

Addressing Barriers to Efficient Renewable Integration

Comparison of Inverters Response to Voltage Sag at 50% and 100% Power

Lead Organisation: University of New South Wales (UNSW)

Project Partners: UOW, AEMO, CSIRO

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Inverter Bench Testing Results: <http://pvinverters.ee.unsw.edu.au>

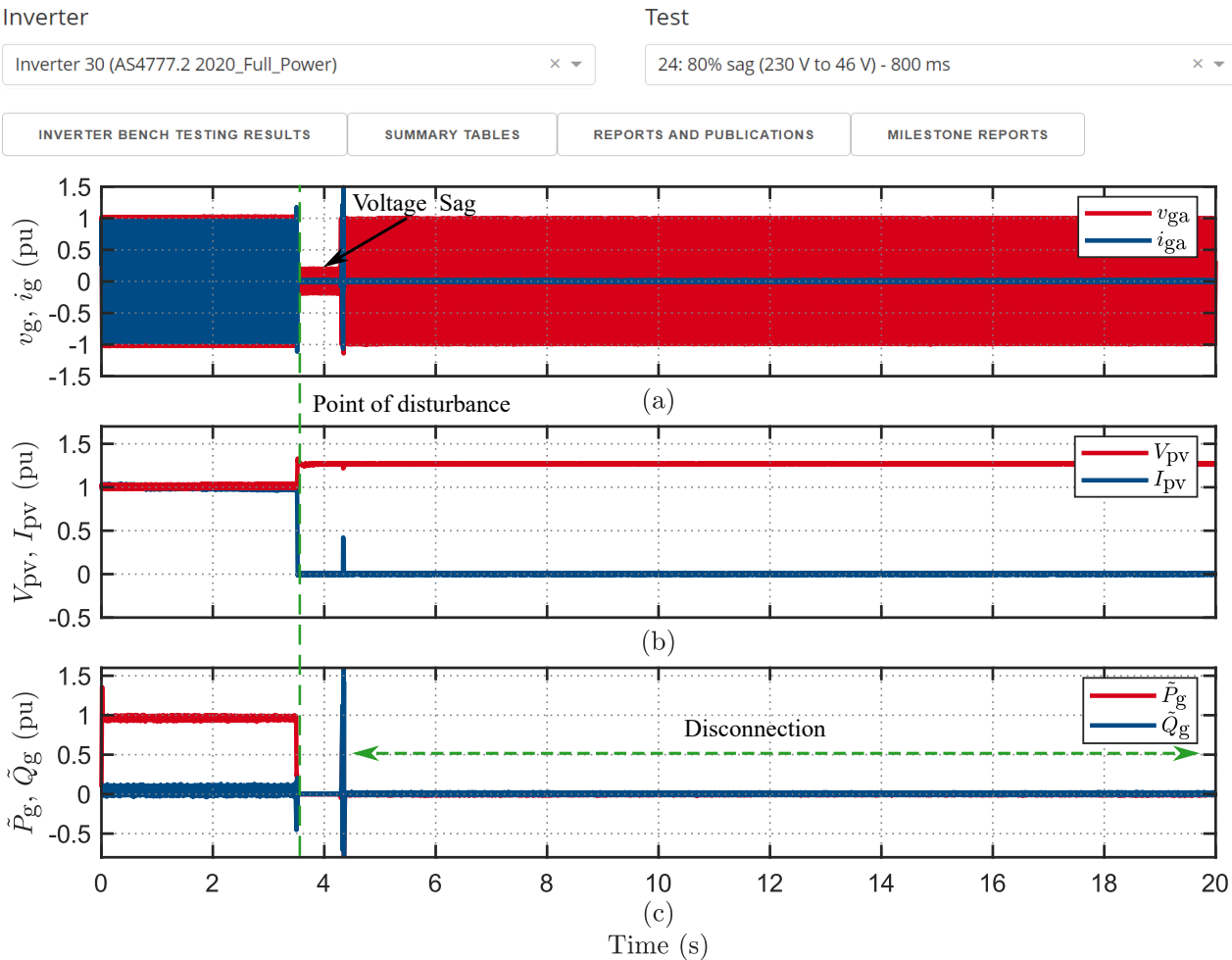
Summary

This report demonstrates that the power level of inverters results in different responses for particular tests. It supports the argument for conducting compliance tests at worst-case test conditions $P = 1pu$ rather than $P = 0.5pu$.

Inverter 30: Response at 100% power level

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Voltage Sag tests



Inverter 30: Response at 50% power level

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Voltage Sag tests

Inverter

Test

Inverter 30 (AS4777.2 2020_Full_Power)

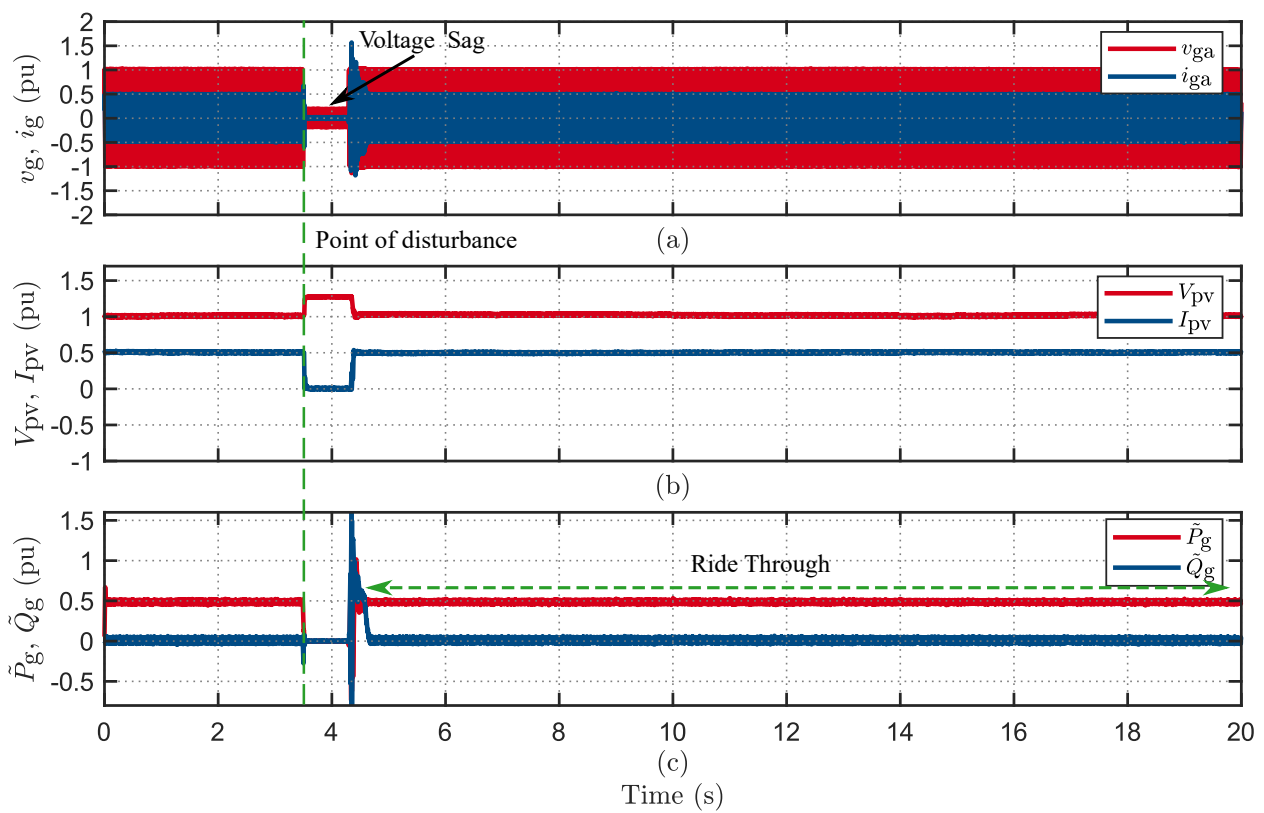
24: 80% sag (230 V to 46 V) - 800 ms

INVERTER BENCH TESTING RESULTS

SUMMARY TABLES

REPORTS AND PUBLICATIONS

MILESTONE REPORTS



Summary of inverter 30 at full and half power

inverter 30 (2020) Full Power

Duration (ms)	Voltage magnitude during the sag (p.u.)						
	0.8	0.7	0.6	0.5	0.4	0.3	0.2
80	ride-through	ride through	ride through	ride through	ride through	ride through	ride through
120	ride through	ride through	ride through	ride through	ride through	ride through	ride through
220	ride through	ride through	ride through	ride through	ride through	ride through	ride through
800	-	-	-	-	-	-	Disconnect

inverter 30 (2020) Half Power

Duration (ms)	Voltage magnitude during the sag (p.u.)						
	0.8	0.7	0.6	0.5	0.4	0.3	0.2
80	ride-through	ride through	ride through	ride through	ride through	ride through	ride through
120	ride through	ride through	ride through	ride through	ride through	ride through	ride through
220	ride through	ride through	ride through	ride through	ride through	ride through	ride through
800	-	-	-	-	-	-	ride through

Inverter 38: Response at 100% power level

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Voltage Sag tests

Inverter

Inverter 30 (AS4777.2 2020_Full_Power)

Test

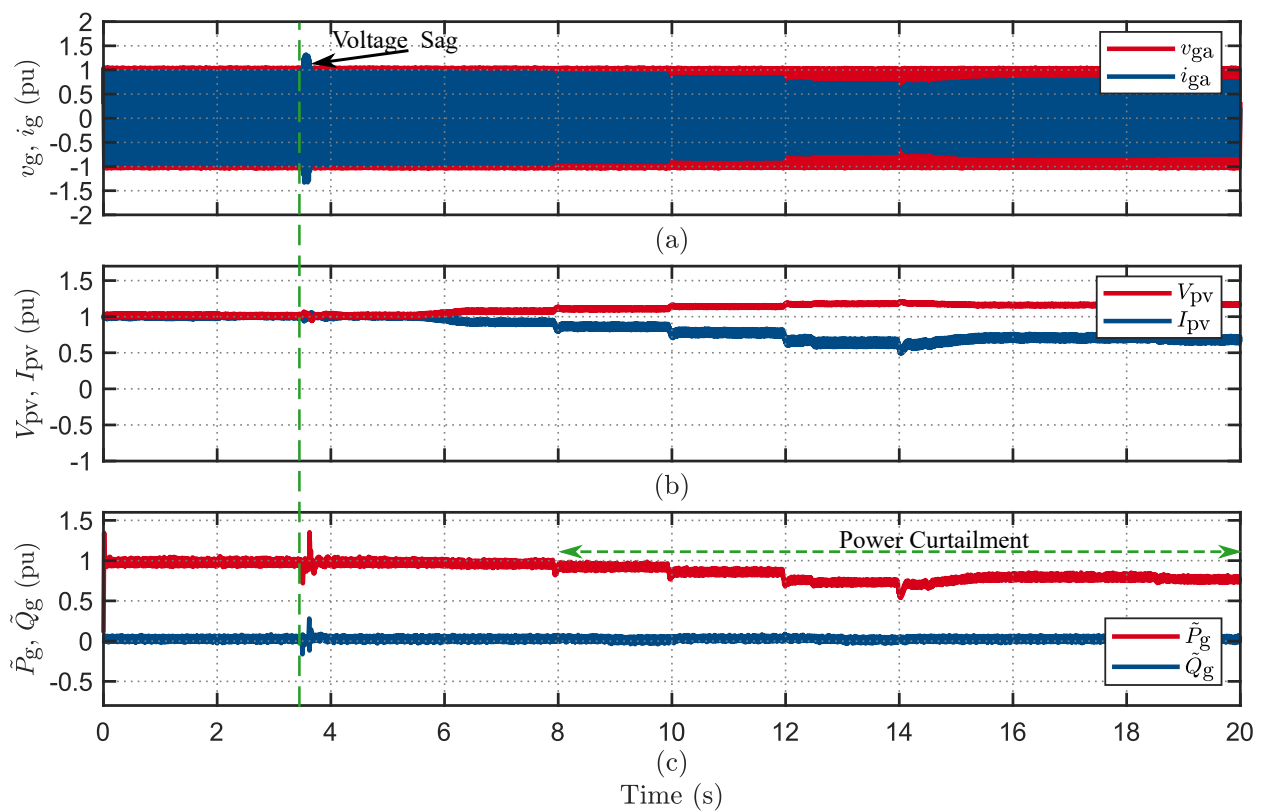
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Inverter 38: Response at 50% power level

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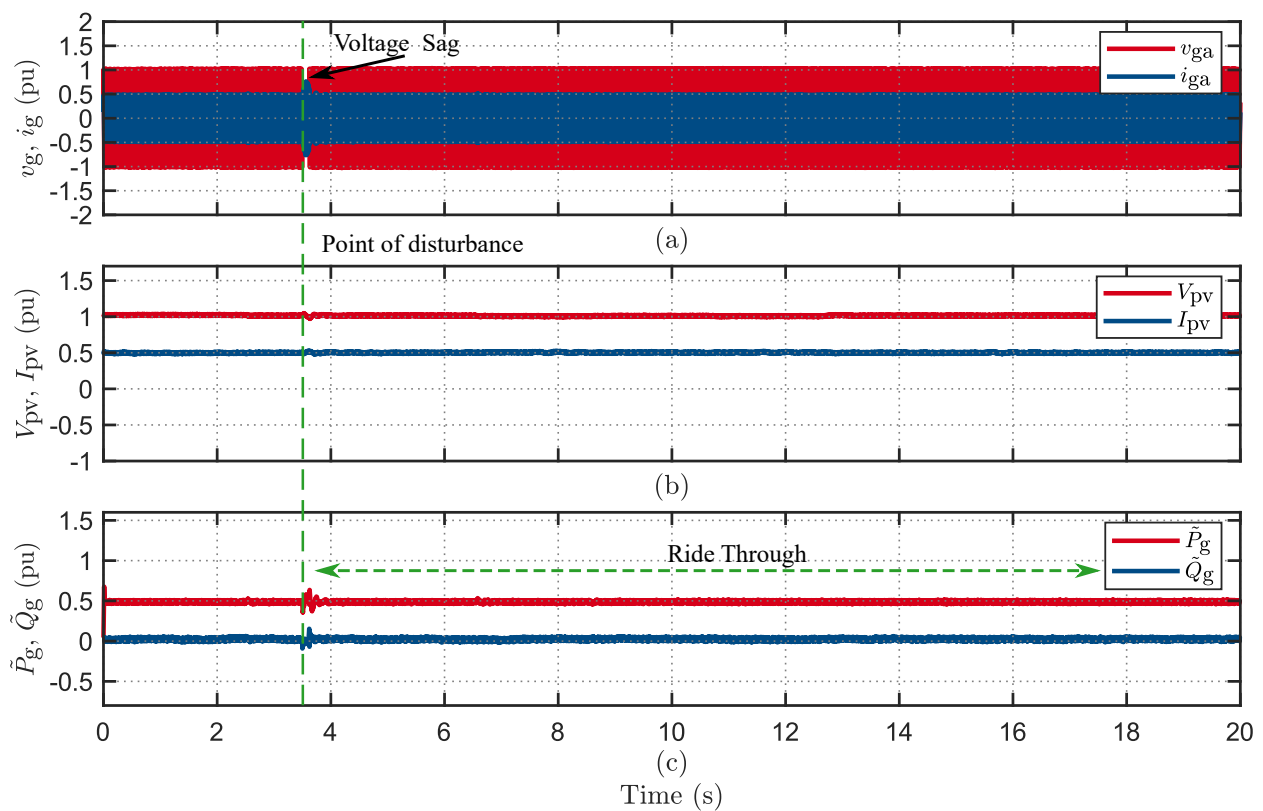
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Summary of inverter 38 at full and half power

inverter 38 (2020) Full Power

Duration (ms)	Voltage magnitude during the sag (p.u.)						
	0.8	0.7	0.6	0.5	0.4	0.3	0.2
80	ride-through	Power curtail	Power curtail	Power curtail	Power curtail	Power curtail	Power curtail
120	ride through	Power curtail	Power curtail	Power curtail	Power curtail	Power curtail	Power curtail
220	ride through	Power curtail	Power curtail	Power curtail	Power curtail	Power curtail	Power curtail
800	-	-	-	-	-	-	Power curtail

inverter 38 (2020) Half Power

Duration (ms)	Voltage magnitude during the sag (p.u.)						
	0.8	0.7	0.6	0.5	0.4	0.3	0.2
80	ride-through	ride-through	ride-through	ride-through	ride-through	ride-through	Power curtail
120	ride through	ride through	ride through	ride through	ride through	Power curtail	Power curtail
220	ride through	ride through	ride through	ride through	ride through	Power curtail	Power curtail
800	-	-	-	-	-	-	Power curtail