

# PACIFIC VALLEY SCHOOL

DATE	DESCRIPTION
8/9/24	Helped William Miller Solar with replacing MATE3 controller, updated firmware, William recalibrated AC input voltage that may have fixed the generator issue. *Originally Mate controller was reading the AC input at 268V AC, but reading power directly from the generator showed 246V AC.
10/14/24	found out that last few weekends the system has shut down and it probably from error codes stating the generator had an over voltage
10/16/24	After talking to battery manufacturer. Changed settings in Mate controller; set "MUST RUN" charge times for generator; set Charge Controller "ABSORB" voltage to 60.1V and for 6.6 Hrs; set Inverter "ABSORB" voltage to 60 and for 6.6 Hrs
10/19/24	-checked generator and found it had faulted out with the 1446 Error code on the generator itself. -turned on generator manually from solar Mate3 controller and the generator only ran for a few minutes and then faulted and turned off. I noticed that when the inverter fan's kicked on, the generator faulted out right after. I read power on the generator output conductors at the manual transfer switch inside the generator shed and noticed that the generator faulted out with a 70a draw. -programmed MATE3 inverter "AC INPUT AND CURRENT LIMIT" rom 30a limit down to 20a
10/23/24	- Changed mate programming so generator has a three minute warm-up and a three minute cool down.
10/29/24	- Generator had faulted this morning so I went up there to collect our power monitor.
10/30/24	Talked to Bill at San Luis powerhouse about generator and showed him our graphs from our power monitor
11/8/24	-met with SLO Powerhouse and tested generator with load bank *isolated from the inverter. The test proved the problem may not be in the generator but at the inverter equipment. * note.....generator had external voltage regulator before it's rebuild and wiring in the control box has been warn -troubleshoot generator problem in the inverter room. Tried to upgrade the inverter firmware and had difficulties. Investigated how to isolate inverters to try and find our problem.
12/11/24	-update for notes. Using the temporary old UPS backup, finding out that the internet turns off when the generator stops and the inverters drop the AC input. -Xerox machine has been faulting out over the past few months due to surge error. On 12/5/24 Xerox had 20 fault events. During the morning fault events, the online monitoring was offline (from 1:11am-11am) meaning the internet was off at that time. -new UPS battery backup seemed to fry at 10:30PM
12/20/24	-helped install new battery backup for communications equipment to replace the one that had fried due to surging -continued troubleshooting power quality issue. With the new battery backup not installed and the generator running, found that the system was working properly with an 80amp draw which before would've faulted the generator. Once we plugged in the battery backup and got it powered up, the generator faulted with a 70amp draw and a voltage spike of about 300volts. We tried again and the generator didn't fault, but the inverters dropped the generator after noticing voltage spikes. There's reason to believe that there may be an issue with the communications equipment and we need to still investigate that.

12/23/24	<p>-continued troubleshooting power quality. Found that battery backup does not seem to be the problem because the generator is still faulting even with the UPS unplugged and off the system. I couldn't find a way to consistently aggravated the generator fault.....it seems like it's at random. I found this out by changing settings, multiple ways, and ran the generator through all these to see if there was a common point in which the generator faults.....no luck.</p> <p>Things I tried was....</p> <p>-unplugged loads on UPS battery backup, changed inverter MATE settings so AC input charge rate to 30a per inverter, and found (with voltmeter on the "AC input" breaker at inverter) a voltage spike of 267v with a 14KW+/- load</p> <p>-tested generator with battery UPS breaker off and found (with voltmeter on the "AC input" breaker at inverter) a voltage spike of 259v @ 16KW load</p> <p>-turned of slave inverter "GEN IN" breaker and still had voltage spike</p> <p>-changed module control on each inverter to "both" and still had voltage spike</p>
12/27/24	<p>- Continue troubleshooting power surging.</p> <p>-turned off individual sub panel circuit breakers in IT server room and generator still faulted</p> <p>-turned off PV and PV charge controller input breakers and the system voltage spiked and the inverter dropped the generator, but did not fault</p> <p>-turned off slave inverter and inverter dropped generator with 9KW load on generator, but did not fault. Second attempt resulted in no voltage spike</p> <p>-turned off master inverter and no fault with 33A generator draw</p> <p>-converted all inverters back to normal and ran generator. Noticed the inverter relays were "clicking" a lot and the inverters was not accepting the generator input. I turned the generator off and then back on and found the generator voltage was fluctuating all over the place and faulted.</p> <p>-turned off main breaker on the generator and found the generator voltage spiked and faulted</p>
1/2/25	<p>-unplugged generator battery charger. Changed inverter setting so AC INPUT CHARGING was at 30a per inverter. Generator faulted with 16KW load. Measured on the AC INPUT breaker at inverter from each hot to neutral and caught 131.6V (L1) and 132v (L2) when when voltage spiked.</p> <p>SLAVE INVERTER.....</p> <p>A) turned off master inverter and only had slave inverter on and changed module control setting to LEFT and found 240-242v with 4KW load with no spike</p> <p>B)on slave inverter changed module control setting to RIGHT and found 240-242v with 4KW load with no spike</p> <p>C) on slave inverter changed module control setting to BOTH and found 240-242v with 4KW load with no spike</p> <p>MASTER INVERTER</p> <p>A) on master inverter changed module control setting to LEFT and found 240-242v with 4KW load with no spike</p> <p>B) on master inverter changed module control setting to RIGHT and found 240-242v with 4KW load with no spike</p> <p>C) on master inverter changed module control setting to BOTH and found 240-242v with 4KW load with no spike</p> <p>-put everything back to normal and disconnected generator start leads at inverter and turned on generator ON manually and generator faulted with voltage spike</p> <p>*noticed that the generator display screen read 20a draw on each leg, but at the MATE controller display screen read a generator draw of 14KW which I figured was a 58a +/- draw on each leg</p>