TOSHIBA

Leading Innovation

Meeting/Seminar on Smart Grids/Smart Meters at New Delhi

Toshiba Presentation :
Contribution for Indian Smart Grid
- Network Stabilization
- Rural Solution

17 Aug. 2016

Katsutoshi TODA
Chairman & Managing Director,
Toshiba Transmission & Distribution Systems (India) Private Limited

Toshiba Transmission & Distribution Systems (India) Pvt. LTD.

Strategies;
- to be a global manufacturing hub of Toshiba T&D Group
- strengthen Toshiba technology & quality by Indian's capability

■ Overview of TTDI

- Location: Hyderabad, India
- 100% Toshiba owned subsidiary
- Acquired from Vijai Electricals in Dec. 2013
- Chairman and MD : Dr. Katsutoshi Toda
- Number of Employees: Approx. 6,000

Wide range of Products

Power Transformer

Distribution Transformer Amorphous/CRGO

HV/MV Switchgear

■ Strength

- Cost competitive
- Massive production capacity
- Excellent quality & delivery
- Vertically integrated factory in 640,000m2

Factory Appearance

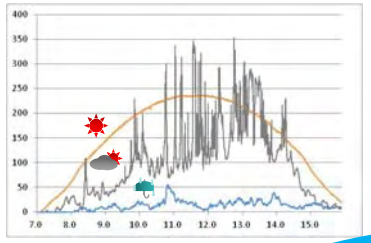
Location: Hyderabad

Importance of Renewable Energy in Japan

Renewable Energy:

- Contributes to solving global warming
- Reduces import dependency through energy diversification (energy security)
- Contributes to creating new industries and jobs

However, the introduction of renewable energy systems always involves issues such as output instability, high costs, and site constraints.

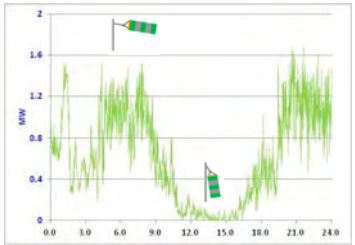


PV Generation

Power Fluctuation Suppression

Surplus Power Management

Transmission Capacity Enhancement



Wind Turbine Generation

Reference: http://www.meti.go.jp/english/policy/energy_environment/renewable/ref1001.html

Over 10MW Large Scale BESS in Japan

Kyushu EPCO Buzen S/S

(NGK NaS + MITSUBISHI ELECTRIC Changes for the Better)

50MW-300MWh

Mar.2016 operation Start

(http://www.kyuden.co.jp/press_h160303-1.html)

Minami-Hayakita S/S

ほくでん

(SUMITOMO ELECTRIC Redoxflow)

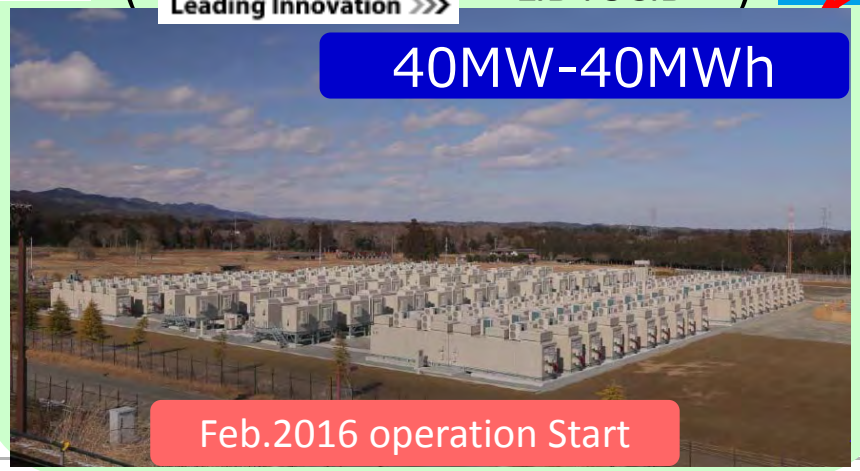
15MW-60MWh

Dec.2015 operation Start

(http://www.hepco.co.jp/info/2015/1197871_1643.html)

Minami-Souma S/S

(TOSHIBA Leading Innovation LIB : SCiB™)



40MW-40MWh

Feb.2016 operation Start

(https://www.tohoku-epco.co.jp/news/normal/1191223_1049.html)

Nishi-Sendai S/S

(TOSHIBA Leading Innovation LIB : SCiB™)

40MW-20MWh

Feb.2015 operation Start

(https://www.tohoku-epco.co.jp/news/normal/1189166_1049.html)

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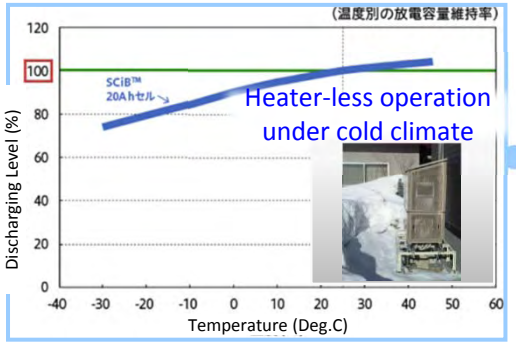
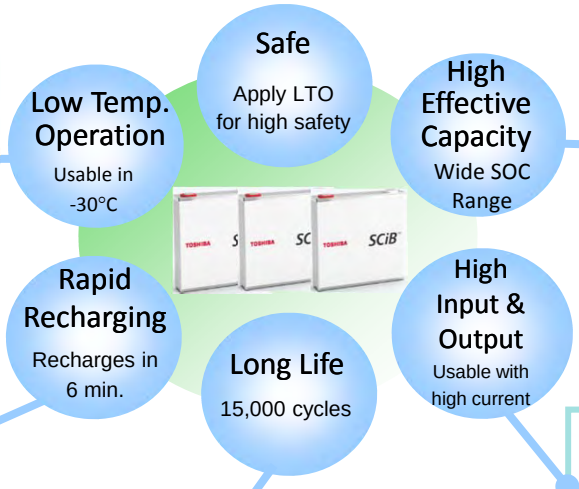
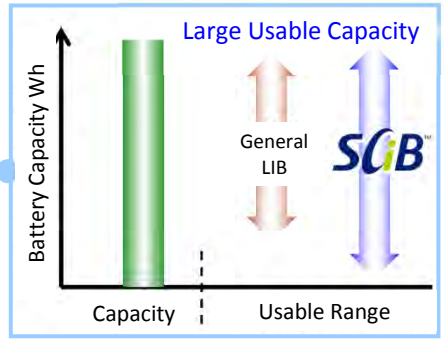
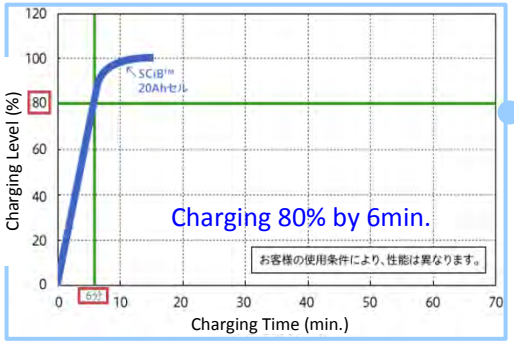
Features of SCiB™

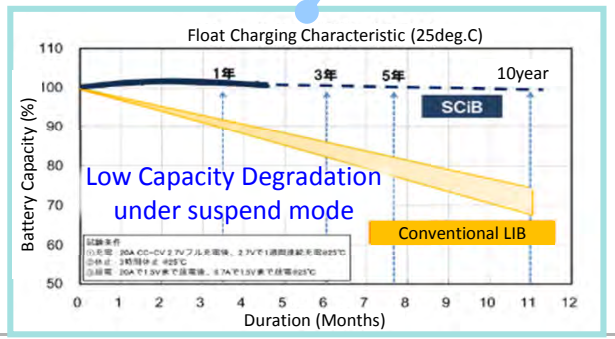
- **High Reliability** usable for several applications, **Larger Usable Capacity**
- **Long Life Performance** Maintenance Free
- **Rapid Charge/Discharge** contribution for several segments such as Idling stop for Automotive, Traction Energy Storage System for Railway System, and stabilization for Grid Network
- **Wide Temp. Range** applicable for many places in the world

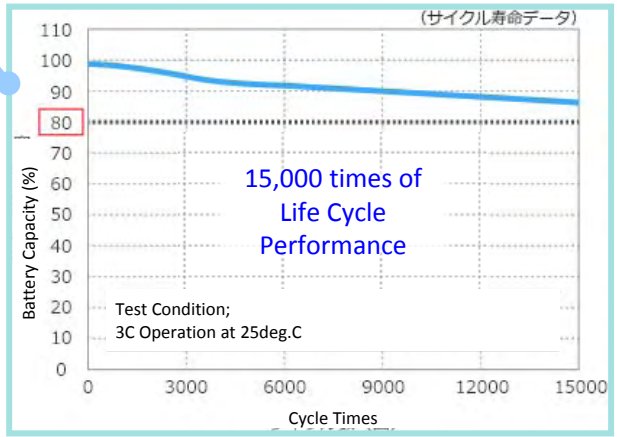












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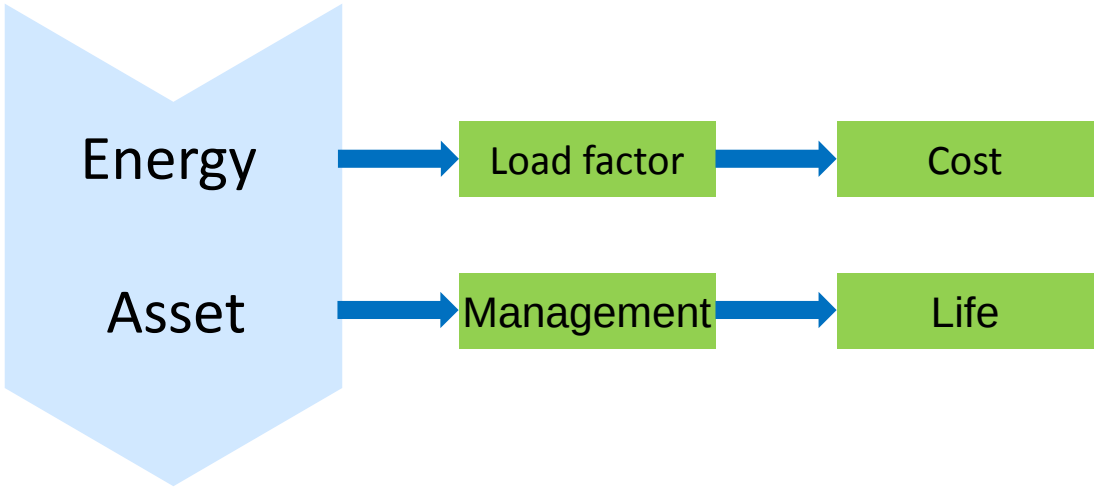
Distribution Transformers in Indian network

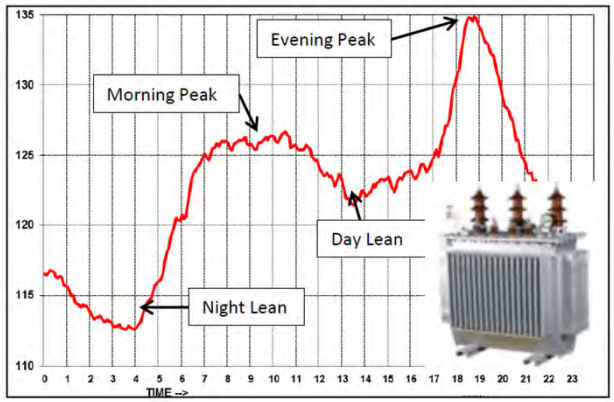
CONCERNS

- High Failure Rate
  - Major reason is overload
- Oil leakages
  - Along with failure environmental concerns
- Theft
  - Oil, Core coil Assembly

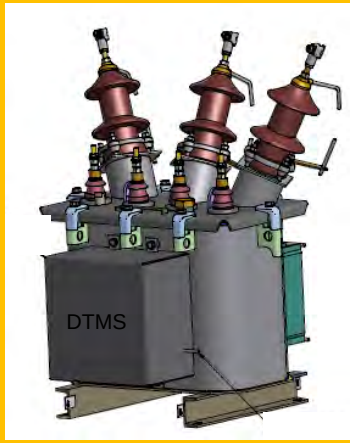
Every year all the utilities together add nearly half a million transformers into the distribution network

Valuable Real time data on transformer performance at one place





Distribution Transformer Monitoring system (DTMS)



Asset Parameters

Oil Temperature

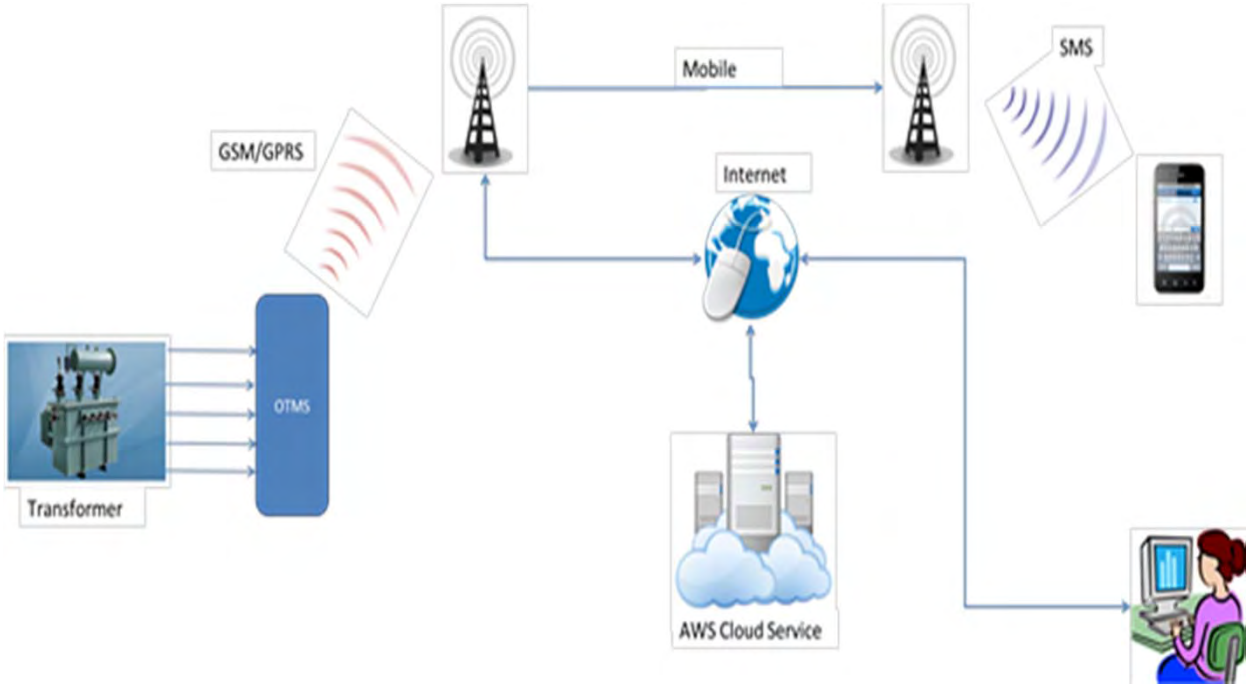
Oil Level

Energy Parameters

Voltage

Current

Power factor



- Reduce the Down time of Transformer
- Monitor Overloading of Transformer
- Monitor the Oil Level
- Avoid the Transformer Theft
- Avoid the Electricity Theft
- Identify the problems in the Transformer before failure
- Locate the transformer in Customer GIS (Geographical Information system)

IEEMA Specification

CO_2 Gas Insulated Transformer for theft prevention

CO_2 GIT at TTDI

25kVA			
Voltage		**Load Loss**	195(Max)
HV	11000	**Impedance**	4±IEC
LV	250	**Over All Dimensions**	
Temperature Rise		Length	745±10%
Gas	60	Width	815±10%
Winding	65	Height	1100±10%
No Load Loss	120(Max)	**Total Weight**	360±10%

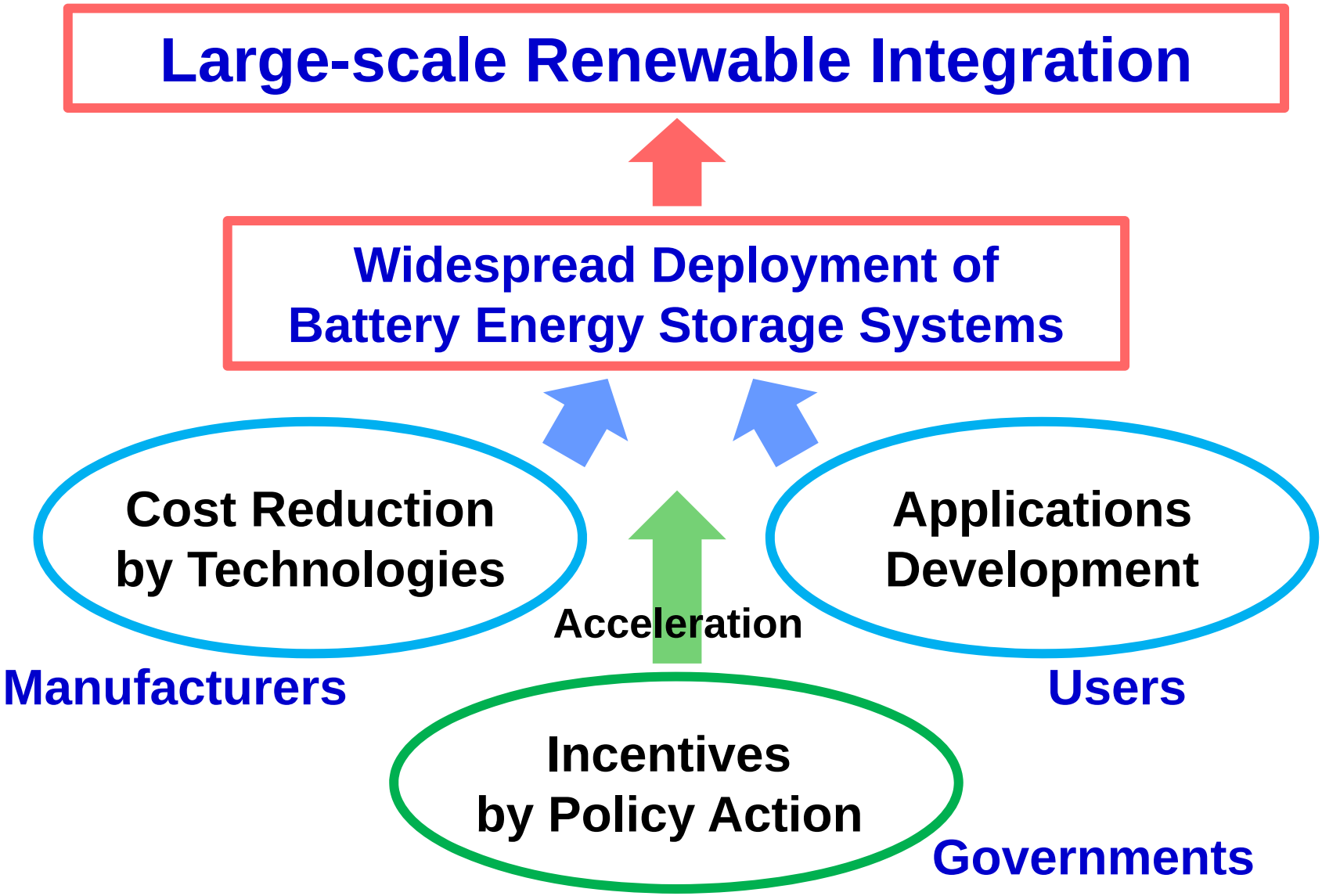
25 kVA ,
1 Phase,
Aluminium wound

- No oil inside
- No copper inside

Comparison

	OIT	GIT	DRY
Efficiency	High	High	Low
Dimensions	Low	Low	High
Weight	Low	Low	High
Cost	1 unit	1.5unit	2.5
Environment Friendly	less	High	High
Safety levels	Less	High	High
Outdoor suitability	High	High	Low

Concluding Remarks



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