

EXECUTION
PIONEERS



COATING & LINING INTEGRITY ASSURANCE

Holiday & Spark Testing Services

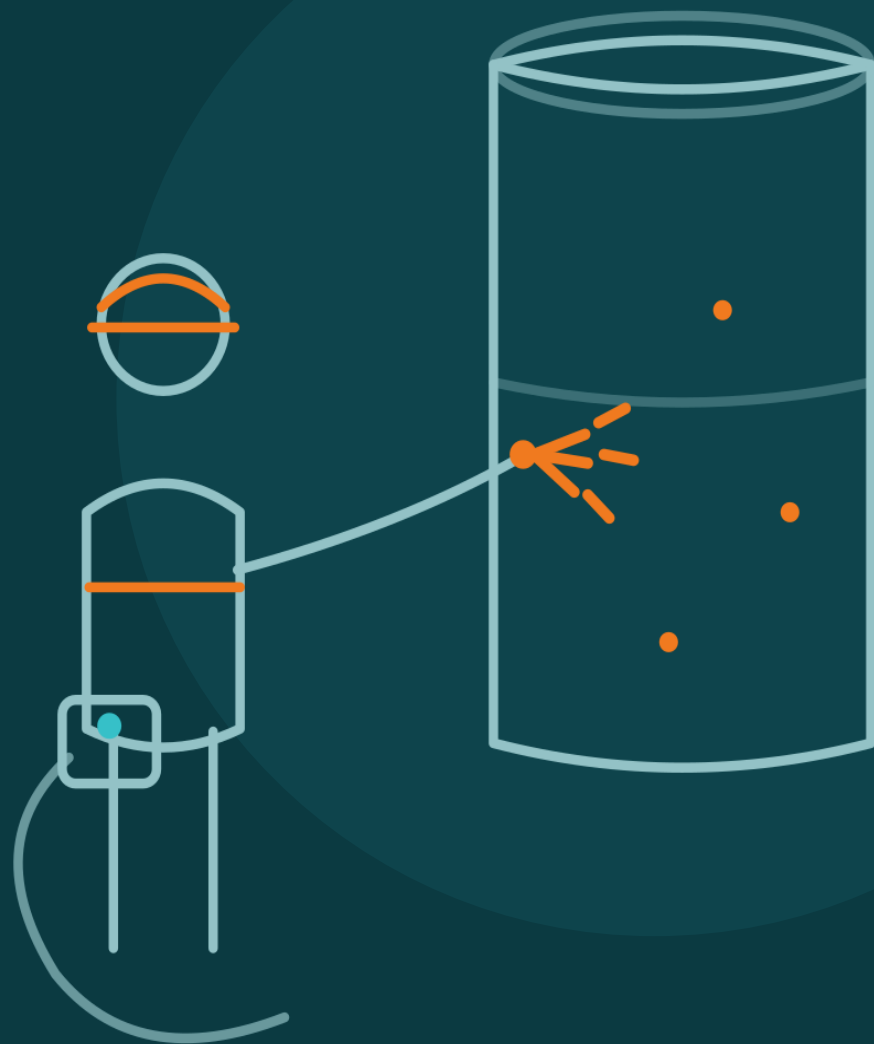
High voltage discontinuity (holiday) and low-voltage porosity detection for protective coatings and linings verifying continuity before your assets go into service.

ASTM D5162

ASTM G62

NACE / AMPP SP0188

ISO 29601



OVERVIEW

Finding the flaws the eye cannot see

A protective coating is only as good as it is continuous. A microscopic pinhole, void or thin spot a “holiday” opens a direct path for corrosive electrolytes to reach the steel, concentrating attack on a tiny anode and driving rapid pitting and premature failure.

“

WHAT IS A HOLIDAY?

A discontinuity pinhole, void, crack, thin spot, inclusion or missed area in a non-conductive coating over a conductive substrate. It lowers the dielectric strength of the film and is often invisible to the naked eye.



Prevents premature corrosion

Stops electrolytes from reaching steel at hidden defects.



Verifies specification compliance

Confirms the coating meets the project-invoked standard.



Protects asset value

Extends coating life and defers costly recoating.



Reduces in-service risk

Catches defects before the asset is commissioned.

TWO COMPLEMENTARY METHODS

Matched to film thickness and to the standard

Test voltage is calculated from total dry-film thickness ($\approx 4 \text{ V}/\mu\text{m} \cdot 100 \text{ V}/\text{mil}$ for spark testing) and always validated against a deliberately created known holiday before inspection begins.



Low-Voltage Wet Sponge

9–90 V

Thin film $< 500 \mu\text{m}$ (20 mils)

A moisture-fed sponge conducts current through any discontinuity to trigger an audible alarm without risk of damaging the film. Ideal for thin-film coatings where high voltage could cause harm.

Best for: tank & vessel thin-film linings, primers, intermediate coats.



High-Voltage Spark (DC)

to 30 kV

Thick film $> 500 \mu\text{m}$

A charged electrode generates a visible spark and alarm at each holiday. Voltage is set to film thickness and verified against a known reference defect for thick-film coatings and immersion-service linings.

Best for: thick linings, pipe coatings/FBE, rubber & GRP/FRP linings.

SERVICE SCOPE

What we inspect

Scope of services

- High-voltage DC spark testing of thick-film coatings & linings
- Low-voltage wet-sponge porosity detection of thin films
- 100% holiday testing of immersion-service tank & vessel linings
- Internal & external pipeline coating / FBE / tape-wrap testing
- Spark testing of rubber-lined and GRP/FRP-lined equipment
- Pre-commissioning & in-process QA/QC inspection support
- Repair verification & documented re-test of marked holidays
- Third-party / witness inspection & coating surveys

Typical applications

Storage Tanks

Pressure Vessels

Process Pipelines

Buried Pipe

Tank Floors & Roofs

Separators

Desalters

Sour-Service Equip.

Structural Steel

Concrete Linings

Rubber Linings

GRP / FRP

Railcars & Skids

Manholes & Sumps

Fabrication Yards

Skid Packages

Inspected to recognised international standards

Standard	Title / Scope	Applies to
ASTM D5162	Discontinuity (holiday) testing of non-conductive protective coating on metallic substrates	Steel coatings & linings
ASTM G62	Holiday detection in pipeline coatings (Methods A & B)	Pipeline external coatings
NACE / AMPP SP0188	Discontinuity testing of new protective coatings on conductive substrates	Tanks, vessels, structures
ASTM D4787	Continuity verification of liquid- or sheet-applied linings on concrete	Concrete substrates
ISO 29601	Assessment of porosity in the dry film by detection	Protective paint systems
Client specs	Saudi Aramco APCS / SAES, SABIC & Ma'aden engineering standards	Project-specific criteria

Standards are referenced for context; inspection is performed to the specific revision invoked by the project specification.

A controlled, documented inspection process

01

Review & cure check

Confirm spec, DFT records and full coating cure before testing.

02

Set & verify voltage

Calculate from DFT; validate against a known holiday.

03

Surface preparation

Clean, dry surface; remove bloom or moisture that misreads.

04

Systematic scan

Overlapping passes at controlled speed (~30 cm/s) for full coverage.

05

Mark & record

Each holiday flagged is marked and logged location, size, count.

06

Repair & re-test

Repaired areas re-tested at the same voltage to confirm clearance.

07

Report & sign-off

Traceable report with results, acceptance status & certification.

Restoring Coating Integrity to Meet Project Specifications

When a coating or lining fails the holiday or spark test, the affected area shall be repaired in accordance with the approved coating system, manufacturer recommendations, project specifications, and applicable international standards. No coated or lined surface shall be accepted for service until all detected defects have been successfully repaired, re-tested, documented, and approved.

Repair & Verification Process

01 Locate & Mark Defects

Identify and clearly mark all detected holidays, pinholes, voids, cracks, thin spots, and coating discontinuities.

02 Assess the Root Cause

Evaluate the cause of failure, including surface preparation, contamination, coating application, curing conditions, dry film thickness (DFT), and environmental factors.

03 Surface Preparation

Remove defective coating, feather surrounding edges, restore the required surface profile, and ensure the surface is clean, dry, and ready for recoating.

04 Re-Apply the Approved Coating/Lining System

Apply the specified coating or lining system in accordance with the approved coating procedure, manufacturer's recommendations, and project specifications, ensuring the required DFT is achieved.

05 Cure & Environmental Verification

Verify coating cure, temperature, humidity, dew point, and all environmental conditions before performing the final inspection.

06 Final Inspection, Re-Test & Acceptance

Re-perform the Holiday/Spark Test using the appropriate test method and voltage settings. A comprehensive inspection report is issued, documenting all repair activities, test results, and final acceptance records.

Calibrated equipment, certified inspectors, traceable reports



Equipment & calibration

Pulsed & continuous DC holiday detectors (to 30 kV) and low-voltage wet-sponge units from recognized makes with valid calibration certificates and field verification before each job using reference coupons.



Inspector qualifications

AMPP (NACE/SSPC) & BGAS-CSWIP certified coating inspectors, supported by ASNT NDT personnel experienced with Aramco, SABIC and Ma'aden inspection regimes.



Deliverable: inspection report

Test date, equipment & calibration, voltage setting, coating DFT, number & location of holidays, repair actions, re-test results, acceptance status and certified inspector sign-off.



Health, Safety & Environment

Spark testing produces live sparks at up to 30 kV. All work is performed under permit-to-work with gas testing, confined-space controls, insulated PPE and trained operators strictly aligned to client and Saudi Aramco HSE requirements. Spark testing is never performed in flammable or explosive atmospheres.

PROJECT EXPERIENCE

Representative projects across the Eastern Province

A snapshot of representative coating-integrity inspection scopes for owner-operators and EPC contractors across the Eastern Province — plants, tank farms, pipelines and fabrication yards.

STORAGE TANKS

Tank-Farm Lining Integrity

Jubail Industrial City · Eastern Province

100% spark testing of immersion-service epoxy linings on floating-roof tanks; marked, repaired & re-tested.

SP0188

ASTM D5162

PRESSURE VESSELS

Separator & KO-Drum Coatings

Dammam fabrication yard · Eastern Province

Wet-sponge & HV holiday testing of internally lined separators and knockout drums before shipment.

ASTM D5162

Client spec

PIPELINES

Buried Line FBE Survey

Cross-country route · Eastern Province

Jeeping of factory-applied FBE mainline coating and field-joint wraps before lowering-in.

ASTM G62

CONCRETE LININGS

Basin Lining Verification

Coastal utility site · Eastern Province

Continuity verification of sheet- and liquid-applied linings on concrete basins, sumps & containment.

ASTM D4787

TURNAROUND

Shutdown Witness & Re-Lining QA

Process plant · Eastern Province

Witness inspection and spark testing of relined tanks and vessels within tight shutdown windows.

SP0188

ISO 29601

SPECIAL LININGS

Rubber & GRP/FRP Testing

Jubail Industrial City · Eastern Province

HV spark testing of rubber-lined tanks and GRP/FRP ducting and vessels to confirm continuity.

ASTM D5162

Client spec

WHY EXECUTION PIONEERS

A Kingdom partner built for execution



In-Kingdom presence

Based in the Eastern Province with rapid mobilisation to plants, tank farms and yards across Saudi Arabia.



Certified, audited quality

AMPP/BGAS-certified inspectors, calibrated equipment and traceable, specification-driven reporting.



Shutdown-ready response

Flexible crews geared to turnaround timelines, witness inspection and tight pre-commissioning windows.



Local content & IKTVA

Saudi-registered delivery supporting clients' localisation and IKTVA objectives under Vision 2030.

2030

Execution Pioneers supports Vision 2030 by building local inspection capability and asset-integrity expertise that keeps critical national infrastructure safe, compliant and productive.

How we support **YOU** in the Kingdom

- ✓ Rapid in-Kingdom mobilization to your project sites, fabrication yards and turnarounds across the Kingdom.
- ✓ Integrates with your QA/QC and HSE permit-to-work, gas testing and confined-space controls as standard.
- ✓ IKTVA-aligned, Saudi registered local content supporting companies in-Kingdom value and Vision 2030 commitments.
- ✓ Specification-driven, traceable reporting ready for third-party / witness review and pre-commissioning sign-off.



Talk to us about your next **inspection**



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Coating Integrity & NDT Inspection