Keynote Speech
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PPT slides will be available at
www.saifurrahman.org
Use the Presentations tab
Novel power system

Novel power system integrated with modern information technology

Source: SGCC

Energy Transition in a Future Power System

Vision of the Future Grid

Energy Transmission

Energy Production

Energy Consumption

Energy: Efficient, Reliable, Compatible and Open

Customer: Flexible, Intelligent, Credible and Interactive

Equipment: convergence, perception, aggregation, self-healing

Big data/Cloud computing/IoT/Mobile/Intelligence/block chain

Historical status

Equipment status

Environmental information

Business flow

Data flow

Energy flow

Source: SGCC
Grid Reliability and Digitalization – Players in the Digital Grid

The assets

Internet of energy ecosystem

Key applications

Planning & building
Operations
Service
Market

Key elements

Cloud & storage
Analytics
Artificial intelligence
Cybersecurity

The players

Integrates all players
Enables new services
Enables new business models

Generators
Aggregators
Grid operations
Market operators
Retailers

Source: ABB

The Novel Power System Ensures Energy Transition

Extensive & interconnected

New generation power system

Flexible & resilient

Open & sharing

Smart & interactive

Secure & controllable

Source: SGCC
Key Technologies of the Energy Internet

Challenges:
- Holographic perception
- Ubiquitous connectivity
- Integrated innovation

Key technologies:
1. Intelligent sensor and terminals
2. Communication network architecture
3. IoT platform
4. Information security

- Comprehensive state perception
- Easy and flexible application
- Efficient information transmission

Source: SGCC

Unified IoT platform
Open to external capabilities

Features:
- Mass connection management, High concurrent processing
- Micro-application services, Open data sharing

Characteristics:
- Independent operation
- Resource Sharing
- Open capability

IoT vertical application development towards open sharing mode

Source: SGCC
Overlaying on the Current System

Loads at a House Level

Building Automation Platform
WiseBldg platform supports many industry standard protocols and communications technologies.

WiseBldg can make an old building smart.
Building – Virginia Tech Building

Alexandria, Virginia, USA

Area: 2500 Sq meter
Energy: 14-25 MWh/mo.
Peak load: 61 kW

Classroom under Real-time Monitoring

Power meter
Environmental sensor (CO2, noise, temperature)
BEMOSS core
Thermostat
Motion sensor
Plug load controller
Indoor Environmental Monitoring

Solar PV System Monitoring and Control
Solar PV and Smart Inverter Integration

WiseBldg User Interface
Managing Battery Storage from WiseBldg Platform

Battery Cells
LG Chem

Battery Storage Monitoring & Control

Battery Voltage
State of Charge
Current Status
Current Readings
Output Power
Charging
All Buildings should be Smart Buildings

Building Automation Systems (BAS) can slash power consumption and energy bills significantly, but they are too expensive for most buildings.

*BEM Controls breaks through this barrier.*

Our Wise Building (WiseBldg) platform is affordable and works with any existing loads to make any building smart, no matter the size or age.

www.bemcontrols.com

Thank You

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