

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

1.8×10^{21} bytes

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

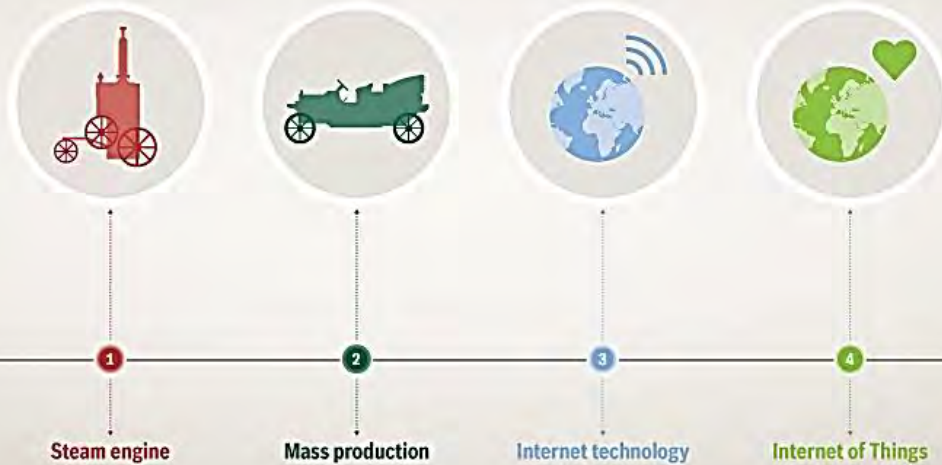
1.8 Trillion Gigabytes



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Trends / Opportunities

FOURTH INDUSTRIAL REVOLUTION

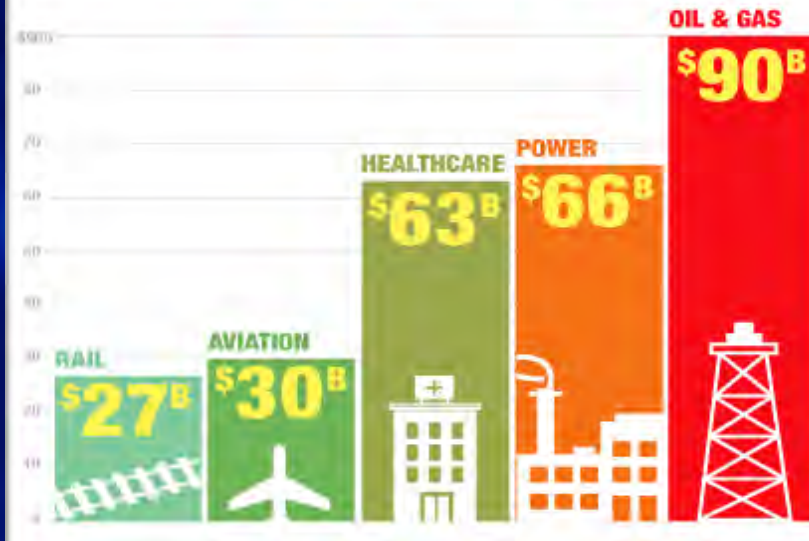


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Trends / Opportunities

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



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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?

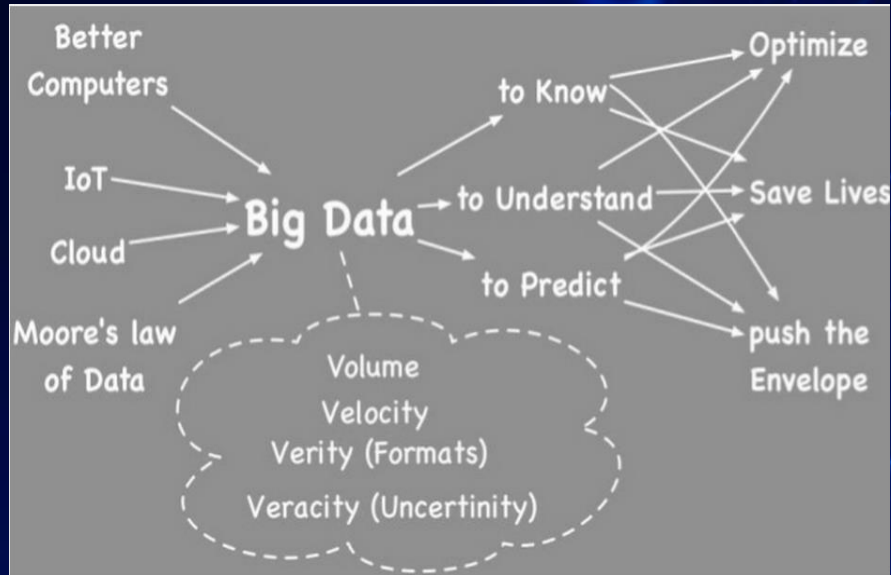
- Remote Monitoring transforms the way we serve our customers by enabling
 - Lower cost to serve
 - Speed to serve (Faster response)
 - Better diagnostics



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Why Remote Monitoring / Telematics

Push from Technology



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.



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Key Benefits



Global/Regional Views



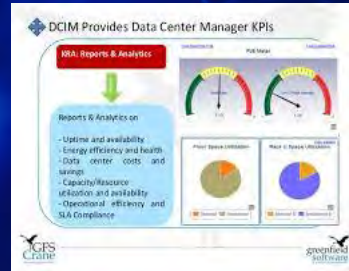
Multiple Site Management



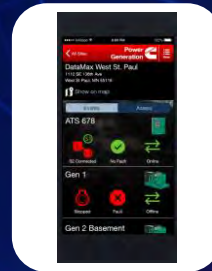
Remote Service



24x7 Monitoring



Reporting & Analytics



On the go access



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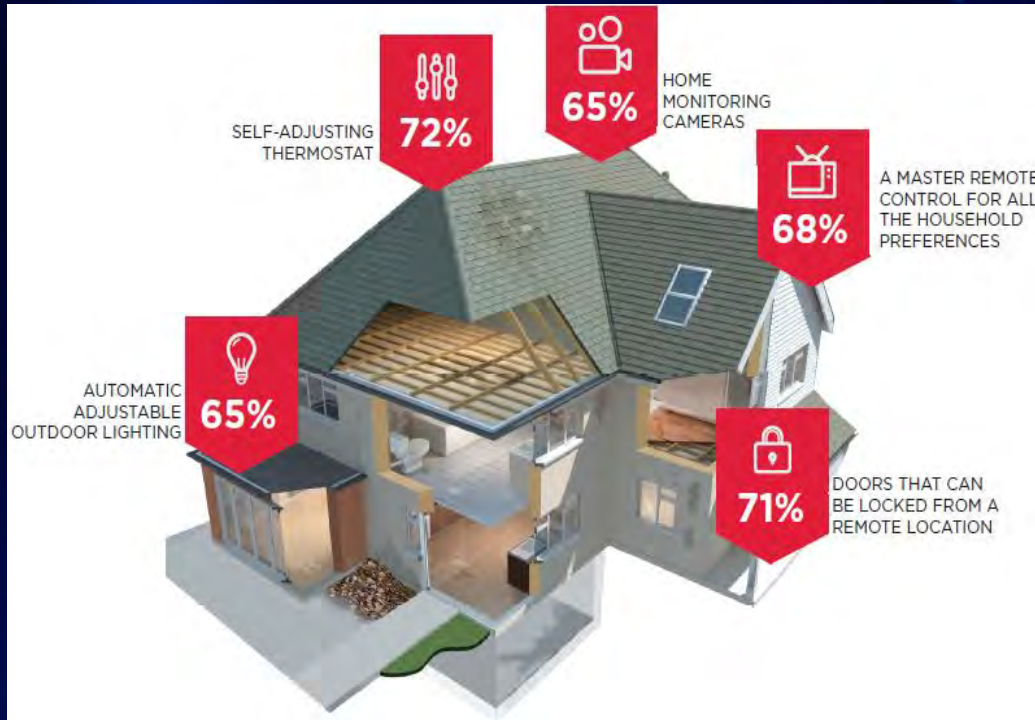
Customer Expectations

- 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



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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.



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Segment Drivers

Rental

- Fleet management
- Maintenance / service
- System integration

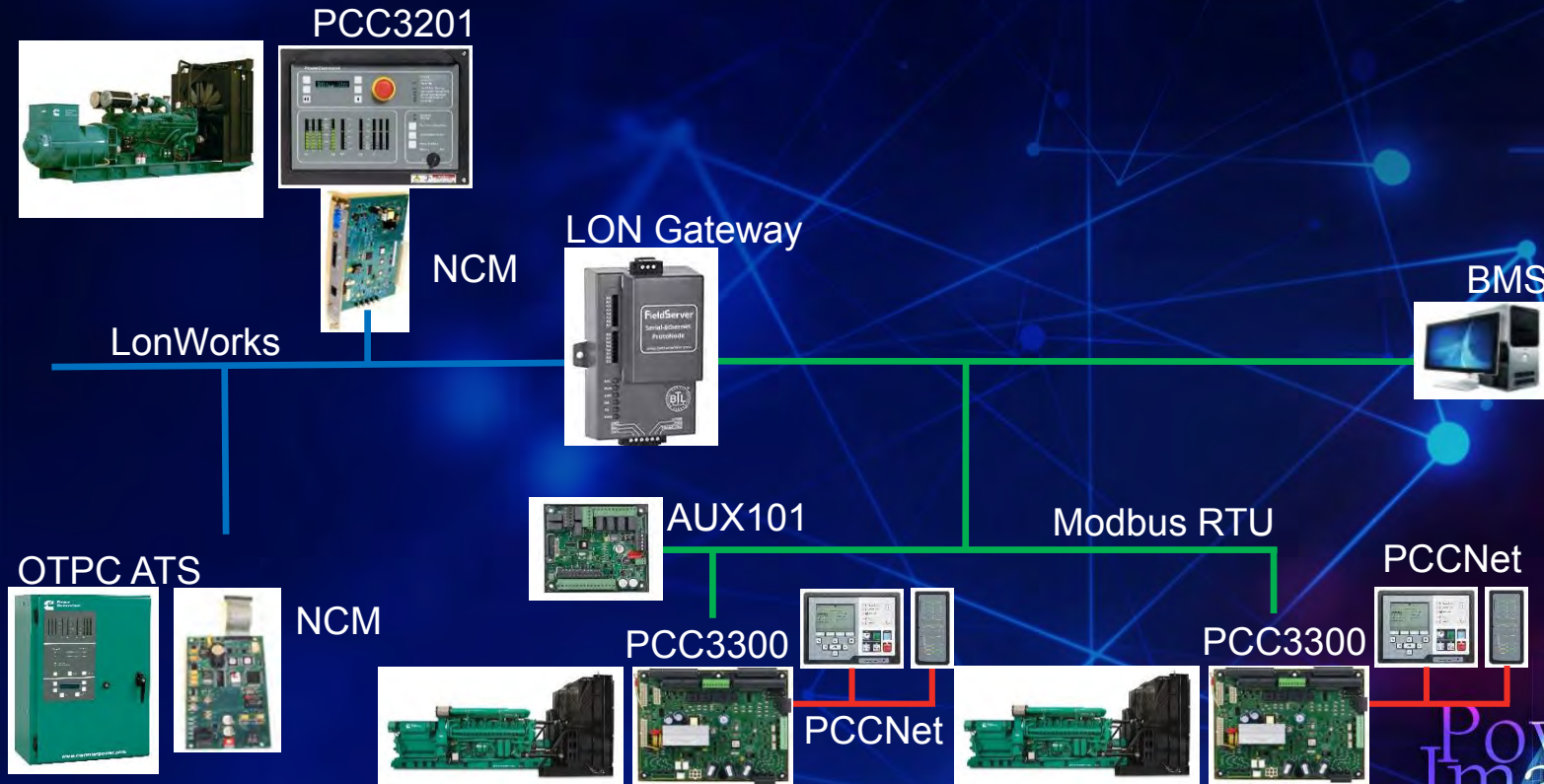
Prime Power

- Maintenance / service
- Diagnostics
- Uptime



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Remote Monitoring



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Remote Monitoring

SMS/Text



Web Browser



CDMA



Ethernet



BMS



Modbus TCP



Modbus RTU

LON Gateway



NCM

PCC3201



LonWorks

Modbus RTU

AUX101



PCCNet



PCC3300



PCCNet

PCC3300



NCM

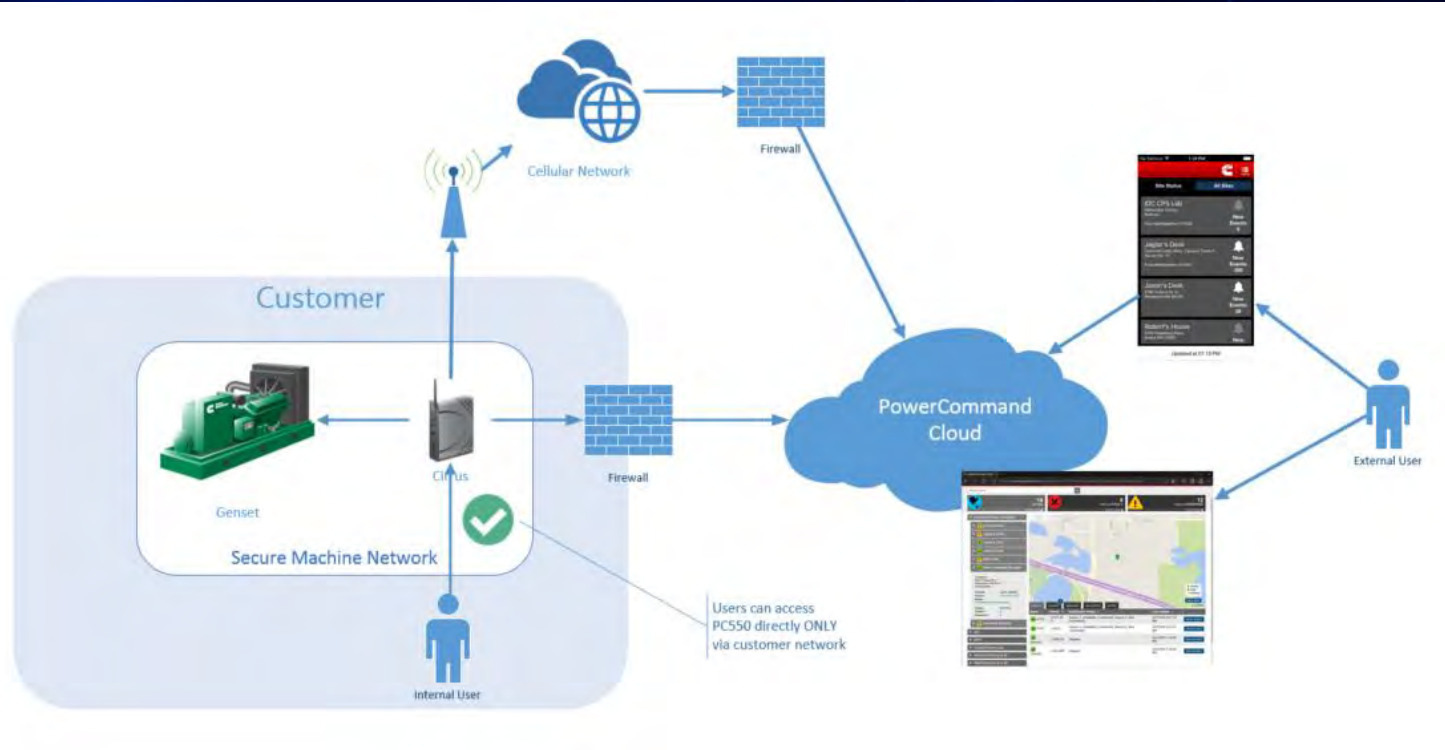


OTPC ATS





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Cloud-Based Remote Monitoring




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PowerCommand Cloud Mobile

← All Sites  




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 01/09/2017 at 03:29 PM

 Event Code: 5664

Genset in Auto

Genset1 01/09/2017 at 03:29 PM

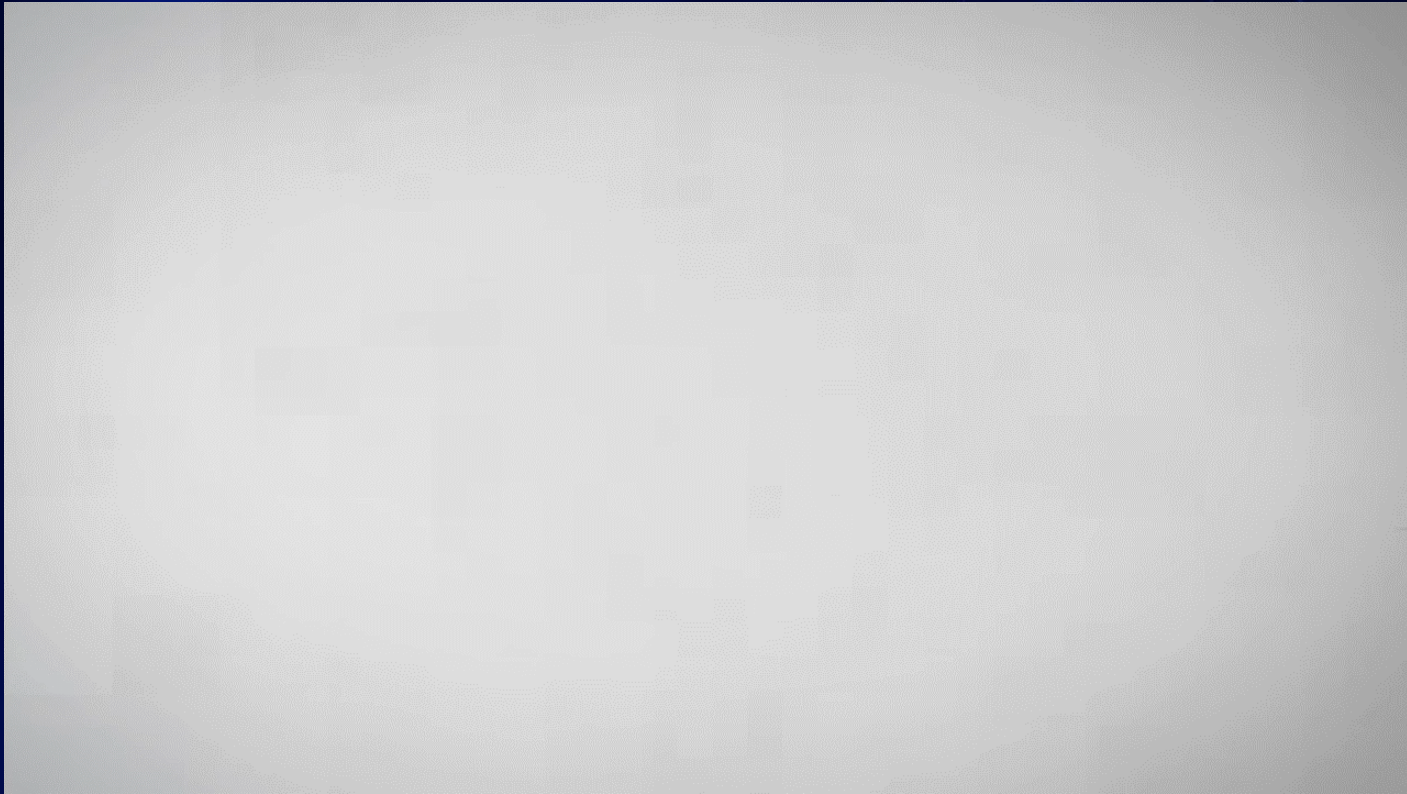
 Event Code: 5138

Genset Not In Auto



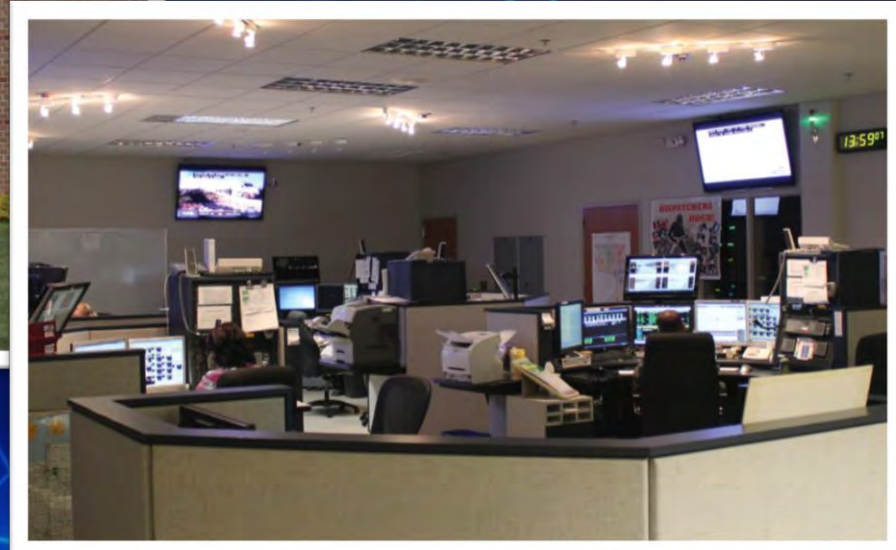
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PowerCommand Cloud™ Video



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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.



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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.



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Thank you!

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