

Installer Accreditation

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Agenda

- 1) The need for Installer accreditation
- 2) Key elements of a working Installer accreditation
- 3) SAPVIA PV GreenCard and AREP P4 levels as examples
- 4) Take Home Messages

1. The need for Installer Accreditation

- Current standards and reporting **exclude solar PV, DC and/or grid integration.**
- Current **qualifications**, certification, **designations** and/or accreditation **does not include solar PV or DC.**
- Both the above **takes time** to establish and enforce.
- Many existing **electricians/installers/engineers** are **not familiar with solar PV, DC or grid integration.**
- Very **high risk** with solar PV and DC installations and **consequences can be severe**

2. Key elements of a working Installer Accreditation

Credibility

- Aligned to existing laws, standard, regulations and/or qualifications.
- Based on international best practices and standards.
- Safety a key priority area, followed by quality and performance
- Proper documentation and reporting

2. Key elements of a working Installer Accreditation

Support and Sustainability

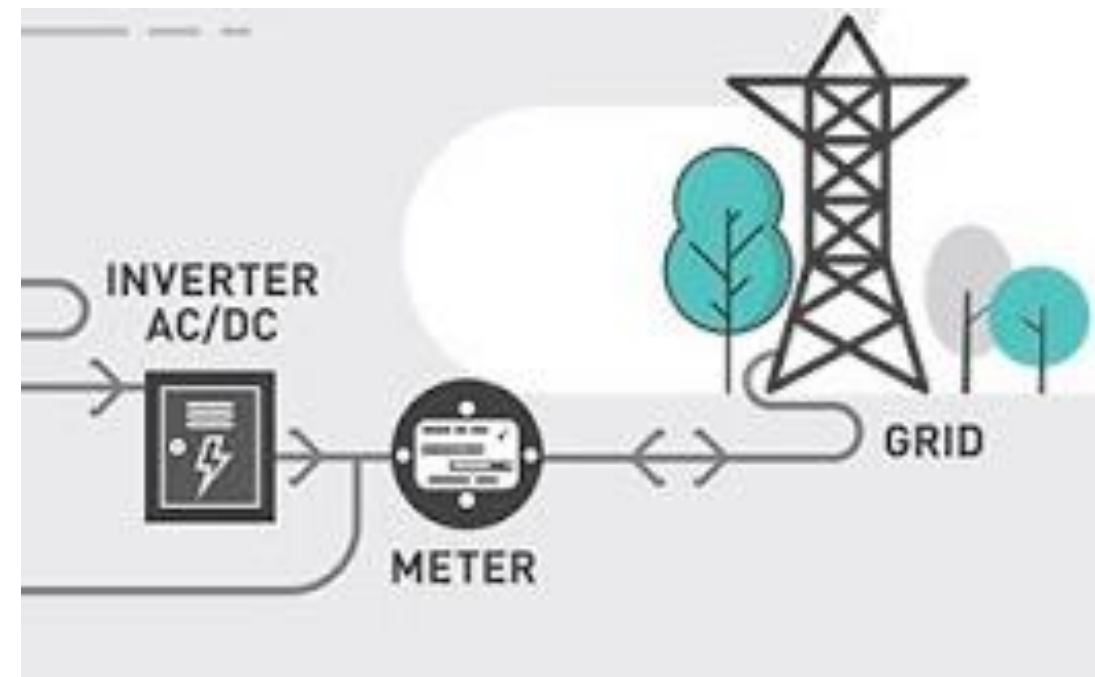
- Must be driven by key stakeholder in the industry
- Must be dynamic and flexible
- Ideally to be endorsed, supported and/or recognised by all stakeholders.
- Must add value (compliment, not replace) and maturity required

3. Example: South African Photovoltaic Industry association (SAPVIA) PV GreenCard in SA

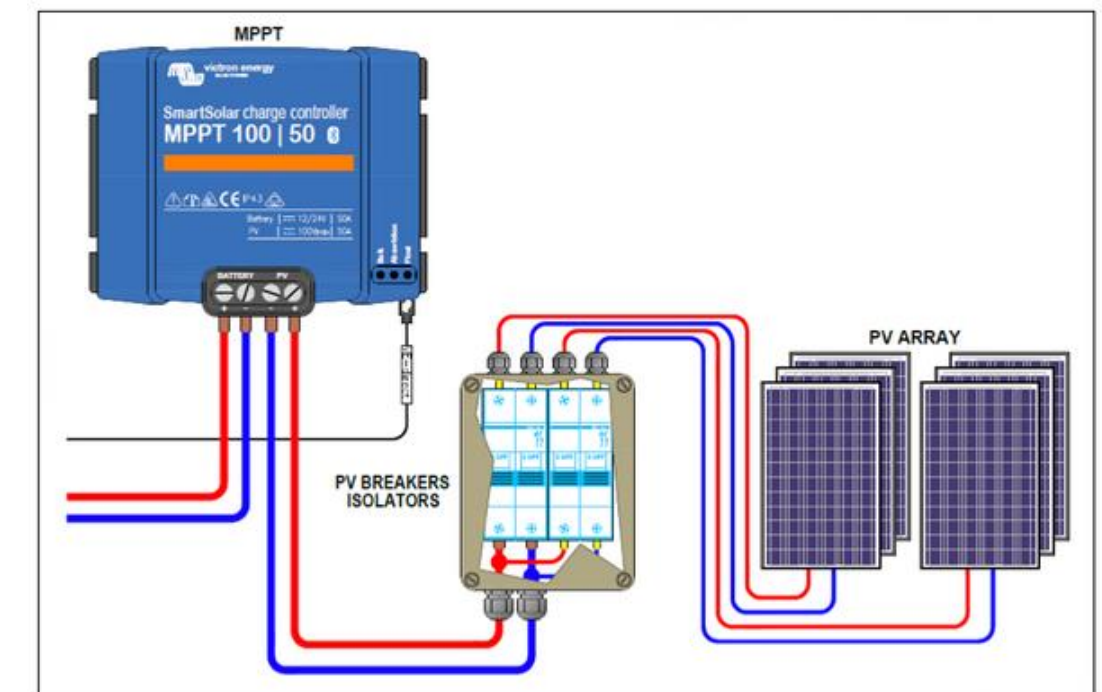
- 1) The PV GreenCard will serve as a measure for high quality installation as an as-build report and aims to cover standards and best practices for the following areas:



PV solar components



AC installation (especially in terms of grid connection)



DC installation (DC cable, Switches, fuses, etc)

3. Example: South African Photovoltaic Industry association (SAPVIA) PV GreenCard in SA



Lightning protection



Safety at work



Rooftop installation



Fire safety



Commissioning, Operation and Maintenance

3. SAPVIA PV GreenCard Based on National Part Qualification



All qualifications and part qualifications registered on the National Qualifications Framework are, the material is reproduced or quoted, the South African Qualifications Authority (SAQA) should be

SOUTH AFRICAN QUALIFICATIONS AUTHORITY
REGISTERED QUALIFICATION:

Occupational Certificate: Solar Photovoltaic Service Technician

SAQA QUAL ID		QUALIFICATION TITLE		
99447		Occupational Certificate: Solar Photovoltaic Service Technician		
ORIGINATOR				
Development Quality Partner - MERSETA Construction				
PRIMARY OR DELEGATED QUALITY ASSURANCE FUNCTIONARY			NQF SUB-FRAMEWORK	
-			OQSF - Occupational Qualifications Sub-framework	
QUALIFICATION TYPE	FIELD		SUBFIELD	
Occupational Certificate	Field 12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	MINIMUM CREDITS	PRE-2009 NQF LEVEL	NQF LEVEL	QUAL CLASS
Undefined	344	Not Applicable	NQF Level 05	Regular-ELOAC
REGISTRATION STATUS		SAQA DECISION NUMBER	REGISTRATION START DATE	REGISTRATION END DATE
Registered		SAQA 05115/16	2016-12-01	2019-12-01

SAQA (South African Qualification Authority)

Solar Photovoltaic Service Technician (ID: 99447) qualification

PV GreenCard based on The **Solar PV installer** “Part qualification”

3. SAPVIA PVGC Accreditation Process



Training



Register at SAPVIA



Assessment



**Installer number
and forms**



PVGreenCard

Install PVGC systems

3. PV GreenCard Assessment

2-Day Solar
PV Installer
Assessment

- In line with the QCTO part qualification, the result is based on a weighting;
 - 42% for the theoretical
 - 58% for the practical
- The candidate is required to obtain an overall score of 80% to pass the assessment



FIGURE 11: COMPLETED INSTALLATION TO BE ASSESSED

Theoretical assessment			
#	SECTION	max marks	percentage
1	ELECTRICAL FUNDAMENTALS	28	89.29%
2	SOLAR PV FUNDAMENTALS	41	93.90%
3	SITE INSPECTION	21	85.71%
4	SOLAR PV SYSTEM DESIGN	4	100.00%
5	SOLAR PV INSTALLATION	14	85.71%
6	SANS 10142	13	76.92%
7	INSPECTING AND TESTING	16	56.25%
	TOTAL	137	85.04%
Practical assessment			
#	SECTION	max marks	percentage
A	MATERIAL LIST (INDIVIDUAL)	10	100.00%
B	WIRING DIAGRAM (INDIVIDUAL)	14	64.29%
C	ERRORS ON PRE-MOUNTED INSTALLATION (INDIVIDUAL)	10	100.00%
D	INSTALLATION WORK (GROUP)	20	85.00%
E	QUALITY OF WORK (GROUP)	24	91.67%
F	SOLAR PV CIRCUITS (DC) (GROUP)	14	100.00%
G	SOLAR PV CIRCUITS (AC) (GROUP)	11	90.91%
I	DISTRIBUTION BOARD (GROUP)	10	80.00%
H	SAFETY IN THE WORKPLACE (OBSERVATION)	10	90.00%
J	USE OF MATERIALS AND TOOLS (OBSERVATION)	10	100.00%
K	ROOF MARK SHEET	25	80.00%
	TOTAL	158	87.97%



SAPVIA PV GreenCard As Built Report

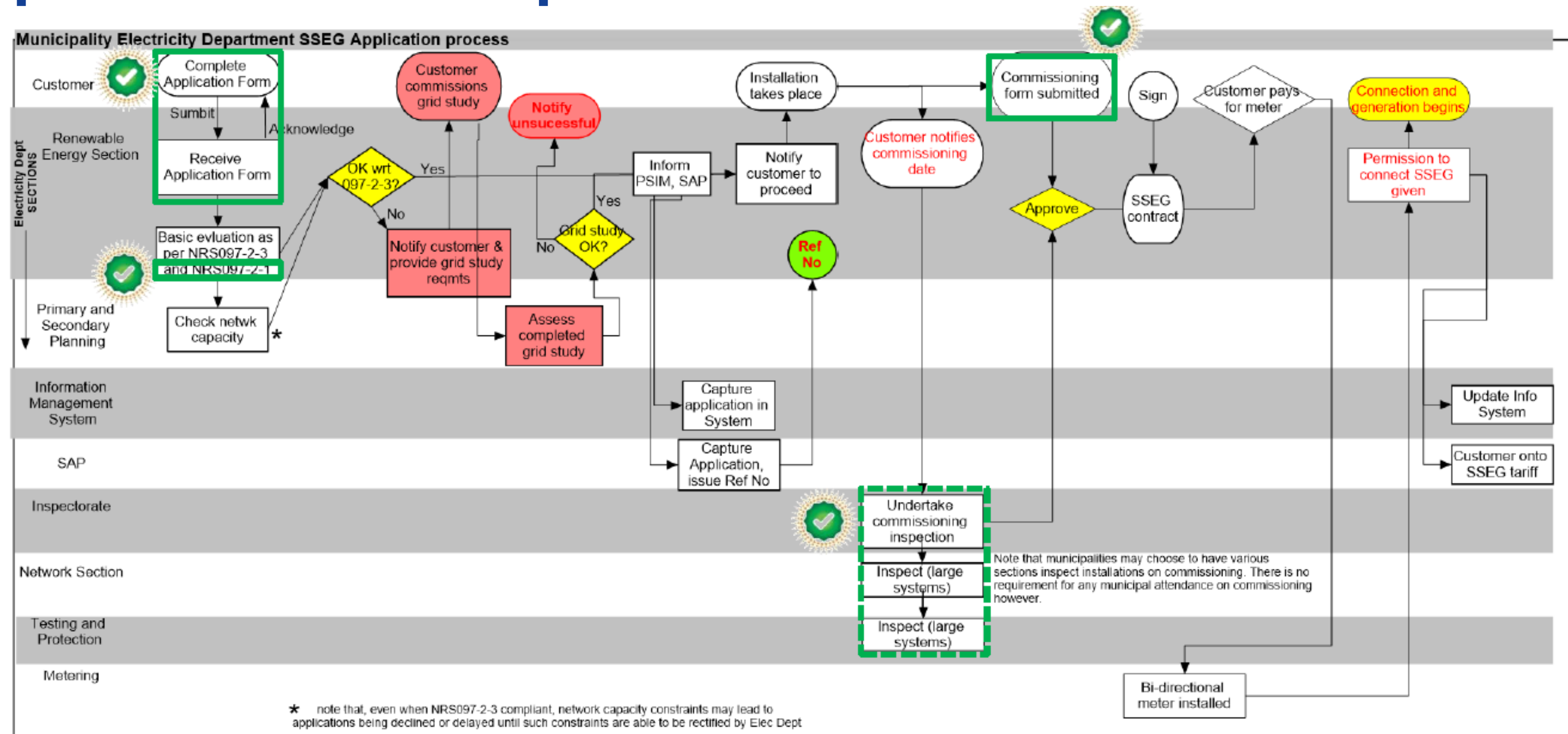
PVGC ABR: System Specific. Grid-Tied, Hybrid, Of-Grid, UPS

	Date of Approval Date of Customer Approval : 09-01-2024 08:42	PVG-3816949
PVGC Assessed individual : Gayle Mc Lennan Installation Electrician : John White		
DOEL # : GC1203/2021 COC # : COC-8678878/NY/87899		
PVG Account # : INST-3913749-2		
Owner Information		
Full Name	John Nobody	
Company	ZYQ Plumbing	
Email	info@yesbla.com	
Mobile	(076) 656 5656	
PV GreenCard Assessed Individual		
		
Installation Address		
Street, house no	456 Klipfontein Rd	Installer Company
Suburb	Surrey Estate	Installer
Province	Western Cape	Street, house no
Postal Code	7764	Suburb
GPS Latitude	-33.970569	Province
GPS Longitude	18.550548	Postal Code
Installation Configuration		
Installed Capacity:	4.30 kWp	
		
Alignment	32 degrees	
Roof Pitch	22 degrees	
Installation Type		
HYBRID SOLAR SYSTEM		
Roof integrated		
My Notes are important. The roof is very slippery.		
Demand and Yield Forecasts		
Annual electricity consumption (kWh/year)	2321.00	
Estimated PV-Yield (kWh/year)	4232.30	
Assumed own consumption (%)	89%	
Multiple orientation/inclination	Yes	
System Components		
10 Modules		
QTY Installed	Module Manufacturer	Type
10	Axitec	AXIblackperfect FXXL TOPCon 108 Cells (AC-430TFM/108BB) 420 - 430 Wp
2 Inverters		
QTY Installed	Inverter Manufacturer	Inverter Model
2	Afore	HNS3600HS
1 Mounting System		
QTY Installed	Mounting Manufacturer	Mounting Type
1	Space X	Model T-YU
4 Batteries		
QTY Installed	Battery Manufacturer	Battery Chemistry
4	Huawei iSite Power	Sodium-ion
Depth of Discharge (DOD)		
50W		
Storage Capacity (kWh)		
5.0 kWp		

	Date of Approval Date of Customer Approval : 09-01-2024 08:42	PVG-3816949
DC - Cables and Power Lines		
DC Cable Manufacturer	H1Z222-K	AC Cable Manufacturer
DC Cable Type	SINGLE-CORE DC CABLE	AC Cable Type
DC Cross-section (mm²)	6.00	AC Cable Cross-section (mm²)
Commissioning		
COC Number	COC-8678878/NY/87899	
Electrical Safety		
The Solar PV system is installed in accordance with SANS 10142-1	YES	
The Solar PV system is installed in accordance with SANS 60364-7-712	YES	
All DC components are rated for a voltage greater than the system operating DC voltage	NO	
Fire Safety		
Smoke and heat extraction systems are fully functional.	YES	
Firewalls and fire compartments have been taken into consideration in accordance with the fire protection regulations.	YES	
Lightning and voltage surge protection		
Has a lightning/surge risk assessment been done? (SANS62305-2)	YES	
Building has lightning protection system.	YES	
No additional external lightning protection necessary due to technical, legal or contractual reasons.	YES	
PV generator is within protection angle of the lightning protection system.	YES	
Separation distances kept to all PV components (modules, substructure, cables...).	YES	
Equipotential bonding of mounting structure has been carried out for the mounting structure, cross section 6mm² for copper or comparable.	YES	
Type 2 DC surge arrester installed near the DC and AC inputs of the inverter.	YES	
Type 1 and 2 combination arrester at the building grid connection point (required when external lightning protection installed!).	YES	

	Date of Approval Date of Customer Approval : 09-01-2024 08:42	PVG-3816949
Documents		
Regulatory compliance / Electrical Certificate of Compliance (COC), completed and signed by the designated registered person (IE or MIE).	YES	
Regulatory compliance / Electrical single line diagram showing main components and utility interconnection.	YES	
Regulatory compliance / Roof / array layout and string plan with inverter allocation.	YES	
For the PV-Modules used / Technical data sheets	YES	
For the PV-Modules used / Installation manual	YES	
For the PV-Modules used / Manufacturer warranty document.	YES	
For the PV-Modules used / Copies of test certificates	YES	
For the inverter(s) used / Technical data sheets.	YES	
For the inverter(s) used / Installation manual.	YES	
For the inverter(s) used / Manufacturer warranty document.	YES	
Photos of Installation		
		
		

PV GreenCard – Aligned to Utility processes and requirements



PV GreenCard: Installer Database

PVGreenCard info@pvgreencard.co.za +27 (0)21 200 5856 Philip

ABOUT ▾ ROOFTOP SOLAR PV ▾ INSTALLERS ▾ CUSTOMERS ▾ CONTACT LOGOUT

Installers

10 entries

LINK	LOGO	COMPANY NAME	PROVINCE	CONTACT INFORMATION
		Mc Lennan Digital Web Studio	Western Cape	info@mc-lennan.com +27 (021) 123 45678

PVGreenCard info@pvgreencard.co.za +27 (0)21 200 5856 Philip

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BSW
GERMAN SOLAR
ASSOCIATION

German Solar Association (BSW-Solar)

Map/Directions

You have been located in Stellenbosch University, Cape Town, 7530, South Africa

Main Office

- Address: 53 Lietzenburger Str., Bezirk Charlottenburg-Wilmersdorf, Berlin, Germany
- Contact: Ronald Upmann
- Email: ronald.upmann@private-press.de
- Website: http://www.solarwirtschaft.de

Installers

Branch Name	Installer Name	Installer Surname	Account/Ref #	Address
Head Office	Ronald	Upmann	INST-0008955-1	53 Lietzenburger Str., Bezirk Charlottenburg-Wilmersdorf, Berlin,

Start typing address



Quality Assurance

- PVGC MOU with BravoScan
 - BravoScan PV GreenCard QA Partner
 - Installed system inspections and installer compliance monitoring.
 - Database of typical installation faults to inform training and CPD.
- Compliance and QA
 - Training Centres and Assessment Centres inspections and oversight.
- PVGC As-Built report
 - Reworked in PVGC 2.0. UI and UX focus.
 - Quality of data captured. Dropdown databases.
 - Compliance focus. NRS 097-2-1



4. African Renewable Energy Professionals (AREP) accreditation levels

AREP P4 Levels of competence (for the individual)

AREP P4 Platform

• Level A	Identification of products and terminology
• Level B	Understanding the function of the different products
• Level C	Understanding how various products work together
• Level 1	Understanding basic design & installation principles
• Level 2A	Understanding intermediate design & installation principles
• Level 2B	Proving practical competence
• Level 3	Understanding advanced design & installation principles
• Level ...	

TAKE HOME MESSAGES

– A few points to remember

1. Accreditation not required by law, but does add value as a QA initiative
2. Various stakeholders are requiring or at least supporting industry accreditations.
3. Can serve as an interim solution until standards are updated and/or authorised has been upskilled to be competent.

