



IMW INSTITUTE

January, 2025.

ABOUT US

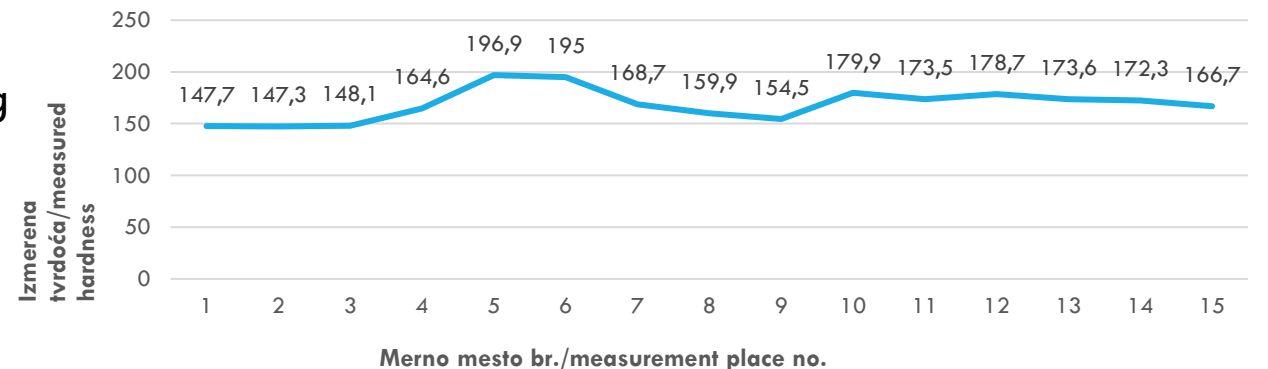
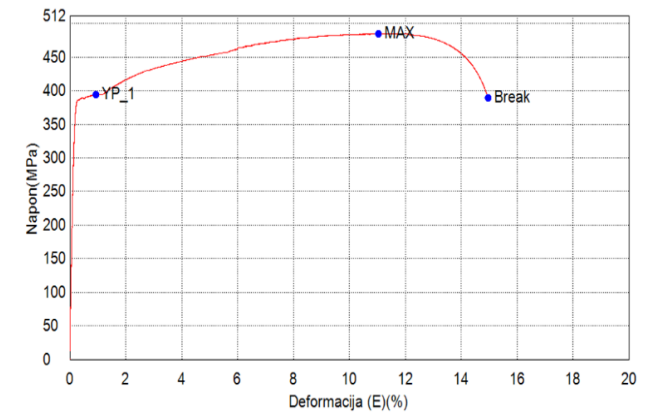
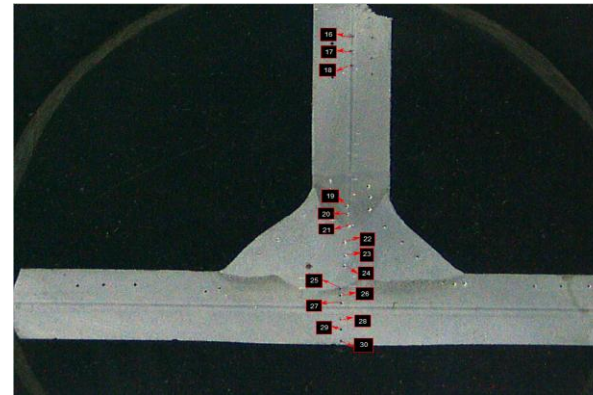
- IMW Institute was founded in April 2019 as a limited liability company for quality control, scientific research, and development work. The primary activity of the Institute is research and development in the field of technical and technological sciences. The Institute provides services for testing welded joints, metallic materials, water, various industrial products and raw materials, and the content of metals in soil.



ABOUT US



- Highly qualified employees New,
- state-of-the-art testing equipment
- Professional services
- Quick response to client requests Location of the Institute (Central Šumadija) / MIND PARK Lužnice
- Quality of testing reports Creation of statements with reports (comments, suggestions for product improvement, explanations, expert opinions...)
- Capability to create testing studies Field testing
- Dedication, precision, quality
- Accredited institute with testing laboratories according to SRPS ISO/IEC 17025



ABOUT US — PROFESSIONAL STAFF



- IMW Institute employs highly educated and professional staff:
 - Welding Engineers IWE/EWE (with extensive experience in aluminum and steel welding)
 - Metallurgists with extensive experience (expertise in metallurgy, metallography, microstructure analysis, and product improvement)
 - Master Chemists
 - Master Technology Engineers
 - Master Mechanical Engineers
 - NDT Personnel Level 3 and Level 2 (with extensive experience in VT, PT, MT, UT , and digital RT testing)



LABORATORIES

Mechanical-Metallographic
Laboratory



NDT Laboratory



Laboratory for Chemical-Technological Testing



SERVICES



Mechanical-Metallographic Laboratory

- Tensile characteristics of materials
- Bending test
- Hardness testing of metallic materials and rubber (Brinell, Vickers, Shore)
- Impact toughness testing using Charpy pendulum
- Microscopic testing (up to 2000x)
- Macroscopic testing (up to 50x)

NDT laboratory

- Visual inspection
- Liquid penetrant testing
- Magnetic particle testing
- Ultrasonic testing (PAUT, TOFD, FMC and TFM)
- Digital radiography testing

Laboratory for Chemical- Technological Testing

- Testing of paints and varnishes
- Physical-chemical testing of water, various industrial products, and raw materials
- Physical-chemical testing of steel and metal alloys (Al, Cu, etc.)

MECHANICAL-METALLOGRAPHIC LABORATORY



The Mechanical-Metallographic Laboratory is equipped with state-of-the-art equipment that allows for a wide range of tests, including both mechanical and microstructural characteristics of metallic materials, welded joints, rubber, plastic, and bonded joints.



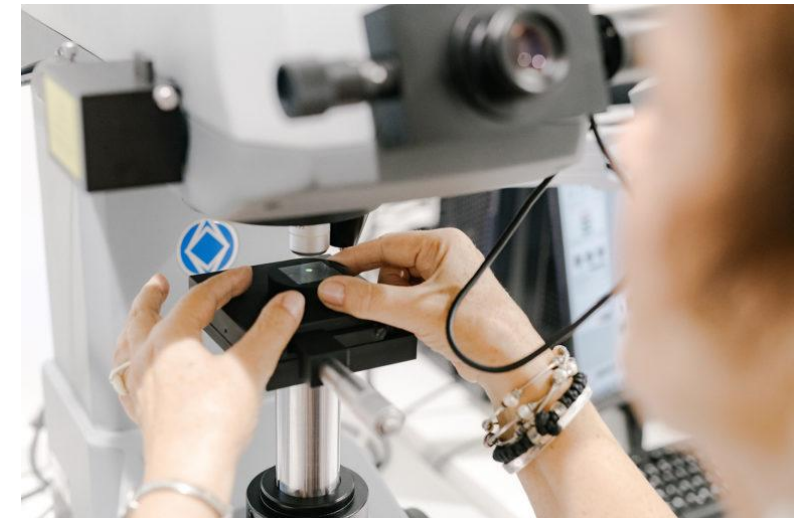
Tensile, bending, and compression testing are conducted using the state-of-the-art Shimadzu AG-X testing machine.

- Flat samples (0mm-25mm), Ø samples (4mm – 23mm),
- Special tool for wire testing Capability to test screws
- Testing of crimped cables
- Testing by tension/shear of glued joints
- Peel test Testing by bending welded joints on pins from 10mm to 90mm
- Possibility to design and manufacture special tools based on customer requirements
- Automatic creation of tension diagrams with large number of monitored parameters (R_m, R_{eH}, R_{eL}, R_{p0.2}...)

MECHANICAL-METALLOGRAPHIC LABORATORY



- Testing the hardness of metals and welded joints with Brinell method from 1/10 to 10/3000 (dimensions of the indenter/force in kgf) and Vickers from HV0,01 do HV30
- Precise movement of samples along the X and Y axes (with a micrometer scale)
- Capability to test the hardness of $\varnothing$ samples
- Automated creation of hardness diagrams



The laboratory is equipped with 4 independent devices for determining micro and macro hardness using the Brinell and Vickers methods.

MECHANICAL-METALLOGRAPHIC LABORATORY



Metallographic testing – Leica DM4 microscope with magnification up to 2000x

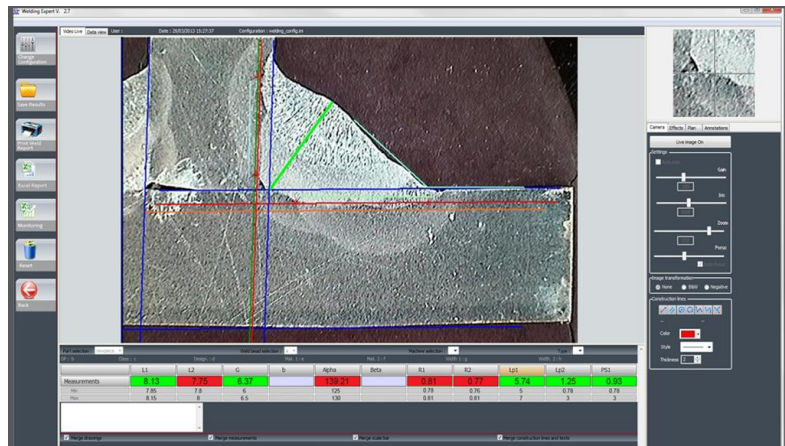
- Specialized Metallurgical Microscope Magnification up to 2000x
 - Polarized light for grain size examination
 - DIC contrast for determining the depth of imperfections
 - Analysis of metallic and non-metallic inclusions...
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- In addition to the results required by the standard, metallurgists attach a professional opinion with recommendations for improvement along with the report.
 - Analysis of heat treatment and suggestions for improvement

MECHANICAL-METALLOGRAPHIC LABORATORY



Macrostructural analysis

- Magnification up to 50x
- Software-based determination of dimensional characteristics of welded joints
- High-quality macro photography
- Direct display of dimensional deviations from standard requirements
- In the case of irregularities, metallurgists and IWE (International Welding Engineers) provide suggestions for improving the quality of the welded joint based on the obtained results.



Macrostructural testing with magnification up to 50x

MECHANICAL-METALLOGRAPHIC LABORATORY

- Impact toughness testing up to 300J
- Testing at room and reduced temperatures down to -60°C
- The laboratory prepares samples using special mill for V notches.



Impact toughness testing using the Charpy method

LABORATORY FOR CHEMICAL-TECHNOLOGICAL TESTING



The Laboratory for Chemical-Technological Testing is equipped with modern equipment for determining the chemical composition of metals using the OES method, as well as equipment for testing paints and coatings..



- ****State-of-the-art device for quantitative chemical analysis of metal samples****
- ****Special attachment for testing small samples (wires, foils, etc.)****
- ****Capability to determine metal content with accuracy to five decimal places.****

Chemical composition testing of metals using the OES method on the highest quality device in the world – SpectroLab spectrometer.



LABORATORY FOR CHEMICAL-TECHNOLOGICAL TESTING



- Determination of dynamic viscosity
- Quality control of liquid samples such as solvents and semi-solid substances
- Determination of coating thickness and protective coatingsGloss measurement



LABORATORY FOR CHEMICAL-TECHNOLOGICAL TESTING

The Laboratory for Chemical-Technological Testing is specialized in physical-chemical testing of water, various industrial products and raw materials, soil, as well as chemical testing of steel and metal alloys (Al, Cu, etc.).



*Inductively Coupled Plasma Optical Emission Spectrometer
(ICP-OES)*

- Determination of metal, metalloid, and some non-metal content in solutions
- This method has wide applicability due to the ability to convert solid samples into solutions through digestion (slag, metal dust, soil, etc.).

LABORATORY FOR CHEMICAL-TECHNOLOGICAL TESTING



Turbidimeter – a device for determining turbidity.

- The laboratory optical turbidimeter is used for determining the turbidity of various samples, primarily water samples.**
- Measurement range: 0-1000 FNU/NTU.**

LABORATORY FOR CHEMICAL-TECHNOLOGICAL TESTING



Jar tester – simulating processes at a water treatment plant.

- The Lovibond ET 740 jar tester is a device used to simulate processes at a water treatment plant.
- The destabilization of colloiddally dispersed particles causing turbidity is achieved by adding a coagulant during the coagulation phase, while their agglomeration is achieved by adding a flocculant during the flocculation phase.

TECHNICAL-TECHNOLOGICAL PREPARATION SECTOR



The Technical-Technological Preparation Sector encompasses the complete technical and technological preparation of samples for further testing, from creating orders and CAD preparation to the fabrication of test specimens and precise sample preparation.



Semi-automated devices for precise grinding and polishing of metals



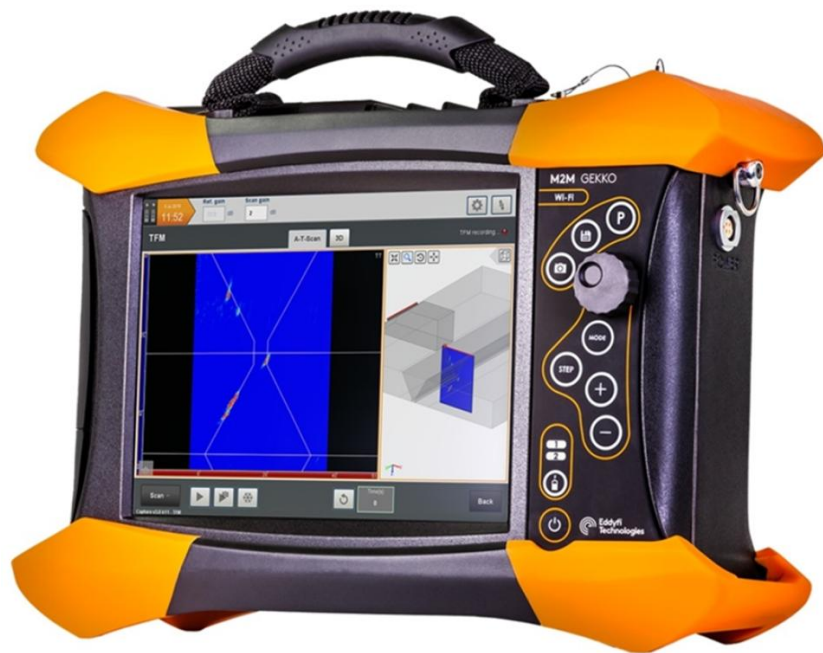
Modern devices for sample encapsulation



Device for electrolytic polishing and etching of materials

NDT LABORATORY

Ultrasonic testing of metals and welded joints is conducted using new generation of M2M Gekko, the state-of-the-art phased array flaw detector. offering embedded real-time TFM in addition to beam-forming phased array and conventional UT technology through a modern intuitive software interface.



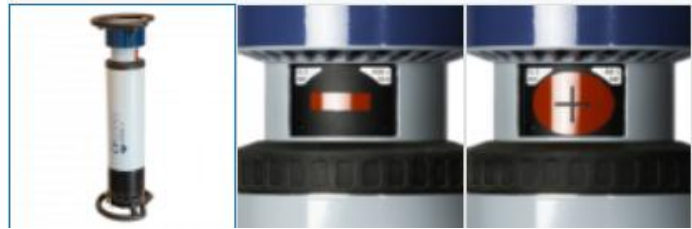
GEKKO M2M

- Conventional
- PAUT (Phased Array Method)
- TOFD (Time of Flight Diffraction)
- FMC (Full Matrix Capture)
- TFM (Total Focusing Method)

Gekko M2M Phased Array Flaw Detector

Gekko® is a field-proven flaw detector offering PAUT, UT, TOFD and TFM through the streamlined user interface Capture™. Released in 32:128, 64:64 or 64:128 channel configurations, M2M Gekko combines high-resolution and speed while reducing inspectors' training time.

DIGITAL RADIOGRAPHY



- Generator CP300D (30-300KV, 1-10mA)
- Detector (154 microns, detector dimensions: 464x388mm)
- Sherlock NDT Software
- Duplex IQI D13
- Wire penetrameters for aluminum (1Al, 6Al, 10Al, and 13Al)
- Wire penetrameters for steel (1Fe, 6Fe, 10Fe, 13Fe)

DIGITAL RADIOGRAPHY

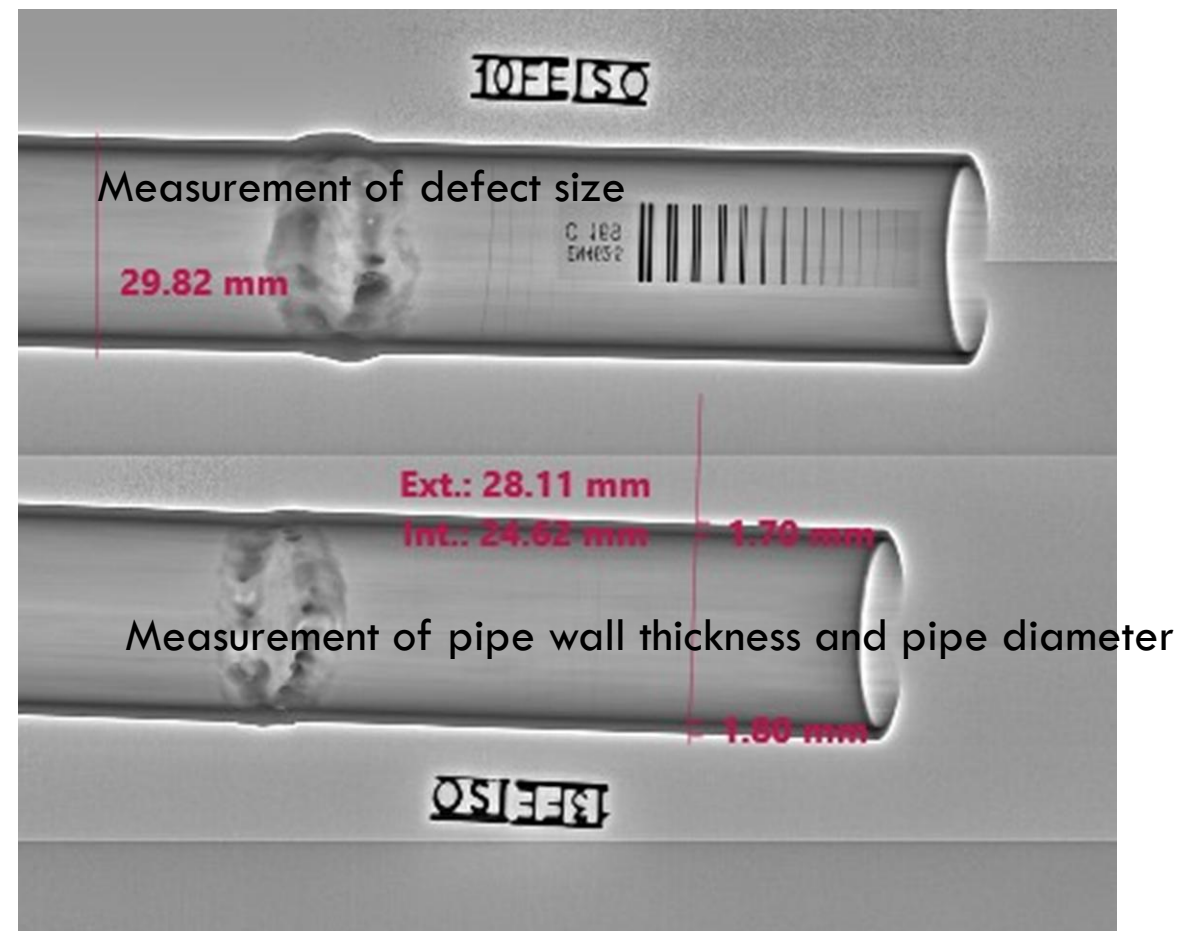
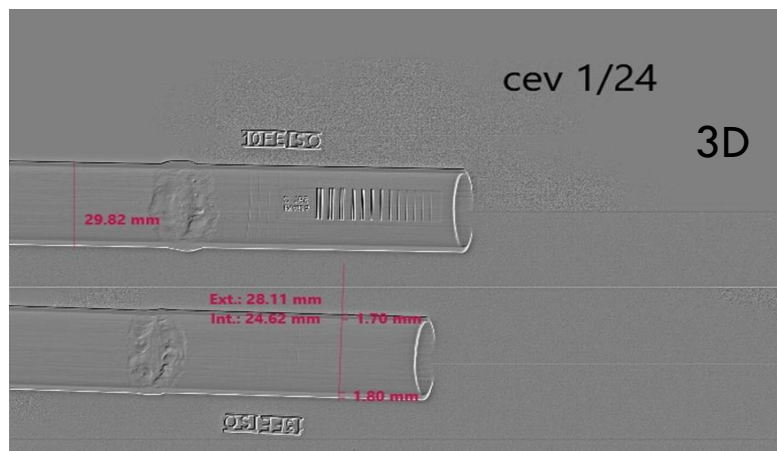
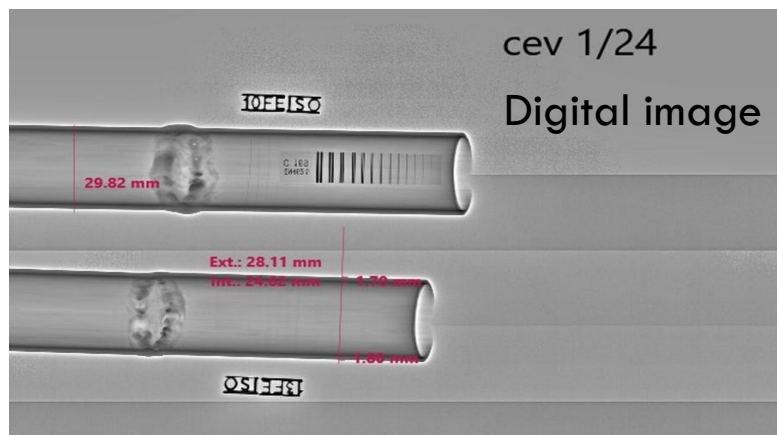
What is digital radiography

- Digital industrial radiography is a technique used in industry for the inspection and quality control of various materials, such as metals, plastics, or composites. This technique employs X-rays or gamma rays to create images within objects or materials, enabling the detection of defects or irregularities that are not visible to the naked eye.
- The main difference between digital industrial radiography and traditional methods (such as film) lies in how the images are generated, captured, and analyzed. Instead of using films to capture images, digital industrial radiography utilizes digital detectors or panels that convert X-rays or gamma rays into digital signals. These digital data can then be displayed on a computer monitor or other digital device, allowing for quicker analysis and sharing

Where is digital radiography used?

- Metallurgy and metal production: In the metal industry, digital industrial radiography is used for inspecting welded joints, detecting internal defects in metal components such as pipes, pipelines, tanks, and other machine parts.
- Oil and gas industry: In these industries, digital industrial radiography is used for inspecting pipelines, tanks, valves, and other components of oil and gas processing and transportation systems. It is also used for detecting corrosion, defects, and flaws in structural components.
- Aviation: In the aviation industry, digital industrial radiography is used for inspecting composite materials, welded joints, and other aircraft components to detect cracks, irregularities, or other defects that could affect flight safety.
- Automotive industry: In automobile manufacturing, digital industrial radiography is used for inspecting welded joints, detecting cracks or irregularities in key vehicle components such as engines, brakes, and suspension.
- Engineering and construction: In these two sectors, digital industrial radiography is used for inspecting construction materials, welded joints, and other structural elements to detect defects, cracks, or weak points.
- These are just some of the primary areas where digital industrial radiography is used, but its range of applications can be much broader depending on specific requirements and the needs of the industrial process.

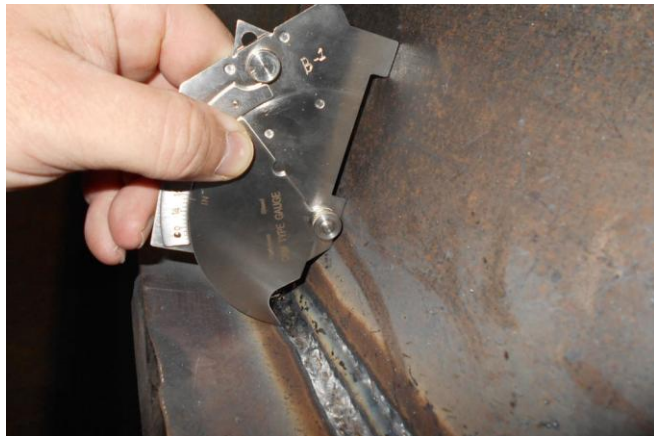
DIGITAL RADIOGRAPHY



NDT LABORATORY

Along with the most advanced equipment for ultrasonic testing and digital radiography, visual testing (VT), penetrant testing (PT), and magnetic particle testing (MT) are carried out within the NDT laboratory as well as on-site.

- Visual inspection of welded joints (VT)
- Liquid penetrant testing of welded joints (PT)
- Magnetic particle testing of welded joints (MT)



CERTIFICATE

IMW Institute DDO provides testing services in 3 accredited laboratories (Mechanical-Metallographic, Chemical, Chemical-Technological Testing Laboratory, Non-Destructive Testing Laboratory) according to SRPS ISO/IEC 17025 – Accreditation Certificate No. 01-498.

In addition to accredited testing services, we offer the possibility of testing using non-accredited methods and developing methods tailored to your needs.

For methods under accreditation, please consult the valid scope of accreditation. The scope of testing in the DOCUMENTS section can be found on the website
www.imw.rs





Inspired by quality

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