AGL Engineering S.A.

Corporate Engineering Profile | 2026

Specialist Engineering for Airfield Ground Lighting & Critical Electrical Infrastructure

AGL Project Execution Support · AGL & MV Cable Diagnostics · Fault Location & Repair · Training & Assessment

ENGINEERING DECISIONS
BASED ON MEASURED EVIDENCE

Established 2010 · Grass, Grand Duchy of Luxembourg · Authorised ADB SAFEGATE Service Partner

AT A GLANCE

Independent specialist engineering, close to the infrastructure

AGL Engineering S.A. is a Luxembourg-based specialist engineering company for Airfield Ground Lighting (AGL) and critical electrical infrastructure. We combine senior engineering judgement with our own field capability: project execution support, testing, cable diagnostics, fault location, repair engineering, commissioning, training and lifecycle asset assessment.

2010 established in Luxembourg	**30+ years** AGL & MV field experience	**4 continents** operational assignments	**up to 36 kV** MV cable diagnostic services*

MV cable diagnostic services for shielded networks up to 33 kV nominal (IEC 18/30 (36) kV; 35 kV class); test methods and voltages are selected to suit cable construction, capacitance and project requirements.

What we do	AGL project execution support · AGL primary circuit integrity · MV switchgear and protection · AGL and MV cable diagnostics · fault location and repair engineering · commissioning and acceptance · condition and lifecycle assessment · training and competency assessment
Who we serve	Airport operators and authorities · governments and public entities · defence organisations · contractors and engineering teams · AGL manufacturers · utilities, industry, renewable energy, oil & gas, ports and transport
How we differ	Independent of equipment sales and replacement programmes · one diagnostic-to-repair workflow · field-proven AGL Primary Circuit Integrity Framework™ · manufacturer-independent instrumentation · senior engineer on site at the critical stages
Credentials	Authorised ADB SAFEGATE Service Partner · Authorised ADB SAFEGATE AGL Trainer & Assessor · work aligned with ICAO, IEC, IEEE, EN 50110 and applicable FAA guidance
Field capability	Mobile engineering laboratory: sheath testing, IR/PI, HV bridge, TDR/ARM/ICE/DECAY, surge pinpointing, cable and phase identification. Advanced VLF, Tan Delta and Partial Discharge diagnostics are available within project-specific test and mobilisation programmes

EXECUTIVE MESSAGE

Engineering decisions based on measured evidence

Critical electrical infrastructure is a strategic asset. Its reliability directly affects operational continuity, safety, financial performance and investment decisions. Airports, defence installations, utilities and industrial facilities depend on systems that must perform predictably, often long after their original design assumptions were made.

As infrastructure ages, the decisions become harder. Should an asset remain in service? Can its life be extended safely? Is repair technically justified, or has replacement become the more responsible investment? These questions cannot be answered by age, by maintenance intervals or by isolated pass/fail results.

At AGL Engineering, we believe the purpose of engineering is to reduce uncertainty. We integrate field observations, electrical measurements, advanced diagnostics, protection and control evaluation and practical execution experience into one structured methodology. For new-build and rehabilitation projects, the same discipline is applied before assets enter service: approved designs are translated into practical work sequences, verified installation methods, controlled cut-over and documented commissioning.

> **OUR RESPONSIBILITY**
>
> **We do not simply test electrical infrastructure. We provide the engineering evidence required to decide whether an asset should be operated, monitored, repaired, rehabilitated or replaced.**

Our engineering principles

Engineering before technology. Engineering defines the question, technology produces the evidence, and engineering converts that evidence into a decision. No single measurement describes the condition of a complex system; the strength of a conclusion depends on how well the available evidence is integrated.

Practical answers. Our work answers the questions that drive the next decision: Can the asset remain in service? Which failure mechanisms are relevant? Which repair strategy is appropriate? Which maintenance, rehabilitation or replacement option gives the best technical and economic outcome?

Independence. We are independent of equipment sales and predetermined replacement programmes. The recommended action follows from the condition, function and operational importance of the asset, not from a preferred commercial outcome.

Knowledge stays with the owner. Our reports, commissioning records and training strengthen the client’s own capability. Where appropriate, we verify the first installation together with the executing team so that it becomes the field standard for the remaining work.

WHO WE ARE

Between engineering consultancy and specialist field service

AGL Engineering S.A. was founded in Luxembourg in 2010. Our experience originated in airport electrical infrastructure and AGL systems, where reliability, safety and operational continuity are inseparable. That background shaped a methodology built on practical field execution, disciplined testing, fault investigation and system-level analysis. The same principles now support medium-voltage networks, underground cable systems and other mission-critical electrical assets.

We deliberately occupy the position between traditional consultancy and specialist field service: close enough to the infrastructure to understand how assets actually behave, independent enough to interpret evidence objectively and challenge assumptions.

> **WHAT DISTINGUISHES US**
>
> **Our work starts where routine inspection is no longer enough and the asset owner needs to know what the measured condition actually means.**

Core engineering domains

- Airport electrical infrastructure and Airfield Ground Lighting
- AGL project execution support, commissioning and technical advisory
- Medium-voltage engineering, switchgear and protection systems
- Cable diagnostics, fault location and repair engineering
- Condition assessment, asset integrity and lifecycle management
- Training, competency assessment and knowledge transfer

We support infrastructure owners and contractors throughout the asset lifecycle: from design review and execution planning, through installation, cut-over and commissioning, to operation, diagnostics, repair, rehabilitation and eventual replacement.

Why reliability cannot be assumed

Underground cables, joints, transformers, protection systems and control circuits can deteriorate while the installation still appears to work. Operation is not proof of condition: a system may remain energised while insulation is ageing, redundancy has already been lost or a localised defect is developing toward failure.

Age is not condition either. Two assets of the same type and age can differ greatly depending on installation quality, moisture, thermal history, accessories and previous faults. And the significance of a defect depends on its consequence: a cable defect at an airport can remove runway or taxiway lighting; a failed section in an MV ring removes redundancy and raises the consequence of the next failure. A sound assessment therefore treats each asset as part of a system.

ENGINEERING SERVICES

From design and execution to lifecycle decisions

Each assignment is defined by what the client needs to achieve, the evidence and execution controls required, and the action that should follow. Our services follow two complementary pathways that share one engineering discipline.

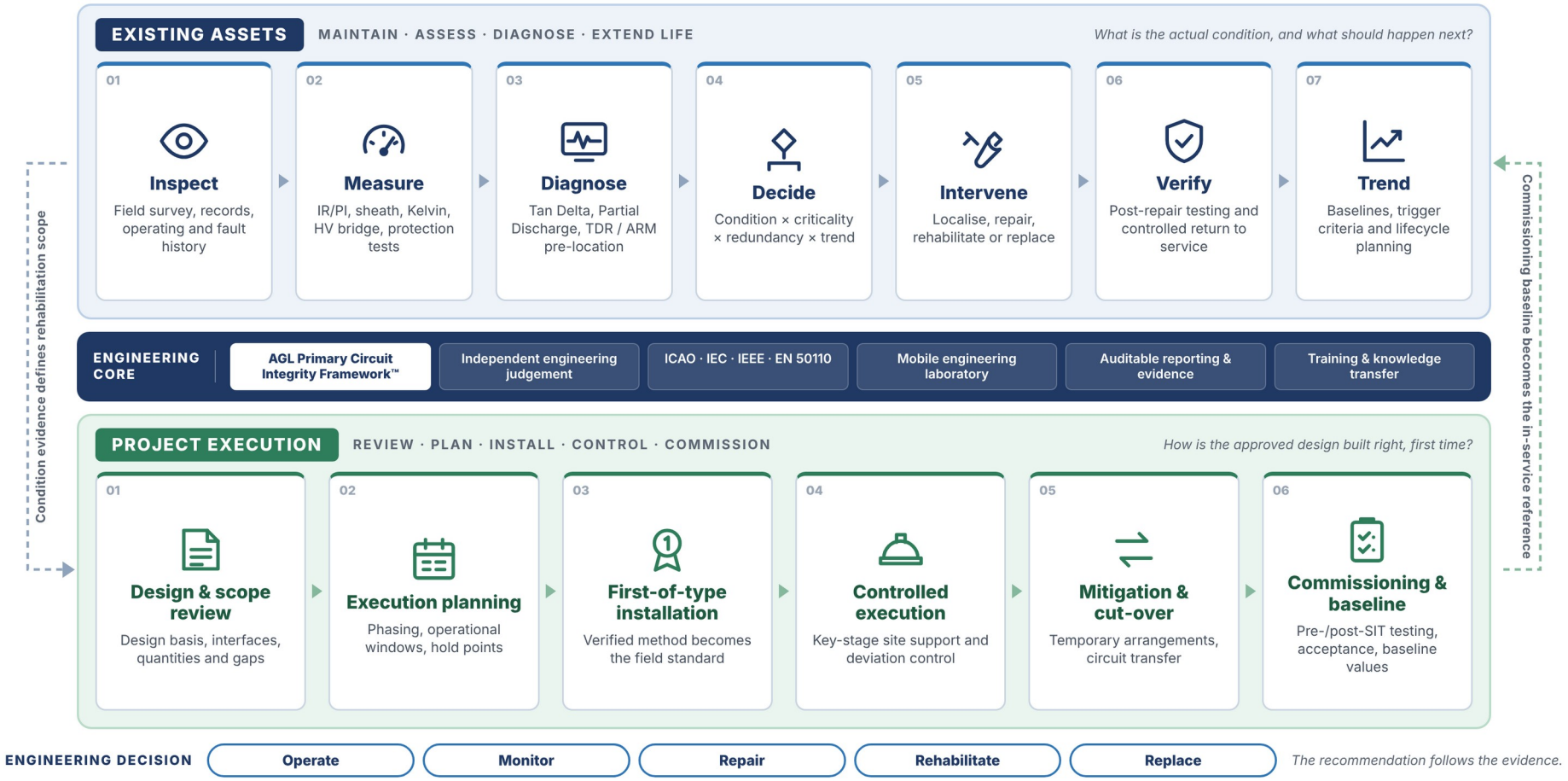
Stage	Existing assets	Project execution
1. Establish the facts	Document review, inspection, electrical testing, protection testing, fault investigation and diagnostics selected for the asset, voltage class and failure mode.	Review of the approved design, scope, interfaces, quantities and missing information before field work starts.
2. Assess and plan	Results are correlated with design, operating history, standards, manufacturer data and earlier measurements to establish probable condition.	Work sequence, operational windows, team interfaces, hold points and responsibilities are defined.
3. Engineer the action	Fault localisation, repair engineering, rehabilitation planning, protection changes, replacement strategy or revised maintenance practice.	First-of-type installation, operational mitigation and controlled cut-over.
4. Verify and manage	Post-intervention testing; records become the baseline for trending and lifecycle planning.	Testing, commissioning, acceptance and documented baseline values.

Service areas

Service area	Typical scope
Engineering consultancy & advisory	Technical advisory, design and specification review, technical due diligence, execution planning, procedures and technical reporting
AGL project execution support	Execution planning, first-of-type installation, operational mitigation, cut-over, commissioning and acceptance testing
AGL systems	Runway, taxiway, approach and apron lighting; CCRs; ALCMS; PAPI; apron floodlighting; VDGS; photometric surveys
Maintenance engineering	Preventive and corrective maintenance programmes, condition-based maintenance strategy
Medium voltage	Switchgear, circuit-breaker and protection relay testing; network and redundancy assessment
Cable diagnostics & repair	Condition assessment, fault location, repair engineering and post-repair verification for AGL and MV cables
Asset integrity	Baselines, trending, criticality and lifecycle planning
Training & assessment	Theory and practical training, competency assessment, knowledge transfer during execution

INTEGRATED ENGINEERING PROCESS

AGL & critical electrical infrastructure — one engineering discipline across the complete asset lifecycle



Existing assets and project execution share one engineering core. Condition evidence defines rehabilitation scope; the commissioning baseline becomes the in-service reference.

AIRPORT & AGL ENGINEERING

Electrical infrastructure for safe and continuous airfield operations

Airport electrical infrastructure combines safety-critical visual aids, constant-current series circuits, medium-voltage distribution, control systems and underground networks in an environment where availability is essential. We treat these systems as one integrated installation, not as isolated equipment.

AGL primary circuits require specialist understanding of constant-current operation, series isolating transformers, screened primary cable, connectors and the interaction between insulation condition and operational reliability. A circuit that still operates may contain weaknesses that justify investigation before it fails.

Airfield Ground Lighting capabilities

- Runway, taxiway, approach and apron lighting systems
- AGL primary series circuits, series isolating transformers, screened 5 kV primary cable and connectors
- Constant Current Regulators, ALCMS and control and monitoring interfaces
- PAPI installation, alignment, calibration and ground checks with formal reporting
- Photometric surveys of AGL and apron floodlighting with validation reports
- Visual Docking Guidance Systems (VDGS): installation, commissioning and maintenance
- Fault investigation, cable localisation, repair engineering and post-repair verification
- Preventive maintenance strategy and condition-based assessment
- AGL Primary Circuit Integrity Framework™: lifecycle verification, trending and targeted remediation

Working in an operational airport

Airport work requires more than technical competence. Installation and rehabilitation must be built around operational windows, airside access, safety procedures, NOTAM and shutdown planning, and the consequence of taking circuits out of service. We combine execution phasing, operational mitigation, controlled cut-over and commissioning with the same discipline used for diagnostics and maintenance.

Where applicable, our work is aligned with ICAO Annex 14 and the Aerodrome Design Manual, IEC and IEEE standards, EN 50110 electrical safety requirements, applicable FAA guidance, manufacturer documentation and airport-specific procedures. Standards define the framework; engineering judgement determines how it applies to the actual installation.

> **AIRPORT ENGINEERING PRINCIPLE**
>
> **For airport infrastructure, reliability is not an abstract indicator. It is an operational requirement that must be demonstrated, maintained and documented.**

AGL PROJECT EXECUTION SUPPORT

From approved design to controlled installation, cut-over and commissioning

Many AGL projects already have an approved design, the equipment and an installation workforce. The remaining challenge is translating that design into a field execution that protects airport operations, controls interfaces and achieves the required installation quality. We close the gap between engineering intent and reliable implementation.

The service gives airports, contractors and engineering teams senior AGL experience during execution without the cost or dependency of a full-time resident consultant. We do not replace the client's project organisation or workforce. We establish the execution method, guide the critical stages and provide specialist support where wrong decisions lead to rework, operational disruption or unreliable infrastructure.

Execution support model

Stage	Engineering purpose
1. Design & scope review	Confirm the approved design basis, interfaces, quantities, materials and missing information before field execution.
2. Execution planning	Define work sequence, work zones, team interfaces, operational windows, inspection hold points and responsibilities.
3. First-of-type installation	Establish and demonstrate the correct installation method with the executing team before repetitive work proceeds.
4. Operational mitigation	Protect operational AGL systems; define temporary arrangements, isolations, restoration principles and contingency measures.
5. Cut-over & commissioning	Guide circuit migration, electrical testing, functional verification and controlled return to service.
6. Continued technical support	Key-stage site missions plus remote back-office support for technical questions, deviations and critical decisions.

Knowledge transfer through execution

We work with the client or contractor to complete and verify the first representative installation, for example a transformer pit, duct section, connector arrangement, lighting mast or circuit transfer. That verified installation becomes the reference standard for the repetitive works, so the client's own team can continue with a clear and controlled method.

> **DIVISION OF RESPONSIBILITY**
>
> **The client retains its project, construction and safety responsibilities. AGL Engineering provides senior specialist guidance at the stages where practical AGL experience has the greatest influence on quality, reliability and operational continuity.**

AGL PRIMARY CIRCUIT INTEGRITY FRAMEWORK™

From regulatory compliance to verified electrical condition

THE QUESTION

How do you know whether the primary circuit you are responsible for is in verified condition – not compliant on paper, but actually verified?

ICAO maintenance compliance is necessary, but a completed insulation-resistance test alone does not establish the full electrical condition of an AGL primary circuit. IR shows insulation behaviour under the applied DC test conditions. It does not by itself reveal every voltage-dependent or intermittent defect, locate a fault, verify sheath integrity, confirm screen and earthing topology or explain the failure mechanism.

The Framework bridges aviation maintenance obligations and the electrical engineering practice needed to establish defensible circuit condition. It integrates ICAO requirements with applicable IEC and IEEE field-testing principles and places each measurement in the lifecycle stage where it adds most value. It is independent of any single instrument or manufacturer.

Three-phase verification model

Lifecycle phase	Purpose	Core verification
Phase 1 – Pre-SIT cable verification	Prove the cable system before series isolating transformers and accessories add variables.	Cable identification; screen continuity and topology (Kelvin); oversheath/jacket testing; IR/PI; VLF withstand at milestones where technically applicable.
Phase 2 – Post-SIT baseline verification	Establish a defensible baseline after final circuit assembly.	Screen and earthing confirmation; IR/PI in final configuration; leakage-current assessment; HV bridge voltage-drop/resistance distribution; documented baseline values.
Phase 3 – In-service integrity assessment	Detect change, preserve diagnostic validity and trigger action before failure where practicable.	Boundary conditions re-verified first; IR/PI trending; EFDS treated as system-level indication; comparative HV bridge checks against Phase 2; evidence-gated escalation to localisation and repair.

Six interconnected layers

Layer	Engineering purpose
1. Governance & operational context	Circuit function, operational criticality, maintenance obligation and decision objective.
2. Boundary conditions	Cable identification, screen continuity, earthing topology and sheath condition: the factors that decide whether measurements are valid.
3. Lifecycle integrity model	The correct verification sequence before SIT installation, after final assembly and in service.

Layer	Engineering purpose
4. Diagnostics & fault localisation	Escalation from non-destructive measurements to advanced localisation only where evidence justifies it.
5. Remediation & verification	Repair of the confirmed defect and verification before return to service.
6. Evidence & lifecycle management	Auditable records, baselines, trends and trigger criteria for future decisions.

Framework service modules

Module	Scope	Deliverable
A. Circuit readiness assessment	Screen continuity and topology, uncontrolled earths, moisture indicators, risk rating	Readiness report, diagnostic validity statement and remediation plan
B. Lifecycle integrity trending	Boundary checks, IR/PI trending, EFDS correlation, comparative HV checks against baseline	Assessment report, action plan and trigger criteria
C. Commissioning integrity verification	Phase 1 pre-SIT with milestone VLF, Phase 2 post-SIT baseline, documented topology and earthing	Commissioning evidence pack for acceptance and dispute reduction
D. Remediation & fault localisation	Screen bonding restoration, multi-earth correction, evidence-gated localisation, targeted repair, post-repair verification	Localisation, repair and verification record

> **FRAMEWORK PRINCIPLE**
> **Compliance provides the obligation. Engineering verification provides the evidence. Trending shows whether the condition is changing.**

MEDIUM-VOLTAGE ENGINEERING

Network reliability, protection and asset condition

Medium-voltage infrastructure is the electrical backbone of airports, industrial sites and critical facilities. Its reliability depends on more than individual cables or switchgear panels: network topology, redundancy, protection performance, switching philosophy and the ability to isolate faults all determine operational resilience. We evaluate MV systems at both asset and network level.

Switchgear and protection

- Inspection, maintenance and condition assessment of MV switchgear and substations
- Circuit-breaker maintenance, functional testing and interlock verification
- Protection relay testing by secondary injection, settings verification and relay replacement support
- Review of protection logic, selectivity, trip chains and operating sequences
- MV transformer testing, verification and commissioning support
- Assessment of feeder redundancy and network operating configuration

Medium-voltage cable systems

Underground MV cables are assessed as part of the complete feeder. Construction, accessories, screen bonding, sheath condition, fault history, route information and operating duty are considered together with test results. Our MV cable diagnostic services include VLF withstand testing, Tan Delta measurements and Partial Discharge assessment for suitable shielded cable networks up to 33 kV nominal (IEC 18/30 (36) kV, 35 kV class). Project-specific testing and specialised equipment mobilisation are defined according to cable capacitance, construction, condition and method-specific voltage requirements.

Where a feeder contains failed or suspect sections, the assessment must establish more than the fault location: the effect on redundancy, the right repair or replacement strategy, and the testing required before the feeder returns to service. Before cutting and jointing, the correct cable and the L1/L2/L3 cores are positively identified while the cable remains earthed.

Maintenance and lifecycle strategy

Time-based maintenance remains important, but mature MV installations benefit from condition-based decisions. Inspection results, breaker and relay tests, insulation measurements, cable diagnostics and failure history can be combined to prioritise interventions by condition and consequence.

> **SYSTEM-LEVEL ENGINEERING**
>
> **A medium-voltage network is only as resilient as its weakest critical path. Asset condition, protection performance and redundancy must be evaluated together.**

CABLE DIAGNOSTICS & ASSET INTEGRITY

From individual measurements to defensible lifecycle decisions

Cable deterioration in insulation, screens, sheaths, joints or terminations develops out of sight, long before failure. We select methods by cable construction, voltage class, operating history and the engineering question: fault localisation, post-repair verification, insulation condition or suitability for continued service.

Complementary diagnostic methods

Method	What it tells us
Insulation resistance & polarisation index	Insulation behaviour under DC; trend against baseline
Oversheath / jacket testing	Sheath integrity and moisture-ingress paths (IEC 60229 principles where applicable)
Conductor & screen continuity (Kelvin)	Screen continuity, bonding and connection integrity; validity of other measurements
Time Domain Reflectometry	Cable length, impedance changes, joints and pre-location support
HV bridge (Murray / Glaser, voltage-drop)	Resistance-based fault localisation where reflection methods struggle
ARM / ICE / DECAY, surge & acoustic pinpointing	Pre-location and pinpointing of high-resistance, flashing and intermittent faults
VLF withstand	Voltage withstand at milestones, where technically appropriate (IEEE 400.2 / IEC 60502-2 principles)
Tan Delta (dissipation factor)	Global insulation ageing, water treeing, moisture in accessories
Partial Discharge measurement & localisation	Local weak points in insulation and accessories

Damped AC (DAC) Partial Discharge testing can be arranged with specialist partners where the cable system and test objective justify it.

Baselines, trending and change detection

A baseline set at commissioning, after repair or at a first structured assessment is the reference for measuring change; on ageing infrastructure, deterioration often shows as a trend before it becomes a failure. Each report states what the evidence can and cannot support, and defines trigger criteria for closer monitoring or intervention.

Lifecycle decision framework

Criterion	Question
Condition	What does the measured evidence say about the asset today?
Criticality	What happens operationally if the asset fails?
Redundancy	Is an alternative supply or operating path genuinely available?

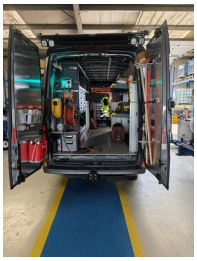
Criterion	Question
Maintainability	Can the defect be located, repaired and verified effectively?
Trend	Is the asset stable, deteriorating or behaving unpredictably?
Economics	Is repair or life extension still technically and financially justified?

MOBILE ENGINEERING LABORATORY

Field-deployed diagnostic, fault-location and repair-support capability

Our mobile laboratory brings measurement, fault-location and repair-support capability to the asset, so investigation, localisation, intervention and verification are completed in one mobilisation – across Europe by road and worldwide by freight. Instrumentation is chosen for the engineering question, not for a manufacturer ecosystem. Advanced VLF, Tan Delta and Partial Discharge testing is incorporated as required, with specialised instrumentation mobilised to suit the assignment.





Equipment architecture

Function	Equipment	Role in the diagnostic workflow
Sheath integrity & sheath-fault localisation	BAUR shirla	Cable and sheath testing up to 10 kV DC; Murray/Glaser bridge pre-location; step-voltage pinpointing
VLF testing & Tan Delta	BAUR PHG 80 portable (project-mobilised)	VLF truesinus® up to 57 kVrms, VLF square wave and DC up to ±80 kV; dissipation-factor diagnostics
Partial Discharge	BAUR PD-TaD 80 + BAUR Software 4 (project-mobilised)	PD measurement and localisation up to 57 kVrms; structured diagnostic reporting
Advanced fault location	Megger STX40P-2000-4	TDR, ARM, ICE, DECAY, IFL; surge 4/8/16/32 kV up to 2,000 J; DC up to 40 kV; burn-down for fault conversion
Portable fault location	Megger EZ-THUMP 12 kV V3	Independent TDR/ARM/surge system for remote sites and parallel investigations
Short-range reflectometry	BAUR TDR 811 handheld TDR	High-resolution TDR, 5 m to 5.5 km ranges (VoP 54 %), IP67; MBF 811 filter for live LV up to 600 V CAT IV. For AGL secondary, control and short primary sections
Resistance / voltage-drop localisation	Megger HVB10	10 kV bi-polar HV bridge for resistance-based localisation, sheath faults and AGL trend checks
Insulation diagnostics	Megger S1-1568	IR/PI and stabilised insulation measurement for AGL and MV sequences

Function	Equipment	Role in the diagnostic workflow
Fault conversion	Megger T 22/13 B burn-down unit	Last-resort conversion of high-resistance faults, used only after non-destructive methods
Route tracing, pinpointing & cable identification	Megger DigiPHONE+2, Ferrolux transmitter; MS-Technik cable selection system	Pinpointing, route and depth verification before excavation; positive identification of a cable within a bundle before any HV test
MV phase identification	Muco FPN-50-A-CC-HYB phase colouring set	Identifies L1/L2/L3 at the work point while the cable stays earthed and short-circuited at injection; three-frequency method, up to 22 km (max. 25 km)
Continuity & bonding	AEMC Kelvin micro-ohmmeter	Low-resistance verification of screen continuity, bonding and connections

TRAINING & COMPETENCY ASSESSMENT

Building lasting capability in client teams

Joël Van Campenhout is an authorised ADB SAFEGATE AGL Trainer & Assessor. AGL Engineering delivers training and competency assessment that supports aerodrome operators' training and proficiency-check programmes, including those required under EASA ADR.OR.D.017.

Courses combine theory with practical exercises on real equipment and conclude with assessment. A typical module balances classroom and hands-on time; complete airport programmes are delivered as multi-week modules.

Training subjects

- AGL principles: series circuits, CCRs, series isolating transformers and ALCMS basics
- Practical AGL maintenance, connector assembly, primary and secondary cabling, shallow-base installation
- PAPI alignment and ground checks
- Insulation testing, EFDS principles and AGL fault location
- MV installation, maintenance and electrical safety (EN 50110)
- ADB SAFEGATE product training on installation and maintenance procedures

Primary circuit integrity training ladder

Level	Content
L1 – Integrity fundamentals	Primary circuit behaviour, boundary conditions, screen and earthing topology
L2 – IR diagnostics	Practical IR/PI testing and the limits of interpretation
L3 – Localisation & remediation	Fault localisation sequencing and repair decisions
L4 – Reporting & validity limits	Three-phase reporting, baselines, trending and validity statements

INDUSTRIES & APPLICATIONS

One specialist capability, deployed across critical infrastructure

Airports and AGL remain the foundation of the company. The same expertise in critical underground cable systems, fault localisation and evidence-based assessment applies directly to other sectors.

Sector	Typical applications
Airports & airfields	AGL execution support; runway and taxiway rehabilitation; circuit cut-over and commissioning; AGL primary circuits; airport MV rings and substations; condition-based maintenance
Defence infrastructure	Military airbases and mission-critical networks requiring controlled fault investigation, repair and documented verification
Utilities & distribution	Service-aged distribution cables up to 33 kV networks; suspect feeders; outage investigation; rehabilitation and replacement prioritisation
Industrial facilities	Buried and ducted MV feeders; production-critical cable systems; fault location and condition assessment
Oil & gas	Critical MV distribution and buried cable systems for production, process and support infrastructure
Renewable energy	Wind-farm and PV collection networks: commissioning, fault location, sheath integrity and condition assessment
Ports & transport	Buried MV distribution and substations where continuity and rapid fault recovery are essential

INTERNATIONAL EXPERIENCE

The same discipline in very different operating environments

AGL Engineering has worked internationally since 2010: remote island airports with limited logistics, active international airports, military airbases, tropical medium-voltage networks and major projects where installation teams need senior AGL guidance. Assignments include direct AGL Engineering contracts, specialist service and training assignments with ADB SAFEGATE, and technical support to contractors and engineering teams.

Region	Representative references	Nature of experience
Belgium & Luxembourg	Belgian Defence airbases Kleine Brogel, Beauvechain, Florennes and Koksijde; Ostend-Bruges; Luxembourg Findel	AGL primary-circuit investigation and repair, PAPI work, surveys and acceptance, maintenance, specialist service and training
Netherlands & Caribbean Netherlands	Rijkswaterstaat; Rijksvastgoedbeheer; Public Entity Saba (Juancho E. Yrausquin Airport); Public Entity St. Eustatius (F.D. Roosevelt Airport); Bonaire International Airport	AGL rehabilitation, installation and commissioning, preventive and corrective maintenance, fault investigation, ALCMS restoration, apron lighting
Curaçao	Curaçao International Airport (Curaçao Airport Partners)	Runway 11-29 AGL infrastructure: pits, ducts, cable interfaces, counterpoise, supply coordination and execution support
Suriname	Johan Adolf Pengel International Airport (JAPI)	12 kV switchgear and protection maintenance, cable-fault investigation, PAPI circuit recovery, network reliability assessment, AGL and MV training
Africa	Nigeria (Escravos), Côte d'Ivoire (Abidjan), Algeria (Reggane), Morocco (Mohammed V), Tunisia (Carthage, Gafsa)	AGL advisory, execution support, specialist service and training assignments
Türkiye & South Asia	Istanbul Airport; Sialkot (Pakistan); Bandaranaike International (Sri Lanka)	AGL specialist service, technical support and training with ADB SAFEGATE

INTERNATIONAL ENGINEERING PRINCIPLE

Different locations change the logistics, climate and operational constraints. They do not change the need for disciplined engineering, verified installation quality and defensible technical evidence.

SELECTED CASE STUDIES

Engineering evidence applied to real operational problems

1. From <500 kΩ to 8 GΩ: recovery of a 30-year-old AGL primary circuit – Belgian military airbase

~6 km primary circuit	**~30 years** in service	**86** series isolating transformers	**<500 kΩ → 8 GΩ** insulation resistance

Challenge. An ageing AGL primary circuit with insulation resistance below 500 kΩ and earth faults in multiple sections.

Response. Full characterisation (IR/PI, leakage profiling, theoretical resistance); systematic sectionalisation following ICAO Aerodrome Design Manual Part 5 diagnostic logic; connector sampling to establish the failure mechanism before excavation; TDR, ARM, ICE, DECAY and surge pinpointing according to fault behaviour; excavation only where combined evidence pointed; repair with resin-filled connection sleeves; complete remeasurement with and without SITs and final ICAO maintenance verification.

Result. Final insulation resistance of 8 GΩ and full operational integrity restored without wholesale replacement of the circuit. Installation-origin connector defects were identified as the principal failure mechanism – something the initial IR value alone could never have revealed. The intervention became a field reference for the AGL Primary Circuit Integrity Framework™.

2. MV network reliability and diagnostic strategy – JAPI, Suriname

Challenge. A service-aged 12 kV airport distribution network with several generations of cable and six known cable sections out of service, reducing the designed ring redundancy.

Response. Preventive and corrective maintenance at Hoofdpost 1 and Hoofdpost 2, switchgear and protection verification, cable-fault identification and a coordinated repair and condition-assessment programme.

Outcome. A network-level pathway to restore defective sections, verify repairs and assess cable condition using IR, sheath, Tan Delta and Partial Discharge methods before repair or replacement priorities are fixed. This phased programme demonstrates how advanced diagnostics support technically justified repair and replacement decisions.

3. AGL renewal and commissioning – Saba

Challenge. A remote island airport with constrained logistics and operational windows, needing renewal of taxiway and apron edge lighting while keeping the airfield available.

Response. Execution planning, night-time installation support for 6.6 A LED AGL equipment, transformer and cable interfaces, CCR and ALCMS integration, commissioning and a follow-on preventive maintenance programme.

Result. A controlled transition to a maintainable series-circuit AGL installation with documented commissioning.

4. Runway 11-29 AGL infrastructure – Curaçao

Context and role. Underground AGL infrastructure for Runway 11-29 (transformer pits, ducts, primary and secondary cable routes, counterpoise, lighting interfaces). Technical review, execution

support, interface definition and material coordination: design requirements translated into buildable sequences and verification points before commissioning.

WHY AGL ENGINEERING

Specialist depth where general engineering is not enough

Differentiator	What it means for the client
Engineering + field execution	Recommendations come from people who understand installation, commissioning, fault behaviour and repair constraints in the field.
Evidence before assumption	Measurements, operating history and system configuration are correlated before repair, rehabilitation or replacement is recommended.
AGL + MV integration	AGL is evaluated together with the MV and electrical infrastructure that supports it.
Method before manufacturer	BAUR, Megger and other technologies are selected because their principles answer different engineering questions.
Field-proven integrity methodology	The AGL Primary Circuit Integrity Framework™ structures verification from pre-installation through trending, localisation and remediation.
Execution support without dependency	We establish the method, verify first-of-type work and transfer knowledge so teams can execute repetitive work correctly.
One diagnostic-to-repair workflow	Characterisation, localisation, repair engineering and post-repair verification stay within one technical responsibility, avoiding handover gaps.
Independent lifecycle judgement	The outcome may be operation, monitoring, repair, renewal or replacement. The recommendation follows the evidence.

Future direction: growth by specialist depth

We will not become a general electrical contractor. We are deepening the capabilities that are difficult to reproduce:

- Developing the AGL Primary Circuit Integrity Framework™ as the lifecycle methodology for verified AGL primary-circuit condition
- Expanding MV condition assessment with Tan Delta, Partial Discharge, sheath-integrity and localisation methods, with interpretation kept under engineering control
- Moving clients from reactive fault response toward baselines, trending and condition-based investment planning
- Deploying the mobile platform across airports, defence, utilities, industry, renewables and transport without losing our specialist identity
- Strengthening knowledge transfer so client teams understand not only what was measured, but why it matters

OUR POSITION

AGL Engineering does not sell tests. We establish verified condition, guide technically critical execution and convert evidence into engineering decisions.

LEADERSHIP & CONTACT

Technical leadership that stays close to the work

Joël Van Campenhout

Founder & Managing Director | Electrical Engineer – AGL Specialist

Joël Van Campenhout founded AGL Engineering S.A. in 2010. He brings more than 30 years of field experience in Airfield Ground Lighting, medium-voltage systems, commissioning, maintenance, fault investigation and project execution. His work has grown from hands-on electrical and AGL engineering into specialist consultancy, international field support, cable diagnostics, repair engineering and lifecycle asset assessment. He is an authorised ADB SAFEGATE AGL Trainer & Assessor.

Leadership at AGL Engineering is deliberately technical. Senior responsibility remains directly connected to site conditions, measurements, execution decisions, commissioning results and final recommendations.

LEADERSHIP PRINCIPLE

Specialist engineering is strongest when the person responsible for the recommendation understands how the asset was installed, how it behaves in service, how it fails and how the result can be verified in the field.

Contact

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ENGINEERING DECISIONS BASED ON MEASURED EVIDENCE

Independent engineering. Specialist field capability. Verified decisions throughout the asset lifecycle.