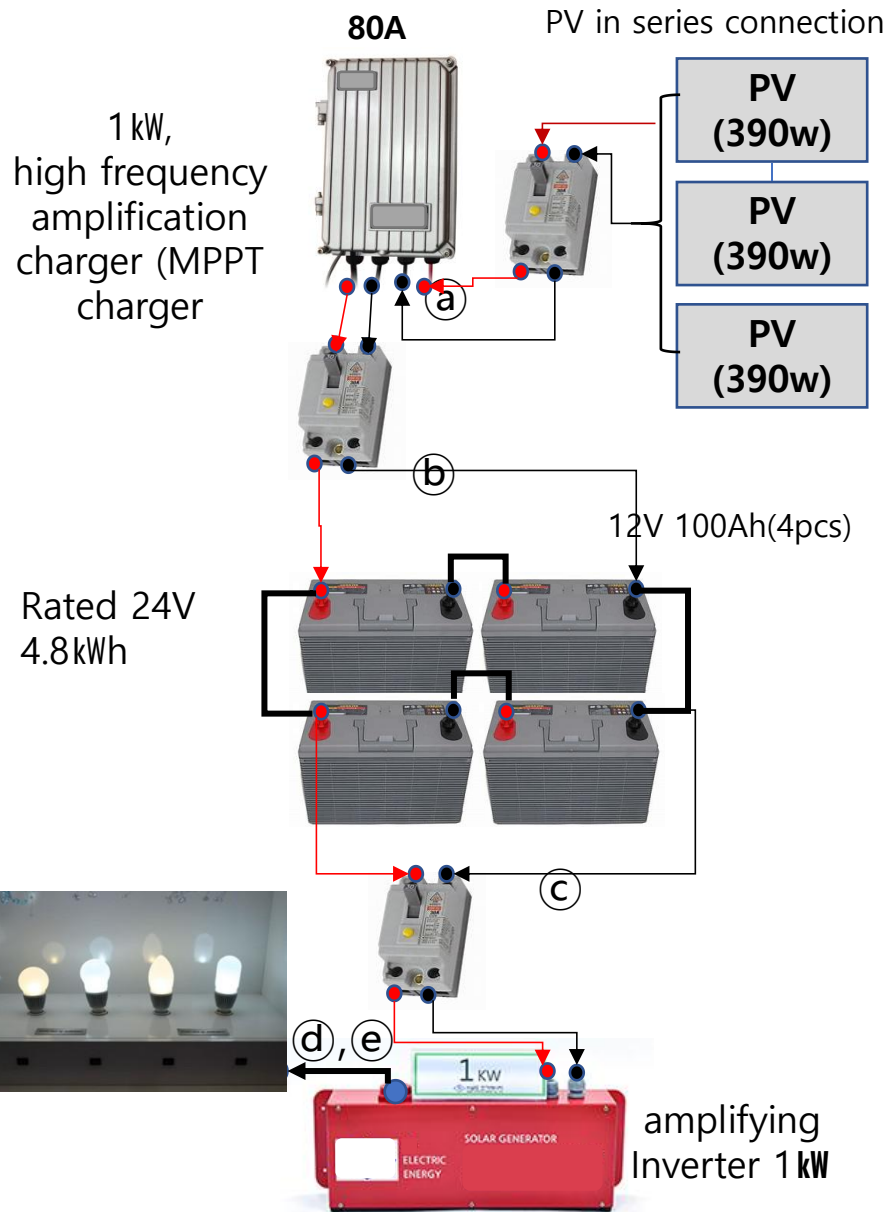


1. Generation Test of 1kW solar LLSS-system

Pb(gel)



The Solar Generator System Setup

3 no. PV solar panels á 390 W

1 amplifying MPPT (Maximum Power Point Tracker) charger/regulator

4 no. 100 Ah Pb-gel batteries – 2 in series, 2 in parallel in all 200 Ah, 24 V

1 no. High Frequency amplifier and inverter, single phase, 220 V

1 no. 2 000W industrial heating blower.

What are we going to test and verify?

Voltage and current from the solar cells

The amplifying effect of the MPPT control unit

Battery voltage

Power consumption of the load (fan or lamps)

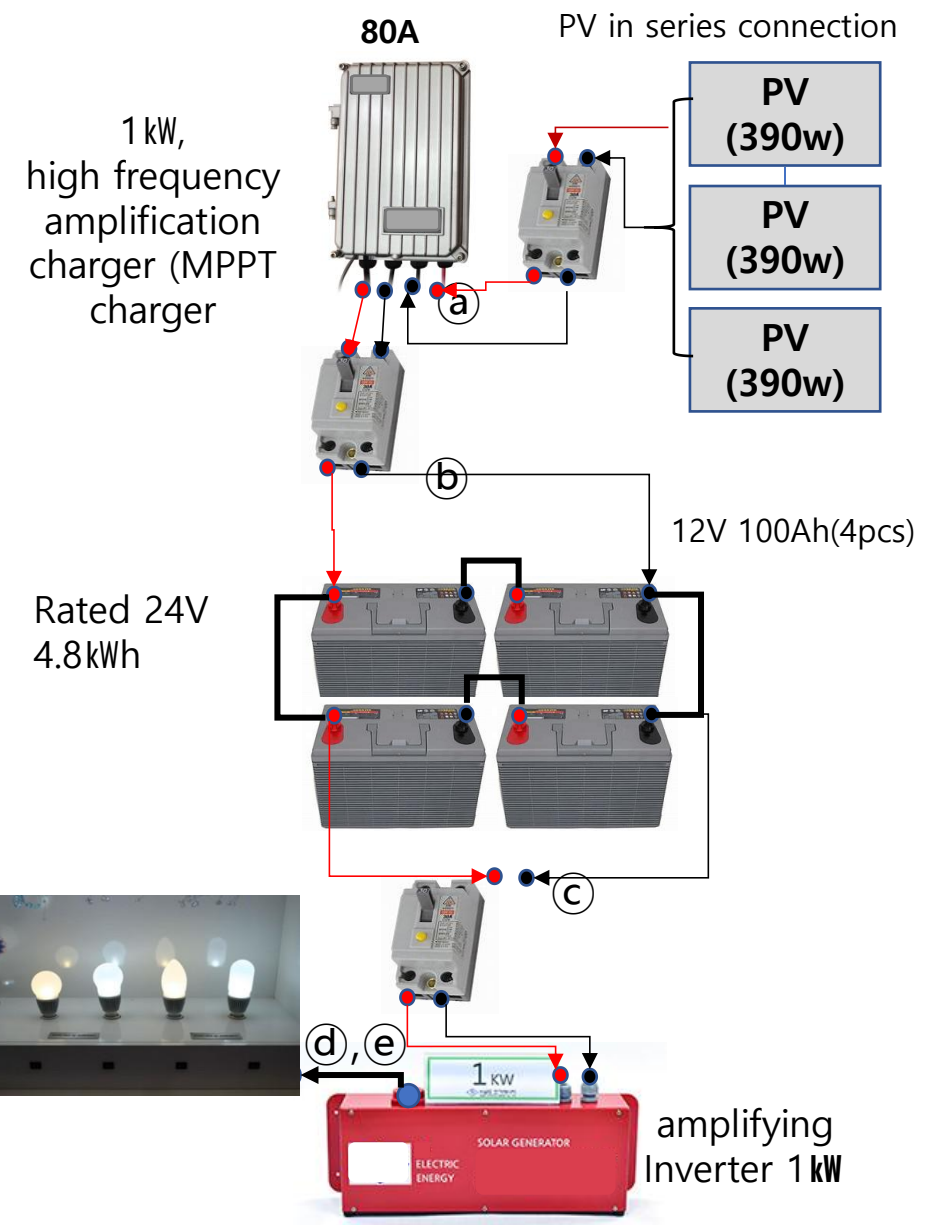
i.e. power delivered from the solar cell generator

Expected result

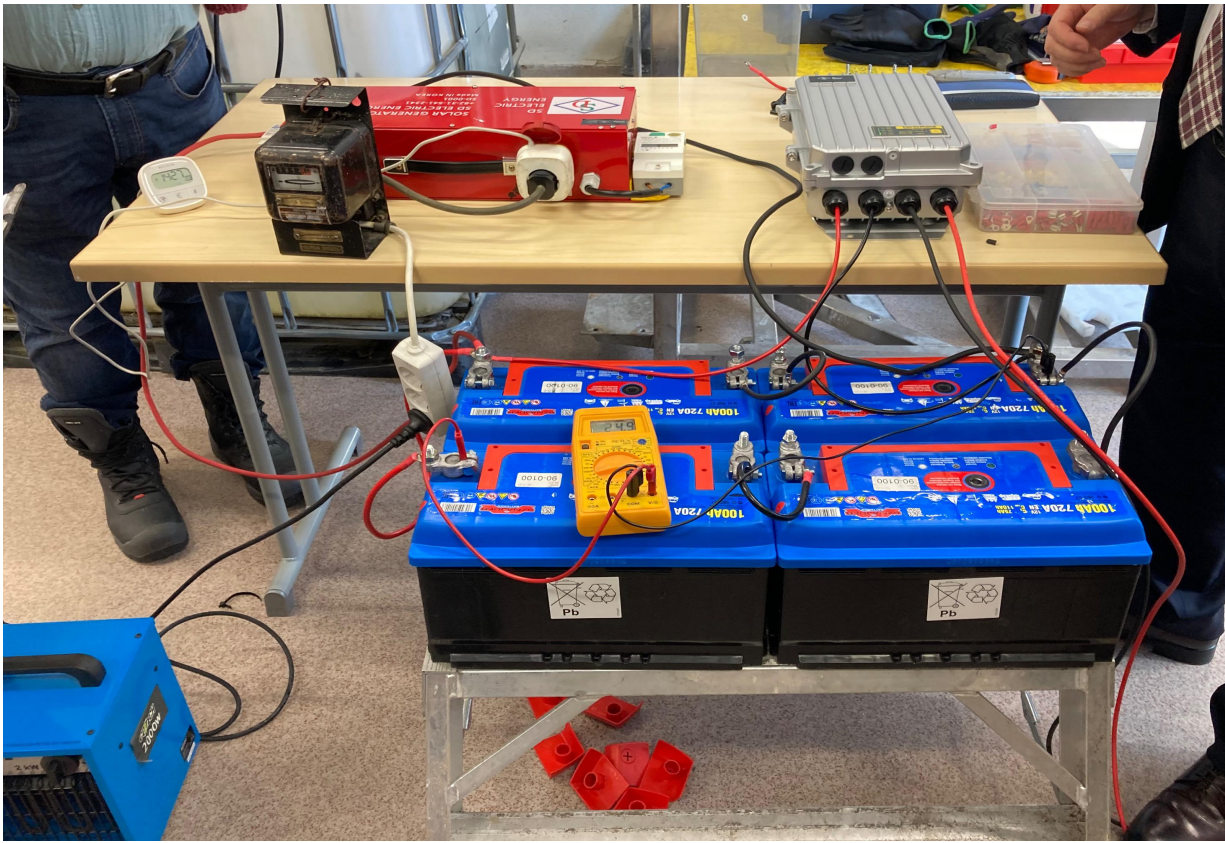
That the photovoltaic generator should be able to generate 3-4 times more energy than a traditional photovoltaic system

1. Generation Test of 1kW solar LLSS-system

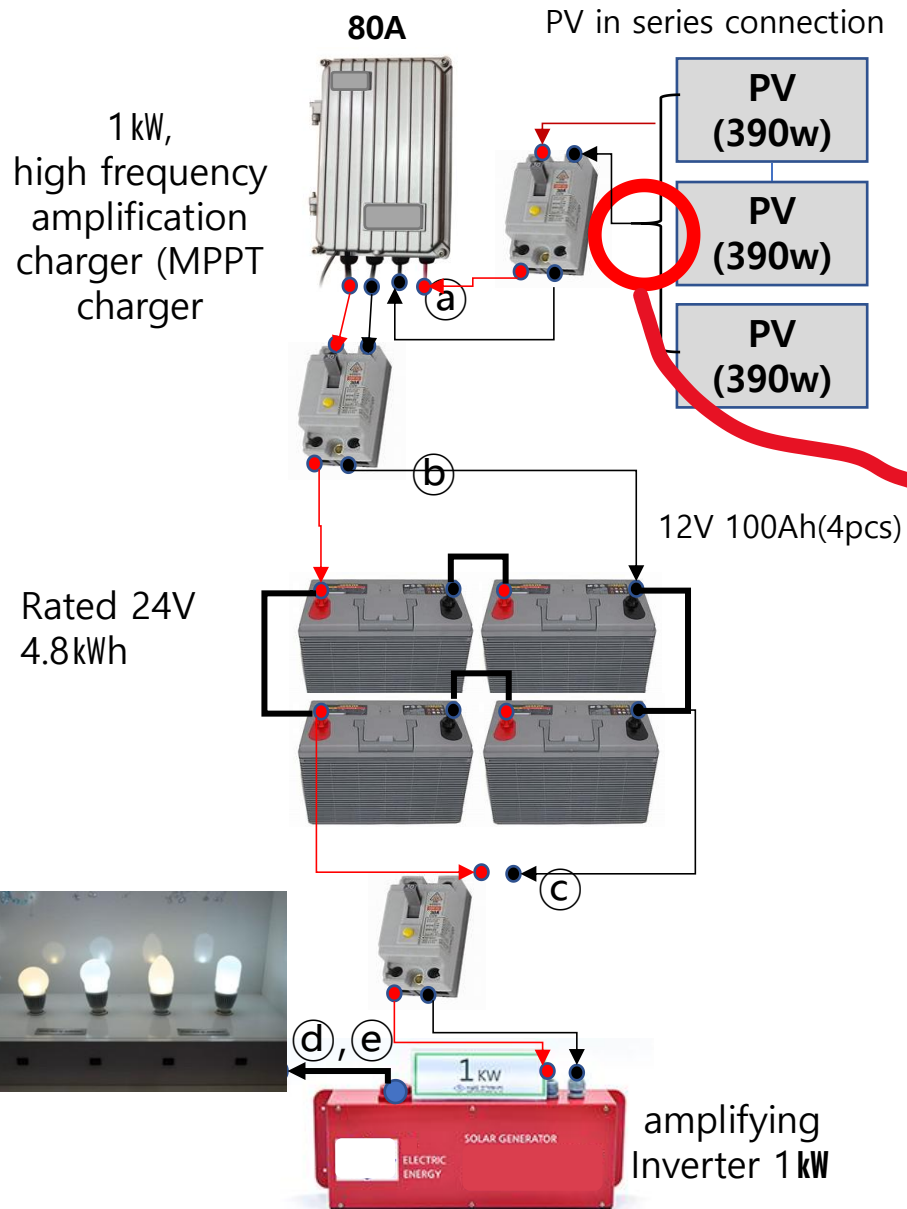
Pb(gel)



The setup of the Test Bench

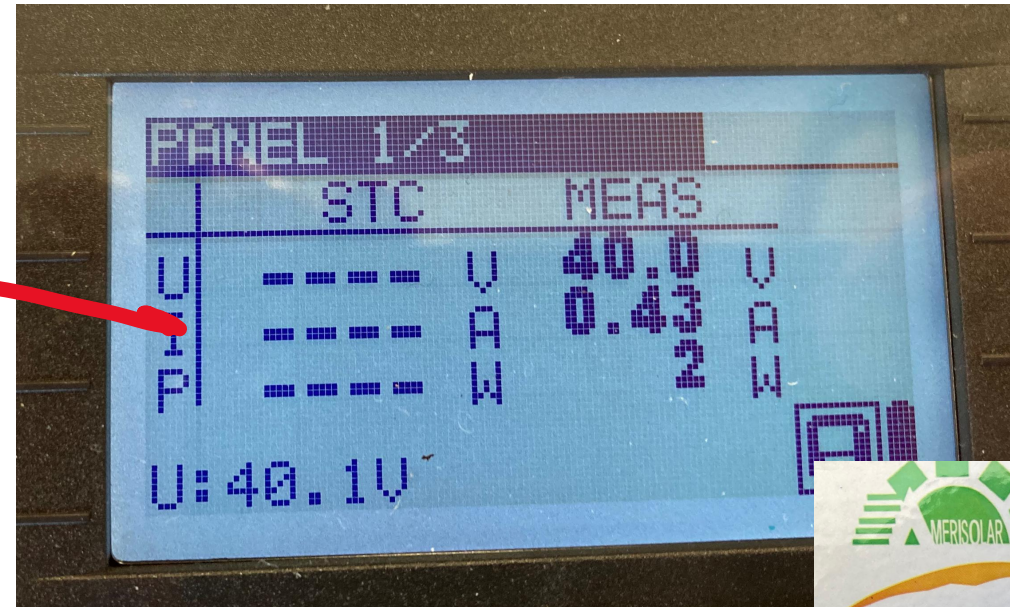


Generation test (1kW solar system)



Measurement at the input point on the MPPT charger

- disconnected the input cables to the MPPT
- Measurement only on the output of the solar panels



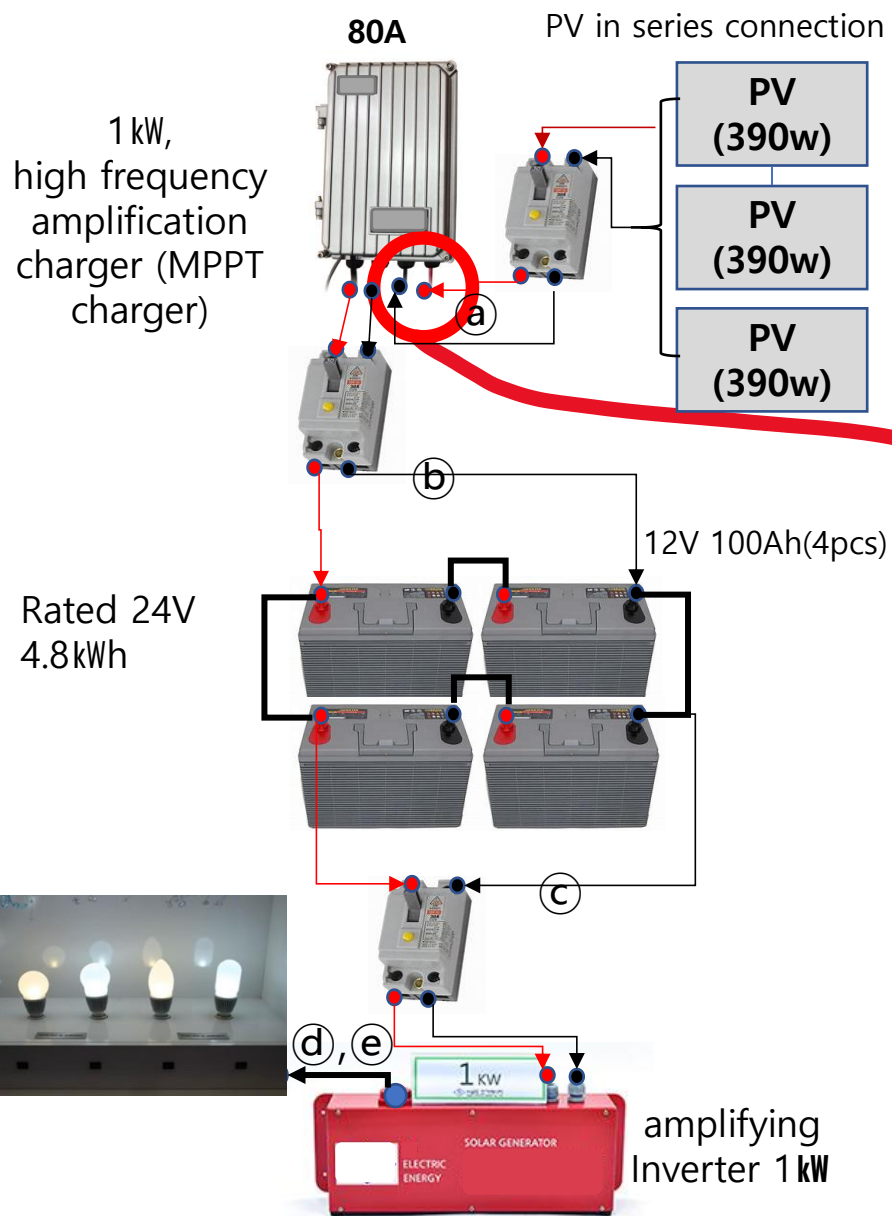
Measurement at the output point gave:

- 40 V = OK
- 0.43A = low, but OK
- 2 W from the solar panel
- normal at sunset

 AS-6M120-HC-390W PERC BLACK	
Maximum Power (Pmax)	390W
Open-Circuit Voltage (Voc)	42.4V
Short-Circuit Current (Isc)	11.58A
Maximum Power Voltage (Vmp)	35.4V
Maximum Power Current (Imp)	11.02A
Maximum System Voltage	1500V
Maximum Series Fuse Rating	20A
Safety Class	Class II
Nominal Operating Cell Temperature	43±2°C
Weight	20kg
Dimensions	1756×1039×35mm
All technical data at standard test condition (STC) (1000W/m², 25°C, AM1.5)	

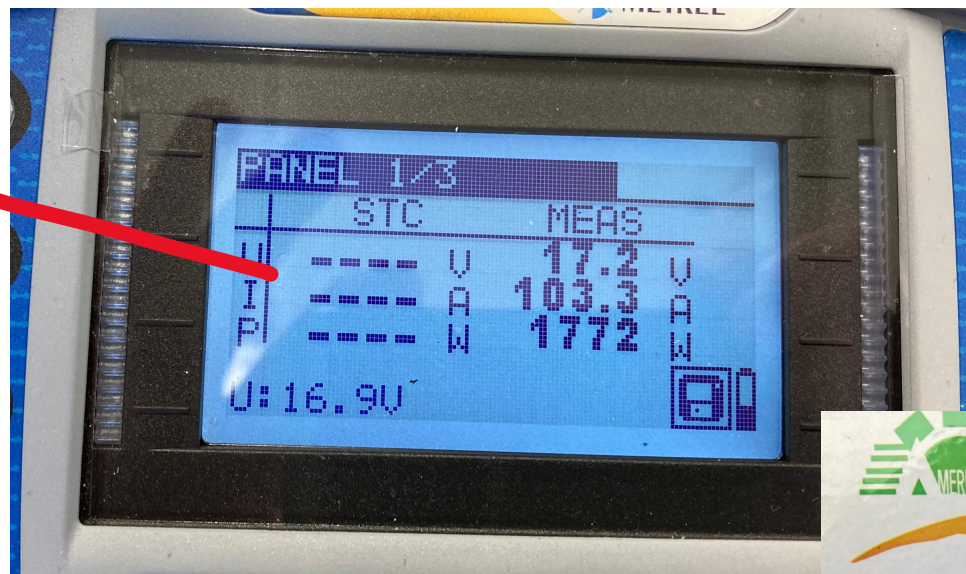
1. Generation Test of 1kW solar LLSS-system

Pb(gel)



Measurement at the input point of the MPPT charger

- 3 PV panels gave too much power
- we then disconnected two panels
- incoming voltage should be 35.4V

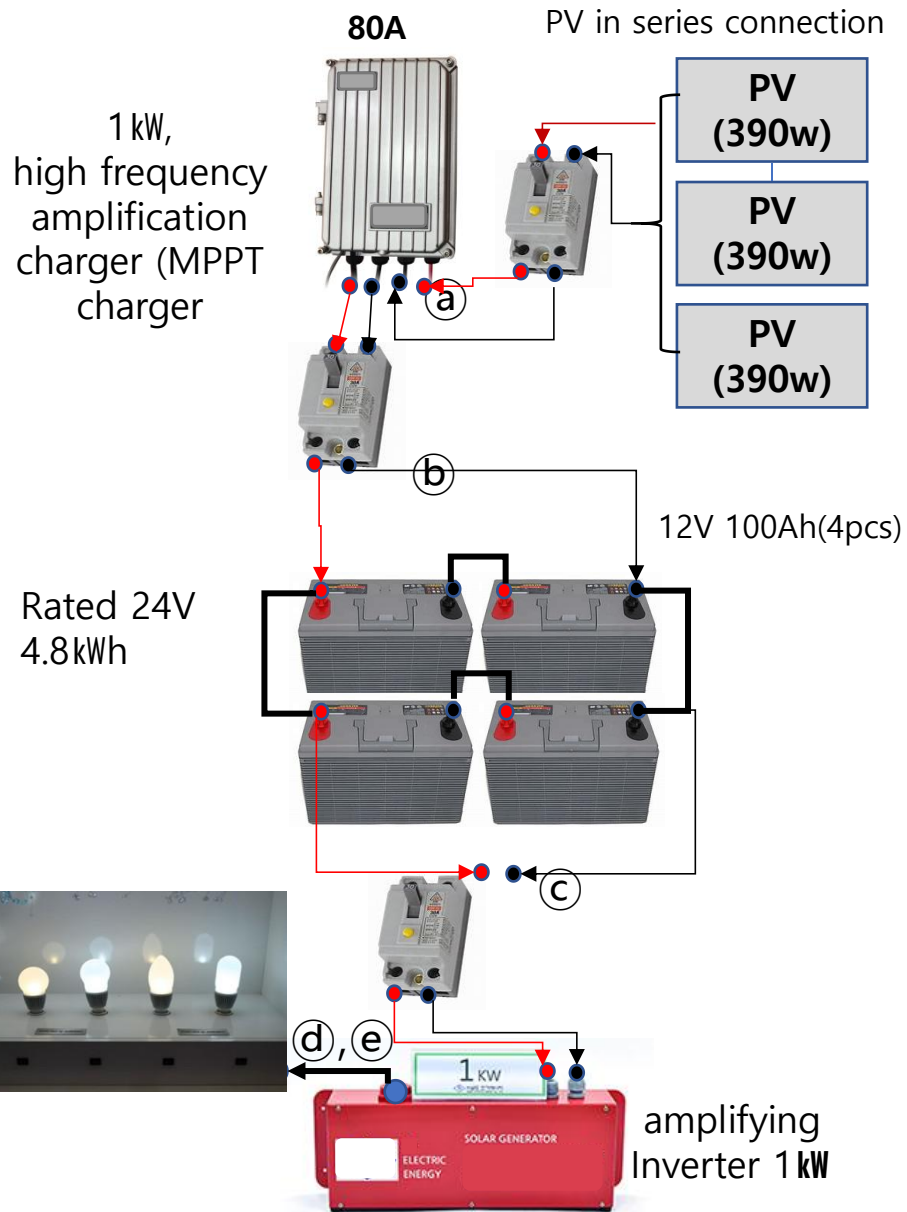


Measurement at the input point:

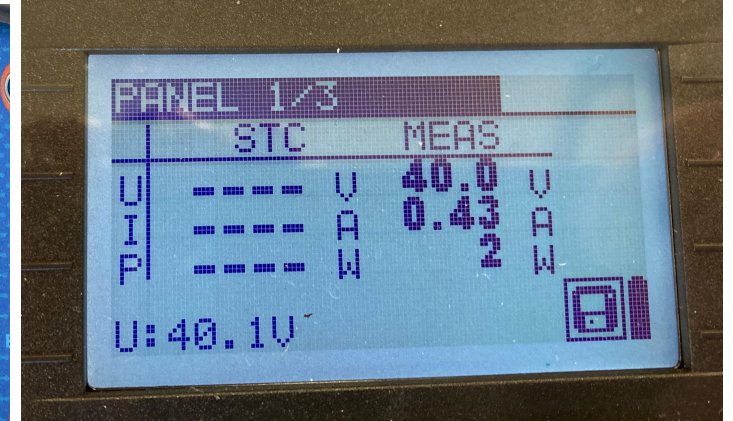
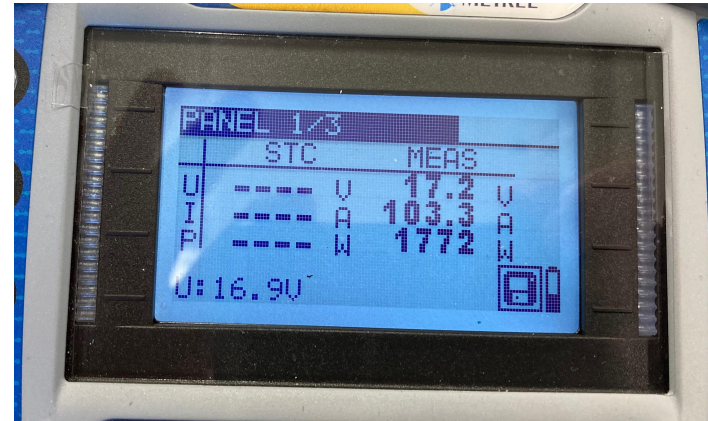
- 17V instead of 35V
- 103A instead of 11A
- 1,772 kW from a single solar panel ??
- what is going on?

MERISOLAR AS-6M120-HC-390W PERC BLACK	
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Generation test (1kW solar system)



Measurement at the input point on the MPPT charger
What has happened?



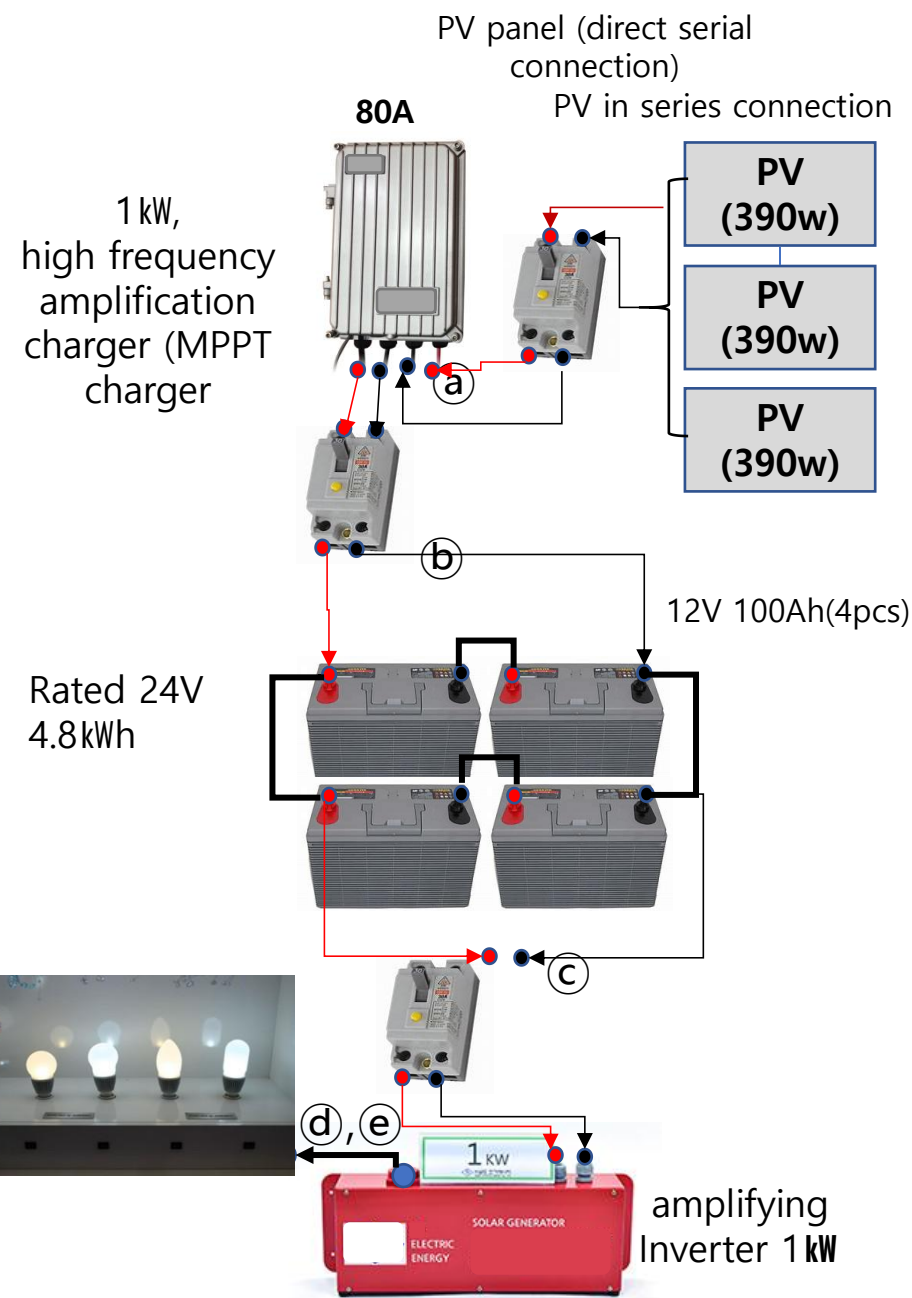
Conclusion:

- MPPT frequency amplification charger has amplified the power (kW) you can get out of a solar panel

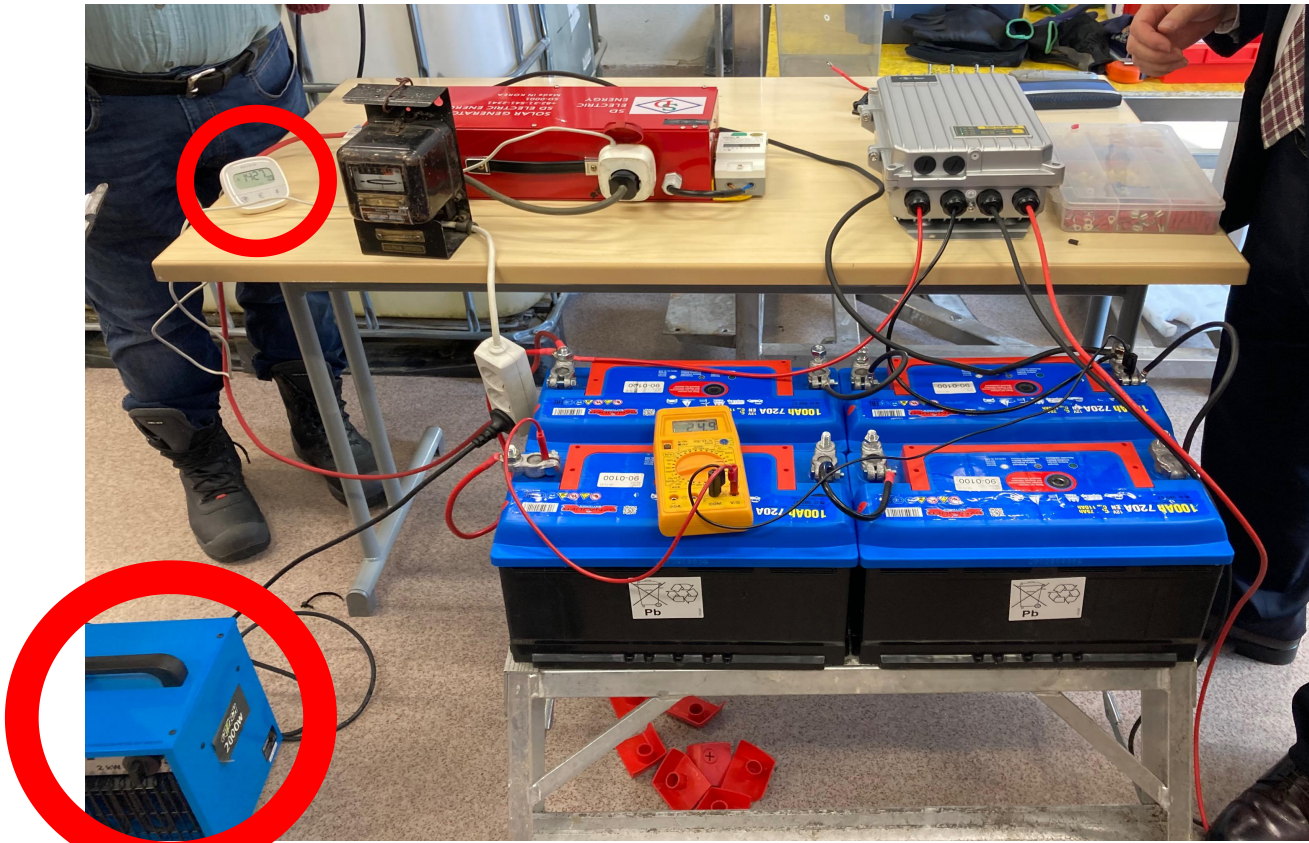
How?

The resonance generated by the charger – compare this with the resonance over the octaves of the C-string in an electric guitar or a piano

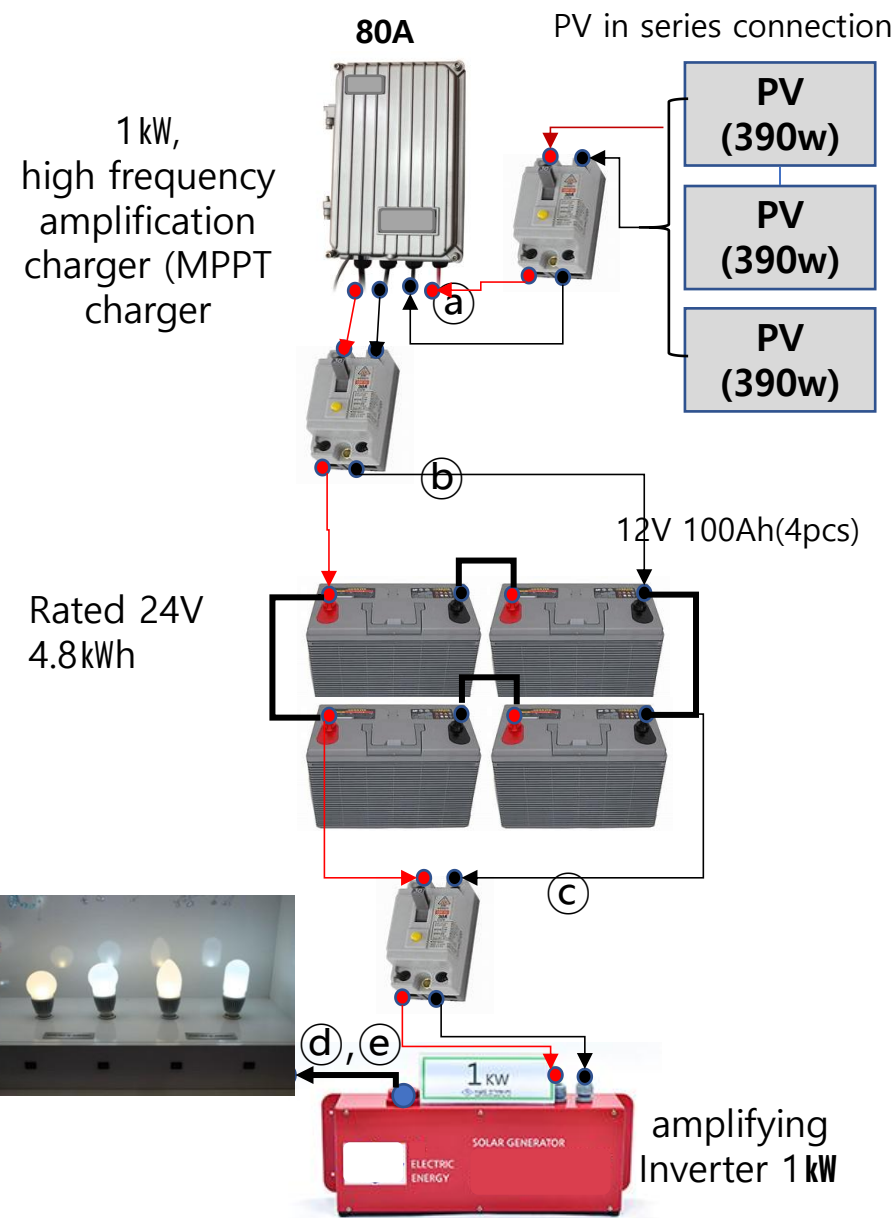
Generation test (1kW solar system) performed in Finland (15th March, 2022)



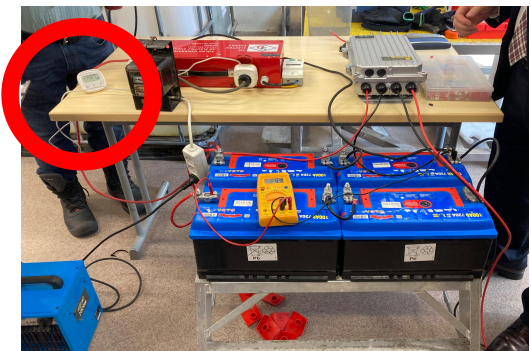
How much electricity was produced by the Solar Generator?



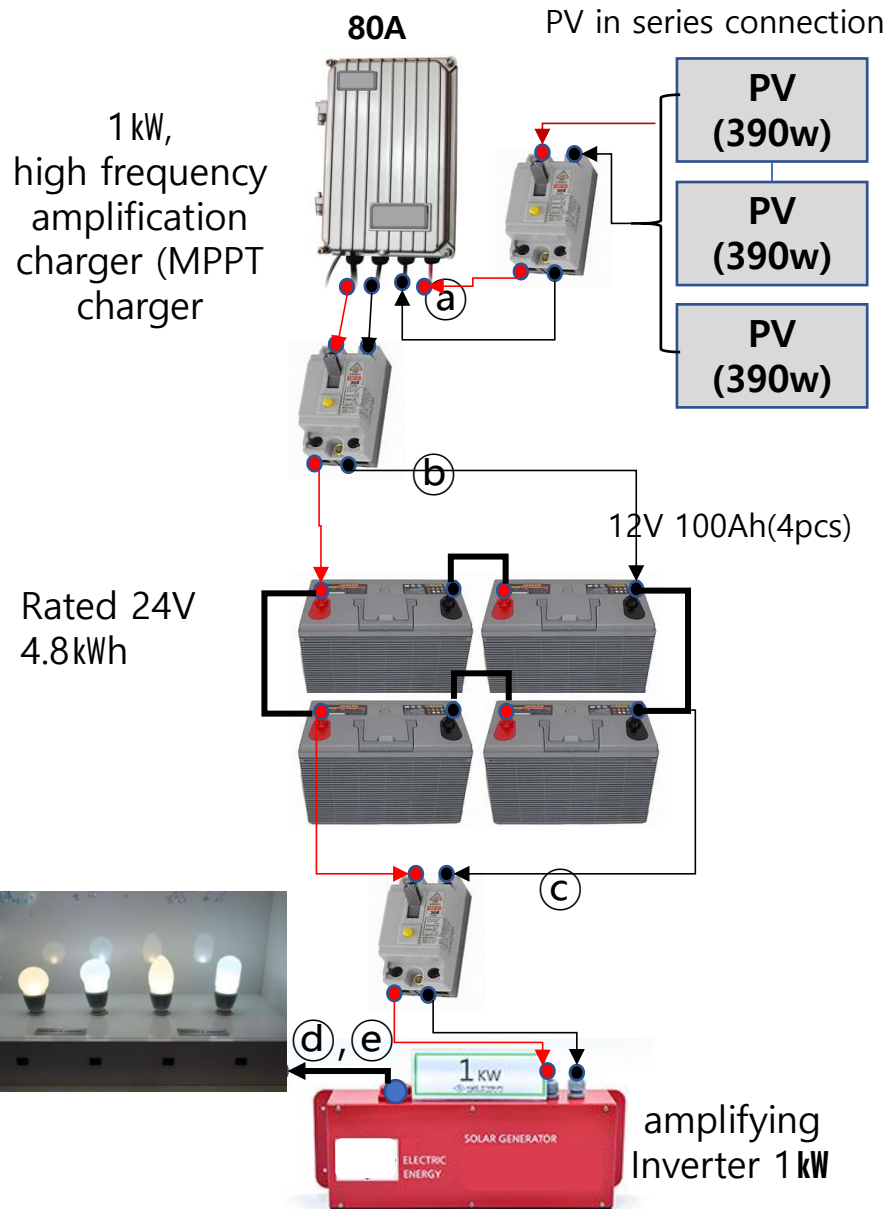
Generation test (1kW solar system)



How much electricity was produced by the Solar Generator?



Generation test (1kW solar system)



How much electricity was produced by the Solar Generator?



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Theoretical maximum power from the solar panel:

$$35.4V \times 11.02A = 389 W$$

actual input from the panel: 125W (measured)

Measured power from the solar cell generator:

1 429 W

Power increase:

$1429/230 = 6.2$ times or 620% (amplification Technology)

Up to 10 times above 4kw solar system.

At least 3 times more electricity generation garanteed