Royal Crown Academy
For Training Technology

Nondestructive testing

UT

ULTRASONIC TESTING

Code: UT L1 (for Level I), UT L2 (for Level II), UT L3 (for Level III)

By using ultrasonic method you can identify location and orientation of imperfection or the material wall thickness. Ultrasonic method is not strictly limited by thickness, material type and part type. It is possible to detect both internal and surface defects and also both volumetric and planar defects.

This is a comprehensive course for individuals with little or no experience in ultrasonic testing; as well as a refresher course for individuals who need to brush up on ultrasonic. Through lecture and laboratory exercises; students gain understanding of technical principles and test procedures.

Based on: Recommended practice SNT-TC-1A. Alternatively we can provide this training course based on EN 473/ISO 9712 or on EN 4179/NAS 410 as well.

Used codes: ASTM E 2375; ASTM E 213; ASTM E 164; ASTM E 797; ASTM E 317; ASME Code Section V; EN ISO 11666; EN 10160; EN 10228-3; EN ISO 23279; EN ISO 17640; EN 12680-1; EN 12668-3

What you will learn

Training is focused on explanation of basic ultrasonic principles and basic knowledge of ultrasonic standards. Practical part is then focused to recognition, positioning and sizing of indications in welds, forgings, castings and pipes. Trainee will also get knowledge about practical limitations and difficulties which can occur during his practice.

Our courses will prepare you to pass the final exam according to SNT-TC-1A or EN 473 code for Level 1, 2 or 3, to be able to operate manually or on automatic lines typical ultrasonic testing.

UT Level I will be able to test parts according to the relevant standards, recognize size and locate the defects in most types of parts, and report them. Level II certified will be trained to inspect according to applicable codes and specifications; and learn to develop procedures instructions for your in-house applications. Classroom training is accompanied by evaluation of study cases; and by practical tasks with testing and evaluation of samples.

info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550

Royal Crown Academy
For Training Technology

Nondestructive testing

Level II training highlights

Demonstrate their understanding of the body of knowledge of the NDT method applications Practical applications (evaluation on components)
Explain the scope and limitations of the method
Select the proper procedure
Select the appropriate equipment and accessories for the employer's
Select the proper calibration standards calibrate the equipment
Apply the method and Interpret and, report and evaluate the results of the NDT
In direct approach to Level 2 it is necessary to complete both levels = 3 weeks duration. For the applicant having the UT1 L1 course is the general qualification course (1 week) optional.

Level I training highlights

Principles of Ultrasonic Testing	Evaluation of discontinuities
UT equipment	Instrument and sensitivity calibration
UT Methods	Vertical Linearity Check
Angle beam and surface wave technique	Health Safety and Environment
Immersion technique	

About Certification

The examination and certification process is directly related to qualification system. In case when the training is performed in accordance with EN473 / ISO 9712 the certificate can be issued by independent European certification body ROYAL CROWN CERT.
Additional details about training and certification are related to specific needs of client and shall be discussed individually. Please refer section "contacts" or our website www.royal-crown.info

Other information

Every trainee will obtain a set of educational materials; each course contains many specific training tests (with evaluation) and practical knowledge. Alternatively we can provide training suitable for candidates working to a written practice based on EN 473 code.

info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550

Royal Crown Academy
For Training Technology

Nondestructive testing

RT

Radiographic Testing (RT) Level-II

Training Course objective

To provide a basic knowledge of RT to enable a participant to carryout tests according to an established procedure under the supervision of a level II or level III personnel. The course is especially designed to provide a sound theoretical knowledge and practical skill for RT required for a Level I technician

RT Level I Responsibilities

To carryout operation as per written procedure/instruction from Level II personnel. He shall be able to set up the carryout the tests as per established and approved RT procedures, classify, report the results and to follow safety norms. He shall not be responsible for the choice of the test technique nor for assessment of the test results.

RT Level I Course outline

Nuclear Physics-Interaction of Radiation with Matter
Shielding, Radiation Detectors, Biological Effects
Radiation Protection, Basic Rules & Techniques
Sources of Radiation and their characteristics
Film Radiography
Film Processing
Inspection Techniques and Procedures
Sensitivity & Definition, I.Q.Is, Other Accessories
Types of Discontinuities

RT Level I Practical training

Radiography of Castings and welds using X-ray and Gamma ray.

RT Level II Practical training

Same as level-I + Interpretation, evaluation of Radiographs, recording of test results and preparation of test reports.

Training course objectives

The course is intended to provide through grounding in the principle of Radiographic Testing-RT and fundamentals of material and process such that the trainee would be able to

Identify suitability of RT for the material and inspection technique
Develop techniques and procedures that can be followed by a Level I operator
Analyse the test result and document the same
Be familiar with codes, standards and specifications for RT to evaluate results of the tests
Be conversant with all statutory and safety norms of the authorities under jurisdiction

RT Level II Responsibilities

A certified RT Level 2 personnel is qualified to

Select proper test technique, equipment, films, IQI and other test parameters
Set up the equipment
Perform testing, Manually process film for high contrast and resolution and interpret the results as per applicable standards
Have knowledge of the scope and limitations of RT
Be familiar with production processes of the test material and knowledge of type and location of expected defects
Describe the operational steps in the radiography test method and understand the importance of each step
To develop RT technique for testing a particular job
Prepare test report for i. Accept ii. Reject iii. Rework
Prepare written instruction for Level I
. Guide and check test results of Level I operators
. Responsible for care and maintenance of the NDT/RT equipment

RT Level II Course outline

Review of Level-I course
Non-conventional Radiography
Techniques in radiography
Codes, standards and Procedures
Acceptance Standards
Manufacturing processes and discontinuities
Interpretation of Radiographs

info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550

Royal Crown Academy
For Training Technology

Nondestructive testing

MT

MAGNETIC PARTICLE TESTING / MPI

Code: MT L1 (for Level 1), MT L2 (for Level 2), MT L3 (for Level 3)
Magnetic particle testing is suitable for surface and sub-surface defect detection in ferromagnetic materials. The surface can be covered with thin layer of dielectric coating. It can be applied even on site or for serial testing.
Based on: recommended practice SNT-TC-1A. Alternatively we can provide this training course based on EN 473/ISO 9712 or on EN 4179/NAS 410 as well.
Used codes: The scope of standards covered by training is specified according to clients' needs. Basic standards covered by the training are usually: US standards (e.g. ASTM E 709, ASTM E 1444-05, ASME Code V/7) and set of EN and ISO standards (e.g. EN ISO 9931-1, 2, 3; EN ISO 17638; EN ISO 23278 etc.)

What you will learn

Training is based on understanding the simple physical principle and on upgrading this knowledge with specific needs of magnetic particle testing. The operator shall know how to verify the proper function of the process, which assures relevant results of the testing.
The level 1 training covers theory overview in direct connection to requirements of the relevant standards. This gained knowledge will prepare operator for accurate test performance. Training for Level 2 operators covers additionally detailed overview of relevant evaluation standards. The training is accompanied by practical tasks with testing and evaluation of samples.

Level I training highlights:

Choosing the magnetization technique	Viewing conditions
Determining of current intensity	Overall process check
Verification of magnetic field intensity	Working with standards
Detection media check	Health Safety and Environment

Level II training highlights

Selection of suitable equipment
Application of standard requirements
Deeper insight into the physics
Creation of written procedure Decision about the test results Health Safety and Environment

About certification

The examination and certification process is directly related to qualification system. In case when the training is performed in accordance with EN 473 / ISO 9712 the certificate can be issued by independent European certification body **ROYAL CROWN CERT**.
Additional details about training and certification are related to specific needs of client and shall be discussed individually. Please refer section "contacts" or our website www.royal-crown.info

info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550

Royal Crown Academy
For Training Technology

Nondestructive testing

PT

PENETRANT TESTING / FPI

Code: PT L1 (for Level 1), PT L2 (for Level 2), PT L3 (for Level 3)
Magnetic particle testing is suitable for surface and sub-surface defect detection in ferromagnetic materials. The surface can be covered with thin layer of dielectric coating. It can be applied even on site or for serial testing.
Based on: recommended practice SNT-TC-1A. Alternatively we can provide this training course based on EN 473/ISO 9712 or on EN 4179/NAS 410 as well.
Used codes: The scope of standards covered by the training is specified according to client's needs. Basic standards covered by the training are usually: US standards (e.g.: ASTM E 165, ASTM E 433, ASTM E 1417, AMS 2644, ASME Code V/6) and set of EN and ISO standards (e.g.: EN 571-1; EN ISO 23277; EN ISO 3452 etc.)

What you will learn

Training is focused on explanation how to recognize important factors that affect the testing results and help NDT operator to understand how set-up process parameters to optimize the test results.
The level 1 training covers theory overview in direct connection to requirements of the relevant standards. This gained knowledge will prepare operator for accurate test performance. Training for Level 2 operators covers additionally detailed overview of relevant evaluation standards. Classroom training is accompanied by evaluation of study cases; and by practical tasks with testing and evaluation of samples.

Level I training highlights

Pre-cleaning of tested parts	Viewing conditions
Penetration and excess penetrant removal	Process control and test panel
Developers and developing	Working with standards
Influence of temperature and time	Health Safety and Environment

Level II training highlights

Selection of suitable equipment Application of standard requirements Recognition of relevant indication
Understanding the evaluation criteria Evaluation study cases solution Health Safety and Environment

About certification

The examination and certification process is directly related to qualification system. In case when the training is performed in accordance with EN 473 / ISO 9712 the certificate can be issued by independent European certification body **ROYAL CROWN CERT**. Additional details about training and certification are related to specific needs of client and shall be discussed individually. Please refer section "contacts" or our website www.royal-crown.info

info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550

Royal Crown Academy
For Training Technology

Nondestructive testing

VT

VISUAL TESTING OF WELDS

Code: VT L2 W (for level 2)
Visual testing of welds is regular requirement not only as self-standing NDT testing, but also it is required prior performing other NDT method. It is one of most required NDT methods.
Based on: standard ISO 17637 of on recommended practice SNT-TC-1A. Alternatively we can provide this training course based on EN 473/ISO 9712 or on EN 4179/NAS 410 as well
Used codes: The scope of standards covered by training is specified according to client needs. Basic standards covered by training are usually: US standards (ASME Code V/9; ASME Code VIII) and set of EN and ISO standards (e.g.: EN ISO 5817; EN ISO 17637, EN ISO 6520 etc.)

What you will learn

Training covers necessary theoretical background for correct performing of tests (in relation to relevant standards). Main focus is on the surface defects' nature and its origin (related also to basics of welding process). The correct identification of welding defects of various types of weld joints is followed by study cases evaluation. Correct setting of acceptance criterion based on standard and evaluation is in this training essential. The practical part covers also overview of weld gauges usage and possibilities.

Level II training highlights

Acceptance criterion selection	Weld gauges
Defects of but welds	Practical tasks
Defects of fillet welds	Health Safety and Environment

About certification

The examination and certification process is directly related to qualification system. In case when the training is performed in accordance with EN 473 / ISO 9712 the certificate can be issued by independent European certification body **ROYAL CROWN CERT**.
Additional details about training and certification are related to specific needs of client and shall be discussed individually. Please refer section "contacts" or our website www.royal-crown.info.

info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550

Royal Crown Academy
For Training Technology

Nondestructive testing

LT

VISUAL TESTING OF WELDS

Code: ET L1 (for Level 1), ET L2 (for Level 2), ET L3 (for Level 3)

Eddy current testing method is used for testing of the electrically conductive materials. This method is applicable in wide scale of branches, very often used for inspections of metallurgic semi products during the in-service inspections of pipe type heat exchangers and in aerospace and automotive industry. This method is widely used for surface discontinuities detection. The discontinuities can be detected to specific depth under surface. This method allows measuring thickness of nonconductive coating or selecting the different materials on the base of the difference in the chemical composition or heat treatment.

Based on: EN 10246-1, 2, 3; DIN 54141; EN 1711; EN 1971; EN 12084; ASME V, 8

Used codes: The scope of standards covered by training is specified according to client needs. Basic standards covered by training are usually: US standards (ASME Code V/9; ASME Code VIII) and set of EN and ISO standards (e.g.: EN ISO 5817; EN ISO 17637, EN ISO 6520 etc.)

What you will learn

Participant will be trained in inspection according to applicable codes and specifications, and learn to develop procedures for your applications. The Level 2 certified specialist is responsible for testing and evaluating the findings according to SNT-TC-1A or EN 473 standard. They can develop the NDT instructions and manage ET testing for their workplace.

Level I training highlights

Basic principles of eddy currents Probes and coils

Practical impedance plane analysis Products imperfections and methods for testing

Bolt and fastener hole inspection Eddy current test equipment Basic test set circuits Parameters for testing

Testing procedures, calibration blocks

Level II training highlights

Characteristic / Limit Frequency	Evaluation of Indications
Test frequency ratios	Testing procedures
Testing equipment and tools	Instructions and report writing
Specialized techniques	Codes and theirs requirements

About certification

The examination and certification process is directly related to qualification system. In case when the training is performed in accordance with EN 473 / ISO 9712 the certificate can be issued by independent European certification body **ROYAL CROWN CERT**.

Additional details about training and certification are related to specific needs of client and shall be discussed individually. Please refer section “contacts” or our website www.royal-crown.info

The duration of LT trainings

Part A	32 hours	Basic knowledge
Part B	40 hours	Bubble testing, Pressure change
Part C	40 hours	Mass spectrometer (He detector)

info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550

Royal Crown Academy
For Training Technology

Nondestructive testing

ET

VT VISUAL TESTING OF WELDS

Code: VT L2 W (for level 2)
Visual testing of welds is regular requirement not only as self-standing NDT testing, but also it is required prior performing other NDT method. It is one of most required NDT methods.
Based on: standard ISO 17637 of on recommended practice SNT-TC-1A. Alternatively we can provide this training course based on EN 473/ISO 9712 or on EN 4179/NAS 410 as well

Used codes: The scope of standards covered by training is specified according to client needs. Basic standards covered by training are usually: US standards (ASME Code V/9; ASME Code VIII) and set of EN and ISO standards (e.g.: EN ISO 5817; EN ISO 17637, EN ISO 6520 etc.)

What you will learn

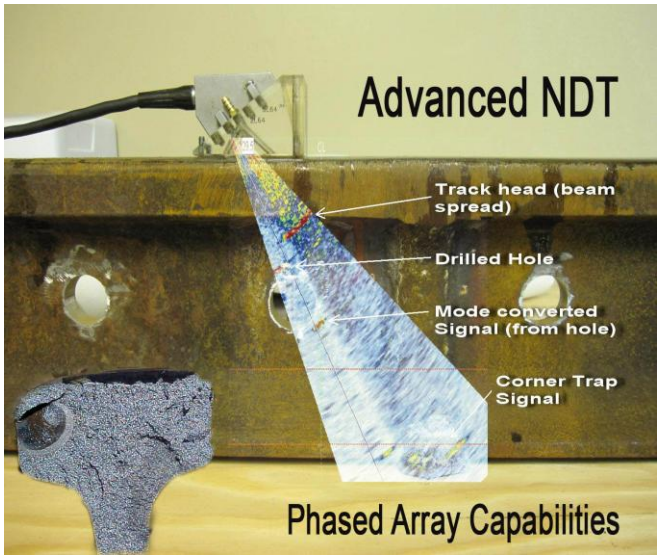
Training covers necessary theoretical background for correct performing of tests (in relation to relevant standards). Main focus is on the surface defects' nature and its origin (related also to basics of welding process). The correct identification of welding defects of various types of weld joints is followed by study cases evaluation. Correct setting of acceptance criterion based on standard and evaluation is in this training essential. The practical part covers also overview of weld gauges usage and possibilities.

Level II training highlights

Acceptance criterion selection	Weld gauges
Defects of but welds	Practical tasks
Defects of fillet welds	Health Safety and Environment

About certification

The examination and certification process is directly related to qualification system. In case when the training is performed in accordance with EN 473 / ISO 9712 the certificate can be issued by independent European certification body **ROYAL CROWN CERT**.
Additional details about training and certification are related to specific needs of client and shall be discussed individually. Please refer section "contacts" or our website www.royal-crown.info.



info@royal-crown.info
www.royal-crown.info

Contact Us: +18002426506
UAE +971528368301
Iraq +9647509155550