



Manufacturing Excellence | 2026

SAFETY
QUALITY
RELIABILITY

TROPICAL GENERATOR SPECIFICATION CHECKLIST

A practical engineering reference for
diesel generators in 40-55°C, 80%+ humidity,
and coastal / dust environments

Built from ASO Genset's deployments across
Southeast Asia, the Middle East, and Africa

Version 1.0 - 2026

asogenset.com

HOW TO USE THIS CHECKLIST

STEP 1 - Declare Your Site Conditions (Page 3)

Fill the site declaration template before requesting any quote. Suppliers cannot size a generator correctly without knowing your actual peak ambient, humidity, altitude, and distance from coast.

STEP 2 - Calculate the Derating (Page 4)

Use the derating worksheet to convert your nameplate kVA requirement into the required nameplate at 25°C reference. A 1,000 kVA need at 50°C site means you must specify ~1,300 kVA nameplate.

STEP 3 - Build the RFQ (Pages 5-6)

Paste the 15-point specification checklist directly into your RFQ document. Require bidders to confirm each line item with their proposed configuration.

STEP 4 - Evaluate Bids (Pages 7-9)

Use the Top 8 Failure Modes and environment-specific add-ons to spot weak specifications. Use the maintenance table to verify lifecycle cost assumptions.

IMPORTANT

This checklist is supplier-neutral. It applies equally to ASO and any other bidder. We use it ourselves when preparing our own quotations.

SITE DECLARATION TEMPLATE

Provide this information to every bidder before requesting a quote.

PROJECT INFORMATION	CLIMATE CONDITIONS
☐ Project name: _____	☐ Peak ambient temperature: _____ °C
☐ Country / city: _____	☐ Average ambient (summer): _____ °C
☐ Site coordinates: _____	☐ Average ambient (winter): _____ °C
☐ Distance from coast: _____ km	☐ Peak relative humidity: _____ %
☐ Altitude: _____ m	☐ Average humidity: _____ %
	☐ Coastal salt aerosol: ☐ Yes ☐ No
	☐ Dust / sand exposure: ☐ Low ☐ Moderate ☐ High
	☐ Monsoon season exposure: ☐ Yes ☐ No

LOAD PROFILE

- ☐ Application type: ☐ Industrial ☐ Hospital ☐ Data center ☐ Marine ☐ Commercial ☐ Other
- ☐ Continuous load: _____ kW (kVA) ☐ Peak / surge load: _____ kW (kVA)
- ☐ Required redundancy: ☐ N ☐ N+1 ☐ 2N
- ☐ Critical-load standard: ☐ NFPA 110 ☐ IEC 60364 ☐ Local AHJ ☐ Other
- ☐ Runtime hours / year: _____ hours

DERATING CALCULATION WORKSHEET

Use this worksheet to convert your site-condition kVA requirement into the required nameplate kVA at 25°C reference.

STEP 1 - Identify your load requirement

Required output at site: _____ kVA

STEP 2 - Look up combined derating at site ambient

Ambient	Engine derate	Alternator derate
25°C	0%	0%
35°C	2-3%	3-5%
40°C	4-6%	7-10%
45°C	7-10%	12-15%
50°C	10-13%	17-22%
55°C	13-17%	22-28%

Site ambient: _____ °C Engine derate: _____ % Alt derate: _____ %

Combined: _____ % (use the larger of the two)

STEP 3 - Calculate required nameplate

Required nameplate = Site requirement ÷ (1 - combined %)

Example: 1,000 kVA at 50°C = $1,000 \div (1 - 0.22) = 1,000 \div 0.78 = 1,282$ kVA nameplate required

STEP 4 - Add altitude derating

Above 1,000 m altitude, deduct further ~1% per 100 m (naturally-aspirated) or ~0.5% per 100 m (turbocharged). Confirm with OEM datasheet.

STEP 5 - Apply redundancy

For N+1 redundancy, size each unit to carry full load when one is offline. Do not divide the load before applying derating.

TROPICAL SPEC CHECKLIST

Part 1 - Items 1-8

1	ENGINE DERATING OEM data sheet derating curve at site ambient + altitude. Required kVA at SITE conditions, not 25°C reference.	[] Confirmed
2	ALTERNATOR INSULATION Class H minimum. Tropicalized winding varnish. Sealed end-shield gaskets.	[] Confirmed
3	ANTI-CONDENSATION HEATERS Specify wattage (typically 100-400 W). Auto-on during idle. Critical for 80%+ RH sites.	[] Confirmed
4	RADIATOR / COOLING Rated for site peak ambient (50°C-rated for Gulf / desert sites). Coated fins for coastal / dust. Two-stage fans on 45°C+ sites.	[] Confirmed
5	AIR FILTRATION Two-stage: cyclonic pre-cleaner + primary element. Specify filter part numbers and projected service interval at site dust load.	[] Confirmed
6	CONTROL PANEL IP55+ enclosure. Conformal-coated PCBs. Controller rated $\geq$ site ambient + 10°C margin.	[] Confirmed
7	ENCLOSURE / CANOPY Multi-layer epoxy + polyurethane coating, total DFT 200-300 μ m. Coastal: salt spray certification ISO 9227.	[] Confirmed
8	EXTERIOR HARDWARE SS316 stainless on all exterior bolts, hinges, latches, exhaust mounts. By material grade, not just "stainless."	[] Confirmed

TROPICAL SPEC CHECKLIST

Part 2 - Items 9-15

9	FUEL SYSTEM Desiccant tank breather. Water separator. Biocide dosing plan documented.	[] Confirmed
10	BATTERY & CHARGING Temperature-compensated charger. Sealed battery compartment. Replacement schedule at 2-year intervals (tropical standard).	[] Confirmed
11	ENGINE HEATERS Coolant block heater to keep engine above dew point during standby. Often deleted - explicitly include.	[] Confirmed
12	SYNCHRONIZATION (paralleled units) Commissioning at peak ambient OR contracted hot-season retuning included in scope.	[] Confirmed
13	TESTING & DOCUMENTATION Factory load test at derated power. Witness FAT option. Full data pack including derating calculations.	[] Confirmed
14	MAINTENANCE PLAN Quarterly megger testing. Oil analysis. Coolant chemistry. Filter & battery intervals documented per tropical schedule.	[] Confirmed
15	WARRANTY TERMS Warranty validity at site ambient + RH confirmed in writing. Beware exclusions above 40°C or 75% RH.	[] Confirmed

WALK-AWAY SIGNAL

If a bidder cannot confirm 12+ of these 15 items in writing within their quote, they have not engineered for tropical conditions. Continue your search.

TOP 8 FAILURE MODES IN TROPICAL DEPLOYMENTS

Quick Diagnostic Reference

#	Failure	Onset	Root cause	Prevention
1	Alternator insulation drop	18-24 mo	Class F + no ACH + high RH	Class H + ACH + sealed gaps
2	Radiator capacity loss	12-24 mo	Salt / dust on fins	Coated fins + sand louvers
3	Control PCB corrosion	12-18 mo	IP44 + no coating	IP55+ + conformal coating
4	Diesel bug (fuel microbial)	6-18 mo	Tank water + idle fuel	Desiccant + biocide
5	Air filter saturation	3-6 mo	Single-stage + dust	Two-stage + pre-cleaner
6	Exhaust mount corrosion	12-18 mo	Mild steel hardware	SS316 + heat-resistant coating
7	Battery failure (early death)	6-18 mo	No temp comp + 45°C	Temp-comp + sealed compartment
8	Sync instability at peak ambient	Year 2+	Tuned at temperate ambient	Hot-season commissioning

"Onset" = typical first observable degradation under standard tropical exposure. Prevention costs listed in companion article at asogenset.com/tropical

ENVIRONMENT-SPECIFIC SPECIFICATION ADD-ONS

COASTAL (within 3 km of ocean)	DUST / DESERT	CRITICAL LOAD
☐ Salt spray test certification (ISO 9227) ☐ Coated radiator fins (epoxy or marine-grade) ☐ SS316 fasteners and hinges ☐ Tin-plated busbar terminations ☐ IP56+ control enclosure ☐ Multi-layer enclosure coating 250-300 µm DFT ☐ Sealed cable glands (IP65)	☐ Cyclonic pre-cleaner (mandatory) ☐ Heavy-duty primary filter, sized for site ☐ Sand-trap intake louvers with drop chamber ☐ Sealed alternator (IP23+) ☐ Radiator cleaning access panels ☐ Monthly radiator wash-down protocol ☐ Lifetime filter cost calculation included	☐ N+1 sized on DERATED output, not nameplate ☐ Sub-10 second transfer at site ambient verified ☐ Cold-start tested at peak ambient ☐ Quarterly megger testing contracted ☐ Synchronization tuned at peak ambient ☐ Remote monitoring + alarming ☐ Code compliance: NFPA 110 or local equivalent ☐ Spare parts kit on-site

COMBINING ENVIRONMENTS

Coastal + Dust + Critical = the hardest tropical projects. Stack all three add-on lists. Expect spec premium of 18-25% over generic tropical.

TROPICAL MAINTENANCE SCHEDULE

Tighten OEM-recommended schedules against tropical conditions. Standard temperate intervals do not apply.

Activity	Temperate	Tropical
Oil change	250 hrs	200 hrs
Oil analysis	Annual	Every change
Primary air filter	500 hrs	300-400 hrs
Pre-cleaner check	-	Monthly
Coolant chemistry	Annual	Semi-annual
Coolant change	2-3 yrs	18-24 mo
Fuel filter	500 hrs	300 hrs
Fuel water separator drain	Monthly	Weekly
Biocide dosing	As needed	Every 6-12 mo
Insulation resistance (megger)	Annual	Quarterly
Battery test	Annual	Quarterly
Battery replace	4-5 years	2 years
Radiator wash	Annual	Quarterly (or monthly desert)
Anti-condensate heater check	-	Verify each service
Synchronization verification	Annual	After peak summer

LIFETIME COST IMPACT

Tropical maintenance costs typically run 30-50% higher than temperate equivalents. Factor this into 10-year TCO when comparing bids.

ABOUT ASO GENSET

ASO Genset designs and manufactures diesel generators specifically for demanding environments including high-temperature, high-humidity, coastal, and desert applications. We have supplied tropical-spec generators across Southeast Asia, the Middle East, and Africa, including industrial, hospital, data center, and marine applications.

INDONESIA	VIETNAM	SAUDI ARABIA
Coastal industrial 500 kVA × 2 85% RH + salt	Hospital emergency 800 kVA × 2 N+1 + ATS	Data center backup 1,250 kVA × 4 50°C + sand

REQUEST A TROPICAL-SPEC QUOTATION

Send us your site declaration (Page 3) and load profile. We will respond with derating calculation, recommended specification, and line-item quote within 2 business days.

[Get Your Quotation](#)

Email: sales@asogenset.com

Web: asogenset.com/contact

This checklist is supplier-neutral. Use it with any bidder, including ASO Genset.

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