Panel Discussion

Smart Grid: How the Power System is Becoming Part of the “Internet of Things”

Moderator - Dr. Edvina Uzunovic
Associate Director of Power Systems and Adjunct Professor

Bryan Gwyn
Senior Director, Protection and Control, Quanta Technology

Steve DeCarlo
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Solutions Director, Doble Engineering
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Bryan J Gwyn
Senior Director Protection and Control

October 8th, 2014
Power Grids - Past

Evolution of Connectivity and Skills Needed by Power Engineers
Power Grids - Past

Pink Floyd – Animals, 1977

- Battersea Power Station
- 1927
- First of its kind
- Now a London Landmark

- Skills
  - Power Engineering
  - Innovative ideas
Power Grids - Past

1960’s – National Super-Grid

- Highly interconnected
- Large power plants serving load centers

Skills
- Power Engineering
- Power System analysis
- Protection & Control
- Use of early computers
Power Grids - Present

Introduction of communication Networks & GPS Satellites

- Interconnected Grids
- Communication Networks
- GPS Time Synchronization

- Skills
- Power Engineering
- Power System analysis
- Protection & Control
- Use of powerful computers
- Telecommunications
- Systems Integration
Power Grids - Present

North American SynchroPhasor Initiative
https://www.naspi.org/
Power Grids - Present

• Energy consumption is changing with technology and environmental drivers
  o Micro-grids
  o Electricity Storage
  o Electric Vehicles
  o Energy efficiency

• Electric - Natural Gas Interdependency
Power Grids - Present

Connectivity at all Levels

- Skills
- Power Engineering
- Power System analysis
- Protection & Control
- Use powerful computers
- Telecommunications
- Systems Integration
- Security
- Renewables
- Microgrids
- Economics
Power Grids – Future?

Global Connectivity
Customer Loyalty through Client Satisfaction
Smart Grid & The Internet of Things

- Past
- Present
- Future
Past
Present

Existing Electrical Infrastructure
Present

Aging Infrastructure

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Present

Alternative Energy

Solar Two - Mojave Desert, California
Future

Microgrids – Distributed Energy Resources

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Future

Smart Grid – “The Internet of Things”
Future
Future
Future
Future

Smart Home Network

September 2014 WPI Energy Symposium
Thank You

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