Case Study
Fill-in detectors for Kalundborg refinery

	CASE: ONSHORE/REFINERY
Client / Country	Statoil Refining / Denmark
Project / Facility	Fire & Gas Extension / Kalundborg Refinery
Process / Plant / Application	Fill-in detectors for 3 process areas after risk assessment determined inadequate coverage by current system
Equipment / Infrastructure	114 units GS01 / 8 units GS01-EA / Other detectors 3 Gateways / 18 Access Points / Siemens S7
SIL or Non-SIL	SIL2 capable
Main Challenges	Large, congested plant area. Enclosed spaces.
Key Notes / Key Sales Points	Cost reductions with wireless – initial cost was estimated to be around USD 20 mil. for HC and H2S detectors. With wireless hydrocarbon detectors, costs could be brought down to roughly USD 7 mil.

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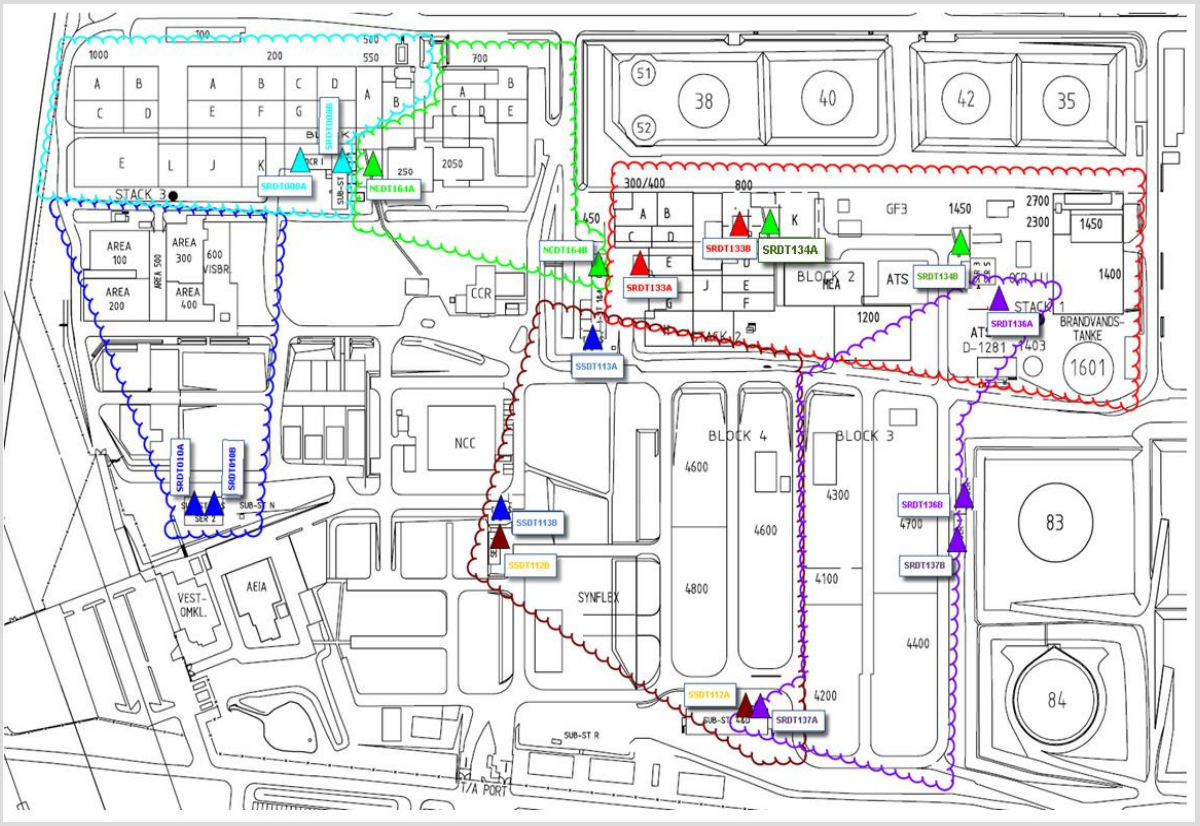

- Project was split into 3 phases (3 geographical areas)
- Placement of access points was based on existing knowledge for wireless on this site

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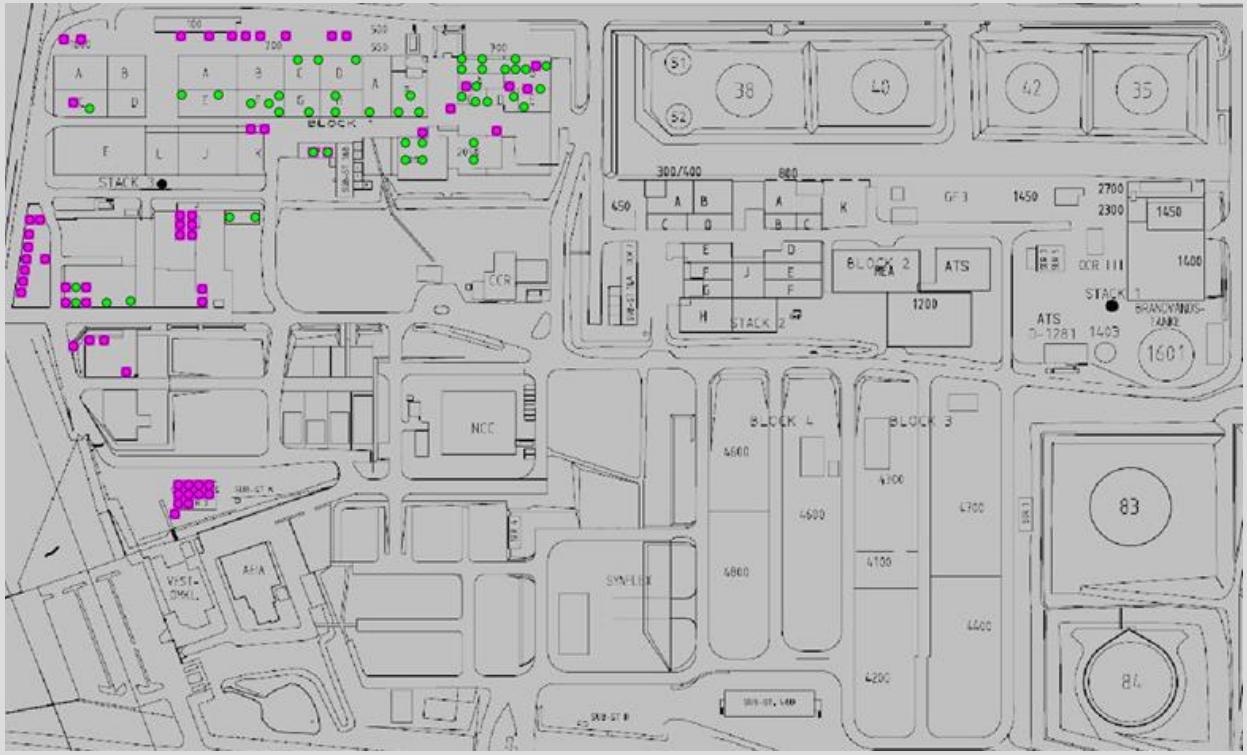
Phase 1 Block 1

Detector locations

Green = GS01

Purple = Other



Block 1 area has wireless challenges due to heavy machinery blocking communication.

Detectors with extened antenna was chosen to overcome this challenge.

Case Study
Site pictures from Kalundborg

Dual access points with good access to a majority of the detectors.

Detector with remote antenna

Case Study
Site pictures from Kalundborg

Control room display with gas detectors

Wireless gas detector in the field

Case Study
Summary of experiences from Kalundborg

- Planning of wireless infrastructure placement can largely be done by visual inspection, but local circumstances can give surprises
- It is better to have some extra infrastructure and instruments installed or ready for use in case challenges occur during commissioning.
- Wireless technology increases the flexibility in placing and moving of equipment
- Expanding with additional instruments on wireless installations is very easy
- Using wireless for safety is a step change for any organization starting to use this. Local competence and understanding of wireless should therefore be developed

- We would have chosen wireless again today. Wireless is the future.