Confidential Report: Tested Results of EQB MIM & Grid Isolation Relay

EQB MIM has been independently tested for safety, heat rise mitigation and long-life reliable operations by; i) Underwriters Laboratory (UL listing below), ii) all three California IOU's (approved unanimously), and iii) Exponent Labs to the highest safety, heat rise, and reliability standards.

EQB MIM complies with CA mandated (Administrative Law Judge "ALJ" Decision & Order: D. 21.01.018) for Grid Isolation and safe Rule 21 Grid Interconnection requirements for Inverter Interlocking with a Grid Isolation Relay. Every new and proposed meter collar adapter "MCA" requesting approval and interconnection to the California Grid will be required to demonstrate compliance with these same UL 414 SB & SC and CA IOU E-5194 testing criteria. Further, any MCA that seeks approval for use, installation, and interconnection to the California Grid will violate several of the NeWorld EQB Granted Patents listed below[1].

1) **UL's Direct & Successful 414 SA, SB, & SC testing of 20 EQB MIM units: Confidential results**

   Direct UL Testing of Heat tolerance on 20 EQB MIMs with Grid Isolation relay under full 200 Amp load by direct UL testing revealed that EQB MIM naturally and passively cooled the attached Meter socket and Smart Meter by an average of 15°F, using only natural passive cooling and without relying on fans or unsafe technical gimmicks.

   Direct UL Testing of Electric Reliability on 20 EQB MIM: More than 6,000 Cycles of continuous Grid Isolation Relay operation every 9 seconds under full 200 Amp load. Equivalent to 16 years of daily relay activation and operation under full 200Amp Load....no reduction in reliability and no failures occurred on any of 20 UL tested EQB MIMs.

   Closure of Grid Isolation Relay into a 10,000 Amp unprotected short circuit (UL hired Schneider labs for testing). No failures or reduction in reliability occurred in any of the UL tested EQB MIMs.

   Closing of Grid Isolation Relay into a breaker protected 25,000 Amp short circuit. No failure of any tested EQB MIM. Resulting UL Listing from these and all other direct UL 414 SB and SC testing.



[1] **US Granted Patents;** #10,916,940, #10,951,036, #10,998,724, #11,108,232, #11,1.14,853, #11,251,613, #11,251,614, #11,374,406, #11,476,666, #11,502,513, #11,502,514, #11,502,515, #11,777,311. *Additional Patents are Pending*

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2) **PG&E's E-5194 attempt at destructive testing of EQB MIM. Demonstrated that EQB MIM is safer, more reliable, and more heat resistant than the Smart Meter (and other MCAs). Confidential Information**

The following E-5194 testing by CA IOUs will be required of every proposed MCA for installation, use and Grid interconnection approval in California.

Overvoltage and Overcurrent Test conducted at PG&E San Ramon, CA Test lab conducted under ALJ D. 21.01.018 mandate and CPUC/IOU agreement E-5194. Testing destroyed three PG&E Smart Meters without any negative impact on the EQB MIM. Pictures below

PG&E's Excess heat "hot socket" test, conducted by Exponent Labs, Inc. in Menlo Part, CA under ALJ D. 21.01.018 mandate and CPUC/IOU agreement E-5194. Tests conducted at up to 710°F. heating of the Meter Socket demonstrated safest operation of the EQB MIM whereas the connected Smart Meter(s) (connected to EQB MIM) internal components, connectors, and relays melted and fused together. In all test instances, these high heat "Hot Socket" tests rendered the PG&E Smart Meters unusable. Pictures below and a copy of the PG&E contracted Exponent Labs test available under MNDA.

NEWORLD ENERGY

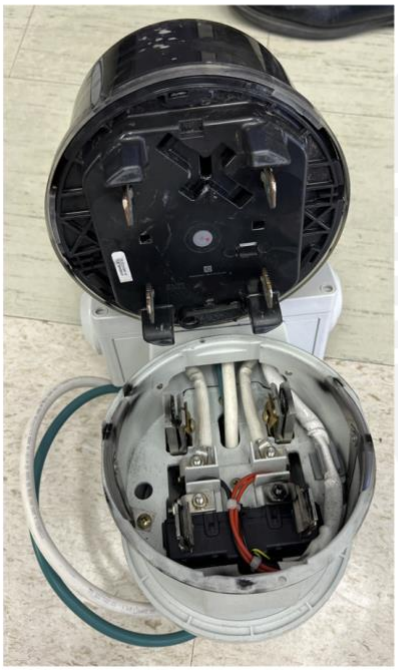
ENERGY QUARTERBACK™

PG&E High Voltage Test

EQB Exceeds Smart Meter Safety during Destructive Testing







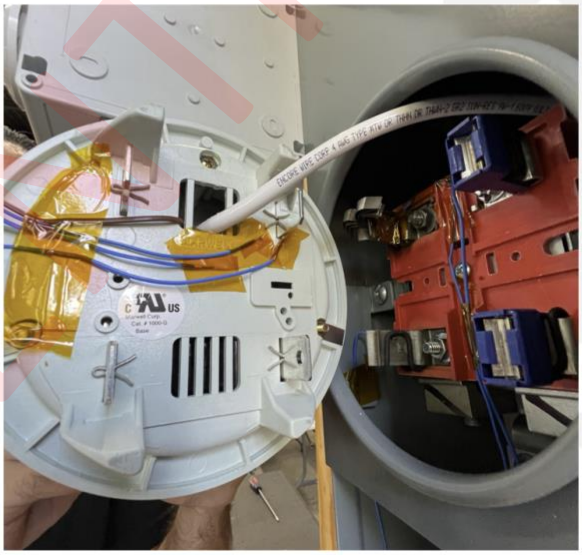
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PG&E Extreme Heat Test

PG&E Hired Exponent Labs for Destructive Hot Socket Test

- EQB passed with 100% function, while smart meter internals melted & failed
- Energy Quarterback naturally cools the smart meter & panel without fans
- EQB exceeds Smart Meter safety





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US Patents: # 10,916,90, # 10,951,036, # 10,998,724, # 11,108,232, # 11,114,853, # 11,251,613, # 11,251,614, #11,374,406, #11,476,666, #11,502,513, #11,502,514, #11,502,515, #11,777,311

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3) **Joint California IOU witnessed testing of EQB MIM interlocking to comply with and allow Rule 21 Grid Interconnection compliance.** PG&E, SCE, and SDG&E witnessed Rule 21 CA Grid Interconnection approval testing at SolarEdge labs in Milpitas, CA conducted under ALJ D. 21.01.018 mandate and CPUC/IOU agreement E-5194. All testing revealed that EQB MIM complied with the three (3) CA IOU Rule 21 safety tests for approved interconnection to the CA Grid. This test is required of any inverter that is used in conjunction with any MCA. The CA IOU's permit NeWorld to submit videotaped results of this essential Rule 21 Grid Interconnection test for approval of the FranklinWH, SolarEdge, LGE, and other battery inverters.

4) Johnson Electric: Confidential Testing results

Johnson Electric was selected by NeWorld Energy to build the patented Grid Isolation relay for the EQB MIM after extensive heat rise and reliability testing of relays from the top US, Asian, and European relay OEMS.

Heat tolerance of EQB MIM 200 with Grid Isolation relay at Johnson Electric Dresden, Germany labs under full 200 Amp load shows 18°C cooling with natural and passive heat conduction and without requiring fans for cooling.

Cycles of Grid Isolation Relay operation under full 200 Amp load > 6,000 cycles of operation with no reduction in performance or reliability. This replicates ULs 414 SB safety and reliability testing that is designed to stress Daily full power Grid Isolation relay operations for the equivalent of at least 16 years of operations. NOTE: *this test does not test the Grid Isolation Relay to its point of failure.*

Cycles of Grid Isolation Relay operation under no load conditions (TEST) > 30,000 operations that is equivalent to > 40 years of daily operations without reduction in mechanical performance or reliability

NOTE: Johnson Electric has manufactured and sold over 4 million 200Amp relays to Electric Utilities since 2012 with zero failures and no returns or malfunctions. The Johnson Quattroflow relay is manufactured exclusively for NeWorld Energy under granted US and International Patents

Johnson Electric Germany **internal test plan**

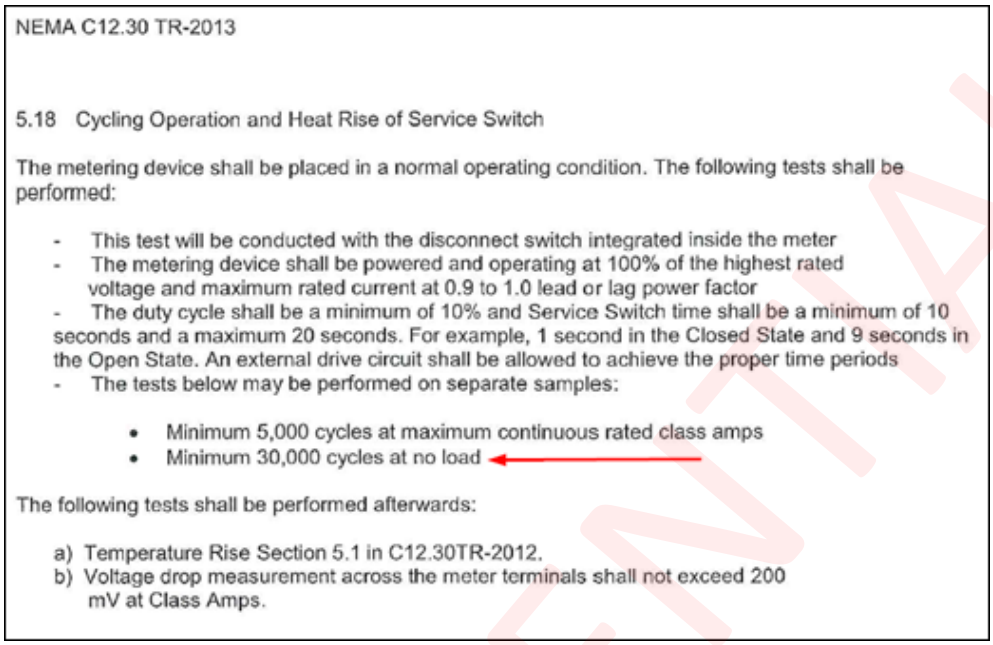
confidential

Test Status	Test Results
Completed	Pass
In progress	Warning
Pending	Fail
Cancelled	

Application: Microgrid Isolation Switch
Project Name: Quattroflow
Project Number: P222585
Customer: Neworld Energy
Product Type: Relay
Product Code: 1622-DRB0034

Test Matrix **Results**

Tests Item		Pass Criteria and Measurement Method	Test Requirements / Standard / Drawing		Test Location	Reference Number	Test Finish Date	Test Status	Test Results	Test Report	Remark
3	Electrical and Mechanical Endurance Requirements										
3.1	electrical endurance	> 6,000 cycles @200A PF0.8	JE	1622-DRB0034	JE DD	OA-VD23-353-02	07.02.2023	Completed	Pass	LB-TD23-073	
3.2	mechanical endurance	>30.000 cycles at no load		NEMA C12.30 TR_2013; §5.18	JE DD	OA-VD23-353-02	03.07.2023	Completed	Pass	LB-TD23-073	
4	Environmental and Thermal Requirements										
4.1	Temperature Rise	Apply a continuous 200A current through the contactor, until thermal equilibrium status is reached. Record maximum		UL414SB12.2	JE DD	OA-VD23-353-02	03.07.2023	Completed	Pass	LB-TD23-073	
4.3	Effect of Operating Temperature	Cycle the temperature between +70°C and -30°C for 168 hours. Measure the operate and release Voltage at the higher and lower temperature extremes. Contacts must not change state (when	ANSI	C12.1 - 4.7.3.16 Test 30	JE DD		13.09.2023	Completed	Pass	LB-TD23-333	
4.5	Accelerated life test	> 1000 h / 85°C / 85% rh		internal spec.	JE DD	OA-VD23-353-02	03.07.2023	Completed	Pass	LB-TD23-073	
5	Shock and Vibration Requirements										
5.1	Mechanical Shock	This test shall be conducted as described in IEC 60068-2-27 revision 1987 based on the following conditions:	ANSI	C12.1 - 4.7.3.18 Test 32	SCUS	OA-VD23-281	19.09.2023	Completed	Pass	SCUS	
5.4	Mechanical Vibration	This test shall be conducted as described in IEC 60068-2-6 with the following conditions: - The metering device shall not be operating and shall be without packaging. - The metering device shall be rigidly mounted to a test fixture and the reference point for the control accelerometer shall be attached to the text fixture.	ANSI	C12.1-2014, Section 4.7.3.20 Test 34	SCUS	OA-VD23-281	19.09.2023	Completed	Pass	SCUS	



NEMA C12.30 TR-2013

5.18 Cycling Operation and Heat Rise of Service Switch

The metering device shall be placed in a normal operating condition. The following tests shall be performed:

- This test will be conducted with the disconnect switch integrated inside the meter
- The metering device shall be powered and operating at 100% of the highest rated voltage and maximum rated current at 0.9 to 1.0 lead or lag power factor
- The duty cycle shall be a minimum of 10% and Service Switch time shall be a minimum of 10 seconds and a maximum 20 seconds. For example, 1 second in the Closed State and 9 seconds in the Open State. An external drive circuit shall be allowed to achieve the proper time periods
- The tests below may be performed on separate samples:

  - Minimum 5,000 cycles at maximum continuous rated class amps
  - Minimum 30,000 cycles at no load

The following tests shall be performed afterwards:

a) Temperature Rise Section 5.1 in C12.30TR-2012.
b) Voltage drop measurement across the meter terminals shall not exceed 200 mV at Class Amps.

5) Competitive Positioning Notes:

Tesla Note: TESLA does not have an Underwriters Lab Tested UL 414 SB or SC UL Listing…Their NRTL compliance of UL 414 SB from Intertek demonstrates compliance with UL 414 SB but not direct and extensive Underwriters Lab testing and UL Listing of the TESLA Backup switch. Moreover, the TESLA Backup switch currently requires an unreliable miniature fan in attempt to cool unsafe heat rise in its Backup switch. Additionally, it is currently being proven in the field that the TESLA Backup switch generates excess dangerous heating and heat rise issues when operating under typical loads in Southwest US installations. The reason is that the TESLA Grid Isolation relay performs double duty as a "temperature sensing Grid Isolation relay" to mitigate its unsafe heat rise. This method forces isolation and disconnection of a home from the Grid whenever the backup switch generates temperatures that are both typical and unsafe. This unusual heat rise "mitigation" by the TESLA Backup switch is the source of numerous customer complaints in Southwest U.S. and TESLA addresses these customer complaints by requiring their more costly switchover to the TESLA Gateway (MID) Grid Isolation product. Other battery manufacturers have confirmed that TESLA's Backup switch is also operating at dangerously elevated temperatures in the US Southeast as well as the US Southwest. Conversely, the EQB MIM has been proven by UL Lab testing and SDG&E testing to passively Cool the meter and Meter socket.

Note 2: ConnectDER merely makes an RMA device with branch metering. The Connect DER MCA does not comply with CA CPUC and IOU mandates, orders, and agreements (ALJ D 21-01-018 and E-5194_ for safe Rule 21 interconnection to the California Grid for Grid Isolation with Inverter Interlock (Patents on this are exclusively granted to NeWorld Energy).

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