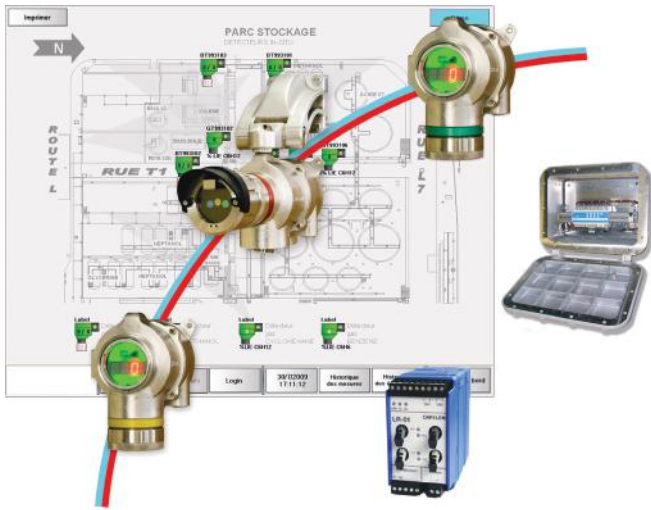




Gas & Flame Detection



3M™ Simtronics™ Syntel

Addressable hazard event monitoring system

A major innovation in gas and flame detection, SYNTEL system integrates gas and flame detectors with third party instrumentation in a secure addressable distributed field network.

Syntel is an addressable system suitable for use in zone 1 and 2 hazardous areas. The complete addressable loop is fault tolerant operating normally with a short or open circuit. Syntel does not have a central processing unit, so there is no common failure point.

Syntel includes an OPC interface, as standard, and can be supplied with Modbus too, allowing easy integration with third party systems.

Syntel stores alarm and calibration information in distributed non-volatile memory, there is no reliance on a centralised system.

Syntel is ideal for installations where there is the possibility for future expansion. The system architecture allows very low cost expansion as cable runs to a central location are not needed.

Features & Benefits

No central processing unit	No common failure point
Addressable flame, gas and third party instrumentation	Distributed intelligence in zoned areas
Fault tolerant	Fully functional with one open or short circuit
Simple system configuration	Reduced engineering and installation cost
Flexible system design	Easy expansion with minimal costs
User friendly, client specific interface	Ease of use to client requirement

Application

- Oil refinery
- Chemical and petrochemical industry
- Offshore
- LNG & LPG storage
- Power stations



Syntel integrates a wide range of hazardous area devices on a secure, fault tolerant addressable network. Standard and client specific HMI 's are available along with communication interfaces to third party systems.

Syntel, a distributed intelligent network

The system communicates without a bus master. Each device transmits and receives bi-directional data, without a centralised processor. Each SYNTEL device is intelligent and has built-in fault isolation, if a short or open circuit is detected the units either side of the fault isolate the error without affecting system performance.

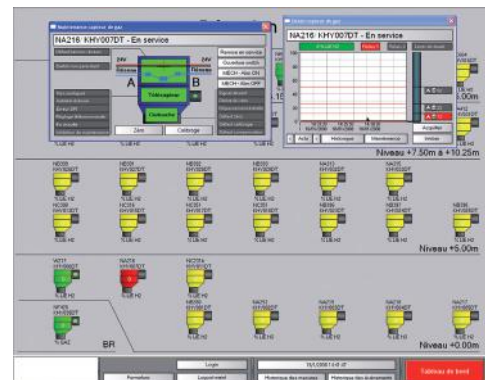
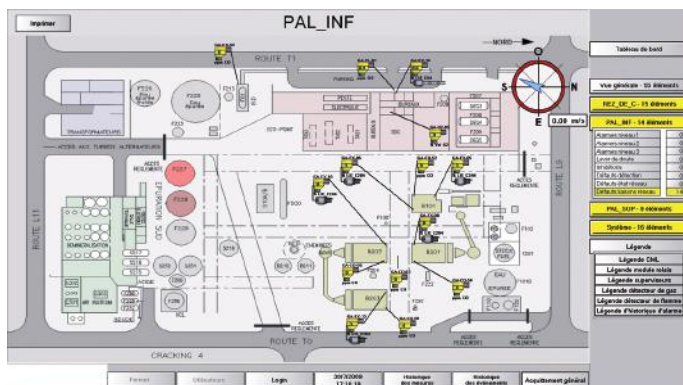
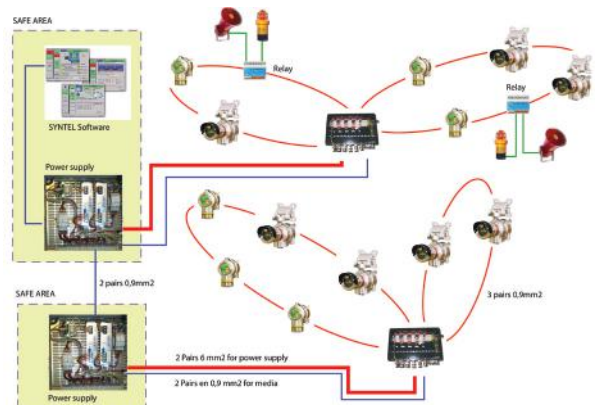
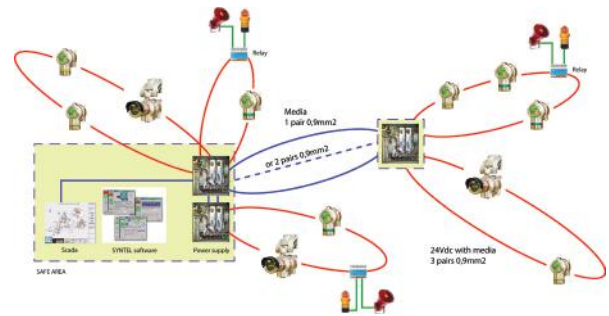
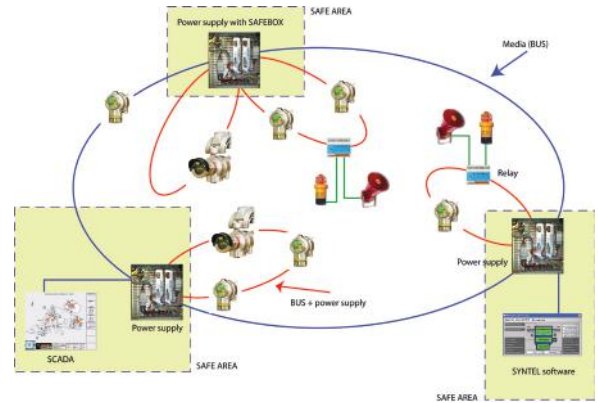
Syntel Multi-Range devices can be interfaced and addressed directly whilst any unit having a 4-20mA output (e.g 3rd party products) can be interfaced using a MECH. Each device / node stores information concerning a range of parameters in nonvolatile memory.

Syntel, architectures fitted to all type of sites

The Syntel system can be implemented in all architectures energised loops with all kind of detectors are linked together with Media loops. Redundant power supplies are outside hazardous areas.

Syntel, user friendly interfaces

A wide range of HMI interfaces are available using point and click navigation. Detailed data acquisition, display and login, as well as SYNTEL configuration capabilities are made available which can be tailored to Client specific requirements. High quality graphics allow detailed plant layouts to be presented these also show device location. Simtronics documentation can also be accessed through some interfaces.



Syntel devices



A : Catalytic flammable gas detector ATEX, IECEx
 Technology: low temperature oxidation process
 Detects: flammable gases
 Range: 1 00% LEL
 Housing: aluminium or stainless steel 31 6L



B : Electrochemical toxic gas detector ATEX, IECEx
 Technology: electrochemical cell
 Detects: toxic gases, oxygen, ppm hydrogen
 Range: see data sheet
 Housing: aluminium or stainless steel 31 6L



C : Solid-state (mos) gas detector ATEX, IECEx
 Technology: solid-state semiconductor
 Detects: H₂S
 Range: 50, 1 00, 200ppm
 Housing: aluminium or stainless steel 31 6L



D : Multi -spectrum ir flame detector ATEX, IECEx, CE DPC, IL3/2
 Technology: 3xIR or UV/2xIR
 Detects: hydrocarbon fires
 Range: 80m on n-heptane fire (normalised 0.3x0.3m for 3IR)
 Housing: aluminium or stainless steel 31 6L

Modules and interfaces



E : Programmable relay module
 Can be placed close to the application
 Hazardous or non hazardous areas
 Relay module 8 inputs - 8 outputs
 LEDS's indicate input/output state
 Programmable logic with SYNTEL interface



F : Ex distribution loop box
 Enables local power distribution
 Ex approved
 Provides up to 4 energized loops



G : Syntel / modbus coupler
 CML is a coupler (gateway) between MODBUS/JBUS and SYNTEL.
 CML is the slave of a ModBus master. It enables access to the reading and writing functions of the ModBus table.
 Rail DIN format, use in non-Ex areas.



H : Lon / IP interface
 NIC/iP module is an interface between SYNTEL and a client iP c network, links to SCADA or HMI .
 Rail DIN format, used in non-Ex areas.



I : Fibre optic coupler
 LRO1 is a dual channel LON/Fibre optic interface. It enables data transmission over long distances.
 Rail DIN format, used in non-Ex areas.



J : Mech
 Interface module between a 4-20mA output device and SYNTEL network.
 Ex or safe area use.
 Accepts up to 4 x 4-20mA devices.

Other devices



K : IR point gas detector
 Technology: IR absorption
 Detects: hydrocarbon gases, CO₂
 Range: 1 00% LEL, % volume
 Housing: stainless steel



L : IR expended point gas detector
 Technology: IR absorption
 Detects: hydrocarbon gases
 Range: 20% LEL
 Housing: stainless steel



M : Laser open path gas detector
 Technology: near IR laser scanning
 Detects: H₂S, CO₂
 Range: 0-200ppm.m H₂S
 Path lengths: 5-50m
 Housing: stainless steel

Options



N : Rackable pc with touch screen
 Industrial rack mount PC touch screen interface for configuration and maintenance.
 Designed to Client requirements.



O : Supervision
 3M Gas & Flame Detection offers Syntel with one or more HMI 's.
 Plant-wide mimic usually provides top level screen.
 Interface designed to Client specific requirements.



P : Maintenance view
 Enables rapid visualisation of device location and state.
 Detailed device state available in one click.

3M™ Simtronics™ Syntel

Reliability

Distributed intelligence:

- Each device stores alarm and calibration information

Fault tolerant:

- The system supports cable failures (short-circuit or break)

Secure communications:

- Each node communicates periodically with all other networked devices.

Redundant power supplies:

- Ensures high availability.

Performance

Maximum distance between two addressable nodes:

- 800 m in copper cable
- 25 km in fibre optic

Single network loop capacity:

- 120 addressable nodes

Maximum number of networked loops per HMI : 16

System capacity: $120 \times 16 = 1920$ addressable nodes

Digital outputs (relays) :

- Decentralised and configurable operation (zoning, voting) depends on detector status and/or digital and analog inputs

References and options

LON Detectors (direct devices)

MultiXplo	Catalytic combustible gas detector
MultiTox	Electrochemical toxic gas detector
MultiTox	Solid-state toxic gas detector
MultiFlame	Multispectrum flame detector UV/2xIR or 3IR

Other detectors

GD10P	Infrared point gas detector
GD10PE	Extended point IR gas detector
GD10L	Infrared open path, combustible gas CH4
GD1	Laser open path, toxic gas H2S - CO2

Additional devices

MECH	Input module for 4-20mA sensors (Hazardous or non hazardous areas)
I / O modules	Several configurations, please ask (Hazardous or non hazardous areas)
LON / RS485	ModBus interface
LON / IP	Interface LON / IP protocol
LON / Fibre optic	Interface LON / Fibre optic coupler
Cable type:	03IP09EI (SF/FA) , 3 pairs individually shielded 0.9mm2

Some prestigious references



European Space Agency Arianespace and CNES have chosen the Syntel system for all the ground launching installations of ARIANE 5, SOYOUZ and VEGA launchers in the Guyana Space center.



The Syntel system is implemented on numerous chemical plants in Europe and worldwide.



EDF (French Electricity producer) has chosen the Syntel system for all its nuclear power plants in France. As a consequence, the Syntel system became a benchmark for a lots of nuclear power plants worldwide.