

Register of Completed Embedded Generation Projects Under 5MW

Generating System	Technology of the Generating Unit(s)	Maximum Power Generation Capacity (MW)	Contribution to Fault Levels	Size and Rating of Relevant Transformers (kVA)	Protection Systems & Communications Systems	Voltage Control, Power Factor Control and/or Reactive Power Capability	Single Line Diagrams of the Connection Arrangement
Generator 1	Solar PV Inverters Digester Gas	2.20	At 11kV Connection Point 3-phase = 0.3kA Ph-Ground = 0.1kA	2 x 1,250	- Inter-trip scheme to prevent islanding - Generating System Under/Over Frequency - Generating System Under/Over Voltage - ROCOF and Vector Shift - Overcurrent and Earth Fault - Synchronisation - SCADA	Inverter Power Factor Range from 0 supplying VArS to 0 absorbing VArS Digester Gas Power Factor 0.95 absorbing VArS 700kVAr Reactor	 PDF
Generator 2	Hydro	1.40	At 11kV Connection Point 3-phase = 0.4kA Ph-Ground = 0.1kA	2,000	- Inter-trip scheme to prevent islanding - Generating System Under/Over Frequency - Generating System Under/Over Voltage - ROCOF and Vector Shift - Overcurrent and Earth Fault - Synchronisation - SCADA	Power Factor Range from 0.8 supplying VArS to 0.98 absorbing VArS	 PDF
Generator 3	Solar PV Inverters	1.00	N/A	1,000 500	- AS4777 Anti-Islanding - Back-up Anti-Islanding - Half-hourly monitoring	Inverter Power Factor Range from 0.95 absorbing VArS to Unity	 PDF
Generator 4	Solar PV Inverters	1.00	N/A	2,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding - Half-hourly monitoring	Inverter Power Factor Range from 0.95 absorbing VArS to Unity	 PDF
Generator 5	Solar PV Inverters	0.60	N/A	2 x 1,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding - Half-hourly monitoring	Inverter Power Factor Range from 0.95 absorbing VArS to Unity	 PDF
Generator 6	Cogen + Solar PV Inverters	0.44	At 11kV Connection Point 3-phase = 0.2kA Ph-Ground = 0.2kA	Dedicated 11kV Supply	- Inter-trip scheme to prevent islanding - Permissive interlocks - AS4777 Anti-Islanding - Generating System Under/Over Frequency - Generating System Under/Over Voltage - ROCOF and Vector Shift - Overcurrent and Earth Fault - Synchronisation - SCADA	Power Factor Range from 0.9 supplying VArS to Unity	 PDF
Generator 7	Solar PV Inverters	0.20	N/A	750	AS4777 Anti-Islanding	Unity Power Factor	 PDF

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					Back-up Anti-Islanding		
Generator 8	Solar PV Inverters	0.20	N/A	1,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 9	Solar PV Inverters	0.20	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 10	Solar PV Inverters	0.20	N/A	1,500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 11	Solar PV Inverters	0.20	N/A	1,500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 12	Solar PV Inverters	0.20	N/A	2,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 13	Solar PV Inverters	0.20	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 14	Solar PV Inverters	0.18	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 15	Solar PV Inverters	0.18	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 16	Solar PV Inverters	0.17	N/A	315	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 17	Solar PV Inverters	0.17	N/A	200	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 18	Solar PV Inverters	0.17	N/A	200	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 19	Solar PV Inverters	0.17	N/A	200	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 20	Solar PV Inverters	0.16	N/A	1,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 21	Solar PV Inverters	0.13	N/A	1,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 22	Solar PV Inverters	0.13	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF

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Generator 23	Solar PV Inverters	0.12	N/A	315	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 24	Solar PV Inverters	0.12	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 25	Solar PV Inverters	0.11	N/A	1,500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 26	Solar PV Inverters	0.11	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 27	Solar PV Inverters	0.10	N/A	315	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 28	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 29	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 30	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 31	Solar PV Inverters	0.10	N/A	1,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 32	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 33	Solar PV Inverters	0.10	N/A	1,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 34	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 35	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 36	Solar PV Inverters	0.10	N/A	200	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 37	Solar PV Inverters	0.10	N/A	3,800	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 38	Solar PV Inverters	0.10	N/A	1,500	AS4777 Anti-Islanding	Unity Power Factor	 PDF

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					Back-up Anti-Islanding		
Generator 39	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 40	Solar PV Inverters	0.10	N/A	1,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 41	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 42	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 43	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 44	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 45	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 46	Solar PV Inverters	0.10	N/A	300	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 47	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 48	Solar PV Inverters	0.10	N/A	2 x 2,000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 49	Solar PV Inverters	0.10	N/A	1000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 50	Solar PV Inverters	0.10	N/A	150	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 51	Solar PV Inverters	0.10	N/A	315	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 52	Solar PV Inverters	0.10	N/A	315	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 53	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF

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Generator 54	Solar PV Inverters	0.10	N/A	1000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 55	Solar PV Inverters	0.10	N/A	1500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 56	Solar PV Inverters	0.10	N/A	300	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 57	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 58	Solar PV Inverters	0.10	N/A	150	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 59	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 60	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 61	Solar PV Inverters	0.10	N/A	1000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 62	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 63	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 64	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 65	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 66	Solar PV Inverters	0.10	N/A	1000	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 67	Solar PV Inverters	0.10	N/A	1500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 68	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 69	Solar PV Inverters	0.10	N/A	1500	AS4777 Anti-Islanding	Unity Power Factor	 PDF

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					Back-up Anti-Islanding		
Generator 70	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 71	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 72	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 73	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 74	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 75	Solar PV Inverters	0.10	N/A	315	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 76	Solar PV Inverters	0.10	N/A	1500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 77	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 78	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 79	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 80	Solar PV Inverters	0.10	N/A	1200	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 81	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 82	Solar PV Inverters	0.10	N/A	750	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 83	Solar PV Inverters	0.10	N/A	500	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF
Generator 84	Solar PV Inverters	0.10	N/A	200	- AS4777 Anti-Islanding - Back-up Anti-Islanding	Unity Power Factor	 PDF

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Generator 85	Natural Gas Cogen	4.00	At 11kV Connection Point 3-phase = 1.5kA Ph-Ground = 1.6kA	Dedicated 11kV Supply	- Inter-trip scheme to prevent islanding - Mechanical and electrical inter locking - Minimum import (non-export) - Reverse power - Generating System Under/Over Frequency - Generating System Under/Over Voltage - ROCOF and Vector Shift - Overcurrent and Earth Fault - Synchronisation - SCADA	Power Factor Range from 0.8 supplying VArS to 0.9 absorbing VArS	 PDF
Generator 86	Solar PV Inverters	0.54	N/A	2 x Dedicated 11kV Supplies	- AS4777 Anti-Islanding - Back-up Anti-Islanding - Non-export	Inverter Power Factor Range from 0.95 absorbing VArS to Unity	 PDF
Generator 87	Natural Gas Cogen	0.53	At LV Connection Point 3-phase = 8.3kA Ph-Ground = 8.1kA		- Minimum import (non-export) - Generating System Under/Over Frequency - Generating System Under/Over Voltage - ROCOF and Vector Shift - Overcurrent and Earth Fault - Synchronisation	Power Factor Range from 0.9 absorbing VArS to Unity	 PDF