



AZ INTERNATIONAL

For Engineering & Contracting



SCOPE

- **AZ is a third party inspection and capacity building body**, aiming to increase the capacity building of technicians and engineers who are working in the field of metal construction, oil and gas services, as well we are providing the NDT and quality inspectionservices
- **AZ was established in 2012**to create high reliable certification body acquiring interactive experience in the field of quality control inspection and capacity building courses in the same field, where we are seeking to highly qualitative services to develop the human resources who are interesting to work in the steel fabrication and construction in oil and gas sector, chemical, fertilizers, cement electrical power plantssectors.
- **AZ Company scope of specialized inspection services includesbut not limited to:**
 1. All types of non-destructive testing(NDT).
 2. Mechanical testing and metallurgicalservices.
 3. Welding procedure writing/qualification & welders testing qualifications/certifications.
 4. Computerized ultrasonic mappinginspection.
 5. Complete storage tanks inspection (walls &floors).
 6. Leak detection andtesting.
 7. Pipelineinspection.
 8. Third party/vendorinspection.
 9. Quality Assurance and Quality Controlservices.
 10. Supply of technical staff for all types of construction projects and On-stream activities to include but not limited to thefollowings:
 - QA/QCpersonnel
 - Constructioninspectors
 - Variousengineers
 11. R&D in the field of cladding and dissimilar welding as well hybrid welding processes.

OUR TEAM

AZ Team consist of academic staff which has a lead influence in industry, and an experience with industrial problems solutions either on lab or industrial scale. an overview of AZ Team is summarized as following;



Dr. Eng. Hussein Said
General Manager

- Ph.D. in welding and metallurgical engineering
More than 15 years concrete experience as instructor



Eng. Gamal Rashed
Metallurgical and NDT Engineer

-SENIOR engineer has solid experience for more than 4 years as NDT instructor.

A qualified technicians and administrative team supported our basic team is available for successful operations.

SERVICES

AZ'S files of activities cover a broad spectrum of specialization in NDT services, Inspection services with strong emphasis in the following fields of expertise:

QUALITY ASSURANCE & CONTROLS

- Quality Inspection of all engineering Disciplines
- Ultrasonic Testing
- Magnetic Particle Testing
- Dye Penetrant Testing
- Visual Inspection
- Welders Inspection, Procedure Testing
- Welder Performance Qualifications
- Coating / Painting Inspection

FIELD /INDUSTRIAL INSPECTION

- Ultrasonic Testing
- Magnetic Particle Testing
- Dye Penetrant Testing
- Visual Inspection
- Land and Marine Pipeline Welding Inspection and NDT
- On-Stream Wall Thickness Measurement and Surveys
- Pipe Mill Surveillance Quality Control and / or NDT

SPECIALIZED SERVICES

- Vendor Inspection (of manufactured & fabricated equipment)
- Pre-Commissioning testing Inspection
- Weld Engineering and Inspection
- Assessment of Welder Performance
- Laboratory Analysis of Materials and Mechanical Testing
- Quality Control
- Quality Assurance

STANDARD SERVICE

AZ NDT SERVICES & NDT RESOURCES. (AZ) offers all standard NDT methods employing state-of-the-art equipment. All equipment is easily portable for all filed applications.

1. Ultrasonic Testing(UT)

Ultrasonic Testing is an efficient, accurate way to detect surface and internal flaws in critical components.

AZ skilled technicians perform a variety of contact UT techniques, including longitudinal wave for thickness measurements, shear wave for weld inspection and surface wave methods.

2. Magnetic Particle(MT)

Magnetic particle testing is an economical means of defecting surface and slightly subsurface defects in all-ferromagnetic materials.

MT can find extremely small defects such as cracks, seams and laminations that could cause component failure. This method is ideal for rapid maintenance testing or critical equipment such as cranes, crane hooks, forklifts and other lifting devices.

3. Liquid Penetrant(PT)

Liquid Penetrant testing utilizing fluorescent and visible methods is used to locate surface defects on any nonferrous surface. PT is sensitive to very small defects including cracks, seams, pits and other defects open to the surface.

SPECIALIZED SERVICES

Turnaround Inspection

For complete turnaround support, HAH provides experienced personnel, technical resources, equipment, and project management. AZ is large inventory of advanced testing equipment and technical programs are designed to meet all your inspection requirements. Experienced project managers ensure that your turnaround is completed smoothly and on schedule.

2. Refinery Equipment Inspection

Inspection of all areas of plants:

- Pressure Vessels & Drums
- Piping & Headers
- Towers & Reactors
- Internal Trays
- Heat Exchangers
- Fired Heaters, Furnace Boilers
- Valves & Pumps
- Separators & Regenerators
- Rotating Equipment
- Crane Hooks & Lifting Equipment
- Storage Tank

3. Wet Magnetic Inspection Program

Proven methods for wet fluorescent magnetic particle inspection allow our experienced technicians to detect blistering, hydrogen or sulfide induced cracking in vessel, spheres, towers and other equipment. With the help of advanced database programs, our technicians record inspection findings, follow up with retesting after repairs, and thoroughly document it all for comparison and trending with past or future inspections.

4. Heat Exchanger Inspection Program

We have combined the full range of services for the evaluation of heat exchangers into a single comprehensive program. Our STEEL Test system provides rapid and accurate inspection of ferromagnetic heat exchanger tubing from the tube I.D. Other I.D. tube inspection methods in our programs include remote visual inspection. Advanced computerized reporting and trending capabilities are also included.

5. Tank Integrity Program

AZ'S Tank Integrity Program provides all the necessary internal and external tank inspections and documentation to comply with API Standard 653. All inspections are certified and follow comprehensive procedures for both in- service and out-of-service inspections.

- External Visual Inspection
- Vacuum Box Testing of the floor seams
- Ultrasonic for thickness and weld integrity
- Magnetic Particle and Liquid Penetrant Testing for material integrity
- Positive Material Identification (PMI)
- Metallurgical Analysis
- Failure Analysis
- Weld Procedure Qualification
- Welder Certification
- Engineer Review, Calculations and Recommendations

6. On-Stream Inspection Program

AZ on stream Inspection Program effectively identifies replacement needs before our scheduled turnarounds AZ uses high temperature ultrasonic techniques in conjunction with insulation coring/replacement plug installation locate and measure wall thinning in insulated piping while in operation. We are able to provide you with the data necessary for advance run/repair/replacement decisions and planning to assure the safety of critical systems and reduce the turnaround time.

7. Portable Alloy Analysis (PMI)

AZ Alloy Identification system accurately analyzes the elemental composition of metals and precisely identifies hundreds of alloys. Whether it is an incoming material inspection or an on-site replacement of critical parts, a few seconds are all that is necessary to positively identify almost any alloy. This saves clients time & money through avoidance of sending material samples to a metallurgical laboratory. AZ provides the most advanced equipment for positive material

identification utilizing the Tezas Nuclear Metallurgist XR. Such a technique allows AZ to identify and analyze 22 basic elements with seconds.

Applications:

- Receiving inspection
- In-Service inspection
- Failure analysis
- Material sorting
- Material salvage operations

8. Vendor Surveillance Program

Any organization you contract to manufacture, fabricate or supply an item or service incidental to the design, construction, operation or testing of a component of facility is a vendor that can be audited by AZ's Vendor Surveillance Program. Our experience covers a wide variety of projects, from foundation materials, structural steel and furnace fabrication to heat exchangers, pressure vessels, electric motors, valves, steam Turbines, stacks, tanks, electrical components, pipe, pumps and compressors. You save the considerable cost of coordinating an in-house system and can be confident your vendors are performing at peak efficiency with our complete surveillance service.

9. Internal bore Ultrasonic Service

AZ's Internal bore UT service provides precision ultrasonic thickness measurement of inaccessible boiler and heat exchanger tubing. Our experienced technicians work inside the boiler drum or from the tube sheet, inserting an ultrasonic probe into the ID of each drum or from the tube sheet, and measuring thickness 360 degrees inside the tube. This method eliminates the need for costly scaffolding, surface preparation and insulation removal.

10. Surface Replication

AZ'S experienced metallurgical technicians perform surface replication, an evaluation to detect creep voids on plant equipment in the early stages of formation without damaging the component or cutting a sample. It is also effective for detection and evaluation of intergranular corrosion including IGSCC, micro cracking, carbide precipitation, carbonization, inclusions, damage caused by over temperature excursions or thermal, cycling and various other conditions. We provide information on-site to allow immediate corrective action, when required. When creep voids are detected early, you have adequate time to make operational changes to slow the creep void mechanism, repair or replace the components and plan for the future.

11. Engineering Services

Through working relationship with a number of top engineering firms, we can provide complete engineering services in conjunction with our testing services. We provide stress analysis, critical flow size determination, disposition of defects, selection of inspection points, conditions assessment programs, remaining life determination and other additional services.

12. Mid-Wall Creep Fissure Detector

An ultrasonic system for detecting creep fissuring in reformer and riser tubes, allowing the condition of tubes to be diagnosed during routine plant maintenance. Examination is fast & efficient, without the need for removing the catalyst, restricting or interfering with other work in the reformer, or furnace staging in most cases. Tubes are examined in-place, allowing inspection of 100% of accessible tube length. Computerized reports and strip-chart records are generated upon completion of inspection, clearly identifying the condition of each tube.

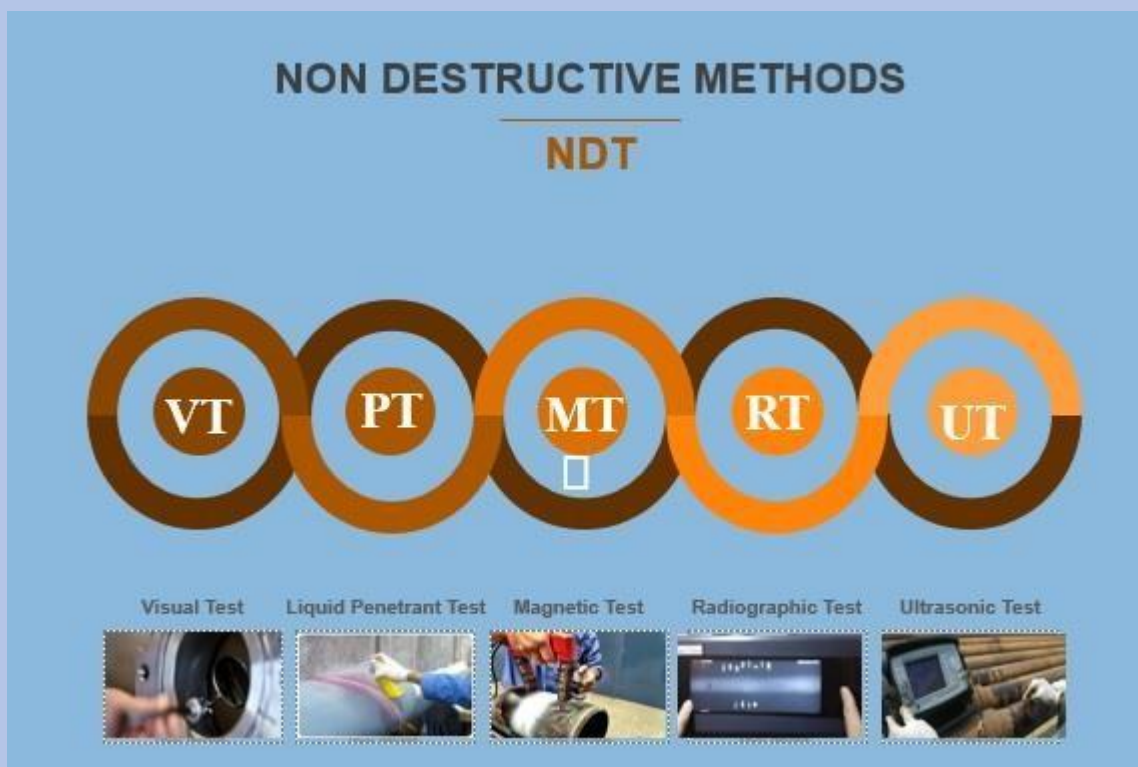
Technical Training

AZ International for Engineering & Contracting has the potentiality to afford any customized course; according to the required qualification and certification of our Clients

Training Methodology

This training course includes the following training methodologies:

- Lectures
- Group discussion
- Case Studies and Practical Exercises
- Pre Test, Post Test and Quizzes during the class room training.
- Videos.



WELDING TECHNOLOGY



AWS for Welding Technology & visual inspection



Shielded Metal Arc Welding Process



Gas Metal Arc Welding Process (CO_2)



Gas Tungsten Arc Welding Process (Argon)



OTHER TRAINING COURSES



API COURSES

API 510

API 570

API 653

CWI Preparation course

Fundamental modules

Practical visual inspection of welds.

API 1104.

Solved problems

Thermal insulation of electrical power plants

Introduction of thermal insulation engineering.

Types of insulation materials.

Calculations of effective thermal insulation material.

Case study of thermal insulation problem of gas piping system

ASME CODE AWARENESS

ASME VIII, V, IX, II, I
and B31.1 and B31.3

QA/QC Course for steel Fabrication

Case study of piping systems in electrical power stations.

Case study of steel structure.

Case study of tanks and pressure vessels

In-service inspection of electrical power stations






Capacity Building Courses




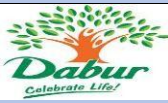


Course title	Course Syllabus
Welding Technology	<p>AWS for welding technology</p> <p>Shield metal Arc welding processes.</p> <p>Visual inspection.</p> <p>Conducting WPS.</p> <p>Welders' qualifications according to ASME IX.</p>
QA/QC Course for steel fabrication	<p>Introduction of quality assurance according to ISO9001 and EN 10204:2004.</p> <p>Materials receiving and sequences of steel fabrications.</p> <p>Interpretation of Welding symbols in engineering drawing according to EN and AWS D1.1.</p> <p>Case study of piping systems in electrical power stations.</p> <p>Case study of steel structure.</p> <p>Case study of tanks and pressure vessels.</p> <p>In-service inspection of electrical power stations.</p>





Course title	Course Syllabus
Thermal insulation of electrical power plants	<p>Introduction of thermal insulation engineering.</p> <p>Types of insulation materials.</p> <p>Calculations of effective thermal insulation material.</p> <p>Case study of thermal insulation problem of gas piping system</p>
Preparation course of certified welding inspectors. (CWI)	<p>Fundamental modules.</p> <p>Practical visual inspection of welds.</p> <p>API 1104.</p> <p>Solved problems.</p>

OUR CLIENTS



Field	Company Name	Assignments
	Petrobel (Belayim Petroleum)	Services of NDT and technical training of the technicians on site and our premises
	Sindbad Petroleum Service (SPS)	Conducting PMI, and other NDT services; Phased arrays and pulse echo A scan of the production facilities.
	Egyptian Welding Academy (EWA)	Collaborative protocol to conduct capacity building training and conducting NDT services for our common clients: (RT,PT,MT,UT)
	Elkadesia For Engineering Industries	Research and development of shielded metal arc welding electrodes, where we succeeded to develop the performance and weldability of the types; E6010, E6013, E7018. Fabrication of raw materials upgrading unit; by welding 904L austenitic stainless steel , releasing and reporting of the fabrication as well as inspection test plan.
	Elsewedy Cement company.	Conducting NDT services (RT, PT, MT, UT) on the cement manufacturing equipment; gyratory crushers, apron feeders, storage surge bins.
	AbouZaabal	Conducting NDT services (RT, PT, MT, UT) on storage tanks of phosphoric acid, tilting pan vacuum filter.
	Power House	NDT services of (RT, UT) of super-heated water boilers.

	Maradive	Long term internship (RT inspection) on off shore facilities
	Modern Academy	Capacity building training of NDT methods and welding technology.
	Unico	Outdoor premises training of employees on NDT methods according to ASNT requirements.
	Medico	Capacity building training of NDT methods and welding technology.
	Dabur Egypt Limited	Evaluation of the steel trusses designedly wise and make extension of new trusses.
	German University in Cairo (GUC)	Cladding of X-ray unit by lead alloy to comply with radiation protection specification.
	Port Said Engineers Syndicate	Capacity building courses of NDT methods to the members of engineering syndicate.
	BALDWIN Engineering Co	Conducting PMI, and other NDT services; Phased arrays and pulse echo A scan of the production facilities
	Orascom	Third party inspection review and dully certification of the NDT procedures.
	NSF	Training of their inspectors according to ASNT requirements of Visual inspection tests.
	Lloyds register	Preparation of welding procedure.
	Student hostel of Alazhar university	Fabrication of stainless steel ancillaries.
	Mining and metallurgical center for research and development at Cairo university	Collaborative protocol, as experienced entity to advise them regarding; to failure analysis and corrosion protection of production facilities in oil and gas sector.
	Setcore	Training of their employees according to API series.
	Cairo oil Refining co.	Training of their inspectors according to ASNT requirements of (MT,PT,RT,VT,UT)

	DSD	Training of their inspectors according to ASNT requirements of (MT,PT,RT,VT,UT)
	EIPAL Egyptian International co. for Aluminum profiles	R&D of aluminum extrusion processes.
	Sinoma-CDI	Conducting PMI, and other NDT services; Phased arrays and pulse echo A scan of the production facilities
	MaireTecnimont	Conducting PMI, and other NDT services; of the production facilities
	MFE Middle East	Conducting NDT services (RT, PT, MT,UT)
	Maria Organization for Trade & Industry	Conducting ULTRASONIC TESTS (UT) on the shelter lifting pad eyes (ABO MADY PROJECT)
	Total solution	Conducting NDT services (RT, PT, MT,UT)
	Petromaint	Heat Treatment
	TETRALIFT	Conducting NDT services (RT, PT, MT,UT)
	Ecco Associate	Conducting NDT services (RT, PT, MT,UT)
	Al Ezz Flat Stssl	Conducting NDT services (RT, PT, MT,UT)
	Arab Contractor	Conducting NDT services (RT)



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Address: 33 Gamal El deen Kassem St. Nasr
City,Cairo

Tel/ FAX : (02) 22-8-79-691

Website: www.azinternational.org

Email: az.qualitycontrol@gmail.com