



Overview of DG Commissioning

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Commissioning process and sign off

1. Is commissioning necessary?
2. Commissioning part of application process
3. High level commissioning and sign off process
4. Commissioning tests

Is commissioning necessary?

Oxford definition of commissioning:

“Bring (something newly produced) into working condition”

DG like Solar Photovoltaic (PV) and storage systems are

- 1) New products
- 2) Unique in design; based on functionality and constraints
- 3) Has various integration challenges

Is commissioning necessary?

- The client wants a safe (legal), well working system
- Product supplier wants to honour their warranty(ies)
- Most installers want to build and protect their reputation
- The network operator or utility wants to protect the network, the user(s) and community
- **Proper commissioning and reporting will help to address some of the above-mentioned requirements.**

Preparation

Site visit and attending commissioning tests could be required to

- 1) Verify information from application documents
- 2) Confirm safe integration and operation of SSEG

Prior to site visit

Prepare documentation

- 1) Application documents
- 2) Customer/Installer details
- 3) Address and location of site
- 4) Circuit Diagram or SLD of local network

Preparation

Prior to site visit (continued)

Personal Protective Equipment (PPE), tools and access keys

1. PPE for working with electricity and (if required) on heights
2. Tools to open distribution boards
3. Access keys
4. Electrical tester (Clamp on tester to measure current)
5. Stopwatch
6. General electrical tools



Preparation

Prior to site visit (continued)

Arrangements for access and testing

1. Ideally a week before site visit
2. Indicate what you would like to do (could take 60min per tie in point)
3. Request a competent person for executing tests at the DG
4. Arrange security clearance/access (if required)



Site Visit

During site visit

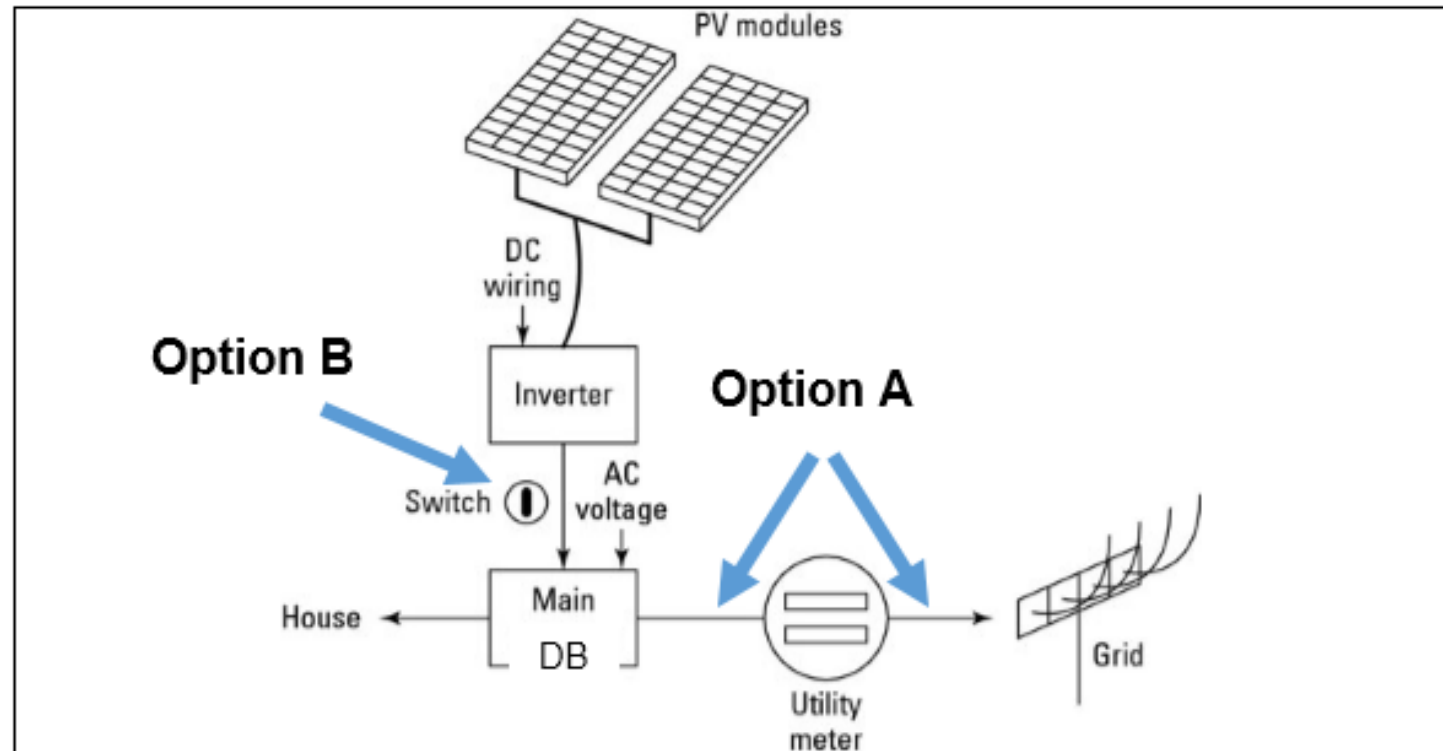
1. Verify details of customer and installer
2. Verify the DG system details
3. Make sure relevant documents are provided
 - 1) Inverter type test according to Interconnection specifications done by accredited 3rd party test house
 - 2) Electrical installation complies with wiring code
 - 3) Final signed as-built circuit diagram or single line diagram (SLD) to be provided
 - 4) Connection agreement contract signed by network operator and customers
 - 5) Verify charging and export parameters

Commissioning Tests - Disclaimer

- **Disclaimer:**
- From a technical point of view the **Interconnection Specification test certificate covers these issues quite thoroughly**, so there are no safety concerns that REQUIRE the utility to do such tests as described here.
- Utilities may **perform such tests on selected (few)** installations for additional comfort on safety aspects.
- NB! - Utility employees may supply the testers but ***is not allowed to operate on electrical installations that is not part of their scope***. It's the facility owner's responsibility to delegate this function to capable people of their choice who will be responsible & liable for testing.

Commissioning Tests

- 1) Testing Point
- 2) Determine at which circuit breaker measurements will be taken



Extra Considerations

- For larger DG (above 500kW) It would be ideal if **power quality measurements** could be done for a few weeks prior and post to the commissioning (mainly).
 - The existing power quality issues can be quantified
 - The effect of distributed generation can be identified
 - Provides a better understanding of how DG can influence the grid
- Operation of DG systems using a combination of solar PV, batteries and/or generators (Hybrid systems) need to be clearly explained and demonstrated.
- Diesel/back-up generators with synchronisation capabilities needs to be dealt with on a case by case and documented.

Extra Considerations

- The first test could take a while if there is multiple tie in points.
- The circuit diagram or single line diagram (SLD) needs to be checked and verified before commencing with any tests
- One utility official could be checking the number, size, serial numbers of the inverters, while the other do the tests.



Take Home messages

- Commissioning of DG is necessary
- It allows for confirming details of DG
- Proper documentation improves safety and compliance
- Utility site visit attendance vs Sign off for commissioning