

Delivering Customer Connections – ‘Becoming Operational’

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**1. Electricity Market
& Ancillary Services**

2. Energisation

**BECOMING
OPERATIONAL**

**4. Day to Day
Operations**

**3. Testing &
Operational Certificate**



semo

Single Electricity
Market **Operator**



**1. Electricity Market
& Ancillary Services**

Market Registration

- All Parties intending to trade, buy or sell energy in the market must complete the Participant Registration Process.
- The registration processes consist of two major steps:
 - Step 1: Party registration - for accession to the market
 - Step 2: Unit registration - for participation in the market
- The unit registration process can take up to 60 business days.
- See the Market Registration page on the SEMO website:
www.sem-o.com



Testing Charges

- Generators under test are charged a €/MWh rate for the energy produced during the testing period.
- The charge rate is dependant on the capacity of the unit.

Unit capacity, MW	€/MWh
GEN ≤ 50	3.58
50 < GEN ≤ 100	3.33
100 < GEN ≤ 150	3.53
150 < GEN ≤ 200	4.12
200 < GEN ≤ 250	4.89
250 < GEN ≤ 300	6.09
300 < GEN ≤ 350	8.43
350 < GEN	11.27

- These testing charges do not currently apply to autonomous generator units.

Ancillary Services

- Under the terms of the Grid Code, generators are obliged to provide Ancillary Services such as **Operating Reserve** and **Reactive Power** capability.
- Generators may also provide a **Black Start** service.
- Generators should enter into commercial contracts with EirGrid for provision of and payment for such services.
- Further information on Ancillary Services can be found on at www.EirGrid.com , under System Operations/Ancillary Services

Treatment in the Market

Prior to receiving an 'Operational Certificate':

- A **Conventional Generator** is deemed 'under test' meaning:
 - All generation production is paid for at SMP;
 - Test charges are levied;
 - No constraint payments;
 - No Ancillary Services payments.
- A **Windfarm** is deemed an 'autonomous' unit meaning:
 - All generation production is paid for at SMP;
 - No constraint payments;
 - No Ancillary Services payments.



2. Energisation

Energisation

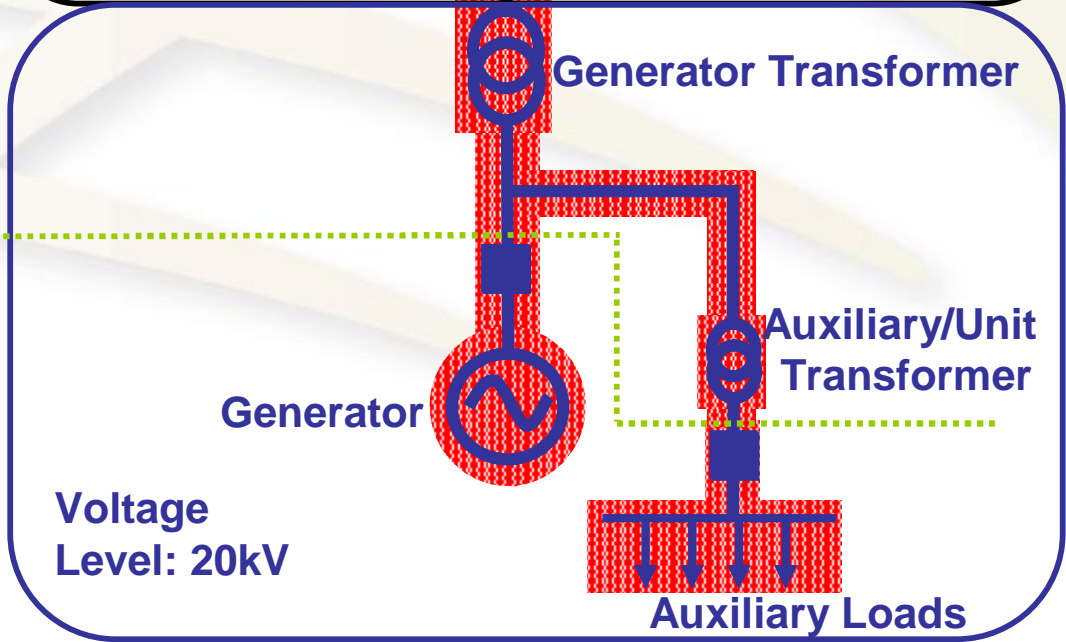
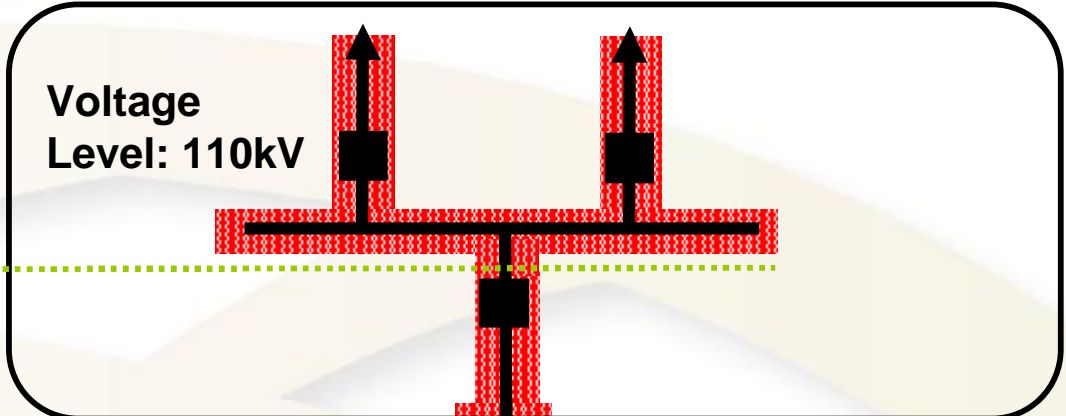
2. Energisation

□ Circuit Breaker OPEN
■ Circuit Breaker CLOSED

Step 1

Step 2

Step 3



Energisation

Declaration of Fitness (DoF):

- A statement that a defined item of equipment is fit to be entered into service, i.e. energised.
- Customer must nominate a competent person to 'DoF'.

Energisation Instructions:

- The step by step switching procedure for making equipment 'live';
- Issued by EirGrid to ESB Networks and Customer as appropriate.

Operating Instructions:

- The operating procedures by which the Transmission-Customer interface is managed;
- Issued by EirGrid to ESB Networks and Customer.

ELE MH 3 FH 3 W&S BLR 1 STM 1 DES 3 BPS 1 FW 2 CON TUR 1 CW 1 AUX 1 WT IO 3 SYS 7

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G_BLR_210 Preserve



3. Testing & Operational Certificate

Trace	Name	Mode	Description	Type	Status	Ruler Time	Ruler Value	Engineer		
<input checked="" type="checkbox"/>	L1MAY10DE201R.X1/SIG	Inst	TURBINE POWER SP	Line	GOOD	13:53:20 06-1	98.2244	MW	1.000000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	L1MAY10DE201N.X1/SIG	Inst	DROOP OUTPUT	Line	GOOD	13:53:20 06-1	-0.854	MW	1.000000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	L1MKA10CE901A.X1/SIG	Inst	POWER OP HIGH SELECTOR	Line	GOOD	13:53:20 06-1	97.3125	MW	1.000000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	L1MAD01CS207.X1/SIG	Inst	TURBINE SPEED 1	Line	GOOD	13:53:20 06-1	3001.39	1/min	1.000000	<input type="checkbox"/>
<input checked="" type="checkbox"/>	L1MAY10DE201.X1/SIG	Inst	TURBINE POWER SP + DROOP	Line	GOOD	13:53:20 06-1	97.2848	MW	1.000000	<input type="checkbox"/>

Testing

3. Testing & Operational Cert.

- Prove compliance with the standards set out in the Grid Code or highlight areas where there is a non-compliance.
- A list of tests is prepared by EirGrid and issued to Customer.
- Testing procedures are developed by the Customer and reviewed/approved by EirGrid.
- Tests must be conducted with normal generator control settings applied.
- Compliance must be demonstrated while operating within EPA licence limits.
- Many tests are witnessed by EirGrid.
- Some tests are dependant on transmission system conditions – must be agreed with EirGrid in advance.

Test List

3. Testing & Operational Cert.

PHASE A

Tests 1 to 31:

- Provision of technical data
- Checking of protection settings
- Operating procedures in place
- Declaration of Fitness for Generator Transformer

Energise Generator Transformer

PHASE B

Tests 32 to 44:

- Interlocking checks
- Generator-Transmission alarms and intertrips
- No load AVR and Governor tests
- Synchronisation tests

Synchronise Generator

PHASE C

Tests 45 to 70:

- Minimum Load, Registered Capacity, Ramp Rates
- Operating Reserve and Reactive Power capabilities
- Accurate provision of SCADA

Is the Generator Grid Code Compliant?

Testing - Windfarms

3. Testing &
Operational Cert.

- Prior to export of power from the windfarm it is essential that EirGrid has Active Power (MW) control of the windfarm.
- Grid Code requirements extend to many windfarms connected on the distribution system – these are also tested by EirGrid.



Generator Testing

Full Load Rejection Test

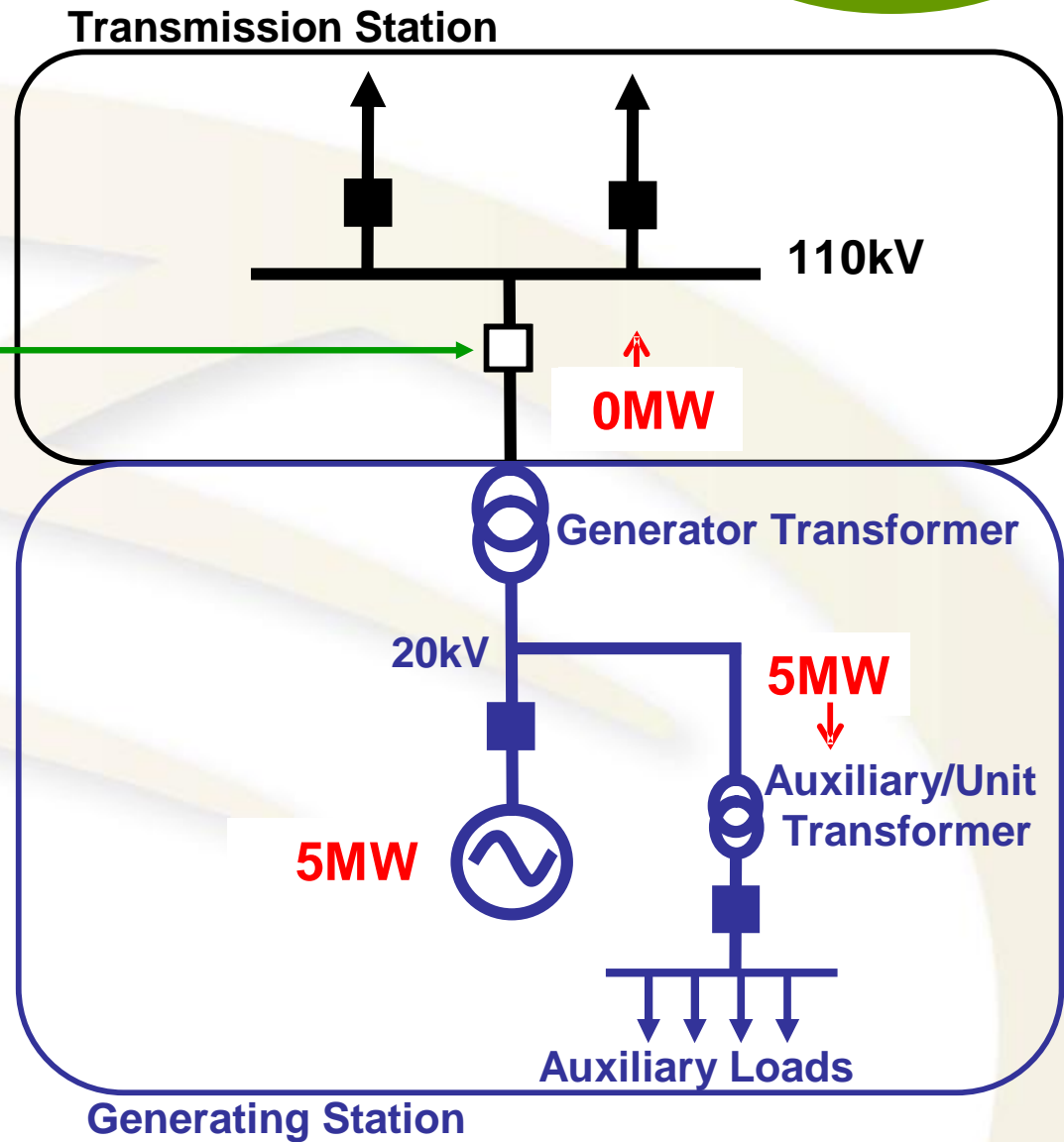
Open while generator is at full output.



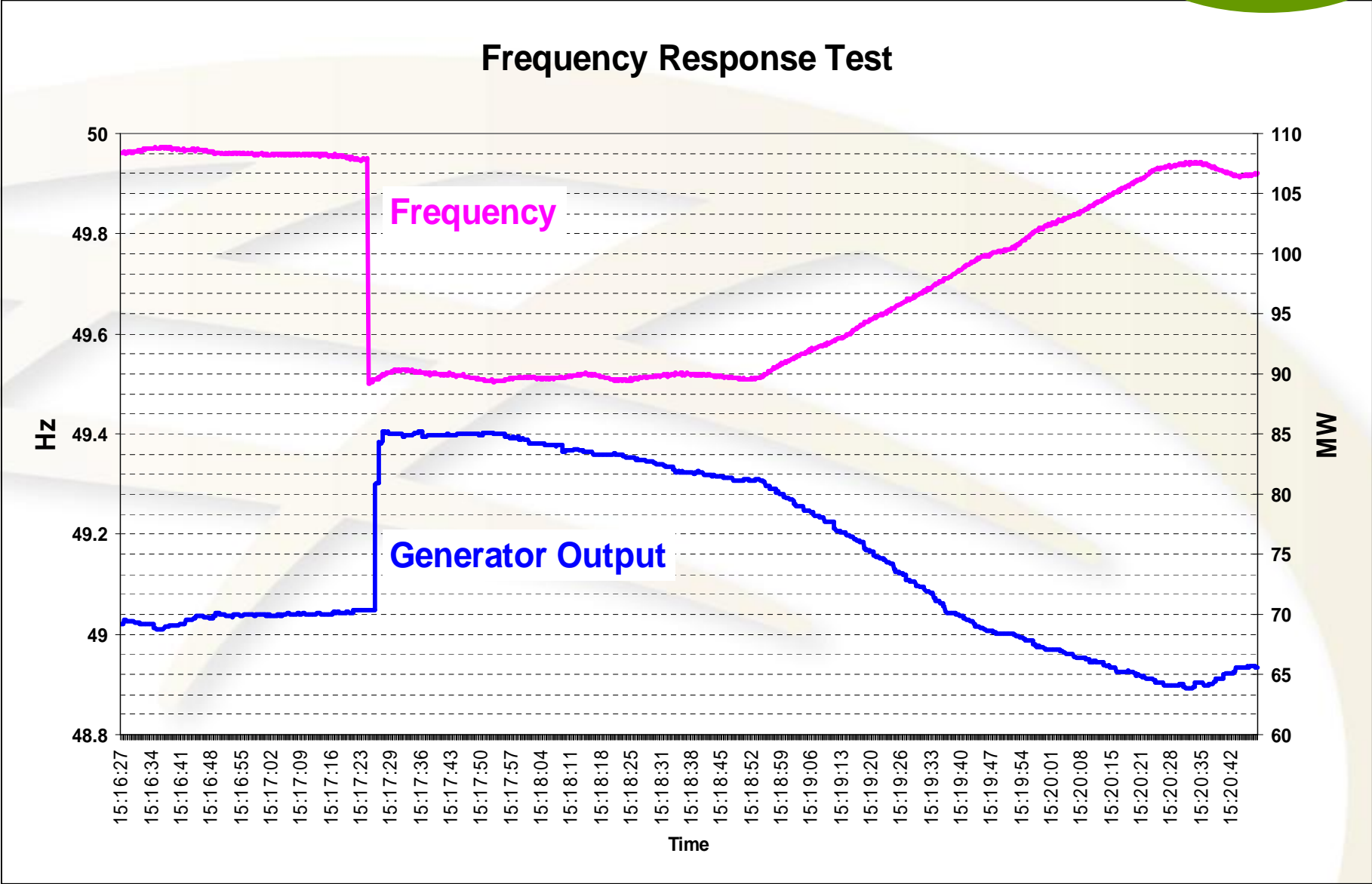
Generator Should remain 'on', feeding its own auxiliary loads.



Then resynchronise across the 110kV circuit breaker.



Generator Testing



Operational Certificate

3. Testing & Operational Cert.



- The Operational Certificate is issued by EirGrid on successful completion of Grid Code Compliance testing.
- With an Operational Certificate:
 - under the terms of the customer's Connection Agreement, the **MEC Capacity Bond** can be released and, if applicable, 'Firm Access' applied;
 - under the terms of the Ancillary Service Agreement receive **Ancillary Service payments**;
 - a windfarm has satisfied all obligations to be considered a **Variable Price Taker** and may receive **Constraint Payments**;
 - a conventional unit may be considered no longer under test and may receive **Constraint Payments**.



Grid Code Derogations

3. Testing &
Operational Cert.

- All generators should comply with the Grid Code.
- Operational Certificate dependant on Grid Code compliance.
- However, customers may apply for derogations from particular requirements of the Grid Code.
- Derogation requests are assessed by EirGrid who make recommendations to the CER.
- The CER decides...rejection of a derogation means that the generator must fix the problem and re-test the generator.





4. Day to Day Operations

Day to Day Operations

4. Day to Day Operations

- All 'dispatchable', 'price making' generators must provide a '24/7' staffed control facility.
- Dispatch instructions, both MW and MVAR, are issued from the National Control Centre (NCC) via the Electronic Dispatch Instruction Logger (EDIL).
- Maintain up to date declarations of availability and technical operating characteristics.
- Respond to Amber, Red and Blue alerts.
- Participate in EirGrid's Generation and Transmission Outage planning process.
- Ensure on going Grid Code compliance.



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Indicative Timelines

