

# **Distributed energy [control] systems**

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# ABB: the pioneering technology leader



# ABB and Formula E

A new era of technological leadership

#### Formula E is now : FIA ABB Formula E Championship

#### Two pioneers united!







## **Grid Automation**

Leading the world of grid automation for over 110 years



## **Grid Automation** End to end offering

&

**Energizing the digital grid** 



### Solar and Wind

Global market and forecast

**\$7 trillion** renewables investment in next 25 years<sup>1</sup>

The global solar energy market is expected to grow up to 97 GW – 120 GW by 2020<sup>2</sup>

Major solar energy markets – China, US, India and Japan to add 20 GW between 2016 and 2020<sup>3</sup> By 2030 wind power could reach 2,110 GW, and supply up to 20% of global electricity<sup>4</sup>

Global investment in wind energy to touch between €120 billion & €150 billion by 2020<sup>5</sup>

### **Distributed Generation** Covering grid-connected value chain

#### Challenge is to manage :

- Voltage / frequency fluctuations
- Unplanned reverse power flows
- Circuit losses, VAr support not sufficient
- Control operation decisions to be made in seconds rather than minutes
- Balancing loads
- Consumers becoming "Prosumers".



## **PV and Wind Plant Automation Solutions**

Unified automation for renewables

### Automation System End-to-end monitoring and control



### **Remote Control Center** Manage plants from anywhere

#### **Highlights and Benefits**

- One single system to monitor and control all the assets of renewable plants, spread across geography
- Plant diagnostics and performance analysis
- Functionalities to connect with ERP systems
- Intuitive HMI to easily visualize data, analyze and take quick decisions



## **Examples in Bulgaria**

Improving operations and maintenance

## **Digital Control and Monitoring Center**

Remote operations center in Sofia takes care for various ABB installations across the country

- Operational Since 2011 and extended in 2017
- Remote control and operation of four PV Parks with total capacity of 85 MW.
- Monitoring of all operational ABB Fast-charging stations across Bulgaria. Example :Technical on-line support Eldrive.
- Dedicated PV application for customers with raw data performance analysis and profit expectations.
- Resolving 85% of all possible issues within the existing Fast-Charging stations network in Bulgaria remotely.
- Next steps : Digital ready for remote monitoring and control of ABB Robots, Motors, Drives and other connected ABB devices.

#### ABB has over 70 million connected devices around world.

# **Digital Control and Monitoring Center**

Remote operations center in Sofia takes care for various ABB installations across the country

#### **ABB Service**

- 24/7 Monitoring of all connected devices.
- Preventive maintenance of all primary equipment's on the 110kV/20kV Substations, Inverters and the photovoltaic modules.
- Control and supervision of substations, charging stations, robots, motors, drives and other ABB devices.
- Optimization of load flows in the different sectors of the plants.
- Reporting, Trend Analysis and Centralization of multiple customer application into one system.
- Optimization of OPEX and CAPEX by applying right maintenance strategy

#### Unlimited number of applications









# **Consumption side : What we care for**

ABB motors and generators help use energy more efficiently



# Example of digitalization benefits

Condition monitoring for preventive maintenance



# ABB drive powers irrigation system for orchard

Solar example from Stara Zagora

#### Customer Challenge

- Remote location and the lack of power grid connection
- Existing irrigation system is using petrol generator
- Approximately 718 kg of CO2 are sent into the atmosphere every month.

#### Solution

- ABB ACS 355 Solar Drive to monitor the voltage level collected by the Solar panels and to power the AC pump in the orchard.
- Auto Start/Stop feature eliminates the need for any human intervention and guarantees the effective powering the of the irrigation system in the orchard.
- The Remote monitoring of the ACS 355 Solar Drive minimizes maintenance trips
- The Drive secures the maximum possible output from the solar panels and maximizes the performance.



**Conclusion** A better tomorrow

Together, let's create a sustainable future



Maximizing renewable return on investments to create a sustainable future – *ensuring a better tomorrow* 



