Telematics and Remote Monitoring in Power Generation Applications

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Big Data Gets Bigger

- How much data was created in 2011?

1.8 Zettabytes

1.8x10^{21} \text{ bytes}

1,800,000,000,000,000,000,000

1.8 Trillion Gigabytes
Trends / Opportunities

FOURTH INDUSTRIAL REVOLUTION

1. Steam engine
2. Mass production
3. Internet technology
4. Internet of Things

Source: GE Industrial Internet Study
Trends / Opportunities

HOW MUCH COULD WE SAVE WITH CONNECTED MACHINES?

A 1% improvement in efficiency in these five industries could add up to $276 Billion over 15 years.

Source: GE Industrial Internet Study
What is Remote Monitoring?

- A remote communication mechanism between a human and a machine, similar to a human and another human.
  - Internet & Cell Phones revolutionized human interactions
  - Telematics are revolutionizing human-machine, machine-machine interactions

Why do we **need** remote monitoring?

- Remote Monitoring transforms the way we serve our customers by enabling
  - Lower cost to serve
  - Speed to serve (Faster response)
  - Better diagnostics
Why Remote Monitoring / Telematics

**Push from Technology**
- Better Computers
- IoT
- Cloud
- Moore’s law of Data
- Volume
- Velocity
- Verity (Formats)
- Veracity (Uncertainty)
- Optimize
- to Know
- to Understand
- to Predict
- Save Lives
- push the Envelope

**Pull from the Market**
- Some segments (telecom, rental, etc.) depend on fleet management.
- Residential owners view generator sets as another “appliance” in their smart home.
- Benchmark from other applications like Healthcare management, airline industry, consumer applications.
Key Benefits

Global/Regional Views

Multiple Site Management

Remote Service

24x7 Monitoring

Reporting & Analytics

On the go access
Customer Expectations

- Reliable power generation solution
- **Peace of mind** that generator set will inform the customer and Distributor/Dealer if something is wrong
- Get connected to assets to check status, faults, testing
- **Uptime assurance** - Problems get solved quickly, or can even be prevented
Powering The ‘Connected Home’

90% of consumers say personal and family security remains one of the top reasons to purchase a connected device.

50% of consumers say they plan to buy at least one smart home product in the next year.

Source: iControl State of the Smart Home Report 2015. Study conducted with 1,600 NA home owners
Segment Drivers

Rental
- Fleet management
- Maintenance / service
- System integration

Prime Power
- Maintenance / service
- Diagnostics
- Uptime
Remote Monitoring

OTPC ATS

LonWorks

NCM

PCC3201

LON Gateway

AUX101

Modbus RTU

PCC3300

BMS

PCCNet

PCCNet

PCCNet

Power Your Imagination
Cloud-Based Remote Monitoring
PowerCommand Cloud Mobile

Power System Simulator
Shoreview MN 55126

Show on map

Events | Assets | Sensors

ATS2
S1 Connected, S1 Available
No Fault

Genset1
Stopped
No Fault

Site Status | All Sites

 Faults (0)

Warnings (4)

No Faults (1)

Events

New

Genset1
Event Code: 5664
Genset in Auto

Genset1
Event Code: 5138
Genset Not In Auto

Power Your Imagination
PowerCommand Cloud™ Video
Case Study: Woodbury County 911 Communication Center
Case Study: Woodbury County 911 Communication Center

- Communications center serves population of 120,000+ across three counties and two states.
- 50,000 emergency calls / 400,000 administrative calls each year.
- CALEA (Commission on Accreditation for Law Enforcement Agencies, Inc.) reporting.
Case Study: Woodbury County 911 Communication Center

- Cummins PowerCommand® 550 Remote Monitoring System
- 1 x Cummins DQFAD Generator Set
- 8 x Cummins OTPC Automatic Transfer Switches
Summary

- Remote monitoring provides a convenient way to monitor power generation equipment, sensors and output controls from anywhere.
- Market drivers vary but point towards a need for remote monitoring solutions integrated into new and existing power systems.
- Cloud-based remote monitoring solutions empower our customers to be successful and allow sophisticated monitoring and diagnostics at anytime and from anywhere.
Thank you!

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