Using our technology for regeneration of old lead-acid batteries to solve Digital Divide

Lead-acid battery is indispensable for building infrastructure for information technology and telecommunications in non-electrified regions. This presentation will introduce our efforts to minimize waste and reduce cost of lead-acid battery.

Takeshi Kawabe
President

Japan Battery Regeneration,Inc.

Secondary Batteries (reusable with recharging)

➢ Invented by Gaston Plante, a French scientist in 1859.

➢ Invention of world's first battery which can be recharged.

➢ Very reliable and safe battery which has been used for more   than 150 years.

➢ Most widely used secondary battery having 70% production share.

➢ Materials: Lead di-oxide for positive electrode, Metallic lead for negative electrode, and diluted sulfuric acid

Major applications

Automobiles, golf cart, forklift, floor polisher, Electriciy storage for renewable energy generation (Solar PV, Wind power, etc.), UPS

- Battery life comes to an end with repeated discharge and charge
- Battery which can be regenerated and re-used on old battery.

Supply electricity to more non-electrified regions with small scale low cost power generation system
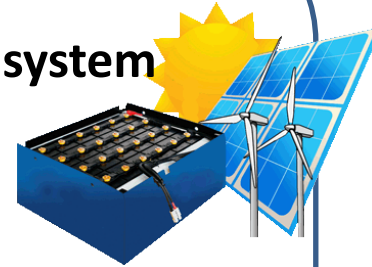
Supply of electricity
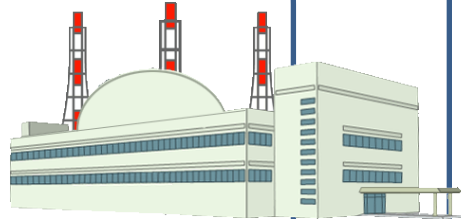
Require huge cost and time to built large or medium scale power generation systems
Heavy burden for developing countries

Importance of building small scale low cost power generation systems

Small scale power generation system

Battery cost occupies large portion of total cost for building small scale   power generation system

Need low cost & high capacity lead-acid batteries

To reduce cost for lead-acid batteries

How can we do it ?

（A）

（B）

Use low cost batteries

Lengthen battery life

1.Selecting batteries is important

What kind of batteries to use?

Purchase low cost batteries

2. Re-use of abandoned old batteries with Regeneration charging & Super-K

Use Super-K activator

Super-K Patented Battery Additive for lead-acid battery

P type Super-K activator
for vehicle batteries

A type Super-K activator
for tubular type & deep cycle batteries

➢ Super-K was developed by *Dr. Akiya Kozawa* (ex-EVP & Head of R & D at Union Carbide in USA) and his Research group at Japanese Universities in 1995.

➢ Super-K is verified by electro-chemistry study and accumulated data by many years of testing at Labs and on the road.

➢ World's most cost-effective solution to regenerate old lead-acid batteries.

➢ Price of Lead is increased by three times of that of 10 years ago.

➢ Worldwide Market for lead-acid battery is expected to increase by 5 to 7 % annually, because of strong demand in developing countries.

➢ Lead is now a precious natural resource.

"Ji-Ene Gumi" (Self-energy supply group) :
Use electricity generated by our own PV system

Representative of "Ji-Ene Gumi" :
Mr. Shokan Otsuka

## Use of commercial electricity: 0 Kh (Zero!)
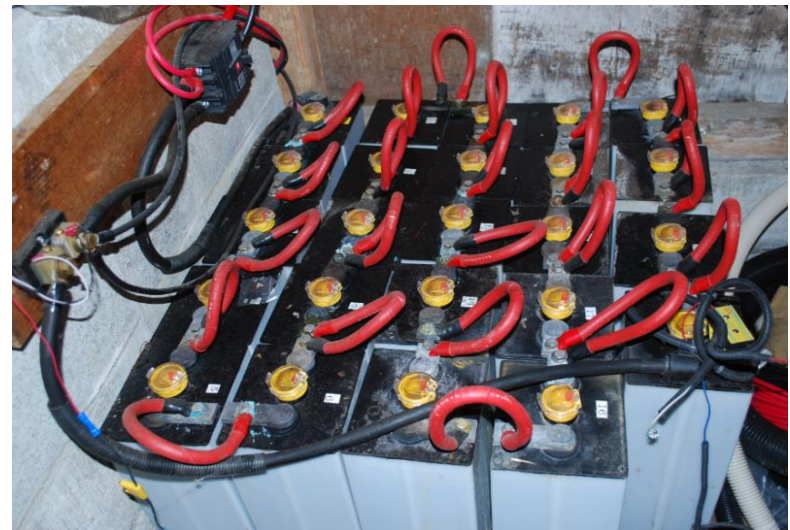
➢ ***ALOZ (Nittsu Shoji, a group of Nippon Express***, a leading logistic company of Japan) established a battery regeneration plant, using Super-K and our technology.

➢ Started regeneration service of old disposed lead-acid batteries used in electric forklifts.

➢ Can recover battery capacity approx. 80 to 90 % of that of a new battery

➢ Super-K put in their every single re-use battery

➢ Our Recognition of Excellence Award at *ITU TELECOM WORLD 2015* in Budapest triggered ALOZ's decision to adopt our technology and Super-K.

Regeneration of batteries in electric golf carts in Rayong, Thailand

➢ ***At St. Andrews 2000 Golf Club*** : Lengthen life of old batteries on golf carts using Super-K, and Regenerate old disposed batteries for re-use with our technology.

➢ They own approx. 500 golf carts, and use 4 to 8 batteries in each golf cart.

➢ Remarkable recovery of battery capacity was confirmed with use of Super-K and our technology, resulting in big cost savings and reduction of industrial wastes.
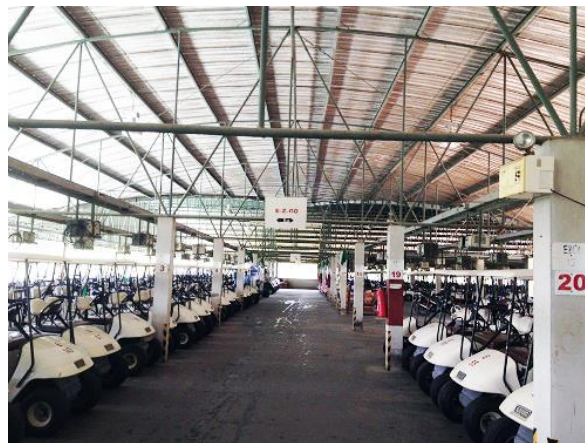
For the Future

- ➢ To solve Digital Divide & to create clean energy
- ➢ Contribute to people who need electricity in rural areas to enjoy ICT Tech
- ➢ Large scale power generation system requires huge cost and time
     Need to make inexpensive small scale power generation and storage system

⬇

- ➢ Battery cost and replacement battery cost for storing electric power

     are huge and heavy burden to the people

- ➢ Promote penetration of small scale power generation system by
     lowering costs necessary for batteries

⬇

【*World's lowest cost solution for extending life of lead-acid battery and re-use of abandoned lead-acid battery by regeneration charging with Super-K*】

- ➢ We wish to contribute to the world by spreading our technology & Super-K in various situations and applications for utilization of clean renewable energy and reduction of industrial wastes for green world.