



Industrial Services

Testing | Inspection | Certification | Quality

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 **TÜVRheinland[®]**
Precisely Right.



Customer Service, Safety and Quality are our highest priority

TÜV Rheinland is a global leader in third party inspection, testing and certification services. Our expertise and comprehensive service portfolio adds value by minimizing risks and helping you to grow your business. We offer all NDT methods, QA/QC functions, and material testing. TÜV Rheinland's Laboratory and Field Services are ISO 17025 accredited, and our Mechanical Testing Laboratory Services are AWS, AASHTO and ISO accredited. With over 145 years of industrial expertise, we utilize our in-depth knowledge to offer you the solutions for your specific requirements.

PERSONNEL CERTIFICATIONS

- Certified Welding Inspector (AWS-CWI)
- API 510 - Pressure Vessels
- API 570 - Piping Inspection
- API 571 - Corrosion & Materials
- API 579 - Fitness for Service
- API 653 - Above-Ground Storage Tanks
- NACE - Certified Coating Inspectors
- Certified NDT Inspectors
 - ISO 9712
 - SNT-TC-1A
 - CP-189
 - T9074-AS-GIB-010/271
 - ASME
- Concrete Certifications (ACI & PCI)

COMPANY ACCREDITATIONS & CERTIFICATIONS

- American Association of State Highway and Transportation Officials - AASHTO
- ISO 17025
- American Welding Society – AWS
- ISO 17020 (Design, Inspection, and Testing)
- ISO 9001

TRAINING & CONSULTING

- NDT Level II Training
- NDT Level III Services



FOCUS INDUSTRIES

- Industrial Components (Pressure Equipment, Elevators, Conveyors & Machinery, Electrical & Automation Systems)
- Energy & Process Industry (Power Plants, Renewable Energy, Chemical Process, Oil & Gas)
- Infrastructure (Buildings, Roads, Tunnels, Bridges, Railways, Communications Towers, Utility Towers)
- Transportation (Automotive, Power Systems, Manufacturing, Rail)
- Heavy Industry (Foundries, Locks, Dams, Hydro, Rolling Stock, Reactor Vessels, Kilns, Turbines, Crackers, Cranes)

INDUSTRIAL SERVICES

- Pressure Equipment (PED, ASME)
- Equipment & Machinery
- Construction Materials
- Industrial Inspection (API, ASME)
- Infrastructure & Transportation
- Energy & Environment
- Project Management
- Materials Qualification Testing
- Nondestructive Testing
- In-Service Inspections
- In-Service Testing
- Condition Monitoring

CUSTOMER PROFILES

- Owners & Operators
- Engineering Procurement & Construction (EPC)
- Operations & Maintenance (O&M) Companies
- Architectural & Engineering (A&E)
- Automotive Manufacturers (OEM's)
- General Contractors (Civil & Structural)
- Mechanical Contractors
- State & US Government Agencies
- ASME Fabricators
- Heavy Industrial Fabricators
- Mineral & Mining
- On-Shore & Off-Shore Oil & Gas
- Aerospace
- Tier 1 Manufactures (Automotive & Industrial)
- Foundries & Machine Operators
- Rail & Shipping (Owners & Maintenance)



Field Services

On-site industry inspection services (NDT, condition monitoring, performance testing) are available for numerous industries throughout project or asset life-cycle, including construction, commissioning, operating (in-service), and decommissioning.

CONVENTIONAL AND ADVANCED NDT METHODS

- Magnetic Particle Testing (MT)
- Ultrasonic Testing (UT)
- Liquid Penetrant Testing (PT)
- Visual Inspection
- Radiographic Testing (RT)
- Positive Material Identification (PMI)
- Hardness Testing (HT)
- Eddy Current
- Strain Gauging
- Ground Penetrating Radar (GPR)

STRUCTURAL CONCRETE INSPECTION PRESTRESSED/PRECAST PLANT Q.A.

- Aggregate Testing
- Tension Calculation & Monitoring
- Material Certifications
- Pre-Fabrication Inspection
- Post Fabrication
- Pullout Testing Rebar/Anchor bolts
- Compression Test Monitoring on Concrete Cylinders

STRUCTURAL STEEL BRIDGE AND BUILDING INSPECTION

- Quality Assurance & Quality Control
- Shop & Field
- Paint & Galvanized Coating
- Expediting Services
- Weld Process Services
- Materials Sampling & Mechanical Testing
- Visual
- AWS-CWI
- Bolt Tensioning
- Roof & Floor Deck
- Window Testing
- Fireproofing
- Shear Stud



Mechanical Integrity Services

Ensuring the integrity of your plant's processes requires a comprehensive program that lets you determine the safety of the processes, schedule maintenance, and determine the remaining service life of operation. TÜV Rheinland experts provide Mechanical Integrity (MI) services in supporting Asset Integrity Management (AIM) to a broad spectrum of industrial clients, including but not limited to the petroleum (upstream and downstream), chemical process, power generation, and pharmaceutical industries. Our on-site inspections provide a full range of non-destructive testing (NDT) methods and complete API inspection services. We have the capability to provide support throughout a facility's life-cycle based on a thorough knowledge of regulatory documents, including OSHA (29 CFR 1910.119), ASME (III, V, VIII, IX), API (510, 570, 653, 571, 579) and CCPC

MECHANICAL INTEGRITY PROGRAMS

- Project & Program Management
- Technical Procedures & Inspection Plans
- RBI Program Development (API 580)
- In-Service Testing & Inspections (NDT & API)
- Equipment Re-Engineering Optimization
- Pressure Vessel Solutions
- (Design Reviews & Life Extension)
- Fitness for Service (API 579)
- Process Corrosion Monitoring
- Welding Engineering
- Metallurgical Analyses
- Root Cause Failure Analysis

SPECIALIZED INSPECTION & TESTING

- Ultrasonic Testing & PAUT
- Fiber Optic Video Borescopes
- Eddy Current Array Testing
- Eddy Current Tube Testing
- PMI (XRF & OES)
- Magnetic Flux Leakage for Floor Scans

- Ground Penetrating Radar (GPR)
- Vacuum Box Examination (LLRT & ILRT)
- In-Situ Hardness Testing
- Floating Roof Inspections
- Tank Crawlers & Robotic Inspection
- Settlement Surveys
- Real-Time Condition Monitoring

ATTRIBUTES OF APPLIED MECHANICAL INTEGRITY

- Optimizing the Return on Asset Investment
- Increases in Production at Lower or No Extra Cost
- Reductions in Systems Downtime
- Less Costly and More Efficient Inspections
- Reduced HSE Exposure & Incidents Mitigation
- Readily Available Regulatory Compliance Records
- Proactive Risk Management & Governance
- Plant Life Improvement & Extension
- Adaptable RCM Process
- Operator Surveillance Program Optimization
- Upgraded Supply Chain for Support Services
- Integration of Data Management Systems



Specialty Services

Containment Services – Inspection, Testing & Sorting

RECOVER QUICKLY FROM UNPLANNED PROBLEMS

Unplanned supplier & production problems are the ones that can do the most damage to your business. A derailment of the components and assemblies supply chain can result in unplanned cost to your bottom line and damage your organization's reputation. TÜV Rheinland's quality support and assurance services can help you limit your loss in non-conformance situations and restore your production supply capabilities.

We can provide our containment services, including emergency part testing and on-line quality control inspection, either in one of our high-tech laboratories or onsite at your facility or your supplier's facility.

BENEFITS OF OUR CONTAINMENT SOLUTIONS

With sorting and containment services from TÜV Rheinland, you can be sure of:

- Availability 24 hours a day, 365 days a year through our Containment Hotline 1-877-771-SORT (1-877-771-7678)
- Maintain production & assembly flow – expediting component supply chain
- Mitigate lost production time by QC real-time corrective actions
- Reduced risk of company liability with enforced & documented safety standards
- Expedited service and years of experience in components & assembly QC
- Increased components recovery through high-speed & quality-focused services
- Improve supplier quality & production effectiveness
- In-depth and detailed reporting
- Worldwide market acceptance
- Exclusive, one-stop service

Typical customer and Industries Served:

INDUSTRIES SERVED	APPLICATIONS
Automotive	Components & Assemblies
Foundries/Casting	Parts & Components
Forging	Process Parts & Components
Welding (Spot Weld)	Assemblies
Steel Mills	Mixed Material

Pressure Equipment & Plant Technology (PEPT)

TÜV Rheinland offers a full inspection and certification service for Pressure Equipment, Transportable Pressure Equipment, Structural Elements, Pressure Accessories, Safety Accessories and materials, to satisfy international standards, directives and regulations.

With local and global access to Design Engineers, Inspectors, Auditors, Certifiers, TÜV Rheinland can service clients locally and in 60+ countries worldwide, and help address all their Inspection and certification needs, no matter where they are located. Our experienced, efficient, and flexible professionals assist our customers in getting their products to market globally, much faster and trouble free.

SERVICES:

- Certification of Pressure Equipment Manufacturers in accordance with European Directive 2014/68/EU (Equipment with a design pressure of >0.5bar, or >7.25psi)
- Certification of Simple Pressure Vessels in accordance with European Directive 2014/29/EU
- Certification of Transportable Pressure Equipment in accordance with European Directive 2010/35/EU, in conjunction with ADR/RID
- Certification of Material Manufacturer in accordance with AD2000 W0 either separately or in conjunction with 2014/68/EU Annex I § 4.3
- Certification of Structural Products and Structural Material/Components under CPR 305/2011, EN 1090, EN 10025
- Manufacturer and Welding Shop certification in accordance with AD2000 HP0 & EN ISO 3834
- Auditing and certification of companies/products for HAZLOC in accordance with European Directive 2014/34/EU and IECEx
- Certify Boilers, Boiler Accessories, Boiler Parts, Pressure Vessels & Materials in accordance with Indian Boiler Regulation Act
- Welding Certification Services (Weld Procedure Qualification, Welder/Welding Operator Qualifications), in accordance with EN ISO Standards & ASME/PED
- EN 10204:2004 3.2 Certification
- Assisting companies prepare for Chinese SELO license
- Inspections on Equipment under Japanese High Pressure Gas Laws, and various other international Standards
- Design & Type Approvals of all Pressure Equipment under EU Directives, and to any international standard
- Provide pre-manufacturing meetings to prepare and inform Manufacturers to be able to manufacture products for the European Union, and to satisfy specific directive requirements

TRAINING

Pre-manufacturing consulting and certification includes on-site consulting and a step-by-step/how-to approach to prepare for obtaining PED certification. Topics covered include:

- Manufacturer's Responsibilities & Notified Body's Responsibilities
- Essential Safety Requirements
- Hazard Analysis & Design Requirements
- Material Testing, Certification, Procurement & Documentation
- Metallic Products - Types of Inspection Documents (EN 10204)
- Particular Materials Appraisals
- Welding Qualification & Certification
- Fabrication & Inspection Requirements
- How to Select the Right Conformity Assessment Procedure
- Applying the ASME Code to Meet PED Requirements
- Traceability
- Declaration of Conformity
- Marking & Labeling



ASME Boiler and Pressure Vessel Code

TÜV Rheinland is accepted by the National Board of Boiler and Pressure Vessel Inspectors (NBBPVI) as an ASME Authorized Inspection Agency (AIA) by virtue of NB-360 and accredited in accordance with NB-369 to perform in-service or repair/alteration inspection activities pursuant to the National Board Inspection Code (NBIC). As an AIA, we can assist you through the whole certification process and subsequent construction of your products according to the ASME Code. Our global network of qualified authorized inspectors (AIs) will advise and assist you to comply with all Code requirements.

SERVICES:

~IN THE CONTEXT OF ASME CERTIFICATION~

Assistance in:

- Preparation of Quality Control Manuals
- Welding procedure and performance qualification
- Preparation and qualification of NDE procedures
- Qualification of NDE personnel
- Preparation of design calculations

Participation in:

- Pre-audits
- ASME Joint Reviews and surveys

~OTHER SERVICES FOR ASME~

- Technical seminars and workshops (public and in-house, tailor-made)
- Inspection of parts, components and assembly
- Audits of suppliers
- Design examination & preparation
- Solutions for compliance with ASME BPVC
- Solutions in case of "ASME without stamp"
- Solutions for the use of ASME BPVC to fulfill local regulations

OUR ASME ACCREDITATION SCOPE

- Section I – Power Boilers
- Section III (Div. 1 & 3) – Nuclear Facility Components
- Section IV – Heating Boilers
- Section VIII (Div. 1, 2 & 3) – Pressure Vessels
- Section X – Fiber-Reinforced Plastic Pressure Vessels
- Section XI – Inservice Inspection of Nuclear Power Plant Components
- Section XII – Transport Tanks

YOUR BENEFITS

- Customer-oriented service in ASME projects of any kind
- Reliable AIA for inspection services during construction and in-service of pressure vessels, boilers, transport tanks and nuclear components
- Competent ASME experts
- First-hand information through participation in ASME committee work
- We can represent you introducing and promoting your inquiries and needs
- Quick and correct solutions to your problems
- Quick and correct solutions in relation to Market Access Service (MAS)



Laboratory Services

TÜV Rheinland's laboratories provide sampling of "production run" inspections. Our procedures comply with the highest quality standards required in the automotive, aerospace, manufacturing, defense, power generation and transportation industries.

WELDING EVALUATION SERVICES – AWS & ASME

- Procedure Qualification Records (PQR)
- Welding Procedure Specification (WPS)
- Welder Qualification Test (WQT)
- Mechanical Testing per Industrial and Government Codes
- EN/ISO 9606, EN 13133, EN 13134, ISO 14732
- ASME IX
- AWS D1.1

CALIBRATION VERIFICATION SERVICES

- Dial Gauges
- Load Cells
- Micrometers
- Calipers
- Pressure Gauges
- Torque Wrenches
- Loading Jacks
- Scale Verified
- Gauge Blocks
- Skidmore Wilhelm

MECHANICAL LAB SERVICES

Materials testing is offered using a variety of mechanical techniques. Ferrous and non-ferrous metals, composites, elastometrics, plastics, rubber, cables and rope - ranging from 3 to 180 inches long and up to 48 inches wide - may be tested. Tension and compression load testing capabilities range from 12 to 1.2 million pounds.

NONDESTRUCTIVE TESTING LAB SERVICES

- Radiography
 - Computed & Digital Radiography
 - X-Ray (Film, Real Time, Micro Focus)
 - Gamma (Cobalt, Selenium, Iridium)
- Magnetic Particle
 - Visible & Fluorescent
 - Wet & Dry
 - Field & Laboratory
 - High Production Options
- Liquid Penetrant
 - Visible and Fluorescent
 - Solvent Removable, Water Wash, Post Emulsifiable
- Ultrasonic
 - Flaw/Thickness
 - Contact
 - Immersion Scanning
 - Phased Array
- Eddy Current
 - Flaw Detection
 - Materials Sorting
 - Hardness Sorting
 - Tube Inspections

MATERIAL TESTING SERVICES

- Fracture
- Impact Testing
 - Charpy
 - Izod
- Drop Weight/Tear
- Flexural and Peel Testing
- Compression Testing
- Measured Tensile Properties
 - Modules of Elasticity
 - N-Values
 - Reduction, Strength, Yield, Elongation
- Bend Test
- Hardness
 - Brinell
 - Vickers
 - Mic-10
 - Rockwell
- Specialty
 - Bridge Bearing Pads
 - Walls & Prisms
 - Nuclear Fixtures
 - #1-24 Rebar
 - Wire Rope
 - Crane Hooks
 - Nylon Straps
 - Railroad Rail Testing
 - Dynamic Load Testing
 - Longitudinal Compression
 - Slow Bend
 - Hardness Testing
 - Metallurgical Testing

METALLURGICAL SERVICES

TÜV Rheinland has over 45 years of combined experience in failure analysis and metallurgical testing including:

- Microstructural Analysis
- Grain Size Measurements
- Scanning Electron Microscopy (SEM) with Energy Dispersive x-ray Spectroscopy (EDS)
- Non-destructive Testing (dye penetrant, magnetic particle, ultrasonic)
- Heat Treatment Evaluation
- Process Evaluations
- Root Cause Determination

WHY CHOOSE TÜV RHEINLAND?

With our extensive knowledge of industrial audits, inspection, test, and verification services for national and international projects and our reputation for conscientious and reliable work, TÜV Rheinland provides customer satisfaction around the globe and help ensure successful project and asset performance.

**TÜV RHEINLAND LOCATIONS
FOR INDUSTRIAL SERVICES**

8181 Broadmoor Ave. SE Caledonia, MI 49316 1-800-748-0208	100 Industrial Blvd. Aliquippa, PA 15001 1-724-378-3900	10300 Town Park Dr. SE 4099 Houston, TX 77072 1-281-333-5080
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509 Parkway Street West Unity, Ohio 43570 1-616-271-9660	71 E Saginaw Road Sanford, MI 48657 1-616-536-0184
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