

DESCRIPTION OF THE METHOD

Eddy current testing method is used for testing electrically conductive materials within various fields of application. It is most commonly used for inspection of metallurgical semi-finished products, in-service inspections of tubular heat exchanger, and for aviation and automotive industry. The method belongs among so-called surface methods. Therefore it is often used for observation of surface imperfections. It is also capable of detecting imperfections in a certain depth beneath the surface (10 to 25 mm depending on material). Furthermore, the method can be applied to measure the thickness of non-conductive coatings, or classify materials on the basis of their chemical composition or heat treatment. Its main advantages are testing rates, easy automated control and evaluation.

DESIGN AND PRODUCTION

In cooperation with ROHMANN GmbH, ATG offers complex solutions for NDT workplaces from simple devices up to complex systems. Our specialists will suggest the most suitable solution for your applications that can be stationary or portable devices such as:

- | | | | |
|---------------------|--------------------------|---------------------|-----------------------|
| Absolute probes | Multidifferential probes | Accessories | Standards and samples |
| Differential probes | Portable analog devices | Through-type probes | Special systems |
| Special probes | Portable digital devices | Rotary probes | Stationary systems |



SELECTED PRODUCTS FOR ET

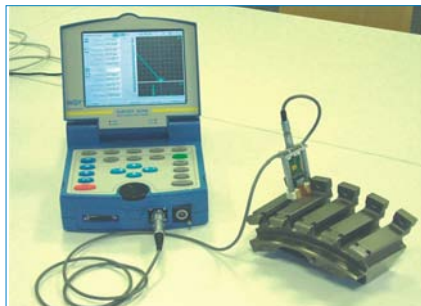
ELOTEST M2V3

Suitable for detection of defects such as tears in aircrafts parts, automobiles and other means of transportation. Frequency mixing, material classification, and other applications are achievable.



ELOTEST B300

Multichannel device suitable for use in aerospace, transportation, chemical, and power industry. A connection to videoscope is provided on demand.



ELOTEST IS

Multichannel device suitable for use in automotive and metallurgical industry. Inspection of bearings, rods, tubes, pins, pivots, pistons, shafts, gear wheels etc.



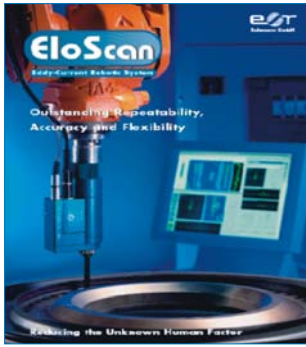
ELOTEST PL 500

Multichannel device, up to 8 drivers and 256 sub-channels. The fastest ET multiplex in the market with the velocity over 100m/s (with resolution better than 1mm!). Distance compensation from the tested specimen. It may operate as "structuroscope".



SELECTED SPECIAL APPLICATIONS

Automatic inspection of wheels, gearing, holes...



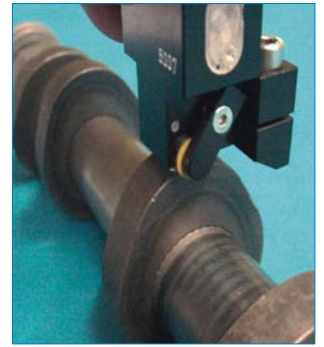
Manual inspection of turbine blades.



Automated inspection of pistons.



Automated inspection of camshafts.



SERVICES AND TESTING

Various applications require different approaches and demands.

ATG inspectors perform inspections of e.g.:

Metallurgical semi-finished products on automatic lines by through-type probes and rotary heads (requirements are introduced in, e.g. EN 10 246-1,3)

Tubes of heat exchangers by internal trough-type probes (requirements according to ASME V/VIII or DIN 25435-6)

Aircraft in-service (specific requirements of aircraft producers)

Automated inspection of parts in automotive industry

Structuroscopy

For testing ATG generally uses: devices and systems ELOTEST by ROHMANN.

Applied methods are: resonance, impedance, leakage flux.

Services of NDT Level III personnel:

- NDT personnel qualification
- Preparation of written practice, methodical performance of NDT examination, setting of acceptance criteria
- Laboratory and on-site testing
- Output and protocol of results
- Professional guarantees, methodical activities, and formation of legislation



TRAINING AND SEMINARS

ATG provides qualification of NDT level I, II and III personnel. Our company belongs to the most important training agencies of "special processes" in Europe. During the training personnel is prepared for duties of NDT examination in industrial conditions. **Training courses include practice on professional NDT equipment!**

Each attendant of our training obtains:

- Attendance certificate,**
- Qualification certificate** - after passing the final exam

Training and qualification of the NDT personnel in accordance with the following standards:

- EN 473/ISO 9712, EN 4179/NAS 410 (aerospace industry) - JAR 145.30
- SNT-TC-1A employer's certification



DESCRIPTION OF THE METHOD

Magnetic particle testing method (MT) is often used as NDT method for ferromagnetic materials. The major applications are in aerospace, automotive and power industry and transportation. With regard to its relative simplicity and ease of carrying out, it is one of the most important methods even for inspection of equipment in service. MT method is capable of detecting surface and subsurface defects such as tears, cracks, pores, inclusions etc. It is applicable for ferromagnetic materials only.

DESIGN AND PRODUCTION

ATG offers complex solutions for all MPI applications:

- | Gauges and meters
- | UV lamps and testing agents
- | Manual electromagnets
- | Portable, mobile and stationary current sources
- | Special MT equipment
- | Stationary magnetic flow detectors
- | Demagnetization equipment



ATG products meet requirements of producers like:

Volkswagen, General Electric, Boeing, Airbus, Embraer, Honeywell, Pratt & Whitney, Parker Hannifin, Rolls Royce Aircraft Engines, ...
All products comply with the latest norms: EN, ASTM, ASME Code, NADCAP, NAVSHIP, NADCAP, ...

SELECTED PRODUCTS FOR MT

MAGNETIZER UNIMAG 3000

Suitable for testing in aerospace industry; optionally three phase FWDC current; other accessories; available for up to 3m long products.



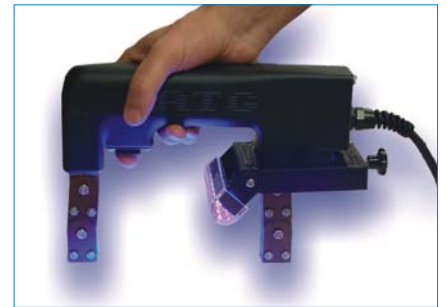
MAGMAN 15-20-40-60-80

Portable generators for testing of welds, castings, forgings, and machined parts. AC / HW demagnetization, continuous current regulation, TRMS value...



YOKE TYP REM 230

Manual electromagnet for 220-230V; suitable for work in detached workplaces and on-site.



CHEMICALS FOR MT

Supplied by Chemetall and Ardrex.



UV LAMPS

Manual or stationary, protective goggles



GAUSS / TESLAMETER

F.W.Bell 5170, 5180 digital signal; TRMS function.



UNIMAG 1200 AC-DC Aerotester

Suitable for testing in aerospace acc. to ASTM E 1444; optionally three phase FWDC current; Quick Break Feature.



DEMAGNETIZATION TUNNELS Demat

For demagnetization of ferromagnetic products magnetized by AC or DC, continuous frequency regulation; timers, movement adjustment.



Results of MT inspection are directly evaluated according to requirements of standards or requirements of customers. The basic methodic standard is EN ISO 9934 - 1 to 3, EN 1290, EN 1369, EN 10228-1 and EN 10246-12 + 18.

Equipment of ATG operators:

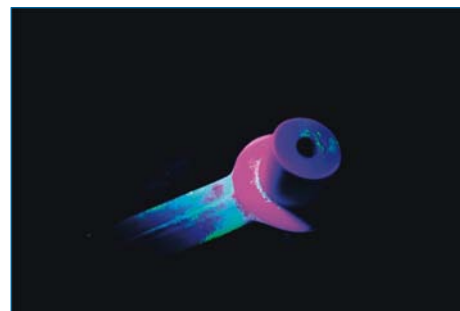
Manual electromagnetic yokes REM

Portable and mobile generators MAGMAN, meters and gauges for assurance of appropriate testing conditions - UV meters, luxmeters, magnetic field intensity indicator, ammeters, etc.

Magnetic powders + suspensions (CHEMETALL, Overchek, Ardrex product lines)

Stationary magnetizers: MINIMAG a UNIMAG, AC/AC magnetizers for automotive industry, FWDC type for aviation applications according to ASTM E1444, HW type for casting and others

Systems with sequential multidirectional magnetization for oversized castings and weldments



TRAINING AND SEMINARS

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Each candidate for our NDT training courses obtains:

Attendance certificate

Qualification certificate - after passing the final exam

Qualification of NDT personnel is provided according to the following codes:

EN 473/ISO 9712, EN 4179/NAS 410 for aircraft industry - JAR 145.30

SNT-TC-1A employer certification



DESCRIPTION OF THE METHOD

Penetrant testing method (PT) is one of the most widespread NDT methods. PT method is used to search for surface defects, especially in automotive, aerospace, petrochemical, and energy industry. Its main importance is in inspection of welds. Testing by PT method is very easy, undemanding and in basic application also cheap. PT method is capable of detecting imperfections like cracks, porosities, laps, cold laps etc.

DESIGN AND PRODUCTION

ATG supplies complex solution for PT

Our FPI/PT lines are able to: provide regular checks for proper function of the system, measure day light and UV light intensity, evaluate indications, check concentration of the emulsifier, measure sensitivity of the system etc.

ATG provides the complete range of equipment needed for penetrant testing:

- | Penetrant lines – manual or automatic /with precleaning and etching/
- | Penetration boxes
- | Filtration units with active carbon
- | Tanks for application of powder developer
- | Equipment for electrostatic application of penetrant and developer
- | UV lamps - manual or stationary
- | Test blocks, luxmeters, UV meters
- | Penetrants, cleaners, developers...



SELECTED PRODUCTS FOR PT

FPI LINES

Company produced lines are for large scale review in aerospace, automotive industry, and engineering. We produce manual and automatic lines, with environmental friendly operations and full rinse water recycling .



UNIVERSAL PENETRANT CABIN KPM 1000

The set is adjusted for all steps of fluorescent penetrant inspection in one box; functions: rinsing, drying, ventilation, filtration of rinsing water, darkening.



PENETRANTS ARDROX

Red dye, fluorescent or dual penetrants. High quality products, for various application, approved by most important producers.



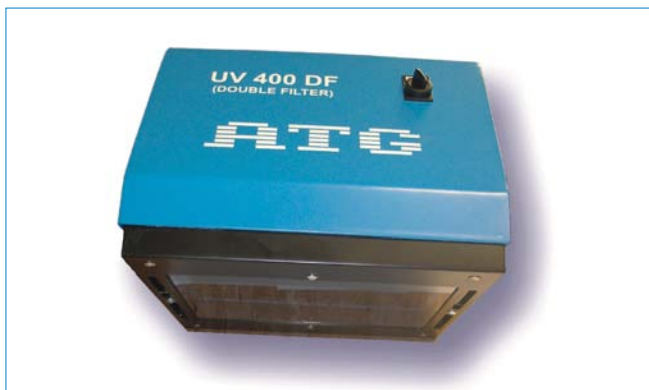
Test blocks and accessories for PT

- | Al-crack ASTM/ASME CODE V, 6
- | WTP-1 (Wash Test Panel) - Test block type I, II acc. to EN ISO 3452-3
- | Gauge TAM 135273 M
- | PSM - 5 panel - TAM 146040
- | Ni-Cr test block I/MIL-I-8963/JIS



UV LAMPS - ATG 400 DF

| Filter for UVA and UVB radiation



MEASURING OF LIGHT

| Luxmeter

| UV meter



SERVICES AND TESTING

ATG offers installed FPI lines for outside services:

| FPI line for Aerospace, method A and D acc. to ASTM E 1417
| FPI for big quantities - up to 8000 pcs/day, suitable for automotive industry

ATG products comply with requirements of: Volkswagen, General Electric, Boeing, Airbus, Embraer, Honeywell, Pratt & Whitney, Parker Hannifin, Rolls Royce Aircraft Engines etc. in accordance with following standards:

| EN ISO 3452 - 2-3-4
| EN 571-1
| EN 1289
| EN 1371 - 1,2
| EN 10228 - 2
| ASTM E 1417, ASTM E 165, ASME Code, NAVSHIP
| NADCAP AC7114/1



TRAININGS AND SEMINARS

ATG provides qualification of NDT level I, II and III personnel. Our company belongs to the most important training agencies of "special processes" in Europe. During the training personnel is prepared for duties of NDT examination in industrial conditions. Training courses include practice on professional NDT equipment !

Each candidate for our NDT training acquires:

| **Attendance certificate**
| **Qualification certificate** - after passing the final exam

Preparation and qualification of personnel is in accordance with standards:

| EN 473/ISO 9712- qualification and certification of personnel in NDT
| EN 4179/NAS 410 for aerospace industry - JAR 145.30
| SNT-TC-1A for employer's qualification



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Products for NDT
Training courses
Outside agency
NDT Testing
Inspections

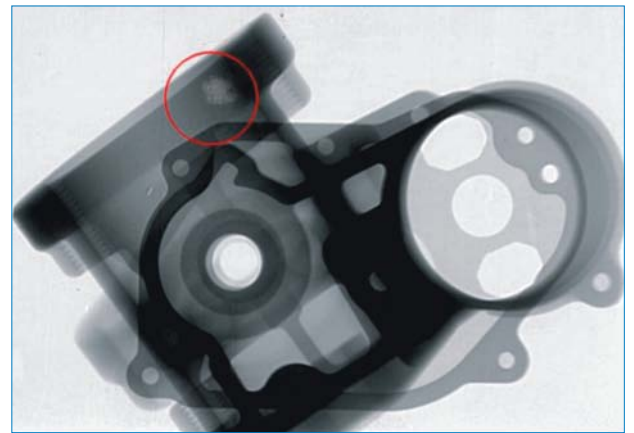
DESCRIPTION OF THE METHOD

Radiographic testing method is capable of obtaining an image of internal volumetric discontinuities (in some cases it is possible to detect some advantageously orientated 2D defects). The most frequent use of RT is for examination of welds, castings (also with very complicated shapes) etc. Due to the tradition and demonstrativeness RT is one of the most important methods in NDT. RT is used for the equipment with higher level of the inaccessibility (e.g. pressure vessels), in the aerospace, or petrochemical industry. Digital radiography (DR) and computed radiography (CR) are filiations of classic film radiography, which uses a non-film detecting media. Some elements of RT systems are supplied by modern technology. Therefore it is possible to obtain an image in digital format and use common digital tools to improve image quality.

DESIGN AND PRODUCTION

ATG offers complex solution for radiography – from simple devices up to complex systems with automatic duty cycle. Our specialists are prepared to recommend you suitable methods and specify correct technique for your application.

- | Computed radiographic systems
- | Digital radiographic systems
- | Radioscopic systems
- | X-ray sources
- | Mobile X-ray sources
- | X-ray sources of special design
- | Films, chemicals
- | Radiogram inspection and evaluation
- | RT accessories
- | Standards, referential catalogues, ...
- | Shielding cabins, X-ray bunkers, manipulation
- | Solutions for radiation safety



SELECTED PRODUCT FOR RT

COMPUTED RADIOGRAPHY SYSTEMS

Transportable CR systems provide advanced functions (e.g. scanning of non-standardized lengths of imaging plates) as well as high image quality.



RADIOGRAPHIC FILM MATERIAL & CHEMICALS

The films with long tradition and very high quality are supplied as contapack as well as dark room package.



X-RAY SOURCES BALTEAU

Light mobile sources, powerful bunker sources, constant potential sources, special design X-Ray sources, ...



ACCESSORIES FOR RT

- Universal portable light boxes for viewing of weld images,
- Image quality indicators (IQI) penetrameters acc. to: EN 462/DIN 54 109, ASTM E, API, AWS, ...
- Lead identification markers, lead shims
- Film holders
- Darkroom lighting



PORTABLE DIGITAL DENZITOMETER

Portable digital densitometer allows to measure the optical densities in full range required by NDT standards. Battery powered, measuring is based on the transmission principle.



ATG supplies:

- Large screen illuminators and illuminators with iris shutter
- Desk-top densitometers; microdensitometers; densitometers with RS232 PC port

SERVICES AND TESTING

ATG provides inspections, measurements and evaluation according to requirements of our clients, according to international standards as well as industrial codes.

Consultancy services:

- Our specialists recommend you suitable methods, warn about possible limitations, optimize testing parameters, chose the equipment and aids, prepare written instructions, safety instructions, design the workplace / laboratory, etc.



Services of NDT Level III operators

- NDT personnel qualification, written procedure preparation, methodical performance of NDT examination, setting of acceptance criteria, laboratory, and field testing, reporting, ... **Special warranties, methodic activities and creation of legislative:** These activities are everytime provided by qualified NDT Level III operators (according to EN 473/ISO 9712, SNT-TC-1A and NAS 410).

ATG uses X-ray sources as well as gamma sources (Se75, Ir192 a Co60) for inspections.

TRAINING AND SEMINARS

ATG provides qualification of NDT level 1, 2 and 3 personnel. Our company belongs to the most important training agencies of "special processes" in Europe. During the training personnel is prepared for duties of NDT examination in industrial conditions. **Training courses include practice on professional NDT equipment !**

Each participant of our training obtains:

- Attendance certificate
- Qualification certificate - after passing the final exam

Training and qualification of NDT personnel are in accordance with the following standards:

- EN 473/ISO 9712, EN 4179/NAS 410 for aerospace industry - JAR 145.30
- SNT-TC-1A employer certification



DESCRIPTION OF THE METHOD

Ultrasonic testing method (UT) is one of the basic NDT testing methods. Ultrasonic testing enables to detect the occurrence of internal material imperfections in a large depth beneath the surface. UT is generally used for testing molded semi-finished products (metal plates, forgings, rods ...), welds, and castings. It is applicable to test various nonmetallic materials such as plastics and composites. The advantage is an automatic process control. Besides, the internal defects such as tears, delaminations, cavities, surface defects are detectable as well. This method benefits by the immediate display of results.

DESIGN AND PRODUCTION

ATG has own development centre. Therefore we are able to tailor all testing equipment for UT. The following products and accessories are offered:

- | Automated ultrasonic systems
- | Gauges and accessories
- | Portable ultrasonic instruments and thickness meter
- | UT Phased Array by NDT Solutions
- | UT instruments designed for automated systems
- | UT systems for spot welds inspection (Atlantis NDE)
- | Equipment for air-coupled ultrasonic (QMI)
- | Ultrasonic instruments for control state diagnostics



SELECTED PRODUCTS FOR UT

AUTOMATED LINES

Suits for automated one- or multichannel UT testing of components, e.g. rails, round iron, wheel discs, rings, seamless and welded tubes, rods etc.



MANUAL ULTRASONIC DEVICES SONATEST

Digital devices: Sitescan 123, 150, 250, Sitescan D10, D20 Masterscan 350,380, Software SDMS, Minidisplay M1, Special devices: Railscan 125, Powerscan 450, Dryscan 410.



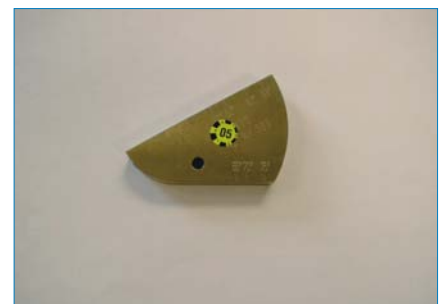
UT PROBES SONATEST

Direct probes of longitudinal waves, angle probes of longitudinal and transversal waves, simple or double probes, immersion flat and focusing probes, TOFD and Phased Array, non-contact air-coupled probes, EMAT probes, rolling-type probes, cables ...



UT GAUGES

- | For calibration
- | Step wedge
- | ASME, ASTM, CBV reference
- | Gauges for automated testing
- | and others



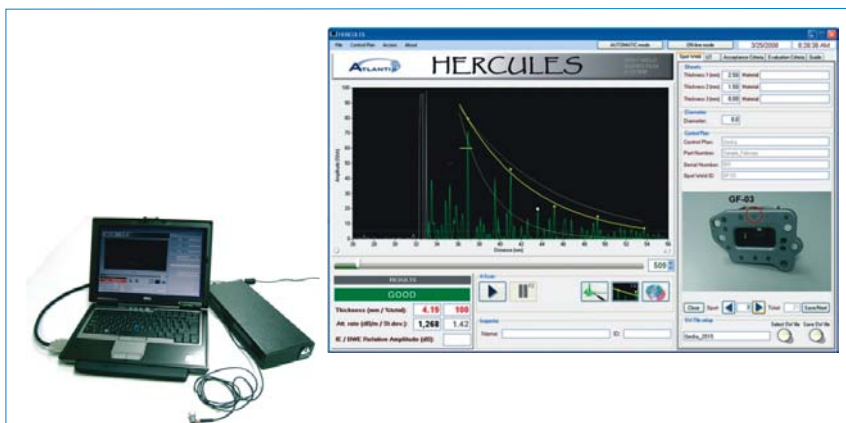
ULTRASONIC THICKNESS METERS

Instruments for coating measurements by **Sonatest** and **Dakota**



UT PORTABLE INSTRUMENTS WITH COMPUTER PROCESSING

Acquired data processed by one-channel device designed for basic applications, by default installed in portable computer for easy use in different location of a hall. The area of application – above all spot welds inspection in automotive industry.



SERVICES AND TESTING

Our specialists recommend you appropriate methods and call attention to possible limitation, specify the testing method in relation to the requirements (test sensitivity), optimize the testing parameters, select devices and accessories, assure the steps for work safety, suggest the workplace etc. Ultrasonic testing method exploits the detection of ultrasonic waves reflected from inhomogeneities or defects, respectively. It can be applied for **metallic and nonmetallic material inspection**.

The advantage is a possibility to test semi-finished products of enormous thicknesses (a few meters of forgings). **ATG provides testing of weld joints, steel flat products, forgings, steel tubes, testing in foundry industry or thickness measuring, UT thickness measuring of hardened layer with aid of HÄRTI system, immersion testing on 7-axes manipulator with option of C-scans, and testing of aircraft parts** performed by operators with aerospace qualification. For these activities ATG is approved by the Civil Aviation Authority.



Equipment of ATG operators for UT inspections:

- Ultrasonic instruments (reflected and one-way method)
- Standard sets of UT probes
- Ultrasonic calibration and reference gauges
- Ultrasonic hardness testers and thickness meters
- Devices for thickness measurement of coatings and paints
- Ultrasonic manipulators and systems
- Ultrasonic equipment for spot welds inspection

TRAINING AND SEMINARS

ATG provides qualification of NDT level I, II and III personnel. Our company belongs to the most important training agencies of “special processes” in Europe. Courses prepare NDT operators for duties in ultrasonic testing in industrial conditions. **Training courses include practice on professional NDT equipment!**

Each candidate for our NDT training courses obtains:

- Attendance certificate**
- Qualification certificate** - after passing the final exam

Training and qualification of NDT personnel are in accordance with the following standards:

- EN 473/ISO 9712, EN 4179/NAS 410 for aircraft industry - JAR 145.30
- SNT-TC-1A employer's certification



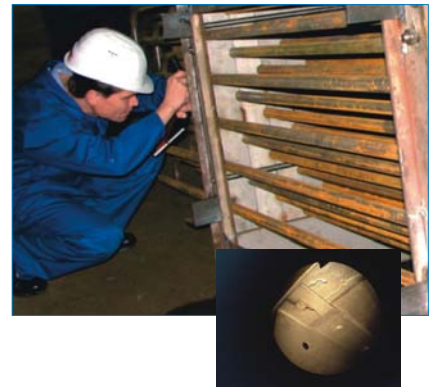
DESCRIPTION OF THE METHOD

Visual testing method (VT) is the most widespread NDT method. VT method is focused on inspection and evaluation of the surface with naked eye or using special equipment. VT is used by standard NDT control of defects like cracks, cold laps, surface conditions and porosities. Our company finds deviation of shape, measures and assesses linear misalignments, excessives penetration of welds and offsets of casting dye. ATG checks the surface conditions. Compared to the other NDT methods (RT, PT, ...), VT is a valuable NDT method, which even exceeds in its scope the applications of other NDT methods. VT is considered to be the basic NDT method, which should be performed prior to any other NDT method.

DESIGN AND PRODUCTION

ATG offers complex equipment for NDT workstations - from simple devices up to complex systems. ATG can help you to propose the most suitable solution for your application, which can be mobile or stationary.

- | Boroscopes
- | Fibroscopes
- | Videoscopes
- | Gauges
- | Magnifiers
- | Luxmeters
- | Cases for welding inspectors
- | Etalons



SELECTED PRODUCTS FOR VT

BOROSCOPES OLYMPUS

Rigid endoscopes, diameter from 0.9 mm, length up to 1430 mm, possibility to connect the camera.



VIDEOSCOP iPLEX

Light mobile videoscope, data record, digital zoom, turning of the end in 4 directions in the length 1,5 - 8 m, diameter 4,4 mm or 6 mm.



WELDING INSPECTORS SET

Tough lockable suitcase containing gauges, magnifying glass with lighting, lamp, mirror, contact microscope and further necessary equipment.



GAUGES – MAGNIFIERS - ETHALONS



HIGH SPEED CAMERAS

Used for control of fast processes, technological processes, explosions, destructive testing, crash tests, etc.



LUXMETERS

Measuring range: 0 - 50000 lux or 0 - 5000 cd; definition: 1 or 10 or 100 lux; special photodiode is equipped with the correction colour screen.



SERVICES AND TESTING

ATG provide testing in our labs as well as on site. Our company perform visual testing both in our laboratories and directly on customers' work sites and workplaces. For standard testing of interior spaces with straight access **boroscopes with inclinable prism** (remote vision direction set-up), light source and accessories for **digital data acquisition** (digital camera and adaptor) are used. For inspection of interior spaces with indirect access **iPLEX videoscope** with exchangeable object lens is used.

Regarding the VT we possess several sets of gauges for welds (inspection sets), photographs MSS-SP-55 and SCRATA casts evaluation replicas (according to ASTM A-802).

Services of NDT Level III operators:

NDT personnel qualification; creating of Written Procedures, methodical performance of testing, acceptance criteria; testing on and off company premises; logging into files. **Professional guarantee, methodical activities and formulation of legislation.**

These activities are always provided by Level III qualified personnel (according to EN 473/ISO 9712, SNT-TC-1A and NAS 410).

Counseling services – our experts will recommend you appropriate methods, specify the right testing techniques depending on requirements (sensitivity of testing), optimize the testing parameters, choose the equipment and tools, provide labour safety procedures, project the workplace etc.



TRAINING AND SEMINARS

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Training and qualification of NDT personnel are in accordance with the following standards:

- EN 473/ISO 9712, EN 4179/NAS 410 for aerospace industry - JAR 145.30
- VT 970/ISO 17637, VT2dw, EN 12454
- SNT-TC-1A employer's certification

