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Customer Instruction Form – Electricity Export (over 50kWh)

PART 1a

Applicant's Details

Company Name :
Company registered No.
Postal Address :
Contact Name :
Email Address :
Telephone No.
Fax No.

Consultant's Details (if applicable)

Consultants Name :
Postal Address:
Contact Name :
Email Address :
Telephone No.
Fax No.

Power station location and operation

Power station name :
Postal Address or site boundary plan (1:500) :
Details of any existing Connection Agreements :
Target date for provision of connection / commissioning of power station :
Connection Point (OS grid ref or description) :

Preferred connection point voltage :	
Single line diagram of any on-site existing or proposed electrical plant or, where available, operation diagrams	Please attach
What security is required for the connection? (see Note A1) :	

No. of generation sets in power station :	
Are all generation sets of same design/rating?	Y/N
Will power station operate in island mode?	Y/N
Will generation plant supply electricity to on-site premises?	Y/N

Power station export requirements (see Note A4):

Total power station output at registered capacity (net of auxiliary loads)

Registered capacity (maximum active power export)	MW
Maximum reactive power export (lagging)	MVAr
Maximum reactive power import (leading)	MVAr

Power station maximum fault current contribution (see Note A5)

Power station standby import requirements (see Note A2)

Maximum active power import	MW
Maximum reactive power import (lagging)	MVAr
Maximum reactive power export (leading)	MVAr

Power station top-up import requirements (see Note A3)

Maximum active power import	MW
Maximum reactive power import (lagging)	MVAr
Maximum reactive power export (leading)	MVAr

Peak asymmetrical short circuit current at 10ms (i_p) for a 3φ short circuit fault at the connection point	kA
RMS value of the initial symmetrical short circuit current (I_k") for a 3φ short circuit fault at the connection point	kA
RMS value of the symmetrical short circuit current at 100ms ($I_{k(100)}$) for a 3φ short circuit fault at the connection point	kA

Power station interface arrangements (see Note A6)

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Note A1 – The DNO will assume a single circuit connection to the power station is required unless otherwise stated. Options include:
(a) single circuit connection
(b) manually switched alternative connection
(c) automatic switched alternative connection
(d) firm connection (secure for first circuit outage)

Note A2 – This section relates to operating conditions when the power station is importing active power, typically when it is not generating. The maximum active power import requirement and the associated maximum reactive power import and/or export requirements should be stated

Note A3 - This section relates to operating conditions when the power station is importing active power, typically when it is generating, but is not generating sufficient power to cater for all the on-site demand

Note A4 – This section relates to operating conditions when the power station is exporting active power. The active power export and associated maximum reactive power export and/or import should be stated for operation at registered capacity.

Note A5 - See Engineering Recommendation G74, ETR 120 and IEC 60909 for guidance on fault current data. Additionally, fault current contribution data may be provided in the form of detailed graphs, waveforms and/or tables. This information need not be provided where detailed fault level contribution / impedance data is provided for each Generation Set in Part 1b or Part 2 of this application form

Note A6 - The interface arrangements need to be agreed and implemented between the User and DNO before energisation. DPC7.3.1 of the Distribution Code refers.

PART 1b

Generation set general data

Number of generation sets to which this data applies:		
Type of generation set (please tick box)	Synchronous generator	□
	Fixed speed induction generator	□
	Double fed induction generator	□
	Series converter / inverter connected generator	□
	Other (provide details)	□
Type of prime mover:		
Operating regime (see Note B1). Please tick box	Intermittent	□
	Non-intermittent	□

Generation set Active Power capability

Rated terminal voltage (generator)	V
Rated terminal current (generator)	A
Generation set registered capacity (net)	MW

Generation set apparent power rating (to be used as base for generator parameters)	MVA
Generation set rated active power (gross at generator terminals)	MW

Generation set Reactive Power capability at rated Active Power (gross, at generator terminals)

Maximum reactive power export (lagging). For HV connected generators only	MVAr
Maximum reactive power import (leading). For HV connected generators only	MVAr

PART 1b

Generation set maximum fault current contribution (see Note B2)

Peak asymmetrical short circuit current at 10ms (i_p) for a 3φ short circuit fault at the generation set terminals (HV connected generators only)	kA
RMS value of the initial symmetrical short circuit current (I_k") for a 3φ short circuit fault at the generation set terminals (HV connected only)	kA
RMS value of the symmetrical short circuit current at 100ms ($I_{k(100)}$) for a 3φ short circuit fault at the generation set terminals	kA

Note B1 – Intermittent and Non-intermittent Generation is defined in Engineering Recommendation P2/6 as follows:
Intermittent Generation: Generation plant where the energy source for the prime mover can not be made available on demand.
Non-intermittent Generation: Generation plant where the energy source for the prime mover can be made available on demand.

Note B2 - See Engineering Recommendation G74, ETR 120 and IEC 60909 for guidance on fault current data. Additionally, fault current contribution data may be provided in the form of detailed graphs, waveforms and/or tables.

PART 2a

Generation set model data: Synchronous generation sets (or equivalent synchronous generation sets)

Generation set identifier:	
Type of generation set (wound rotor, salient pole or asynchronous equivalent). See Note C1	
Positive sequence (armature) resistance (HV connected generators only)	per unit
Inertia constant (generation set and prime mover). (HV connected generators only)	MWsec/MVA
Direct axis reactances:	
Sub-transient (X''_d) – unsaturated / saturated	per unit
Transient (X'_d) – unsaturated / saturated (HV connected generators only)	per unit
Synchronous (X_d) – unsaturated / saturated (HV connected generators only)	per unit
Time constants:	
State whether time constants are open or short circuit (HV connected only)	
D-axis sub-transient – unsaturated / saturated (HV connected generators only)	s
D-axis transient – unsaturated / saturated (HV connected generators only)	s

Note C1 – Asynchronous generators may be represented by an equivalent synchronous generator data set

PART 2b

Generation set model data: Fixed speed induction generation sets (see Notes D1 and D2)

Magnetising reactance (HV connected generators only)	per unit
Stator resistance (HV connected generators only)	per unit
Stator reactance (HV connected generators only)	per unit
Inner cage or running rotor resistance (HV connected generators only)	per unit

Total effective inertia constant (generator and prime mover). HV connected generators only	MWsec/MVA	
Shunt capacitance connected in parallel at % of rated output:	Starting	kVar or graph
	20%	
	40%	
	60%	
	80%	
	100%	
Active power and reactive power import during start-up		MW-MVAr / time graphs

Active power and reactive power import during switching operations e.g. '6 to 4 pole' change-over (HV connected generators only)	MW-MVAr / time graphs
Outer cage or standstill rotor reactance (HV connected generators only)	per unit
State whether data is inner-outer cage or running-standstill (HV generators connected only)	
Slip at rated output (HV connected generators only)	%

Note D1 – Asynchronous generators may be represented by an equivalent synchronous data set

Note D2 – You will need to provide the above data for each asynchronous generation set based on the number of pole sets (i.e. two data sets for dual speed 4/6 pole machines)

PART 2c

Generation set model data: Doubly fed induction generation sets

Generation set maximum fault current contribution data (see Note E1)	
Magnetising reactance (HV connected generators only)	per unit
Stator resistance (HV connected generators only)	per unit
Stator reactance (HV connected generators only)	per unit
Running rotor resistance (HV connected generators only)	per unit
Running rotor reactance (HV connected generators only)	per unit

Standstill rotor resistance (HV connected generators only)	per unit
Standstill rotor reactance (HV connected generators only)	per unit
State whether data is inner-outer cage or running-standstill (HV generators connected only)	
Generator rotor speed range – Minimum to rated speed (HV connected generators only)	rpm
Total effective inertia constant at rated speed (generator and prime mover). HV connected generators only	MWsec/MVA

Note E1 – Fault current contribution data should be provided in Part 1 of this application form

PART 2d

Generation set model data: Series converter / inverter connected generation sets

Generation set maximum fault current contribution data (see Note E1)	
Generator rotor speed range (HV connected generators only)	rpm

Total effective inertia constant (generator and prime mover). HV connected generators only	MWsec/MVA

Note E1 – Fault current contribution data should be provided in Part 1 of this application form

PART 2e

Transformer information

Transformer identifier	
Transformer type (Unit/Station/Auxiliary)	
Number of identical units	
Type of cooling	
Rated (apparent) power	MVA
Rated voltage ratio (on principal tap)	kV/kV
Positive sequence resistance (HV connected only)	per unit
Positive sequence reactance at principal tap	per unit

Winding configuration (e.g. Dyn11). HV connected only	
Type of tap changer (on load / off circuit)	
Tap step size	%
Maximum ratio tap	%
Minimum ratio tap	%
Method of voltage control (HV connected only)	

Method of earthing of high-voltage winding
Method of earthing of

low-voltage winding

Declaration

I confirm that I have completed the above notification and have provided the necessary information above. I understand that any incomplete or inaccurate information provided may result in an incorrect connection point being specified for my development and may also incur costs alterations.

Signature:

Job title:

Name:

Company:

Date: