 - 450 | 40 - 450 | 40 - 450 | 40 - 450 |
| Maximum exposure time, s | 180 | 180 | 180 | 180 | 180 | 180 |
| X-ray sensor | Automatic exposure detection | Automatic exposure detection | Automatic exposure detection | Automatic exposure detection | Automatic exposure detection | Automatic exposure detection |
| Data interface | IEEE 802.11n/ac | IEEE 802.11n/ac | IEEE 802.11n/ac | IEEE 802.11n/ac | IEEE 802.11n/ac | IEEE 802.11n/ac |
| Image transmission time, s | 3 | 3 | 3 | 3 | 3 | 3 |
| Dimensions, mm | 160 × 400 × 25 | 208 × 257 × 28 | 322 × 355 × 17 | 322 × 355 × 17 | 400 × 470 × 17 | 384 × 460 × 15 |
| Weight, kg | 3.2 | 2.4 | 3.4 | 3.4 | 5.4 | 4.2 |
| Operating environment,℃ | -20 to +50 | -20 to +50 | -20 to +50 | -20 to +50 | -20 to +50 | -20 to +50 |
| Battery life, h | 7 | 7 | 7 | 7 | 7 | 7 |
| Dust and water resistance | IP67 | IP67 | IP67 | IP67 | IP67 | IP67 |




# SCANRAY® 1230




## A unique combination of technical parameters and capabilities of the system

The optimal size of the active area: 127 × 317 mm with a minimum distance from the edge of the detector housing along the long side of 6 mm.

Can work with X-ray generators of constant potential of up to 450 kV and with all models of pulsed X-ray generators as well as Se-75 and Ir-192.

The pixel size of 124 μm, the grayscale of 16 bits and the minimal noise level of the detector make it possible to obtain a digital radiographic image of the highest quality.

The detector's low weight of 3.2 kg and the use of wireless Wi-Fi communication technologies provide an unsurpassed level of mobility and convenience in real working conditions.

# Contents of delivery of SCANRAY® series


**Portable flat-panel detector**
The detector's design allows it to be used in the harshest conditions without a cable connection, 2 pairs of replaceable batteries provide at least 8 hours of continuous operation.

**Industrial tablet with pre-installed software DR-SOFT®**
An industrial tablet supplements the complete portability of the system for the site operation.

**Laptop with pre-installed software DR-SOFT®**
A laptop for convenient viewing and analyzing the images in stationary conditions.

**Additional Wi-Fi module**
Serves as an intermediate link between the operator's station and the detector when direct wireless communication is hindered.

**Universal protective cover**
Dampens possible mechanical impacts when placing the detecting unit on the control object. The cover has a built-in mounting system for additional equipment, i.e., magnetic holders or lashing straps included in the standard package of delivery.

**Transportation case**
A shockproof case for transporting the entire system.

# Additional accessories for SCANRAY® 1230

### Magnetic wheels

Used for positioning the detector in the protective cover on pipes and flat surfaces of objects made of ferromagnetic steel. An additional magnet performs the function of an anchor and prevents the device from rolling off the inclined surface.

Provide additional convenience for control welded pipe joints of large and medium diameters, as well as tanks due to easy positioning: magnetic wheels make it possible to smoothly move the detector without removing it from the pipe.

Subsequently, one can get the entire weld in one image using the image stitching function in DR-SOFT®.

### Magnetic holders

Used for mounting a flat-panel detector in a protective cover on objects made of magnetic metals. They allow easy changing of the detector's position on the control object by switching off magnetic systems.

### Belt mount

Intended for positioning the flat-panel detector in the protective cover on objects made of non-magnetic materials. The detector is attached to the control object by means of slings with a quick-release mechanism. Allows monitoring of the pipes without removing and damaging the insulation.

### Duplex wire Type IQI according to ISO 19232-5

Designed to determine the unsharpness of the image during NDT inspection.

### Heating element with battery

Serves to ensure operation of the detector at low temperatures as low as -40°C. The heating element is attached to the protective cover and connected to the detector with a cable. The battery pack built into the element provides power to the heating mat and additional power to the detector.

# Additional accessories for SCANRAY® 1230

**Tripod**
Used for installing the detector next to the NDT object in field and stationary conditions. The positioning height of the detector is up to 3 m.

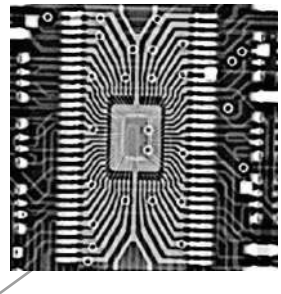
**Tripod manipulator**
Recommended for use in factory laboratories. Its application makes it possible to position not only a flat panel detector but also an X-ray source relative to the controlled object. Allows automating the control of the same product types.

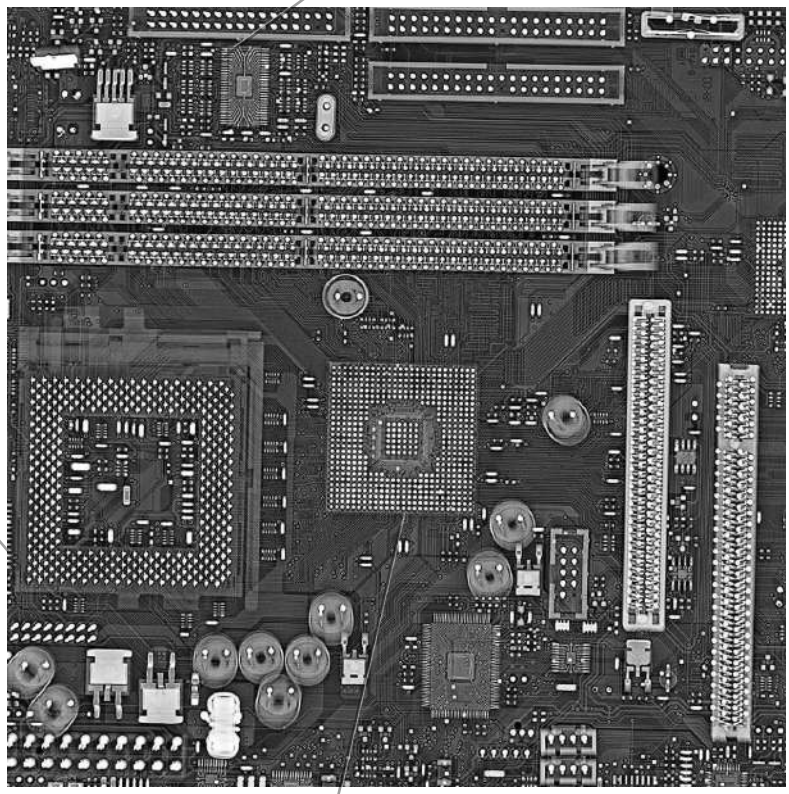
The standard contents of delivery already come with all the necessary accessories for easy and convenient non-destructive testing of various control objects. Additional accessories for special applications are available on a separate order.

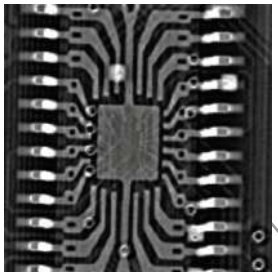
# Images taken with SCANRAY® series

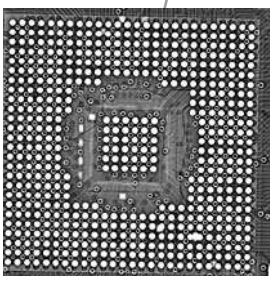
**Pixel pitch 75 microns**

These digital radiography systems are focused on the inspection of circuit boards and electronics as well as critical components, the quality of which is subject to increased requirements, for example, in the aerospace or military industry.

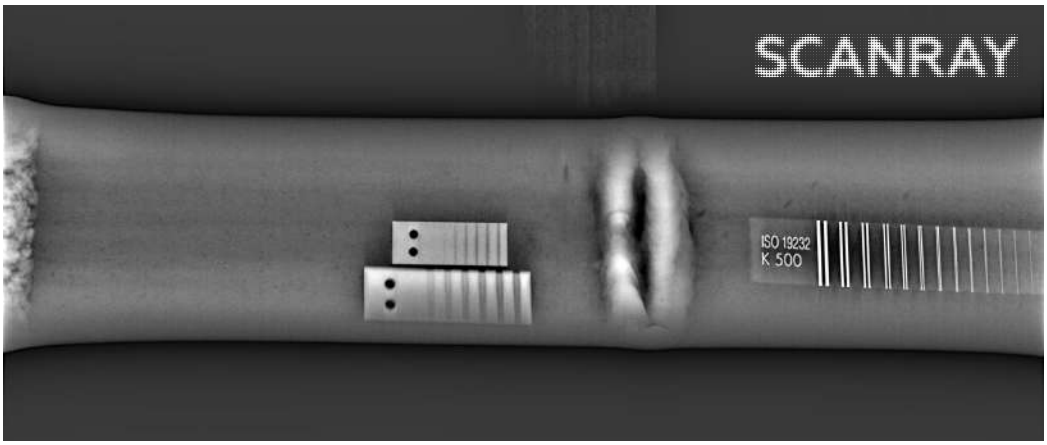


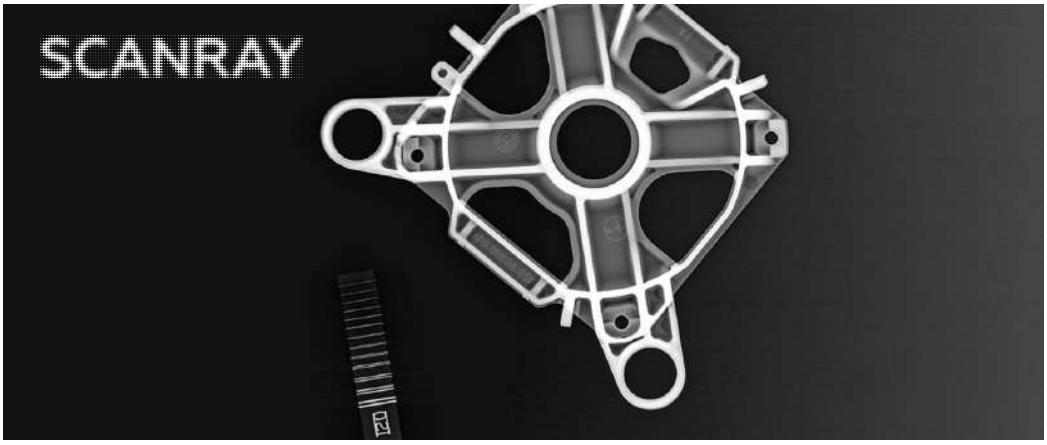


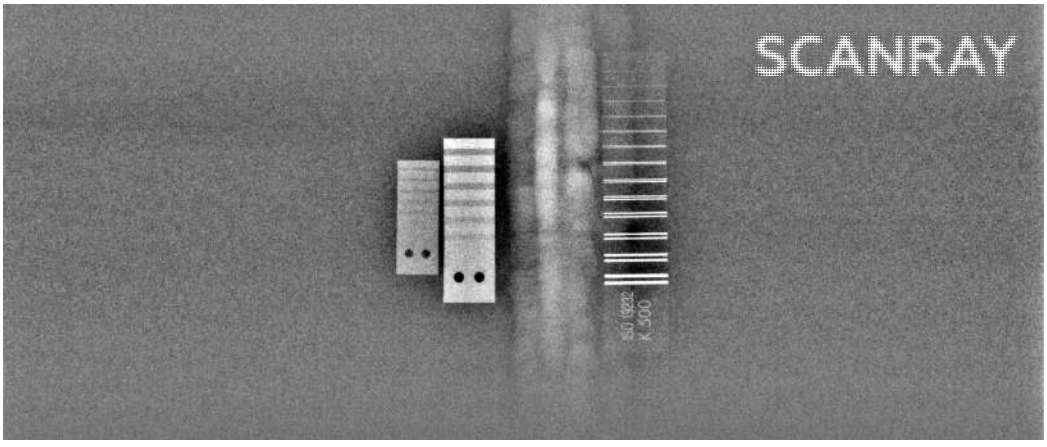


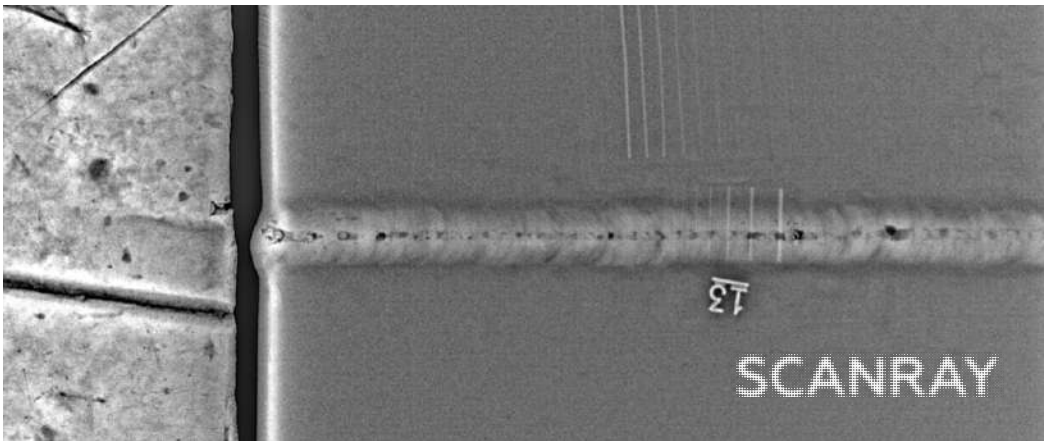


Pixel pitch 124 microns

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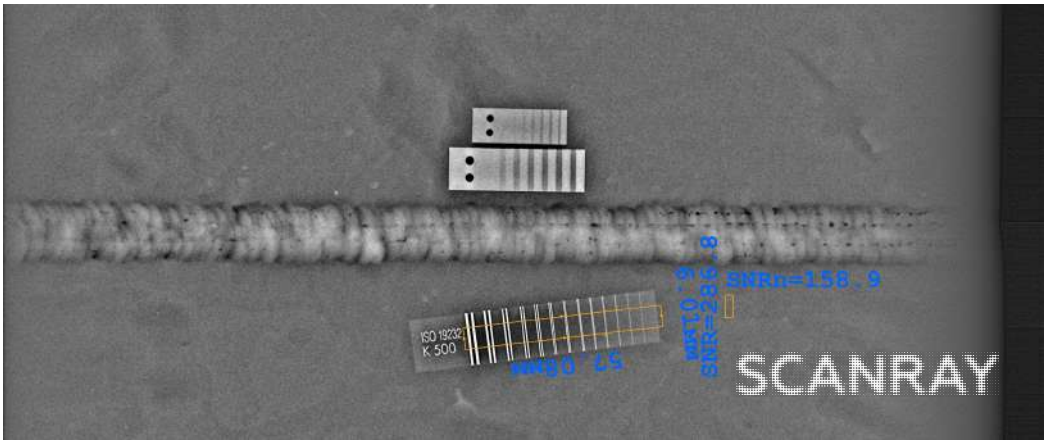
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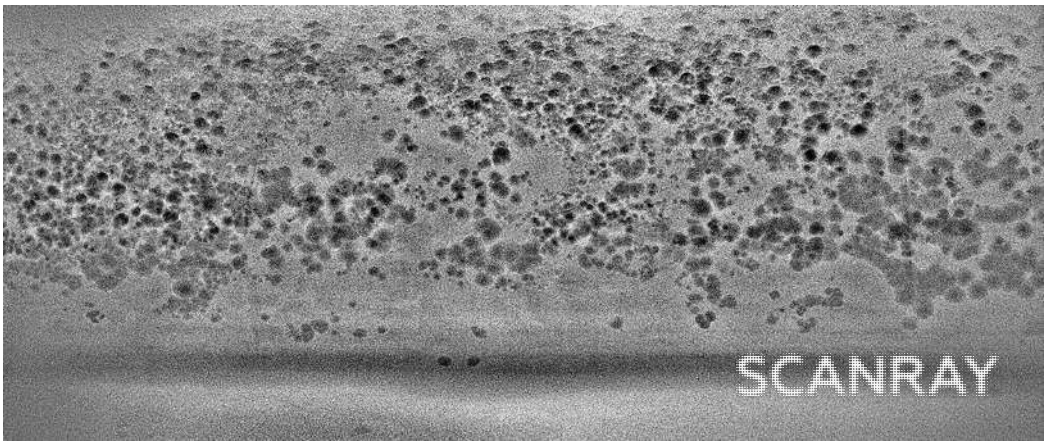
SCANRAY

## Our service

– Equipment warranty;
– Prompt support on emerging issues;
– Remote webinars;
– Free training at our centers;
– Possibility of field training, equipment commissioning and maintenance;
– Help in developing control methodology;
– Marketing and technical support.

DR SYSTEMS

**DR SYSTEMS**
INNOVATIVE TECHNOLOGIES IN
NON-DESTRUCTIVE TESTING

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