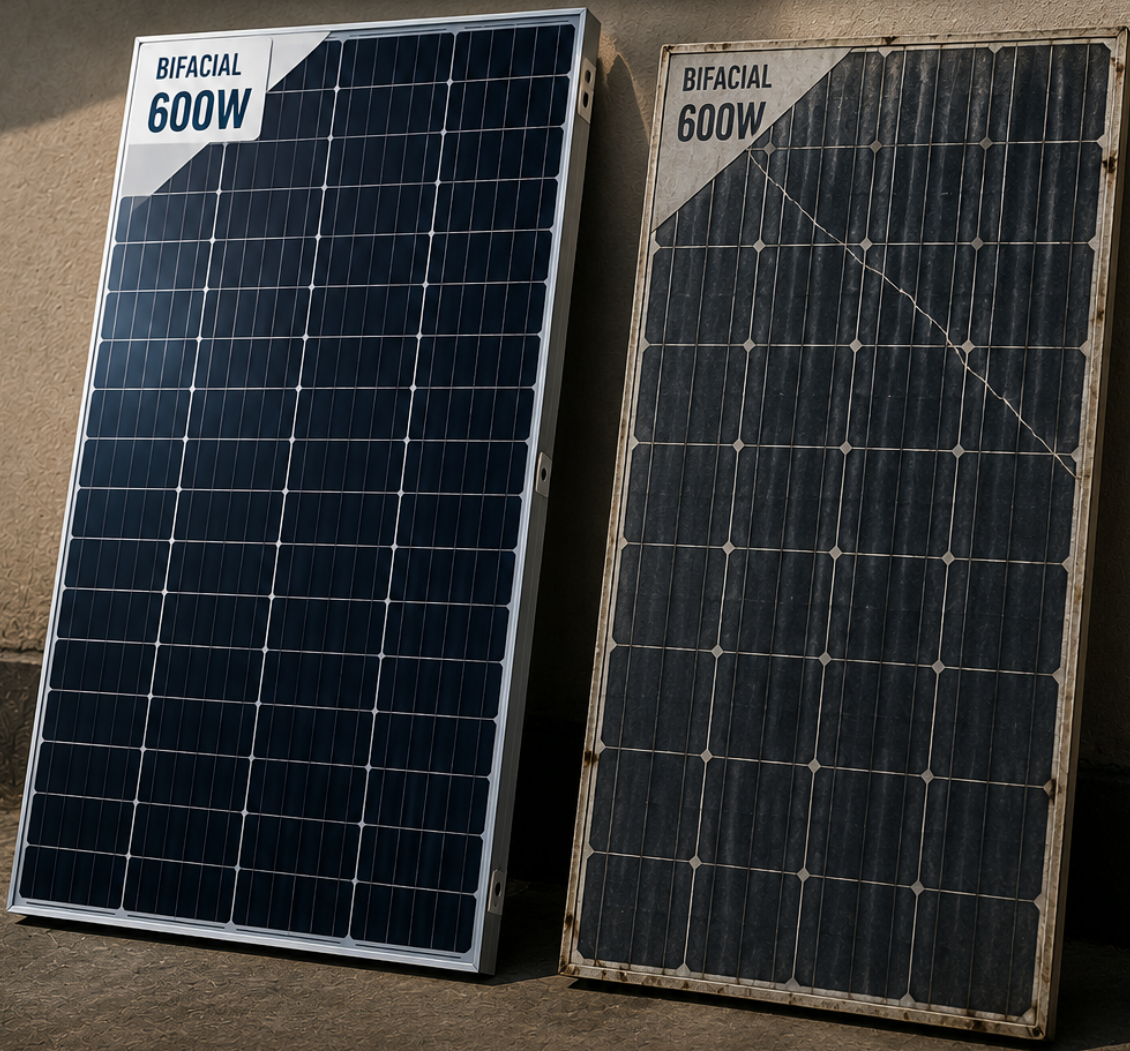


SPOTTING FAKE OR **SUBSTANDARD** SOLAR COMPONENTS

A Bonus Guide from Eccentric Solar Limited



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INTRODUCTION



If you've read the main guide, you already know how to calculate your real system size and vet a vendor before paying a deposit. This bonus guide protects a different, equally important part of the same purchase: making sure the actual physical components going onto your roof or into your battery room are what they claim to be.

Substandard and counterfeit solar components are a real, well-documented problem in Nigeria's market, batteries that die within months instead of years, panels that produce a fraction of their labeled output, inverters with cut corners inside a casing that looks identical to the genuine article. But I want to be honest with you from the very first page about something that matters: most legitimate, hardworking solar vendors in Nigeria also don't carry full official certification paperwork for every component they sell. This isn't because they're hiding something. It's because the retail solar market here has grown faster than the paperwork infrastructure around it, and formal certification checking is, in practice, mostly enforced at the point of government contract bidding, not everyday retail sales.

So this guide is not going to tell you "reject any vendor who can't produce a NEMSA certificate." That standard would flag the majority of the market, including plenty of installers doing honest, competent work. Instead, this guide focuses on what actually helps you in the real world: practical, visual, and behavioral ways to tell a genuine component from a substandard one, using the same checks I train my own technicians to run before any installation.

By the end of this guide, you'll know exactly what to look for on a panel, a battery, and an inverter, before it ever goes into your system, and what to do if you suspect you've already been sold something substandard.

CHAPTER 1: WHAT CERTIFICATIONS ACTUALLY TELL YOU (AND WHAT THEY DON'T)



Starting With an Honest Picture of the Regulatory Landscape

Before we get into practical spotting techniques, it's worth understanding what the official certification system in Nigeria is actually designed to do, and where its real-world limits are. This matters because a lot of solar marketing leans on certification language without explaining what it genuinely covers.

NEMSA type approval. The National Electricity Management Services Agency is legally responsible for approving electrical equipment, including solar inverters, panels, batteries, and charge controllers, before they're meant to be sold or installed in Nigeria. In principle, this exists to catch unsafe or substandard equipment before it reaches consumers.

In practice, here is the honest reality: the majority of solar components sold in Nigeria's retail market today do not carry formal NEMSA type-approval documentation at the point of sale. This is true even for products from reasonably well-known brands sold through ordinary retail channels. NEMSA enforcement becomes strict and consistently checked specifically when a company is bidding for a government contract, where documentation is a formal, non-negotiable part of the tender process. For a homeowner or small business buying through the ordinary retail market, demanding to see NEMSA paperwork before every purchase is not a realistic or fair standard, and applying it strictly would end up flagging good, honest vendors right alongside dishonest ones.

SON (Standards Organisation of Nigeria) certification. SON runs conformity assessment programmes, including MANCAP for locally manufactured goods, aimed at verifying product quality and safety standards. Similarly to NEMSA, SON certification exists and matters, but coverage across the retail solar market is inconsistent, and its absence on a specific product you're looking at doesn't automatically mean that product is fake or dangerous.

COREN registration — the more realistic everyday check. The Council for the Regulation of Engineering in Nigeria is the professional body responsible for regulating engineering practice in the country. What's directly useful for you as a buyer is that COREN runs a dedicated Renewable Energy/Energy Efficiency (RE/EE) Certification Scheme specifically for solar PV and related renewable energy work, and COREN signed a formal partnership agreement with NEMSA in mid-2025 to align standards between the two bodies. Unlike equipment-level NEMSA paperwork, COREN registration is about whether the person or firm actually doing your installation has verified engineering competence, and you can check this yourself, for free, at portal.coren.gov.ng, by searching a firm's or individual's COREN registration number.

Why This Distinction Matters So Much

Here's the practical takeaway from all of this: **certification paperwork and product quality are related, but they're not the same thing, and the absence of one doesn't prove the absence of the other.** A vendor without a NEMSA certificate in hand isn't necessarily selling you a fake battery. A vendor with a nicely printed certificate isn't necessarily selling you a genuine one either, since certificates can be copied, borrowed, or misrepresented just as easily as products can.

This is exactly why the rest of this guide focuses on physical, practical, checkable signs, things you can look at, touch, and ask about directly, rather than relying on paperwork alone. Certification is one input among several, not a single pass-or-fail gate.

A Fair Word to Installers, Too

If you're a solar vendor reading this guide rather than a buyer, this chapter is also for you. Not having full NEMSA documentation on every product you sell doesn't make you dishonest, it reflects a genuine gap in how Nigeria's retail solar supply chain currently operates, and you're not alone in that. What separates a trustworthy installer from a risky one, in the eyes of an increasingly informed buyer, is your team's real competence (which COREN registration helps demonstrate), your transparency when asked direct questions, and your track record of delivering systems that actually perform as promised.

What Comes Next

Now that you know what certification can and can't tell you, it's time to get hands-on. Chapter 2 puts a panel, a battery, and an inverter directly in front of you and shows you exactly where a fake or substandard product gives itself away, often in ways a glance at paperwork would never catch.

CHAPTER 2: VISUAL & PRACTICAL RED FLAGS BY COMPONENT



Why Physical Inspection Matters More Than Paperwork Here

As we covered in Chapter 1, certification paperwork alone won't reliably tell you whether a component is genuine. What will help, in almost every case I've encountered over years of installations, is a careful physical inspection combined with a few pointed questions. This chapter walks through each major component type in detail.

SOLAR PANELS

Check the weight and rigidity. A genuine panel of a given wattage rating has a fairly consistent weight range for its size, because it's built with a certain thickness of glass, a proper aluminum frame, and a full complement of internal cells. A panel that feels unusually light, thin, or flexes noticeably when you press gently on the frame corners may be using thinner glass or a reduced cell count than its label claims.

Test the actual output directly, don't rely on the sticker alone. In the Nigerian market specifically, this is the single most reliable check available to you, more reliable than any visual inspection, because a printed label or sticker can claim any wattage regardless of what the panel actually produces. Ask your installer (or, if you're comfortable with a multimeter yourself) to measure the panel's actual voltage and current output under strong midday sun, and compare this reading against the rated values printed on the label, allowing for the fact that real-world output is always somewhat lower than the lab-tested rating printed on the sticker (due to

heat, angle, and atmospheric conditions covered in Chapter 2 of the main guide). A panel that reads dramatically below what its label claims, well beyond the normal real-world derating you'd expect, is very likely mislabeled or built with fewer or lower-grade cells than advertised. A competent installer should be willing and equipped to do this test before installation, and a vendor who resists or seems unfamiliar with basic output testing is itself worth noting.

Inspect the cell layout. Open your phone camera and look closely at the visible cells under the glass. Genuine panels have evenly spaced, uniformly colored cells across the entire surface, with consistent, clean soldering lines connecting them. Look for: gaps or uneven spacing between cells (sometimes a sign of a lower actual wattage than labeled, padded out with empty space), visibly different shades of blue or black between cells (can indicate mismatched or recycled cells), and messy, uneven soldering joints.

Check the label and frame branding. Compare the printed specification label (wattage, voltage, current ratings) against the frame branding and any accompanying documentation. Mismatches, a label from one brand on a frame stamped with another, or numbers that don't add up correctly when you check the relationship between voltage, current, and wattage on the label, are a clear warning sign. A quick way to sanity-check this: rated wattage should roughly equal rated voltage multiplied by rated current, if the numbers on the label don't multiply out close to the stated wattage, something is off.

Ask about warranty and performance guarantee. As an industry standard, genuine panels from established manufacturers typically carry a 10 to 12 year product warranty and a 20 to 25 year performance warranty (guaranteeing the panel still produces a large majority of its original output after decades of use) — this is a widely recognized benchmark across reputable solar panel manufacturers globally, not a figure specific to any one brand. A vendor who can't tell you the manufacturer's actual warranty terms, or who only offers a vague "installer's warranty" with no reference to the panel manufacturer at all, is a signal to ask more questions.

BATTERIES

Check the weight relative to stated capacity. Similar to panels, battery weight is a fairly reliable physical indicator. A genuine battery of a given amp-hour or kWh rating uses a certain amount of internal lead, lithium cells, or other active material to achieve that capacity. A battery that feels notably lighter than what's typical for its stated capacity and battery type may contain less active material than advertised, meaning it will likely underperform and degrade faster than promised.

Inspect the casing and labeling quality. Genuine batteries from established manufacturers typically have crisp, clearly printed labels, consistent casing molding with no rough edges or misaligned seams, and serial numbers that are lasered or properly printed rather than looking like a sticker slapped on top of a generic casing.

Ask for a load test if the vendor is able to provide one. A proper battery load test, checking voltage under load rather than just at rest, is one of the most reliable ways to verify actual capacity before installation. A reputable installer should be willing to demonstrate this, or explain clearly why it isn't practical in your specific situation (for example, a brand new battery that hasn't been charged yet).

Be cautious of unusually low prices relative to the market. This is one of the most consistent patterns across every component type: if one vendor's battery price is dramatically lower than several other quotes for

what's described as the same capacity and brand, the difference usually comes from somewhere, reduced active material, recycled cells, or a capacity rating that doesn't match reality.

INVERTERS

Check the build quality of the casing and connectors. Genuine inverters from established brands typically have solid, well-fitted casings, properly labeled terminals, and connectors that fit securely without excessive play or looseness. Cheap or counterfeit units often have visibly thinner casing plastic, poorly aligned seams, or terminals that feel loose even before any wiring is connected.

Ask about the actual continuous power rating versus the surge rating. A common trick, whether deliberate or simply poor practice, is advertising an inverter's surge rating (a brief peak it can handle for a few seconds) as though it were the continuous rating (what it can sustain for extended periods). Ask directly: "What is this inverter's continuous power rating, not just its surge rating?" A vendor who understands the difference and answers clearly is demonstrating real technical competence. One who seems confused by the question, or who only ever quotes the more impressive surge number, deserves closer scrutiny.

Check for a genuine efficiency rating. As a general industry benchmark, quality inverters typically publish a conversion efficiency rating (how much power is lost as heat during DC to AC conversion) in the 90 to 95 percent range, this is a standard specification reputable manufacturers state clearly on the datasheet, not a number specific to one brand. A vendor who can't tell you this number at all, for a product they're actively trying to sell you, may not know the product well themselves, which is its own kind of warning sign.

CHOOSING BETWEEN ESTABLISHED BRANDS AND NEW ENTRANTS: A BALANCED VIEW

Everything covered so far helps you inspect a single component in front of you. This section covers a different, equally important question: which brands, as a whole, are actually worth trusting in the Nigerian market, for batteries and inverters especially, where after-sales support matters as much as the initial product quality.

Why brand track record matters so much for batteries and inverters specifically. Unlike a panel, which mostly either works or doesn't with very little in between, batteries and inverters are the components most likely to need servicing, repair, or spare parts replacement at some point over their working life. This is where an established brand's structure, whether they've built genuine service centers across the country, whether spare parts are actually available when needed, whether there's a real support line you can call, becomes the difference between a manageable repair and a total loss.

I've seen this pattern repeat often enough to trust it: a new brand enters the Nigerian market, undercuts prices to win early sales, and once a fault develops months or a year later, the company is unreachable, claims parts "are on the way" indefinitely, or has simply stopped operating in Nigeria altogether. When this happens, you're often left with no real option but to replace the entire unit, at your own cost, regardless of how the original purchase was framed.

Why this doesn't mean "always choose the oldest brand," though. Here's the nuance that's easy to miss: brand age by itself isn't a reliable guarantee of quality either. Some older, well-known brands have been in the Nigerian market long enough to build strong name recognition, and a small number take advantage of

that trust, particularly where SON's enforcement capacity hasn't kept pace with the market's growth, by pushing incomplete-cell, lower-standard components while relying on their established reputation to avoid scrutiny. A recognizable name is a reason to look closer, not a reason to skip the checks in this chapter entirely.

What to actually check about a brand, new or old:

- **For an established brand:** Does it have real, physical service centers you can locate, not just a head office in one city? Can the vendor tell you, specifically, where you'd go if this exact unit needed servicing in two years? A brand with genuine infrastructure will have clear answers here.
- **For a newer brand:** Does it show real signs of long-term investment in Nigeria, local staff, an actual service or support setup already in place, sub-distributors or partner installers in more than one city, rather than the appearance of a purely import-and-sell operation with no local footprint? A new brand with genuine financial backing and a real intention to stay will usually be able to demonstrate this if you ask directly.
- **For any brand, new or old:** Has the vendor or brand been willing to demonstrate live capacity or output testing, in person or publicly online? This has become an increasingly useful, informal check in the Nigerian market. A growing number of newer brands and installers now conduct live capacity and performance testing in public, often on social media, precisely because visible proof builds trust faster than a name alone can, and because no brand wants a public failure attached to its name. In a market where formal regulatory testing hasn't fully kept pace, this kind of public, peer-reviewed demonstration is genuinely helping to filter out weaker products, in effect, installers and brands doing some of the sorting work that regulatory bodies haven't fully caught up to yet. A brand's willingness to be tested this openly is itself a meaningful, positive signal.

The most practical approach: let your installer recommend, then compare. Rather than trying to independently research every brand's history and financial standing yourself, ask your vetted installer (someone who passed the checklist in the main guide) to recommend two or three specific brands they'd stand behind for your battery and inverter, based on the criteria above, established support structure, or a newer entrant with demonstrated transparency and staying power. Once you have a short list of genuinely competent options, that's the right point to compare price and specifications between them, rather than comparing blindly across the entire market, where the cheapest option is often cheap for a reason you can't easily see from a listing alone.

A General Pattern Worth Remembering

Across all three component types, the same few signals repeat: unusual weight for the stated specification, inconsistent or poor-quality labeling and branding, a price dramatically below other quotes for the same claimed specification, and a vendor who seems uncertain or evasive when asked specific technical questions about the product they're selling. None of these signs alone is definitive proof of a fake, but when two or three of them show up together on the same component, that's a strong reason to pause and ask more before you commit to a purchase.

What Comes Next

Chapter 3 covers what to do if you're reading this guide after the fact, because you already suspect, or have confirmed, that a component you purchased is substandard or counterfeit.

CHAPTER 3: WHAT TO DO IF YOU'VE ALREADY BOUGHT FAKE COMPONENTS



First, Don't Panic, and Don't Immediately Remove Anything

If you suspect a component you've already purchased and installed is substandard, the first instinct many people have is to immediately want to rip it out and demand a refund. Before doing that, it helps to slow down slightly and document what you're seeing properly, this puts you in a much stronger position for whatever happens next, whether that's a vendor resolving it in good faith or a more difficult dispute.

Step 1: Document Everything Before You Touch Anything

Take clear photos of the component in place, close-up photos of any labeling, branding, or serial numbers, and if possible, a photo or video of the specific problem you're experiencing (for example, a battery voltage reading that doesn't match expectations, or an inverter shutting down under a normal load). Keep your original invoice, any warranty documentation, and any WhatsApp or written communication with the vendor about the specifications you were promised.

Step 2: Compare What You Received Against What You Were Promised

Go back to your original invoice or quote and check exactly what was specified, brand, wattage, capacity, and compare it directly against what's physically installed, using the checks from Chapter 2. If there's a clear mismatch, this is your strongest evidence for any conversation with the vendor.

Step 3: Approach the Vendor Directly and Calmly First

Before escalating anywhere else, give the vendor a fair opportunity to make it right, especially if they were vetted well using the main guide's checklist and have a real physical address and registration. Present your documentation clearly and specifically: "The battery installed doesn't match the capacity we agreed on in the invoice, here's what I'm seeing." A vendor with a genuine reputation to protect will often want to resolve this quickly, through replacement, repair, or partial refund, rather than risk a public dispute.

Step 4: If the Vendor Is Unresponsive or Refuses to Engage

If direct conversation doesn't resolve things, and you vetted the vendor properly using the CAC and COREN checks from the main guide, you have real options: a CAC-registered company can be reported to relevant consumer protection bodies, and if you paid by bank transfer or card, your bank may be able to assist with a dispute in cases of clear misrepresentation. This is exactly why the vendor vetting checklist in the main guide matters so much before you pay, a vendor with no verifiable registration or address leaves you with far fewer options if something goes wrong.

Step 5: Use This as Your Own Vetting Checklist Going Forward

Whatever the outcome, keep your documentation and your experience in mind for any future solar purchases, whether that's expanding your current system or replacing a component. The same checks from Chapter 2, weight, labeling, technical questions asked directly, become faster and more instinctive each time you use them.

A Closing Thought

Substandard components are a real and documented issue in Nigeria's solar market, but they are not the majority outcome, and they are very often avoidable with a careful eye at the point of purchase. The goal of this guide isn't to make you suspicious of every vendor, it's to make you confident enough in what you're looking at that you can tell the difference between a real problem and a normal, honest transaction.

A note before you go: the physical inspection checks in this guide reflect patterns commonly seen across the Nigerian solar market and years of hands-on installation experience. They improve your odds of spotting a problem, but no visual or physical check can guarantee a component's authenticity with certainty. Your results may vary based on the specific brand, vendor, and product involved.

QUICK-REFERENCE SUMMARY CHECKLIST

Keep this page handy for any future solar component purchase:

Panels:

- ☐ Weight feels appropriate for stated wattage
- ☐ Cell layout is even, consistent color, clean soldering
- ☐ Label numbers multiply out correctly ($V \times A \approx W$)
- ☐ Manufacturer warranty terms (10-12yr product / 20-25yr performance) clearly stated

Batteries:

- ☐ Weight feels appropriate for stated capacity
- ☐ Casing and labeling look professionally made, no rough edges
- ☐ Vendor willing to demonstrate or explain a load test
- ☐ Price is in a reasonable range compared to other quotes for the same spec

Inverters:

- ☐ Casing and connectors feel solid, well-fitted
- ☐ Vendor clearly explains continuous rating vs. surge rating
- ☐ Vendor can state the efficiency rating
- ☐ Price is in a reasonable range compared to other quotes for the same spec

General:

- ☐ Two or more warning signs together on one component = pause and ask more
- ☐ Document everything (photos, invoice, communication) at the point of purchase, just in case