





INTERNATIONAL OPERATIONS & MAINTENANCE CONFERENCE
IN THE ARAB COUNTRIES

UNDER THE THEME

"MANAGING MAINTENANCE WITHIN INDUSTRY 4.0"

CONICIDE WITH THE 16TH ARAB MAINTENANCE EXHIBITION

Grid Stabilization solutions
Grow existing electrical grids
under increasingly complex
conditions.

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Company presentation





EasyEnergy: engineer and consultant. Innovative.

We understand complex challenges





























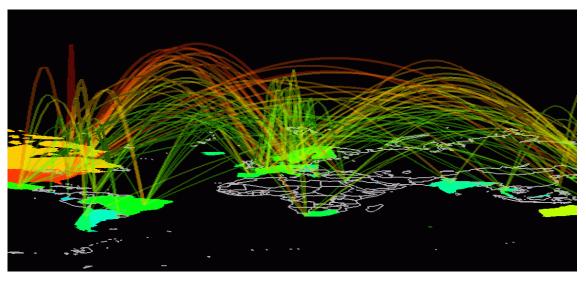


The challenge













The challenge







The challenge – grid stability





EXISTING GRID/UTILITY MODEL

Monopoly provider

No ownership by individual consumers

No customization

Generation is remotely located

Negative externalities

Limited innovation

Volatile variable costs

ELECTRICITY CONSUMER



VALUES

Lower costs Innovative

Cleaner fuel Modular/ scalable

Ownership/ control by individual

Revenue production

consumers

"BEHIND-THE-METER" RE MODEL

Many providers

Increased ownership by individuals

Can be customized for specific uses

Onsite

Lower externalities

Modular/scalable

Higher innovation

Limited variable costs

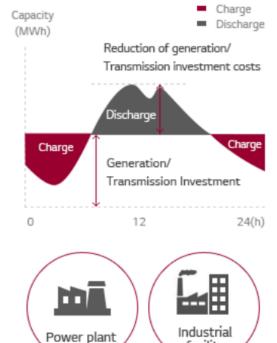


The challenge – grid stability





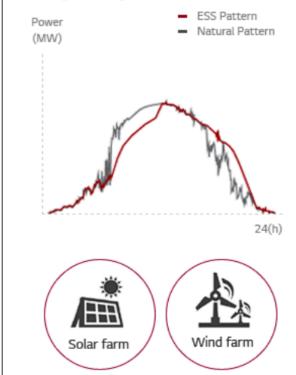
Peak Shifting



facility

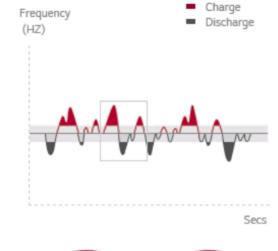
- · Charge during off-peak times
- Discharge during peak times

Discharge During Peak Times



· Stabilization of intermittent renewable power through charging and discharging during periods of high production or high energy demand

Frequency Regulation







- Charge when grid frequency increases
- Discharge when grid frequency decreases

Our concept





- CONSIDER ENERGY AS MONEY
- CONSIDER CO₂ AS MONEY
- CONSIDER RELIABILITY AS MONEY



MINIMIZE ENERGY LOSSES

COMPLEXITY

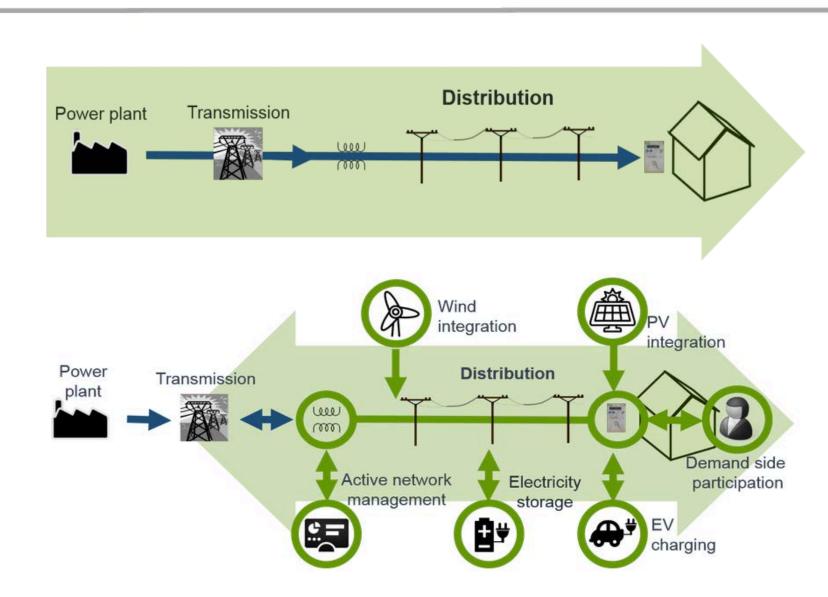
CONTROL

DESIGN OF ADVANCED, INTEGRATED SOLUTIONS

Opportunities of the digitalization



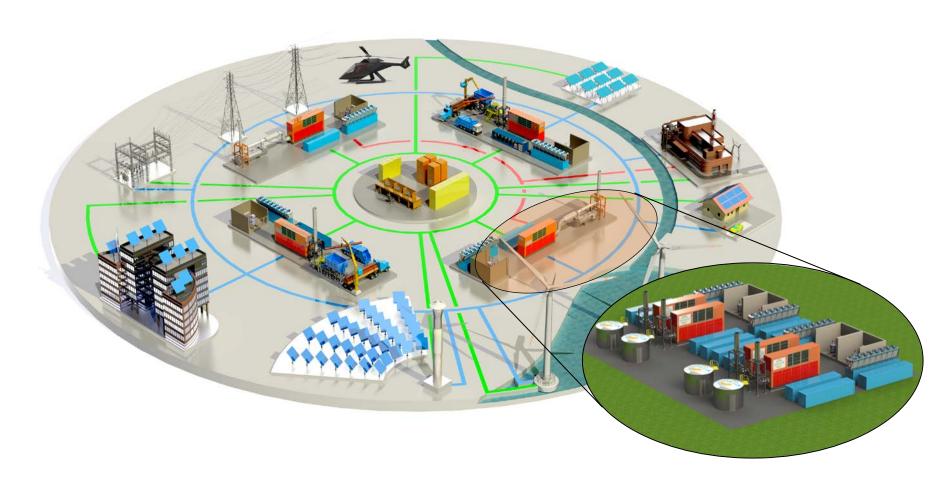




Our concept







Our concept





SMART GRID

- Analysis of "big data"
- Consumption shall be monitored
- o Connection between production and consumption
- Centralized control of the grid

- Power output variations depends upon meteorology / seasonality
- Storage of surplus production is difficult

RENEWABLE ENERGY SOURCES Global approach to grid stabilization

HYBRID SYSTEMS

- o Fast reaction and start-up
- Minimized storage = lower costs
- Local installation = modularity



NEW TOOLS SHALL BE DEVELOPED TO INTEGRATE THE CONTROLS



POWER MANAGEMENT

- OPTIMIZE CHANGE AND DISCHARGE
 EFFICIENTLY MANAGE POWER SOURCE
- DYNAMIC OPTIMISATION OF GRID OPERATION

MODULARITY

NEW PARAMETERS TO BE MONITORED
 NEW INSTRUMENTS TO BE INSTALLED
 SECURE COMMUNICATION
 CONCEPT

METERING CONCEPT

- SPECIFIC SOFTWARE ARCHITECTURE
 SECURE COMMUNICATION CONCEPT
 ABLE TO ADAPT TO CHANGING REQUIREMENTS
 - EASY TO SCALE-UP

ICT

GRID MODELIZING
 RESPONSIVE ALGORITHMS BASE
 BLOCKCHAIN
 DYNAMIC USE OF RESOURCES

OMAINTEC 11

Conclusions





- Change mindset: consumers will be part of the production.
- Understand production, grid and cyber as one common entity.
- Master complexity: mechanical, electrical, controls, cyber, social.

Conclusions





Consultants will be key to solve customer's future energy challenges!

... and how can we support you?

THANK YOU
FOR YOUR ATTENTION!

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