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ASNT Corporate Partner
The American Society for Nondestructive Testing

Asset Integrity ONESOURCE

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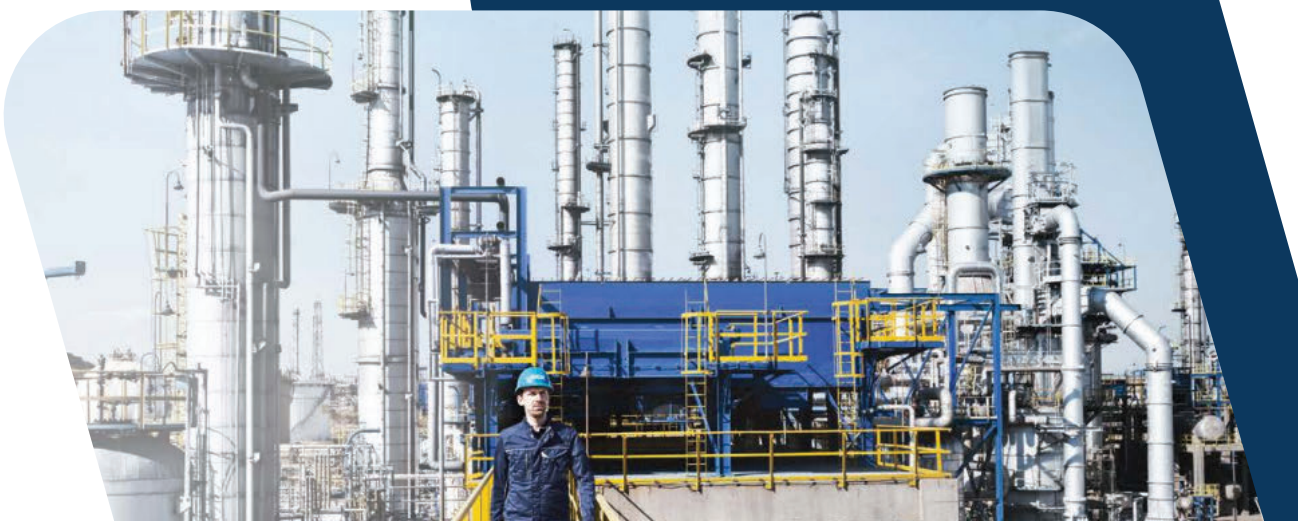
CONTENTS



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WHO ARE WE?

ZENGARY GROUP is a leading, global, one-source provider of asset protection solutions, used to evaluate the structural integrity of critical energy, industrial and public infrastructure. ZENGARY Services' solutions worldwide help keep our client's equipment and facilities in safe, operational, and regulation-compliant working order. We help to support:

- Refineries & Pipelines
- Commercial & Military Aircraft
- Civil & Commercial Infrastructure
- Manufacturing Facilities
- Nuclear, Hydroelectric, and Transmission & Distribution Facilities

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VISUAL TESTING

Visual testing is one of the most used NDT methods, usually the first part of any inspection, due to its immediate evaluation. Once the visual testing is performed, it can be established which non-destructive method can be further used.

APPLICATIONS

- The identification of all visible flaws on the surface.
- The inspection of less accessible areas.

TYPES OF EXAMINATIONS:

- Direct examination
- Indirect examination using magnifiers, endoscopes etc.

ADVANTAGES

- Simplicity
- Speed
- Low costs

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PENETRANT TESTING

This examination consists of applying a dye penetrant on the examined surface. After penetration time, the developer is applied. Due to the absorption properties of the developer i s highlight the discontinuities open to the surface.

APPLICATIONS:

- Identification of all defects opened to the surface, including the ones that can not be seen on visual examination.
- Examination of welded joints of metallic and nonmetallic (ceramic, aluminum, etc.)

TYPES OF EXAMINATIONS:

- Dye penetrant exam-ination - color contrast.
- Fluorescent penetrant examination.

ADVANTAGES:

The method is very sensitive to the presence of small superficial discontinuities which makes it superior to visual examination.

- There are few use limitations. At the same time, several small objects can be tested without compromising quality standards, thus saving time and reducing costs considerably.
- Complex geometries can also be tested.

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MAGNETIC TESTING

APPLICATIONS:

Identification of surface defects and its vicinity's defects.

Examination of material surfaces likely to crack.

TYPES OF EXAMINATIONS:

Color contrast magnetic particle testing.

Fluorescent magnetic particle testing.

Magnetic The technique exploits a special feature of ferrous alloys – ferromagnetism; it is the ability to focus the magnetic field on an area in order to highlight the anomalies of the flux lines of magnetic field in the surface defect.

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MAGNETIC TESTING

ADVANTAGES:

In contrast to other types of examinations, the magnetic particle can determine the surface defects even in the vicinity. In addition, using this method it is not necessary to clean the surface before, aspect which confers an advantage linked so the execution time, and the conditions in which the examination can be performed.

•The necessary equipment is portable, and the result is immediate.

•High speed examination.

•Simplicity and ease in performing the examination.

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ULTRASONIC TESTING

PULSE-ECHO Method

The method is based on mechanical waves (ultrasound) generated by a piezo-magnetically excited element at a frequency typically in the range between 2 and 5 MHz. Control involves the transmission, reflection, absorption of ultrasonic propagated wave in the controlled part. The transmitted wave beam is reflected within the play and the flaws, then returns to the flaw that can be both transmitter and receiver. Positioning fault is done by interpretation of the signals.

APPLICATIONS:

Identification of internal defects in welds, metal,

plastics, ceramics, glass.

Examination of plates, castings and forgings.

ULTRASONIC TESTING

PULSE-ECHO Method

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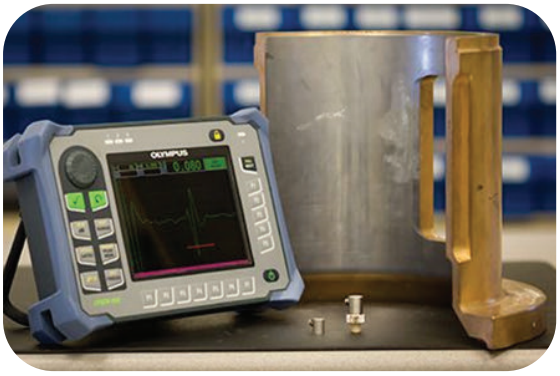
TYPES OF EXAMINATIONS:

Pulse-echo ultrasound examination using longitudinal and transverse waves.



ADVANTAGES:

- Ultrasonic examination presents a series of advantages compared to other non-destructive methods, it has a high sensitivity and high mobility.

- Using the method is not limited only to magnetic materials (as with magnetic particles) nor to the discontinuities open to the surface (such as dye penetrant) and to the scan, it does not require any kind of radiation protection.
- The possibility of determining the position of the defect in the controlled part.
- Mobility of the equipment.

EQUIPMENT:

- Krautkramer-USM 36
- Olympus –MXU.

ULTRASONIC EXAMINATION

Thickness measurement

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EXAMPLE

Thickness measurements are an application of ultrasounds. The method has applicability on any steel product or any other homogeneous material whose structure allows longitudinal wave propagation with relatively constant speed and from which a ultrasound beam reflection can be obtained from the opposite probe.

APPLICATIONS:

- This verification is used for thickness measurements of pipes, storage tanks, pressure vessels, metal structures etc.

ULTRASONIC EXAMINATION
Thickness measurement

ULTRASONIC EXAMINATION

Thickness measurement

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TYPES OF EXAMINATIONS:

Direct reading examination method;

- Examination by the method of multiple echoes

ADVANTAGES:

- Mobility given by the fact that it is necessary to perform measurements accessing only one side of the object examined (pipes, tanks and other objects).
- Precision
- Speed
- Measurement performed through the paint layer using D7908 probe with simultaneous display of material thickness and paint layer.
- Measuring the thickness of the material at components with temperatures up to 500° C in operation using D799 probe

EQUIPMENT:

- Olympus MG 45

COMPUTERIZED RADIOGRAPHY

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SEMI (AUTOMATIC)
EXAMINATION - PA-TOFD

Semi (automatic) examination with PA and TOFD is made using manual cart and automatic using Welld rover.

CONFIGURATION CAN BE:

1 PA Probe and one pair TOFD;
1 PA Probe and two pairs TOFD;
2 PA Probe and one pair TOFD;
2 PA Probe and two pairs TOFD;

APPLICATIONS:

Control of welds
with great thicknesses.

ADVANTAGES:

Automatic recording of the entire control, which can be provided to the client on CD;
•The control of thicker welds;
•Accurate identification of defect positions in Welding;
•The control up to 10 m tall with weld rover, without the need of installing a scaffold.

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SEMI (AUTOMATIC)
EXAMINATION - PA-TOFD

EQUIPMENT:

- Olympus MG 45

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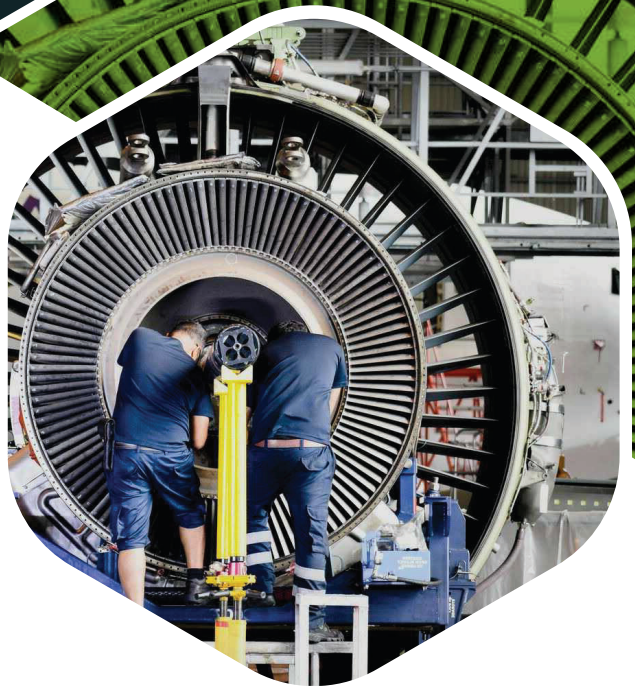
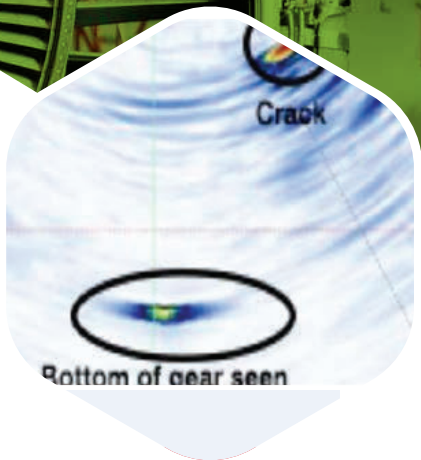
ULTRASONIC TESTING
Phased Array

The examination PA uses a single probe which contains multiple elements (16-128) to send ultrasonic angle beams through the test object. Each individual element can be pulsed to send where timed phase.

This produces several beam angles, which combined form a network.

This network of beams identify changes in the material, such as cracks or inclusions that can be viewed on screen and identified.





ULTRASONIC EXAMINATION

Phased Array

APPLICATIONS:

Weld examination;

- Control of plates, forgings;
- The examination of metallic pieces

ADVANTAGES:

The examination can be performed using the encoder that records real-time control, and location of discontinuities.

- The results can be viewed immediately and saved / stored in the equipment.
- Possibility of automatic control using weld rover.
- The ability to show multiple images at the same time, resulting in the rapid identification of discontinuities.
- Configuring the examination with the help of Estbean Tols and Setup Bilder.
- Mobile equipment, examination can be made at home.

EQUIPMENTS:

- Olympus MXU;
- Olympus MX2.

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Time of flight diffraction is one of the most advanced techniques of ultrasound examination. The method is based on the phenomenon of diffraction of the ultrasonic waves that create virtual images of the discontinuities found in the examined parts. This method has a higher degree of accuracy than any other method of ultrasound and it is considered to be one of the fastest NDT methods because a weld can be examined in a single scan.

ULTRASONIC EXAMINATION

Time of Flight Diffraction

ADVANTAGES:

- Images obtained with the help TOFD guarantees complete coverage of the area examined/ inspected.
- TOFD technology can detect 100% defects in controlled parts.
- TOFD has a high sensitivity regarding the detection of defects planar, vertical or horizontal which can not be distinguished by X-ray or with conventional UT.
- TOFD system is able to store and evaluate the details of the defects, on the height, length, and makes this with a high degree of accuracy using the TomoView program.
- The ability to show multiple images at the same time, resulting in rapid identification of discontinuities with the help of TomoView and Omni PC programs.
- Configuring examination with the help of Estbean Tools and Setup Bilder.

APPLICATIONS:

- Control of welds with large thicknesses.
- Recording and storage on the control device and transmitting the recorded CD.

EQUIPMENTS:

- Olympus MXU;
- Olympus MX2.

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EXAMINATION

PACorrosion Mapping

PA technology - Corrosion Mapping was developed for checking and measuring corrosion in different subassemblies of the industry. This method consists of scanning large areas, resulting in a mapping of the entire surface in different colors indicating the thickness / corrosion of metal.

ADVANTAGES:

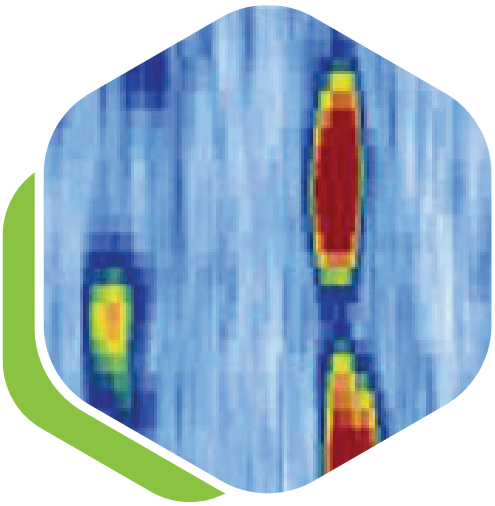
- Recording the control with the encoder.
- Interpretation of the results by computer.
- Corrosion mapping.

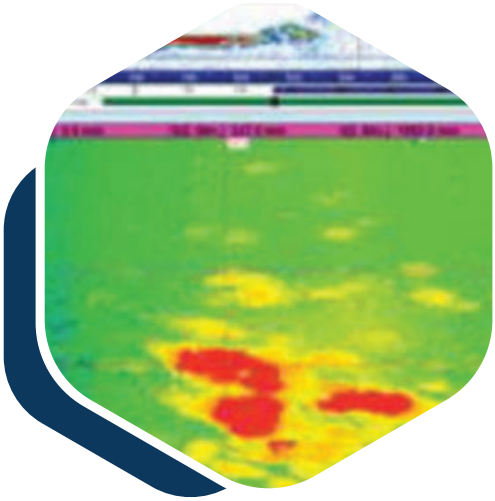
APPLICATIONS

- Corrosion mapping from tanks, pipes, and other components where there is this requirement

EQUIPMENTS:

- Olympus MXU;
- Olympus Mx2;





POSITIVE MATERIAL IDENTIFICATION (PMI)

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Positive material identification, using Innovi X System equipment, is a nondestructive examination method which consists of analyzing steel alloys and low alloys to establish their chemical composition by determining the percentage quantities of the constituents.

PMI-MASTER SMART is the first truly portable optical emission spectrometer for metal analysis. Thanks to its light weight and small size, the PMI-MASTER Smart can be conveniently carried, performing complete chemical analysis, especially in hard to reach areas. The rechargeable battery pack provides enough power for approx. 10 h in standby, 450 measurements in spark mode, depending on the measurement conditions.

ADVANTAGES:

- Examination can be performed at the location designated by the client.
- Dimensions and portability of the equipment allows tests on pipes in operation both at ground level and at height.
- The equipment's software allows direct reading of chemical composition.
- It is an extremely fast method of examination, the result is obtained in 15 sec/ analysis.

Trying to impact the shock run both at ambient temperature and at low temperature.

Using liquid nitrogen and absolute ethanol for adjusting the temperatures from +20 to - 196°C (temp. of liquid nitrogen). The temperature was verified with digital thermometers provided with immersion probes.

HARDESS TESTING

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It is made in the laboratory and in the field with portable divice. The mesurment can be made in several scales:

- Vickers (HV)
- Rockwell (HRC, HRB).

MECHANICAL TESTING PEHD

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Destructive control laboratory tests and analyzes to perform high density polyethylene (PEHD) for:

- Approval of welding processes;
- Approval of welders.

Materials Testing Laboratory has its own machine shop for collection and processing of specimens, standards and norms required by the clients and the law.

APPLICATION:

- Tensile test ;
- Cohesion testing;
- Macrostructure;

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LEEA LIFTING GEAR INSPECTION

REQUEST THE BEST FROM OUR PEOPLE...

When there is a problem with lifting gear equipment, accessories or tackles... Zengary Quality is there to help solve the problem. All our technicians are LEEA trained and certified locally. We specialize into the following:

- Lifting Equipment General
- Lifting Machines Manual
- Lifting Machines Power
- Offshore Container Examination
- Overhead Travelling Cranes
- Runways & Crane Structures
- Mobile Crane Examination
- Pedestal offshore Cranes – API 2D|2C

API – IN-SERVICE PLANT INSPECTIONS

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Our wealth of knowledge gained from years of experience performing inspections on pressure equipment, pressure piping systems, and above ground storage tanks, combined with our extensive knowledge and experience performing NDE inspections on both in-service pressure equipment and new construction vessels in fabrication shops has allowed ZENGARY Inspection to become recognized as the industry leader in performing API visual inspections and repair and alteration oversight on in-service pressure equipment..

Our team includes multiple API inspectors who have years of documented training and experience in pressure vessel (API 510), tank (API 653), and piping inspection (API 570), cross-qualified and CGSB and PCN certified in multiple NDT disciplines.

We can deploy the specialist engineers within no time to any site needed. SQS quality Solution management, Inspectors work within the time frame to satisfy the client. SQS quality Solution can provide the following services and personnel.

- API 570 Piping Inspections
- API 510 Pressure Vessel Inspections
- API 653 Above storage Tank Inspection
- Rotating Equipment Inspection
- Conventional NDT

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Industrial Rope Access - Irata

Work at height

AT-HEIGHT AND SUBSEA INSPECTION & MAINTENANCE

On land, underwater, or in the air, our certified technicians inspect and repair your assets to return them to services as safely and efficiently as possible. Our solutions are customizable to a variety of facility needs and requirements, servicing assets in the oil and gas, infrastructure, nuclear and alternative power, and mining industries. ZENGARY access services make inspection and maintenance possible for the hazardous, remote, hard-to-reach, and confined space locations in your facility.

TRAINING

Zengary provides industry-leading training in rope access, climbing, rescue, and more essential skills. We teach the techniques necessary to successfully administer services and complete work at-height.

- Rope Access Training
- PDQ Wind Turbine & Tower Rescue Training
- Custom Training
- Confined Space Entry & Monitoring
- Working at Height Fall Protection

To learn about our training courses and receive information on preparation, requirements, and more, access our Rope Access Training, please send an email to: training@zengaryqualityllc.ca

ROPE ACCESS TRAINING LEVELS

- Rope Access Training I
- Rope Access Training II
- Rope Access Training III
- SPRAT Certification

CONTACT US

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