ATG

INFO 2019

COMPLETE SOLUTION FOR NDT

Instrumentation & Equipment

Qualification & Certification

Testing & Inspection

Outside Agency Services

Accredited Nadcap™
NDT - AC7114/1 Rev J

www.atg.cz

CONTENT

INTRODUCTION

Dear customers, colleagues, friends,

After one year we would like to share with you again our new company brochure, which may help you with operation, implementation and optimization of special processes as NDT, welding, heat treatment, surface and chemical treatment etc.

We believe that successful development of engineering companies in manufacturing and maintenance is strongly related to special processes. The goal of the ATG Group is to participate on this process and support you – our customers – in all its segments. That may range from qualification of technical personnel (without which no special process may exist), consulting and implementation support during implementation of the special process (including its Quality Management System) and design and realization of customer solutions for optimal implementation and execution of the process.

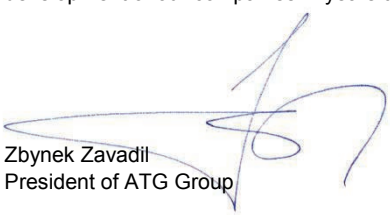
ATG Group is keeping with the philosophy, that:

- Successful **development of our customers is a baseline for successful development of ATG Group**. For that reason we would like to agree with our customers and partners on higher level of mutual information, which may significantly increase the efficiency of the whole community as well as help each of the participants.
- Ability to effectively **connect mutually independent processes, i.e. welding or production of composites with NDT**, surface treatment and FPI etc., including full coverage of each process from qualification, QMS and delivery of equipment. This brings significant benefits for the customer including simplification of the whole company system of special processes **throughout networking structures** and creation of purpose-built structures.

For that reason we would like to create with your help a discussion and interpretation forums for general support especially in the area of energy (nuclear power plants), aerospace and subsequent processes and we would like to motivate you for broader and more complex cooperation.

We also expect, that due to demographic situation and general support of the state, one of the most important processes in further development of the economics is limitation of human factor in both manipulation and handling and evaluation. For this reason the ATG Group focuses on robotization of NDT process, validation, verification of special processes and automated evaluation for special processes through deep learning (INDUSTRY 4.0).

I believe that our portfolio will interest you and we will move forward to a broader cooperation, which will bring successful development of our companies in years to come.



Zbynek Zavadil
President of ATG Group

ATG GROUP

ATG Group is the **unity** of companies with one corporate identity and ownership held by the parent company ATG Ltd. (ATG Prague) Members of the ATG Group **follow the same Corporate Mission, Vision and Strategies**, as well as **praise the same Core values**, that are based on centralized Quality Assurance.

The executives of the ATG Group are centralized in ATG Prague and they are **the guarantee of one unified approach to the Special Processes** of the whole ATG Group for all potential customers.

All members of the ATG Group provide their customers with complete solution for NDT and related Special Processes that means both, products and services, related to their industrial field. This may be applied inside one member company (i.e. products and services for NDT in ATG Prague) as well as across more ATG Group members (i.e. production of composites in LAC and NDT testing of composites in ATG Prague).

Close interaction of all the Group members ensures for the customer that the activities not provided by the local member can be supplemented by other, adequate member on Customer's request.

The members of ATG Group are located in Group's all current major geographic areas of interest: Prague (Czech Republic), Trencin (Slovakia), Sankt Petersburg and Moscow (Russia), Kiev (Ukraine), and Abu Dhabi (United Arab Emirates).

In addition to the ATG Group members, there is a broad range of partners and distributors directly cooperating with ATG Group in their respective regions. Achieved synergy between these organizations is used for the benefit of the Customer by extended distribution abilities and ATG Group's product support.

MISSION

Maximize operational safety of industrial products **by top level quality** of industrial inspections.

VISION

Be a **financially strong**, **technology company** operating on the **international scale** in the area of industrial inspections, ensuring the quality of Customer's products by implementing the complete solution of **advanced technologies**, **products** and **services**, based on the **latest technical trend and development**.

CORE VALUES

Honesty → Responsibility → Expertise → Quality → Integrity → Flexibility → Innovation

CORPORATE STRATEGIES

- Complete solution for the Special Processes, always fully in accordance with Customer's specific requirements
- Implementation of both products and services as the two inseparable parts of the Special Processes
- Global approach, ensuring for the customer integrity with international standards

ATG GROUP PRODUCT PORTFOLIO

ATG Group provides complete solution for NDT by implementing both products and services in all standard NDT methods and other related Special Processes.

The product portfolio ranges from single devices up to complete solutions involving implementation of complex NDT systems using several NDT methods, personnel qualification of the operators and establishment of the whole NDT process including accompanying processes at the shopfloor.

PRODUCTION AND EQUIPMENT

Scope of work

- Job-shop production of **customized**, automated / semi-automated / manual **NDT systems** for testing of robust, difficult or non-standard parts
- Batch production of **standardized** automated / semi-automated / manual **NDT devices** for testing of standardized or widely used parts
- Mass production of **equipment, tools and gauges**
- Solution of accompanying processes (e.g. water / surface treatment etc.)

Target segment

- Testing of batch or mass-produced components for transport and energy industry and machinery
- Suitable for each stage of the production process
- MT, PT, UT, ET, RT, LT methods of NDT process

QUALIFICATION AND CERTIFICATION

Scope of work

- **Independent qualification and certification** for NDT Plant and Welding Inspection
- **Employer qualification and certification** for NDT and Welding and Third-Party Inspection
- All **standard NDT methods** in all levels (1/2/3) and all relevant product / industrial sectors
- **Specialized NDT methods** (IRT, TCS, EI)
- **Specialized NDT techniques** (Phased Array, TOFD, UT-sw, Digital and Computed Radiography)
- **Practical part** of the training as the principal feature

Target segment

- Production quality assurance personnel
- Maintenance quality assurance (inspection) personnel
- Aerospace qualification acc. to EN4179/NAS410

TESTING AND INSPECTION

Scope of work

- **Individual testing** of low-count products in ATG facility by internal staff, including professional problem analysis and proposal of technical solution
- **Inspection in production facilities** (ASME, PED, shop/site inspection)
- **Maintenance / devices under operation inspection** activities (RLA, RBI)
- **Mass testing** of Customer's products on ATG devices by outsourcing of a qualified staff as one of the principle approaches to complete solution for NDT
- **ATG Special Process House**

Target segment

- Testing for aerospace and automotive industry
- Inspection in petrochemical and energy industry

OUTSIDE AGENCY SERVICES

Scope of work

- Implementation of the whole NDT process into the Customer's facility
- Services of NDT Level 3
- Design of Quality Management System for NDT
- Personnel qualification by Customer's Written Practice
- Auditing of NDT process
- Performance evaluation of NDT personnel
- Proficiency testing of NDT labs acc. to ISO/IEC 17043
- Audit support for NADCAP, EASA, TPG and ASME

Target segment

- Mass-production facilities with internal NDT test sites operating in especially aerospace industry
- Support for implementation of NDT process during NADCAP, EASA, TPG and ASME approvals

STRUCTURE OF ATG GROUP

ATG Group is the most active in regions of Europe, Russia and Middle East and the structure of ATG Group is designed to cover their regional needs. In last two years ATG Ltd. also actively entered to Far East region. All members follow the same principle of the company – **deliver the complete solution of both products and services for special processes**.

ATG Group uses the cultural and geographical diversity of its members and partners as an advantage and cooperates on many international projects in order to deliver the best technical solution for the Customer. As a result ATG Group operates with their activities almost all around the World.

Company name	Share*	Production	Services	City	Country
ATG Ltd.	100%	X	X	Prague	Czech Republic
LA Composite	100%	X	X	Prague	Czech Republic
ATG – Inspekta Srl.	100%		X	Prague	Czech Republic
ATG NDT Academy	60%		X	St. Petersburg	Russia
ATG Slovakia	59%	X	X	Trencin	Slovakia
PK-Q	50%		X	Prague	Czech Republic
ATG Oniko	45%		X	Kiev	Ukraine
ATG Consulting & Training Services	24%		X	Abu Dhabi	UAE

*share of the mother company ATG Ltd. in given daughter company in November 2018

TRAINING CENTERS OF ATG GROUP

In addition to the net of member companies, ATG Group has several training centers that are exclusively focused on personnel qualification in NDT as one of the major sources of company revenue. These centers are supported through local partner organizations. The countries where training centers were already established include Russia, Serbia, Latvia, Ukraine, United Arab Emirates, Kingdom of Saudi Arabia, Iraq, Turkey and Algeria.

PARTNERS OF ATG GROUP

Last but not least, ATG Group also cooperates with a broad range of partners from all around the World. These partners may include distributors, inspection agencies, freelancers and many others.

HISTORY OF ATG GROUP

Year	Milestones
1992	■ Establishment of ATG, Ltd.

1993	■ Definition of target production area:
	  ■ Fluorescent penetrant inspection lines (FPI)
	  ■ Magnetic-particle inspection lines (MPI)
	  ■ Ultrasonic Testing manipulators
	■ Establishment of Production Department (first FPI line for Letov and MPI line for AERO)
	■ Beginning of personnel qualifications in cooperation with Sector CERT and SKODA Turbines
	■ Personnel qualification for all standard NDT methods (ET, LT, MT, PT, RT, UT, VT)
	■ Approved Training Center for SECTOR Cert GmbH

1995	■ Establishment of APC (Association for Personnel Certification), Inc. independent certification body ■ Establishment of the first subsidiary (that time joint-venture of ATG and Letov), the LA Composite
1997	■ Establishment of QC Pilsen, that time only ISO 9712 / EN 473 Examination Center in the Czech Republic
1999	■ First UT tank for aerospace (turbine disks testing) ■ Start of activities in Russian Federation
2000	■ Approval by CWS ANB for European / International Welding Inspection (EWI/IWI) qualification
2001	■ First automated combined UT – MT NDT system ■ Cooperation with Hartford Steam Boiler in industrial inspections (ASME Code, PED)
2002	■ Establishment of ATG Slovakia, Ltd., the first subsidiary abroad
2003	■ Approval of Czech National Aerospace NDT Board (Czech NANDTB) for EN 4179 / NAS 410
2004	■ Start of activities in Gulf region
2006	■ Approval of EASA Part 145 (Process D1)
2008	■ Subsidiary ATG Consulting and Training Services, Ltd. in Abu Dhabi, UAE ■ UNIMAG 13000 AC/AC, one of the biggest MPI system on the world, produced for SIEMENS
2009	■ First fully automated FPI line for Strojmetal Kamenice, Inc. ■ Approval of American Petroleum Institute (API) for TPCP program
2010	■ First of UNIMAG Aerotester series with unique Quick Break technology in accordance with ASTM E1444 ■ Establishment of ATG Cert, independent, non-accredited certification body
2011	■ Sale of QC Pilsen, Inc., independency in qualification and certification acc. to EN 473 / ISO 9712 (NDT) ■ First ET manipulator for aerospace (testing of wheels) ■ Approval of ATG Cert Examination Center by Reaktortest ■ Approval by TÜV Nord Systems and TÜV Nord Czech for ISO 9712 / EN 473 qualification system (Training center and Examination Center)
2012	■ Approval by Ministry of Oil, Iraq – ATG is the only NDT qualification provider for MMO, Iraq
2013	■ Approval by Russian Civil Aviation Authority (Rosaviacijia) for qualification acc. to EN 4179 ■ Approval by KIWA Inspecta (Inspecta Latvia) for ISO 9712 / EN 473 qualification system (Training center and Examination Center) ■ CIA accreditation for interlaboratory proficiency testing of NDT labs
2014	■ Approval by AWS for CWI and CRI qualification and certification system ■ Approval by Russian National Aerospace NDT Board for EN 4179 / NAS 410 NDT personnel qualification
2015	■ Establishment of Special Process House for mass NDT testing ■ NADCAP accreditation of Special Process House for its FPI water-washable penetrant inspection process ■ New training and production facilities in new building beside ATG Headquarters ■ Establishment of ATG Academy subsidiary in Sankt Petersburg, Russia
2016	■ NADCAP accreditation of Special Process House for its MPI and UT inspection processes ■ Delivery of so far the biggest FPI line to VSMPO Verchnjaja Salda for aerospace industry ■ Reconstruction of the ATG headquarters in Prague
2017	■ UNIMAG 14000 AC/AC, one of the biggest MPI system on the world, produced for MAN, Siemens, Vartsilla a Mitsubishi Heavy Industry

EVALUATION OF ATG GROUP ACTIVITIES IN 2018

ATG Group has continued with declared development and continually fulfilled its goals defined in the year 2018 as follows:

PRODUCTION AND EQUIPMENT

- Entry to the Japanese market with delivery of MPI bench for testing of crankshafts with maximal length of 14 meters
- Entry to the Netherlands market with delivery of automated MPI bench for railways industry for customer NEDTrain
- Entry to the Korean market with delivery of new generation ET wheel tester for testing of aircraft wheels with integration for continuous conveyor for customer Korean Air Lines in Seoul
- Developed manipulator AWM 1000 for manipulation with aircraft wheels for manual inspection of bore holes by eddy current or for visual testing
- New X-ray source FOKUS with direct and panoramic source and output power of 160 and 200 kV
- Start of cooperation with Galvatek company (Finland)

QUALIFICATION AND CERTIFICATION

- ATG representative appointed to ASME Standards Committee for personnel qualification in the area of NDT, with focus on new qualification system ASME ANDE-1
- Request for approval of ATG to become the Designated Testing Organization for ASME ANDE-1 submitted to ASME
- Start of negotiations for mutual cooperation between ATG and HSB in the field of personnel certification in connection with ASME ANDE-1
- Implementation of new qualifications RT2ce, UT-sw, Internal auditor of NDT and Auditor of NDT process
- Realization of 3 special UT Phased Array courses acc. to ISO9712 with length of 5 weeks each for HEESCO Company (Ministry of Oil, Iraq)
- Realization of first series of Digital Radiography courses in Russian Federation
- Start of negotiations for cooperation in NDT personnel qualification in India

TESTING AND INSPECTION

- Approval of ATG by IFIA (International Federation of Inspection Agencies)
- Approval of ATG by Ministry of Oil, Iraq for performing TPI inspections
- Extension of ATG Special Process House by cleaning and cleanliness verification process
- Approval of ATG by GE Aviation Czech for cleaning and cleanliness verification process acc. to specification P4TF21
- Qualification of 2 new ATG´s ASME inspectors
- Deployment of ATG welding inspectors in the Oceania for the first time (Australia)

OUTSIDE AGENCY SERVICES

- Appointment of ATG as the Outside Agency of Korean Air Lines and GE On Wing Korea
- Start of cooperation for NADCAP implementation support for 4 customers from the Russian Federation
- Inter-laboratory Proficiency testing acc. to ISO/IEC 17043 reached 107 participants from all around the world in 2017

COMPLEX PROGRAMS

- Establishment of AATNA consortium together with companies ALTA, ALVEL, and TUV Nord Czech focused on implementation support of special processes for nuclear energy industry
- Start or research for application of neural networks and deep learning for automated evaluation of findings

The share of annual turnover of ATG Ltd. in 2018 was the following – Production and Equipment: 47%, Qualification, Certification and Outside Agency activities: 39% and Inspections: 14%.

The number of internal staff of ATG Ltd. reached 110 employees this year, with 49% university graduated and including 21 qualified as NDT Level 3. The total number of employees of ATG Group reached 198 persons.

ATG GROUP DEVELOPMENT PLAN FOR 2019

For year 2019 ATG Group intends to develop the following in each of the main Customer products:

PRODUCTION AND EQUIPMENT

- Strengthening the newly established position on Korean and Japanese markets
- Penetration with AWT 950 NG among other MRO organizations including companies from the Middle-East
- Introduction of low-cost option for selected MPI benches of the ATG portfolio
- Entry to the Indian market with ATG equipment

QUALIFICATION AND CERTIFICATION

- Approval of ATG as the Designated Testing Organization for ASME ANDE-1
- Approval of own Provisional ANDE Level 3 by ASME
- Extension of qualification courses offer by IRT for Buildings Inspection acc. to SNT-TC-1A
- Establishment of training center for ISO 9712 in Basra with support of local organization
- Establishment of Center of Excellence for UT techniques Phased Array and TOFD
- Start of regular qualification activities in India with support of local organization

TESTING AND INSPECTION

- Approval of GE Aviation for inspection activities in RT method
- Extension of ATG Special Process House and its integration with ATG showroom
- Extension of inspection activities for Ministry of Oil, Iraq, approval of MOC and MOE
- Start providing the NDT Level 2 services for MRO organizations (EASA Part 145 D1) in Germany

OUTSIDE AGENCY SERVICES

- Reference for Outside Agency services from Germany
- Extension of cooperation in Outside Agency services with Korean Airlines and GE On Wing Korea
- Extension of Outside Agency services to Middle east and Far East
- Extension of applications for Inter-Laboratory Proficiency Testing acc. to ISO17043 more outside of the EU

COMPLEX PROGRAMS

- Connection with system integrators for providing complete solution for NDT
- Higher synergic effect between ATG and distribution nets of ATG main partners

IMPORTANT NEWS OF YEAR 2018

ATG's long-term goal is to increase the volumes of NDT products throughout outsourcing and increased reproducibility and traceability of performed NDT. This principle is applied in both, provided services and designed and produced equipment.

The goal of ATG Group is to deliver complete solution for NDT, either by implementation of whole process including equipment at the customer's facility, or by outsourcing of customer's NDT process to the premises of ATG Group. News of the year 2016 is further developing this idea by new applications ATG can offer it to its customers.

PRODUCTION AND EQUIPMENT

The biggest MPI bench in the World UNIMAG 14 000 AC/AC for testing of crankshafts of ship engines

Between the end of 2017 and beginning of 2018 ATG successfully installed probably the biggest MPI bench in the World UNIMAG 14 000 AC/AC for testing of crankshafts for cogeneration units and big diesel engines of trans-ocean ships with maximal crankshaft length of 14 meters for a customer from Japan, which is one of the biggest producers of crankshafts of such size in the World – delivering for companies MAN, Siemens, Vartsilla and Mitsubishi Heavy Industry.

This bench allows **performance of testing process by MPI within less than 60 minutes**. By such the testing time was reduced from original two days to 5% (compared to conventional testing by hand-held yokes). Simultaneously, by implementing dedicated equipment the verification reliability was significantly improved.

Special MPI bench UNIMAG 2600 AC/AC/AC for testing of railway axles with installed gearboxes

In 2018, ATG delivered a specialized MPI bench UNIMAG 2600 AC/AC/AC for testing of railway axles with installed gearboxes for company NEDTrain (Netherlands railways). This device is delivered in a completely new maintenance center in Haarlem and it utilizes an unique magnetization principle using techniques of direct current flow and two movable coils for 100% coverage of axles´ surface and all defect orientations without necessity to disassemble the gearbox.

The UNIMAG 2600 system is fully automated, i.e. it communicates with the central control system (MES, that controls the previous and subsequent operations including manipulation with axles). The device also automatically sets up and archives all magnetization parameters including automated set-up of the clamping length, archiving of detected indications etc.

New generation of automated system for testing of aircraft wheels with integration to continuous conveyor system

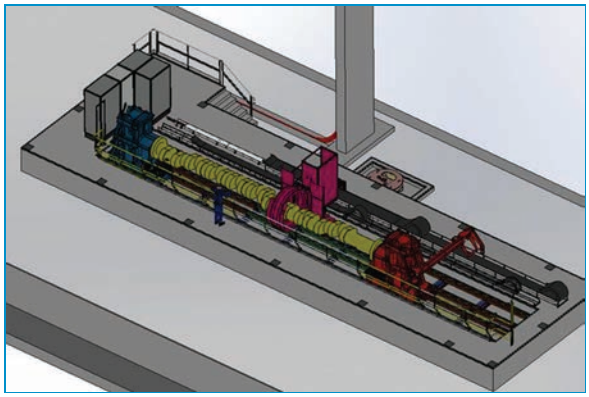
In 2018, ATG developed and produced its first new automated wheel tester for inspection of aircraft wheels AWT 950 NG, successfully delivered to the Korean Air Lines in Seoul. This device brings a range of advantages compared to its predecessor, e.g. higher sensitivity, better signal to noise ratio, simple and fast inspection, archiving and printing of test reports, adjustable height of the testing table, or choice between manual or automated testing.

Additionally, this device is adapted for integration with continuous conveyor system and it is therefore suitable even for big maintenance centers. The device is possible to be bought alone or together with manipulator AWM 1000 for lifting and turning of wheels during manual ET inspection of bore holes and for visual testing.

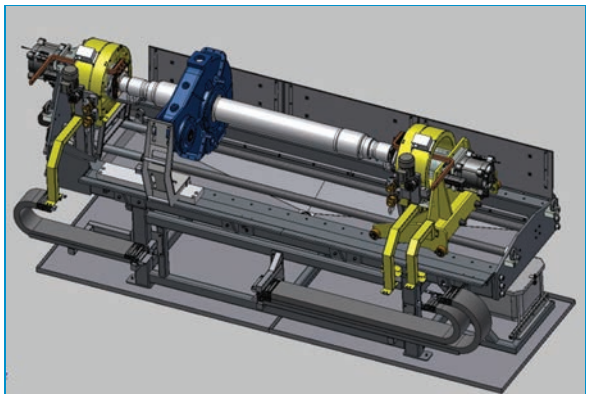
New specialized equipment for X-ray inspections

ATG started the sale of mobile X-ray sources FOKUS XD and XP. These sources have very small dimensions and weight from 5.4 kg. Options include sources with direct direction of radiation (XD 160 and 200 kV), as well as panoramic sources (XP 200 kV). The effective voltage of all modifications is 24 V, therefore the source can be connected to a truck's battery, or battery of passenger cars via 12 / 24V inverter. The original accessory includes a battery in a portable suitcase (including a charging unit). It is possible to purchase a range of optional accessories.

For testing of pipes by RT, UT and VT the ATG company now provides systems Transscan and Uniscan that can be combined with FOKUS X-ray source or with other sources. These systems allow combined testing of pipings with diameter between 300 and 1420 mm with one clamping of titanium guidance rails. The whole equipment is able to work autonomously, only from car batteries. Attachment of the guidance rails takes about 3 min.



UNIMAG 14000 AC/AC FOR TESTING OF CRANKSHAFTS (MARITIME)



FULLY AUTOMATED MPI BENCH UNIMAG 2600 AC/AC/AC FOR RAILWAY AXLES (RAILWAYS)

AUTOMATED AWT 950 NG (AEROSPACE)

X-RAY SOURCES FOKUS (ENERGY, AEROSPACE)

QUALIFICATION AND CERTIFICATION

ATG representative appointed to ASME Standards Committee for ANDE-1 NDT and QC personnel qualification, including Nuclear Specific Industry Sector

ATG representative was appointed to the standardization committee of ASME for qualification of NDT and QC personnel. This committee is responsible for the qualification system ASME ANDE-1, which is since 2017 approved alternative to SNT-TC-1A and ASNT/ANSI CP-189 for qualification of ASME BPVC.

The appointment is also including participation in partial SIS committees (Specific Industrial Sector) for both nuclear and non-nuclear pressure vessels and pipings.

ATG started application for Designated Testing Organization approval acc. to ASME ANDE-1

ATG applied for approval as a DTO (Designated Testing Organization) for qualification specification ASME ANDE-1. If approved, ATG will become one of the first approved DTOs in the European Union. Part of this application is also approval of own provisional ANDE Level 3 for UT method, which is already in progress.

TESTING AND INSPECTION

ATG approved by GE Aviation Czech for cleaning and cleanliness verification process

ATG received in 2017 approval from GE Aviation Czech for cleaning and cleanliness verification process acc. to P4TF21 specification for GE Catalyst engine, the newest from the turboprop engines produced by GE Aviation. ATG was approved already during trials of the engine, the main production is expected to ramp up from 2020 to 2022.

Special equipment for cleaning of tubes utilizes a series of cleaning mechanisms as isopropyl alcohol cleaning, ultrasonic cleaning and high-pressure water jet cleaning. The equipment shall be operated in controlled environment for perfect cleanliness of the parts. Presence of any debris may limit the operation of some engine components and consequently cause serious damage of the engine.

Strengthening of cooperation with Hartford Steam Boiler

In fall 2018, ATG successfully qualified 2 new ASME inspectors. By this step and by starting negotiation of cooperation between ATG and HSB with presence of ASME about the personnel qualification ATG further strengthens the cooperation with this reputable ASME organization.

COMPOSITES PRODUCTION (LA COMPOSITE)

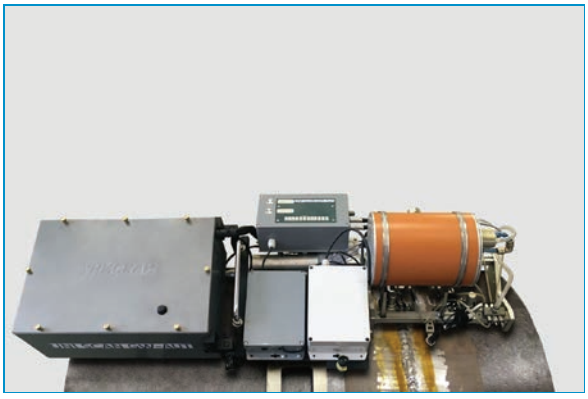
Extension of composite parts product portfolio

LA Composite received a contract for sub delivery of carbon parts for company Aissmann-COTESA designed for automotive industry (AMG). LA Composite by this establishes itself in this industrial sector. Simultaneously the deliveries for aerospace increased - except for the main customers as Airbus Helicopters, Daher-Soccata and Aerosecure (Leonardo Helicopters) the company newly delivers for DIEHL Aviation.

New production facilities in Čelákovice for companies ATG and LA Composite

ATG Group acquired new production facilities with total area of 3000 m^2 in Čelákovice (Central Bohemia). These facilities shall be used mainly for final assembly of big FPI lines and bonding of bigger parts for aerospace industry.

CLEANING OF PARTS FOR GE CATALYST ENGINE (AEROSPACE)



NEW LIGHTWEIGHT X-RAY INSPECTION EQUIPMENT – FOKUS AND UNISCAN (ENERGY, PETROCHEMISTRY)

NEW PRODUCTION FACILITIES IN ČELÁKOVICE

PRODUCTION IN LA COMPOSITE

INTRODUCTION OF LA COMPOSITE LTD.

LA composite Ltd. (LAC), the member of ATG Group, is a recognized build-to-print manufacturer of composite parts for the aerospace industry. Started production in 1995 in Prague, Czech Republic, the company has been expanding its expertise in structural, interior and ducted composite parts for civil aircraft and helicopters.

LAC is a wholly owned subsidiary of ATG – Advanced Technology Group Ltd. with **68** employees and **4.5 milion EUR** turnover annually.

LAC can offer full design, prototyping and technology development, production of high-precision and versitale moulds, serial manufacturing, post-processing and assembly, consultancy in engineering and training (in cooperation with ATG Prague) and repair services in composites industry. LAC is capable to produce geometrically complex components using mainly prepreg technology with autoclave or oven molding cures and additionally also vacuum infusion, RTM process or wet lamination (for moulds).

The company's quality approvals include EASA Part 21 G, AS 9100 and ISO 9001:2016. The company is also approved supplier for Airbus Helicopters, Korean Air, Leonardo Helicopters, Daher and Diehl Aviation.

MISSION

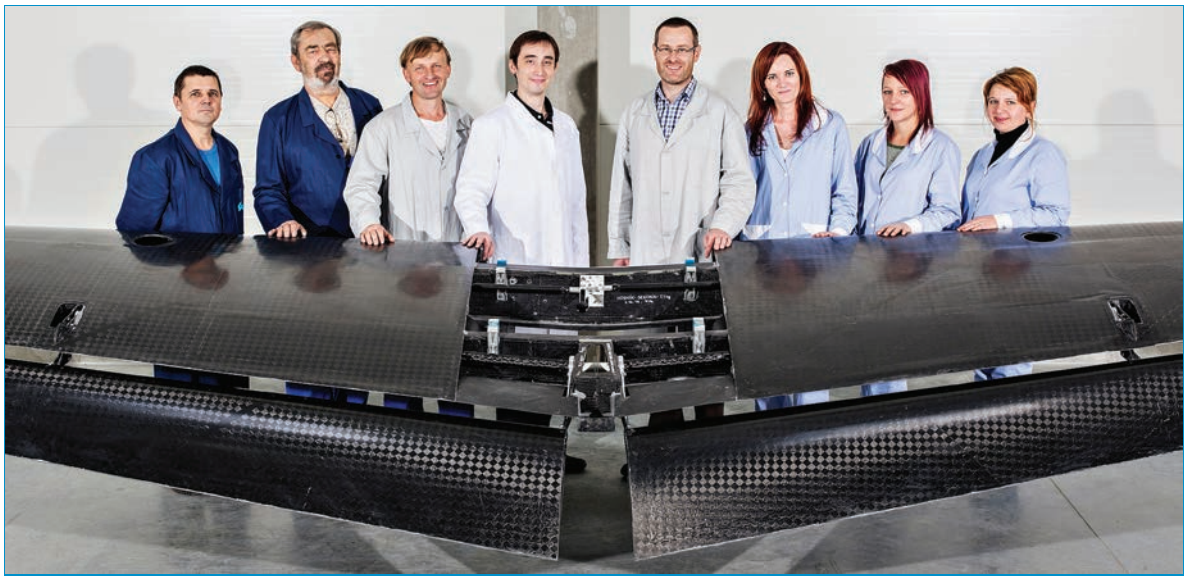
- Serve main **Prime customers** to deliver value-added products to final customers
- Develop core **technology** expertise within and outside the ATG Group

VISION

- Being a continually growing company (in terms of revenues, profits and technology progress)
- Manufacture comprehensive composite products for aerospace and transport industries
- Operate globally and act on global markets
- Compete on the quality of work and flexibility

STRATEGY

- Advance in technology through strategic partnerships
- Develop in-house technology and expertise
- Strengthen marketing and sales power within the ATG Group



PRODUCTION

The production facility is upgraded by continual investments; it has 3,500 m^2 of production area equipped with two autoclaves, ovens, freezers, CNC plotters and post-processing equipment. The production capabilities and skills are proved by more than ten years of successful ongoing partnership with Tier 2 suppliers all around the World.

PRODUCT PORTFOLIO

- Aircraft fire protection lining (forward and aft cargo doors)
- Helicopter emergency flotation systems (forward and aft bays and covers)
- Helicopter skin sandwich panels
- Aircraft interiors (toilet floor pans)
- Air conditioning system (parts for heat exchangers)
- EASA CS 23 jet aircraft (composite fuselage and wings)
- Subway interior panels

MAIN CUSTOMERS

- Airbus Helicopters
- Korean Air Lines
- Leonardo Helicopers – Aerosekur
- Daher
- Diehl Aviation

AIRCRAFT EQUIPPED WITH LAC PARTS

- Airbus A320/330/350/380 families
- Leonardo Helicopters AW139/169/189
- Airbus H125

UL-39 project

Company LAC participates on the UL-39 project, where it ensures the technology development and prototype production of all composite parts including primary structure of the aircraft: fuselage, wings, tailplane, as well as parts of the landing gear, stator, rotor of the propulzor etc.

R&D AND TECHNOLOGY PROJECT

The goal is to provide a complete solution to customers incorporating LAC engineering services. LAC supports their customers by feasibility study, structural analysis AND technology development up to prototyping and serial production using 3D CAD and FEM software. With LAC partners, the company conducts experimental measurements and structural testing.

Due to product diversity from the product portfolio of the rest of ATG Group, LA composite Ltd. is not considered in further pages of this document except this introduction. For further information about LAC please visit www.lacomposite.com.

ATG GROUP PRODUCTION AND EQUIPMENT

ATG Group develops and produces wide range of equipment for NDT in all standard NDT methods and follow-up processes to NDT (e.g. etching, cleaning units, water treatment). The products may range from simple devices up to complex, innovative NDT systems, which use several NDT methods and fully automated testing mode for maximal elimination of human factor.

PRODUCTION CAPACITY AND PRODUCTION PROCESS

ATG Production Department disposes of enough professional personal capabilities for fast delivery of its products and during last 27 years already installed thousands of various NDT products, mostly for FPI and MPI NDT methods. Every year ATG Prague produces hundreds of standard equipment and thanks to its flexible expert team as well as fully customized solutions for NDT.

ATG Group takes advantages of synergy effect of all its activities which gives complete view on the provided solution. This allows reflecting of best practices already to the design of the equipment to be produced.

Every project is initiated by strong cooperation with the Customer and NDT specialists of ATG Group in order to evaluate and consider precisely relevant alternatives. Design of the products is tailored to suit Customer's specific needs, which are confirmed before the Construction and Manufacturing phases start. Every product, where it is possible, is pre-assembled in ATG facility in order to verify its functionality (pre-acceptance) and then installed as a turn-key product at Customer's site.

If requested, the products may be further optimized to minimize e.g. lead time, underutilization of workforce etc. As a part of optimization ATG Group also provides customized on-site training of the operators on given product acc. to requested qualification system. In case of need, after-sales services for ATG products (both in-warranty and after-warranty) are available worldwide.

FOCUS ON QUALITY, RELIABILITY AND SAFETY

All systems, instruments and supporting equipment are produced in compliance with required safety and NDT standards. ATG Group focuses on high quality of manufacturing and therefore it implements (and is certified in) ISO 9001 Quality Management System and uses only high quality components for manufacturing and assembly (e.g. from Siemens, Sick, FESTO) on its devices.

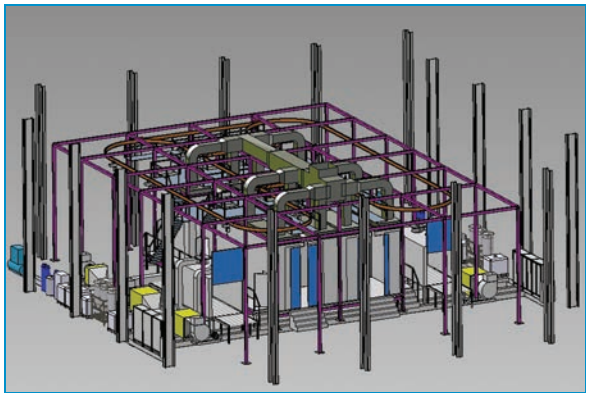
Due to the 27 years of production experience products of ATG Group are known for its very high reliability with very low defect rate and low level of necessary warranty servicing. This statement is proven by high level of repeated contracts from past Customers, who tend to return to ATG Group on a regular basis.

ATG GROUP FOR INNOVATION

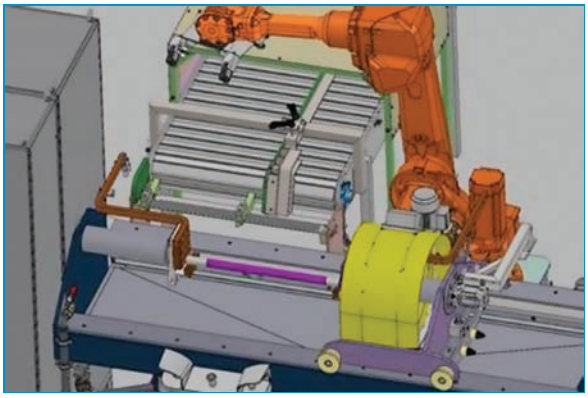
Products of ATG Group use the most modern technology in order to provide maximal testing efficiency for the Customer. This may include applications for **higher sensitivity**, **higher testing speed**, **reduction of human resources**, **reduction of unit testing cost** and others.

Special focus is on logistic and transport/handling systems of tested material with respect to the workplace ergonomics. Substantial effort is also given to new approaches to data processing (e.g. **C-scan**) or controlling and data collection systems for sophisticated inspection systems and development of the most advanced NDT technologies as **Quick Break Break for MT, automated evaluation for MT and PT** by utilizing deep learning or automated systems for LT (together with ATC Inc.).

PRODUCTION OF FPI (LPM 110K)

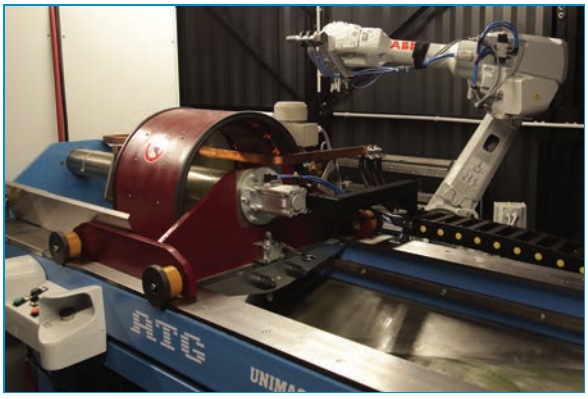


PRODUCTION OF MPI (ROBOMAG 1200)



DESIGN

MANUFACTURING



FINAL PRODUCT

MPI SYSTEMS AND EQUIPMENT

ATG Group designs and manufactures a complete range of MPI (Magnetic Particle Inspection) systems and equipment for all industrial sectors and in all requested magnetization combinations: AC, HWDC, FWDC. These systems are applicable in mass production in automotive industry (UNIMAG AC/AC series) as well as production and maintenance facilities (UNIMAG Basic, or MAGMAN series) for low/high volume testing in aerospace.

ATG is able to fulfill the most of the Customer's requirements by own design and internal mechanical and electronic workshop, especially for increase of testing productivity and safety:

- Customized clamping and manipulating systems, with ability to test parts ranging from pins, through rotor turbine blades up to crankshaft of ship diesel engines with length of 15 meters
- Design according to ASTM E1444 with Quick Break
- Operator-friendly control system
- Long-term stability without minimal servicing requirements with high load factor (30-50%)
- Internal calibration system with data acquisition system

The deliveries of these systems are joined with possibility to qualify NDT operators and provide on-the-job training in ATG Training Center where are disposable training MPI benches, or directly on delivered equipment at the customer´s site.

MPI FOR AEROSPACE

Production (bearings, forgings, chasses)

- UNIMAG Aerotester single-generator series in compliance with ASTM E1444
- AC/FWDC, electronic Quick Break technology
- Able to cover NADCAP requirements

Maintenance (bolts, torque tube, brakes)

- UNIMAG Basic, MAGMAN AC/HWDC, MINIMAG
- Cost efficient solution with mechanical clamping
- Flat coils

MPI FOR AUTOMOTIVE

Mass testing (forgings, casting)

- UNIMAG AC/AC, AC/DC or special systems AUTOMAG (thousands parts per shift)
- AC/AC (two genetators) combined magnetization, automatic MPI process, automated evaluation, data archiving

Long products (shafts, arms)

- UNIMAG AC or AC/DC systems
- Automated MPI process

MPI FOR RAILWAYS

Production (wheels, axles, frames, bearings)

- UNIMAG AC/AC, UNIMAG Basic, MAGMAN AC/HWDC
- Special manipulation systems for automated systems

Maintenance (shafts, wheel sets)

- UNIMAG AC, UNIMAG Basic, MAGMAN
- MAGMAN 4000 R for testing of wheels
- Split coil, yokes REM and RUM 230

MPI FOR ENERGY AND OTHERS

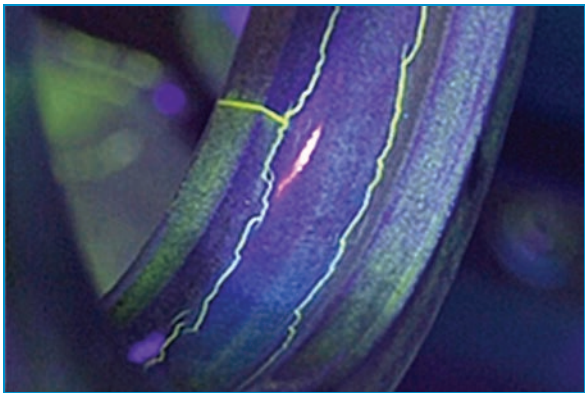
Forgings (shafts, crankshafts, rings)

- UNIMAG AC, AC/AC, consumption in MW
- Forgings up to 15 m long, 30 t heavy
- Special manipulation systems

Castings (turbine´s cases)

- MAGMAN AC/HWDC
- Multidirectional/vector magnetization
- Up to 3 x 20 000 A

UNIMAG 1200 AC/DC AEROTESTER QB



UNIMAG 1200 AC/DC AEROTESTER QB DEFECT DETAIL

UNIMAG 600 AC/AC (AUTOMOTIVE)

UNIMAG 2600 AC/AC/AC (RAILWAYS)

MAGMAN MULTI (POWER)

UNIMAG 13000 AC/AC (POWER, MARITIME)

FPI SYSTEMS AND EQUIPMENT

ATG delivers own FPI (Fluorescent Penetrant Inspection) lines for high quality testing of surface defects, especially for aerospace industry (acc. to ASTM E1417) and high capacity, fully automated lines for automotive industry.

The most of delivered solutions are designed fully in accordance with Customer's requirements for inspection capacity, dimensions of tested parts and requested transport system – manual (LPM) with overhead hoist system or rollers, automated (LPC) with crane system or automated transport auto-operator system.

All systems can be equipped by supporting FPI system technologies as:

- Water treatment of entering water and waste water from FPI system
- Surface treatment – etching before FPI process and accompanying water treatment (neutralization of waste water)
- Degreasing before FPI process
- Etching for macrostructure inspection after FPI
- Nital etching lines for Etch Inspection
- All solutions can be equipped with optimal transport system

ATG's FPI lines can be delivered with immersion, spraying or electrostatic application of penetrant, with all possible types of developer application (immersion, storm cabinet, electrostatic generator), and all penetrant systems (especially water-washable and post-emulsifiable). If required, in anti-explosive version as well.

The customized solution allows consecutive upgrade to fulfill requirements for capacity increase or change/completion of penetrant/chemical system by additional technology. FPI lines are typical candidates for further testing optimisation.

The deliveries of these systems are joined with possibility to qualify NDT operators and provide on-the-job training in ATG Training Center where are disposable training FPI lines, or directly on delivered equipment at the customer´s site.

FPI SYSTEMS FOR AEROSPACE

Production (blades, Al/Ti forgings)

- Immersion or spraying type FPI lines
- Automated or manual transport system
- Etching and degreasing
- Able to cover NADCAP requirements

Maintenance (wheels, blades, beams)

- Immersion or spraying type FPI lines
- Manual lines or cabins (KPM) with integrated functions for lower capacity

FPI FOR AUTOMOTIVE

Mass production (Al castings, forgings)

- Fully automated immersion or spraying type FPI lines
- Conveyor type or batch transport system
- Capacity of up to 10 000 pieces per shift
- Possibility to place line in several floors to minimize the shopfloor area

FPI FOR LARGE PRODUCTS

Production (bars, tubes and castings)

- Semi-automated (LPC) or manual (LPM) FPI lines with special handling and transport system
- Special FPI Boxes
- Customized manipulators for heavy loading

OTHER APPLICATIONS

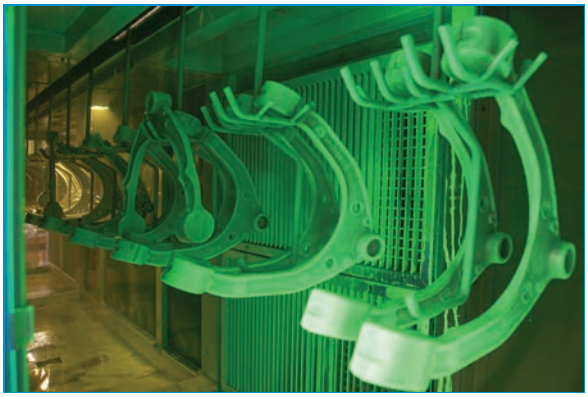
Laboratories, Education

- FPI cabins (KPM 1000)
- Small education lines (LPM 50)
- FPI Box

LPM 1800 (AEROSPACE)

FPI LINKA LPM 110 K (AEROSPACE)

LPC D1 (AUTOMOTIVE)



LPC D1 (AUTOMOTIVE)

LPM 2600 (POWER)

LPM 2600 (POWER) DETAIL

ET AND UT SYSTEMS AND EQUIPMENT

ATG Group develops and manufactures a range of customized automated UT and ET systems (lines, manipulators) for rotational or longitudinal products (including specialized parts for railways, automotive and aerospace industry).

UT systems are equipped with SOCOMATE UT cards allowing wide flexibility in system parameters' modification. ET systems are based on Rohmann equipment. The mechanical, motion and control parts of lines or manipulators are designed, produced and programmed in ATG Ltd.

ATG Group also integrates UT systems with other NDT methods, e.g. MPI (for bearing rings inspection), or Eddy Current (bar/tube inspection). Thanks to these combined systems it is possible to reach high testing efficiency for the whole volume of products to be tested (combination of surface and volume method). ATG designs and produces own scanning manipulators (mechanics + motion control) as well as data acquisition and post processing software for all industrial applications as C-scan.

UT and ET systems are used in applications for aerospace, railways and wrought material production. All these systems are equipped with mechanics and transport systems for products to be tested and own control system. The possibility of combination of more NDT methods can successfully solve various Customer's challenges.

The deliveries of these systems are joined with possibility to qualify NDT operators and provide on-the-job training in ATG Training Center where are disposable training UT and ET manipulators, or directly on delivered equipment at the customer´s site.

ATG Group also delivers necessary calibration blocks for adjustment of inspection devices.

UT FOR AEROSPACE

Production (forgings, shafts)

- UZM series, immersion UT systems for rotary parts
- 5- to 9-axis manipulators
- Data acquisition and post-processing software
- C-scan technology
- Approved for GE, Rolls Royce, SNECMA production

UT FOR RAILWAYS

Production (wheels, axles, bearings, rail)

- UZM series, horizontal immersion UT systems
- Customized manipulation for high-speed inline applications, using of special probes
- Typically delivered together with MPI

ET FOR AEROSPACE

Production and maintenance

- Wheels and bearings testing
- Wrought material testing
- WHEEL TESTER
- BAR SCAN

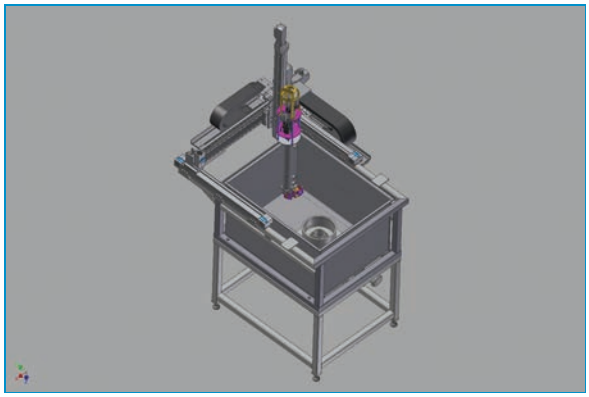
UT FOR WROUGHT MATERIAL PRODUCTION - LARGE PRODUCTS

Mass production (bars, tubes, billets, pipes)

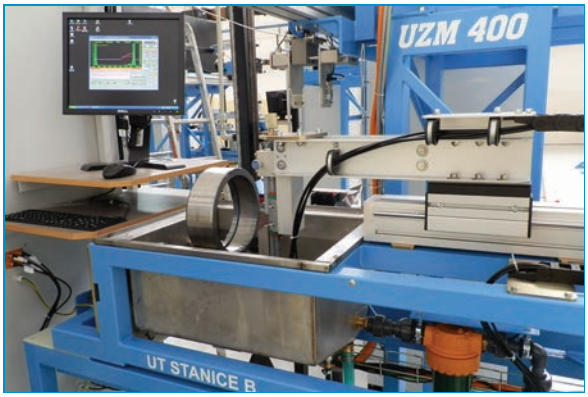
- BAR SCAN, high-speed in-line inspection
- Data acquisition and post-processing software
- Phased Array systems

UT – UZM 1000 (AEROSPACE) – TURBINE DISCS

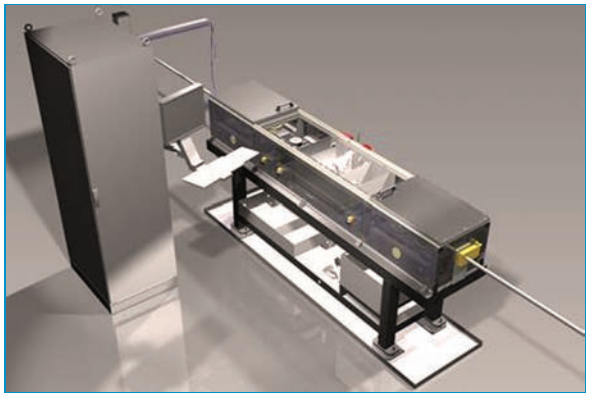
UT – UZM 600 (RAILWAYS) – RAILS



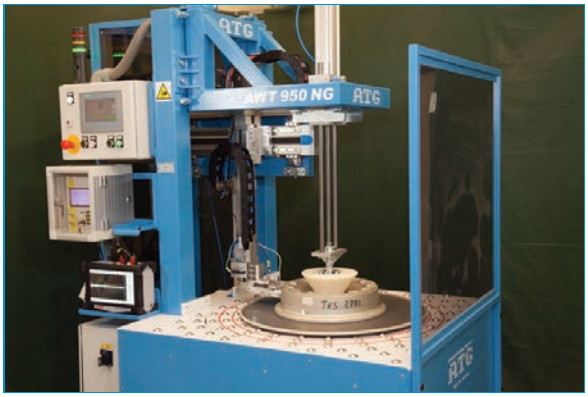
UT – UZM 340 V (RAILWAYS) – BEARINGS



UT - UZM 400 (RAILWAYS) – BEARINGS



ET/UT SYSTÉM BARSCAN 14-28 – BARS



ET – WHEELTESTER (AEROSPACE MAINTENANCE) – WHEELS

NDT INSTRUMENTATION AND EQUIPMENT SUPPLIERS

In order to offer to the Customer a complete portfolio of products on high technological level, ATG Group **cooperates with the following reputable companies**, which are being the experts in their respective field.

ET (EDDY CURRENT TESTING) – ROHMANN GMBH

Rohmann GmbH is a German company located in Frankethal that has been more than 30 years on the market with the ELOTEST equipment for crack detection, material sorting and hardness testing. Rohnmann is also well-known for their special customized high-tech probes for various industrial fields. ATG Group supplies Customers with their handy equipment for aerospace as well as different automatic systems for automotive (pistons, bearings, shafts) and semi-product industry (tubes, bars).

- TOP products: ELOTEST, DRAISINE WPG D340
- Exclusive territory: Czech and Slovak Republic
- Non-exclusive: Bosna and Hercegovina, Iraq, Croatia, Russia (only aerospace), Slovenia and Serbia
- www.rohmann.de

LT (LEAK TESTING) – ATC INC.

The American company ATC Inc. from Indianapolis is known for their unique concept of using micro-flow meter for serial and mass leak testing for automotive (castings, fuel tanks, breaks, air-con etc.), pharmacy (vials, blister etc.) and medical industry (catheters, insulin pumps etc.). Compared to PD (Pressure Decay) or PDD systems, ATC's systems are about 30% faster in evaluation and much less temperature-sensitive. In addition the ATC vacuum equipment allows to test up to 5 . 10^{-7} sccs, which means that in many applications this unique concept may replace expensive Helium Mass Spectrometry (HMS) due to its perfect sensitivity for leaks of up to 2 μm in diameter. After 25 years on market ATC entered to Europe and ATG became the servicing and calibration center for ATC all around Europe as well as system integrator for their systems.

- TOP products: E2, VE2, ME3
- Exclusive territory: All EU countries, Switzerland, Russia and Turkey
- www.atcinc.net

MPI AND FPI CHEMICALS – CHEMETALL GMBH

Chemetall GmbH from Frankfurt u. Mohan is a worldwide no. 1 in MPI and FPI chemicals. Thanks to this longtime cooperation ATG can offer to the Customer wide range of professional products for NDT in automotive and aerospace industries with all needed approvals. In addition, the company can also supply other products form sealing, cleaning and conservation for all industry.

- TOP products: ARDROX, CHECKMORE, LUMOR, BRITEMORE
- Exclusive territory: Czech and Slovak Republic
- www.chemetall.com

RT (RADIOGRAPHY) – BALTEAU NDT

Belgium company BALTEAU NDT is the only X-Ray manufacturer able to propose wide range of solutions applicable to all kind of industrial sectors from Biomedical to Oil & Gas. Balteau NDT also (as the only one company) offers patented remote control unit called HAND-X.

- TOP products: CERAM, LLX, HAND-X
- Exclusive territory: Czech and Slovak Republic
- Non-exclusive territory: Serbia
- www.balteau.com

DR (DIGITAL RADIOGRAPHY) – VISICONSULT GMBH

On the field of Digital Radiography ATG cooperates with German company VisiConsult GmbH. The company offers high-tech solution for X-ray image processing from Image Intensifiers including sophisticated software X-Plus up to X-ray cabinets and manipulators. Together with ATG's specialists and experiences with DR ATG supplies the Customers with Digital Radiography solutions for various applications both in NDT and safety.

- TOP product: X-plus, McXray
- Exclusive territory: Czech and Slovak Republic
- Non-exclusive territory: on approval by VC
- www.visiconsult.com

UT (ULTRASONIC TESTING) – SONATEST LTD.

Sonatest Ltd. is top-end producer of equipment for ultrasonic testing. Throughout the twenty-years-long cooperation with this British company from Milton Keynes ATG delivered to its Customers many UT devices ranging from thickness gauges and UT probes up to UT instrumentation. In last years we are proud to bring one of the best Phased Array systems: VEO and PRISMA on market.

- TOP products: SITESCAN, MASTERSCAN, WHEEL PROBE, VEO+ and PRISMA
- Exclusive territory: Czech and Slovak Republic
- Non-exclusive territory: Serbia
- www.sonatest.com

UT (ULTRASONIC TESTING) – PHOENIX ISL LTD.

The company PHOENIX ISL is a specialist in design and manufacture of ultrasonic non-destructive testing solutions serving sectors such as power, aerospace, process industries and railways. Phoenix ISL offers a dynamic range of standard NDT products, from manual and automated scanners, probes and instrumentation to sophisticated nuclear plants' inspection, or turbine and generator systems inspection, all using the latest techniques, including TOFD and Phased Array technology.

- TOP Products: WrapIt, MagMan, Bracelet
- Exclusive territory: Czech and Slovak Republic
- Non-exclusive territory: Serbia
- www.phoenixisl.com

Except the above-mentioned companies, ATG Group also supplies the Customers with products of MR Chemie and Kodak. ATG also implements hardware and software from Rittal, Rockwell, Siemens, Socomate and others. Further information about their use may be found on ATG websites www.atg.cz.

QUALIFICATION PROCESS

ATG Group follows all requirements of the Customer in order to help him to be competitive on the market. Personnel qualification of Customer‘s employees is an important part of this task.

The Employer (supplier) takes full responsibility for his products and this responsibility is further transferred to employees by their contract in the company. Each employee therefore takes responsibility for his/her work. Due to that he or she must be well qualified for work, which means to fulfil minimal requirements for education and vision acuity, has experience in the field and be trained and examined by someone that copes with the given field.

The **qualification process** as a whole is composed of 3 parts:

- Qualification training
- Qualification examination
- Certification

Applicants need to pass every step in order to successfully complete the process. Each step is paid and prices may vary dramatically depending on the length and by organizations providing the qualification.

Therefore it’s important to know the adequate range of qualification for the employee: **process**, **qualification system**, **method**, **qualification level** (and technique), **sector** (and **product code**). Selection determines the effectiveness with which the employee will be able to work as well as operational expenses to be spent.

This six-combination, called by ATG Group the **PSMLSC combination**, gives exact quantification of provided qualification of the requirements put on the trainee, both legal and personal. ATG Group uses it to help the Customer to choose an appropriate qualification for their employees based on their requirements and needs.

SELECTION OF QUALIFICATION

Processes (e.g. NDT, welding) in terms of qualification may be seen as the industrial or production activities that the company is implementing. Regular employee is usually working only in one process (or even only its part).

Qualification for each *process* may be done according to various **qualification systems**. Each system reflects different verification mechanism (independent and employer certification) including strictly observed **industrial sectors** (aerospace, pressure vessels) due to high danger/responsibility involved (e.g. EN 4179).

Both Process and System are usually predefined by the company’s business environment that is given for the company and therefore cannot be selected freely. The next four operational attributes provide more flexibility.

Method is a set of physical principles, technology and knowledge to be used to process particular activity within the *Special Process* of the company’s interest. In terms of the whole PSMLSC combination, this is the *key decision point* for the responsible manager as it decides what the employee is going to do on shopfloor.

Level determines the extent of knowledge operator needs to know and basic range of responsibilities he/she may have delegated once working in the field. In most of the *systems*, 3 basic levels are accepted.

- *Level I* – operator *is performing without evaluation* under an operator Level II, or III respectively, without evaluation
- *Level II* – operator *is responsible for evaluation* and is qualified to write instructions for Level I
- *Level III* – operator *is responsible for the whole NDT process* (is a manager) for given method

Industrial sector defines the area of the interest. In industrial inspections, this usually means the types of products to be tested (e.g. welds, castings) or industrial field (e.g. aerospace, railways).

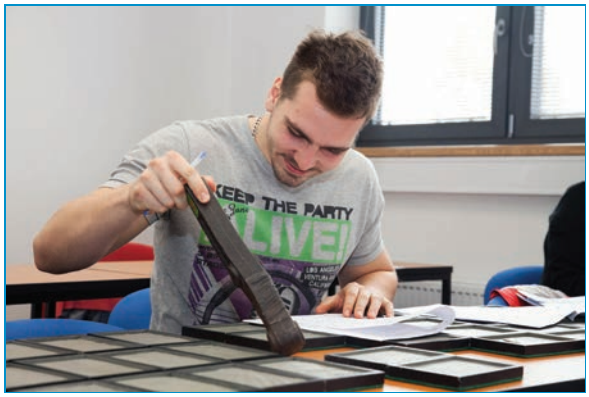
Product code defines a specific documentation that prescribes the special method of production that has been used (e.g. ASME Code, EN 13445, AWS D1.1., EN 1090). This further narrows down *industrial sector*, or it defines specific approach given by e.g. country of origin.

RADIOGRAPHIC TESTING (ATG CTS, UAE)

EDDY CURRENT TESTING (ATG PRAGUE)

ULTRASONIC TESTING (ATG PRAGUE)

MAGNETIC PARTICLE TESTING (ATG PRAGUE)



VISUAL TESTING OF CASTINGS (ATG PRAGUE)

PENETRANT TESTING (PUNE, INDIA)

PERSONNEL QUALIFICATION TRAINING

Training in ATG Group is performed in well-equipped classrooms using modern technologies of presentation and practical exercises with **well-equipped laboratories**, **company-prepared handbooks**, **real-life samples** provided from company's partners from operation and **experienced lecturers** with individualistic approach to the trainees to maximize the added value of the training.

GENERAL PART

Professional training should provide **strong background in theory** that enhances the practical abilities by real understanding of the problem. ATG Group provides its **own handbooks**, which reflect 27 years of experience on the market. All handbooks use the most renowned sources (as ASM and ASNT handbooks) and are always practically oriented, providing both physical background and manual for in-practice operation. Handbooks are also reflecting the content of general part of the tests in partners' Examination Centers.

SPECIFIC PART

Each NDT operator must be able to work correctly with related standards and documentation. In each method experienced lecturers of ATG Group help **to facilitate the understanding and importance of NDT standards to trainees** (or other for different qualification systems as Welding Inspections, Plant and Third Party Inspections) by teaching them how to use the standards properly and highlighting the key aspects of most widely used standards for each method and system.

For Employer qualification system ATG Group uses the Employer's company documentation directly to bring the training as close to the operation in practice as possible, following precisely the requirements of the Customer's Written Practice.

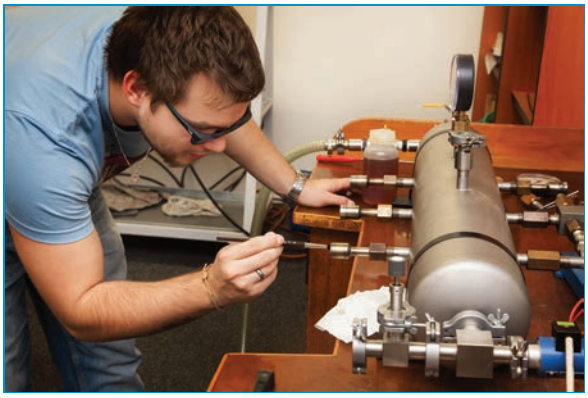
PRACTICAL PART

In total, there is **over a1 100 training samples available** for the practical part of the training to ensure trainees will have enough opportunities to handle the method well for the practical part of the test and get sufficient basic experience for right further development. Samples are selected to provide various types of defects that the operator may encounter in operation in various industrial sectors. Fully equipped laboratory for each system and method is available, including modern NDT equipment and NDT systems and all necessary probes, gauges, test blocks etc.

Training can be provided in ATG Group's facilities, or it can be realized in the Employer's plant as well. Training can be provided in Czech, Slovak, English, Russian, German and Arabic language.

The same philosophy as for the products of ISO 9712, ISO 20 807, SNT-TC-1A, EN 4179 / NAS 410 is also adopted for specialized products as for UIC 960 or other processes as Plant Inspection, Welding Inspection and Third Party Inspection.

EXPERIENCED LECTURERS WITH PERSONAL APPROACH PROVIDE TOP-END QUALITY OF TRAINING



TRAININGS ALWAYS FOCUSED ON GETTING PRACTICAL EXPERIENCE

EXTENSIVE IMPLEMENTED SYSTEM OF TRAINING TESTS FOR MONITORING OF ACQUIRED KNOWLEDGE

QUALIFICATION EXAMINATION

Qualification examination shall dverify the trainee's ability to perform defined activity according to the requirements, with respect to related standards, specifications and applied qualification system as ISO 9712, ISO 20 807, SNT-TC-1A, EN 4179 / NAS 410 etc. It should not be a ground for demonstration of the examiner's knowledge.

Every person is stressed out when doing an examination. ATG Group provides the trainees to be tested **professional approach, focusing strictly on testing of capabilities** of operation in practice. ATG Group does not use quibble questions. Tests are carefully prepared for each qualification level to check trainee's knowledge and skills only in the given field.

In order to balance all test sets, the success on each answer is **periodically monitored** and questions are altered or replaced when proven to be too easy or too difficult (resp. misleading) by internal method task groups.

Practical part of the test is always held on carefully selected test samples, which are separated from training samples and which fulfill the criteria of defined qualification system as ISO 9712, ISO 20 807, SNT-TC-1A, EN 4179 / NAS 410 etc. Test samples vary (e.g. for ISO 9712 multisector) so the trainee is tested in broader range of method's applications. All test equipment is provided on the place, but personal test devices are accepted after safety check.

IMPARTIALITY

There are various means of maximizing impartiality during the test implemented on the examination process. Examiners of ATG Group are trained to provide support when needed without impartiality breach. Content of the tests is always reflecting the content of the trainings and any topic that may occur in a test question is always explained during the training in ATG Group Training Centers and is listed in related ATG Handbook.

CERTIFICATION POSSIBILITIES

ATG Group cooperates with several accredited certification bodies that accept the results of the ATG Examination Center (Reaktortest, TÜV Nord Czech, TÜV Nord Systems and Inspecta Latvia for ISO 9712, ISO 20 807, AWS and IIW IAB / CWS ANB - for Welding Inspectors). In addition, ATG Group provides its own, non-accredited certification body ATG CERT as an alternative to those mentioned or for special qualifications out of standard qualification systems.

CERTIFICATION PROCESS

Operators prove their eligibility by personal certificates. Personal certificate is the result of the **certification process**, which verifies compliance with all certification requirements, which are:

- *Basic education* (i.e. operator can read and count)
- *Practical experience in the field* (method)
- *Documented training* with required number of hours
- *Successfully passed qualification exam*
- *Demonstration of visual competence* (i.e. visual acuity)

Certification body shall verify compliance with certification requirements and based on the compliance prepare a written statement. This written statement is referred to as the *certificate*. (The certificate is not an authorization to work.)

Certification requirements are stated in the certification regulation. This document defines the qualification levels, their requirements, basic responsibilities and conditions for issuing certificates and it is given by each certification body.

TYPES OF CERTIFICATION

In **independent certification** independent certification body has no direct relation to person to be certified as well as his employer. This certification is governed by the ISO 17024 standard and in NDT uses mainly ISO 9712 and ISO 20 807.

In **employer certification** the person responsible for certification is the employer or a person authorized by the employer. This certification is governed by the employer's qualification and certification regulation (so-called Written Practice), which is created on the basis of ASNT Recommended Practice No. SNT-TC-1A (it is not the same as ASNT CP 189, ASNT Level 3 certification or ASNT ACCP).

For specific industries such as aerospace, steel products and pipes production, and railways other special standards are used, e.g. EN 4179 / NAS 410, ISO 11484, EN 10256, or UIC 960, ASME ANDE-1. They usually follow the *employer certification* (except UIC 960 and ASME ANDE-1).

NDT personnel qualified in ATG Training Center can be certified by independent certification bodies ATG CERT, Reaktortest, TÜV Nord Czech, TÜV Nord Systems and Inspecta Latvia. ATG Training Center, however, provides trainings also for employer certification system acc. to SNT-TC-1A and EN 4179 / NAS 410. Training center also provides qualification acc. to UIC 960 for NDT in railways and acc. to AWS and CWS ANB for welding inspection.

ISSUING, VALIDITY AND TRANSITION BETWEEN CERTIFICATION BODIES

The certificate determines, who is the person to be certified, in which process, sector, method and level (sector) and in which period is valid. After expiration operators must apply for recertification and reassess the certification requirements.

In some cases the candidate or the employer decides to change the certification body in order to meet the requirements of the Customer. In such case the following applies:

Training, which is well documented in terms of duration, content and participation, may be applied to any certification body for certification act. It means after passing the training in ATG Group the doors keep open for various certification bodies.

Qualification exams are recognized only for approved Examination Centers. In case of passing the exam in ATG Group the applicant may apply for certification at ATG CERT, Reaktortest, TÜV Nord Czech, TÜV Nord Systems and Inspecta Latvia.

Certification body can be changed by the person to be certified according to his or her own decision. There use to be an instruction to follow. ATG CERT allows transition from other trusted systems through recertification exam.

ACCREDITATION OF CERTIFICATION BODIES

Often repeated and justified question in the independent qualification system is **who has the right to question the correctness and usability of a certificate?** Or, in other words: Is there a third party, who determines the correctness of the certificate?

Many organizations claim the right to judge this and the uninformed reader may get confused based on the strong words of disapproval of one party or the other. On this page this issue is explained in order to make the end to the misleading and incorrect understanding of this problem.

RECOGNITION OF CERTIFICATION BODIES

Personal certificate may be recognized or not recognized only by the following parties (i.e. they may question certificate's usability):

- **Employer** of the person to be certified
- **State** (in the case of qualification for PED [Pressure Equipment Directive] 2014/68/EU – former 97/23/EC)
- **Customer** and the customer's inspector on his behalf

There are no other cases of certificate's recognition. Certification bodies may claim that they do not recognize the certificates of others, but this decision is valid only for them and does not represent any obligation (and cannot be enforced) for the employer, state or the customer.

ACCREDITATION AND ITS INFLUENCE ON RECOGNITION

Organizations that issue credentials or certify third parties against official standards may be themselves formally accredited by accreditation bodies, hence they are sometimes known as "accredited certification bodies". The accreditation process should **maximize the chance** that their certification practices are acceptable, typically meaning that they are competent to test and certify third parties, behave ethically and employ suitable quality assurance.

Nevertheless, **there is no requirement for certified bodies to be accredited** and it does not apply that non-accredited body is automatically worse in terms of quality. There is no request to pass the accreditation by law and thus the **accreditation works only as a benchmark of minimal quality, not as an assurance of the top quality**.

It is again the privilege of only the employer, state or customer to determine whether the non-accredited or accredited certification body is trustworthy for them or not. If the certification body has high reputation and is able to demonstrate correct approach, there is no reason not to use such an organization, regardless the accreditation status. That is, because the accreditation does not provide any real benefit for the customer, except independent administrative verification of certification process setup in given certification body.

ATG GROUP AND ACCREDITATION OF CERTIFICATION PROCESS

ATG Group believes the real quality services can be provided without accreditation. It bases its certification activities on the reputation where the credibility of the system is guaranteed by the credibility of the whole ATG Group's system and behavior. As a result, daughter company **ATG CERT provides only non-accredited certificates**, as an alternative for the Customer to accredited certificates of partner certification bodies.

In order to satisfy the demand of the Customer, ATG Group developed a training and examination system, which is fully accepted by accredited certification bodies as well.

Applicant sucessfully passing the qualification process (which is the same for all applicants in the same given combination of method / level / sector) may choose, whether he/she would like to apply for certificate by a non-accredited certification body ATG CERT, or pay premium for a certificate of partner, accredited certification bodies.

ATG CERT

ATG CERT is an independent, non-accredited certification body with own Examination Center. ATG CERT complies with the criteria of ISO/IEC 17024 and offers a reliable and cost-effective personnel qualification and certification for:

- NDT personnel acc. to ISO 9712 in all standard NDT methods and all levels
- NDT personnel acc. to ISO 20807 (UTT – Ultrasonic thickness testing, UT-sw – Ultrasonic testing of spot welds)
- NDT personnel out of scope of EN ISO 9712 (e.g. VT2w - Visual testing of welds, VT2c - Visual testing of castings)
- Welding Inspections personnel
- Plant Inspections personnel
- Third Party Inspections personnel

Certification processes of ATG CERT are described by its Procedures. To ensure the widest possible recognition and acceptance, the ATG CERT Procedures are based on and fulfill the requirements of the International and European standards related to the qualification used in industry.

ATG CERT also offers an option whereby certification of NDT personnel can be carried out by an accredited certification body as: TÜV Nord Czech, TÜV Nord Systems, Inspecta Latvia and Reaktortest. It is possible to use the results of the certification process of approved certification bodies for ATG CERT certification as well.

The goal of ATG CERT is to make its certificate holders respected throughout the industry worldwide. ATG CERT is committed to make every effort for that.

IMPARTIALITY

ATG CERT has been arranged in conformance with ISO/IEC 17024. ATG CERT is a separate unit within ATG Group structure and is independent of any single predominant interest. Board of ATG CERT is composed of leading experts with highest level of credibility in the processes they cover.

HOW TO OBTAIN ATG CERT CERTIFICATION

The candidates for ATG CERT certification must have a successfully completed training complying with ATG CERT syllabuses, exam by EC of ATG CERT and fulfilled the requirements for experience and vision acuity.

Certification by ATG CERT is open for holders of current valid certificates issued by other certification bodies by its **controlled recertification process** defined by internal procedure. ATG CERT will grant exemption for specified part of exam for holders of valid certificates issued by a certification body approved by ATG CERT.

EXAMINATION CENTER – EC ATG CERT

Examination Center of ATG CERT offers examinations of NDT personnel (especially acc. to ISO 9712 and ISO 20807) and inspection personnel in independent certification systems.

The Examination Center is approved by following Certification bodies: ATG CERT, TÜV NORD Czech, TÜV NORD Systems, Reaktortest and Inspecta Latvia to conduct the qualification examination for NDT and inspection personnel and in addition IIW IAB / CWS ANB for Welding Inspection.

ATG CERT is periodically independently audited to ensure the highest standard of professional service and confidentiality.

ATG CERT has high degree of flexibility and is able to conduct examinations upon demand at any location in Europe, Asia and North Africa in Czech, English, Russian and Arabic languages.

Certification Body
ATG
CERT

STANDARD COURSES PROVIDED IN ATG GROUP

Process	System	Method	Technique (level*)	Sector	Code
NDT	ISO 9712	BASIC **		MS	
NDT	ISO 9712	ET – Eddy current Testing		MS	
NDT	ISO 9712	ET – Eddy current Testing		t	
NDT	ISO 9712	FT – Flux Testing		t	
NDT	ISO 9712	LT – Leak Testing	B, C	MS	
NDT	ISO 9712	LT – Leak Testing		HS	
NDT	ISO 9712	MT – Magnetic particle Testing		MS	
NDT	ISO 9712	MT – Magnetic particle Testing		w	
NDT	ISO 9712	MT – Magnetic particle Testing		c	
NDT	ISO 9712	PT – Penetrant Testing		MS	
NDT	ISO 9712	PT – Penetrant Testing		w	
NDT	ISO 9712	PT – Penetrant Testing		c	
NDT	ISO 9712	RT – Radiographic Testing	CR, DR	MS	
NDT	ISO 9712	RT – Radiographic Testing	CR, DR	w	
NDT	ISO 9712	RT – Radiographic Testing	CR, DR	c	
NDT	ISO 9712	RT – Radiographic Testing	CR, DR	we	
NDT	ISO 9712	RT – Radiographic Testing	CR, DR	ce	
NDT	ISO 9712	RT – Radiographic Testing	CR, DR	PV	
NDT	ISO 9712	UT – Ultrasonic Testing	PA	MS	
NDT	ISO 9712	UT – Ultrasonic Testing	PA, TOFD	w	
NDT	ISO 9712	UT – Ultrasonic Testing	PA	c	
NDT	ISO 9712	UT – Ultrasonic Testing	PA	t	
NDT	ISO 9712	VT – Visual Testing		MS	
NDT	ISO 9712	VT – Visual Testing	d	w	
NDT	ISO 9712	VT – Visual Testing	d	c	
NDT	ISO 9712	VT – Visual Testing	d	l	
NDT	ISO 9712	VT – Visual Testing		PV	
NDT	ISO 20807	ET – Eddy current Testing	ETT	-	
NDT	ISO 20807	UT – Ultrasonic Testing	UTT, sw	-	
NDT	SNT-TC-1A	AUDITOR		-	
NDT	SNT-TC-1A	BASIC **		-	ASME, API
NDT	SNT-TC-1A	ET – Eddy current Testing		-	
NDT	SNT-TC-1A	FT – Flux Testing		-	
NDT	SNT-TC-1A	LT – Leak Testing		-	ASME
NDT	SNT-TC-1A	MT – Magnetic particle Testing		-	ASME, API
NDT	SNT-TC-1A	PT – Penetrant Testing		-	ASME, BPVc
NDT	SNT-TC-1A	RT – Radiographic Testing	CR, DR	-	ASME, API
NDT	SNT-TC-1A	UT – Ultrasonic Testing	PA, TOFD, ATM, DTM	-	ASME
NDT	SNT-TC-1A	VT – Visual Testing		-	ASME
NDT	SNT-TC-1A	IRT – Infrared Thermographic Testing		-	
NDT	EN 4179/NAS 410	AUDITOR		-	
NDT	EN 4179/NAS 410	ET – Eddy current Testing		Part 21	
NDT	EN 4179/NAS 410	ET – Eddy current Testing		Part 145	
NDT	EN 4179/NAS 410	FT – Flux Testing		Part 21	
NDT	EN 4179/NAS 410	FT – Flux Testing		Part 145	
NDT	EN 4179/NAS 410	LA – Lubrication Analysis		Part 21	
NDT	EN 4179/NAS 410	LA – Lubrication Analysis		Part 145	
NDT	EN 4179/NAS 410	LT – Leak Testing		Part 21	
NDT	EN 4179/NAS 410	LT – Leak Testing		Part 145	
NDT	EN 4179/NAS 410	MT – Magnetic particle Testing		Part 21	
NDT	EN 4179/NAS 410	MT – Magnetic particle Testing		Part 145	
NDT	EN 4179/NAS 410	PT – Penetrant Testing		Part 21	
NDT	EN 4179/NAS 410	PT – Penetrant Testing		Part 145	

Process	System	Method	Technique (level*)	Sector	Code
NDT	EN 4179/NAS 410	RT – Radiographic Testing	CR/DR	Part 21	
NDT	EN 4179/NAS 410	RT – Radiographic Testing	CR/DR	Part 145	
NDT	EN 4179/NAS 410	UT – Ultrasonic Testing	PA, TOFD, ATM, DTM	Part 21	
NDT	EN 4179/NAS 410	UT – Ultrasonic Testing	PA, TOFD, ATM, DTM	Part 145	
NDT	EN 4179/NAS 410	VT – Visual Testing		Part 21	
NDT	EN 4179/NAS 410	VT – Visual Testing		Part 145	
NDT	EN 4179/NAS 410	IRT – Infrared Thermographic Testing		Part 21	
NDT	EN 4179/NAS 410	IRT – Infrared Thermographic Testng		Part 145	
NDT	EN 4179/NAS 410	EI – Etch Inspection		Part 21	
NDT	ATG G 19-32	Introduction to NDT		MS, w, PV	PED,ASME,AWS
NDT	ATG G 19-32	VT – Visual Testing		w	
NDT	ATG G 19-32	VT – Visual Testing		c	
NDT	ATG G 19-39	Internal auditors of NDT		AS, MS	
NDT	ATG G 19-39	Auditors of NDT process		AS, MS	
NDT	ISO 11484	ET – Eddy current Testing		wp	
NDT	ISO 11484	MT – Magnetic particle Testing		wp	
NDT	ISO 11484	PT – Penetrant Testing		wp	
NDT	ISO 11484	RT – Radiographic Testing		wp	
NDT	ISO 11484	UT – Ultrasonic Testing		wp	
NDT	ISO 11484	VT – Visual Testing		wp	
PI	ATG G 19-34	COR - Corrosion Inspection		-	
PI	ATG G 19-34	MI – Mechanical Inspection		-	
PI	ATG G 19-34	DT – Destructive Testing		-	
PI	ATG G 19-34	MEI – Machinery Equipment Inspection		PE	API 510
PI	ATG G 19-34	MEI – Machinery Equipment Inspection		PS	API 570
PI	ATG G 19-34	MEI – Machinery Equipment Inspection		ST	API 653
PI	ATG G 19-34	MEI – Machinery Equipment Inspection		CR	ASME B30.2
PI	ATG G 19-34	SMI – Structural Members Inspection		BR	AWS D 1.1
PI	ATG G 19-34	SMI – Structural Members Inspection		WS	AWS D 1.1
PI	ATG G 19-34	RBI – Risk-Based Inspection		-	API 580
PI	ISO 18436	LA – Lubrication Analysis		-	
PI	ISO 18436	VA – Vibration Analysis		-	
PI	ISO 18436	IRT – Infrared Thermography		-	
WI	CWS ANB/IAB	TM – Technology Module **		-	
WI	CWS ANB/IAB	IWI – International Welding Inspector	B/S/C	-	
WI	AWS Q1	CRI – Certified Radiographic Interpreter		-	AWS D1
WI	AWS Q1	CWI – Certified Welding Inspector		-	AWS D1
TPI	ATG G 19-34	SHI – Shop Inspector		-	
TPI	ATG G 19-34	SII – Site Inspector		-	
TPI	ATG G 19-34	EX – Expediting		-	

* Trainings are provided in all standard levels. If level is not specified, it means level 1,2,3. In addition, ATG Group also teaches listed special techniques.

** The first 4 days of the BASIC Exam training can be waived after previous successful pass through the Technology Module (it doesn't work the other way round).

MS	Multisector	**PV**	Production and construction of equipment	**CR**	Cranes
w	Welds	**I**	Plastics	**BR**	Bridges
c	Castings	**wp**	Wrought products	**WS**	Welded Structures
t	Tubes	**PE**	Pressure Equipment	**d**	Direct Visual Testing
f	Forgings	**PS**	Pipe Systems	**sw**	Spot Welds Testing
AS	Aerospace	**ST**	Storage Tanks		

Refresh courses are available on request. For further information about courses please visit www.atg.cz.

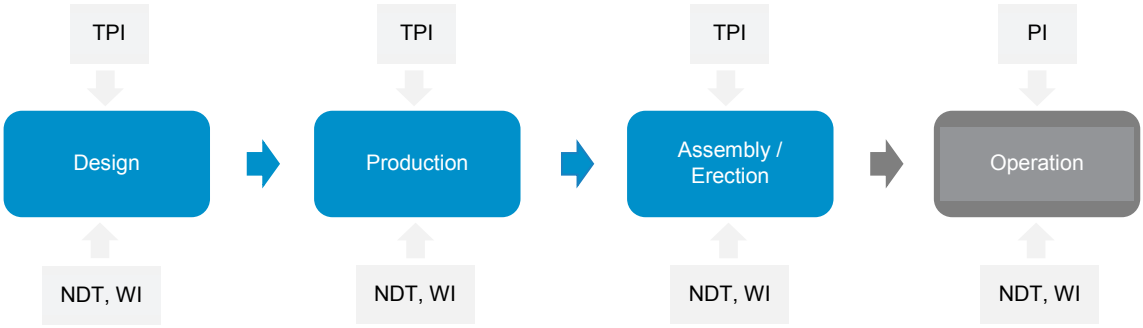
ATG GROUP INSPECTION AND TESTING ACTIVITIES

In order to produce and maintain industrial products fully functional there is a set of regulations provided for the production and maintenance processes with strictness reflecting the level of danger from its operation. The compliance with these processes is verified by **inspection and testing** activities, which verify the functionality status and, in addition, ensure the fulfilment of industrial safety standards and regulations.

The inspection and testing activities of ATG Group include the following:

- Nondestructive Testing (NDT)
- Welding Inspection (WI)
- Plant Inspection (PI) including Corrosion Inspection
- Third-party Inspection (TPI)

Based on this, **ATG Group covers the inspection activities of the whole production and life in operation of industrial equipment**. As a result ATG Group provides both production process verification and product maintenance activities.



INSPECTION

Properly timed inspections of production process (it means at least design, manufacturing and expediting) is necessary for evidence of accordance with the agreed requirements. **ATG Group has the ability to provide inspection through all production stages** to assure compliance of the Producer with all Customer and law requirements.

Products in operation may lose their functionality or may represent a greater risk to operate after some period of time. ATG Group shall verify through the in-service and maintenance inspections the compliance with planned functionality and **is able to assess the residual life** of industrial sites on request.

The main inspection activities of ATG Group can be summarized as:

- Inspection and supervision of special processes (NDT process and Welding)
- Inspection of deliveries of big units in the phases of shop manufacturing and site erection (TPI)
- Inspection of operated devices/equipment joined with analysis of damage induced by service (PI)

GEOGRAPHIC COVERAGE AND HUMAN RESOURCES

ATG Group uses both their own staff and staff of many partner organizations worldwide and thus it is able to cover shop & site inspections almost all around the World. The inspection staff is highly qualified through own ATG qualification or ISO, IAB/IIW, ASME, AWS, API, ASNT which provides high level of flexibility.

ATG is contractual partner of Hartford Steam Boiler International with own ASME and PED authorized inspectors, furthermore ATG disposes of inspectors approved by SAUDI ARAMCO, JGC, ADCO (Oil & Gas field), ALSTOM (Power generation) and GNS (Spent nuclear fuel transport & storage casks).

TESTING

Product quality is a major parameter of any industrial site. In order to assess the product quality and maximize it, testing during the production process needs to take place. NDT process is an exceptional tool that allows check of 100% of parts at considerable speed without any permanent damage induced.

ATG Group provides testing by qualified NDT level 2 personnel inhouse in Prague (CZ) and Trencin (SK) and is able to organize testing on Customer's site, both by own staff and/or outsourced staff, on ATG owned devices and equipment.

The range of testing may include mass testing of thousands of parts as well as individual tests as a support activity for Residual Life Assessment. These may be assessed by personnel qualified in all qualification systems (ISO 9712, SNT-TC-1A, EN 4179 / NAS 410 etc.), depending on request of the Customer.

SPECIAL PROCESS HOUSE

Special processes as NDT have important value-added for the company and therefore it is desirable for the company to implement them to their production process. In some cases, however, the organization is unable to provide this process alone and it is easier to pass this process to a reliable contractor, who will deliver the process as a whole. Such situation usually occurs when this process is not part of core business portfolio of the company.

ATG offers the full delivery of NDT process as follows:

- UT immersion testing for rotary parts in UT manipulator and standard testing of bars
- ET testing for aircraft discs and wheels and manual testing of cracks
- MPI of aerospace parts acc. to ASTM E1444, testing for automotive industry
- FPI of aerospace and automotive parts including all supportive processes acc. to ASTM E1417, NADCAP accredited

These processes can be delivered as a whole, therefore including the following:

- Responsible person for given process as Level 3
- Qualified providing personnel Level 2 according to requested qualification and certification system
- Own equipment together with adjacent technologies
- Own procedures complying with Customer's requirements
- End user's approvals, accreditation of process (NADCAP)

ATG is focused on high quality NDT services for aerospace, transportation, pressure vessel, and piping systems and **is able to support own activities by certifications/accreditations/qualifications and references as NADCAP, TPG etc**.

Cleaning and cleanliness verification

New special process, the cleaning and cleanliness verification, was fully implemented in 2018 by ATG. It is primary focused on **cleaning of parts for GE Aviation Czech's turboprop engine families**. The process is approved according to GEA P4TF21 Specification and would be mainly suitable for the cleaning of highly critical aviation components.

WELDING INSPECTION

Welding process is the most important technical Special Process and permanent joining technology. This process is closely connected with NDT. Therefore, a lot of inspection activities of ATG Group are joined with welding inspection.

The coordination process of welding is described in e.g. ISO 14731 (previous EN 719), where the importance of the inspection of all phases of welding process is clearly explained. As it is defined, the whole welding process shall be planned and realized under control of coordination welding personnel as is e.g. **International Welding Engineer** or **International Welding Technologist**.

Nevertheless, all steps of welding process shall be inspected and verified against the governing documents, i.e. contract, or agreed production standards and codes, which are defined in the contract. Such inspection increases the probability of appropriate realization of agreed products. Somebody must be responsible for relatively independent assessment of conformity of all phases of welding process. This person is e.g. the **International Welding Inspector**.

ATG Group offers services for Second Party Inspection or Third Party Inspection by own staff or by hired, verified freelancers. Majority of ATG Group's Welding Inspectors have additional qualification in NDT process (NDT Level 2 or higher) with experience from providing of NDT services.

Welding Inspection and Coordination staff of ATG Group is qualified in IIW IAB system (International Welding Inspectors and International Welding Engineers) and AWS (CWI – Certified Welding Inspector) and experienced from many projects controlled by Alstom, ABB, Saudi Aramco, JGC, NET4GAS, RWE etc. on projects for manufacturing and erection of power plants, piping systems, refineries etc.

ATG disposes of 4 International Welding Engineers, 7 International Welding Inspectors and 2 Certified Welding Inspectors to support the Customer in coordination of welding process.

PLANT INSPECTION

The main reasons for inspection of in-service equipment are to:

- Determine the physical condition
- Determine the type, rate, and causes of equipment degradation
- Decide the following activities, which interpret and solve monitored state of inspected operated device

Active damage mechanisms and rates of degradation will vary markedly depending on the process flow and its contaminants or corrosion levels, temperature of exposure, and structural materials. One of the primary reasons for performing periodic inspections is to identify deficiencies and defects that could result in a safety incident – e.g. leaks, loss of containment, fire, toxic exposure. When identified, these are evaluated and (if needed) fixed through repair and further inspection immediately.

ATG Group inspectors utilize multiple DT and NDT methods and techniques in the inspection and evaluation of equipment condition. Inspectors consider the types of active degradation mechanisms and corresponding degradation modes active in the devices to determine the best methods and techniques to be used during the inspection process.

All information analyzed by ATG Group is carefully documented, provided to the Customer and after each inspection and contributes to the planning of future inspections, repairs and replacements. Moreover this information may form the equipment history basis for remnant life assessment (RLA) and risk-based inspection (RBI).

INSPECTIONS ACCORDING TO API

For specific types of equipment working in Oil & Gas, in order to protect the public from fire, contamination or explosions, guidelines must be in place to ensure proper construction, installation, inspection, operation, maintenance, alterations, and repairs. Inspections according to API procedures are in principle similar to the “general” plant inspections, with exception of specific methodical requirements, evaluation algorithms and acceptance criteria that are applied.

Inspections are performed according to procedures encompassing the requirements outlined in industrially accepted codes as API 510 (pressure vessels), API 570 (piping systems), API 653 (storage tanks) or other standards for repair, maintenance, in-service inspections, and alteration.

ATG Group provides, as one of the very few training centers on the market, the qualification of Plant Inspectors according to API 510, API 570, API 580 and API 653. This is a noncompulsory, however highly recommended course, that targets at full understanding of the responsibilities of the plant inspector, including the extent of technical knowledge as well as comprehensive understanding of API standards.

The philosophy of API guides is the best methodology for maintenance of operated devices. This philosophy is even adopted out of Oil & Gas industry and can bring very beneficial results for the Customer in general.

CORROSION INSPECTIONS

ATG Group inspection activities in the field of corrosion cover main problems that the plant inspectors have to solve in everyday work. There are two principal subjects of ATG Group activities in this field that are applicable for both, design and production as well as in-service operation (maintenance):

- Corrosion/degradation of inspected part/equipment material
- Protective coatings and protective systems applied on inspected part/equipment and its state

Both of these topics are considered together as one system and together with API methodology can solve many challenges.

Material analysis

Material analysis is focused particularly on assessment of its applicability in defined working conditions, evaluation of type and extent of corrosion including corrosion rate and assessment/prediction of remnant life of the part.

Protective coatings analysis

Protective coatings are examined for compliance with required application conditions (surface preparation, cleanliness, temperature, relative humidity, curing time) and with required thickness, integrity, surface smoothness etc. Coating inspection of parts in service is focused on its damage, wear, erosion and other factors that can influence negatively corrosion resistance of the part.

Also temporary protective coatings (preservation) for transport or shut-down of equipment and protective systems, cathodic & anodic protections, can be inspected by ATG specialists including independent consultancy.

REMNANT LIFE ASSESSMENT

Industrial sites, as they are operated for longer time, may change their original conditions significantly. The site and its devices/parts may be subjected to many aspects, as mechanical damage, stress and strain from operation, corrosion and others. All these may cause, in the worst case, even a collapse of the site.

Remnant (or also Remaining/Residual) Life Assessment is an important type of inspection that assesses the remaining life by application of on-site inspection, series of calculations and extrapolation. It allows the owner to operate industrial sites longer than was the original projected life and due to that make significant cost and time savings.

Standard RLA consists of following steps:

- Collection of historical data
- Operational parameters vs. material properties evaluation
- Actual part condition inspection including destructive testing of samples
- Damage mechanism evaluation
- Remnant life calculation according to procedure/practice used
- Formulation of corrective measures and conditions for future operation including date of subsequent inspection

ATG Group possesses enough qualified staff with background from various fields and experience from real-life inspection on operating sites to provide the Customer with top-end quality of this complex and difficult service.

PLANT INSPECTIONS

SECOND AND THIRD PARTY INSPECTIONS

Second and Third Party Inspection involves independent assessment of items at their place of manufacture before delivery (shop) or during erection/assembly (site). The difference between Second and Third Party inspection is defined by relation to the Customer.

This is the most convenient and cost-effective way to determine for the Customer whether a product, service, process, piece of equipment or installation complies with expressed needs, Customer's expectations, applicable regulations or other specific requirements. The inspection plays an important role in order to avoid or minimize the risk of failures.

SHOP INSPECTION

Shop Inspection usually includes as follows (the actual scope of work is defined through inspection and test plan (ITP)):

- Design review
- Review of material certificates
- Visual inspection
- Non-Destructive Testing (NDT)
- Attendance review
- Supervision or performance of mechanical or functional tests
- Hydrostatic testing
- Painting and packing inspection including review of all relating documentation

SITE INSPECTION

Shop Inspection usually includes as follows (work conditions are more restricted than on the shop due to user regulations):

- Visual inspection of completed equipment and 100% testing of assembly welds
- Ultrasonic Testing of full penetration of all welds
- Conformity reviews of structural members (already fabricated) delivered to the project site
- Erection documentation review

Part of site inspection could be also the performance tests after assembly in real conditions of operation against shop status.

EXPEDITING

Expediting differs from inspection in their mission. Expediting does not focus on the quality of products but it maps the supply chain, its flow and timely delivery.

ATG Group is providing all kinds of mechanical, electrical and instrumentation inspections with our partners worldwide as the Third or Second Party. Our services are used by SAUDI ARAMCO, ADCO, JGC, ALSTHOM, GNS, NET4GAS etc.

ASME AND PED INSPECTIONS

Boilers and pressure vessels (or pressure equipment) production is under the control of the state, because these products are very dangerous and can cause a detriment on human being and human properties. Therefore a state shall care for own citizen safety and shall control this production. The law is similar in all countries and in EU it is defined in PED.

The ASME BPVc is the most widely used pressure equipment standard/code in the World. It is recognized also in EU to fulfill requirements of PED (Pressure Equipment Directive 97/23/EC).

ATG Group offers all the necessary inspection and together with Hartford Steam Boiler certification services for fulfilling the requirements of the ASME International Boiler and Pressure Vessel Code.

It means ATG Group supports its customers in following activities:

- Establishment and implementation support of the QC system in compliance with the ASME BPVc or other Code
- Annual audit of Customers' shopfloors
- Preparations for ASME or PED certification audits
- Manufacturing inspections at Customers' shopfloors
- Qualification and certification of Customers' welding procedures and welders according to ASME IX

INDUSTRIAL INSPECTIONS

ATG GROUP OUTSIDE AGENCY ACTIVITIES

All special processes (and NDT especially) are joined with strict requirements for quality management and procedural base of the process. **The person responsible for assurance of these requirements is the NDT Level 3 appointed and authorized by the Employer**.

ROLE OF NDT LEVEL 3 IN NDT PROCESS

NDT Level 3 controls the whole performance of NDT process on Employer side and he/she is its technical manager. He/she is fully responsible against the law and the Customer.

The described activities are not relevant only for the Employer certification systems as SNT-TC-1A or EN4179/NAS 410. The governing role of NDT Level 3 is applicable for all qualification systems including independent qualification system ISO 9712.

ISO 9712 is different from the point of view of NDT Level 3 in using certification body for performance of the certification act. Nevertheless the duties and responsibilities of NDT Level 3 in operation of company NDT process are the same. Although the institution of Outside Agency is not mentioned in ISO 9712, the equivalent can be utilized through outsourcing of external NDT Level 3.

CONTROLLING ROLE OF NDT LEVEL 3

NDT Level 3 controls the whole operation of NDT process and he/she is responsible to the authorities, certification or accreditation bodies and the Customer for the whole NDT process in given method.

In case of absence of own Employer's NDT Level 3, the Employer may nominate to fulfill all (or a part of) NDT Level 3 responsibilities to outsourced **Outside Agency**, which can substitute requested activities of responsible person for given special process and method (see ASNT Recommendation SNT-TC-1A or EN 4179 / NAS 410, which are the most important Employer certification systems). The Employer is responsible for right choice of this Outside Agency and therefore the ability of the Outside Agency shall be proved and documented.

The Outside Agency shall be authorized officially and in written form by the Employer, because the Outside Agency takes responsibility for given part of activities of Employer's NDT Level 3 on the contractual base.

ATG Group offers this Outside Agency (or NDT Level 3) services for the whole NDT process in full range as follows:

- Services of NDT Level 3
- NDT personnel qualification
- Written Practice and Written Procedure / Instruction processing
- Calibration process
- Auditing of NDT process and Performance Evaluation
- Continuous supervision/auditing of the whole process

These activities are backed by 27 years of experience, own skilled NDT Level 3 personnel and more than 160 references in production and maintenance sectors in various industries. ATG Group can provide these services in Czech, English and Russian language.

NDT PERSONNEL QUALIFICATION

Successful operation of NDT process is mostly dependent on the quality of personnel qualification. It means the ability of the operator to fulfill all requirements for successful performance of given special process is the base of correct, documented providing of NDT process.

NDT personnel qualification in aerospace is predominantly covered by qualification system defined by EN 4179 / NAS 410 (these standards are identical). The other production sectors are supported through ASNT Recommendation SNT-TC-1A.

Outside Agency of ATG Group shall prepare and define personnel qualification process of Employer's NDT staff exactly according to his requirements and needs with respect to the obligatory requirements of EN 4179 / NAS 410 or SNT-TC-1A.

All these conditions and requirements are defined in special procedure of the Employer, so-called **Written Practice**.

The whole qualification shall be focused on the Employer's production or maintenance program including use of Employer's Written Procedures for specific and practical part of qualification. The training, for the Employer's convenience, may be performed directly in his facility, on his NDT equipment and his samples.

WRITTEN PRACTICE AND WRITTEN PROCEDURES PROCESSING

Every special process shall be controlled through the right, documented procedural base. This base describes and defines the whole process, beginning from personnel qualification requirements and finishing by calibration procedures.

NDT Level 3 is responsible for qualification of own NDT staff of Level 1 and 2 especially and all requirements for such qualification must be described in a special document called **Written Practice**. This Written Practice is an implementation of controlling standards on the Employer's specific conditions.

All NDT methods of the Employer must be operated according to specifications – **Written Procedures**, which define all obligatory features and conditions for given method and follow production standards and codes used in the Employer's production process. NDT Level 3 is responsible for creation, approval and supervision of these conditions that are defined in the Written Procedure.

Outside Agency of ATG Group may substitute such activities for the Employer in all levels. The documents are produced according to standards and specific requirements, approved for correctness by Employer and can be supervised.

AUDITING OF NDT PROCESS AND PERFORMANCE EVALUATION

The quality of NDT process has to be continuously supervised and inspected by responsible person and that is the NDT Level 3. The annual performance evaluation of all NDT staff by NDT Level 3 is not only a requirement of SNT-TC-1A or EN 4179 / NAS 410, but it is the most important task in Quality Management System of each NDT department.

Quality management of NDT process is therefore very important part of every production process and Employer is directly dependent on its continuous improvement. Auditing allows the Employer to continuously monitor and control the process and take actions depending on the result of the audit.

Outside Agency of ATG Group can provide internal auditing for the Employer or independent third-party auditing for the Customer by experienced and reputable auditors with strong background in NDT process.

ATG Group also provides own special qualification program for auditors working for NDT process and this program can be included in the Employer qualification and certification system to prepare own qualified and skilled auditors, who can increase quality and credibility of the Employer's NDT process.

SERVICES OF NDT LEVEL 3

NDT Level 3 is a technical manager of the NDT process on Employer's site. As a result he/she is responsible for a day-to-day monitoring and controlling of the NDT process and is also the contact person during Customer's (or certification) approval audits on Employer's side.

In global view NDT Level 3 is responsible for following functions especially:

- NDT personnel qualification
- Calibration process
- Creation and approvals, implementation of mandatory conditions and rules of NDT (acc. to Written Procedures)
- Continuous supervision/auditing of the whole process

Outside Agency of ATG Group provide support in day to day management by their skilled NDT Level 3 staff as well as help with preparation for Customer's audits and communication with auditors in order to maximize the chance of audit's success.

Outside Agency of ATG Group can also support the Customer during preparation for audits by NADCAP, TPG, EASA and others.

NDT INTERLABORATORY PROFICIENCY TESTING ACC. TO ISO/IEC 17043

In the industry, there is a growing number of NDT organizations that claim to be providing qualified NDT services for their Customer. The general experience, however, shows that not all of them provide adequate level of proficiency. Government, as well as major corporations, wants to ensure, that the outsourced organization is adequate to requested purpose and implemented NDT process reflects a standard approach with defined quality.

Proficiency testing (ILPT) involves use of **inter-laboratory comparisons** to evaluate laboratory's performance and its on-going competence. Inter-laboratory proficiency testing (ILAC) is anonymous comparison and evaluation of participating organizations compared to strictly defined tasks and related objectives and by its principle provides essential information about the position of the organization's NDT laboratory compared to the competition, the overall performance and important reference for the organization's customer.

The whole process is described in ISO/IEC 17043 that specifies general requirements for the competence of providers of proficiency testing schemes and for the development and operation of proficiency testing schemes.

ATG Prague is the only accredited company in the Czech Republic and one of only few accredited organizations worldwide for Inter-laboratory Proficiency Testing for NDT according to ISO 17043. ATG Prague is accredited for this activity in all standard NDT methods.

EXTERNAL USE

Accreditation requirements

Participation on this program is required by accreditation bodies for repeated evaluation of proficiency ability of accredited laboratories according to ISO/IEC 17025.

Marketing opportunities

Participants passing successfully through Proficiency Testing Programs can present and demonstrate its competence assessment realized by Accredited Body to their customers and significantly increase their value compared to the competition missing this assessment or performing worse in the given program.

INTERNAL USE

Continuous improvement

ILPT provides to the organizations monitoring tool of its own NDT process in comparison with other participants of given programs and by that defines weak and strong points of their NDT process. This may enhance the company Quality Management System development as well as continuous improvement (requirement of ISO 9001).

APPLICATION FOR ORGANIZATIONS OUTSOURCING NDT PROCESS

Investors and companies outsourcing NDT process from secondary organizations need to evaluate their contractors on regular basis and compare them. ILPT according to ISO/IEC 17043 provide an independent tool for validation of professional competence of possible or current NDT suppliers and motivate suppliers to increase their performance.

In order to increase efficiency of the program, ATG customizes the Proficiency Testing program model according to Customer's requirements, but as the third party, keeping maximal impartiality.

REFERENCES

PRODUCTION AND EQUIPMENT

Magnetic Particle Testing

- KINEX (Honeywell), Slovakia
- NEDTRAIN, Netherlands
- POCLAIN HYDRAULICS, Czech Republic

Penetrant Testing

- ELBIT (Rolce Royce), Romania
- FAGOR (BMW), Spain
- GE AVIATION, Czech Republic
- VSMPO (Boeing), Russian Federation
- PRATT & WHITNEY, Poland

Ultrasonic Testing

- KINEX (Honeywell), Slovakia
- PCC (Rolce Royce, GE, Snecma), Czech Republic

Eddy Current Testing

- KOREAN AIR LINES, South Korea
- IBERIAN, Spain

QUALIFICATION AND CERTIFICATION

EN ISO 9712

- FORCE, Denmark
- HEESCO (Ministry of Oil), Iraq
- SANDVIK, Czech Republic
- ČEZ, Czech Republic

SNT-TC-1A

- BORKHIMMASH, Russian Federation
- CHART FEROX, Czech Republic
- SSFAT, Kingdom of Saudi Arabia

EN 4179 / NAS 410

- KOREAN AIR LINES, South Korea
- CZECH AIRLINES, Czech Republic
- S7, Russian Federation
- AKKA, France

International Welding Inspectors

- RWE, Czech Republic
- TÜV SÜD, Germany

TESTING AND INSPECTION

Mass NDT testing

- PCC (Snecma, Rolls Royce), Czech Republic
- TRW, Czech Republic

Remnant Life Assessment (RLA)

- BANIAS GCG POWERPLANT (Banias GCG), Syria
- SYNTHOMER, Czech Republic

Cleaning and Cleanliness verification

- HEGGEMANN, Germany
- GE AVIATION, Czech Republic

Inspections

- ADCO, United Arab Emirates
- GAZELLE (Net4gas), Czech Republic
- JGC, Japan
- SAUDI ARAMCO, Kingdom of Saudi Arabia
- SNOHVID PROJECT (Nexans), Norway

OUTSIDE AGENCY SERVICES

PRI NADCAP support

- AERO VODOCHODY AEROSPACE, Czech Republic
- GE AVIATION CZECH, Czech Republic
- HONEYWELL, Czech Republic
- JIHLAVAN, Czech Republic
- LATECOERE, Czech Republic
- SEKO AEROSPACE, Czech Republic

PRI TPG support

- UNEX UNIČOV, Česká Republika
- ČKD KUTNÁ HORA, Česká Republika

Proficiency Testing for NDT acc. to ISO/IEC 17043

- EXOVA, Great Britain
- QTEC-QUALYNSPECT, Portugal
- ROLLS-ROYCE POWER ENG., United Kingdom
- SKODA JS, Czech Republic
- TEC EUROLAB, Italy
- TUV NORD SYSTEMS, Germany