

Novel Adaptations of ISA100 Wireless™

27 August 2013

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Webinar Topics

Introduction and Status of ISA100 WCI

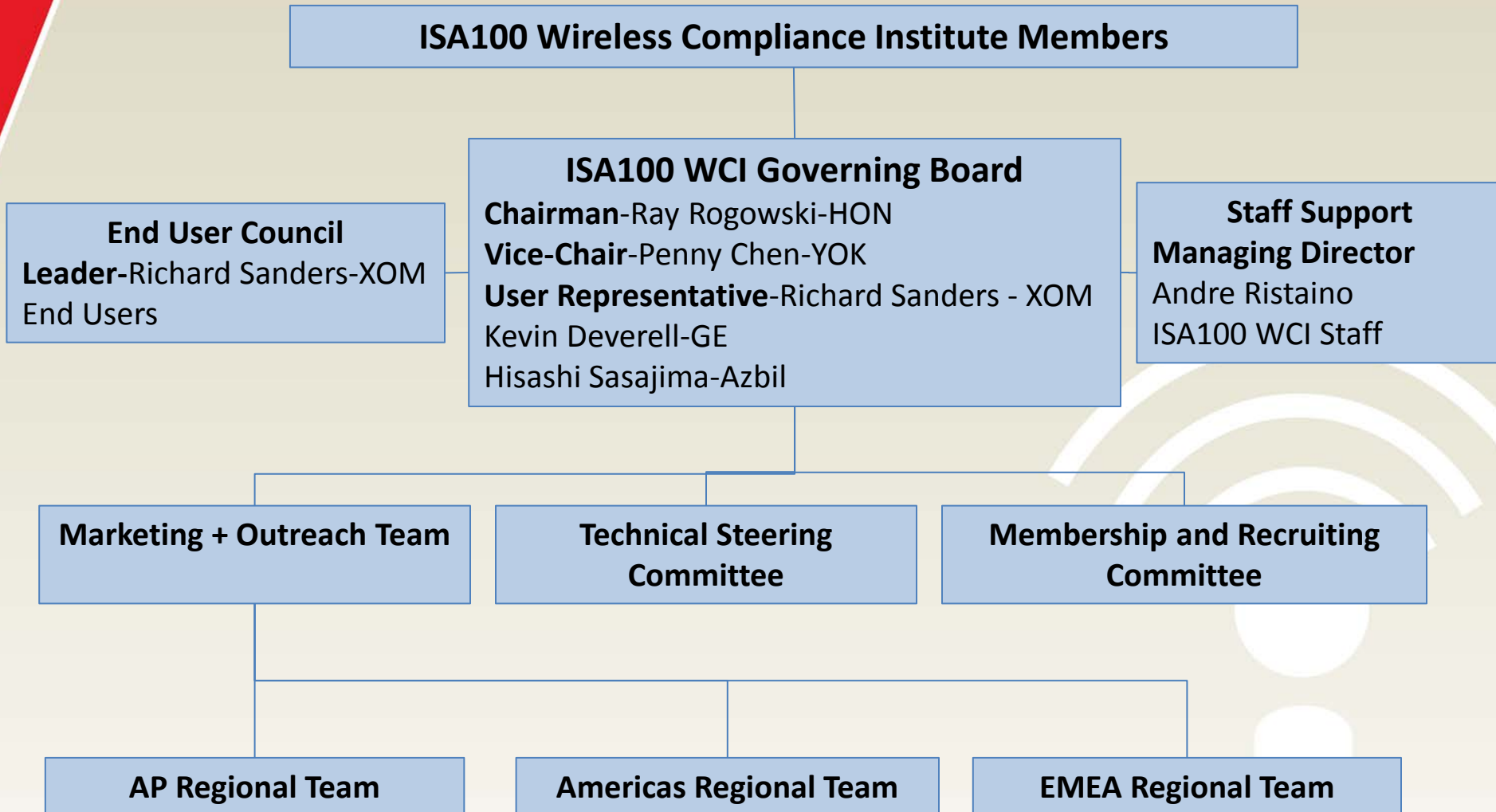
1. GasSecure – GS01 Gas Detector – SIL2 Profisafe
2. Ultra-3eTI - Air Guard iMesh 3e 540 Series (FIPS 140-2)
3. GE Condition Monitoring– Protocol Tunneling
4. GE Portable Condition Diagnosis
5. Honeywell - Hart Adaptor – Protocol conversion or tunneling
6. Enraf Level Sensor – Protocol Tunneling
7. Key Drivers of ISA100 Wireless Popularity

Website – www.isa100wci.org

Articles, Presentations and, Webinars - <http://www.isa100wci.org/en-US/Learning-Center>

YouTube - <http://www.youtube.com/isa100wireless>

Organization Structure



ISA100 WCI End-user Council

- Leader-Richard Sanders, ExxonMobil
 - Elected by end-user members
 - Voting seat on ISA100 WCI Governing Board
 - Forum for vetting requirements for end-user experience initiatives (example IR provisioning)
 - Provide input on priority of ISA100 WCI technical projects.

ISA100 WCI Member Companies

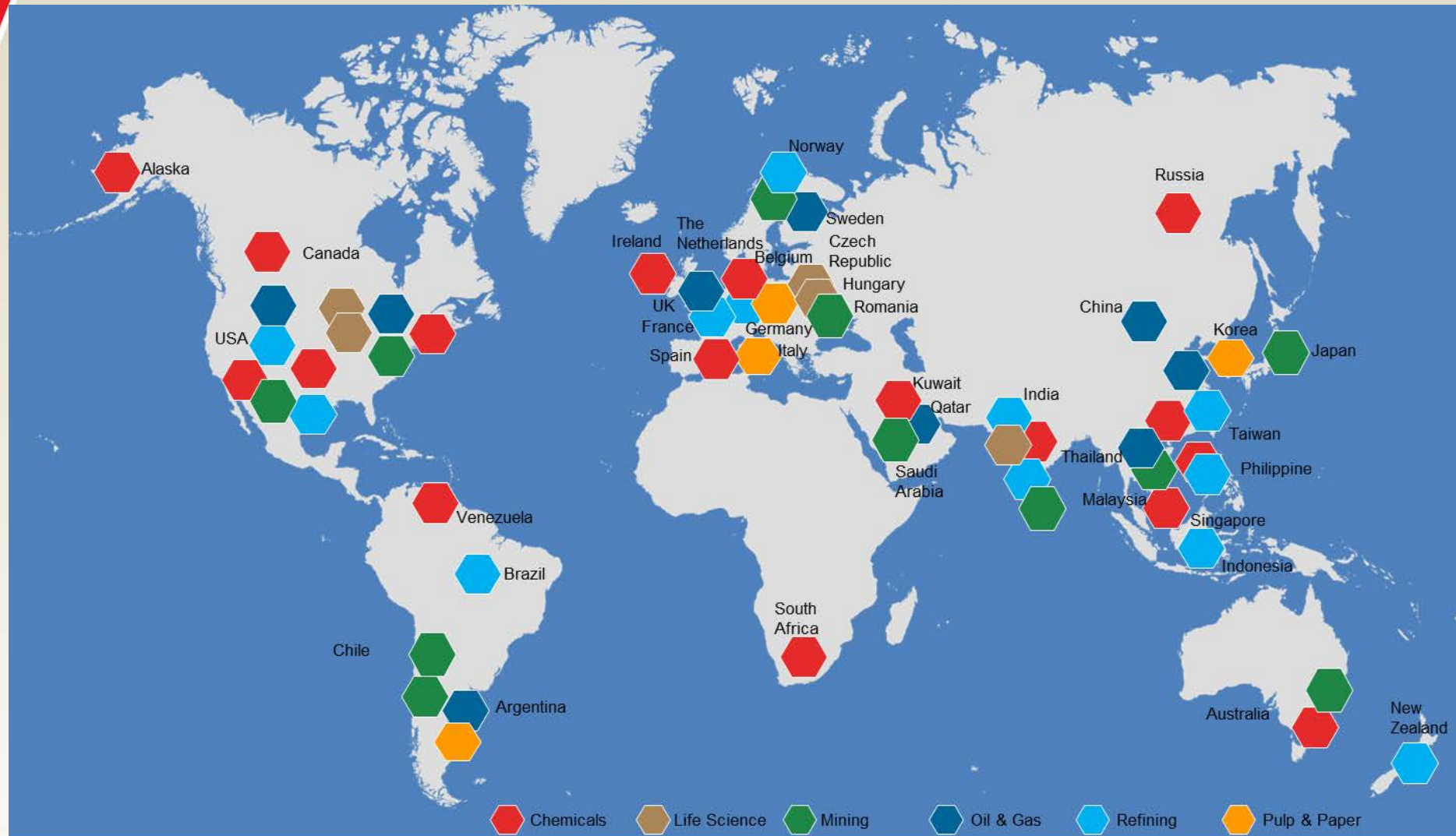


ISA100 Wireless Globalization

- ISA/ANSI ISA100.11a-2011 international standard
- ISO/IEC 62734 (PAS) – CDV due 13 Sept 2013
- Strong interest from around the globe including China.
- Installations around the globe with over 134,000 devices connected in 2012 and consistent growth projected for next 5 years.
- Over 1 Billion hours of operation for ISA100 Wireless devices around the world.

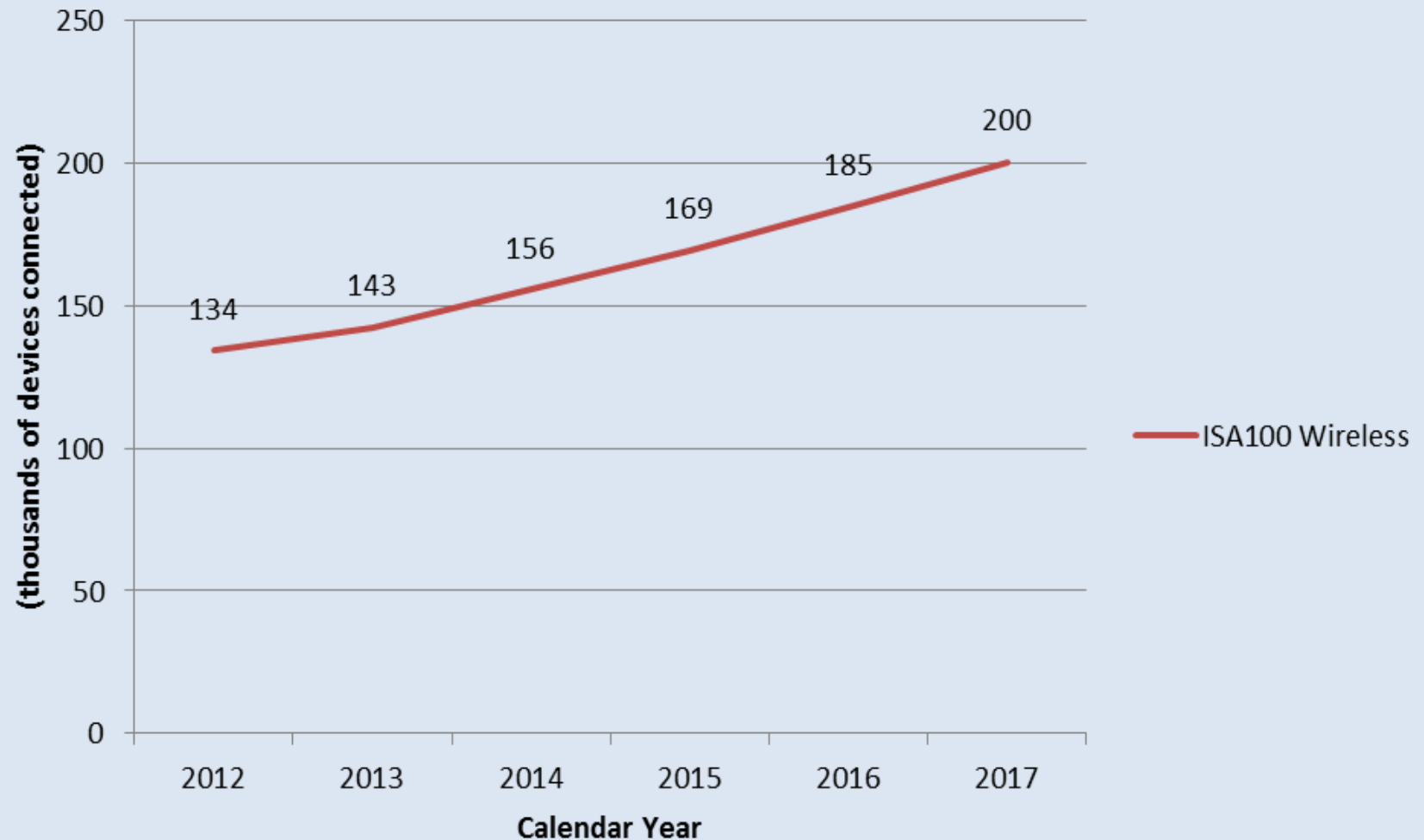
ISA100 Wireless Global Installation Map

Over One Billion Operation Hours



World Market-All Regions Uptake of ISA100 Wireless

(source IMS March 2013 report)



Collaboration With Other Standards Groups

1. **FDT** - Completed FDT DTM Annex for ISA100 Wireless in 2012
2. **Fieldbus Foundation** – The Fieldbus Foundation issued a Preliminary Specification (PS) in August 2013 addressing fieldbus transducer blocks for ISA100.11a wireless devices. The new transducer block specification will enable automation end users to interface ISA100.11a devices to FOUNDATION fieldbus for better integration with a control system, or with FOUNDATION devices.
3. **Fieldbus Foundation** – ISA100 Wireless included in successful Remote operations Management (ROM) trials at Petrobras

ISA100 Wireless Technical Ecosystem

New technology providers added during 2013

1. CDS – Romania - ISA100 Wireless product integrator. Nivis channel sales partner EMEA.
2. R3 Sensors – USA based ISA100 Wireless product integrator.
3. Centro – USA based ISA100 Wireless product integrator. Nivis channel sales partner NA, AP

ISA100 Wireless Products in Pipeline

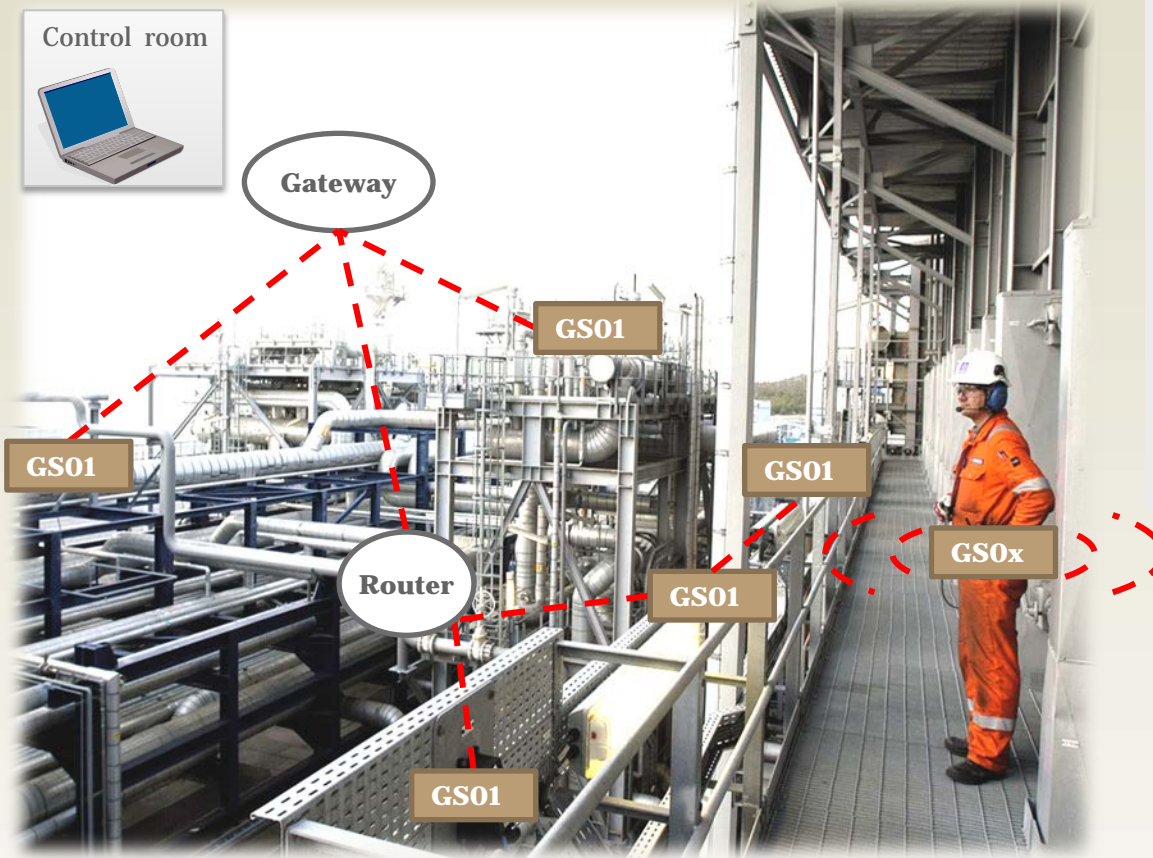
Company	Key Products
COSASCO	Corrosion Sensors
Nivis	ISA100 Wireless SDK
TLV	Steam Trap and valves
R3 Sensors	Temperature, Pressure
CQUPT	Temperature, Pressure
Eltav	Manual Valve Position Sensor
Flowserve	Control Valve, position sensor
Azbil	Control Valve
John Crane	Temperature, Pressure
New Cosmos	Gas Detection Systems
Forbes Marshall	Steam Engineering & Controls

1. GasSecure



GS01 ISA100 Wireless™ Infrared Gas Detectors

See Webcast, July 16th, 2013



Features:

- High reliability – SIL2 incl. SafeWireless™ communication
- Continuous monitoring with two years battery life
- Fast response (5 s)
- No recalibration

<http://www.gassecur.com/>

Gulfaks C.

- Rig operated by Statoil in the North Sea.
- 20 detectors



Architecture

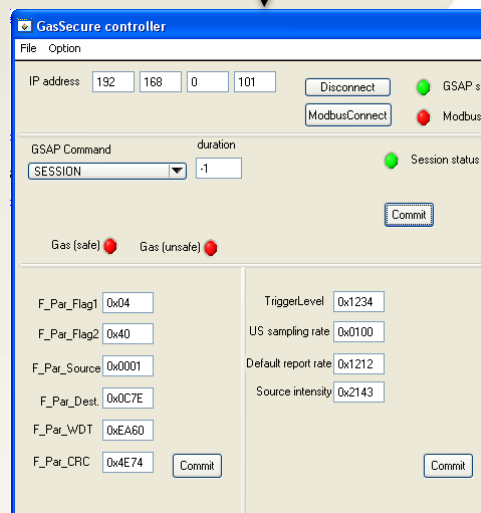


Wired
ProfiNET

Ethernet/Modbus



Wireless ProfiSAFE
on
ISA100 Wireless



GasSecure tool
for safety and
operating
parameters

Enabling Features Unique to ISA100 Wireless

ISA100 Wireless CONTRACTS (QoS)

- Gives guaranteed (if no packet loss) time of packet delivery
- Publish
- Client/Server
- **Bi-directional**

ISA100 Wireless Modern Object oriented design

- Supports tunneling of other protocols
- Facilitates design of user defined operations

ISA100 Wireless supports fragmented packets, in HART this needs to be done by application

ISA100 Wireless supports slow hopping

ISA100 Wireless supports variable length slots

ISA100 Wireless supports star networks (nodes do not have to be routers)

2. Ultra-3eTI



Ultra-3eTI - Air Guard iMesh 3e 540 Series

Seemingly generic ISA100 Wireless **gateways** and **sensor nodes** enhanced for USA DOD encryption requirements.

- FIPS 140-2 cybersecurity certification by US National Institute of Standards and Technology (data encryption)
- Uses certified ISA100 Wireless radio module
- United States of America Department of Defense Market
- Applications include process monitoring, equipment monitoring, maintenance, energy/conservation, HSE.



<http://www.ultra-3eti.com/>

3. General Electric – Condition Monitoring



Essential Insight.mesh



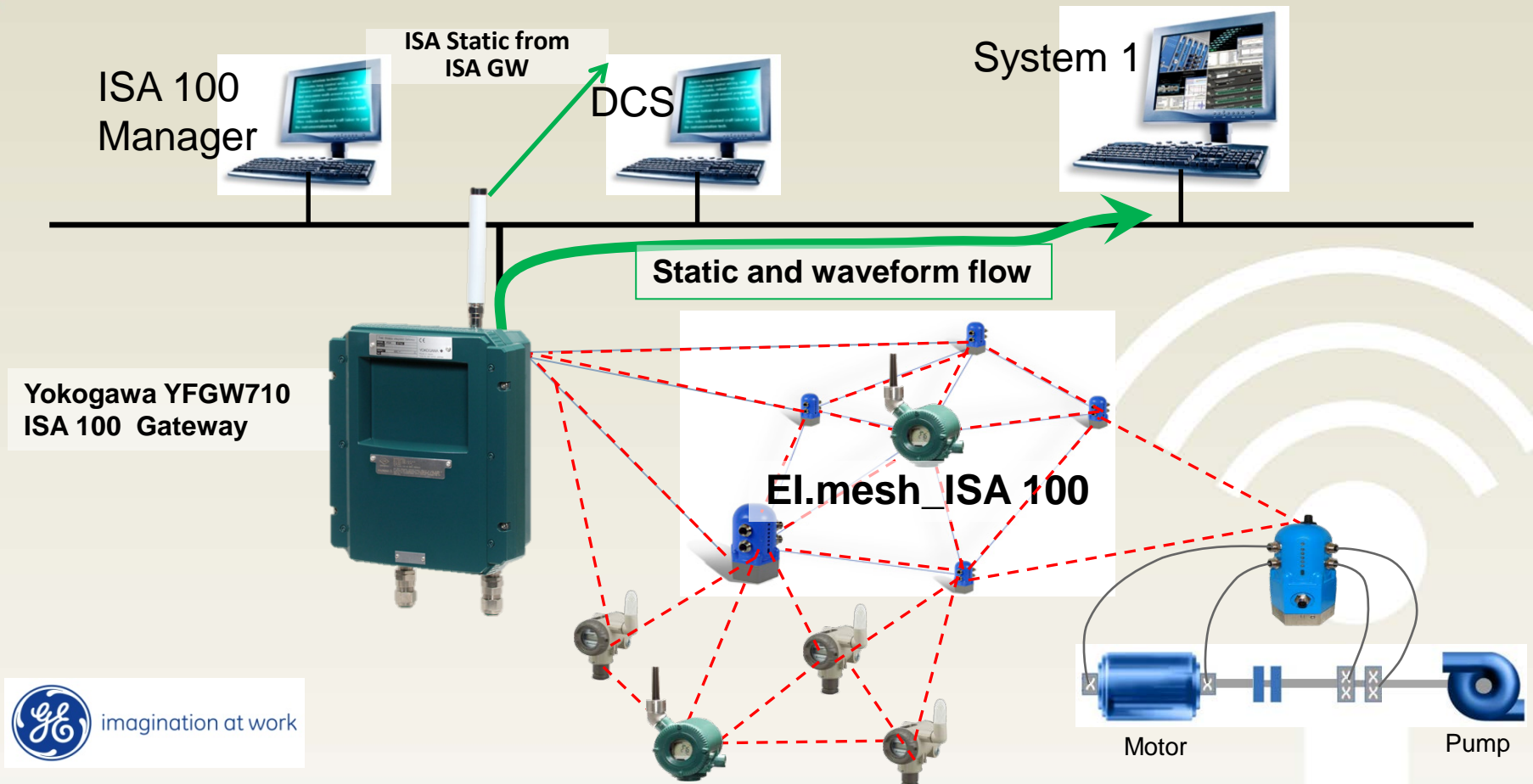
Bently Nevada™

Asset Condition Monitoring



El.mesh certified ISA 100

ISA100
Certification



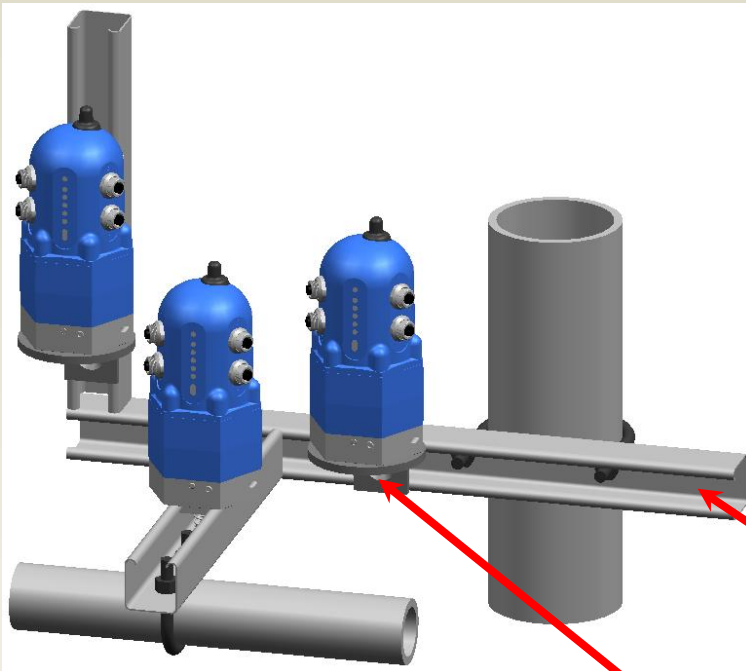
GE Bently Nevada data served to directly to DCS through other vendor gateways

<http://www.ge-mcs.com/en/bently-nevada-monitoring/>

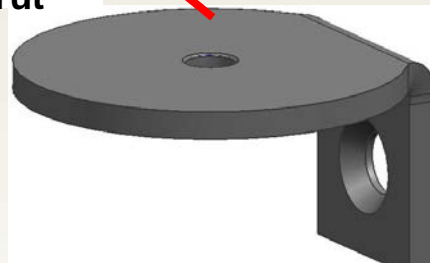
Flexible mounting options

Mounting options:

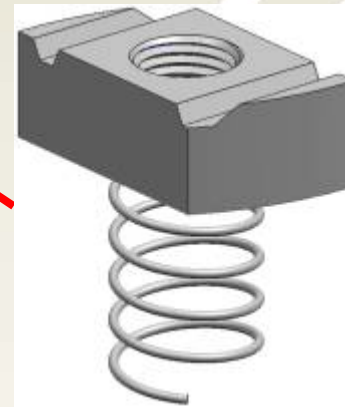
- Mount for Unistrut®
- Stud mount
- Magnetic mount



mounting example with Unistrut®



mounting Bracket for Unistrut®



mounting Nut for Unistrut®



4. GE – Portable Condition Diagnosis



Prowler™ Portable Data Collection Kit

GE's Bently Nevada Prowler Portable Data Collection Kit is a preassembled collection of the components needed to deploy up to four wireless monitoring points on equipment where monitoring is desired.

This self-contained kit enables quick deployment of one temperature and three vibration measurements to effectively monitor machinery on a long term or short term basis with virtually no installation costs. The kit includes GE's System 1* condition monitoring software that delivers all the tools needed for an operator to analyze potential faults on any machine.



5. Honeywell – Hart Adapter



Hart Adapter – Wired Hart to ISA100 Wireless



What it does:

- Wirelessly connects any HART device to an ISA100.11a Network

Key Features:

- ISA100 Wireless Compliant
- Transmit diagnostics and process variable data
- Up to 350 meters (1,000 ft.) range
- Powered from 4-20mA loop and D-cell battery
- Diagnostics indicated by LEDs
- FM Class 1, Div 1, ATEX Class 1, Zone 1
- **UNLOCK STRANDED DIAGNOSTICS**



6. Honeywell Enraf Wireless FlexLine Level Sensor

Honeywell Enraf wireless FlexLine

- Additional diagnostics to detect hardware failures, while a 1oo2D voting algorithm will detect, report and isolate failures on the boards without interruption.
- Validated for use in SIL-2 and SIL-3 applications allowing it to be used in overfill protection applications.
- Certified for use in custody transfer applications
- Customer application remains the same
Data sent to the same Entis Pro software

Proprietary protocol sent through ISA100 Wireless Network.



Key Drivers of ISA100 Wireless Popularity

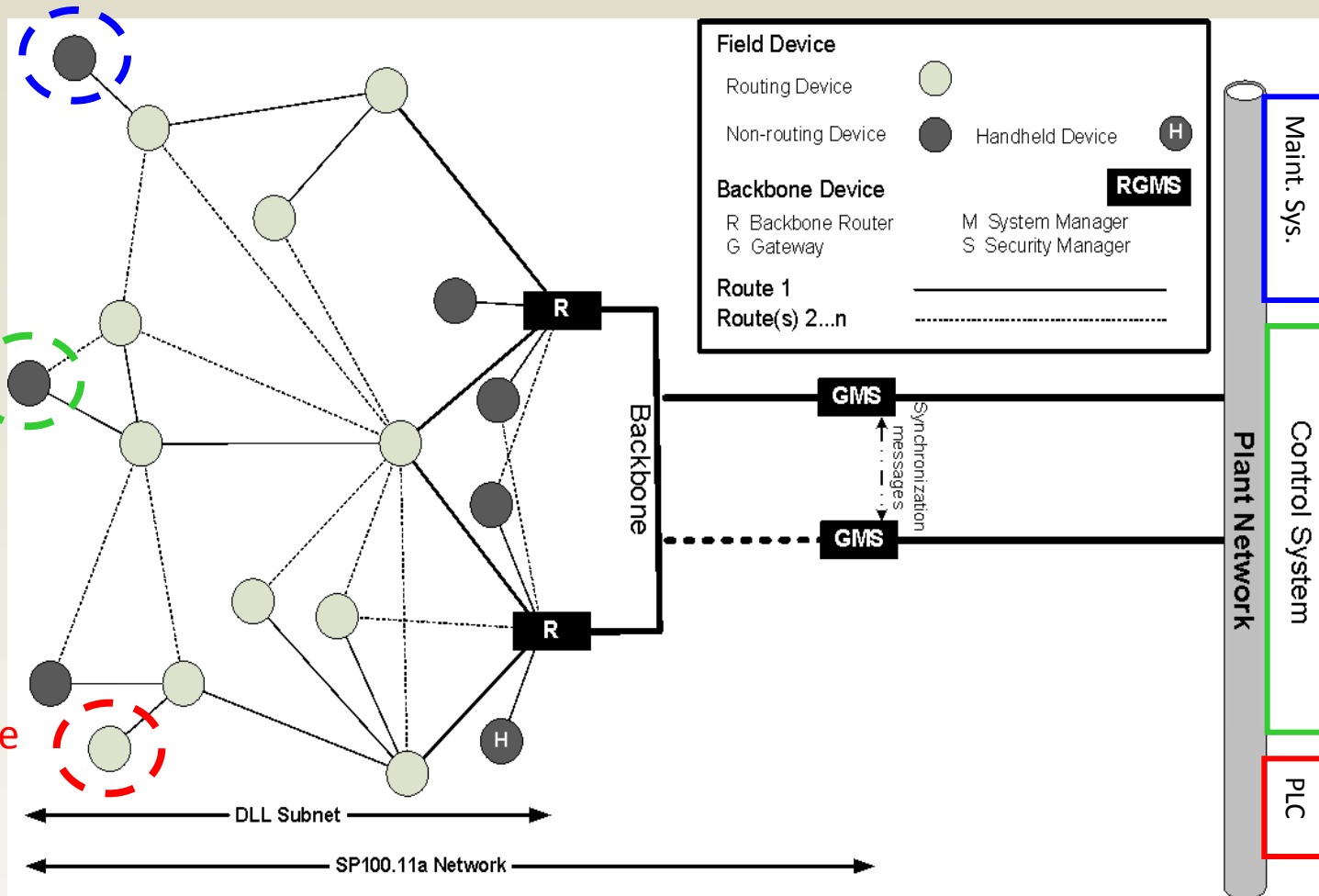
- ISA100 Wireless CONTRACTS (QoS)
 - Gives guaranteed (if no packet loss) time of packet delivery
 - Publish
 - Client/Server
 - **Bi-directional**
- ISA100 Wireless supports slow hopping and variable length slots
- ISA100 Wireless Modern Object oriented design
 - Supports tunneling of other protocols
 - Facilitates design of user defined operations
- Superior Meshing Scheme - ISA100 Wireless supports star networks (nodes do not have to be routers)
- Native IPv6loWPAN in the mesh
- Duo-cast
- 128 bit AES
- PKI
- Tunneling
- Many applications in one infrastructure

Multi-protocol Support

HART

FF

Device
Net



HART

FF

Device
Net