



MTL FIELDBUS PRODUCTS

# ACCESS TO ALL AREAS FOR FIELDBUS

Making fieldbus power & connectivity easy in safe & hazardous areas

PROCESS CONNECTIONS



# MTL... investing in the future

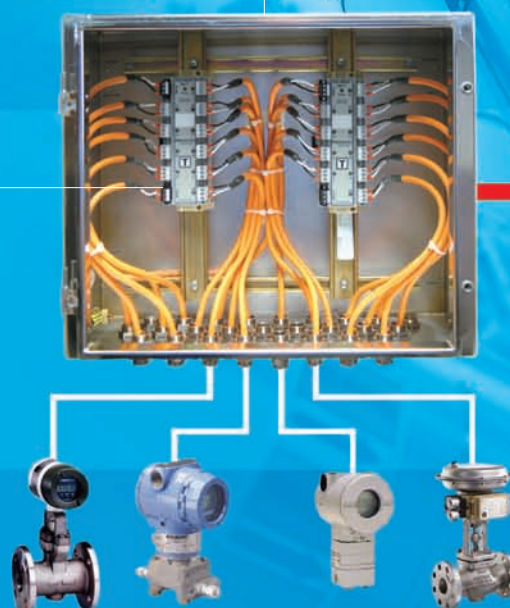
## Fieldbus Power & Connectivity

### ◦ PROCESS JUNCTION BOX

The process junction box is a key element in fieldbus architecture, making the connection between the trunk cable and the spurs to individual devices. As a provider of complete fieldbus solutions, MTL has a comprehensive range of enclosures that are designed to house Megablock wiring components and accessories, as well as field-mounted barrier boxes.



### THE FIELD



### ◦ MEGABLOCK WIRING COMPONENTS

Megablocks are DIN-rail mounted passive hubs designed for easy connection of field devices to fieldbus networks. With over 250,000 FOUNDATION fieldbus™ device connections installed, Megablocks have an excellent reputation for reliability and ease of use. The established SpurGuard™ feature protects the fieldbus segment in the event of spur short-circuit faults, and a comprehensive programme of approval ensures compliance with hazardous area requirements world-wide.

### ◦ SURGE PROTECTION

A fieldbus, like any distributed electrical system, is at an increased risk of lightning-induced surges and transient overvoltages because it presents a large target area with multiple points of entry. The operation of a network relies not only on the individual field instruments but also on the trunk and spur cables; should these be damaged by surges then the whole system is at risk. The MTL Surge Technologies' fieldbus protector range has been designed specifically for fieldbus installations, providing excellent protection while remaining transparent to the digital communication signals. The cost of reliable surge protection is therefore a small price to pay to safeguard the significant investment in today's fieldbus systems.

### ◦ DIAGNOSTICS

As the leading supplier of fieldbus physical layer products, MTL knows the value of an integrated diagnostic capability. The F809F module is unique in that it provides simple "plug-'n-play" physical layer diagnostics for any fieldbus user. And because it appears as a fieldbus device, the user interface is the standard instrument management software used for every other fieldbus device on the system. No extra cabling is required because it integrates seamlessly with all major DCS host systems.

## CONTROL ROOM



### ◦ FIELDBUS POWER SUPPLIES

Power supplies for fieldbus networks provide conditioned DC power to the field wiring and fieldbus instruments. Power Conditioners are selected based on the area classification of the end devices and the total power requirements of the network. In hazardous area applications, the type of power supply depends on the 'method of protection' adopted. MTL fieldbus power supplies cover every application, including redundant types for high-reliability applications.

### ◦ HOST CONTROL SYSTEM

FOUNDATION fieldbus™ is supported by all major Control System vendors. MTL have worked closely with every supplier to develop cost effective, integrated power supply solutions.

# Why choose MTL...?



All these companies can't be wrong!

## LARGEST INSTALLED BASE - WORLDWIDE

Adopting the newest technology doesn't mean that risks have to be taken when selecting hardware. MTL and Relcom have been supplying the fieldbus market for over 10 years, and have the industry's largest installed base of physical layer components. Third-generation power supplies and wiring components, and a decade of fieldbus experience, mean users can specify with confidence.

- Over 5,000 fieldbus installations
- 250,000 Megablock fieldbus device connections
- Used on the world's largest fieldbus installations

## FIELD BUS LEADERSHIP

- First ever fieldbus power conditioner
- First true redundant conditioning power supply
- First short-circuit protected wiring block: SpurGuard™
- First IEC 60079-27 compliant FISCO power supplies
- First FNICO power supplies - still the definitive solution
- First FF-831 registered power supplies
- First multi-channel, redundant fieldbus power supply module
- First Fieldbus Foundation™ registered diagnostic module

## APPLICATIONS SUPPORT

MTL and Relcom have individually earned a reputation for the highest levels of pre- and post-sales support. Trained local and regional sales and applications engineers are available to provide technical advice at every stage of the design cycle, to ensure trouble-free start up and rapid diagnosis of in-service problems. Engineering-led management is at the heart of MTL's strategy for fieldbus success.

## DIAGNOSTIC EXPERIENCE

MTL has extensive experience of diagnosing faults on fieldbus networks, and has established a technical lead in the manufacture and use of hand-held test equipment. Building on this experience MTL have released the first Fieldbus Foundation™ registered diagnostic module. This easily integrates diagnostics information into your choice of fieldbus control system with integrated help screens to assist with the rapid tracing and rectification of field faults.



## CONTINUOUS PRODUCT DEVELOPMENT

An ambitious programme of product development demonstrates MTL and Relcom's commitment to remaining a foremost supplier of components to the fieldbus community. With the regular introduction of innovative new products, MTL aims to satisfy the requirements of this and future generations of fieldbus users.



## GLOBAL HAZARDOUS AREA APPROVALS

With over 30 years of experience in designing explosion-protected equipment for the process industries, MTL know how to achieve utmost safety for fieldbus installations in hazardous areas. MTL's established fieldbus component ranges carry comprehensive approvals to satisfy installation requirements world-wide, and all new products are subject to a rigorous certification programme.



## FIELDBUS FOUNDATION™ REGISTRATION

All MTL and Relcom fieldbus power supplies are qualified by the Fieldbus Foundation™ to the FF-831 standard, which is the guarantee of reliability and performance. Additionally all MTL FOUNDATION fieldbus™ communicating devices are registered by the Fieldbus Foundation™, assuring users that they are easily integrated into their choice of fieldbus control system.



## CONTROL SYSTEM VENDOR APPROVAL

MTL fieldbus power supplies and wiring components have been tested and approved by all the major fieldbus control system vendors. This endorsement of MTL's quality and reliability means that end users can choose fieldbus products with confidence.



YOKOGAWA  Honeywell  invensys

# Achieving high availability for fieldbus systems...



The MTL range of components makes it easy to complete any fieldbus installation between the fieldbus instruments and the Fieldbus Interface Module (FIM).

## FPS-SERIES FIELDBUS POWER SUPPLIES



MTL FPS-Series fieldbus power supplies have established a reputation for reliability and ease of use in many of the world's largest fieldbus installations. They provide a choice of options for simplex and redundant power conditioning for fieldbus networks, while simplifying the connection to bulk power supplies and alarm circuits.

## F800 SERIES FIELDBUS POWER SUPPLIES



The F800 Series represents the state-of-the-art in high-density, redundant fieldbus power supplies. Designed to achieve low per-segment cost and high packing density in large fieldbus installations, the F800 uses 8-channel power supply modules in a redundant format on a passive base. Highest levels of system availability are achieved by eliminating all single points of failure, and termination of the fieldbus segment is maintained with single or redundant modules installed.

FPS and F800 Series power supplies are available in a wide variety of formats for integration into leading fieldbus control systems, or as simple carrier-based units for use with any fieldbus installation.

A key feature of the F800 Series is the network monitoring option, which continuously monitors the health of installed fieldbus segments. This can speed the fault-finding of errant networks, providing valuable information on the health of the physical layer. Parameters measured include bulk power supply input voltage, segment voltages, signal levels of all devices and noise. Fieldbus-to-shield shorts and improperly terminated wiring are also indicated.



## FISCO POWER SUPPLIES



Fieldbus Intrinsically Safe Concept (FISCO) defines the future for hazardous area fieldbus by removing the limitations associated with earlier intrinsically safe implementations. More field instruments can be connected to each fieldbus trunk, and the safety assessment and documentation are greatly simplified. MTL's FISCO power supplies deliver intrinsically safe fieldbus without practical constraints.

## FNICO POWER SUPPLIES



For fieldbus applications in Zone 2 and Division 2 hazardous areas, MTL's unique Fieldbus Non-Incendive Concept (FNICO) power supplies bring together the benefits of FISCO with higher current levels, allowing yet more devices per trunk. Live-working is permitted throughout the field network, and compatible field devices may be selected from a wide variety of intrinsically safe or non-incendive types.

## FIELD BUS DIAGNOSTICS

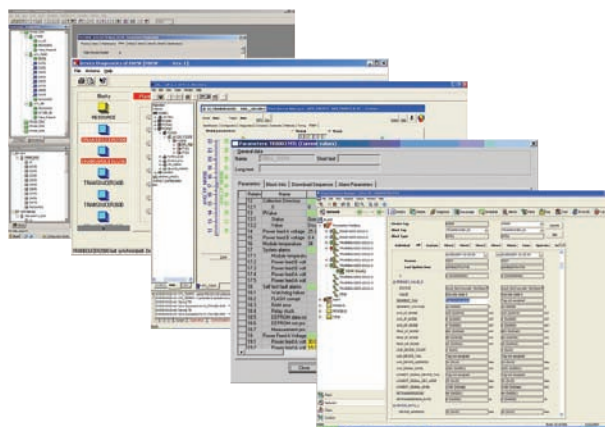
MTL fieldbus test instruments assist with the maintenance and fault-finding of fieldbus installations. Compact in size and powered from the fieldbus itself, the FBT-3 and FBT-6 testers have proven invaluable during the commissioning of numerous fieldbus networks world-wide. Used in conjunction with the battery powered FBT-5 signal generator, Fieldbus Monitors FBT-3 and FBT-6 are used to test fieldbus cabling, while the FBT-4 signal probe checks for basic fieldbus operation.



## F809F



The F809F Fieldbus Diagnostic Module is available as an option for use with F800 Series fieldbus power supplies. It plugs into the F800 module carrier and continuously monitors the performance of each of the eight fieldbus segments, providing information on the network health. The F809F is a FOUNDATION fieldbus™ device, and communicates with the host control system via a fieldbus segment. This allows the network status and measured parameters to be displayed in the host control system using instrument management software.



# Integrated Solutions...

MTL has worked closely with all major fieldbus control system vendors to develop integrated fieldbus power supply systems, to reduce hardware costs and simplify the engineering effort during installation.

Integrated solutions typically incorporate power supplies for multiple fieldbus segments, and have a direct connection to the host controller via system cables. Their benefits include:

- **Reduced engineering effort**
- **Less cabinet wiring**
- **Cabinet space savings**
- **Lower hardware cost**
- **Closer integration**
- **Compatibility demonstrated by thorough testing**

## Honeywell



- **F650A** 2-segment fieldbus Remote Termination Panel (RTP). Provides isolated, redundant power to two fieldbus links. Supports redundant Experion-PKS 'Series A' FIMs, connected via standard Honeywell RTP cables.



- **F656A** compact, 2-segment non-redundant, unpowered fieldbus RTP. For use with MTL FISCO or FNICO power supplies. Supports non-redundant Experion-PKS 'Series A' FIM, connected via standard Honeywell RTP cable.



- **F660A** 4-segment fieldbus I/O Termination Panel (IOTA). Provides isolated, redundant power to four fieldbus links. For use with the 4-link 'Series C' FIM. Mounts directly into Honeywell 'Series C' mounting channel.

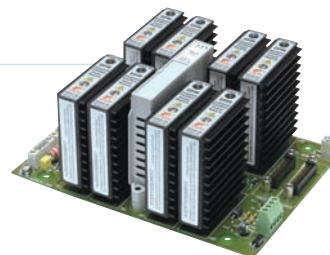


- **F860** 8-segment fieldbus I/O Termination Panel (IOTA). Provides isolated, redundant power to eight fieldbus links. For use with the 4-link 'Series C' FIM. Mounts directly into Honeywell 'Series C' mounting channel.



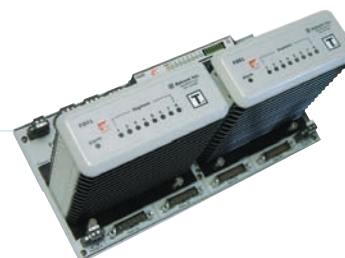
## YOKOGAWA

- **F600A** 4-segment fieldbus power supply system. Provides isolated, redundant power to four fieldbus segments. Connects to Yokogawa ALF-111 Fieldbus Interface Card via standard system cables. Built-in alarm module provides relay indication of module failure or loss of bulk 24V dc power. Available in left- and right-hand versions for high-density mounting in cabinets.



- **F606** termination board. Provides a compact, low-cost connection between Yokogawa ALF111 Fieldbus Interface Card and MTL FISCO or FNICO power supplies.

- **F880** 8-segment fieldbus power supply system. Provides isolated, redundant power to eight fieldbus segments, using 8-channel modules in a redundant format.



## Invensys



- **F618D** 8-segment fieldbus power supply system. Carries FPS-Series power modules and Foxboro FBM228 fieldbus modules to provide power for 8 fieldbus segments in Foxboro I/A series control systems.

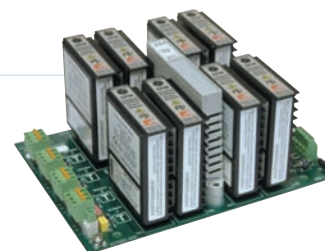
- **F810** 8-segment fieldbus power supply system. Carries two 8-segment, redundant power modules and four FBM228 fieldbus modules to provide power for eight fieldbus segments in Foxboro I/A Series control systems.



- **F690A** 4-segment fieldbus power supply system for host control systems without field-side system connectors. Provides isolated, redundant power to four fieldbus segments. Available in left- and right-hand versions for high-density mounting in cabinets.

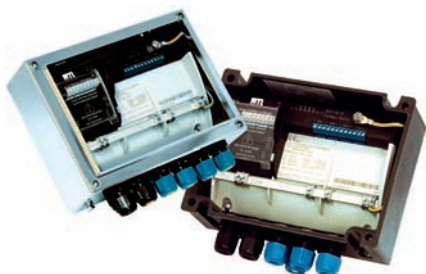


- **F890/F892** 8-segment fieldbus power supply system. Provides isolated, redundant fieldbus power using 8-channel modules in a redundant format. Host-side fieldbus connections are via pluggable screw-terminal or spring-clamp terminals.



# Widest fieldbus product range...

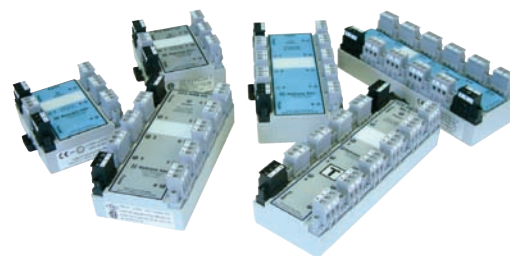
## FIELDBUS BARRIERS



MTL's range of Fieldbus Barriers provides an alternative to FISCO for IS fieldbus applications. Each Zone 1-mounted barrier unit supports four intrinsically safe spurs, for connection to 'Entity' or FISCO-certified fieldbus instruments in IIB or IIC, Zone 0 hazardous areas. Multiple Fieldbus Barriers may be connected on the fieldbus trunk, which is installed as increased safety (Ex e) wiring. The barrier units are compatible with the MTL redundant power supplies, including integrated power systems for all major fieldbus control system vendors. Custom enclosures are also available for multiple fieldbus barrier modules, including ancillary components such as isolating switches and surge protectors.

## MEGABLOCK WIRING COMPONENTS

Megablocks represent the most comprehensive range of fieldbus wiring components available. Designed to simplify the task of interconnecting trunk and spur wiring, the DIN-rail mounted blocks are available in a range of sizes between 2 and 12 spurs to accommodate all fieldbus topologies. SpurGuard™ protection maintains the integrity of fieldbus installations by preventing spur short-circuits from causing failure of the whole network, while pluggable connectors provide for easy disconnection of spur wiring. Hazardous area approvals are supported for all common application types, including Ex n/non-incendive, intrinsically safe and increased safety, meaning that a common architecture can be applied regardless of the chosen method of protection. Integrated terminator options may also be specified, and LED indicators provide information on the status of each unit.



## PROCESS JUNCTION BOXES



MTL Process Junction Boxes are designed to accommodate Megablock wiring components, together with accessories such as terminators, spur connectors and surge protection devices. The product range includes painted stainless steel, carbon loaded polyester and polished stainless steel junction boxes to meet the exacting requirements of process industry customers. They can be supplied either pre-fitted with a wide choice of stainless steel, nickel-plated brass and plastic cable glands, or drilled for user-specified glands. The enclosures carry hazardous area certification for applications in all Zones and Divisions.

## FIELD BUS I/O



Fieldbus I/O simplifies and reduces the cost of I/O in a process plant by integrating I/O into the fieldbus network. Traditional I/O methods (control system I/O, remote I/O or low cost single input temperature transmitters) can be eliminated by selecting fieldbus I/O. The use of FOUNDATION fieldbus™ enables easy integration with today's process control systems.



## FIELD BUS DISPLAYS



MTL provides an extensive range of fieldbus displays including single and 8-variable versions for field or panel mounting applications. The large displays are easy to read in process plant environments and include general purpose, Ex nL energy limited and intrinsically safe options.



## SURGE PROTECTION

**MTL has long been recognised as a leader in the field of surge protection solutions for process systems, gaining an enviable reputation for high-specification, innovative and reliable surge protection products.**

MTL Surge Technologies have applied their considerable experience in the field of surge protection for the process control industries to meeting the rigorous demands of fieldbus. The result is the Fieldbus protector range which provides comprehensive system-wide protection for fieldbus networks without interfering with the normal operation of the process or reducing the capacity of the bus.

The **FP32 surge protection device** prevents surges and transient overvoltages conducted along the trunk or spur cables from damaging the associated electronics such as terminators, Megablock wiring components and fieldbus interface cards. It is designed to be used at both ends of the trunk.

The **TP32 transmitter protection device** is specifically designed to protect process transmitters on fieldbus systems. In a design pioneered by MTL, it can be easily installed in new or existing installations by fitting into the spare threaded conduit entry on field instruments. It is capable of diverting surge currents up to 10kA, exceeding the capability of 'built-in' field device surge protection.

The **TP32T** adds a terminator to the protection circuit of the TP32.

AC power protection is often overlooked when deciding on a surge protection strategy. The **MA4000** protects both the bulk AC power supplies and fieldbus from surges entering the system via the mains supply.

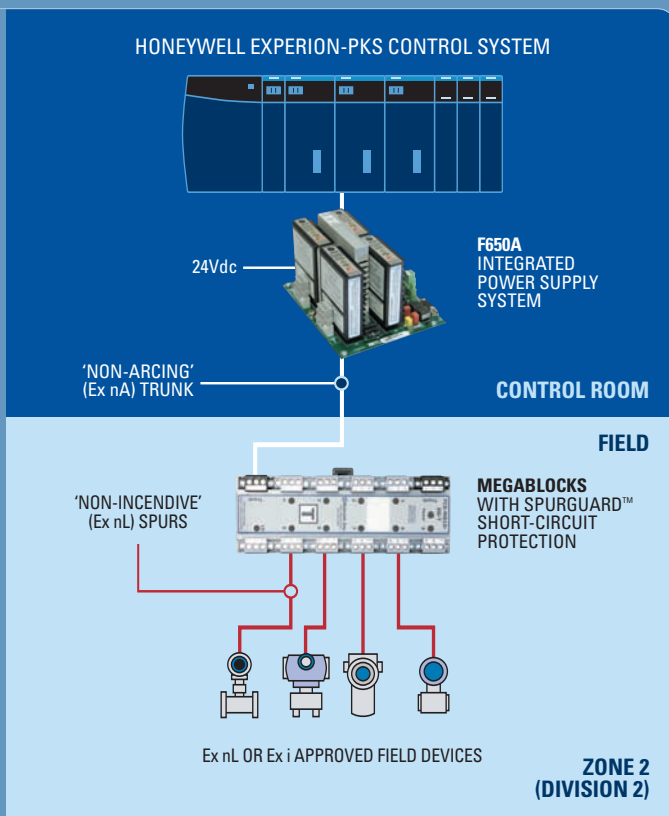


## Application Story: Shin-Etsu, Netherlands

### SpurGuard™ wiring hub feature allows spurs to be live-worked



Japanese company Shin-Etsu is the largest PVC producer in the world. A re-instrumentation programme for the ethylene dichloride cracking furnace process at its facility in Rotterdam, Netherlands provided the opportunity to evaluate the benefits of fieldbus compared with conventional 'point-to-point' wiring.



Spurguard™ protected wiring hubs provide live-workable Ex (nL) spurs at Shin-Etsu, Rotterdam

**hubs** to connect individual spur wiring to the trunk cables. A major benefit identified in the selection process was the 'SpurGuard™' short-circuit protection feature, which not only maintains operation of the fieldbus segments during spur wiring faults but also permits 'live-working' on the spur wiring in Zone 2 hazardous areas. The electronic current limitation in the short-circuit protection mechanism permits an EEx [nL] classification, meaning that similarly-certified EEx nL or intrinsically safe fieldbus instruments can be connected in Zone 2.

- **F650A** integrated fieldbus power supply system for Honeywell Experion-PKS



FOUNDATION fieldbus™ was chosen for the project because it offered improved reliability of the process, simpler maintenance and superior diagnostics. In addition, FF enables single instruments such as differential pressure transmitters and vortex flow meters to measure multiple process variables, meaning that fewer field instruments would be needed. Shin-Etsu's own experience showed that 90% of field failures occurred in cable terminations, so the reduction in wiring and cabling offered by fieldbus was attractive.

Shin-Etsu selected **Honeywell's Experion-PKS controller** for the fieldbus installation, comprising 275 fieldbus instruments across 35 segments. To provide power to the fieldbus segments, the **MTL F650A fieldbus power supply system** was chosen. The key benefits of the F650A were identified as ease of integration into the Honeywell system (being by means of a simple cable assembly), and the provision of isolation between the bulk power supply and fieldbus wiring, thereby eliminating the risk of segment failure due to multiple earth faults.

For the field wiring, Shin-Etsu chose **Megablock wiring**

## Application Story: Shell/CNOOC, Nanhai, China

### Power supply and Megablock solution chosen for proven reliability

The world-scale CSPC petrochemical complex in Guangdong Province in China, a joint venture between Shell Nanhai Limited and CNOOC, produces 800,000 tons of naptha per year with the integrated polymer plants on site having a total capacity of 2.3 million ton per year. The installation is regarded as one of the world's largest FOUNDATION fieldbus™ networks to date, comprising over 30,000 fieldbus instrument connections on more than 3,000 segments.

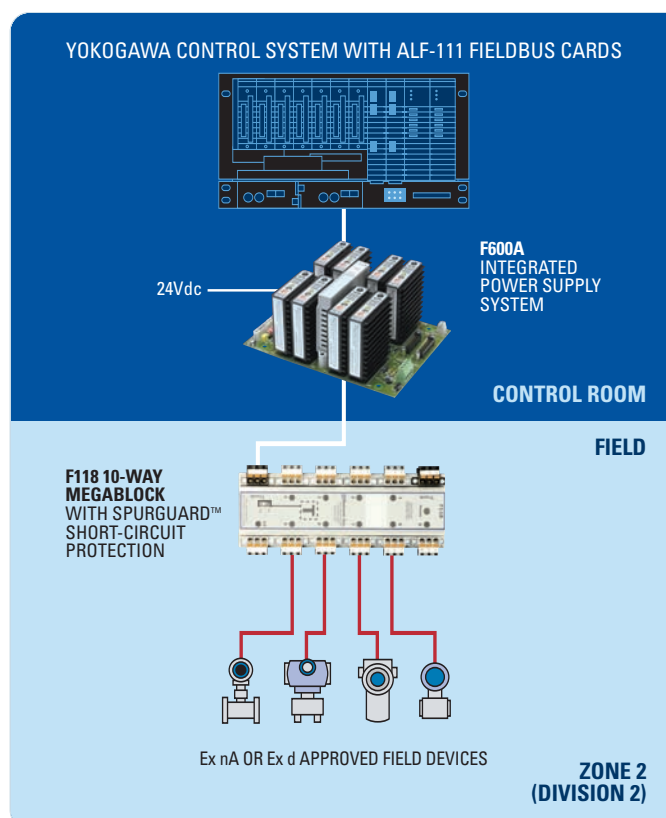
MTL were chosen to supply **fieldbus power conditioners** and **Megablock wiring hubs**. The FPS Series power conditioners were selected because they provide the required isolation between power supply and fieldbus segment, and their redundant operation has delivered the highest levels of availability on many prior fieldbus projects. To improve integration and reduce control room cabinet requirements, the power conditioners were mounted on F600A backplanes for direct connection to redundant Yokogawa ALF111 fieldbus cards.

*"MTL were selected as the supplier of key fieldbus components because of their proven record with Shell and other fieldbus users" said Johan Veerman (Principal Instrument and Process Control Engineer for CSPC). "Also, MTL's ability to support the many engineering contractors throughout the world and to offer on-site support from their offices in China is important in this fast track project. As the most experienced fieldbus physical layer supplier, MTL has helped minimise the risk on this prestige fieldbus project".*

The segment design standardised on 8 fieldbus devices per segment with a requirement for 2 spares, so the specially-developed F118-PC 10-way Megablock was selected as the wiring solution for use throughout the project. Its Zone 2 certification and 'SpurGuard™' short-circuit protection allows connection to non-incendive, non-arcing and flameproof certified field devices. To simplify wiring, spring clamp connections were provided for all fieldbus connections.



• **F600A** 4-segment integrated redundant power supply system for Yokogawa ALF-111 Fieldbus Card



F600A fieldbus power supply system supports 10 fieldbus devices per segment at Shell, Nanhai, China

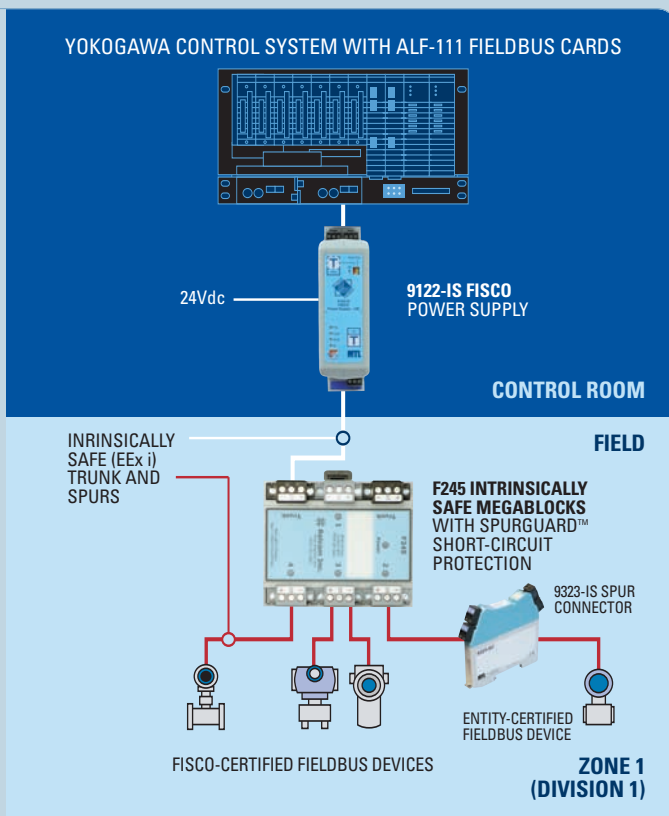


## Application Story: Shell, Bonny Island, Nigeria

### FISCO delivers intrinsic safety maintenance benefits for fieldbus networks

The Bonny Island Terminal Project in Nigeria is a new development comprising 24 oil storage tanks for Shell Petroleum Development Corporation. The main engineering contractor, Hyundai Heavy Industries, chose the Korean subsidiary of Yokogawa Electric to provide the control system, which includes the CENTUM CS3000 controller with FOUNDATION fieldbus™ capability.

The fieldbus network at the Bonny Island facility includes a total of 6,000 devices, of which 1,600 are located in Zone 1 hazardous areas.



Intrinsic safety was selected as the preferred protection method for the hazardous sector, with fieldbus power provided by MTL's FISCO power supplies. These are used in conjunction with the 2 way and 4 way intrinsically safe Megablock and FBT1-IS terminator, to create fieldbus segments that may be 'live-worked' throughout without gas clearance procedures. FISCO (Fieldbus Intrinsically Safe Concept) delivers more current to the fieldbus than the earlier 'Entity' IS implementation, allowing as much as 265mA - sufficient to power at least 12 fieldbus devices per hazardous area trunk. Engineering effort is reduced by eliminating the need to calculate cable parameters, while retaining the conventional benefits of IS as the safest of all protection techniques.

MTL's FISCO solution is not limited to FISCO-certified fieldbus devices. 'Entity'-certified devices specified for the Bonny Island project are connected to the FISCO segments via 9323-SC spur connectors, allowing the full range of available IS-certified devices to be used.

#### FP32 Fieldbus Surge Protector



Electrical installations on the Nigerian coast are vulnerable to lightning-induced surge damage, so Hyundai specified surge protection for all the fieldbus segments. This was achieved using FP32 surge protectors that are specifically designed to be transparent to FOUNDATION fieldbus™ H1 communications, while providing protection for the field instruments, power supplies and fieldbus interface modules. The FP32 units are connected at each end of the fieldbus trunk and in the individual spurs to the fieldbus devices.

#### 912x-IS FISCO Power Supply



## Application Story: Carbowil, Poland

### Zone 2 application enjoys flexibility of Fieldbus Non-Incendive Concept

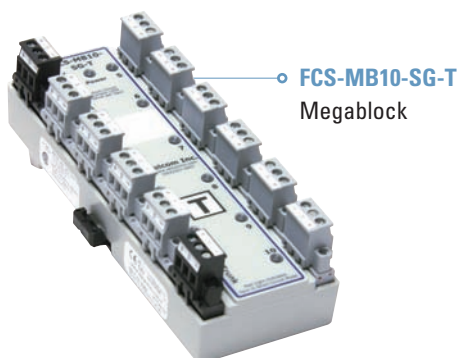
FOUNDATION fieldbus™ was chosen by Carbowil Spolka z.o.o. as the preferred instrumentation technique for its CO<sub>2</sub> production plant in Wloclawek, Poland. Part of the plant is classified as a Zone 2 hazardous area, and in order to maintain a uniform approach across the entire installation, an explosion protection method suitable for Zone 2 was required. MTL's FNICO (Fieldbus Non-Incendive Concept) power supplies were selected to provide power to all the fieldbus segments, each connected to a 10-way Megablock wiring hub.

Among the benefits of FNICO enjoyed by Carbowil is the ability to work on any part of the fieldbus segment while energised in the hazardous area without 'gas clearance', since the entire network – trunk and spurs – is energy-limited to avoid creation of incendive sparks or hot surfaces. This EEx nL technique is defined in IEC standard 60079-27, which governs the design of FNICO power supplies such as the **9112-NI** used at the Wloclawek plant. This particular supply unit is designed with a high current output for Gas Group IIB environments, and is therefore suitable for the less onerous IIA gases encountered in the CO<sub>2</sub> production process.

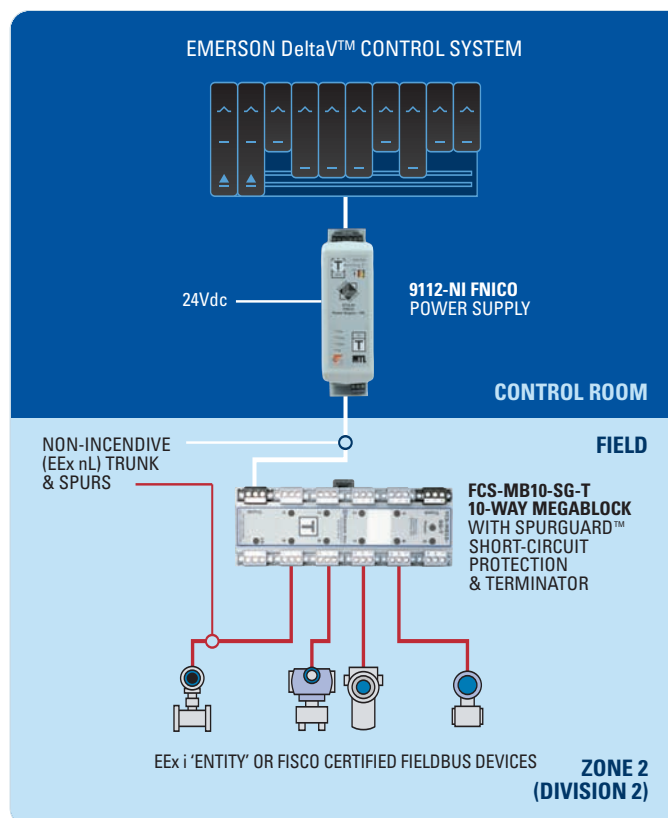
Certification requirements for fieldbus devices connected to FNICO power supplies are straightforward, so the engineering contractor - Jacobs Belgie N.V. - was able to choose from a mixture of intrinsically safe types including both 'Entity' and FISCO approvals.

A further project requirement was the ability to connect to the fieldbus interface cards on the Emerson DeltaV control system. In common with all **MTL's NET9000 power supplies**, the 9112-NI includes the option to provide up to 30mA of current to the 'host' trunk to the DeltaV fieldbus card, thereby avoiding the need for additional power supplies in the safe area.

The **FCS-MB10-SG-T Megablocks** used on the project include SpurGuard™ short-circuit protection and a built-in terminator, and are EEx nL certified making them ideal for use in FNICO systems.



• **911x-NI** FNICO Power Supplies



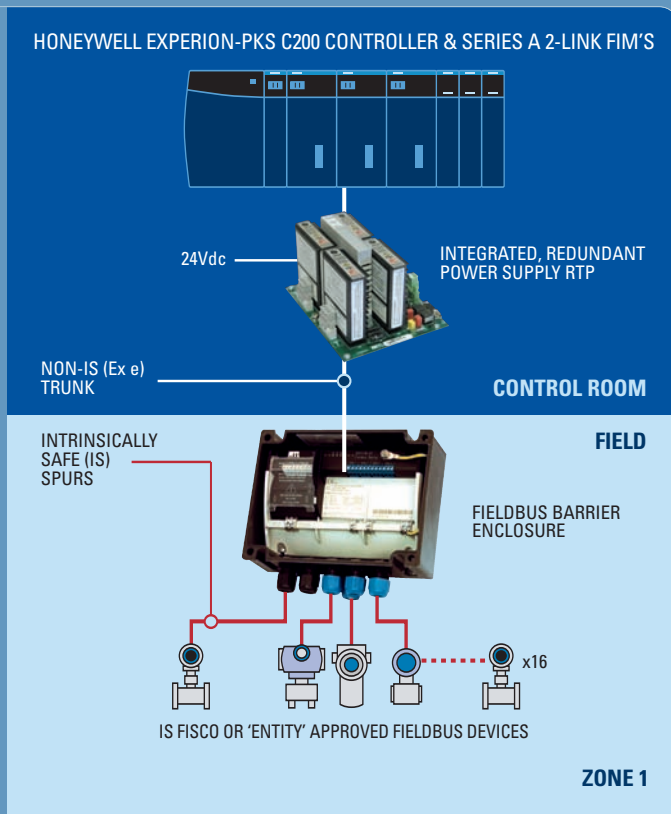
Live-workable trunk and spurs in FNICO installation at Carbowil, Poland

## Application Story: ONGC, Godavari Basin, India

### Custom enclosures enhance Fieldbus Barrier capability



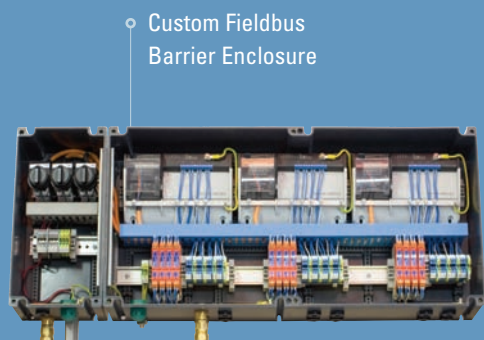
India's Oil and Natural Gas Corporation (ONGC) adopted FOUNDATION fieldbus™ instrumentation for the on-shore gas separation unit as part of the G1-GS-15 development project in the Godavari Basin. MTL Fieldbus Barriers were selected to provide a connection between the Honeywell Experion-PKS C200 host control system and intrinsically safe (IS) fieldbus instruments located in Zone 1 hazardous areas throughout the plant.



The Fieldbus Barriers operate by combining the wiring hub and IS barrier functions within field-mounted enclosures, with the 'home-run' connection implemented using non-IS wiring techniques that are suitable for installation in Zone 1.

MTL provided a range of custom stainless steel enclosures to specifications issued by Honeywell Automation India Ltd. Each enclosure accommodated either three or four barrier modules plus separate terminals for the fieldbus trunk connections, allowing connection to up to sixteen field devices at each node. MTL **F650A** redundant power supplies were used to power the fieldbus trunk.

Fieldbus Barriers may be connected to fieldbus instruments that are certified to either the FISCO standard or the earlier FF-816 'Entity' rules. These devices can be located in a Zone 0 or 1, IIC or IIB hazardous location, with the barrier enclosure itself in Zone 1 (gas) or Zone 21 (dust) environments. Spur lengths up to 120m are permissible, even with FISCO-certified field devices.



- **F650A** integrated fieldbus power supply system for Honeywell Experion-PKS



## Looking for fieldbus experience?...

### Then look no further than MTL-Relcom

We are no newcomers to the fieldbus environment. From involvement in defining the earliest standards through to representation on today's industry bodies, MTL and Relcom have attained a distinguished profile in fieldbus technology. Our installed base of fieldbus power supplies and wiring components exceeds that of any other manufacturer, bringing with it the experience that feeds into second and third generation designs.

#### Engineering Support

Getting it right early on in the project results in significant savings, so engage MTL's expertise early in the FEED stage of the project. MTL can provide complete engineering services for the design of the Fieldbus Network (from field device terminal to Host I/O port) including the creation of segment diagrams in the SmartPlant Instrumentation (INtools) environment.

#### Construction Assistance

MTL can provide on-site hands-on training for the electricians and related trades people hired by the project construction contractor installing the MTL designed network. This training will increase the quality of workmanship in the field and reduce the incidence of wiring problems during commissioning and start-up that could cause delays.

#### Commissioning Services

MTL can provide assistance with commissioning of the FF network by using our diagnostic data tools to verify the integrity of the network between the individual field devices and the fieldbus I/O card. Daily reports will be made to the Control System Commissioning team leader identifying any potential for future problems and the suggested remedy to rectify it.

#### Post project support

A project may be over once it is production; however this milestone simply means that it is time to change to one where ongoing reliability becomes critical. MTL, with its diagnostic tools can also offer ongoing support for the project to ensure that the fieldbus networks will continue to operate with the same level of reliability as the first day they were installed.

Nobody offers as much proven experience in the field as MTL

## SERVICE & SUPPORT - GLOBAL COVERAGE

Fieldbus is here to stay, and so is MTL's commitment to long-term product support. Wherever your fieldbus installation may be - MTL offers an unparalleled worldwide network giving you the complete support package for sales, training and engineering services. MTL's aggressive programme of new product development and innovative design makes MTL the right choice for fieldbus partner, now and in the future.

## DOWNLOADS - STAY TUNED FOR INFORMATION UPDATES



MTL's technical documentation is the envy of the industry, and it's available online. Visit our website at [www.mtl-fieldbus.com](http://www.mtl-fieldbus.com) for up-to-date catalogue information, application notes, calculation and design tools including the first SmartPlant Instrumentation Apparatus import utility for fieldbus products to make it easy for you to develop an integrated fieldbus solution.

[www.mtl-fieldbus.com](http://www.mtl-fieldbus.com)



## Fieldbus Definitions

### FOUNDATION fieldbus™

Fieldbus protocol defined by the Fieldbus Foundation™.

### H1

The low-speed version of FOUNDATION fieldbus™, operating at 31,25kbits/s. H1 fieldbus has been widely adopted in the process industries and is suitable for use in regulatory control and monitoring applications in safe and hazardous areas.

### PHYSICAL LAYER

The first layer in the OSI model for fieldbus which defines the electrical characteristics of the fieldbus, such as speed and signalling levels. The Physical Layer receives messages from the 'communications stack' and converts them into signals on the transmission medium.

### NETWORK

One or more fieldbus segments connected to a fieldbus interface card in a host system.

### SEGMENT

A section of fieldbus, comprising a number of field devices attached to a cable that is terminated at each end in its characteristic impedance. Segments can be linked by repeaters to form longer fieldbusses. The standard allows each H1 segment to support up to 32 fieldbus devices, but many systems limit this to 16 fieldbus devices.

### TRUNK

The main communication cable on a fieldbus segment. It is the cable path between the two fieldbus terminators.

### SPUR

A branch cable connecting a fieldbus device to the fieldbus trunk. H1 Spurs can be up to 120m in length.

### POWER CONDITIONER

A circuit that allows power to be put onto a fieldbus segment without interfering with fieldbus signals.

### FIELDBUS POWER SUPPLY

A source of DC power for fieldbus systems that includes a Power Conditioner.

### TERMINATOR

Network component used at each end of a fieldbus segment to prevent reflections that degrade the signal.

### HOME RUN

Same as TRUNK.

### TOPOLOGY

Shape and design of the fieldbus network (for example, "tree", "daisy chain", "chicken-foot", "point-to-point", "bus with spurs")

### HOST

The fieldbus control system, including the fieldbus interface card.

### REPEATER

An active device that may be used to extend the length of a fieldbus. A maximum of four repeaters can be used in a single network. Repeaters may also be connected in parallel to create multiple segments as part of a larger network.

### LINKING DEVICE

A device capable of converting from one fieldbus physical layer to another, such as H1 to High Speed Ethernet (HSE).

### FIELDBUS INSTRUMENT

A field instrument that has been tested against the Fieldbus Interoperability Test and is capable of communicating in a fieldbus network. Typical H1 fieldbus instruments are valves and transmitters.

### FISCO

Fieldbus Intrinsically Safe Concept, as defined in IEC 60079-27. FISCO simplifies the safety documentation required compared with the earlier 'Entity' concept for intrinsically safe fieldbus, and permits a larger number of fieldbus devices to be connected in the hazardous area.

### FNICO

Fieldbus Non-Incendive Concept, as defined in IEC 60079-27. FNICO transfers the benefits of FISCO into Zone 2 and Division 2 hazardous areas, and has the further advantages of relaxed design rules and higher levels of permissible current.

### ENTITY

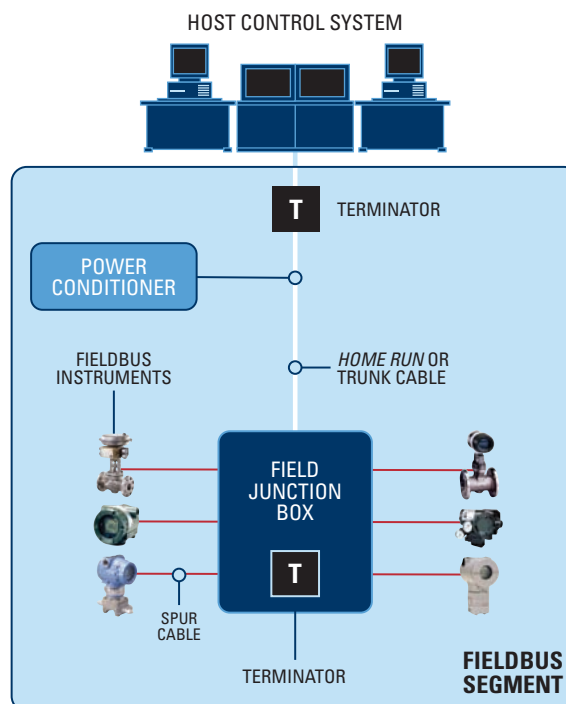
The original concept for intrinsically safe fieldbus as defined in Fieldbus Foundation™ document FF-816.

### HSE

High-Speed Ethernet. The high-speed version of FOUNDATION fieldbus™, operating at up to 100Mbps/s. HSE is based on industrial ethernet specifications and forms a 'backbone' network for connecting equipment such as controllers, linking devices and remote I/O.

### PROFIBUS PA

The low-speed version of Profibus, operating at 31.25kbits/s. Profibus-PA shares the same 'physical layer' specification as FOUNDATION fieldbus™ H1.



Fieldbus physical layer components

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