FINNISH BUSINESS HUB

CREOWAVE

CREATING INTELLIGENT SITES


CREOWAVE
C-SITE
FINNISH BUSINESS HUB
THE WORLD'S ONLY COMPLETE SOLUTION FOCUSED ON
MAKING OPERATIONS INTELLIGENT

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INTELLIGENT...

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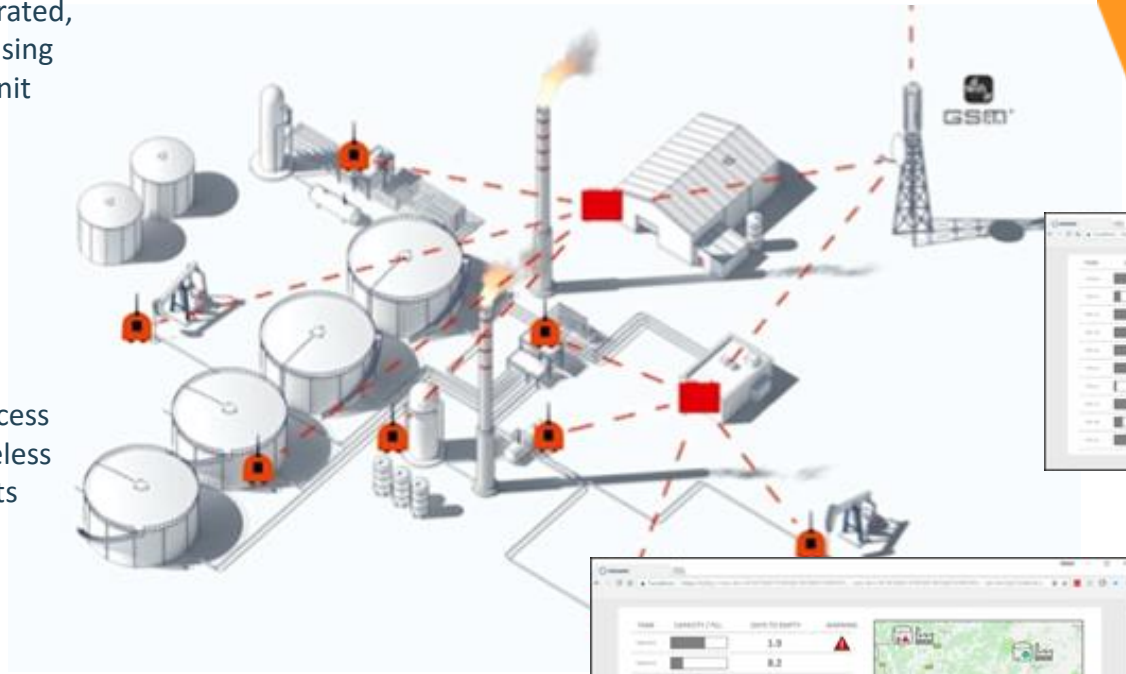
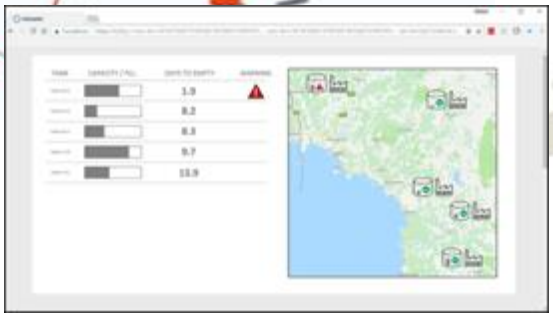
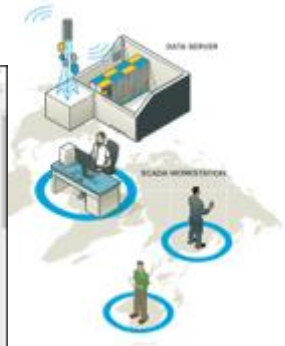
Battery operated, self-organising sensor unit

Intelligent access point for wireless sensor units



Complete management software





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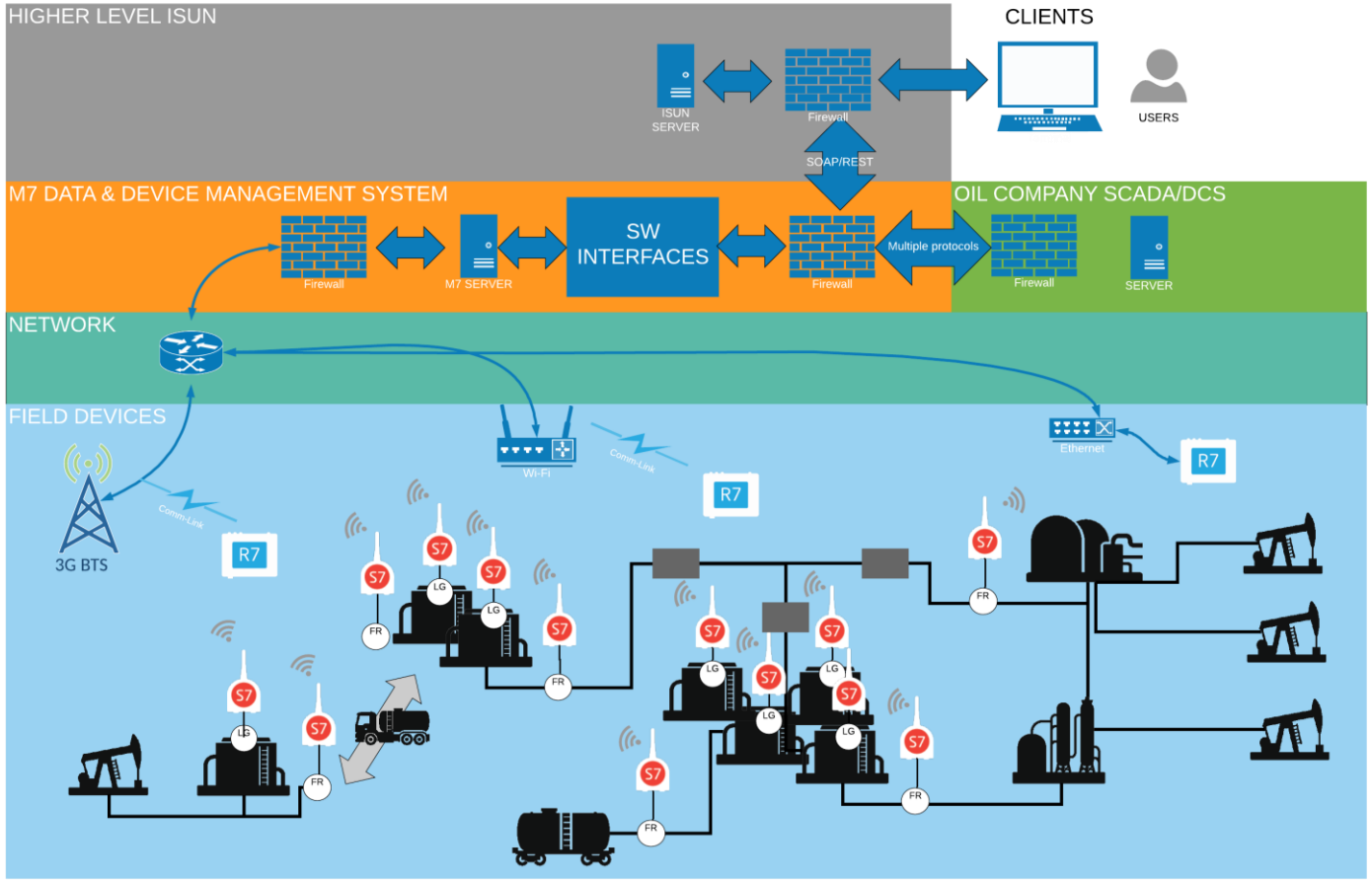
HIGHER LEVEL ISUN
CLIENTS
ISUN SERVER
Firewall
USERS
SOAP/REST
M7 DATA & DEVICE MANAGEMENT SYSTEM
OIL COMPANY SCADA/DCS
Firewall
M7 SERVER
SW INTERFACES
Firewall
Multiple protocols
Firewall
SERVER
NETWORK
FIELD DEVICES
Wi-Fi
Comm-Link
Ethernet
R7
3G BTS
Comm-Link
R7
R7
S7
LG
FR

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Optimized daily activities

Real-time data available

Reduced downtime

Improved efficiency

Improved maintenance

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INTELLIGENT IS PROFITABLE

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	Logistics costs	Theoretical interval	Efficiency	Routes / day	Cost per year
Traditional way	$ 55/ day	0.5 routes / day	31 %	1.6	$ 32 120
Intelligent way	$ 55 / day	0.5 routes / day	88 %	0.6	$ 12 045
			Save logistics cost – make more profits / year		**$ 20 075**

	Production volume	Present lost production	Downtime / year	Cost per year
Traditional way	50 barrels / day	6%	18.3 days	$ 65 700
Intelligent way	50 barrels / day	2.5%	7.3 days	$ 27 375
	Minimize unplanned downtime – make more profits / year			**$ 38 325**

	Cost to clean the ground	Accidental oil leaks	Production volume	Total cost per year
Traditional way	$ 672 / barrel	10h / year	50 barrels / day	$ 15 250
Intelligent way	$ 672 / barrel	0h / year	50 barrels / day	$ 0
	Save environmental costs – make more profits / year			**$ 15 250**


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SIMPLE AND RISK FREE
two countries.
simple
simplest)
1 easy to do or
ary is written in
do you open this?

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C-SITE

	C-SITE Monitor	C-SITE React	C-SITE Smart
WIRELESS REMOTE MONITORING	✓	✓	✓
AUTOMATIC WARNINGS	–	✓	✓
INTELLIGENT PRODUCTIVITY DATA	–	–	✓
CALIBRATION AND BATTERY CHANGE	✓	✓	✓

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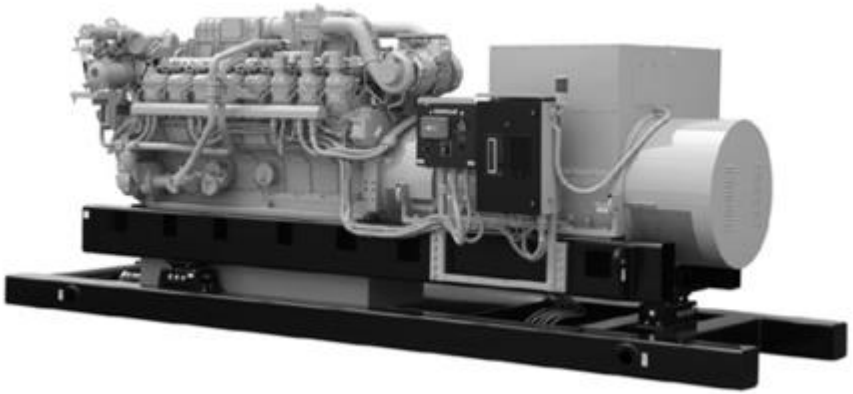
APPLICATION EXAMPLES

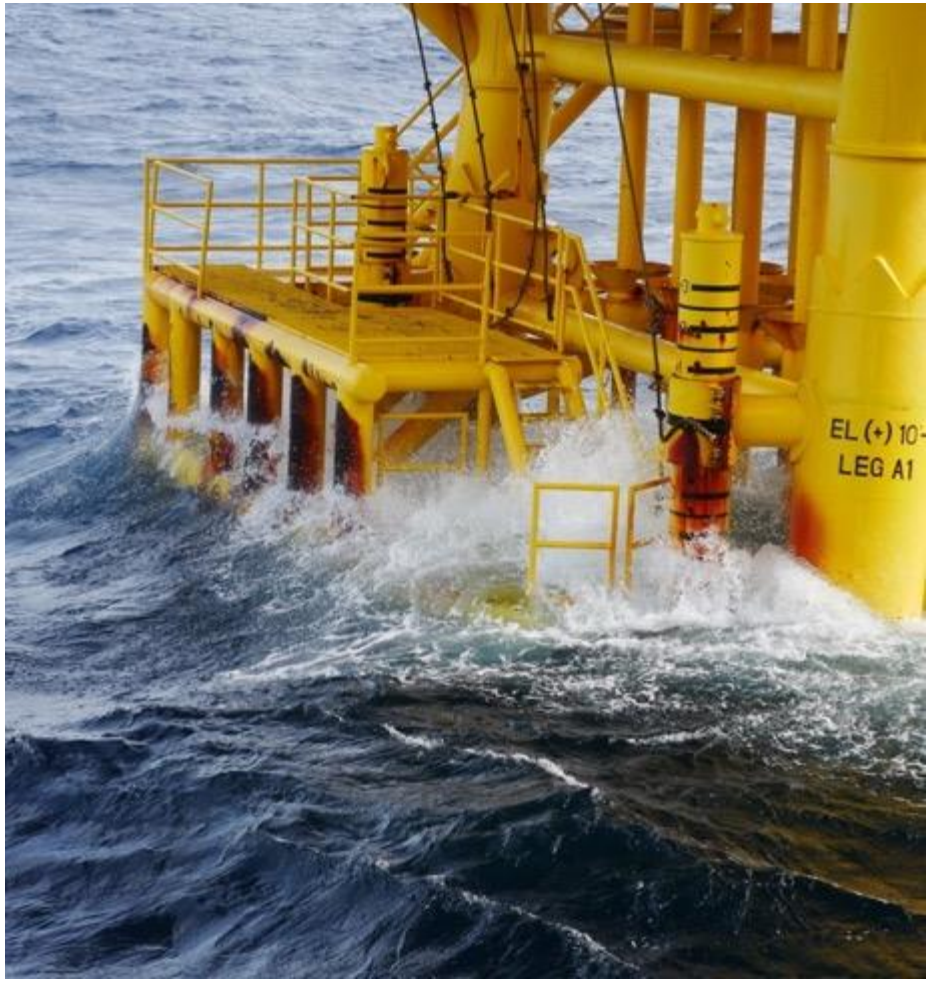


#1: GENERATOR SET MONITORING

- Challenge
  - Generator set has a local monitoring system
  - Data available only on the local instrument panel
  - Operator needs to collect data manually
  - No real-time data available
- Solution
  - Creowave's C-site S7 unit collects data by using the MODBUS interface available on the instrument panel
  - R7 unit delivers the data to the control room by using plant Wi-Fi network
  - Data delivered to the control room with minimum cabling
  - M7 Management software to display real-time data and to store data into a database
- Results
  - No need for manual data collection
  - Real-time data available all the time
  - Early detection of problems → less damage
  - All vital motor parameters monitored continuously
  - Data collected to the historian → enables predictive maintenance by using data analytics
  - Improved maintenance efficiency, maintenance only when needed
  - Minimized downtime

#2: HEAT EXCHANGER MONITORING

- Challenge
  - Fouling the biggest problem
  - Decreased heat transfer between process fluids
  - Causes operational inefficiencies
  - Current systems expensive
- Solution
  - C-site S7 units used to measure hot and cold side input and output temperatures and pressures
  - Mass flow meters can be also connected to the S7 unit if needed
  - M7 software used to calculate effectiveness of the exchanger
- Results
  - Efficiency of the exchanger can be monitored remotely
  - More effective maintenance planning
  - Performance data available → can be compared among other sites → improved operations
  - Energy savings



#3: OFFSHORE WELLHEAD ABANDONMENT PHASE

- Challenge
  - Offshore location in North Sea
  - After the drilling no infrastructure available
  - No electricity or communication
  - Wellheads need to be monitored during the abandonment phase
- Solution
  - Creowave provided S7 units with transducers to monitor annulus pressures
  - Communication to onshore control room was done via satellite radio connected to the R7's Ethernet port
  - Solar panels were used to provide electricity for the units
- Results
  - Annulus pressure data available in real-time onshore
  - Leakage can be detected from the pressure readings
  - No site visits needed
  - Significantly reduced environmental risk

#4: WIRED TO WIRELESS

- Challenge
  - Customer requirement: wireless valve monitoring system with minimum cabling
  - Challenges with wired systems because of the broken cables and high cost
  - Current equipment uses wired 4-20mA communication via PLC
- Solution
  - MIDAS Sensor from Score Diagnostics
  - C-site units used to deliver data from the instrument to the control room
  - S7 units gathers data from the instruments by using current interface
  - R7 unit delivers data to the M7 management software by using 3G network
  - M7 SW used to interface customer's SCADA system
- Results
  - Fast and easy wireless solution within one week
  - Minimized engineering, no PLC or other field network devices
  - Minimized cabling and installation costs

#5: TANK MONITORING

- Challenge
  - No data on the level of the chemical in the tank
  - Estimations done through visual survey of the level
  - Operator needs to drive through all the tanks
  - Current systems is very ineffective as the tanks are spread over a large area
- Solution
  - C-site S7 units used to measure tank levels
  - The data is transmitted onto a software which optimizes a schedule for the operator
  - M7 software used to optimize routes and needed amount of chemical
- Results
  - Efficient routes, exact need for chemical can be planned
  - More effective supply chain as the data can be routed into the ERP system
  - No need to for visual check ups and data is reliable
  - Performance data available → can be compared among other sites → improved operations

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GOT AN UNSOLVED CHALLENGE?

CHALLENGE US

WE'LL PROVIDE A SOLUTION

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