ISA100 WCI Webinar

Webinar date: 2. September 2020

How can we use ISA100 in safety and process applications with regulations written for wired

Presenter:

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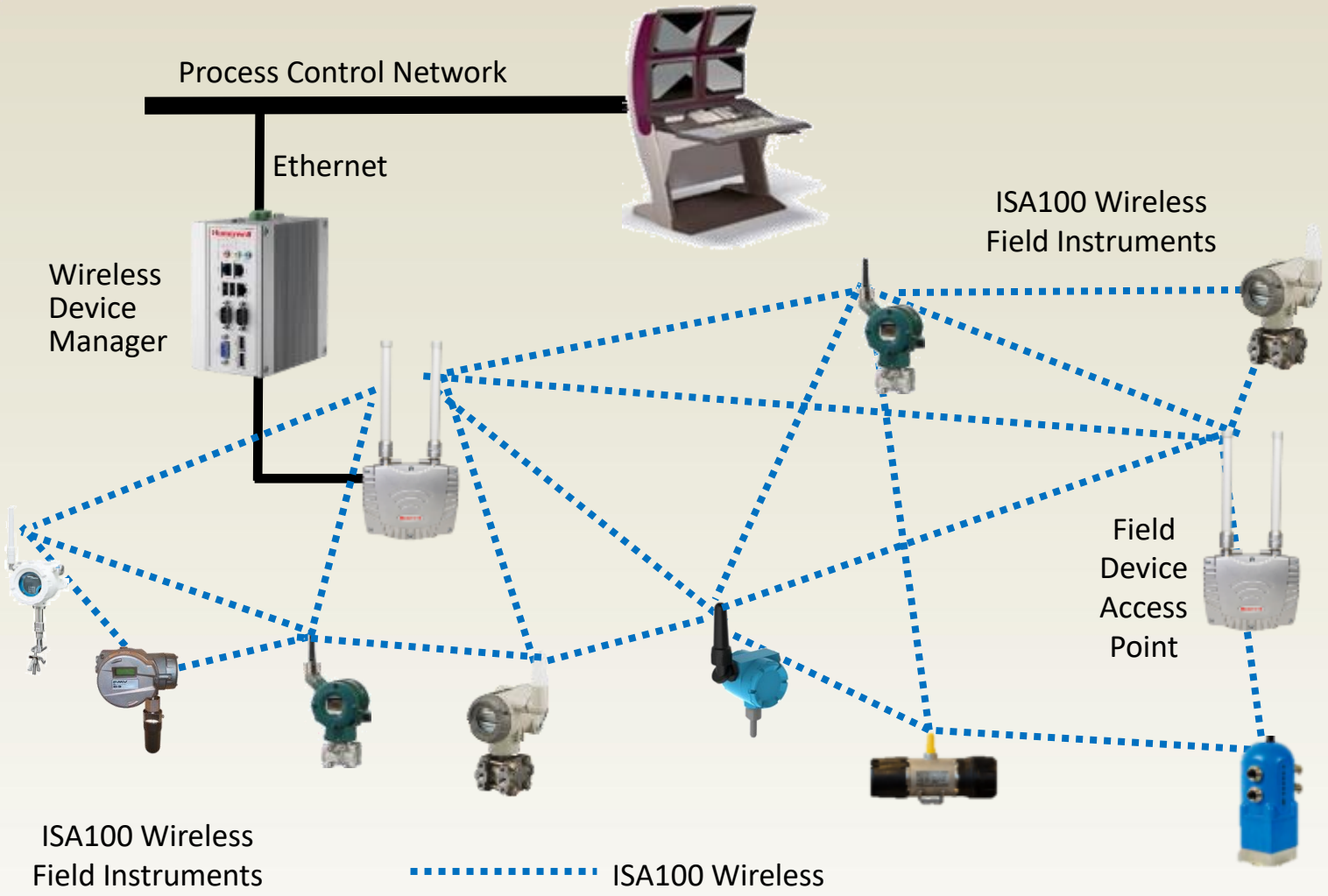
Agenda

1. Introduction Industrial Wireless
2. ISA100 Wireless Industry Standard
3. Safety in an historical perspective
4. Risk, Evolution and Compliance
5. Wired and Wireless
6. Summary
7. Q&A

Introduction to industrial Wireless



Applications examples

- Machine health monitoring
- Basic process control
- Monitoring of well heads
- Remote process monitoring
- Leak detection monitoring
- Diagnosis of field devices
- Condition monitoring of equipment
- Environmental monitoring
- Tank level monitoring
- Gas detection
- Fuel tank gauging
- Steam trap monitoring
- Open loop control
- Stranded data capture
- And more

ISA100 Wireless Fast Facts

- International standard IEC 62734 since 2014
- Complies with ETSI EN 300 320 v1.8.1 (LBT)
- Broad Multi-Vendor Portfolio of ISA100 Wireless Devices
- ISA100 Wireless enables SIL-2 Certification
- Ensured Interoperability - best-in-class solutions from best-in-class suppliers
- Readily available ISA100 Wireless Modules and Stacks
- Enable fast-track development and go to market

Benefits of ISA100 Wireless Instrumentation

Cost Savings	• Up to 90% of installed cost of conventional measurement technology can be for cable conduit and related construction. • Typically: 1/5 the time, 1/2 the cost. • New and scaled applications are now economically feasible.
Improved Reliability	• Wired sensors may be prone to failure in difficult environments. • Wireless can add redundancy to a wired solution.
Improved Visibility	• Condition monitoring (equipment) • Process monitoring
Improved Control	• Add wireless to existing processes for more optimal control.
Improved Safety	• Safety related alarms

ISA100 Wireless Product Portfolio

Infrastructure

Independent Gateway

- Honeywell, Yokogawa

Access Point (AP)

- Honeywell, Yokogawa

Integrated Gateway/AP

- Honeywell, Yokogawa, CDS, Nexcom

GW/AP + Recorder

- Yokogawa

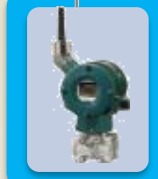
Adapter (HART, etc.)

- Honeywell, Yokogawa

Measurement & Control

Temperature

- Honeywell, Yokogawa

Pressure / Flow

- Honeywell, Yokogawa

Level

- Honeywell, Yokogawa

DI/DO, AI

- Honeywell, Yokogawa

Valve Position

- Eltav, Flowserve, Honeywell

HSE + Life cycle

Corrosion

- RCS , Honeywell

Steam Trap

Spirax Sarco, TLV, Armstrong, Bitherm

Vibration

- GE, Divigraph

Gas

- GasSecure, Scott Safety, New Cosmos, Riken Keiki

pH

- Honeywell, Yokogawa

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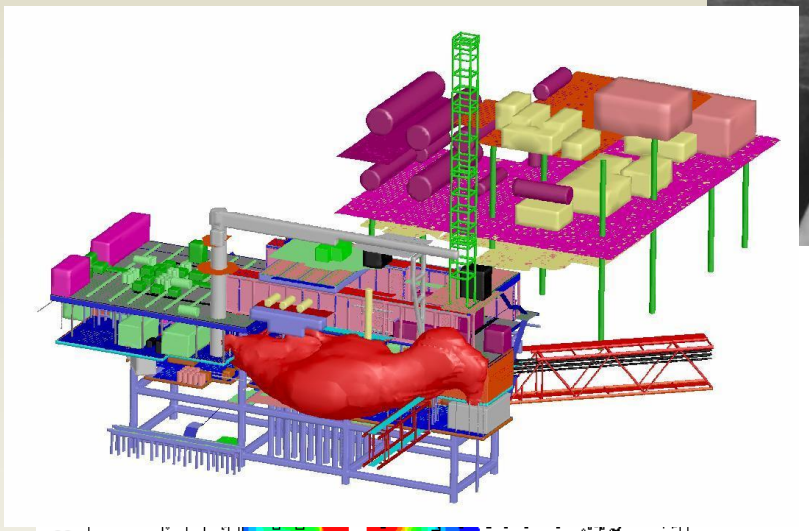
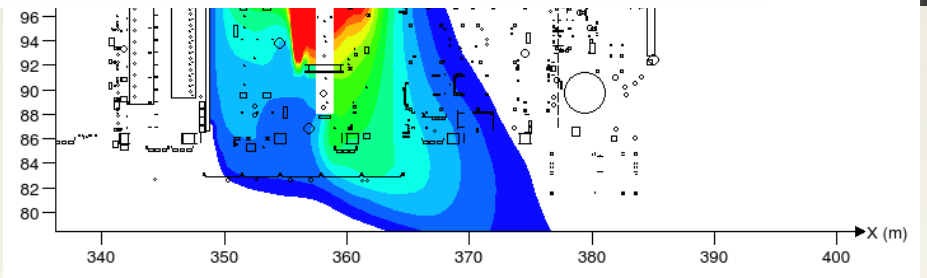
Safety requirements and technology change over time





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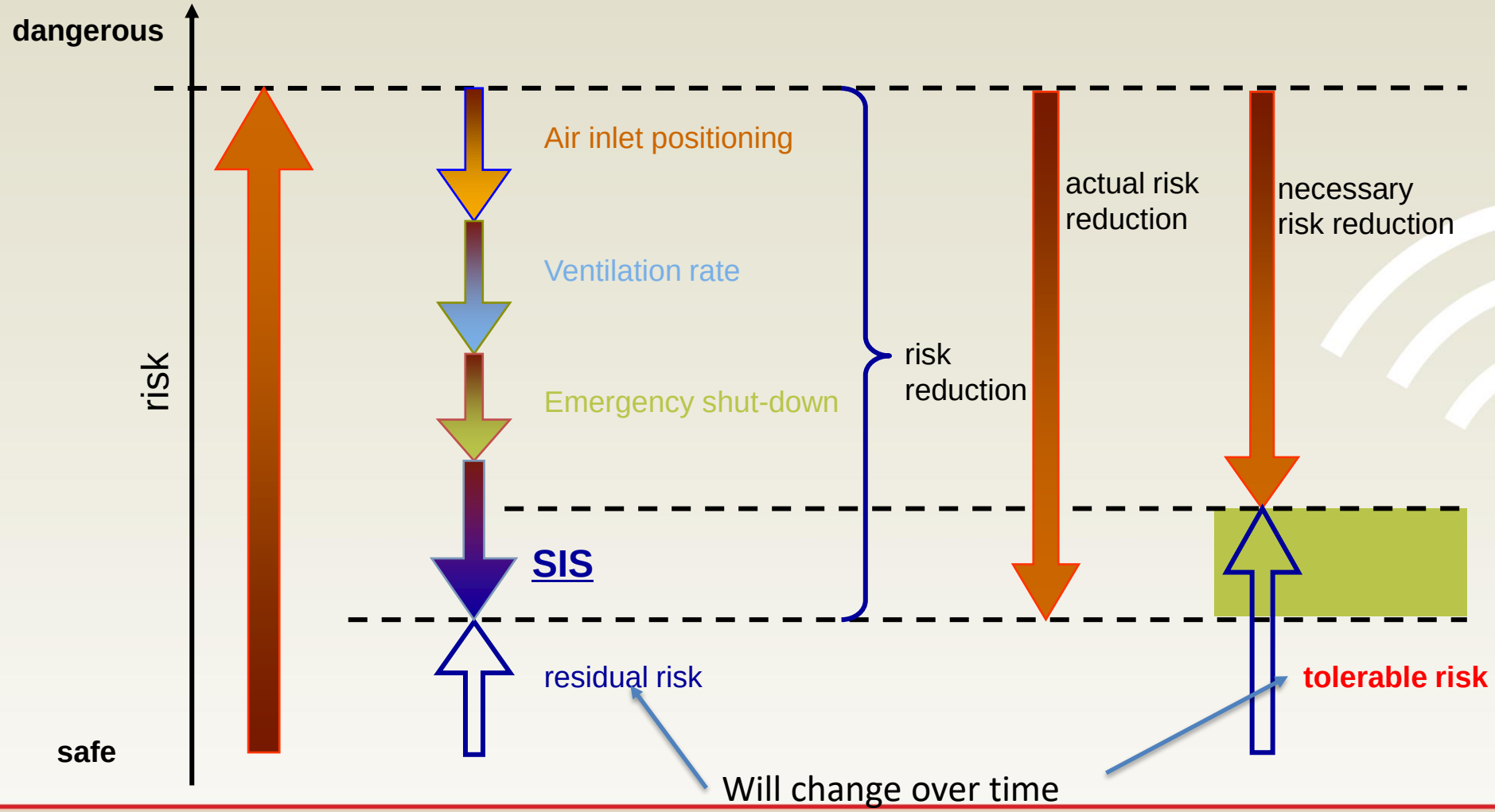
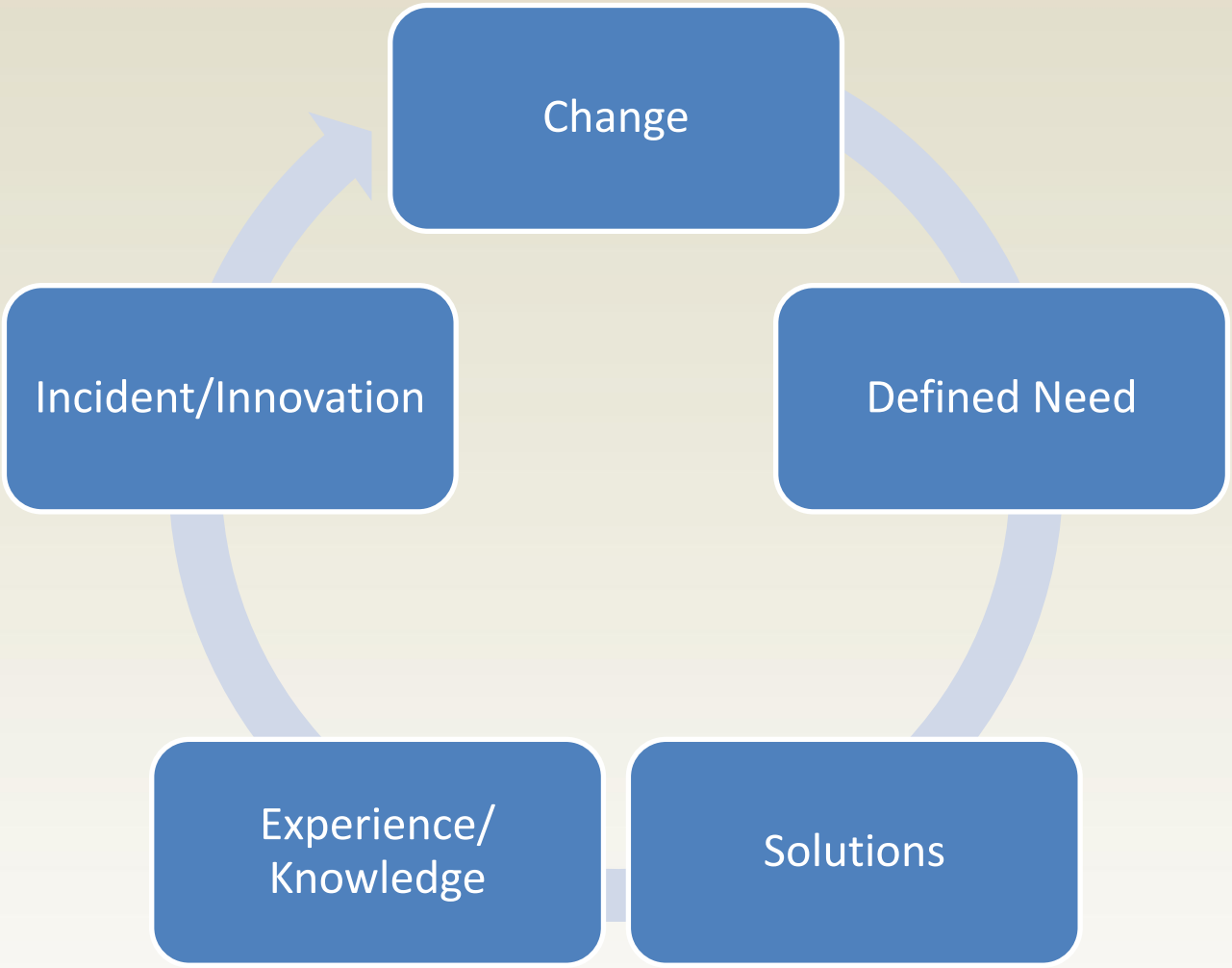
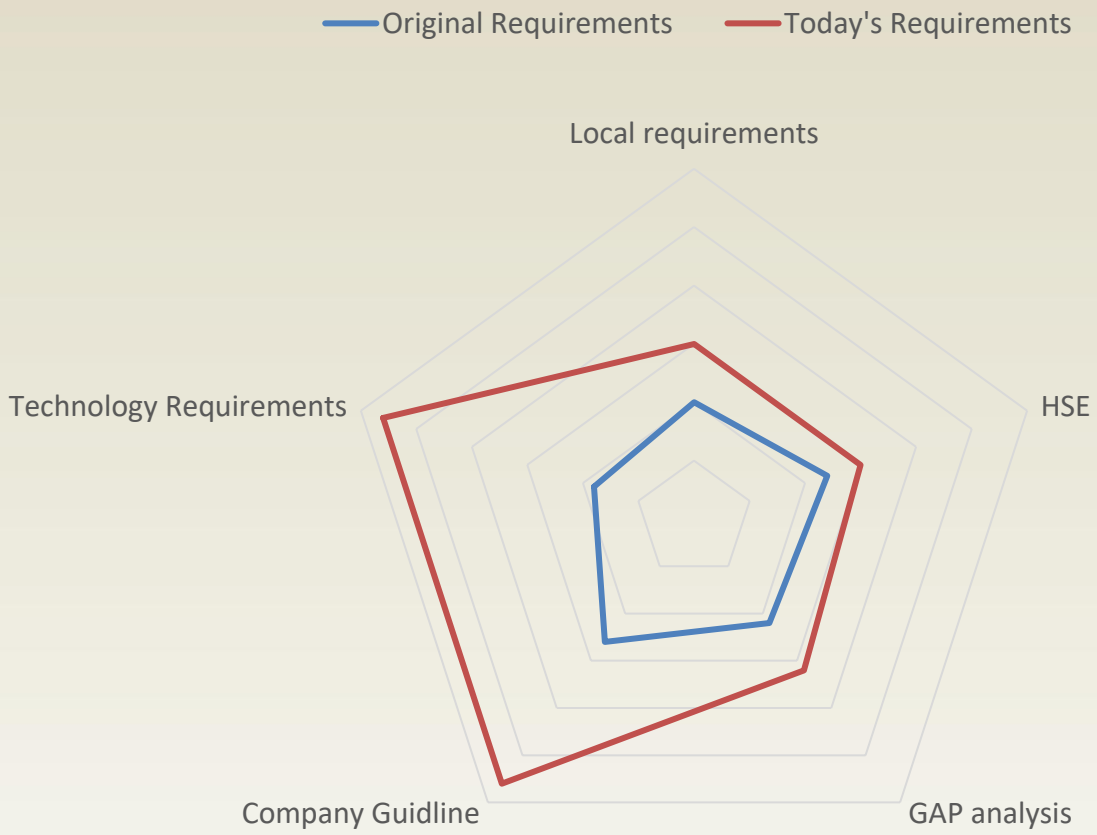
Risk and safety



Evolution of safety



Safety and compliance is a moving target



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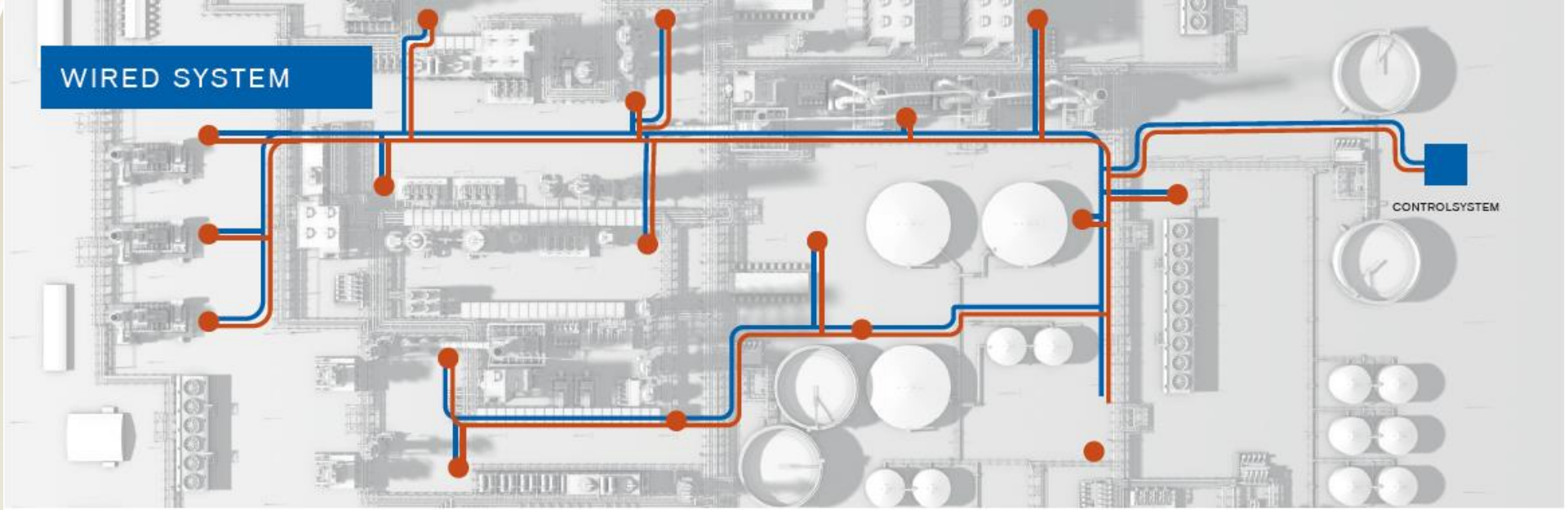
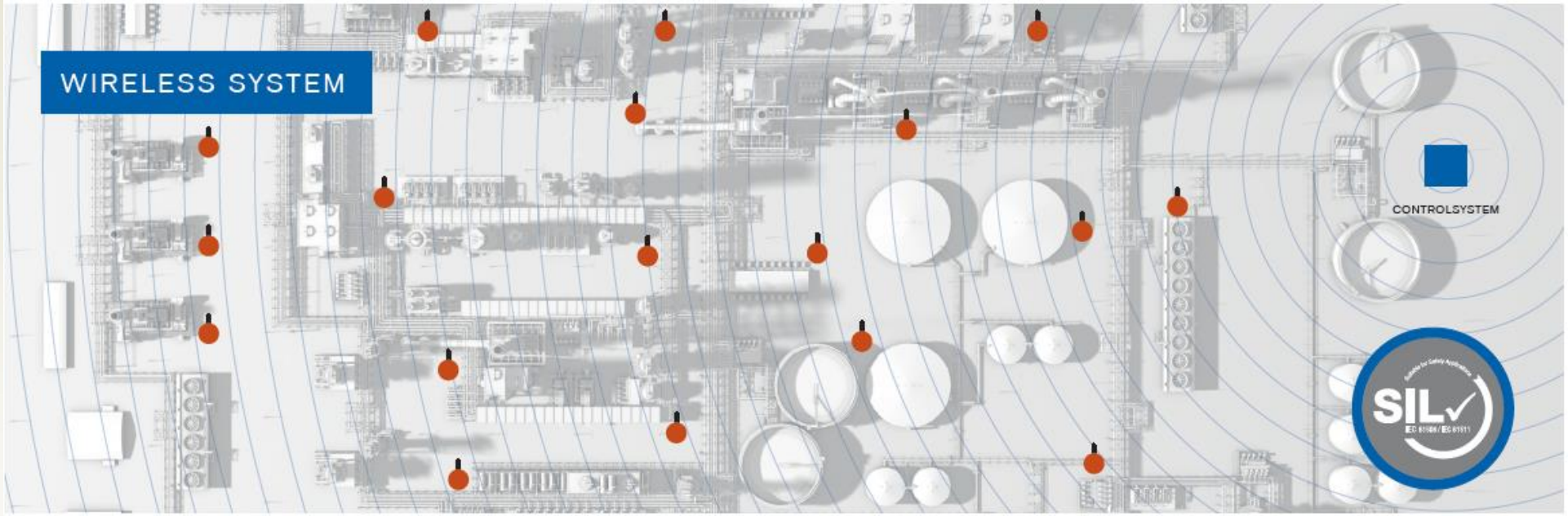
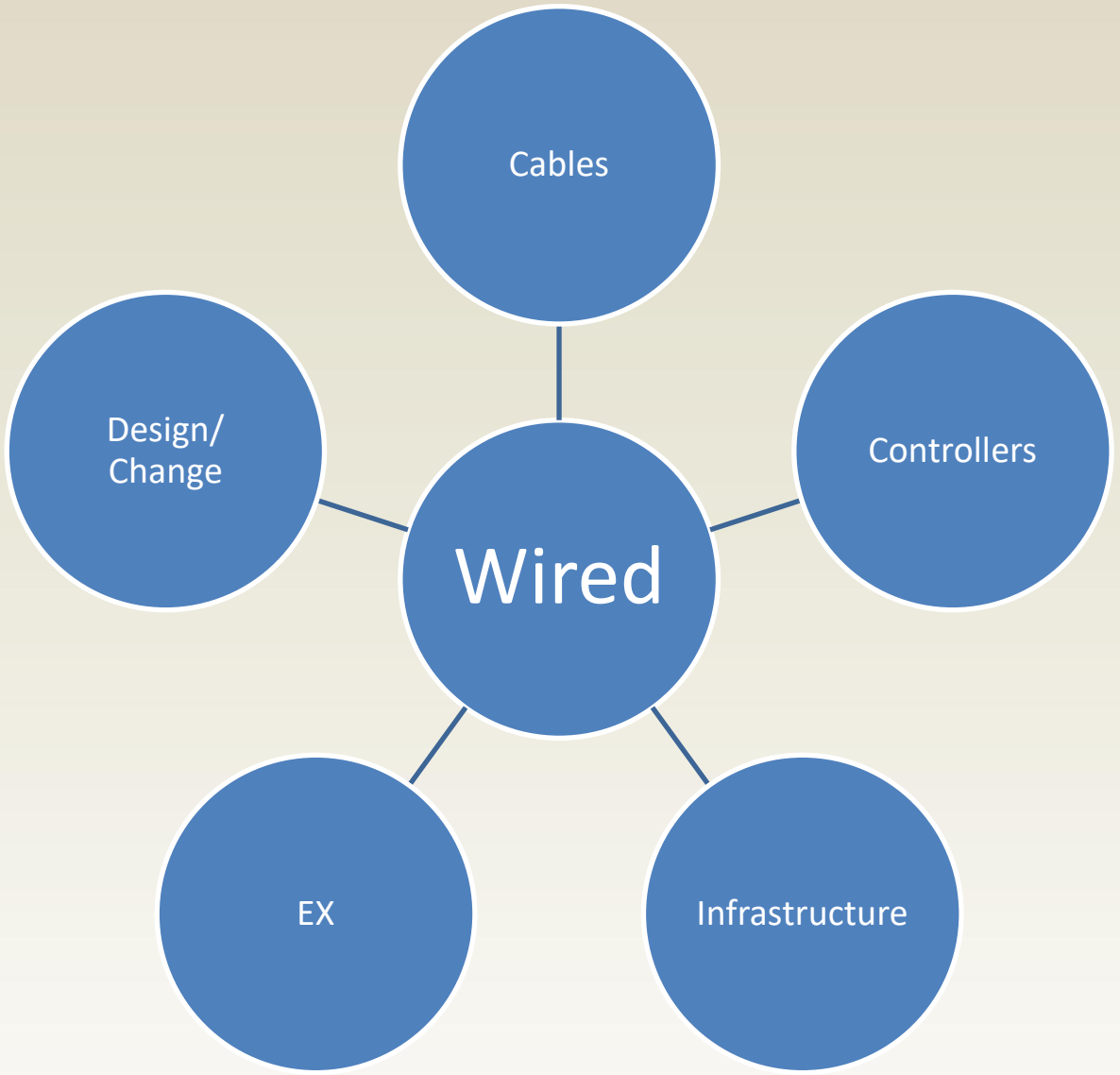

WIRED SYSTEM
CONTROLSYSTEM


WIRELESS SYSTEM
CONTROLSYSTEM
SIL

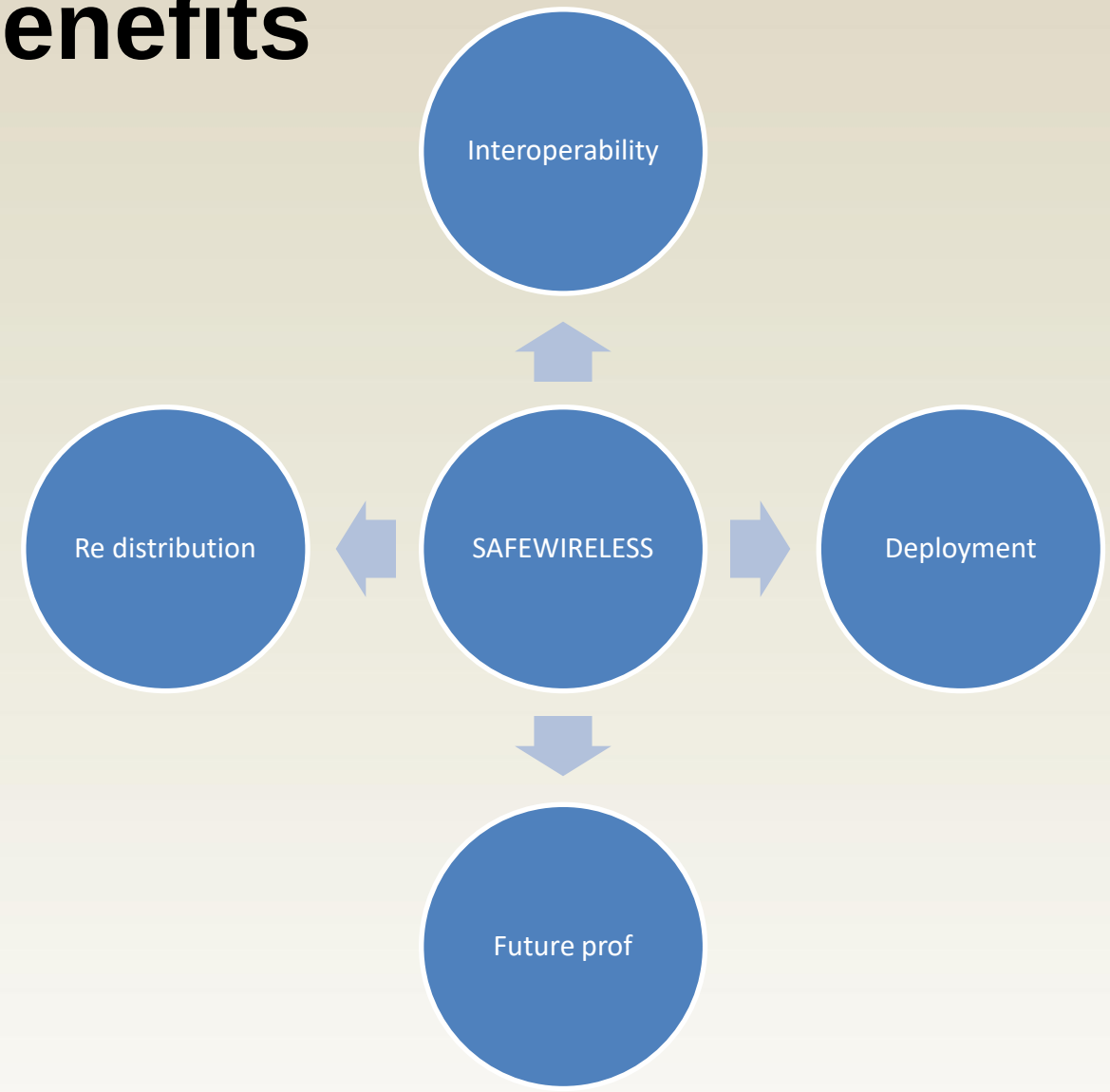
Wired


Cables
Design/
Change
Controllers
Wired
EX
Infrastructure

Wireless

Response time
Disturbance
Segregation
Wireless
Guidelines
Faults
Cyber security

Wireless benefits



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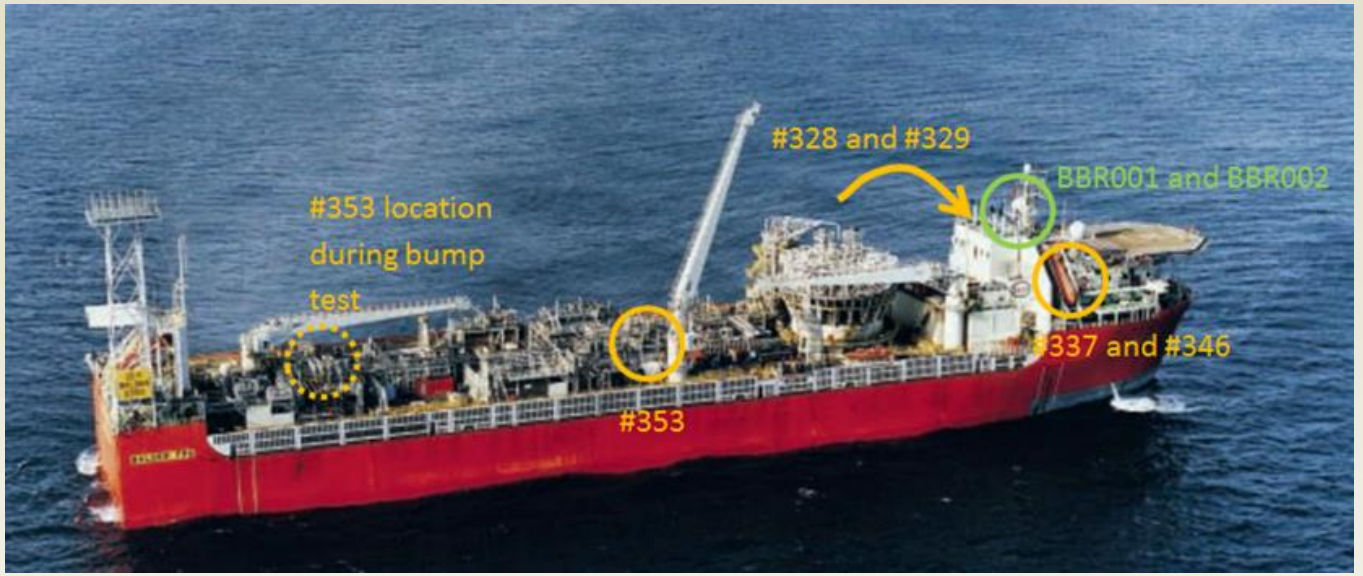
Wireless gasdetection Applications

ExxonMobil FPSO Balder

- Project Details
- - ExxonMobil Balder FPSO, Norwegian North Sea
- - Upgrade of F & G system, to replace obsolete catalytic type detectors with IR
- - Need to increase the number of detectors
- - No spare cables for installation
- - Full swivel stack on the turret
- - Change in processes and temperatures from original design

- ExxonMobil decided to consider using the GasSecure GS01 wireless solution
- - Initial trial approved in 2014
- - 5 GS01 IR Point detectors, 2 Access Points and 2 Management Stations

Application
ExxonMobil FPSO Balder – Trial / Phase 1



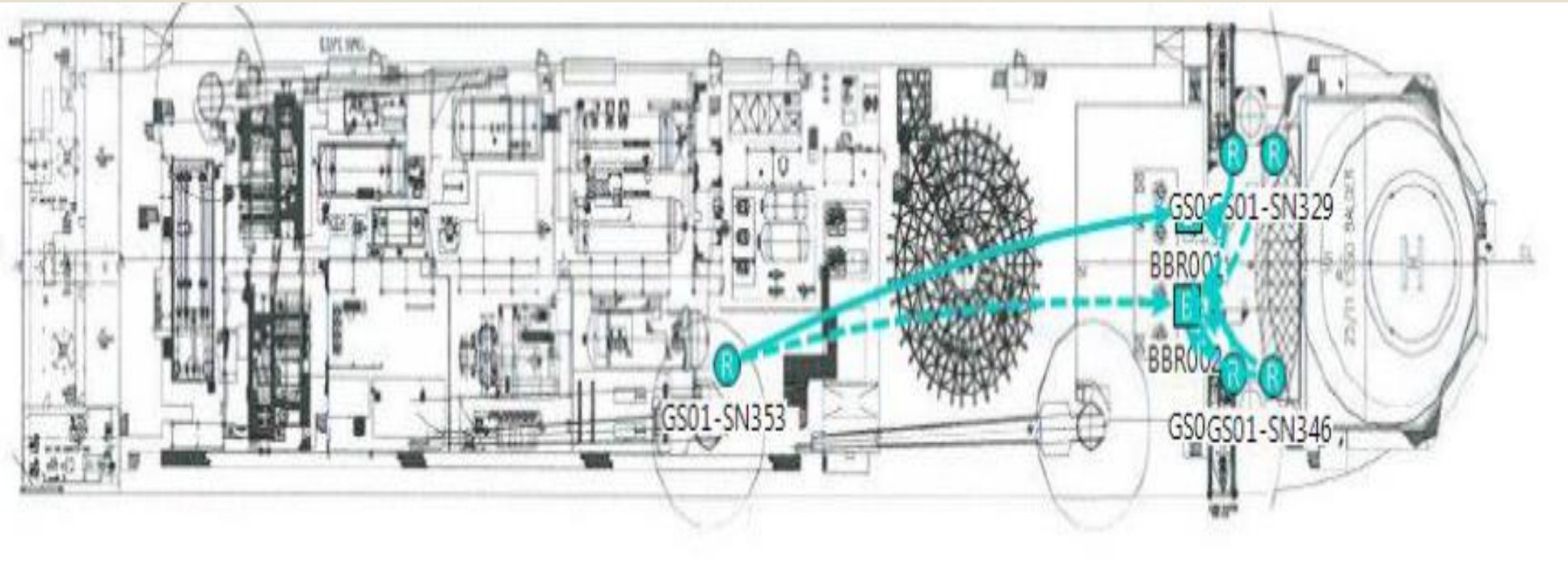
- 5 detectors installed in December 2014
- Redundant Management Stations and Access Points
- Integration to existing ABB 800xA control system

Application
ExxonMobil FPSO Balder – Trial / Phase 1

Client / Country	ExxonMobil / Norway
Project / Facility	FPSO Balder
Process / Plant / Application	FPSO Turret
Equipment / Infrastructure	5 GS01, 2 Access Points, 2 Management Station
SIL or Non-SIL	Non-SIL, with SIL 2 design for future upgrade
Services / Integration / Support	GasSecure and ABB
Executive Action	No
Main Challenges	Pipework / superstructure / offshore
Key Notes / Key Sales Points	Excellent wireless coverage

Application
ExxonMobil FPSO Balder – Trial / Phase 1

Initial installation December 2014

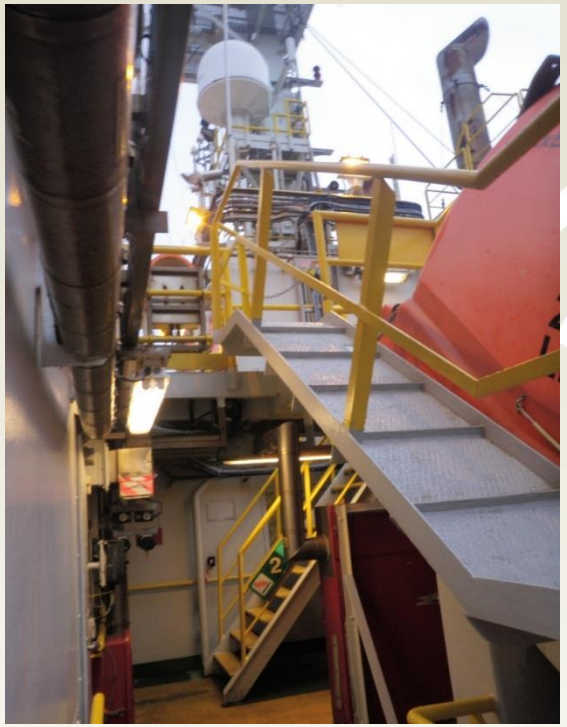


Application
ExxonMobil FPSO Balder – Trial / Phase 1

Management Stations and Access points

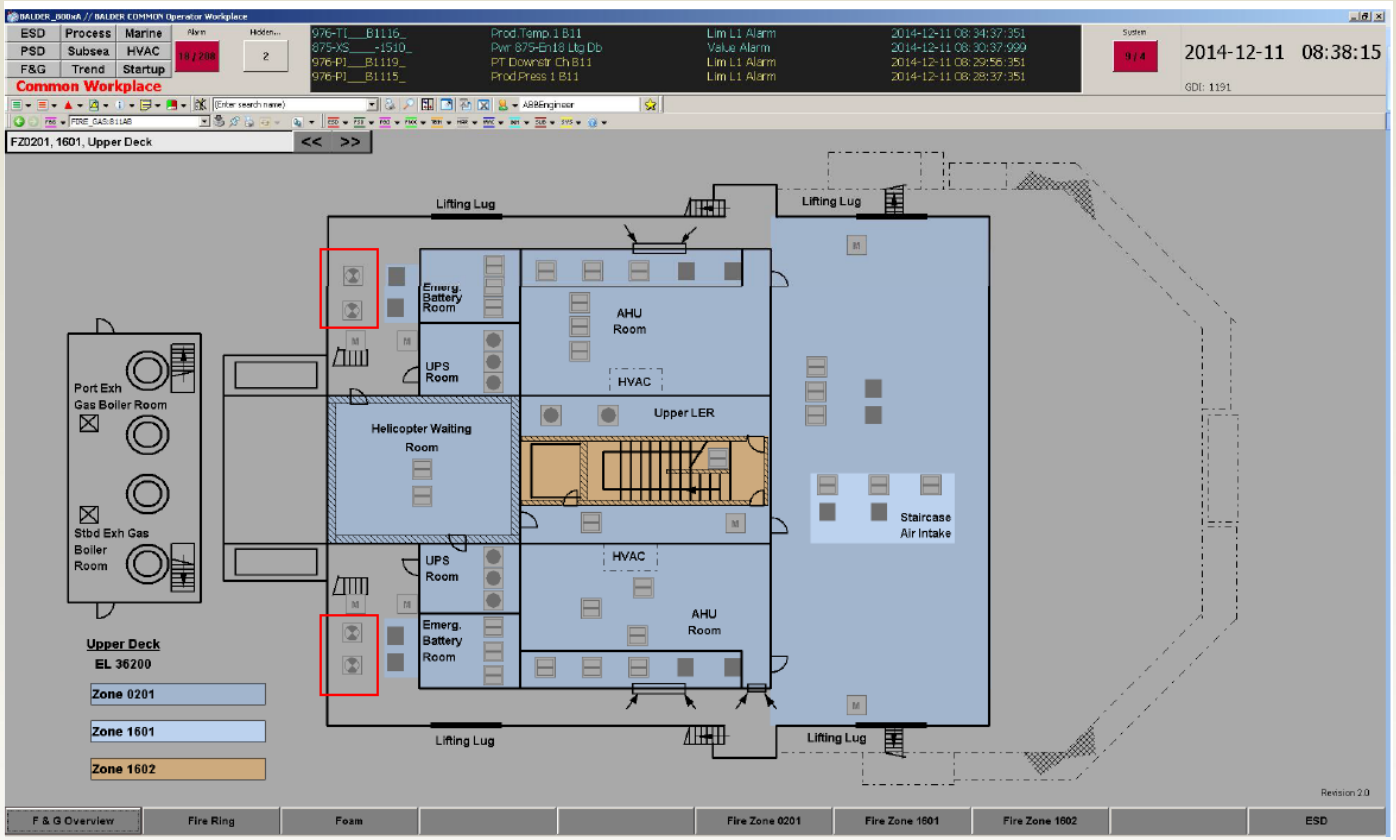
Application
ExxonMobil FPSO Balder – Trial / Phase 1

GS01 detector placements



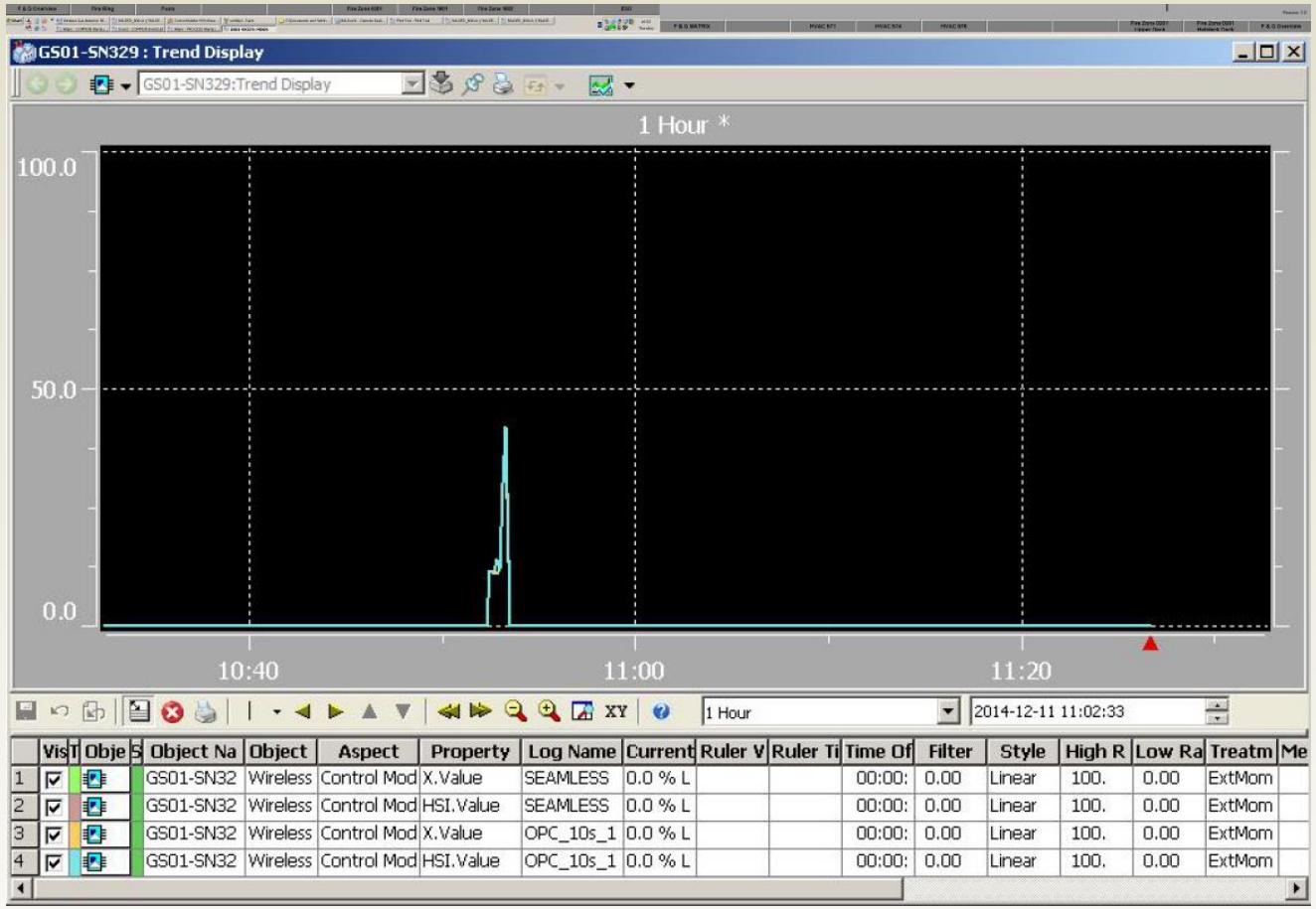
Application
ExxonMobil FPSO Balder – Trial / Phase 1

Control room



Application
ExxonMobil FPSO Balder – Trial / Phase 1

Bump test



	Vis	T	Obje	S	Object Na	Object	Aspect	Property	Log Name	Current	Ruler V	Ruler Ti	Time Of	Filter	Style	High R	Low Ra	Treatm	Me
1	☑				GS01-SN32	Wireless	Control Mod	X.Value	SEAMLESS	0.0 % L			00:00:	0.00	Linear	100.	0.00	ExtMom	
2	☑				GS01-SN32	Wireless	Control Mod	HSI.Value	SEAMLESS	0.0 % L			00:00:	0.00	Linear	100.	0.00	ExtMom	
3	☑				GS01-SN32	Wireless	Control Mod	X.Value	OPC_10s_1	0.0 % L			00:00:	0.00	Linear	100.	0.00	ExtMom	
4	☑				GS01-SN32	Wireless	Control Mod	HSI.Value	OPC_10s_1	0.0 % L			00:00:	0.00	Linear	100.	0.00	ExtMom	

Application
ExxonMobil FPSO Balder – Phase 2

Second installation April 2015

- After 5 month trial, ExxonMobil approved the GS01 solution
- 13 new GS01 detectors were installed in turret, replacing 13 catalytic detectors
- Installation carried out by ExxonMobil's own team on the asset
- Swivel stack was full on turret

Process / Plant / Application	FPSO Turret
Additional Equipment / Infrastructure	13 GS01, 2 Access Points, 0 Management Station
SIL or Non-SIL	Non-SIL, with SIL 2 design for future upgrade
Services / Integration / Support	GasSecure and ABB
Executive Action	No

Application
ExxonMobil FPSO Balder – Phase 3

A full F & G mapping survey was undertaken in 2016

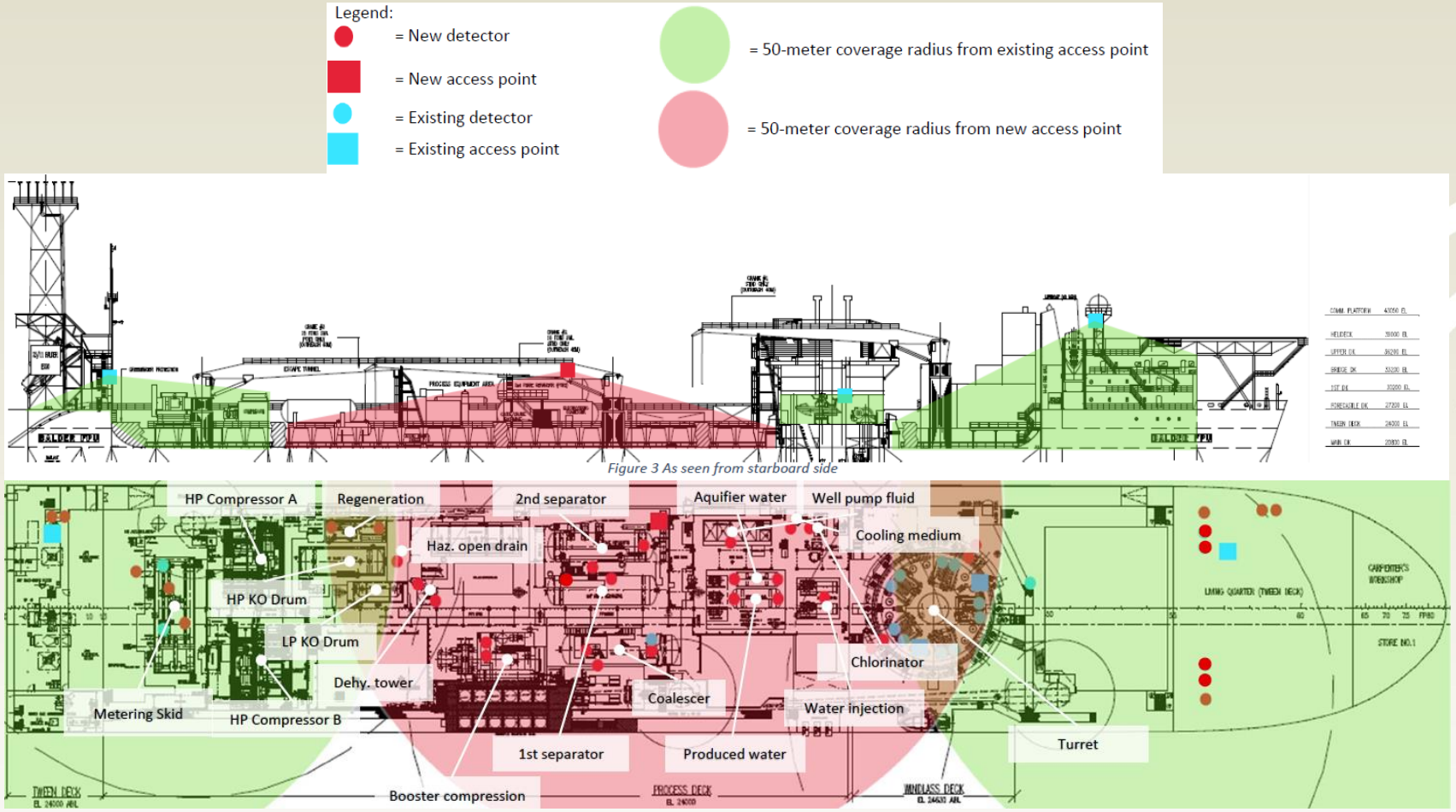


Figure 3 As seen from starboard side

Application
ExxonMobil FPSO Balder – Phase 3

Client / Country	ExxonMobil / Norway
Project / Facility	FPSO Balder
Additional Equipment / Infrastructure	41 GS01, 4 Access Points, 0 Management Stations
SIL or Non-SIL	Non-SIL, with SIL 2 design for future upgrade
Services / Integration / Support	GasSecure and ABB
Executive Action	Yes. Shutdown of FPSO with zoned 2ooN, HH alarm at 30%LEL

Application
ExxonMobil FPSO Balder – Phase 3

Third installation August 2016

Application
ExxonMobil FPSO Balder

Dräger

Results from Balder

- System in operation now for almost 3 years
- Proven to be reliable and extremely cost effective
- Wireless technically approved by ExxonMobil for worldwide use
- Full executive action taken by the gas detection system
- ABB 800XA waiting to be upgraded to a SIL

Client / Country / Project	ExxonMobil / Norway / Balder FPSO
Final Equipment / Infrastructure	59 GS01 detectors, 8 Access Points, 2 Management Stations
SIL or Non-SIL	Pending, awaiting new ABB SIL control system
Executive Action	Yes. Shutdown of FPSO with zoned 2ooN, HH alarm at 30%LEL

Wrap-up

1. Introduction Industrial Wireless
2. ISA100 Wireless Industry Standard
3. Technology for wireless gas detection
4. System Architecture
5. SIL Certification and Safety Function
6. SafeWireless and PROFIsafe
7. Fault Tolerant Wireless Network
8. Case Study
9. Summary

Online Resources

www.isa100wci.org

- Learning Center with White Papers
- Articles, End-user stories, Forum
- Receiving over 20,000 web views per month
- Full list of certified/registered ISA100 Wireless devices
- And more useful content for you and your business

ISA100 Wireless Interest Group

- Latest news, end-user and expert discussions, insights
- 900 members and growing; please join and invite your peers to join as well !
- Receiving over 5,000 web views per month
- Limited Time Offer: Join the group and you will be entered in a prize draw to win a new iPad

ISA100 Wireless LinkedIn Interest Group

Limited Time Promotion

SCAN ME

Scan the QR code and join the ISA100 Wireless Linkedin group. **If you join during our limited time offer**, you will be entered in a prize draw to win a new iPad!

ISA100 Wireless Adoption Development Eco-system

WCI ISA100 Wireless Rapid Development Kit

- Everything you need to develop an ISA100 Wireless (IEC 62734) connected field instrument
- Develop ISA100 Wireless (IEC 62734) compliant and certifiable field instruments with minimal effort using application layer code provided
- Includes reference hardware design for ISA100 Wireless (IEC 62734) field instrument implementation
- Certified WISA modules run ISA100 Wireless communication stack
- User friendly SPiN development board includes OLED display and a large variety of sensors

https://centerotech.com/product/wci-isa100-rapid-development-kit/

Questions?

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For Your Attention!