



# Auspec Asset Integrity Services

*Integrity - Safety - Reliability*

**Non-Destructive Testing**

**Pressure Equipment Inspection**

**Storage Tank Inspection**

**Asset Integrity Management**

**Pressure Relief Valve Testing & Tagging**

**Industrial Cleaning for Inspection Access**

**Volumetric calibration**

**Mechanical Maintenance**

**Lifting equipment inspection**

**Fitness for Service Analysis**

**Risk based inspection**

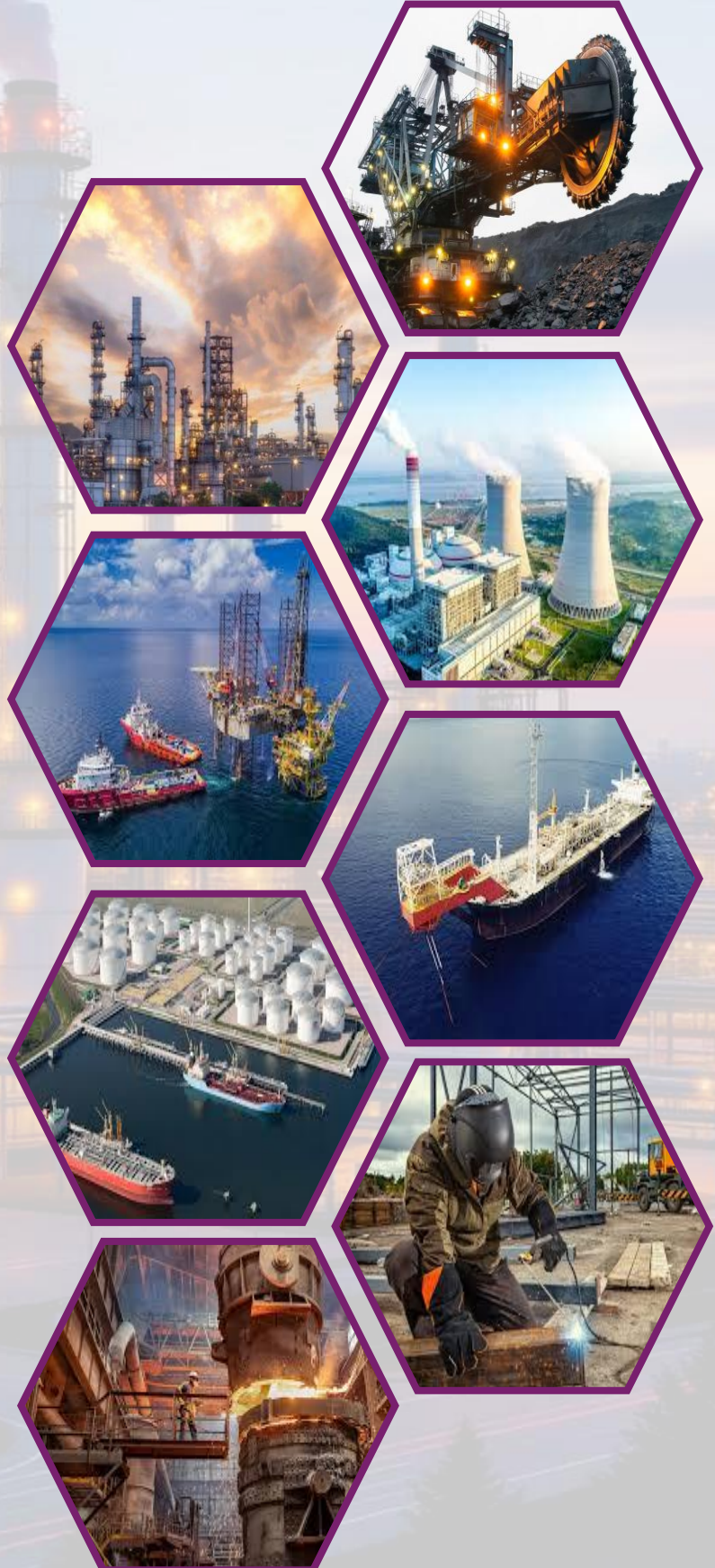
**Pressure Vessel Design & Verification**

**Welding Inspection and Consultancy**

**Pressure Testing**

**Coating Inspection**

**BART Testing (Biological Activity  
Reaction Test)**



 **Contact Us**

**Auspec Asset Integrity Services (AAIS)**

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**Dye Penetrant Inspection**  
**Ultrasonic Testing**  
**Magnetic Particle Testing**  
**Eddy Current Testing**  
**Visual Inspection**  
**Vacuum Box Testing (Tank & Pipe Welds)**  
**Videoscopy / Boroscopy**  
**Hardness Testing**  
**Ferrite Testing**  
**PMI / XRF – Positive Material Identification**



**Phased Array Ultrasonic Testing (PAUT)**  
**Time of Flight Diffraction (TOFD)**  
**Long Range Ultrasonic Testing (LRUT)**  
**Magnetic Flux Leakage (MFL) – Tank Floor**  
**Pulsed Eddy Current (PEC)**  
**Remote Corrosion Scanning (Rapid Motion Scanner)**  
**Automated Remote Corrosion Mapping – PAUT**  
**Manual Phased Array Corrosion Mapping**  
**Spyne - Eddy Current Array Testing**  
**ACFM Inspection (Surface Crack Detection)**  
**Internal Rotary Inspection System (IRIS)**  
**Eddy Current Testing (ECT)**  
**Remote Field Testing (RFT)**  
**Near Field Testing (NFT)**  
**Magnetic Flux Leakage (MFL)**  
**Alternating Current Potential Drop**  
**Guided Wave Ultrasonic testing**  
**Short Range Ultrasonic testing**  
**QSR1**  
**C-MEC® Remote Field Eddy Current**  
**Magnetic Bias Eddy Current**  
**Direct Current Voltage Gradient**  
**EMAT – Electromagnetic Acoustic Transducer Testing**



**Auspec Asset Integrity Services (AAIS), we deliver comprehensive Pressure Equipment Inspection services to ensure the safety, reliability, and compliance of your critical assets. Our inspections are conducted in accordance with Australian Standards (S/NZS 3788, AS 1210, AS 4037, AS 4041), API, and ASME codes, giving clients full confidence in equipment performance and regulatory compliance.**

## **AAIS Capabilities Include:**

- ▶ **In-Service Inspections:** Condition monitoring, corrosion assessment, and risk-based inspection planning.
- ▶ **Fabrication & Construction Inspections:** Weld quality checks, dimensional verification, and code compliance during new builds and modifications.
- ▶ **Hydrostatic & Pneumatic Testing:** Verification of design integrity under controlled pressure conditions.
- ▶ **Fitness-for-Service Assessments:** Remaining life evaluation, defect characterization, and repair recommendations.
- ▶ **MDR Review & Preparation:** Verification and compilation of manufacturer data records to meet client and statutory requirements.
- ▶ **Vendor Inspections:** Independent inspection and verification of equipment and components at vendor facilities.
- ▶ **Commissioning Inspections:** Final checks and validation to ensure safe start-up and operational readiness.
- ▶ **Design Verification:** Independent review of drawings, calculations, and specifications for compliance with **AS 1210, AS 4041, ASME, and API codes**.
- ▶ **Periodic Inspections:** Routine and statutory inspections of boilers, pressure vessels, and piping systems.
- ▶ **Condition Assessments:** Evaluation of corrosion, erosion, and mechanical damage to determine remaining life.
- ▶ **Risk-Based Inspections (RBI):** Inspection planning tailored to equipment condition, operating history, and risk profile.
- ▶ **Certification & Reporting:** Issuance of inspection reports and compliance certificates aligned with AS/NZS 3788 requirements.
- ▶ **Regulatory Compliance:** Compliance with SafeWork / WorkSafe authorities to meet legal obligations under the WHS Act & Regulations.

## **✔ Benefits**

- ✔ **Compliance with Australian law and regulator requirements**
- ✔ **Improved safety and reduced operational risks**
- ✔ **Extended equipment life through proactive maintenance planning**
- ✔ **Independent assurance for owners and operators**



**Auspec Asset Integrity Services (AAIS), we provide comprehensive inspection services in accordance with API 653 – Tank Inspection, Repair, Alteration, and Reconstruction. This standard governs the inspection of aboveground storage tanks to ensure their continued safe operation, compliance, and service life extension.**

**AAIS Capabilities Include:**

- ▶ **External & Internal Inspections:** Visual and NDT methods to assess shell, floor, and roof integrity.
- ▶ **Ultrasonic Thickness Testing (UTT & PAUT):** Evaluation of shell, floor, and roof plate wall loss.
- ▶ **Magnetic Flux Leakage (MFL) Floor Scanning:** Rapid detection of corrosion and pitting in tank floors.
- ▶ **Annular Plate & Weld Inspection:** Detailed evaluation of critical welds and annular plate condition.
- ▶ **Hydrostatic Testing & Commissioning:** Verification of tank integrity before return to service.
- ▶ **Fitness-for-Service (FFS) Assessments (API 579):** Remaining life and defect assessment for repair decisions.
- ▶ **Shell Corrosion Scanning** – Performed using Magnetic Crawlers, Phased Array Ultrasonic Testing (PAUT), or Ultrasonic Single/dual-Crystal Probes to detect wall thinning, corrosion, and defects across the tank shell.
- ▶ **Settlement Survey** – Measurement and evaluation of tank settlement, roundness, and plumbness to ensure foundation stability and compliance with API 653 requirements.
- ▶ **Vacuum Box Testing** – Leak detection method for floor and shell welds, identifying discontinuities and ensuring weld integrity.
- ▶ **Corrosion Rate Calculation** – Monitoring and calculation of metal loss over time to support inspection interval planning.
- ▶ **Remaining Life Calculation** – Predictive analysis to determine safe operating life and establish next inspection/repair schedules.
- ▶ **Repair Recommendations** – Engineering guidance on weld repairs, patch plates, coating renewal, and mechanical modifications for safe tank operation.
- ▶ **Coating Inspection** – Assessment of internal and external protective coatings to identify deterioration, breakdown, or re-coating requirements.
- ▶ **Drone Inspection** – Use of external drones to inspect inaccessible areas of the tank shell and roof, providing safe, high-resolution visual data without scaffolding.
- ▶ **ROV Inspection** – Deployment of Remotely Operated Vehicles (ROVs) for underwater inspection of water storage tanks, ensuring condition assessment without draining.



**✓ Benefits**

- ✓ **Enhanced Safety** – Early detection of corrosion, cracks, and leaks reduces the risk of catastrophic failures.
- ✓ **Regulatory Compliance** – Meets API 653, AS/NZS 3788, and statutory inspection requirements.
- ✓ **Cost Savings** – Prevents unplanned outages, product loss, and costly emergency repairs.
- ✓ **Extended Service Life** – Proactive monitoring and repairs help maximize tank lifespan.
- ✓ **Reduced Downtime** – Advanced tools such as drones, ROVs, and crawlers minimize the need for scaffolding, confined space entry, or tank draining.
- ✓ **Accurate Data** – High-resolution scanning and inspection provide reliable data for corrosion rate and remaining life calculations.
- ✓ **Optimized Maintenance** – Targeted repair recommendations allow efficient planning and prioritization.
- ✓ **Environmental Protection** – Prevents leaks and spills, safeguarding surrounding areas.

Auspec Asset Integrity Services (AAIS), we provide complete Pressure Relief Valve (PRV) testing, inspection, and certification services to ensure your safety devices operate correctly and in compliance with statutory requirements. As the last line of defense against overpressure, PRVs must be tested and maintained to guarantee reliable performance.

**AAIS Capabilities Include:**

- ▶ **In-Situ Testing:** Verifying valve lift and set pressure on site.
- ▶ **Portable Test Bench:** On-site calibration and certification for valves up to required pressure ranges.
- ▶ **Tagging & Certification:** Immediate issuance of test certificates and compliance tags.
- ▶ **Bench Testing & Calibration:** Verification of set pressure and valve performance in a controlled environment.
- ▶ **Inspection & Certification:** Detailed reporting, certification, and tagging of tested valves.
- ▶ **Servicing & Repairs:** Seat lapping, spring replacement, and component refurbishment to restore functionality.
- ▶ **Installation & Replacement:** Supply and fitment of new or refurbished valves.
- ▶ **Database Management:** Record keeping and tracking of valve test history for compliance and maintenance planning.



Auspec Asset Integrity Services (AAIS) provides the ability to precisely measure the quantity (volume) of containment systems, storage units, and process equipment. Using advanced methods and technologies in accordance with international codes and standard practices (API, ISO, OIML, ASTM), we deliver accurate calibration of:

**AAIS Capabilities Include:**

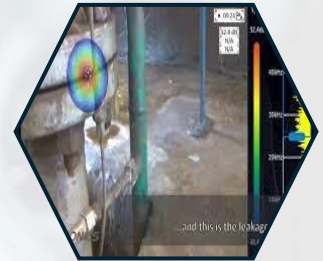
- ▶ **API 650 Atmospheric Storage Tanks**
- ▶ **Pressure Vessels (Horizontal & Vertical)**
- ▶ **Spheres / Spheroids / Spherical Tanks**
- ▶ **Bullet Tanks**
- ▶ **Cylindrical Land Tanks (Horizontal & Vertical)**
- ▶ **Horizontal Above- and Underground Fuel Tanks**
- ▶ **Industrial Silos**
- ▶ **Tanks on Ships & Barges**
- ▶ **Rectangular Tanks / Containers**
- ▶ **Concrete Reservoirs**
- ▶ **Cross-Country Pipelines**
- ▶ **Process & Power Piping**
- ▶ **Stock Piles**



Auspec Asset Integrity Services (AAIS) provides a wide range of pressure testing and leak testing solutions to verify the integrity, strength, and leak-tightness of pressure equipment, vessels, tanks, and pipelines. All testing is performed in compliance with relevant Australian Standards (AS), International Codes, and client-specific requirements.

**AAIS Capabilities Include:**

- ▶ **Hydrostatic & Pneumatic** – strength & leak-tightness verification.
- ▶ **Helium Leak Testing / Tracer Gas Testing**– High-sensitivity leak detection.
- ▶ **AS 2885.5 Pipeline Testing** – For cross-country & underground pipelines.
- ▶ **Vacuum Box** – Weld seam integrity checks.
- ▶ **Equipment Range:** Calibrated pumps (up to 35,000 kPa), digital gauges, data loggers, and mobile test rigs.
- ▶ **Acoustic Imaging Cameras** - Utilizing ultrasonic and acoustic leak detection to identify issues such as compressed air leaks, gas leaks, and vacuum system problems



Auspec provides comprehensive welding inspection and consultancy services to ensure compliance, safety, and quality across all fabrication and maintenance projects.

**AAIS Capabilities Include:**

- ▶ **Welding Inspection** – Visual inspection, NDT coordination, and acceptance verification in line with ASME, API, and Australian Standards.
- ▶ **Welding Supervision** – Monitoring of weld procedures, consumables, welder performance, and on-site activities to ensure adherence to specifications.
- ▶ **Procedure Development** – Preparation and qualification of WPS/PQR in compliance with ASME IX AS 3992 and ISO 15614.
- ▶ **Welder Qualification** – Testing, evaluation, and certification of welders to
  - project and code requirements.
- ▶ **Failure Analysis & Repair Consultancy** – Assessment of welding-related defects, repair strategies, and metallurgical advice.
- ▶ **Stress Analysis & Fitness-for-Service** – Engineering evaluation of welded components for structural adequacy and remaining life.
- ▶ **Consultancy & Training:** Guidance on welding consumables, repair techniques, QA/QC systems, and training programs for welder skill development.
- ▶ **QA/QC System Support:** Development of welding QA/QC documentation, weld maps, inspection test plans (ITPs), and audit support for fabrication shops and field works.
- ▶ **Material Traceability & Control:** Full documentation and verification of base metals, consumables, and heat numbers in compliance with ASME, ISO, and Australian Standards.
- ▶ **Fabrication Oversight:** Monitoring and inspection during fit-up, tack welding, root pass, and final weld stages to ensure code compliance and dimensional accuracy.



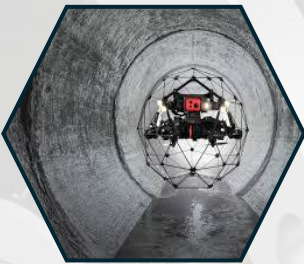
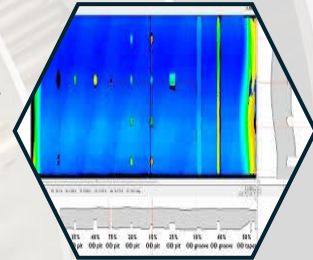
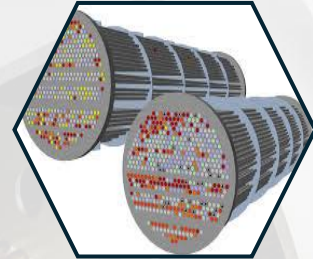
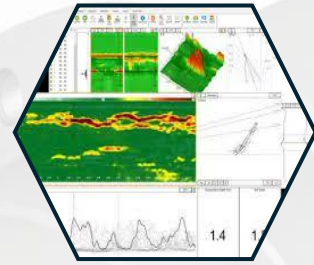
## Heat Exchanger Tube Testing Service

Auspec provides specialised inspection of heat exchanger, boiler, condenser, and air cooler tubes using advanced non-destructive testing (NDT) methods to ensure reliability, efficiency, and extended service life.

**AAIS Capabilities Include:**

- ▶ **IRIS (Internal Rotary Inspection System):** Ultrasonic wall thickness measurement, highly accurate for detecting corrosion, pitting, and erosion.
- ▶ **ECT (Eddy Current Testing):** For non-ferromagnetic tubes, effective in identifying corrosion, pitting, and cracking.
- ▶ **RFT (Remote Field Testing):** For ferromagnetic tubes, suitable for wall loss and general degradation.
- ▶ **NFT (Near Field Testing):** Ideal for fin-fan coolers, effective under tube supports.
- ▶ **MBET (Magnetic Bias Eddy Current Testing):** Enhanced detection of cracking and localised defects in ferromagnetic tubes.
- ▶ **C-MEC® Remote Field Eddy Current:** Advanced inspection solution for challenging ferromagnetic tube applications.

**Benefits: rapid defect detection, accurate life assessment, reduced downtime, and compliance with international standards.**



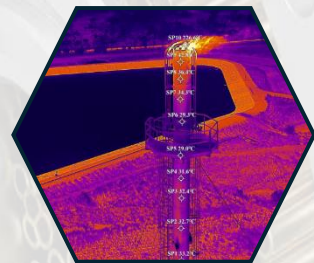
## Drone Asset Inspections and Services

AAIS drone inspections are performed by AICIP/API inspectors with CASA-approved pilot licences, combining technical knowledge of asset integrity with safe and compliant drone operations.

**AAIS Capabilities Include:**

- ▶ **Confined Space Drones (Elios 2)** – Internal inspection of tanks, vessels, silos and piping without human entry.
- ▶ **Flare Stacks & Chimneys** – High-resolution surveys while in operation, reducing shutdown requirements.
- ▶ **Tank Roofs & Internals** – Assessment of floating and fixed roofs, nozzles, and structural attachments.
- ▶ **Pipelines & Pipe Racks** – Long-range surveys for leaks, coating breakdown and structural support checks.
- ▶ **Offshore & Marine Assets** – Hulls, jetties, risers and topside structures.
- ▶ **Bridges & Structural Steelwork** – Detailed inspection of welds, connections and corrosion-prone areas.

**Benefits: safer operations, reduced cost, faster turnaround, minimal scaffolding or rope access, and high-quality visual/thermal data.**



## PMI / XRF – Positive Material Identification

AAIS provides PMI services using portable XRF analyzers to:

- ▶ Verify chemical composition of tanks, vessels, piping, and structural components.
- ▶ Confirm material grade and alloy type (e.g., stainless steels, low-alloy steels, nickel alloys).
- ▶ Detect critical alloying elements such as chromium, nickel, molybdenum, cobalt, and vanadium.
- ▶ Prevent material mix-ups during fabrication, construction, or repair.



## Corrosion Mapping – Automated & Manual

Auspec provides both automated and manual corrosion mapping services using advanced ultrasonic and phased array ultrasonic testing (PAUT) techniques. These methods deliver accurate wall thickness measurements and detailed visualisation of corrosion, pitting, and general material degradation.

### AAIS Capabilities Include:

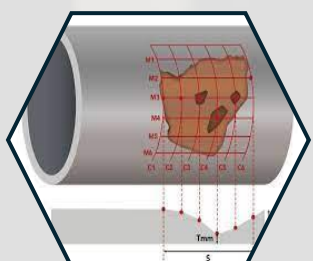
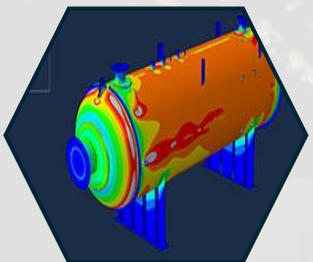
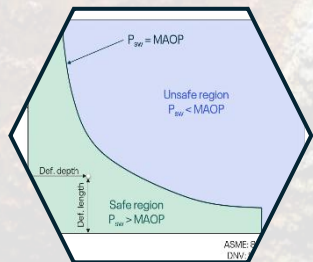
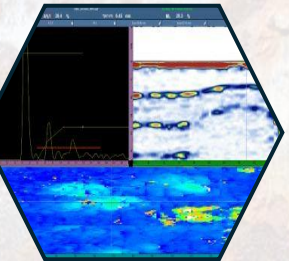
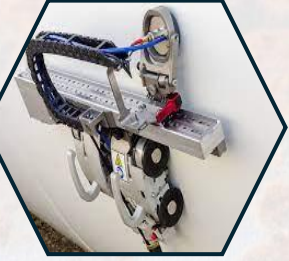
- **Automated PAUT Corrosion Mapping:** High-resolution scanning for large surface areas, producing C-scan images and thickness maps for comprehensive assessment.
- **Manual Ultrasonic Thickness Mapping:** Flexible and cost-effective inspections for localised areas, small components, or when automation access is limited.
- **Jireh Navic Base Crawler Modular Motorized Scanner:** Advanced robotic platform for automated corrosion mapping with precise control, modular adaptability, and enhanced scanning efficiency on tanks, vessels, and piping. Provides far higher resolution, increases process speed (up to 10 times faster than traditional corrosion mapping), and significantly improves probability of flaw detection.
- **Silverwing RMS Scanner:** Robust automated corrosion mapping solution designed for accurate wall thickness measurement on large flat or slightly curved surfaces. Offers high-resolution scanning, reliable defect detection, and efficient coverage for storage tanks, vessels, and structural components.

## Fitness-For-Service (FFS) Analysis

Auspec provides comprehensive Fitness-For-Service (FFS) assessments in accordance with API 579 and relevant international standards. These assessments determine whether pressure equipment, piping, and storage tanks containing flaws or deterioration are suitable for continued operation.

### AAIS Capabilities Include:

- **Level 1, 2 & 3 Assessments:** From screening evaluations to detailed engineering analyses.
- **Defect Evaluation:** Corrosion, pitting, weld flaws, cracks, mechanical damage, and general wall loss.
- **Remaining Life Calculations:** Corrosion rate determination, remaining strength factor, and inspection interval recommendations.
- **Stress & Fracture Analysis:** Application of fracture mechanics and finite element analysis (FEA) using advanced tools such as ANSYS for complex simulations. In addition, Auspec utilises IntegriWISE, a specialised FFS assessment software designed for evaluating the integrity of ageing pipework, pipelines, storage tanks, boilers, pressure vessels, and high-temperature equipment. It is designed to assist with the evaluation of the integrity of pipelines, pressure equipment, and structures containing flaws in line with BS 7910.
- **Repair & Mitigation Strategies:** Evaluation of repair options such as weld overlays, patch plates, rerating, or component replacement.
- **Regulatory Compliance:** Reports and documentation aligned with API, ASME, and Australian Standards.



## Design & Verification

AAIS provides comprehensive Design & Verification services for pressure vessels, storage tanks, and piping systems in accordance with ASME, API, and Australian Standards. Our expertise includes structural analysis and finite element assessments for roofs, supports, and critical components, ensuring compliance with regulatory and client requirements. We deliver independent verification of new designs, modifications, and repairs, supported by detailed engineering calculations, compliance reports, and certification to guarantee safe and reliable operation of assets throughout their service life.

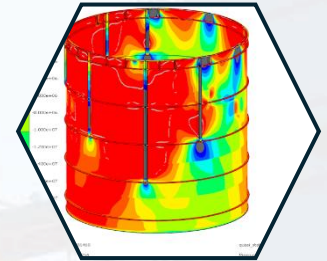


## Risk-Based Inspection (RBI) services

AAIS offers Risk-Based Inspection (RBI) services to optimize inspection strategies for pressure equipment, piping, and storage tanks. By applying API 580/581 methodologies, we assess the probability and consequence of failure to prioritize high-risk components and extend inspection intervals where appropriate. This approach reduces unplanned shutdowns, improves safety, and ensures cost-effective asset management.

## Finite Element Analysis (FEA)

AAIS provides advanced Finite Element Analysis (FEA) services to evaluate the structural integrity and performance of pressure vessels, storage tanks, piping systems, and support structures under various operating and loading conditions. Using industry-recognized software such as ANSYS, Abaqus, and STAAD.Pro, our engineering team performs detailed stress, strain, and deformation assessments to identify potential weaknesses and verify compliance with design codes and standards.



## Tank, Vessel, and Piping CAD Drafting Services

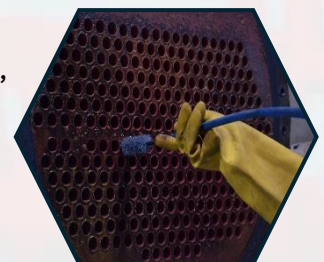
AAIS provides comprehensive Tank, Vessel, and Piping CAD Drafting Services to support engineering design, fabrication, inspection, and maintenance planning. Our skilled team produces accurate general arrangement drawings, detailed fabrication and nozzle orientation layouts, and integrated P&ID schematics to ensure complete system clarity. We deliver 2D and 3D isometric piping layouts that connect tanks, vessels, and process equipment, enabling efficient construction, modification, and inspection activities.



## Storage Tank, Vessel & Heat Exchanger Tube Cleaning

AAIS offers comprehensive cleaning solutions for tanks, pressure vessels, boilers, condensers, and heat exchanger tubes, ensuring equipment is safe, inspection-ready, and operating at maximum efficiency. Our services cover both industrial cleaning for inspection access and operational performance restoration, tailored to meet the needs of refineries, petrochemical plants, power stations, and storage facilities.

- ▶ High-Pressure Water Jetting (Hydroblasting): Effective removal of scale, sludge, and heavy deposits from internal surfaces.
- ▶ Chemical Cleaning: Use of controlled chemical solutions to dissolve corrosion products, fouling, and scale without damaging equipment.
- ▶ Mechanical Tube Cleaning: Rotary and flexible shaft systems for heat exchanger, boiler, and condenser tube restoration.



AAIS provides Biological Activity Reaction Test (BART) services to detect and monitor microbiologically influenced corrosion (MIC) in tanks, pipelines, cooling water systems, and industrial water circuits. BART testing identifies the presence and activity of bacteria such as sulfate-reducing bacteria (SRB), iron-related bacteria (IRB), and slime-forming organisms that accelerate pitting, under-deposit corrosion, and biofouling.

#### Types of BART™ Tests

- ▶ IRB-BART™ (Red Cap) – Iron Related Bacteria  
Detects iron-oxidizing and iron-reducing bacteria that cause tubercles, encrustations, plugging, and corrosion.
- ▶ SRB-BART™ (Black Cap) – Sulfate Reducing Bacteria  
Detects SRB (e.g., Desulfovibrio), associated with hydrogen sulfide production, black water, and severe corrosion.
- ▶ SLYM-BART™ (Green Cap) – Slime Forming Bacteria  
Detects biofilm and slime producers responsible for plugging, biofouling, and reduced system efficiency.
- ▶ HAB-BART™ (Blue Cap) – Heterotrophic Aerobic Bacteria  
Detects general aerobic bacteria that cause turbidity, cloudiness, taste/odor issues, and biodegradation.
- ▶ FLOR-BART™ (Yellow Cap) – Fluorescing Pseudomonads  
Detects pseudomonads (aerobic degraders of jet fuels, solvents, etc.) and some opportunistic pathogens.
- ▶ DN-BART™ (Grey Cap) – Denitrifying Bacteria  
Detects bacteria that reduce nitrates to nitrogen gas; linked to septic conditions and nitrate contamination.
- ▶ N-BART™ (White Cap) – Nitrifying Bacteria  
Detects nitrifiers responsible for converting ammonia to nitrite/nitrate; relevant in water and wastewater systems.
- ▶ APB-BART™ (Purple Cap) – Acid Producing Bacteria  
Detects bacteria that generate organic/inorganic acids, contributing to localized pitting and MIC.
- ▶ BOD-BART™ (Light Blue Cap) – Biochemical Oxygen Demand

At **Auspec Asset Integrity Services (AAIS)**, safety, quality, and client trust form the foundation of everything we do.

#### Safety Commitment

- ▶ We operate under a strict Zero Harm philosophy, ensuring the health and safety of our people, clients, and the communities where we work.
- ▶ All activities are carried out in compliance with Australian WHS legislation, client-specific requirements, and international best practices.
- ▶ Our teams are trained and certified for confined space entry, working at heights, hazardous areas, and high-risk operations, ensuring safe execution in every environment.

#### Quality Commitment


- ▶ AAIS operates within the framework of ISO/IEC 17025 and ISO/IEC 17020, supporting NATA accreditation pathways.
- ▶ Our inspection and testing procedures strictly follow ASME, API, and Australian Standards, ensuring full compliance and reliability.
- ▶ We maintain a calibration and traceability program for all equipment to guarantee accuracy of results.
- ▶ Continuous improvement through audits, training, and feedback ensures that our services remain of the highest technical standard.


#### Client Support

- ▶ We provide responsive, 24/7 support to meet client needs across refineries, petrochemical plants, mining operations, and infrastructure projects.
- ▶ Each project is managed with a focus on clear communication, transparency, and timely reporting.
- ▶ With a combination of experienced inspectors, engineers, and technical specialists, we are a trusted partner in ensuring safe, compliant, and cost-effective asset management.

### Auspec Asset Integrity Services (AAIS)

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