Dräger

ISA 100 **WIRELESS COMPLIANCE INSTITUTE** ™

ISA100 WCI Webinar

Webinar date: 22. March 2022

Solving a leak challenge and preparing for the future

Presenter:

Dräger

Ådne Baer-Olsen
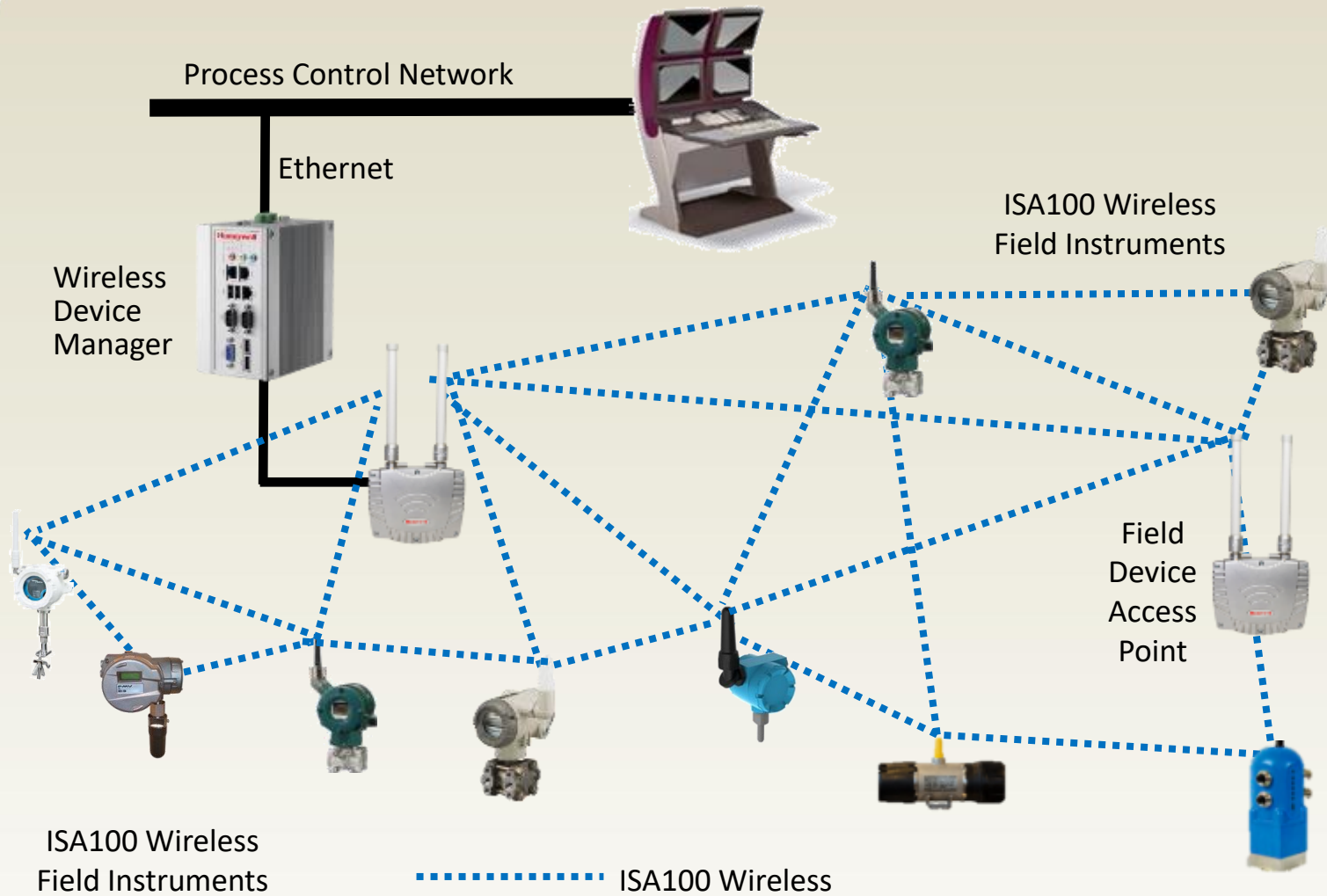Adne.Olsen@draeger.com

Agenda

1. About the speakers

2. Introduction Industrial Wireless

3. ISA100 Wireless Industry Standard

4. Adopting to changes

5. Safety challenge

6. Power of ISA100

7. Solution

8. Potential

9. Summary

10. Q&A

Introduction to industrial Wireless

Process Control Network

Ethernet

Wireless
Device
Manager

ISA100 Wireless
Field Instruments

Field
Device
Access
Point

ISA100 Wireless
Field Instruments

· · · · · · · · · · · ISA100 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

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3

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

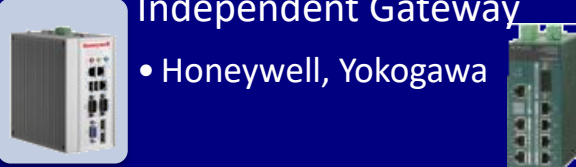| Cost Savings	• Up to 90% of installed cost of conventional measurement technology can be for cable conduit and related construction. • Typically: 1/5 the time, 1/2 the cost. • New and scaled applications are now economically feasible.
Improved Reliability	• Wired sensors may be prone to failure in 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

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ISA100 Wireless Product Portfolio

Infrastructure

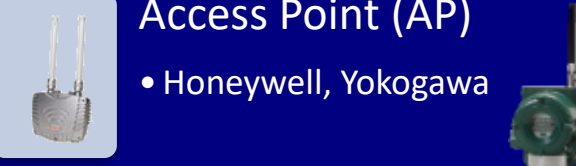**Independent Gateway**
- Honeywell, Yokogawa

Access Point (AP)
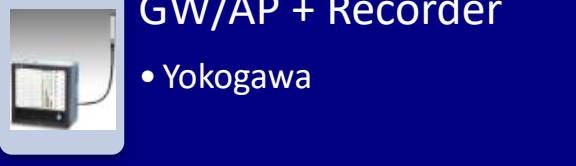- Honeywell, Yokogawa

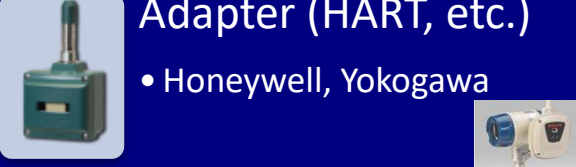**Integrated Gateway/AP**
- Honeywell, Yokogawa, CDS, Nexcom
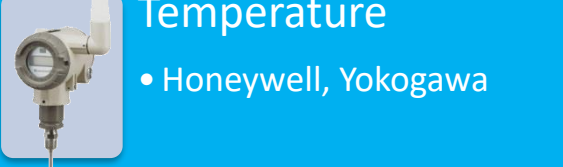
GW/AP + Recorder
- Yokogawa

Adapter (HART, etc.)
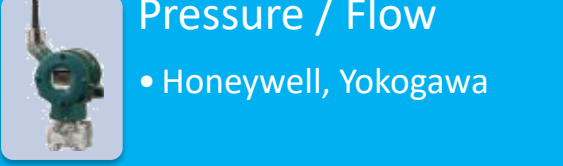- Honeywell, Yokogawa

Measurement & Control

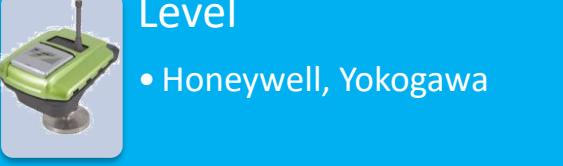**Temperature**
- Honeywell, Yokogawa

Pressure / Flow
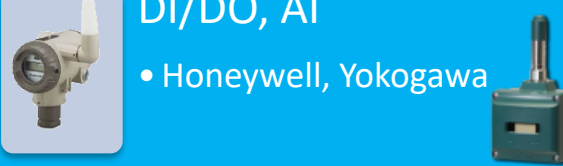- Honeywell, Yokogawa

Level
- Honeywell, Yokogawa

DI/DO, AI
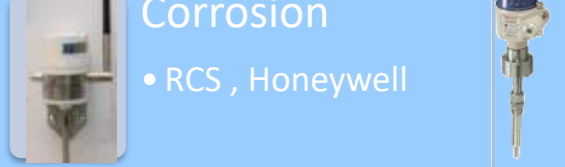- Honeywell, Yokogawa

Valve Position
- Eltav, Flowserve, Honeywell

HSE + Life cycle
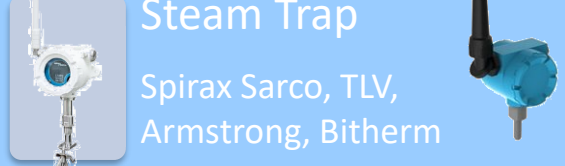
Corrosion
- RCS , Honeywell
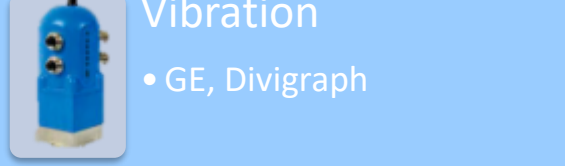
Steam Trap
Spirax Sarco, TLV, Armstrong, Bitherm
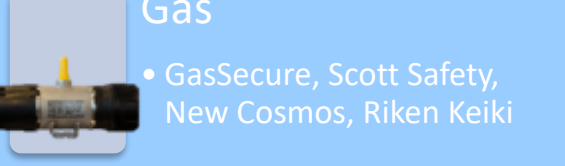
Vibration
- GE, Divigraph
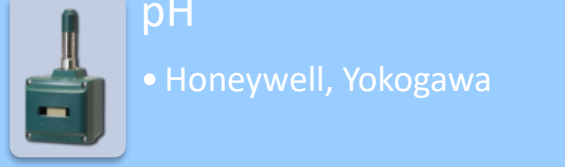
Gas
- GasSecure, Scott Safety, New Cosmos, Riken Keiki

pH
- Honeywell, Yokogawa

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Safety and compliance is a moving target

Solving a challenge

Power of ISA100

ISA 100 Network

Using different vendors achieving
Increased safety and reduced costs

GS01 Wireless Gas Detector
Features and Benefits

Reliable single-beam, triple-wavelength MEMS IR technology ensuring lifetime detection stability, with no need for re-calibration

Truly wireless, no cables: Ultra-low power consumption of ~5 mW allows for a battery life of up to 24 months

GS01

Outstanding performance: Only **wireless** device to combine 5 sec response time with low power operation and long battery life
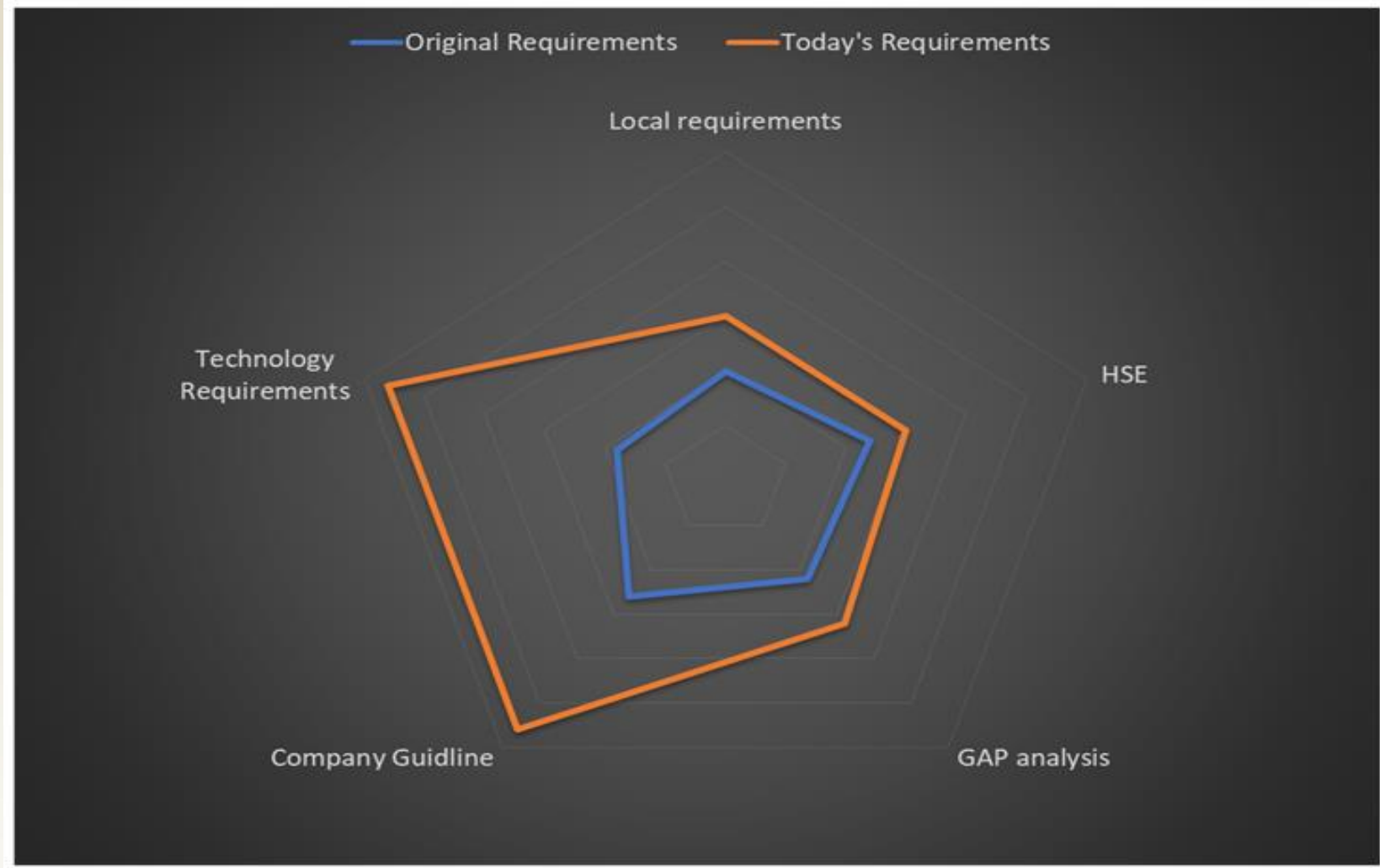
Intrinsic safety approval with field-replaceable battery packs

Hydrocarbon Detection

SIL2 capable – SIL2 approval covers hardware, software and wireless communication, for seam-less integration into safety instrumented systems

Significant savings on total project cost due to reduced engineering; wiring, installation and documentation demand

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GS01 Device Alternatives

- GS01 (standard)
- Fixed 2 dBi antenna
-
  cable
- Installed with two 8mm bolts
  areas
- antenna pointing up or down

GS01-EA
Extended 6 dBi antenna
5, 10 or 20m

Improves flexibility in

with weak radio coverage
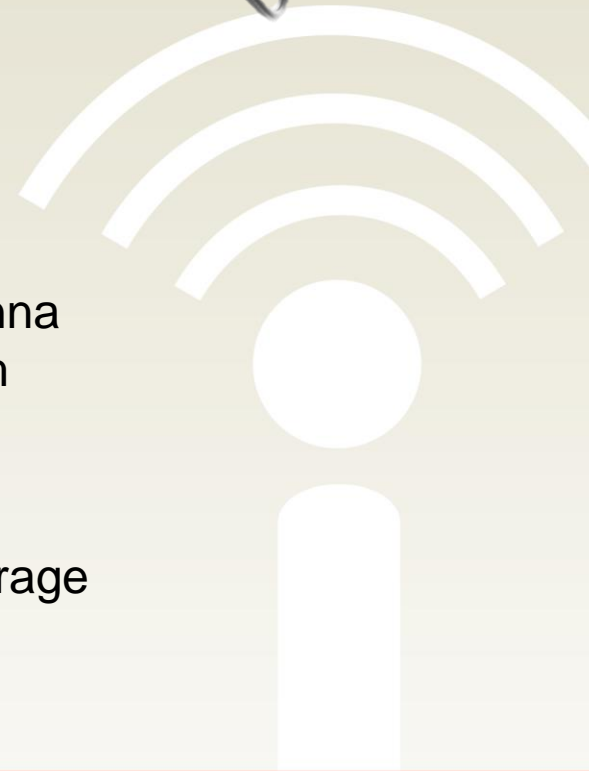
Wireless gas detection

6MM x 6MM

Sub Station 4

6MM x 6MM

12.21MM x 12.21MM

12.21MM x 12.21MM

Corrosion Monitoring

Sub Station 4

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The system

Sub Station 1

Sub Station 2

Fiber loop

Sub Station 3

Sub Station 4

The future

Sub Station 4

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New developments

Sub Station 4

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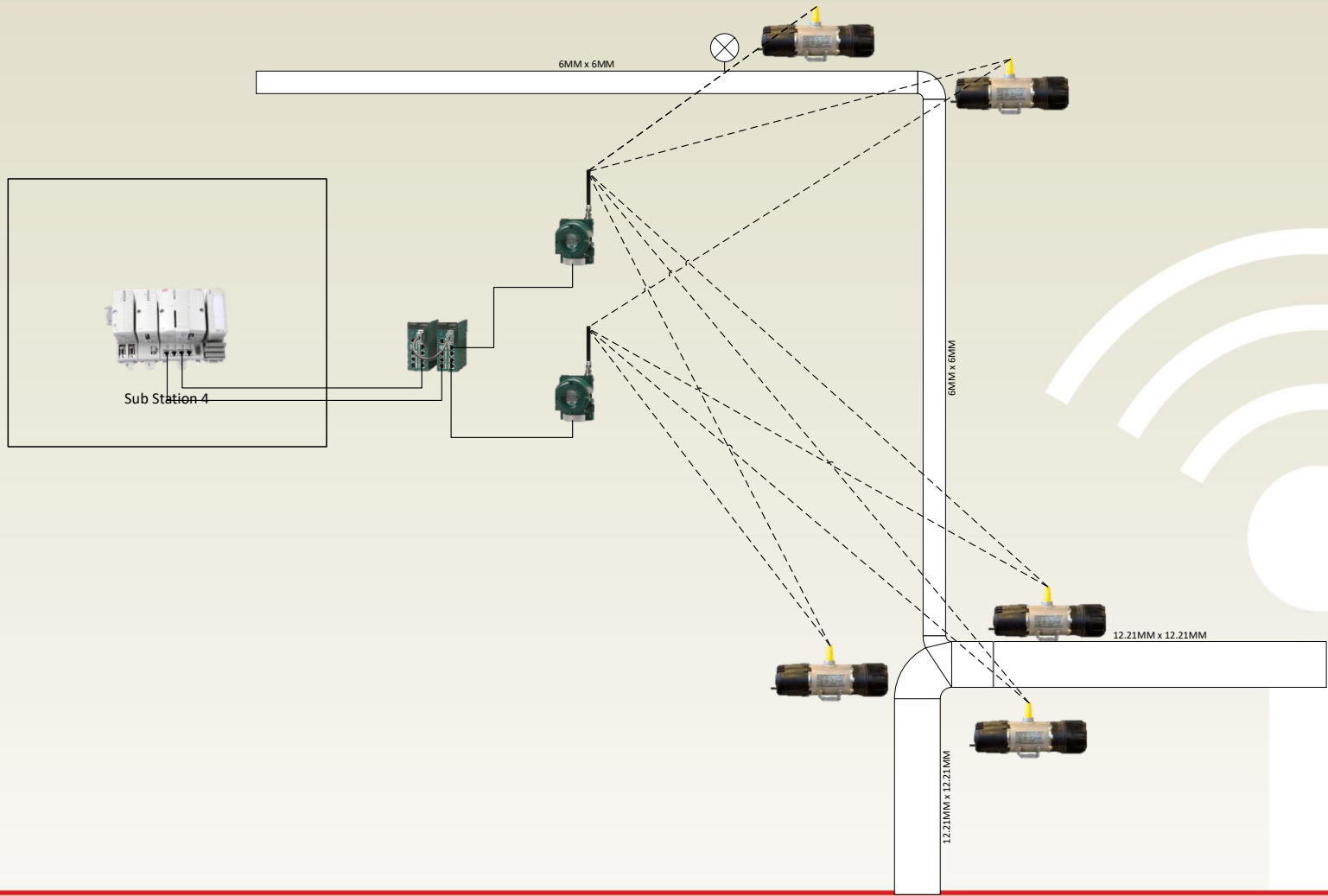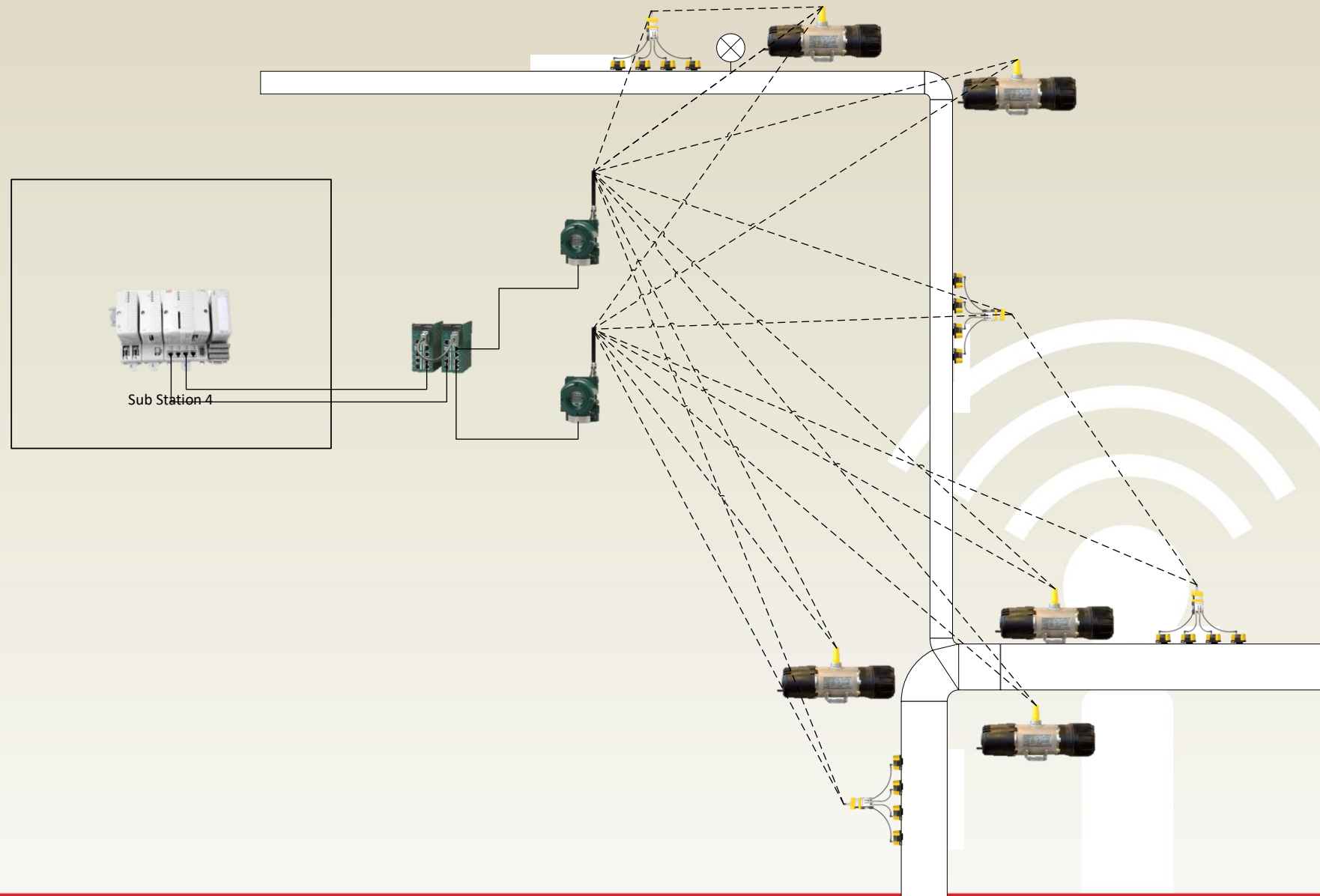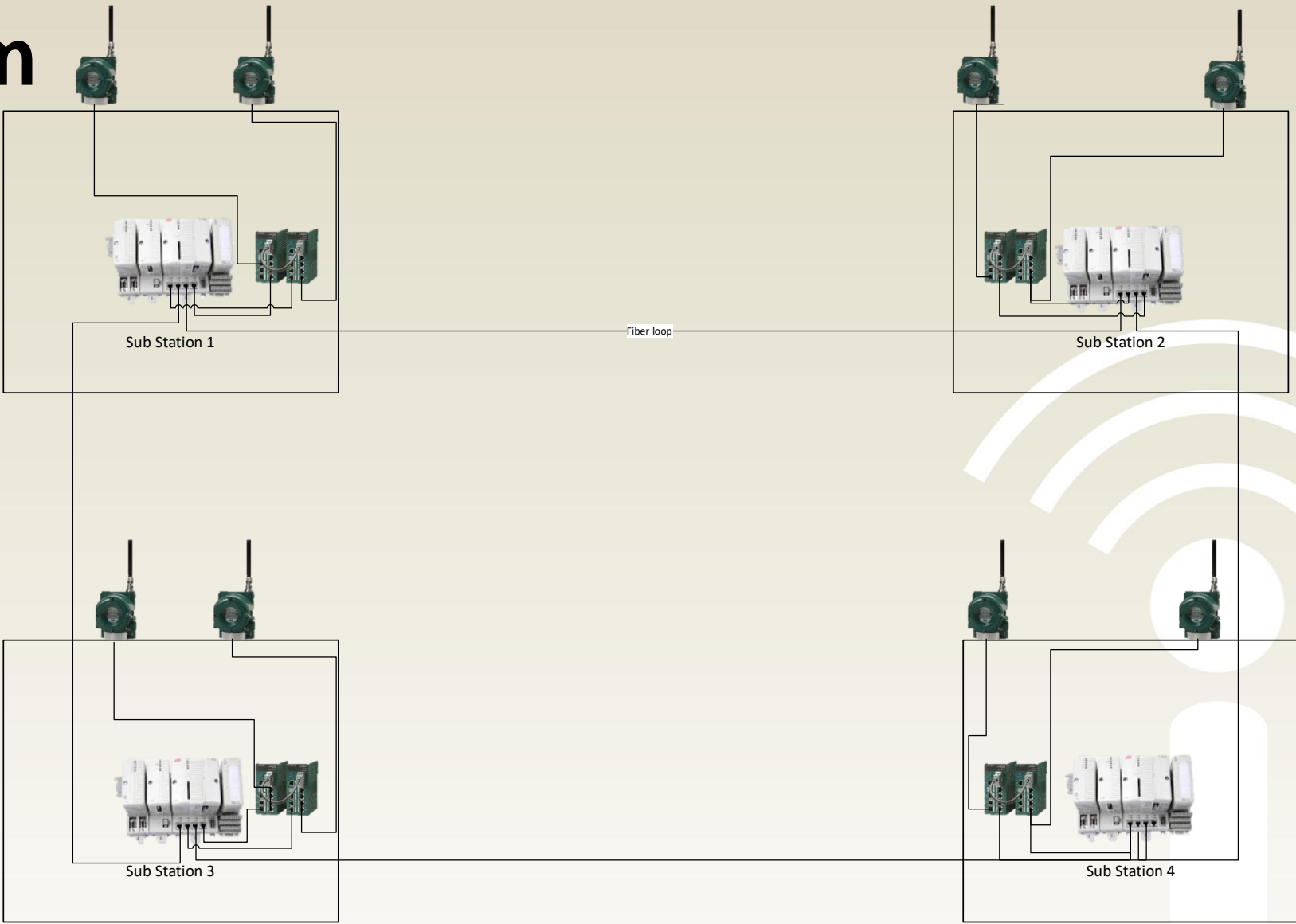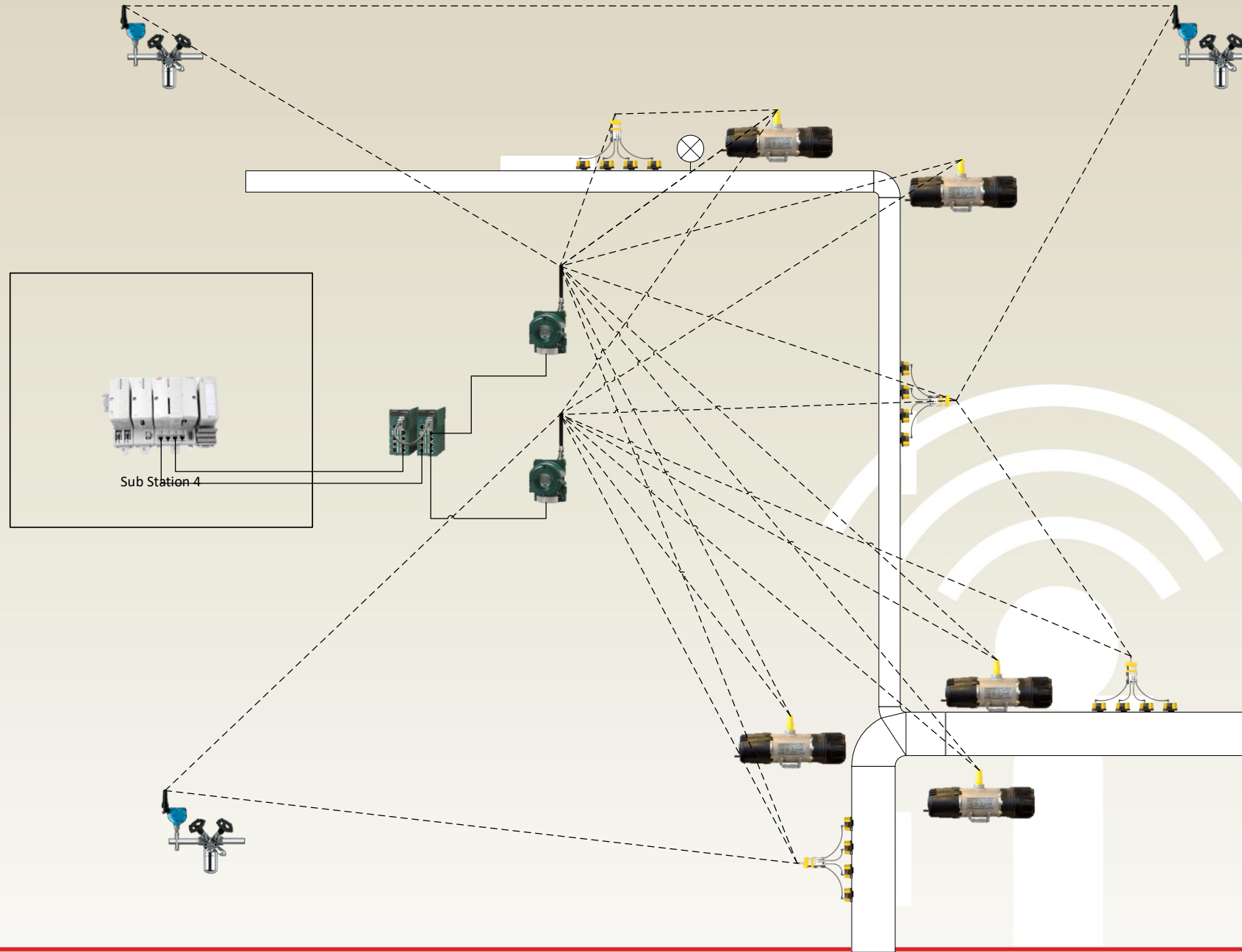
ISA100 Process and SIL2

GS01 SIL2 Certification

- The SIL2 assessment included
  - GS01 Hardware
  - GS01 Software
  - Wireless communication (PROFIsafe)
- Key SIL parameters
  - λ_{DU} = 1.08E-07 h^{-1}
  - SFF = 91 % (for HFT = 0)
  - PFD$_{AVG}$ = 1.61E-03 (for T$_P$ = 2 years)
- Note
  - PFD$_{AVG}$ is well within the allowed range for SIL2 (< 0.01)
  - PFD$_{AVG}$ is claiming less than 35% of this range (< 3.50E-03)

Certificate / Certificat / Zertifikat / 合格証

GasSecure 1311056 P0034 C001

exida hereby confirms that the:

GS01 Wireless Gas detector
HW version GS01_A3 and GS01_A7, SW version 3.0.0

GasSecure AS
Oslo, Norway

Has been assessed per the relevant requirements of:

IEC 61508 : 2010* Parts 1-7
and meets requirements providing a level of integrity to:

Systematic Capability: SC 2 (SIL 2 Capable)
Random Capability: Type B Element
SIL 2 @ HFT=0; Route 1$_H$
PFD$_{AVG}$ and Architecture Constraints
must be verified for each application

Safety Function:
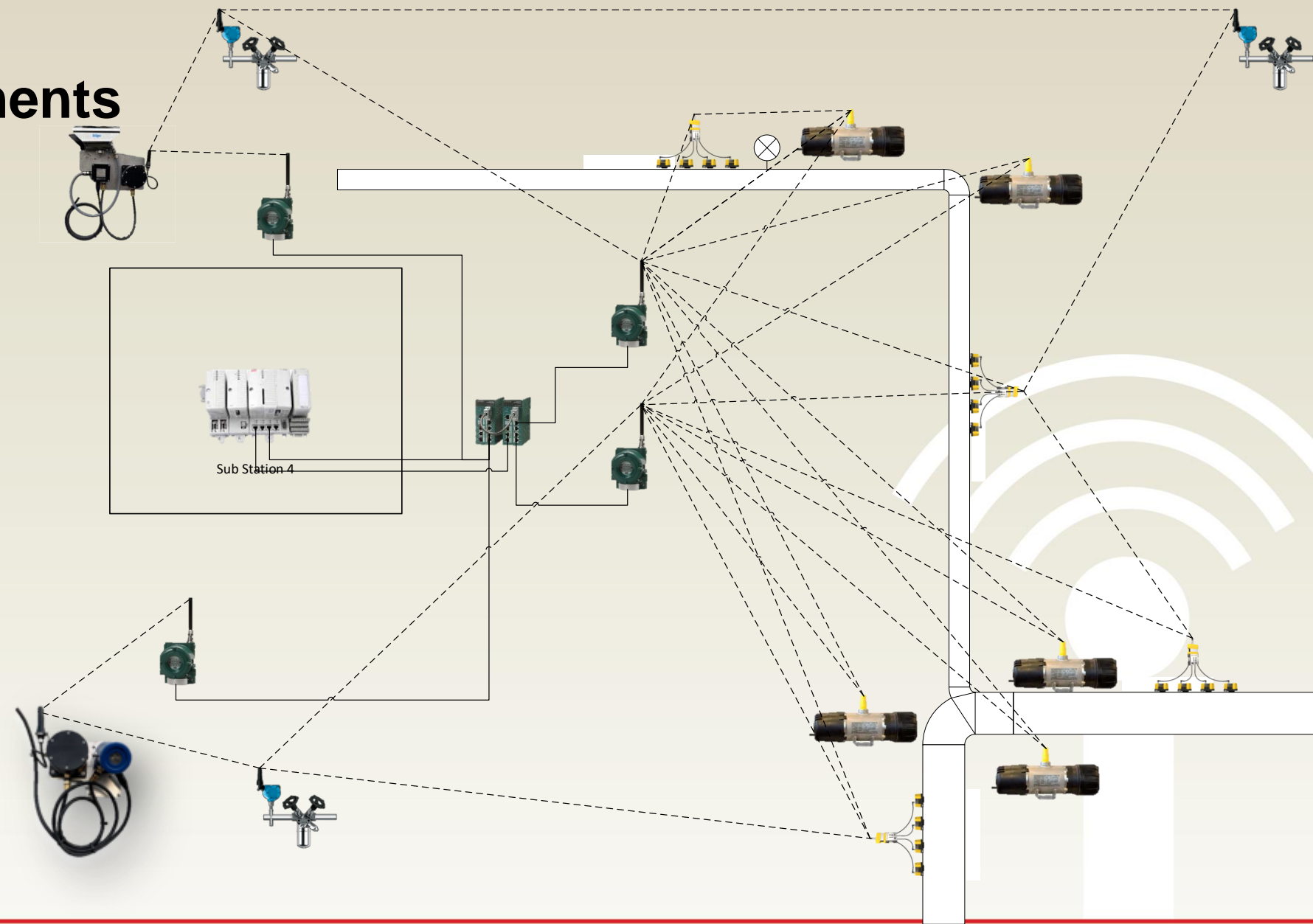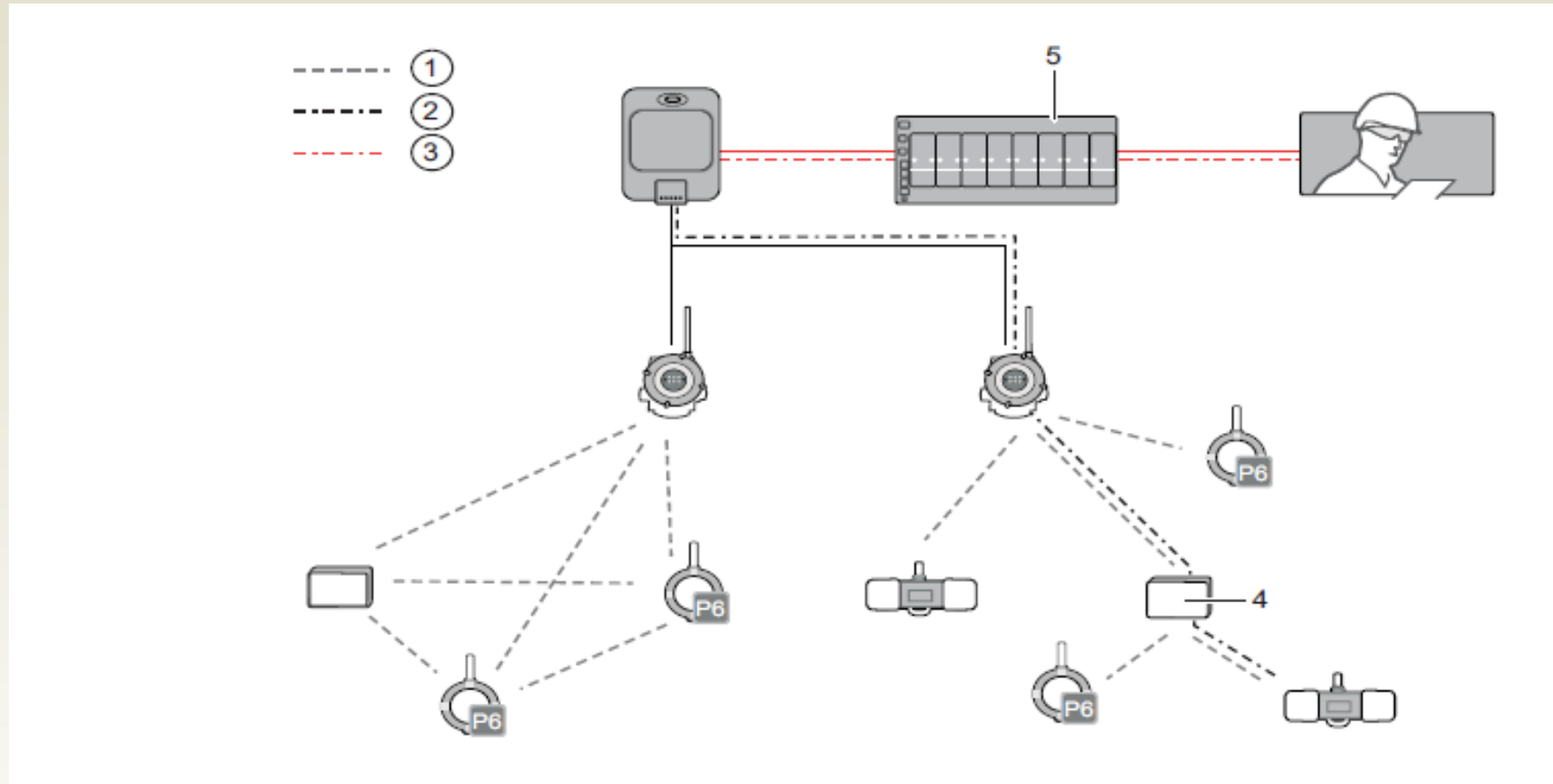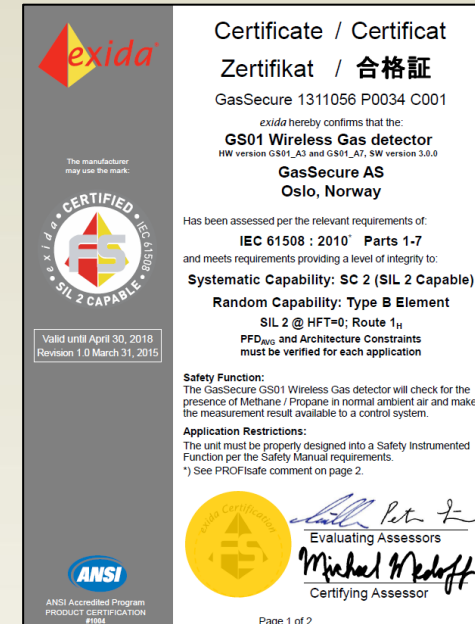The GasSecure GS01 Wireless Gas detector will check for the presence of Methane / Propane in normal ambient air and make the measurement result available to a control system.

Application Restrictions:
The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.
*) See PROFIsafe comment on page 2.

Evaluating Assessors
Certifying Assessor

Valid until April 30, 2018
Revision 1.0 March 31, 2015

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

Page 1 of 2

SafeWireless™

SafeWireless is a communication concept to combine low power with short response time developed by GasSecure.

Principle

    Different response time in the presence and absence of hydrocarbon gas
- Short publish rate (all timeslots used) when GAS   Default = 2 sec
- Longer publish rate (<u>not</u> all timeslots used) when NO GAS   Default = 12 sec

   SafeWireless supports cyclic communication, as required for SIS
- Request from controller must be answered within "process safety time"
- Detector "armed" with safe downlink packet
- Response delayed, but instantly when gas detected

SafeWireless™ - Cyclic Communication

Controller   Gateway   GS01

Legend

← Uplink slots

→ Downlink slots

→ Comm. w/o gas

→ Comm. with gas

GAS

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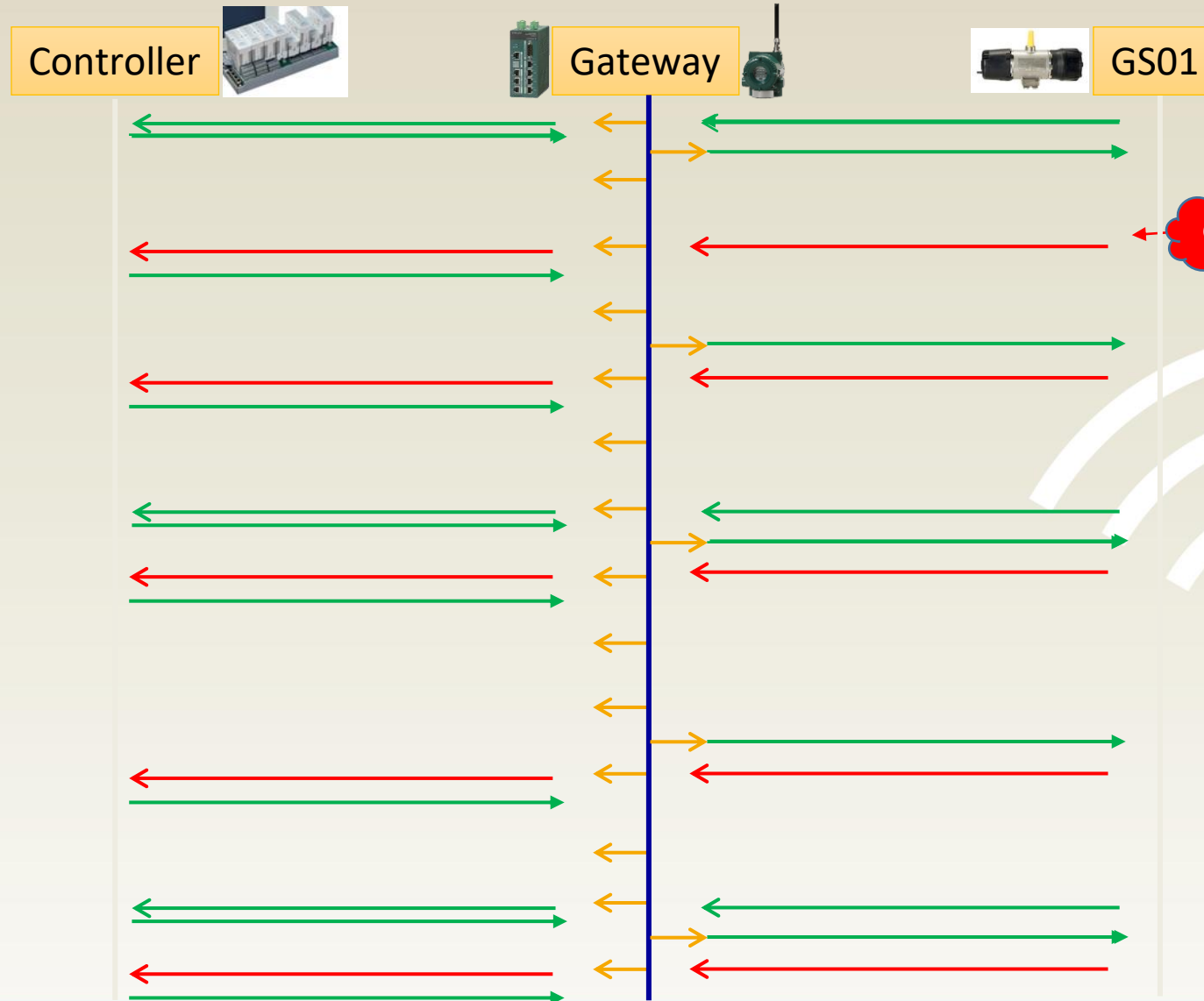
Summary

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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 Linked in Interest Group

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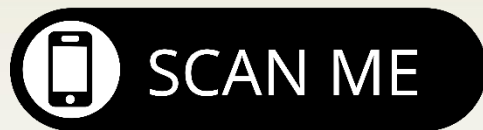
Scan the QR code and join the ISA100 Wireless Linkedin group. **If you join during our limited time offer**, you will be entered in a prize draw to win a new iPad!

SCAN ME

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?

Ådne Baer-Olsen

Adne.Olsen@draeger.com

For Your Attention!