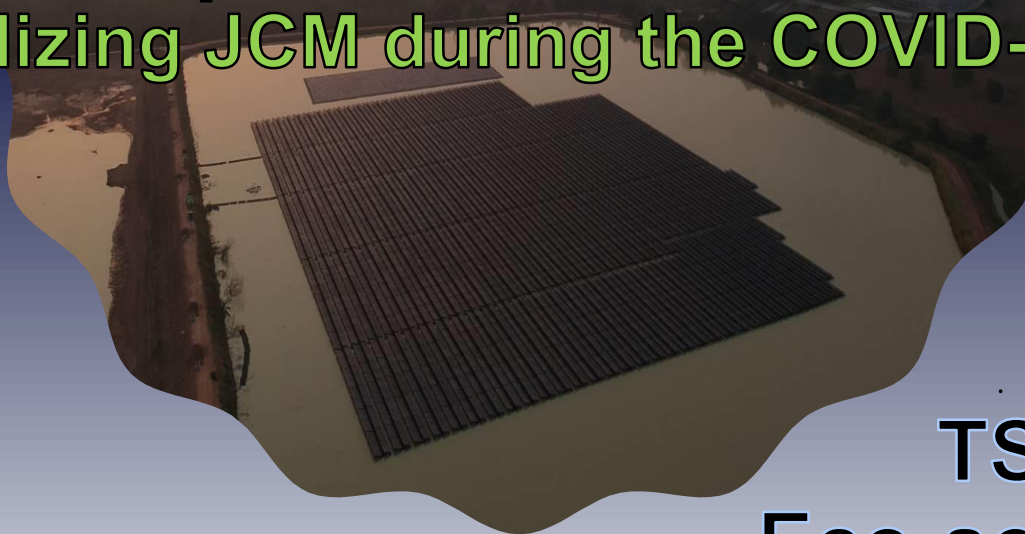


INTRODUCTION OF 5MW FLOATING SOLAR POWER ON WATER RESERVOIR

JCM Implementation in Thailand
~ Utilizing JCM during the COVID-19 ~



TSB Co., Ltd
Eco-solution Division
Yoichi Kaburagi

TOPIC

- Introduction of 5MW Floating PV
- Monitoring and controlling PV module
- Countermeasure against Covid-19 with JCM

Location :Kabinburi Industrial Zone at Prachinburi Province
where approx. 3hr ride from Bangkok to NE.

Power generation Capacity : 5.12MW

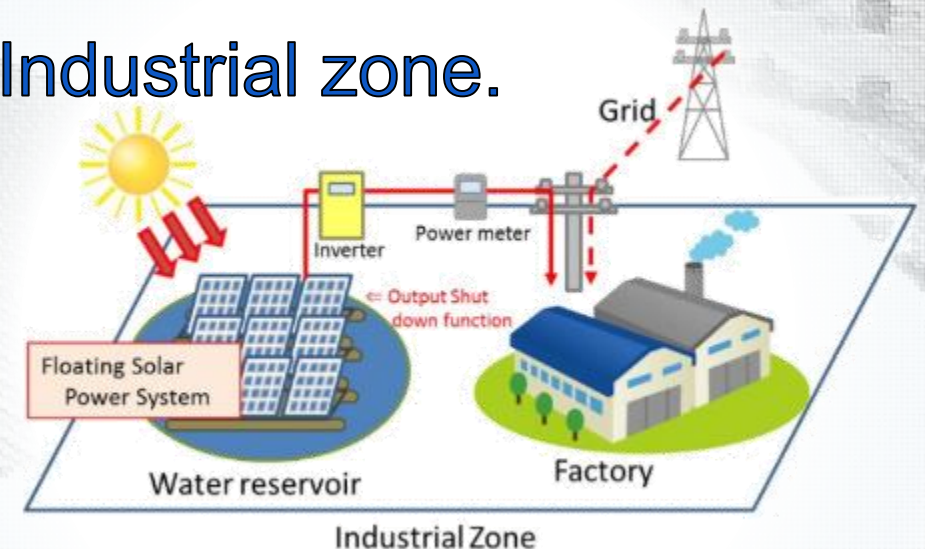
Power generation : 8,917 MWh / year

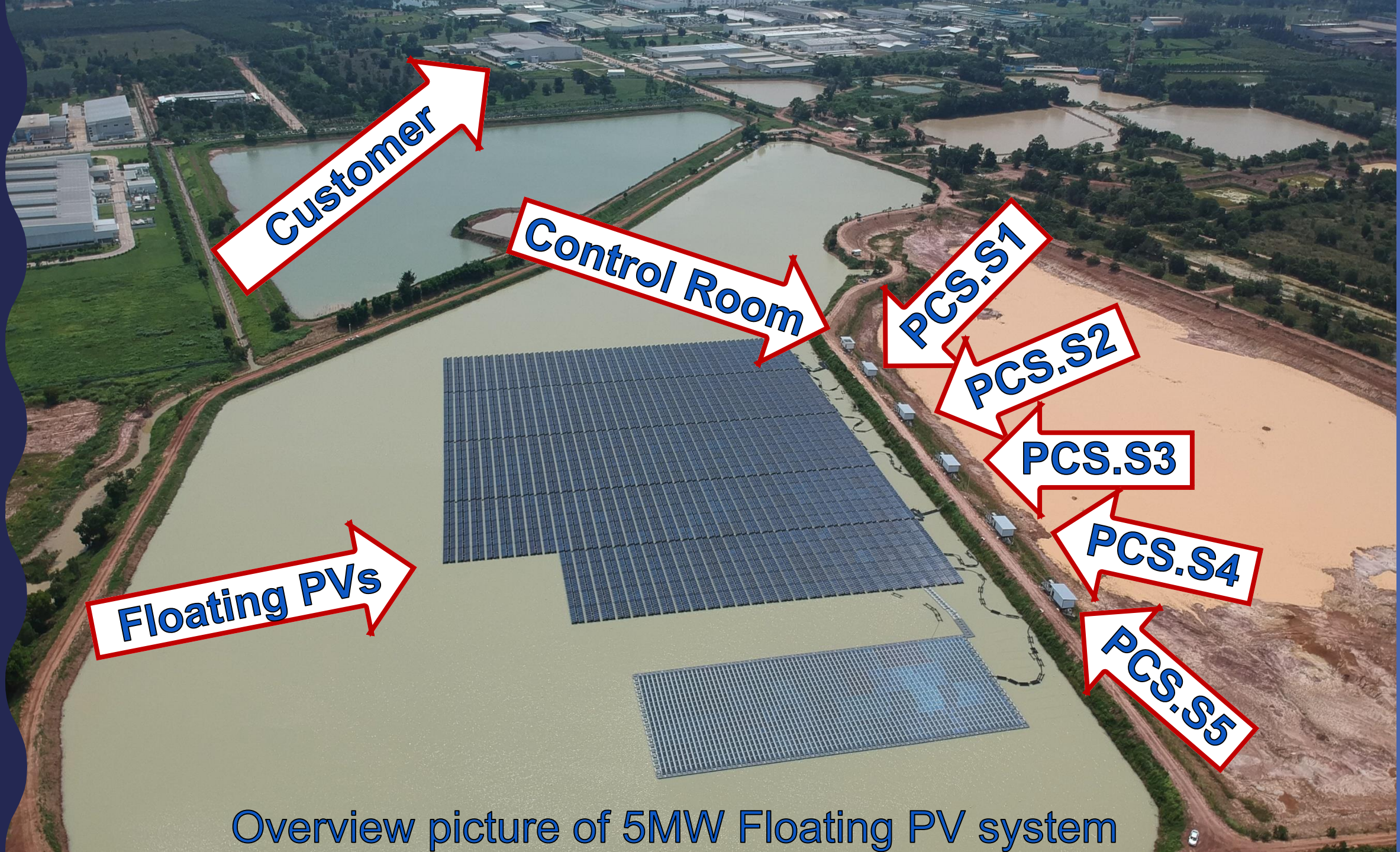
CO2 reduction : 2,706 ton/year

Project Launch : 2019

Project operation term : 25years

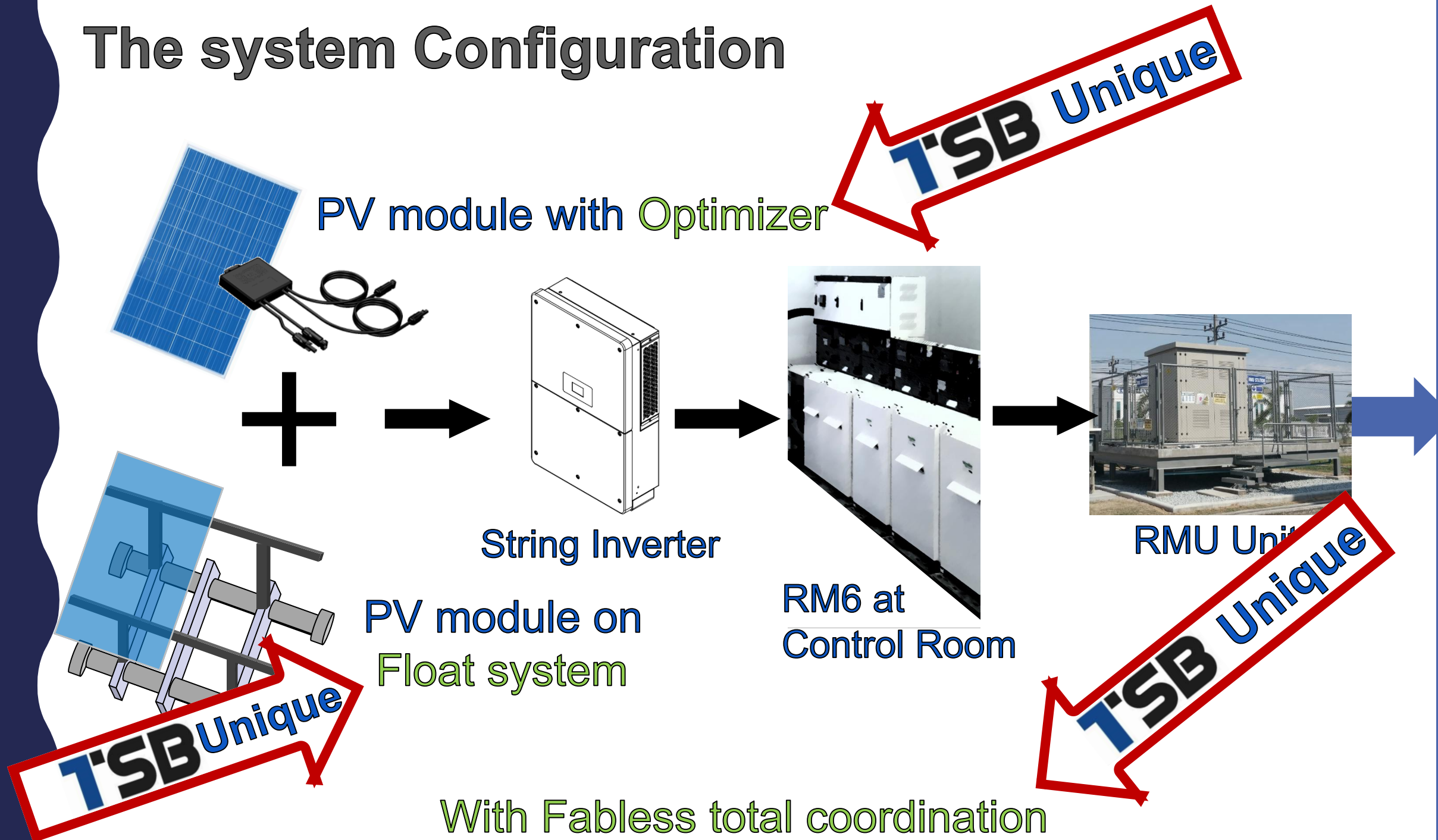
Energy customer : Private company at Industrial zone.



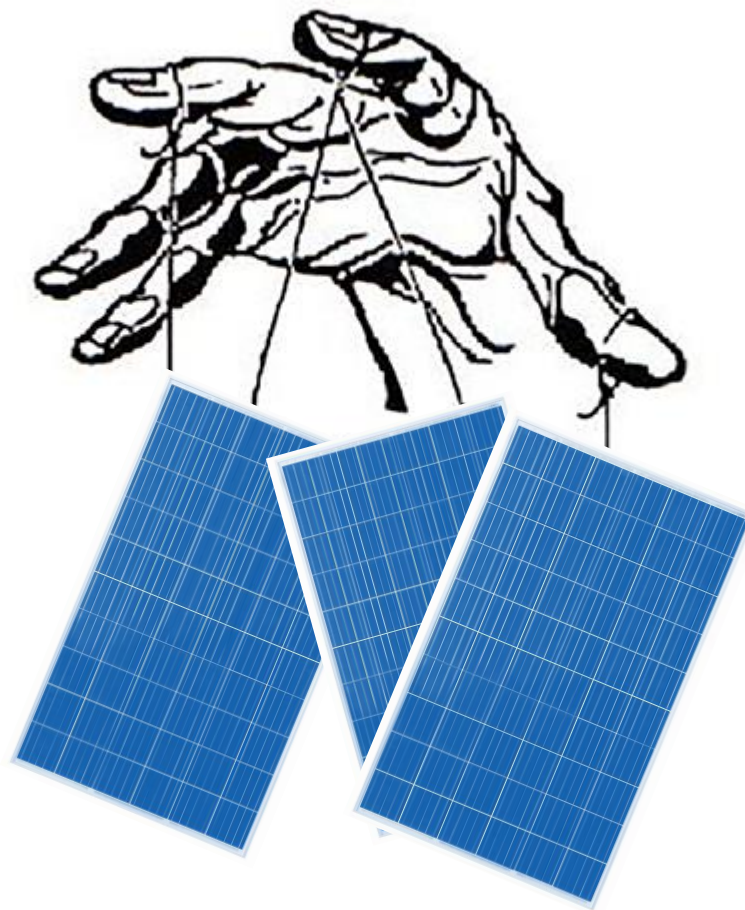


Overview picture of 5MW Floating PV system

The system Configuration



Controlling PV modules



Optimizer

~ Remote monitoring Advantage under COVID-19 ~

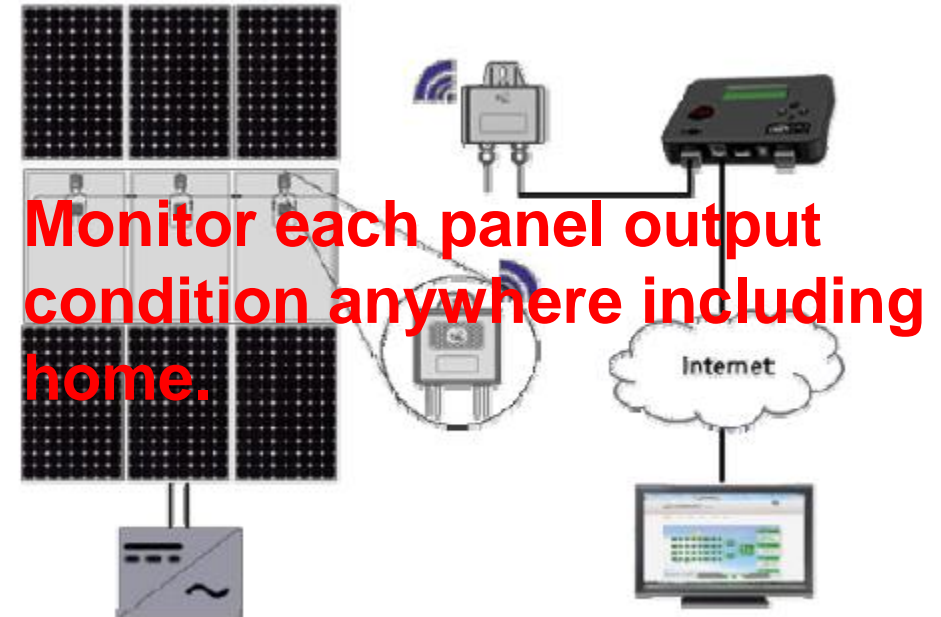


Current Standard

**General PV Panel do not have
Self analysis function.**



With Optimizer

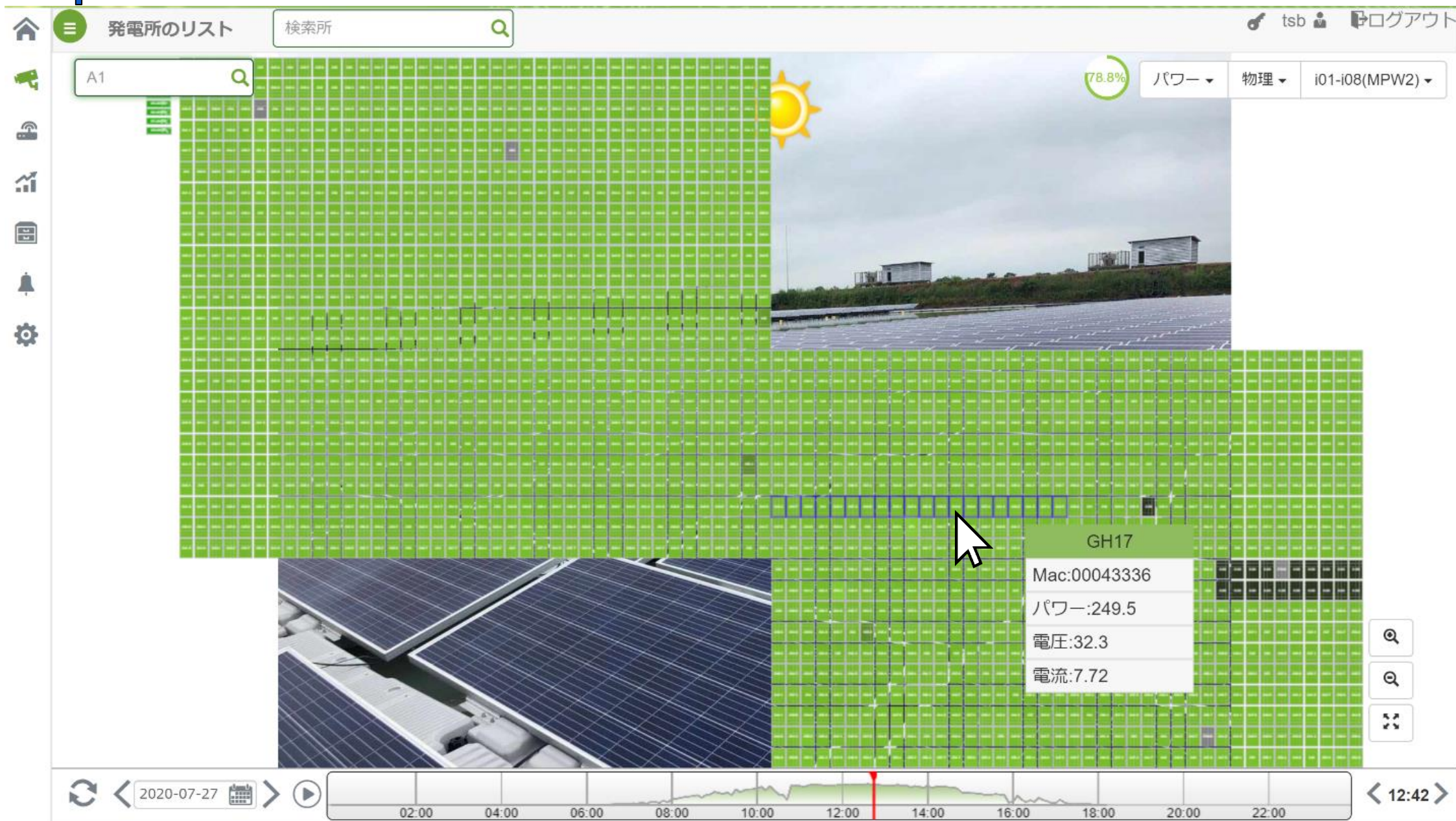


The Solar power generation system have advantage against contagion disease such COVID-19, compared other power system such Hydro or Thermal, it still requires man power to check panel condition regularly for stable power output.

Optimizer can check each panel condition over the internet, which will minimize infection risk for engineers.

Optimizer

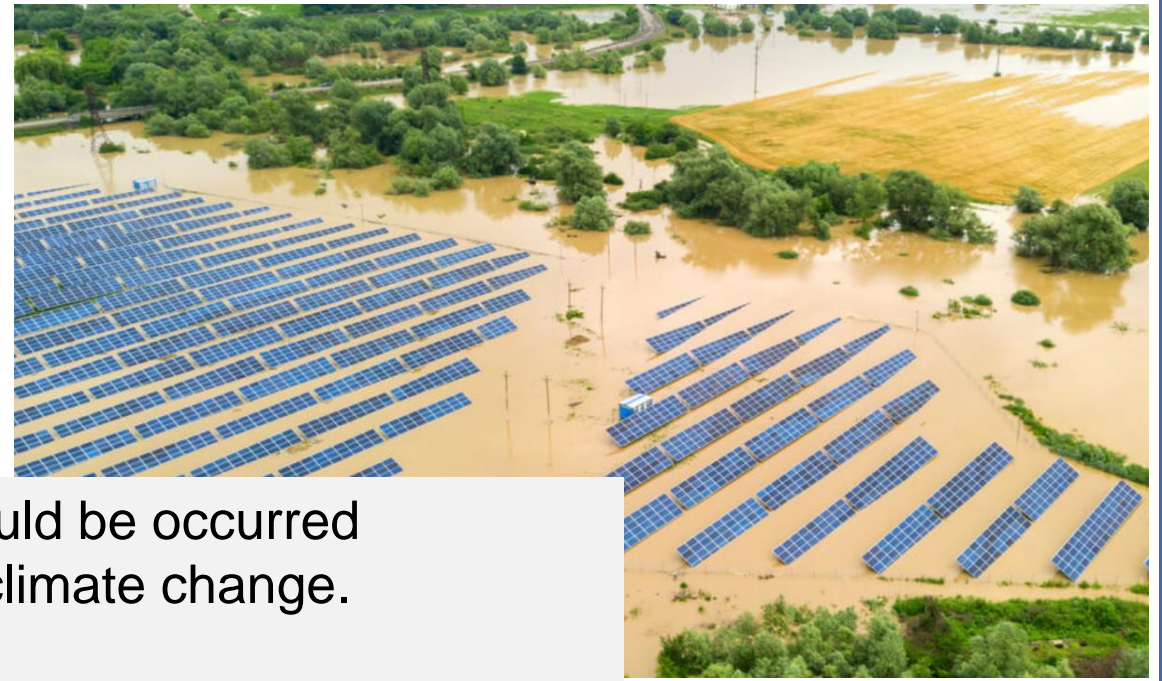
Example of showing good panel



Optimizer

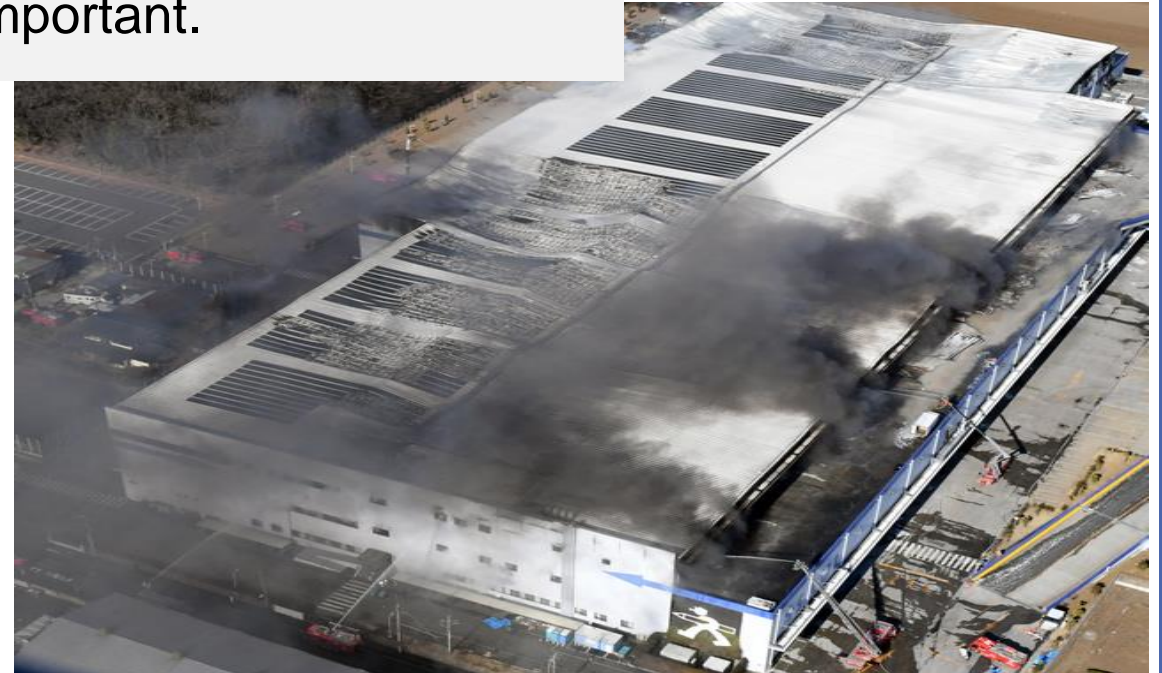
Example of showing bad panel. Engineer can estimate error cause in advance, so that it can minimize repairing team build as well as repairing time.





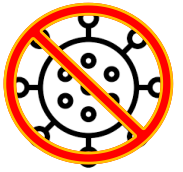
Now days, the natural disasters could be occurred anywhere in the world, due to the climate change.

The safety of power control quite important.



Optimizer

~ Remote controlling Advantage under COVID-19 ~



Current Standard



At emergency case,
Power supply Physically
turn off at site.
*By Inverter level and PV
panel power output keep
continue.

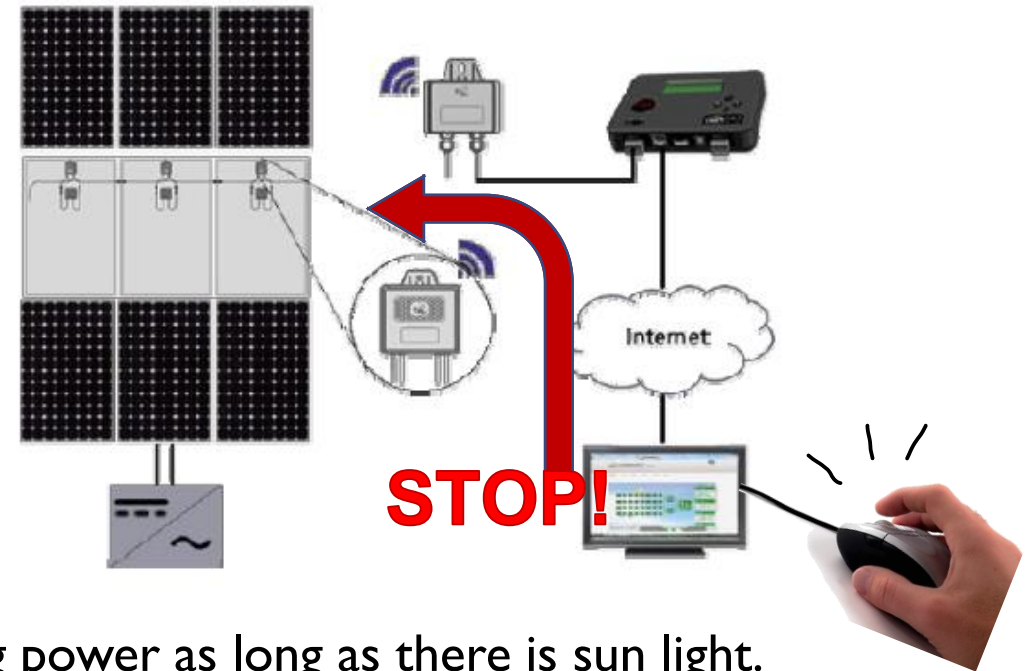
Even turning off the inverter, solar panel keeps generating power as long as there is sun light.

Connected panel strings generate 500~1,000V, which cause critical damage to body.

With Optimizer, we can cut off each panel output through the internet.

Applying appropriate preparation against such natural disasters are required for power producer even small capacity.

With Optimizer



Countermeasure for COVID-19



PV Installation situation in Japan under Covid

~ Mar

Including PV and Inverters, many of PV related equipment's are produced in China, there was impact of material supply, caused new installation construction delay.

Apr ~

Material supply were recovered, but due to Emergency declaration by government, private PV related product procurement slowdown as well as company investment due to unknown economic future.

The new PV system installation in 2020 is expected 30% lower volume compared to 2019.

PV Installation situation in the world

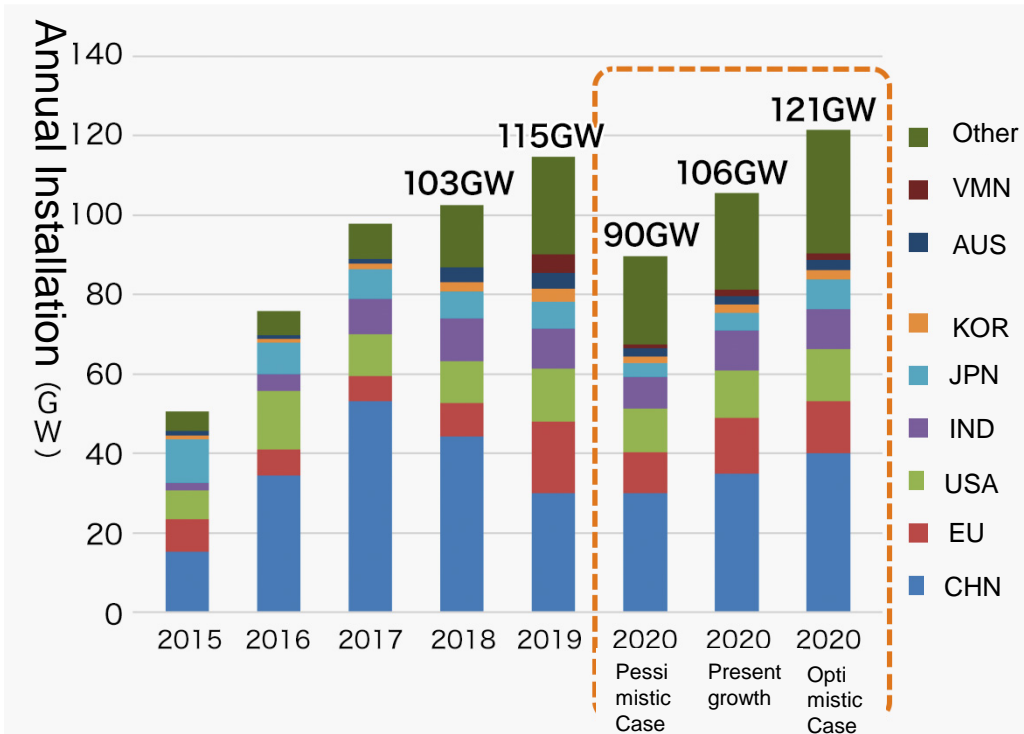
Per RTS corporation research,
World trend of PV installation also reduced, but not as big impact
as Japan.



Green Recovery is one powerful movement from EU.
Some example at Portugal is to make PV installation approval
process smoother, so that much easier for opening SPP business.
Switzerland attempts to lift solar PV market with rebates amid
COVID-19 pandemic.

This kind of world movement makes PV market trend more
optimistic in the world level.

World new PV installation amount



The Change of life

“Urban escape” will be one of the trend.
The liveability at the country side are drastically improved.



Balance of life with safety

There are worldwide curfews, quarantines, and similar restrictions related to the COVID-19 to prevent the further spread, and after the restrictions relieved, people may return back to office / downtown.

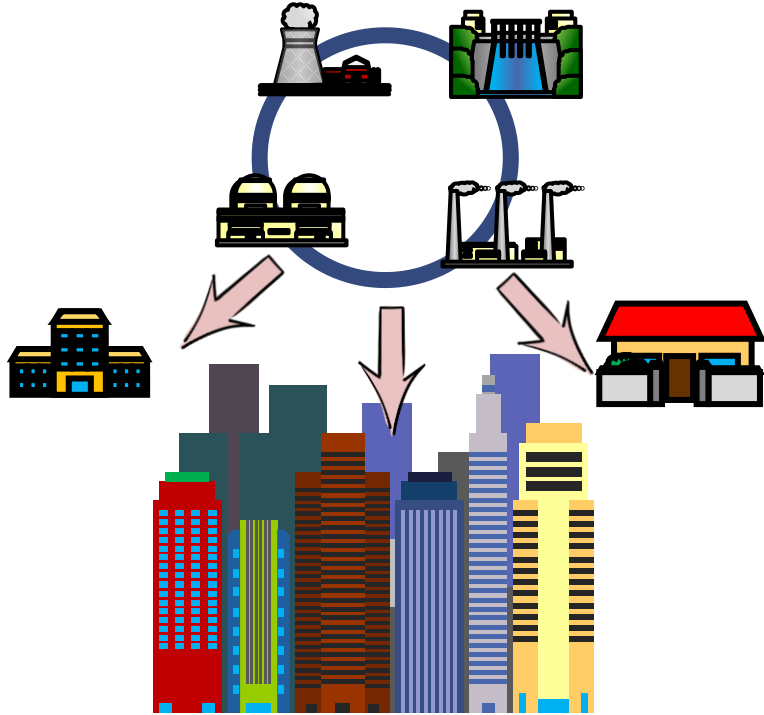
However, the life style wont back to the one which before the Covid.

People experienced efficiency of short and small team's meeting, Tele-work will be applied more frequently, dinner with client will be reduced. Now Everybody start considering “what is the best balance of life with safety”.

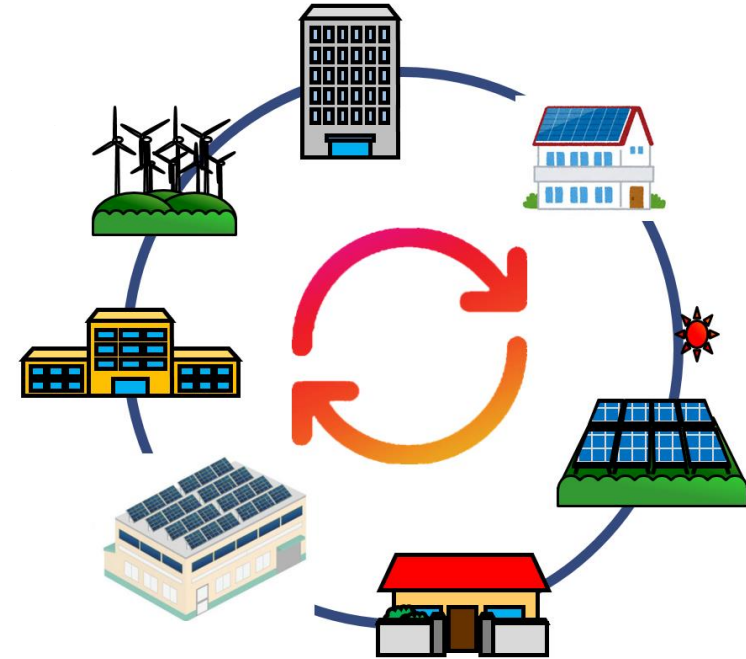
“Urban escape” will be one of the trend following country side liveability improvements.

The Change of Energy

From Massive Energy production



To Energy Decentralization



Power supply trend also change following people new life style, where it moves to Decentralization.

Coincidentally Energy also same :

Renewable energy is De-centralization. PV, Wind, Wave ... such energy are located in local.

People move to local, more energy will be required in local → Energy should be made in local.

It is good trend for RE investors to expand.

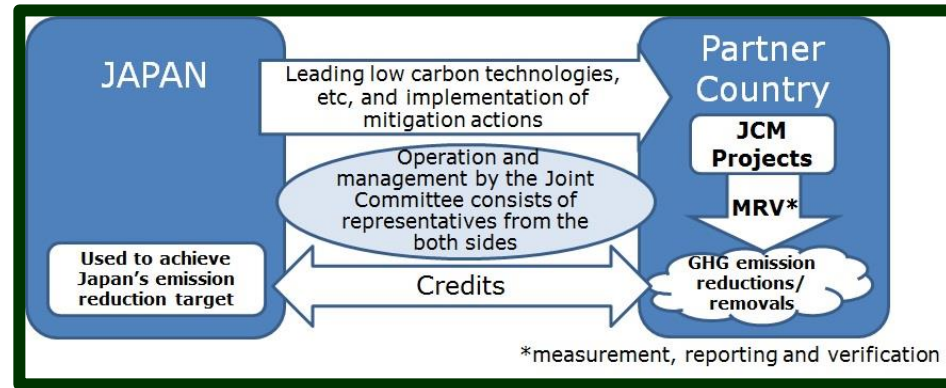


Not easy road

So far,
I mentioned positively at the change
under the COVID,
However, it is optimistic side think.
there is no guarantee of Green
Recovery success.
Promotion system under Paris
Agreement might be discouraged if
Donald Trump re-elected.
Following the market demand drop,
electricity tariff goes lower,
This might slow down investment for
clean energy,

much less at the developing countries.

The Challenge at JCM



JCM activity act as countermeasure against COVID-19



Lets work together !

The foundation of JCM is : Renewable Energy where utilizing natural energy resource, So, it happens in local. By increasing JCM project, it will utilize local resource, and enhance local liveability. The new normalization activity should not be only happened at developed countries, but also happens at developing countries. New normal at Energy section should occur accordingly. Through JCM, by working on reducing Greenhouse Gas, without realizing, this activity may supports countermeasure against COVID-19, And makes people life safe and enriching.

With stronger support from partner country to supports JCM, will accelerate to open new project.



THANK YOU SO MUCH