

2020

special purpose
**telecommunication
systems**

custom made, to solve customer specific needs

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SOHATEL

Special Purpose Telecommunication Systems Catalogue
Catalogo Sistemi di Telecomunicazione per Impieghi Speciali

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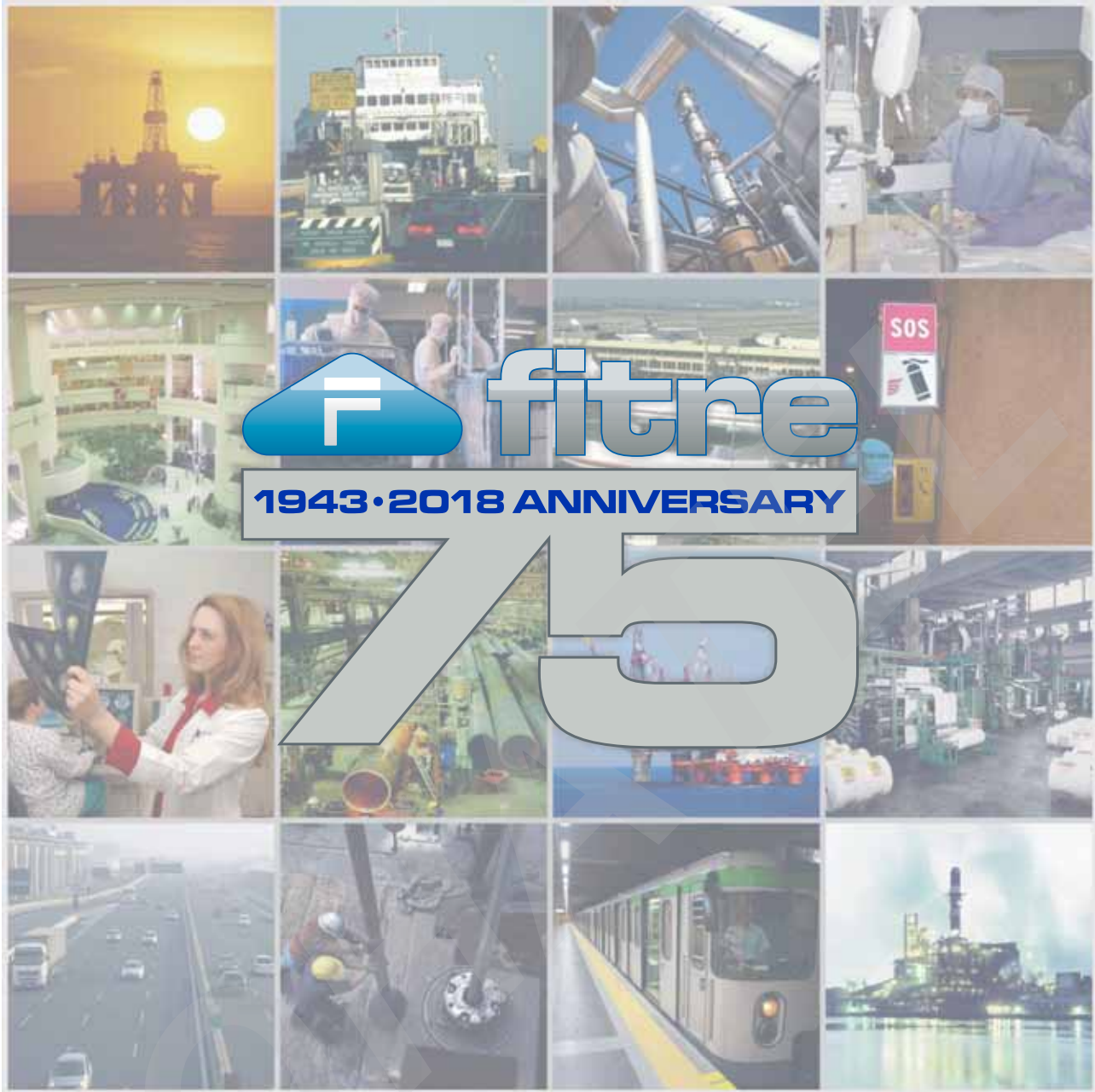
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special purpose telecommunication systems

custom made, to solve customer specific needs



FITRE is an industrial Company that has an enviable experience in the production of special communication equipment, as result of a more than seventy-five years presence in this sector, developing its products entirely in its own R&D laboratories, supporting the most innovative technologies and meeting the most stringent standards.

Therefore, since its foundation, **FITRE** bases its success on technical innovation and customer support.

Main activities concern products and equipment for Net Carriers, products and systems for Industrial Telecommunications and Public Emergency, products for SOHO and Business Telecommunications.

FITRE is also active in developing products and systems for communications and safety in hard environments, such as industrial plants, transports and public areas on territory.

To explore the different solutions, the wide range of products and to verify their conformity to your requirements, we invite you to visit our website www.fitresistemi.com

CommunicationsFirst

Fitre faces and solves the communication problems in the industrial sectors and throughout the territory, meeting harsh working conditions and unexpected constraints.

We place communications needs on the primary level and make use of our experience to analyze, process and answer to the operating requests from partners and customers.

Fitre supports its clientele in the development of appropriate solutions for their specific communication problems, towards reliable communications as primary factor in the growth of each business and in the security of the territory.



There is no an ideal communication system, but instead careful analysis of the requirements stated by the end users in order to create “the ideal system” for those particular setups. Based on this concept, it is clear that one single technology cannot solve all types of communication issues.

Fitre develops solutions based on several technologies – analog, digital and analog/digital – thus guaranteeing:

- ❖ open, modular and flexible solutions based on international standards, avoiding proprietary solutions;
- ❖ choice of the most suitable technology depending on working conditions and/or existing systems.

1871 Antonio Meucci presents the preliminary patent application in New York for his “teletrofono” (this was the name he gave to his first telephone) and founded his “Teletrofono Company”.

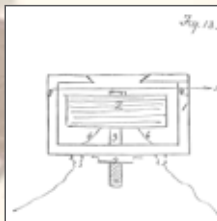
1876 Alexander Graham Bell applies for a patent for his “Improvements in Telephonic Telegraph Receivers”.

1878 The first telephone service provider begins operating in New Haven (USA).

1910 The first manual dial telephone service provider begins operating.

1920 The first automatic dial telephone service providers with electromagnetic step-switches begin operating.

It is exactly in the middle of this historical timeline that the founding of **Fitre** took place, which since its first day has concentrated its aim on the improvement of telephone communications in industrial plants.



2000 Fitre amplifies its efforts on research and development of state-of-the-art communication systems. Its own technological skills allow it to design and market IP digital terminals with VoIP technology since the start of this new century.

Arriving at the present day, after having passed 75 years of activity, **Fitre** continues its expansion in the telecommunications sectors, becoming a point of reference for the market, highlighting its innovative solutions for telecommunications in harsh environments.

1943

2000

2019

Fitre was founded in 1943, at the halfway mark in the history of telephone technology

There are many different kinds of communications in every sector linked to the methods used by the personnel, as well as to more specific safety requirements.

The elements used in these environments are mainly "Terminals", "Speakers" and "Control Units". The system is made out of a group of elements managing the methods each company uses, in order to guarantee its own personnel the possibility to work in safety and with maximum efficiency.

Another element which is necessary for the creation of a "good system" is the careful evaluation of the operating methods of each sector, as well as the particular working conditions and/or system conditions within each single company.

Fitre acts as a partner for each of its clients, offering its experience and skills for analysis and resolution of every single problem.

Fitre can count on a wide range of solutions which have been developed over the years and the bulk of its know-how in this sector.

The range of solutions offered by **Fitre** includes the following types of systems:

- ❖ **Telephone systems** with analog and digital VoIP office devices, waterproof and explosion-proof, complete with telephone accessories including, for example, acoustic/optic ringer relays, telephone hoods, etc.
- ❖ **Communication systems** based on **sound-powered technology**, without the need for any type of power supply; the system can be interfaced with a LAN network.
- ❖ **Systems for management of SOS emergency calls** with specially designed waterproof industrial handsfree phones in compliance with the safety standards governing applications for highways, railroads, public open areas, etc.
- ❖ **Supervision systems for emergency devices**, in order to determine if the device is defective and record events and conversations; with the possibility of integrating them with a video.
- ❖ **P.A. Systems (Public Address System)** with anti-Larsen device and alarms management for automatic diffusion of alarm tones/messages in a single area, a group of areas or in all loudspeaker areas.
- ❖ **Automatic public announcement diffusion systems with TTS (Text-To-Speech)** for railroads, subways, large department stores, etc.
- ❖ **Omnibus "ring" intercom systems** based on a single communication bus.
- ❖ **All-to-all intercom systems**, which allow all users to freely select any other number through the intercom control unit.
- ❖ **Selective intercom systems with direct calling**, allowing to call only certain users.
- ❖ **Protection systems for telephone and data lines** against transients and/or connection problems "outside of the ground network".

All of the emergency system components (control unit, devices, etc.) were developed entirely in Fitre R&D Laboratories, which boast total know-how of mechanical, electronic and software development design.

Thanks to the adoption of an **open, modular type architecture based on international telephone standards**, **Fitre** is able to integrate communication functions with other systems (for example TVCC) and to develop communication protocols with external supervisory and diagnostic systems.

All of the communication systems are based on telephone standards with analog and digital (VoIP) technologies, thus giving the possibility of creating mixed architectures (analog and VoIP).

Main applications of Fitre solutions

The systems offered by **Fitre** are widely used in all industrial market sectors that demand flexibility and quality as priorities:

- ❖ **Steelworks and metallurgical industries**
- ❖ **Petrochemical plants**
- ❖ **Electric power plants**
- ❖ **Cement production plants**
- ❖ **Glass production plants**
- ❖ **Railroads: network and on board systems**
- ❖ **Railroads: tunnel emergency systems**
- ❖ **Subways: network and on board systems**
- ❖ **Highways: SOS emergency call systems for highways and tunnels**
- ❖ **Public spaces: emergency/information call systems integrated with a video surveillance system**

What to choose? Digital VoIP or analog?

Analog architecture requires that each user of the communication system is connected to his/her own control unit via a telephonic twisted-pair wire, which is an example of the traditional telephone technology.

The system functions are closely linked to the type of PABX control unit, as well as to the type of devices used.

Fitre has developed a series of VOX devices based on analog technology and equipped with their own diagnostic system, to solve the operating needs of SOS emergency systems.

Each device can be connected from a distance of approximately 2-3 km from the control unit and the devices do not require a local power supply, which is present only in cases that require a call signal reinforcement.

The **digital architecture** is based on the **Voice over IP** system (Voice via Internet protocol), usually named **VoIP**, a technology that makes it possible to carry out a telephone conversation by using an internet connection on a dedicated network that uses IP protocol, as opposed to passing through the traditional telephone network (PSTN).

Among other advantages in respect to traditional telephone systems, this technology provides:

- ❖ lower infrastructure costs: when an IP network is available, no other infrastructure is necessary;
- ❖ it facilitates the outsourcing of the system management elements (control unit, operator stations, etc.);
- ❖ new advanced functions;
- ❖ implementation of future options does not require replacement of the hardware.

This technology therefore allows the use of pre-existing network resources, permitting a notable reduction of costs in both private and public facilities as well as a geographical distribution of the system elements.

The same network can be used both for vocal communications (telephone intercom emergency communications) as well as for the transportation of TVCC images, thus simplifying the installation procedure.

Each VoIP device is part of the IP network, and therefore is connected to its network switch via a cable cat. 5 or 6 with a maximum length of 90 meters, which can be increased by using suitable media converters.

Each device requires power supply via PoE (Power over Ethernet) or from a local source.

Different communication protocols can be used in VoIP technology. Fitre has selected SIP, since SIP (Session Initiation Protocol) is a protocol based on IP, defined by RFC 3261 and used mainly for telephone applications on IP or VoIP.

Using SIP protocol it is possible to transfer various types of data (audio, video, text messaging, etc.). In addition, SIP allows for modular or scaled architecture, or architecture that is able to grow with the number of service users. This potential has made SIP the most diffused VoIP protocol in the communications market, leaping ahead of many other protocols such as H.323 and MGCP.

In addition, by adopting SIP protocol it is possible to use various standard devices designed to facilitate the use of VoIP by all kinds of users. Some examples of these devices are ATA (Analogue Telephone Adapters) or Gateways, which can convert the signals of a normal analog telephone into an IP data flow.

Fitre VoIP Technology

Since the early years of introduction to the IP technology, **Fitre** has developed communication systems and message diffusion on IP networks for industrial facilities. It is therefore now possible to propose solutions which have had positive results on IP networks for intercoms and public address systems, in particular for safety systems.

The advantages are above all evident in cases where the IP network is already well distributed and used in the same area for other applications. In this way the user can operate on a single network, with consequent savings in regards to installation and maintenance. However, also in cases where the IP network must be created, an IP network is advantageous, providing flexibility and the possibility to keep the critical components in the system under constant control.

Last but not least, it also provides the advantage of easily connecting the system to the outside world over the Internet and therefore to also perform the same usage, configuration and control operations that are available locally from a great distance.

Fitre has developed a series of digital VoIP industrial telephones in waterproof case with SIP protocol and equipped with PoE power supply as well as local power supply at 12-56 Vdc voltage; all of which are suitable for hazardous areas.

ASTRO System Manager

ASTRO System Manager by Fitre: the system platform able to adequately match the specificity and uniqueness of each request, either in terms of performance or in terms of costs and benefits, integrating standard components with intrinsic efficiency and performance characteristics.

In this way, also to guarantee the long-term continuity of the systems, **Fitre** has developed the concept of a modular platform to be composed with standard functional units, both hardware and software, based on their constant technological updating.

So, the main features and advantages of **ASTRO System Manager**, common for all the systems designed on it, can be summarized as follows below.

- ❖ Very competitive and cost effective system solution, using a fully digital Client/Server architecture based on the latest VoIP technology with standard SIP and multicast FastPA streaming protocols.
- ❖ Very high audio quality with 16 kHz bandwidth.
- ❖ Several possible configurations: stand-alone, distributed intelligence through Ethernet connection, fully duplicated systems with LAN connection.
- ❖ Modular, scalable and high reliable system based on distributed master/slave and master/master architecture with hierarchic managing.
- ❖ Ring network management software integrated in **ASTRO System Manager**.
- ❖ System diagnostics of all critical components, with relevant reporting through standard SNMP and web service protocols.
- ❖ ASTRO/Client with GUI for programming/configuration and diagnostics/maintenance, with relevant software to be installed either on a dedicated external PC with web browser or fully integrated in **ASTRO System Manager** or to be accessed by any customer's PC via VNC (Virtual Network Computing).
- ❖ Automatic e-mail and/or SMS notification in the event of failure.
- ❖ Single point of failure managing.
- ❖ Very high flexibility in terms of audio configuration and operation through a fully configurable voice matrix.
- ❖ Configurable priority levels handling.
- ❖ Integration with 'third party' systems (Fire & GAS, CCTV, Access Control, SCADA, DCS, NMS, PLC, etc.) through SNMP, web server and I/O contacts.
- ❖ Alarm events handling capability in order to broadcast alarm tones/messages linked to the active alarm contact(s).
- ❖ Alarms/tones/messages stored in the digital memory of **ASTRO System Manager**.
- ❖ Audio recording of all conversations (with time, date and duration) stored in the digital memory of **ASTRO System Manager**.
- ❖ Historical data base for system events logging (with time, date and duration).
- ❖ Digital acoustic feedback eliminator.
- ❖ **ASTRO System Manager** hardware in redundant configuration "1+1".

The designing approach of **Fitre** is a mix of simplicity and technology.

In order to make possible the widest range of system typologies, while responding to all the installation's requirements and to all the most evolving stringent standards, our hardware & software laboratories had worked out **the Fitre's way** to effectively solve the received systems requests.

All the concept turns around families of components, subject to a constant development, each of which is integral part to compose some well-defined "blocks" that satisfied as much well-defined simple communication functions. These "blocks", that we have named "building blocks", used alone or together with other specific ones, will build the "ideal" system, configured to respond to the specific demands.

Everything based on the idea that splitting the system into single easy to solve matters allows to have the best answer to the whole system.

This concept reveals also another important peculiarity, inherent on the constant updating of the components and consequently of the related blocks, that makes the single building block to be ever the state-of-the-art of that specific system function, taking advantage of the full interchangeability of the components within a complete range of products, to comply the constraints of the installation environment.

Therefore, it is shown on the next pages some of the elements of this concept:

- ❖ **Building Blocks**
- ❖ **Types of Components used**
- ❖ **Systems examples**

Building Blocks

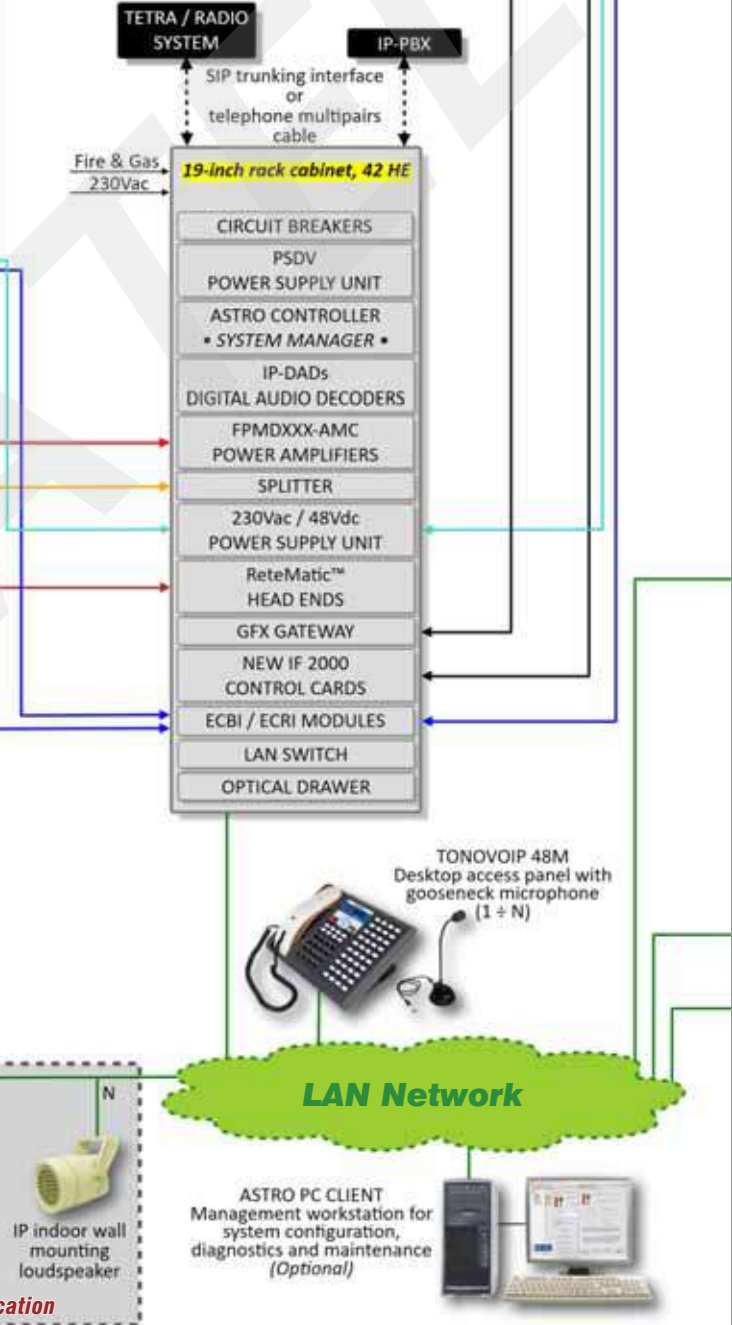
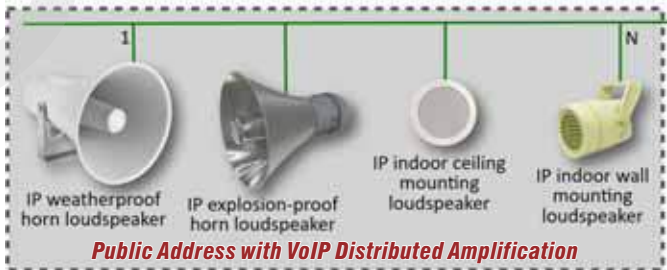
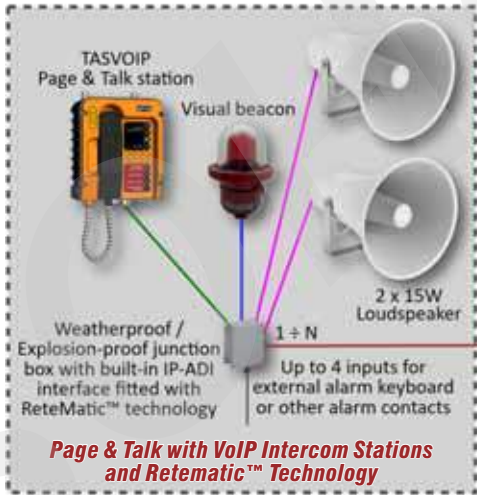
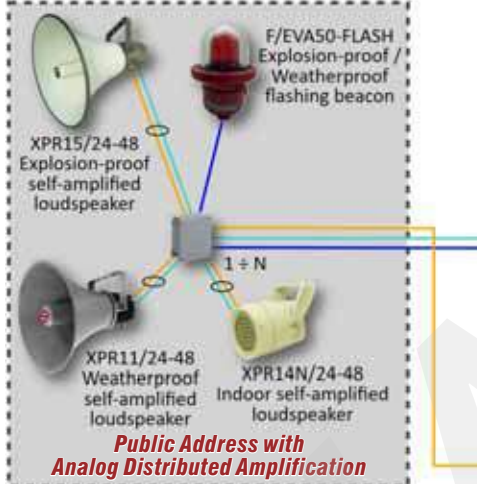
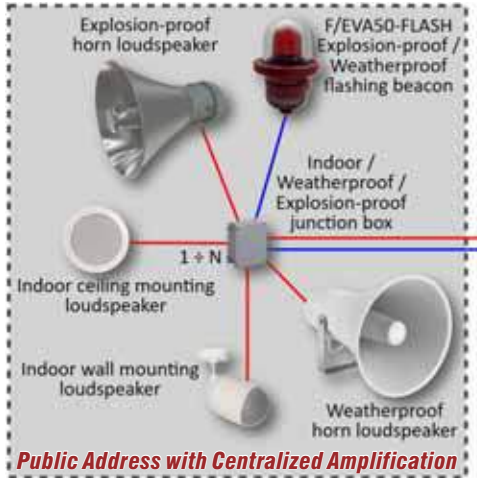
In order to guarantee software and hardware maintenance, **Fitre** has developed the concept of a modular platform to be used with standard "building blocks", functional hardware units and specific software for the management of the various communication functions: Intercom, Public Address, PA/GA, Emergency, Audio/Video Integration, Telephone Systems, Diagnostics, Maintenance, Configuration and Interface with other systems.

By using the same elements, **Fitre** can guarantee constant technological updating of the units used for the systems. Many other components types can be found in our catalogues and **Fitre** also keeps an updated list of a wide range of tested components made by "third parties".

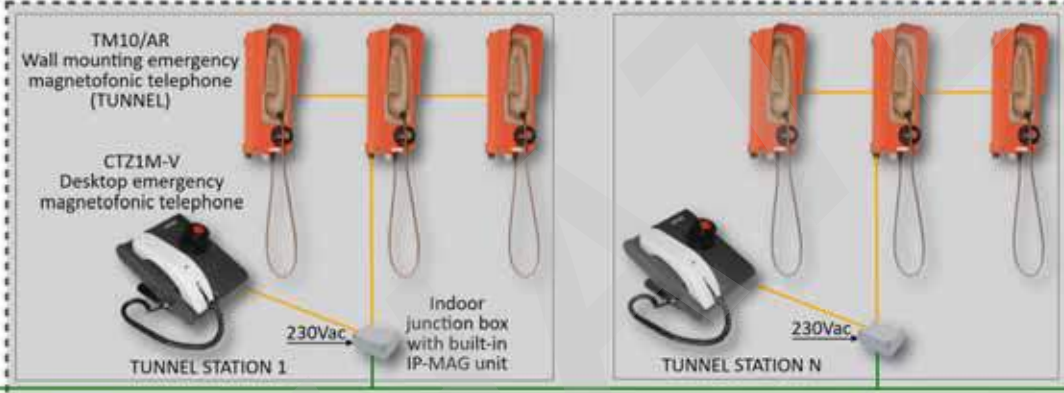
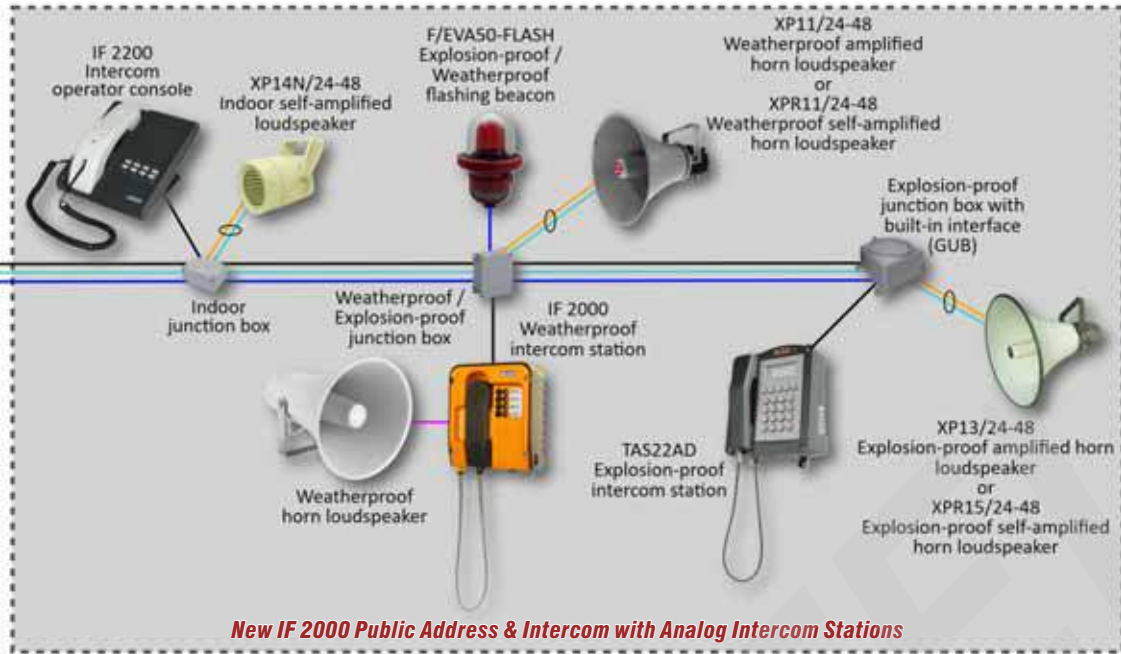
The main and more widespread systems types made through the use of this concept are as follows:

- ❖ Public Address System with Centralized Amplification;
- ❖ Public Address System with Analog Distributed Amplification;
- ❖ Public Address System with VoIP Distributed Amplification;
- ❖ Intercom System with Analog Intercom Stations;
- ❖ Intercom System with VoIP Intercom Stations;
- ❖ New IF2000 Public Address & Intercom System with Analog Intercom Station;
- ❖ Page & Talk System with VoIP Intercom Stations and Retematic™ Technology;
- ❖ ASTROLess Public Address & Intercom System with VoIP Intercom Stations;
- ❖ Emergency Telephony with VoIP Emergency Call Points;
- ❖ Emergency Telephony with Self-Powered Emergency Telephones.

modular building blocks system concept



- Telephone cable for intercom stations
- 100V audio power supply cable for loudspeakers
- 48Vdc power supply cable for flashing beacons
- 0dB audio signal cable for loudspeakers
- 48Vdc power supply cable for loudspeakers
- 0dB audio signal cable for desktop / wall mounting emergency telephones



- 2-core power supply cable for loudspeakers
- 90÷240Vac ReteMatic™ power supply cable (2-core plus ground wire)
- CAT.6 cable for LAN connections

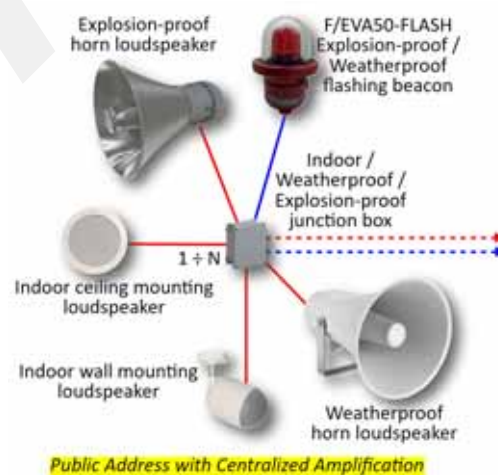
Blocks Overview Scheme

Public Address with Centralized Amplification

Features

- ❖ Full integration with Intercom and Telephone Systems.
 - ❖ **EN 54-16 certification.**
 - ❖ Extended intercom operation between access panels (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
 - ❖ Paging zone calls (including single zones, any combination of zones and all zones).
 - ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
 - ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
 - ❖ Main Public Address / Intercom stations (access panels)
- VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
 - ❖ Very cheap and cost-effective cables network (LAN network to interconnect all access panels and one standard power pair for each speakers' loop).
 - ❖ All access panels can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
 - ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.
 - ❖ Interfacing with plant Telephone System, plant Radio System and with existing Public Address and Intercom Systems.

Typical Diagram



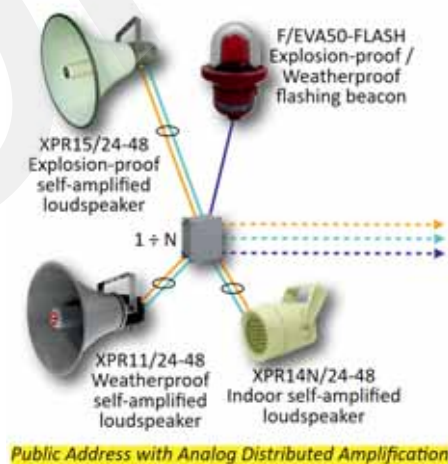
Public Address

Public Address with Analog Distributed Amplification

Features

- ❖ Full integration with Intercom and Telephone Systems.
- ❖ Distributed amplification (alternative or integrative to a centralized amplification) performed through the use of self-amplified loudspeakers with built-in power amplifier.
- ❖ Self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc) fitted with continuous volume control from 0W to the max rated power and with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Extended intercom operation between access panels (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all access panels and one standard power pair for each speakers' loop).
- ❖ All access panels can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.
- ❖ Interfacing with plant Telephone System, plant Radio System and with existing Public Address and Intercom Systems.

Typical Diagram



Public Address with VoIP Distributed Amplification

Features

- ❖ Full integration with Intercom and Telephone Systems.
- ❖ Distributed amplification (alternative or integrative to a centralized amplification) performed through the use of IP self-amplified loudspeakers with built-in power amplifier.
- ❖ IP self-amplified loudspeakers (max power output: 25W with POE+ and 10W with POE), capable to be remotely configured and monitored, and fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Extended intercom operation between access panels (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all access panels and one standard power pair for each speakers' loop).
- ❖ All access panels can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.
- ❖ Interfacing with plant Telephone System, plant Radio System and with existing Public Address and Intercom Systems.

Typical Diagram



Public Address with VoIP Distributed Amplification

Intercom with Analog Intercom Stations

Features

- ❖ Full integration with Public Address and Telephone Systems.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Double functionality of Public Address / Intercom stations and plant telephone sets, i.e. Public Address / Intercom stations working also as telephone sets connected to the plant PABX, as well as plant telephone sets working also as Public Address / Intercom stations connected to the Public Address / Intercom System. In case of failure of Public Address / Intercom System or plant PABX, the telephone or Public Address / Intercom functionality is any case guaranteed.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre analog telephone sets (indoor, weather-proof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations. Max allowed distance of access panels from LAN switch is 250 meters (instead of 100 meters as per usual standard).
- ❖ Very cheap and cost-effective cables network using standard cables (one standard telephone pair for each Public Address / Intercom station).
- ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.
- ❖ Public Address / Intercom stations star connected to the central unit of the system, with a maximum allowed distance up to 3 kilometers.
- ❖ Interfacing with plant Telephone System, plant Radio System and with existing Public Address and Intercom Systems.

Typical Diagram

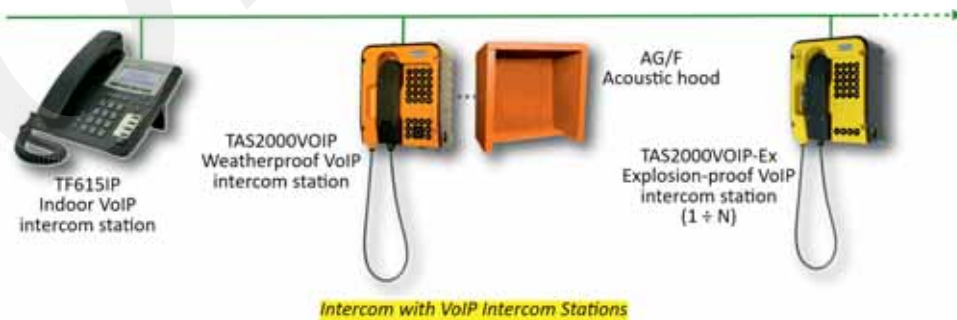


Intercom with VoIP Intercom Stations

Features

- ❖ Full integration with Public Address and Telephone Systems.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Double functionality of Public Address / Intercom stations and plant telephone sets, i.e. Public Address / Intercom stations working also as telephone sets connected to the plant PABX, as well as plant telephone sets working also as Public Address / Intercom stations connected to the Public Address / Intercom System. In case of failure of Public Address / Intercom System or plant PABX, the telephone or Public Address/Intercom functionality is any case guaranteed.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre IP telephone sets (indoor, weatherproof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all IP Public Address/Intercom stations).
- ❖ All Fitre VoIP terminals (Public Address / Intercom stations and access panels) can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.
- ❖ Interfacing with plant Telephone System, plant Radio System and with existing Public Address and Intercom Systems.

Typical Diagram



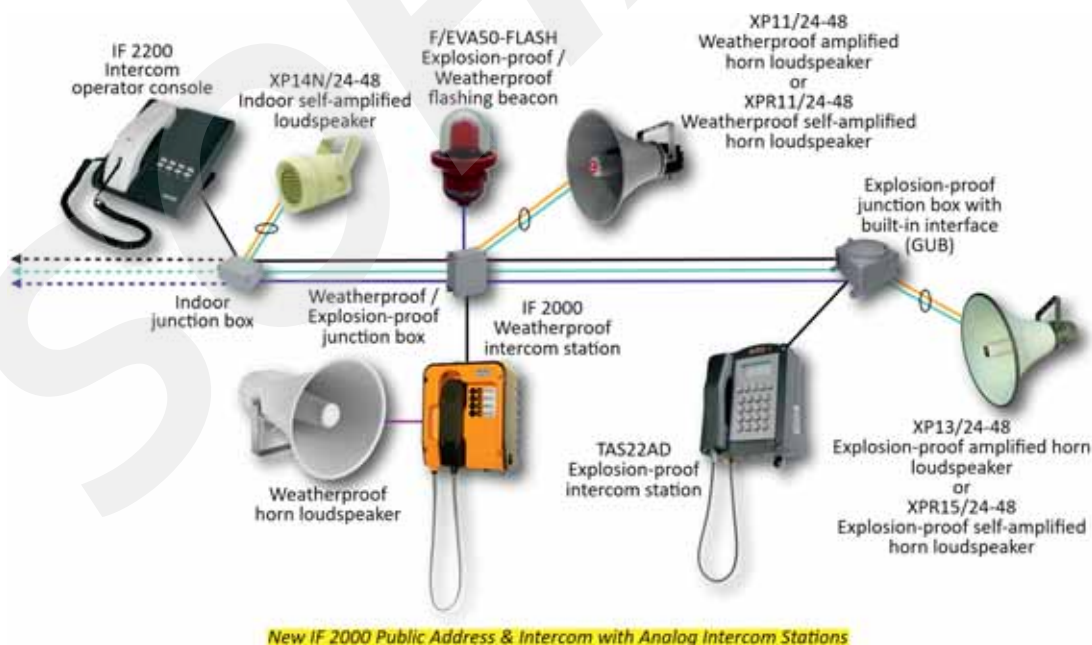
Public Address & Intercom

New IF2000 Public Address & Intercom with Analog Intercom Stations

Features

- ❖ Full integration with Public Address and Telephone Systems.
- ❖ Public Address / Intercom stations fitted with up to 8 lines with visual indication which, depending on project requirements, can be configured individually as page line, party line or direct call to control room.
- ❖ Extended intercom operation (omnibus page/party, group calls and conference calls), with up to five simultaneous conversations on the same party line.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Broadcast with priority of pre-recorded messages, alarm tones and special signals (such as start or end of work, etc.), including single zones, any combination of zones and all zones.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Public Address / Intercom stations with built-in high efficiency 25W class D power amplifier for connection of up to two 80ohms loudspeakers, and fitted with time-out function for disconnection of the line after a pre-set time.
- ❖ Distributed amplification (integrative to the power amplifiers installed inside the Public Address/Intercom stations)
- ❖ performed through the use of self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc, fitted with built-in power amplifier, continuous volume control from 0W to the max rated power and with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level).
- ❖ Equipment power supply from 24Vdc to 48Vdc through high efficiency 230Vac/24-48Vdc power supply unit with or without back batteries.
- ❖ Main Public Address / Intercom stations (access panels) fitted with handset and dedicated push buttons with visual indication for direct activations.
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in hands-free and full-duplex mode even if the ambient noise level is more than 100dB.
- ❖ Interfacing with plant Telephone System, plant Radio System and with existing Public Address and Intercom Systems.

Typical Diagram

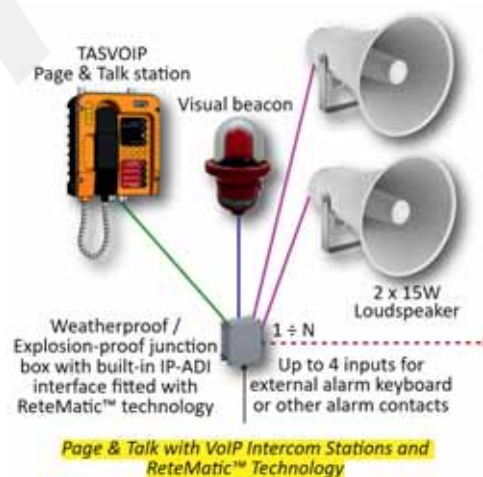


Page & Talk with VoIP Intercom Stations and ReteMatic™ Technology

Features

- ❖ Full integration with Public Address and Telephone Systems.
- ❖ Distributed amplification performed through the IP-ADI interface fitted with ReteMatic™ technology, providing a 30W Class D amplifier capable to support up to two standard (non-amplified) 8Ohm loudspeakers, a visual beacon and 4 inputs for an external alarm keyboard or other alarm contacts.
- ❖ IP-ADI interface in water-proof and explosion-proof versions, providing full diagnostics over the connected devices.
- ❖ Highlights of ReteMatic™ networking are:
 - ♦ carries both power (90-240Vac) and data over standard non-polarized power cables;
 - ♦ any network topology supported (bus, chain, star, even mixed);
 - ♦ composed by an head-end, interfaced to a standard Ethernet LAN, and up to 15 devices for (max distance approx. 500 meters from the head-end);
 - ♦ many ReteMatic™ networks may be interconnected by means of a standard Ethernet switch.
- ❖ Real-time monitoring & fault reporting.
- ❖ Extended intercom operation (omnibus page/party, group calls and conference calls), with up to five simultaneous conversations on the same party line.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Broadcast with priority of pre-recorded messages and/or alarm tones (including single zones, any combination of zones and all zones).
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Base station for wireless communication by means of DECT terminals and headsets.
- ❖ Multi-functional pillars to include intercom station, amplifier, loudspeakers, visual beacon, alarm keyboard and an integrated junction box in a single, easy to move unit.
- ❖ Public Address / Intercom VoIP stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network, i.e. only 2 wires (plus ground wire if needed) to interconnect all IP-ADI interfaces and relevant head-end.
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in hands-free and full-duplex mode even if the ambient noise level is more than 100dB.
- ❖ Intercom system fitted with some special requirements for Exploration Drilling Rigs (frequently moved), i.e. quick to install and dismount, very easy to connect and easy monitoring of system health.
- ❖ Interfacing with plant Telephone System, plant Radio System and with existing Public Address and Intercom Systems.

Typical Diagram

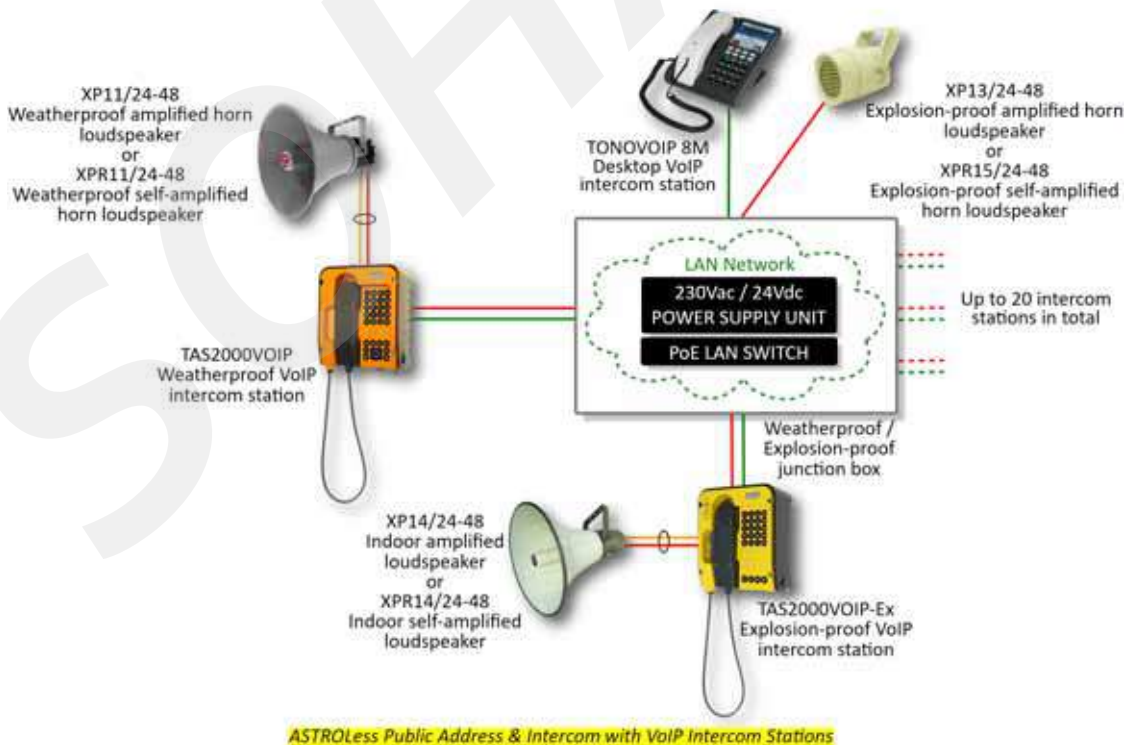


ASTROLess Public Address & Intercom with VoIP Intercom Stations

Features

- ❖ ASTROLess (with no ASTRO server required) is the application of ASTRO server manager used for managing the communication functions in small systems (up to 20 VoIP nodes), using network IP technology implemented in each VoIP node.
- ❖ Based on the standard SIP and FastPA multicasting technology, the system offers high voice quality (16kHz audio band) with very simple installation and very easy-to-use operation.
- ❖ Programming of each VoIP node using the PC's web browser.
- ❖ Echo and noise cancellation management in each VoIP station.
- ❖ Full configurable voice matrix and priority configuration between SIP and FastPA communications.
- ❖ Fully integrated Public Address & Intercom System.
- ❖ Distributed amplification performed through the use of self-amplified loudspeakers with built-in power amplifier.
- ❖ Self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc) fitted with continuous volume control from 0W to the max rated power and with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls limited to 3 participants), with virtually up to 20 VoIP nodes (including the PA amplifiers).
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones), with manual activation from the access panels.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre IP telephone sets (indoor, weatherproof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all IP Public Address / Intercom stations and two standard telephone pairs for each loudspeaker).
- ❖ All Fitre VoIP terminals (Public Address / Intercom stations and access panels) can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ I/O card in each VoIP node (e.g. for managing an external contact to activate an external visual beacon in each station, an automatic direct call and/or a local CCTV camera).

Typical Diagram



Emergency Telephony with VoIP Emergency Call Points

Features

- ❖ Full integration with Self-Powered Emergency Telephone System.
- ❖ Centralized ASTRO Call Manager provided in back-up configuration (one in the Main Control Center and the other one in Back-Up Control Center).
- ❖ SIP trunking Wi-Fi interface with the on-board intercom system.
- ❖ Real-time monitoring & fault reporting.
- ❖ Remote configuration and diagnostics from the Control Center through a suitable PC workstation with relevant software.
- ❖ ECP (Emergency Call Points) usually installed in the railway/subway stations (including lifts) consisting of VoIP emergency telephones fitted with one or two call buttons (typically: "SOS" for emergency calls and "INFO" for information calls).
- ❖ Lifts Emergency Call Points fitted with one "SOS" call button for direct communication with the relevant Control Center digital operator console.
- ❖ Station Emergency Call Points fitted with one "SOS" call button for direct communication with the relevant Control Center digital operator console plus one "INFO" call button for direct communication with the relevant station digital operator console.
- ❖ Emergency Call Points connected to the LAN network through standard PoE with CAT 6 cable.
- ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.
- ❖ Emergency Call Points fitted with digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in hands-free and full-duplex mode even if the ambient noise level is more than 100dB.

Typical Diagram



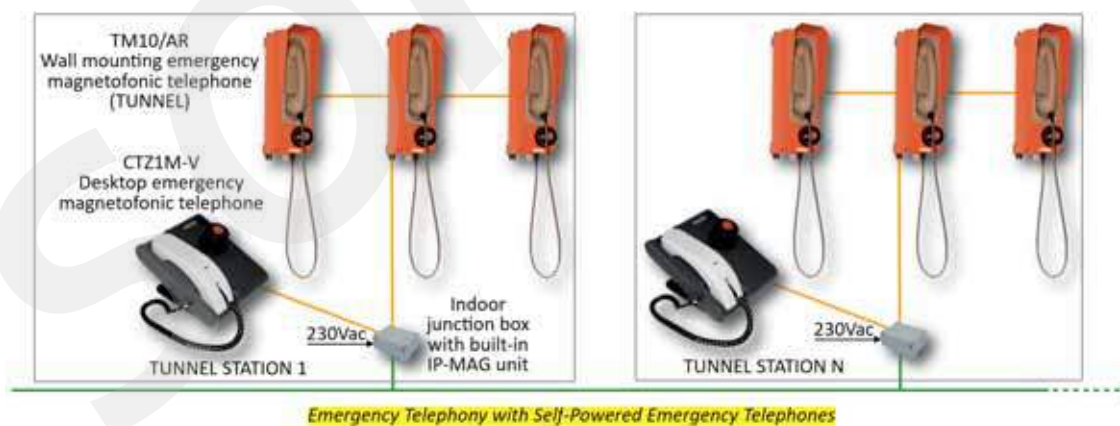
Emergency Telephony

Emergency Telephony with Self-Powered Emergency Telephones

Features

- ❖ Fully integration with ECP (Emergency Call Points) Emergency Telephone System.
- ❖ Centralized ASTRO Call Manager provided in back-up configuration (one in the Main Control Center and the other one in Back-Up Control Center).
- ❖ SIP trunking Wi-Fi interface with the on-board intercom system.
- ❖ Real-time monitoring & fault reporting.
- ❖ Remote configuration and diagnostics from the Control Center through a suitable PC workstation with relevant software.
- ❖ Emergency telephones usually installed in the tunnels consisting of self-powered telephones with call generator connected in parallel on the same two wires cable and not requiring any kind of power supply.
- ❖ In case of normal system operation, all emergency calls coming from the self-powered emergency telephones are addressed (through the station IP-MAG unit and the LAN network) to the relevant Control Center digital operator console.
- ❖ In case of IP-MAG unit and/or LAN network fault as well as in case of station complete power supply loss, all emergency calls coming from the self-powered emergency telephones are automatically addressed to the station emergency self-powered operator console and in parallel also to the extreme emergency self-powered operator console of the next station, so as to guarantee the full redundancy of the station emergency self-powered operator console.
- ❖ Maximum distance between two self-powered emergency telephones (or operator consoles) of 6-8 kilometres depending on the size of the copper cable (typically, it is recommended a twisted pair 2 x 1.5 mm²).
- ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.

Typical Diagram





There are situations where telephone equipment, in addition having to meet to specific standards in terms of performance, requires adequate mechanical characteristics in relation to the place of their installation.

This is the case of industrial plants, infrastructures, and outdoor areas.

Fitre meets the needs of these uses by providing installers with a wide range of products suitable for installation in harsh environments.

All these products have been designed to withstand environmental stresses and always guarantee perfect efficiency and safety of use. Many of the devices are also available in both analog and digital technology for VoIP applications.

They are part of the products shown in the “**Special Purpose Telecommunications Products Catalogue**”:

- ❖ IP66 weatherproof phones in light alloy;
- ❖ IP66 weatherproof polycarbonate phones;
- ❖ IP65 handsfree wall and/or flush phones;
- ❖ handsfree watertight telephones for sterile environments;
- ❖ explosion-proof Atex certified phones;
- ❖ sound-powered phones;
- ❖ weatherproof ringtones;
- ❖ explosion-proof ringtones;
- ❖ light and flashing signalers ;
- ❖ soundproof booths;
- ❖ amplified loudspeakers for public address.

For more information, **request us for a copy of the catalogue** or visit the **fitre.it** website or the specific **fitresistemi.com** website dedicated to industrial telephony.



read this qr-code and
browse or download
the online catalogue
and its updates

types of components used in the systems

and many others are available for specific needs

Types of Components used in the Systems



Analog Telephone Sets

Telephone, intercom and emergency analog sets (VOX series). Weatherproof and explosionproof, steel or die cast aluminium alloy case.



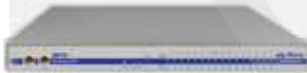
Digital Telephone Sets

Telephone, intercom and emergency digital sets (VoIP series). Weatherproof and explosionproof, steel or die cast aluminium alloy case.



Hands-free Telephone Sets

Telephone, intercom and emergency hands-free sets, analog or digital. Weatherproof and vandal proof, steel or die cast aluminium alloy case.



Gateways

Devices for connecting analog telephone apparatus to the IP network, to enjoy the benefits of IP connectivity and to "extend" the analog connections through the IP network.



IP-DAD

IP-DAD (Digital Analog Decoder), digital interface for the PA (Public Address) and PAGA (Public Address and General Alarm) functions.



Amplifiers

Power amplifiers with diagnostic circuit, line integrity control and automatic switch in case of failure.

Types of Components used in the Systems

Indoor Speakers

Speakers for indoor installation, weather and explosion proof, equipped with line transformer.



Analog and IP Amplified Loudspeakers

Amplified loudspeakers, weatherproof and explosionproof. There are also available models where the output volume can be automatically controlled by ambient noise.



Signals

Acoustic and luminous signals, weatherproof and explosionproof.



PC Client

Personal computer for remote configuration, maintenance and diagnostic of the system.



Operator Set

Industrial operator set "TONO-IP" type, for control rooms, supervision and maintenance.



Software

Software for management of various communication functions: "Intercom", "PA", "PAGA", "Emergency", "Audio/Video Integrating", "Telephony", "Diagnosis", "Maintenance", "Settings" and "Interface with other systems".



IP protection degree decoding table

DIN 40050 - IEC 529 (EN 60529)

1st digit: protection against penetration of solid objects

2nd digit: protection against penetration of water

0 no special protection

0 no special protection

1 objects > 50,0 mm

1 vertically dripping water

2 objects > 12,0 mm

2 angled dripping water (15° from the vertical)

3 objects > 2.5 mm

3 sprayed water (60° from the vertical)

4 objects > 1.0 mm

4 splashed and sprayed water (all directions)

5 entry of dust

5 low pressure jet water

6 complete protection against entry of dust

6 sea waves

7 temporary immersion

8 continuous submersion

Classification table for apparatus in explosive areas

ATEX 94/9/CE

	Group I: mines and their surface plants		Group II: surface and other sites		
	cat. M1	cat. M2	cat. 1	cat. 2	cat. 3
explosive atmosphere	present	probably present	always present	probably present	
kind of substance	methane, combustible dust	methane, combustible dust	gases, steams, fogs, dust	gases, steams, fogs, dust	gases, steams, fogs, dust
protection level	very high	high	very high	high	normal
zone correlation			gas zone 0 - dust zone 20	gas zone 1 - dust zone 21	gas zone 2 - dust zone 22

Zone definition

Gas	Dust	
0	20	Permanent or long time or frequent explosive atmospheres
1	21	Occasionally explosive atmospheres
2	22	Rarely explosive atmospheres

example

CE

XXX

Ex

II

2

D

T125°

areas with combustible dusts

CE mark

notified body

Ex

group

category

dust (D) - gas (G)

certified surface temperature

potentially explosive atmosphere

protection modes:
e = increased safety
i = intrinsically safety
d = flameproof

group

(max) surface temperature class:
T1= 450°C - T1= 300°C
T3= 200°C - T4= 135°C
T5= 100°C - T6= 85°C

example

CE

XXX

Ex

II

2

G

EEx

e

IIB

T4

areas with explosion gases

CE mark

notified body

Ex

group

category

gas (G) - dust (D)

explosionproof protection

typical gas:

A = propane
B = ethylene
C = hydrogen

potentially explosive atmosphere

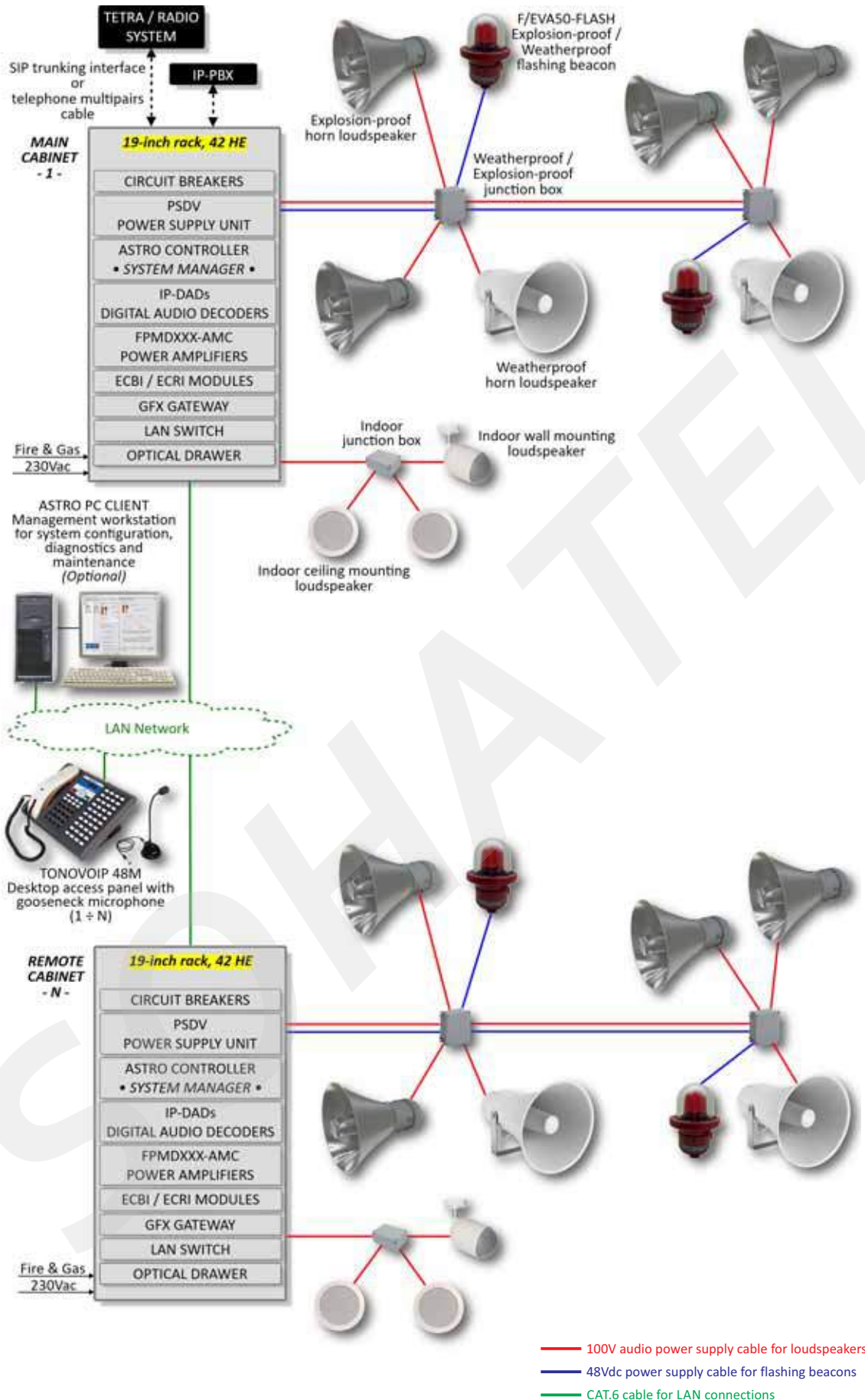
European certification

various system architectures

examples

System Architectures Examples

Public Address Systems with Centralized Amplification	32
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries, and Mobility (Metros, Railways, Highways, Roads and Tunnels)</i>	
Public Address Systems with Analog and/or VoIP Distributed Amplification	34
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries</i>	
Public Address & Intercom Systems with Analog Intercom Stations and Centralized Amplification	36
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries</i>	
Public Address & Intercom Systems with Analog Intercom Stations and Distributed Amplification	38
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries</i>	
Public Address & Intercom Systems with VoIP Intercom Stations and Centralized Amplification	40
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries, and Mobility (Metros, Railways, Highways, Roads and Tunnels)</i>	
Public Address & Intercom Systems with VoIP Intercom Stations and Analog and/or VoIP Distributed Amplification	42
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries</i>	
New IF 2000 Public Address & Intercom Systems with Analog and VoIP Intercom Stations	44
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries</i>	
Page & Talk Systems with VoIP Intercom Stations and ReteMatic™ Technology	46
<i>Oil & Gas (Exploration Drilling Rigs), Petrochemical, Power, Steel, Heavy and Light Industries, and Mobility (Temporary Construction Sites)</i>	
AstroLess Public Address & Intercom Systems with VoIP Intercom Stations	48
<i>Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries</i>	
Emergency Telephone Systems with VoIP Emergency Call Points and Self-Powered Emergency Telephones	50
<i>Mobility (Metros, Railways, Highways, Roads and Tunnels)</i>	



layout of the system



Public Address Systems with Centralized Amplification

Main Features

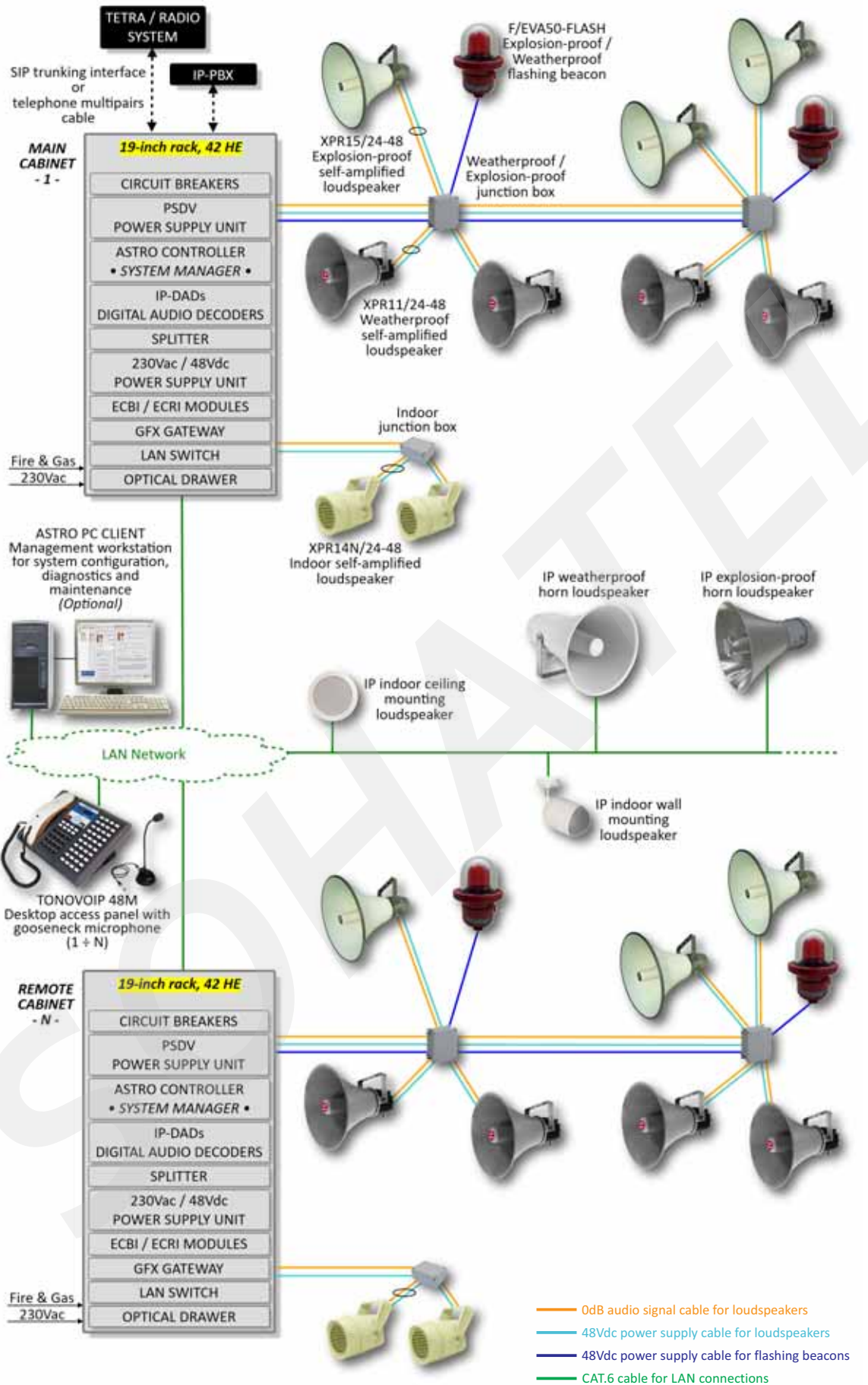
- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ Extended intercom operation between access panels (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all access panels and one standard power pair for each speakers' loop).
- ❖ All access panels can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Interfacing with existing Public Address and Intercom Systems.

Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries, and Mobility (Metros, Railways, Highways, Roads and Tunnels).

Main Options

- ❖ Indoor speakers for accommodation areas fitted with volume control which in case of emergency calls will be overridden, and the volume automatically set up at the maximum level.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors.
- ❖ Central cabinets fitted with antiseismic kit.
- ❖ Power supply unit in redundant configuration "1+1".
- ❖ Power amplifiers in "N+1" backup configuration.
- ❖ System full duplication in "A+B" configuration.
- ❖ Public Address System **EN 54-16 certified**.



layout of the system



Public Address Systems with Analog and/or VoIP Distributed Amplification

Main Features

- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ Distributed amplification (alternative or integrative to a centralized amplification) performed through the use of self-amplified loudspeakers with built-in power amplifier, available in both analog and IP versions.
- ❖ Analog self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc) fitted with continuous volume control from 0W to the max rated power.
- ❖ IP self-amplified loudspeakers (max. power output: 25W with POE+ and 10W with POE), capable to be remotely configured and monitored, and fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Extended intercom operation between access panels (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all access panels and two standard telephone pairs for each speaker)
- ❖ All access panels can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Interfacing with existing Public Address and Intercom Systems.

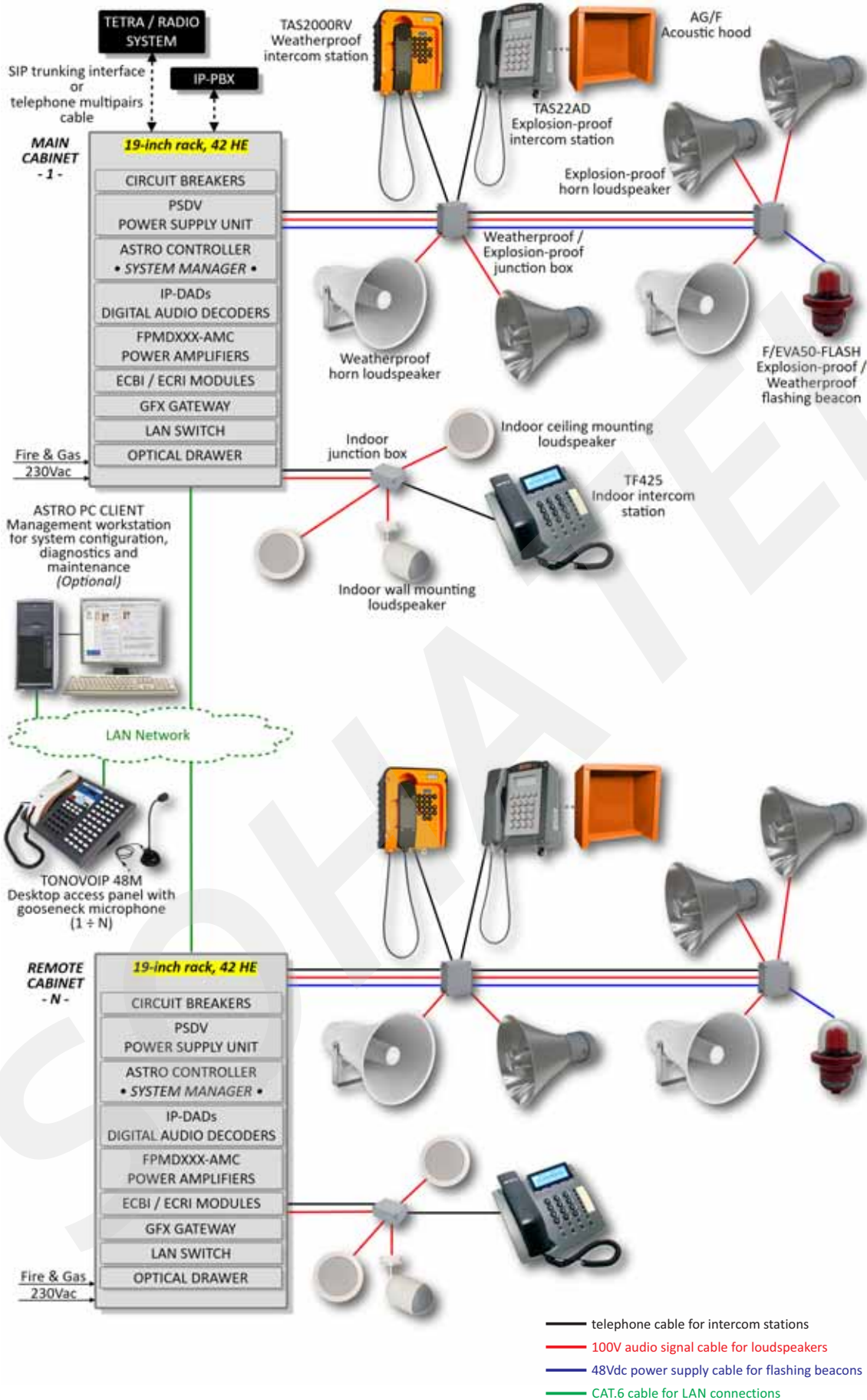
Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries.

Main Options

- ❖ Indoor speakers for accommodation areas fitted with volume control which in case of emergency calls will be overridden, and the volume automatically set up at the maximum level.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Analog self-amplified loudspeakers fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors.
- ❖ Central cabinets fitted with antiseismic kit.
- ❖ Power supply unit in redundant configuration "1+1".
- ❖ System full duplication in "A+B" configuration.

Public Address & Intercom Systems



layout of the system



Public Address & Intercom Systems with Analog Intercom Stations and Centralized Amplification

Main Features

- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Double functionality of Public Address / Intercom stations and plant telephone sets, i.e. Public Address / Intercom stations working also as telephone sets connected to the plant PABX, as well as plant telephone sets working also as Public Address / Intercom stations connected to the Public Address / Intercom System. In case of failure of Public Address / Intercom System or plant PABX, the telephone or Public Address / Intercom functionality is any case guaranteed.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre analog telephone sets (indoor, weatherproof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations. Max allowed distance of access panels from LAN switch is 250 meters.
- ❖ Very cheap and cost-effective cables network using standard cables (one standard telephone pair for each Public Address / Intercom station, one standard power pair for each speakers' loop and one standard power triplet for each beacons' loop).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Public Address/Intercom stations star connected to the central unit of the Public Address / Intercom system, with a maximum allowed distance up to 3 kilometers.
- ❖ Day/night attenuation feature programmable for each power amplifier.
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Interfacing with existing Public Address and Intercom Systems.

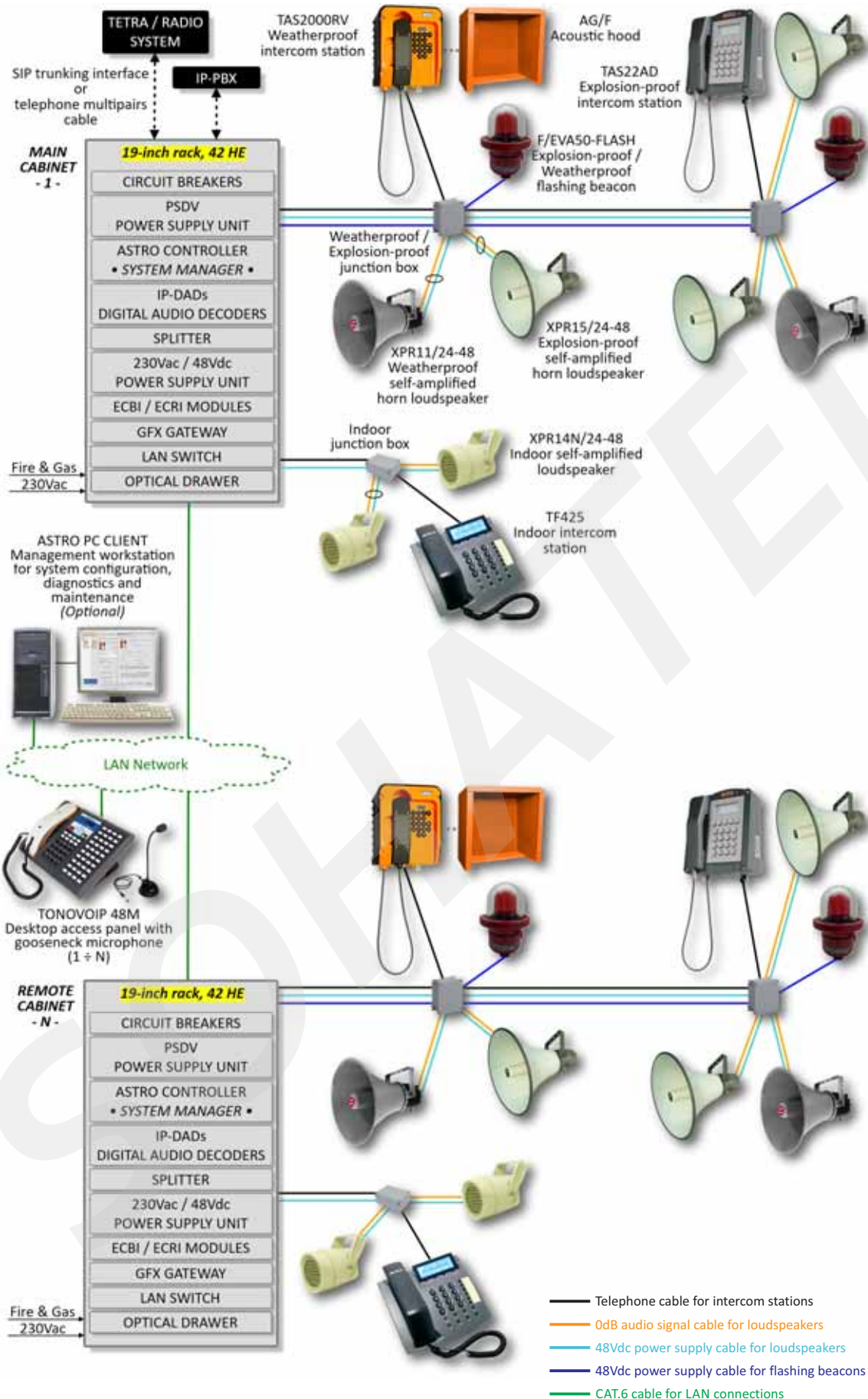
Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries.

Main Options

- ❖ Indoor speakers for accommodation areas fitted with volume control which in case of emergency calls will be overridden, and the volume automatically set up at the maximum level.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors.
- ❖ Central cabinets fitted with antiseismic kit.
- ❖ Power supply unit in redundant configuration "1+1".
- ❖ Power amplifiers in "N+1" backup configuration.
- ❖ System full duplication in "A+B" configuration.
- ❖ Public Address System **EN 54-16 certified**.

Public Address & Intercom Systems



layout of the system



Public Address & Intercom Systems with Analog Intercom Stations and Distributed Amplification

Main Features

- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ Distributed amplification (alternative or integrative to a centralized amplification) performed through the use of self-amplified loudspeakers with built-in power amplifier.
- ❖ Self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc) fitted with continuous volume control from 0W to the max rated power.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Double functionality of Public Address / Intercom stations and plant telephone sets, i.e. Public Address / Intercom stations working also as telephone sets connected to the plant PABX, as well as plant telephone sets working also as Public Address / Intercom stations connected to the Public Address / Intercom System.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre analog telephone sets (indoor, weatherproof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network using standard 2-cores cables (one standard telephone pair for each Public Address / Intercom station and two standard telephone pairs for each speaker).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Public Address/Intercom stations star connected to the central unit of the Public Address / Intercom system, with a maximum allowed distance up to 3 kilometers.
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Interfacing with existing Public Address and Intercom Systems.

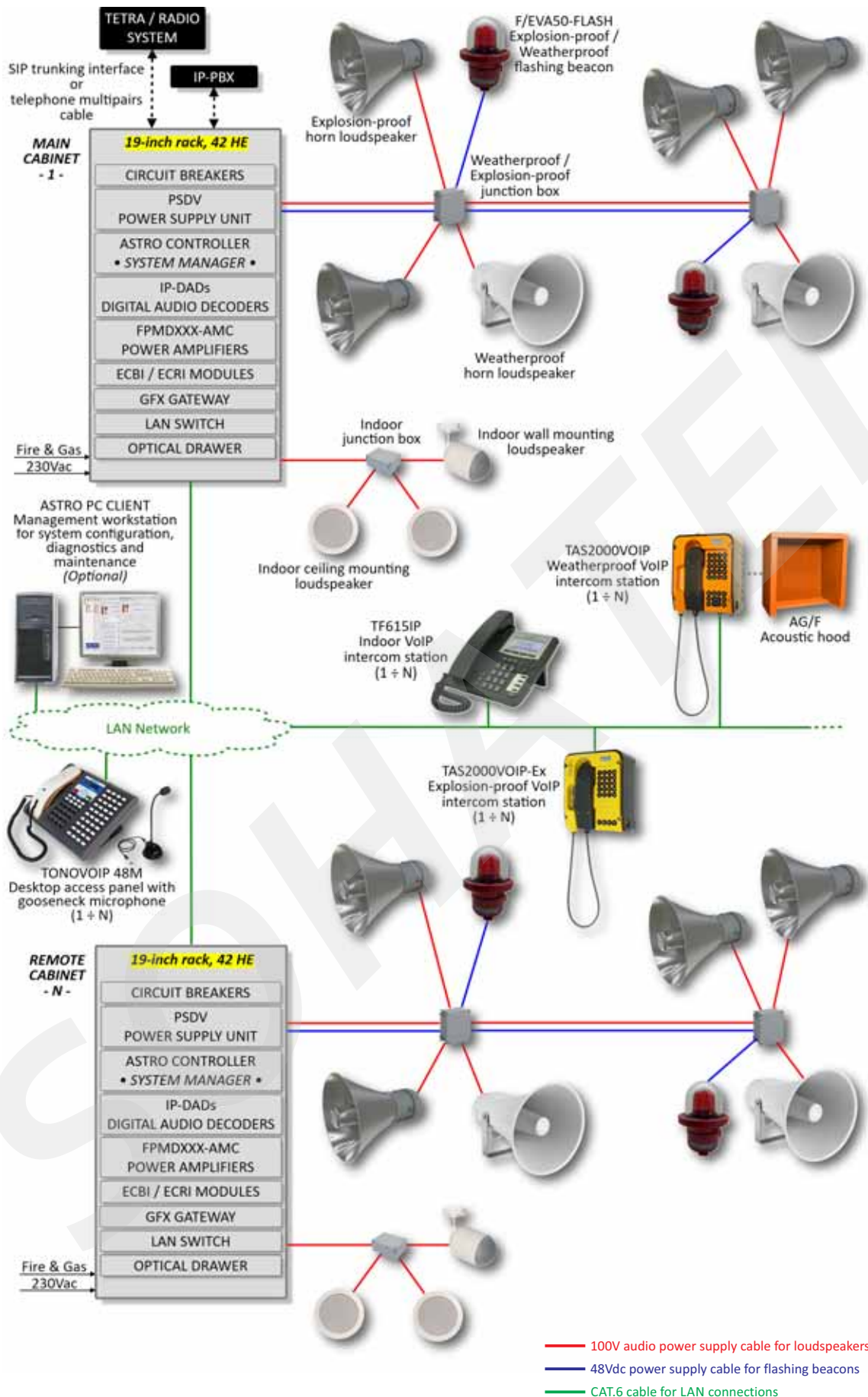
Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries.

Main Options

- ❖ Indoor speakers for accommodation areas fitted with volume control which in case of emergency calls will be overridden, and the volume automatically set up at the maximum level.
- ❖ Self-amplified loudspeakers fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors.
- ❖ Central cabinets fitted with antiseismic kit.
- ❖ Power supply unit in redundant configuration "1+1".
- ❖ System full duplication in "A+B" configuration.

Public Address & Intercom Systems



layout of the system



Public Address & Intercom Systems with VoIP Intercom Stations and Centralized Amplification

Main Features

- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Double functionality of Public Address / Intercom stations and plant telephone sets, i.e. Public Address / Intercom stations working also as telephone sets connected to the plant PABX, as well as plant telephone sets working also as Public Address / Intercom stations connected to the Public Address / Intercom System.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre IP telephone sets (indoor, weatherproof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all IP Public Address / Intercom stations and one standard power pair for each speakers' loop).
- ❖ All Fitre VoIP terminals (Public Address / Intercom stations and access panels) can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in hands-free and full-duplex mode even if the ambient noise level is more than 100 dB.
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Interfacing with existing Public Address and Intercom Systems.

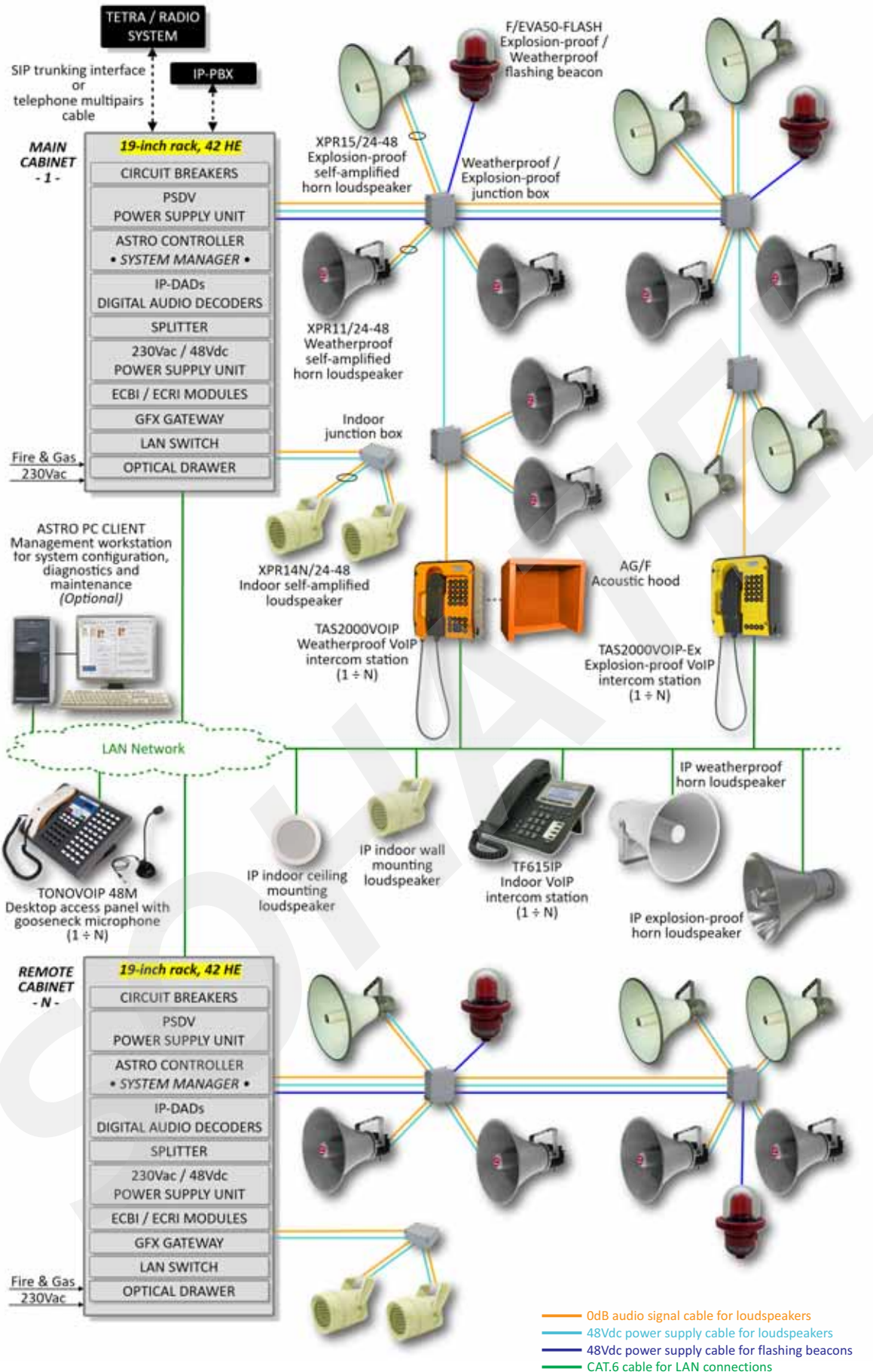
Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries, and Mobility (Metros, Railways, Highways, Roads and Tunnels).

Main Options

- ❖ Indoor speakers for accommodation areas fitted with volume control which in case of emergency calls will be overridden, and the volume automatically set up at the maximum level.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors.
- ❖ Central cabinets fitted with antiseismic kit.
- ❖ Power supply unit in redundant configuration "1+1".
- ❖ Power amplifiers in "N+1" backup configuration.
- ❖ System full duplication in "A+B" configuration.
- ❖ Public Address System **EN 54-16 certified**.

Public Address & Intercom Systems



layout of the system



Public Address & Intercom Systems with VoIP Intercom Stations and Analog and/or VoIP Distributed Amplification

Main Features

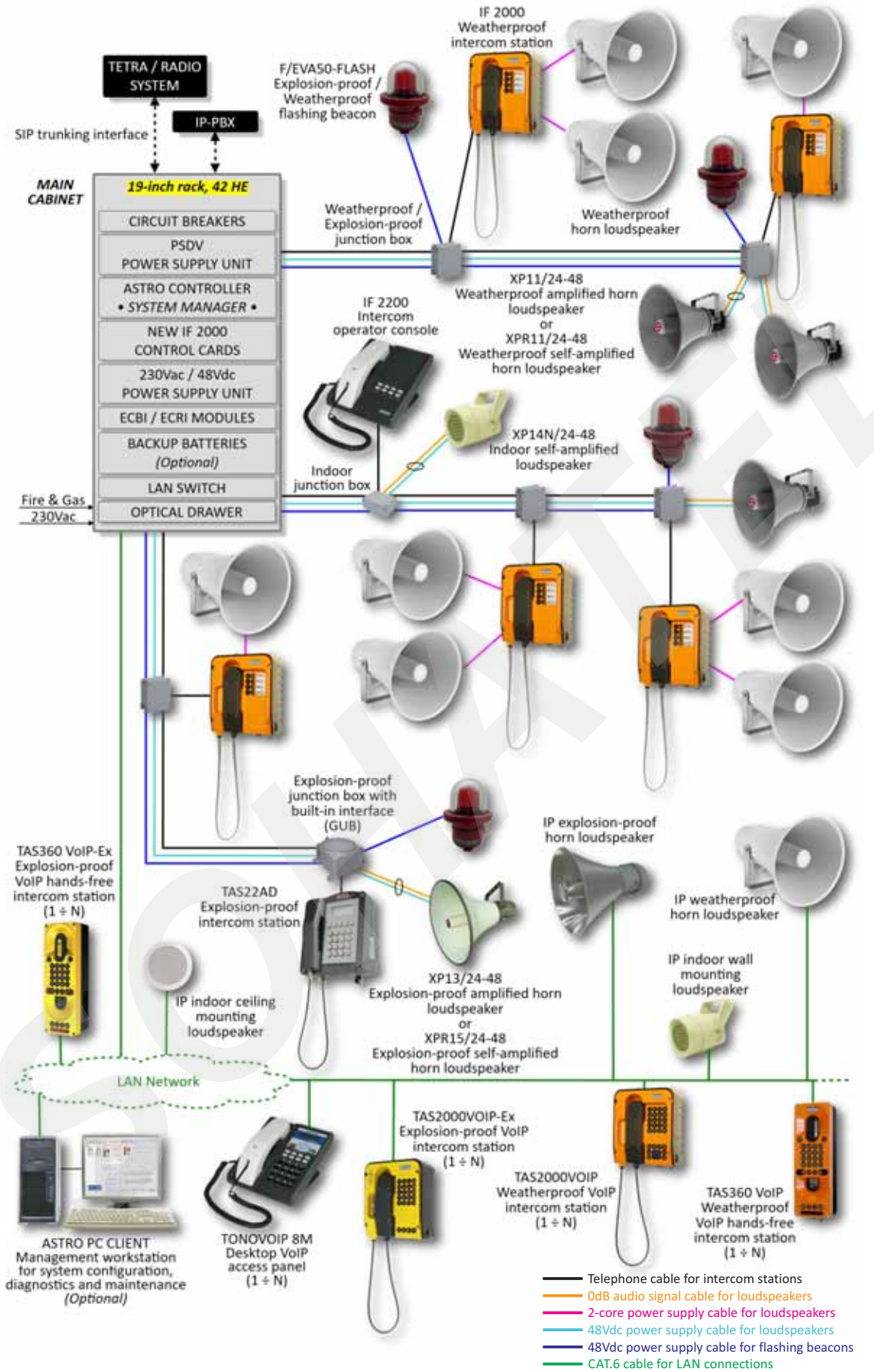
- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ Distributed amplification (alternative or integrative to a centralized amplification) performed through the use of self-amplified loudspeakers with built-in power amplifier, available in both analog and IP versions.
- ❖ Analog self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc) fitted with continuous volume control from 0W to the max rated power.
- ❖ IP self-amplified loudspeakers (max. power output: 25W with POE+ and 10W with POE), capable to be remotely configured and monitored, and fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls), with virtually unlimited number of simultaneous conversations.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones).
- ❖ Double functionality of Public Address / Intercom stations and plant telephone sets, i.e. Public Address / Intercom stations working also as telephone sets connected to the plant PABX, as well as plant telephone sets working also as Public Address / Intercom stations connected to the Public Address/Intercom System.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre IP telephone sets (indoor, weatherproof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all IP Public Address / Intercom stations and two standard telephone pairs for each loudspeaker).
- ❖ All Fitre VoIP terminals (Public Address / Intercom stations and access panels) can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in hands-free and full-duplex mode even if the ambient noise level is more than 100dB.
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Interfacing with existing P. A. and Intercom Systems.

Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries.

Main Options

- ❖ Indoor speakers for accommodation areas fitted with volume control which in case of emergency calls will be overridden, and the volume automatically set up at the maximum level.
- ❖ Analog self-amplified loudspeakers fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors.
- ❖ Central cabinets fitted with antiseismic kit.
- ❖ Power supply unit in redundant configuration "1+1".
- ❖ System full duplication in "A+B" configuration.



layout of the system



New IF 2000 Public Address & Intercom Systems with Analog and VoIP Intercom Stations

Main Features

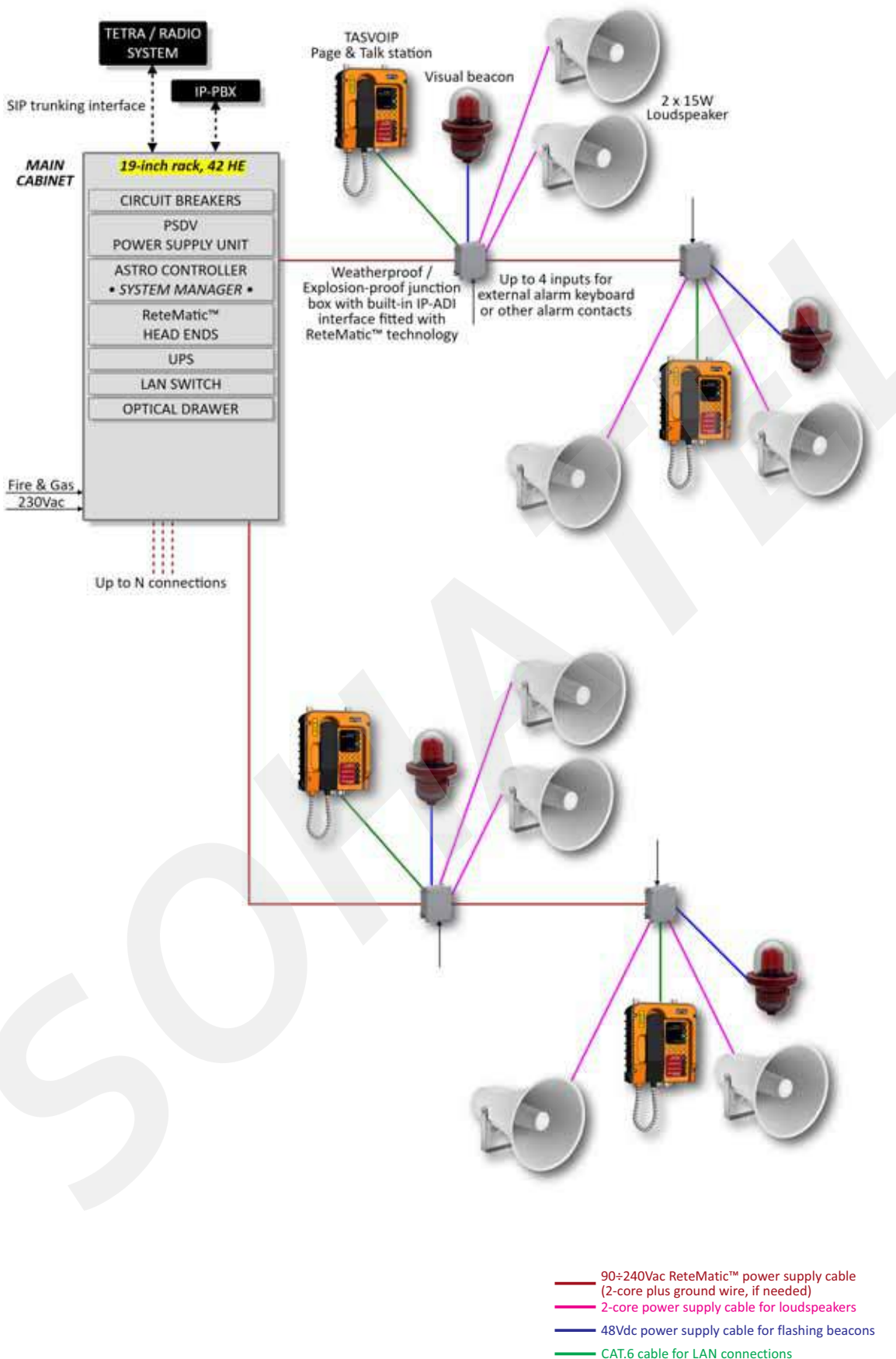
- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ The new IF 2000 Public Address & Intercom System, designed for new installations, allows also to expand or replace any IF 2000 existing system utilizing the existing cables network.
- ❖ Public Address/Intercom stations fitted with up to 8 lines with visual indication which, depending on project requirements, can be configured individually as page line, party line or direct call to control room.
- ❖ Extended intercom operation (omnibus page/party, group calls and conference calls), with up to five simultaneous conversations on the same party line.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Broadcast with priority of pre-recorded messages, alarm tones and special signals (such as start or end of work, etc.), including single zones, any combination of zones and all zones.
- ❖ Night or "production plant stopped" attenuation.
- ❖ Public Address / Intercom stations with built-in high efficiency 25W class D power amplifier for connection of up to two 8 ohms loudspeakers, and fitted with time-out function for disconnection of the line after a pre-set time.
- ❖ Distributed amplification (integrative to the power amplifiers installed inside the Public Address / Intercom stations) performed through the use of self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc, fitted with built-in power amplifier and continuous volume control from 0W to the max rated power).
- ❖ Equipment power supply from 24Vdc to 48Vdc through high efficiency 230Vac/24-48Vdc power supply unit with or without back batteries.
- ❖ In case of simple applications, the new IF 2000 system can be easily configured by connecting together directly Public Address / Intercom stations and relevant speakers.
- ❖ Main Public Address / Intercom stations (access panels) fitted with handset and dedicated push buttons with visual indication for direct activations.
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in full-duplex mode even if the ambient noise level is more than 100dB.

Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries.

Main Options

- ❖ Indoor speakers for accommodation areas fitted with volume control which in case of emergency calls will be overridden, and the volume automatically set up at the maximum level.
- ❖ Self-amplified loudspeakers fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ VoIP P.A. / Intercom stations fitted with extended keypad.
- ❖ IP self-amplified loudspeakers (max power output: 25W with POE+ and 10W with POE), capable to be remotely configured and monitored, and fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ Interfacing with other existing Public Address & Intercom Systems (both analog and VoIP).
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Digital interface for beacons activation in high noise plant areas.
- ❖ System test through access panel installed in the control cabinet.
- ❖ Backup batteries.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors and/or antiseismic kit.



layout of the system

- 90-240Vac ReteMatic™ power supply cable (2-core plus ground wire, if needed)
- 2-core power supply cable for loudspeakers
- 48Vdc power supply cable for flashing beacons
- CAT.6 cable for LAN connections



Page & Talk Systems with VoIP Intercom Stations and ReteMatic™ Technology

Main Features

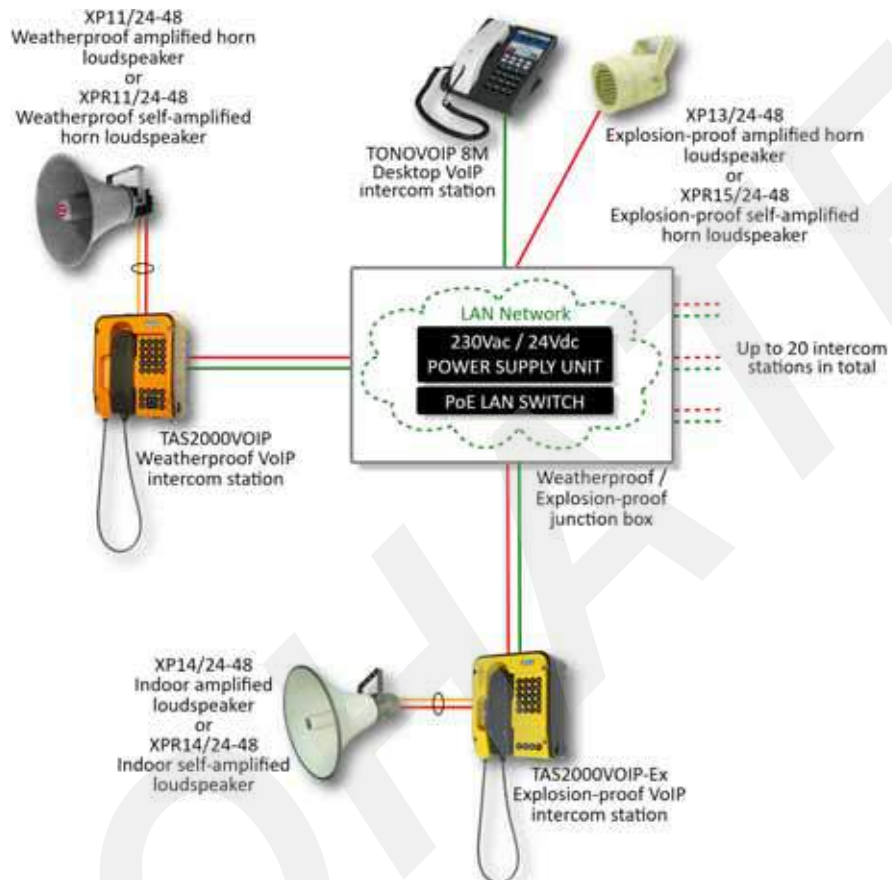
- ❖ Fully integrated Public Address / Intercom / Telephone System.
- ❖ Distributed amplification performed through the IP-ADI interface fitted with **ReteMatic™** technology, providing a 30W Class D amplifier capable to support up to two standard (non-amplified) 8Ohm loudspeakers, a visual beacon and 4 inputs for an external alarm keyboard or other alarm contacts.
- ❖ IP-ADI interface in water-proof and explosion-proof versions, providing full diagnostics over the connected devices.
- ❖ Highlights of **ReteMatic™** networking are:
 - ♦ carries both power (90-240Vac) and data over standard non-polarized power cables;
 - ♦ any network topology supported (bus, chain, star, even mixed);
 - ♦ composed by an head-end, interfaced to a standard Ethernet LAN, and up to 15 devices for (max distance approx. 500 meters from the head-end);
 - ♦ many ReteMatic™ networks may be interconnected by means of a standard Ethernet switch.
- ❖ Real-time monitoring & fault reporting.
- ❖ Extended intercom operation (omnibus page/party, group calls and conference calls), with up to five simultaneous conversations on the same party line.
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Broadcast with priority of pre-recorded messages and/or alarm tones (including single zones, any combination of zones and all zones).
- ❖ Public Address / Intercom VoIP stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network, i.e. only 2 wires (plus ground wire if needed) to interconnect all IP-ADI interfaces and relevant head-end.
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.
- ❖ Digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in hands-free and full-duplex mode even if the ambient noise level is more than 100dB.
- ❖ Intercom systems fitted with some special requirements for Exploration Drilling Rigs (frequently moved), i.e. quick to install and dismount, very easy to connect and easy monitoring of system health.

Main Applications

Oil & Gas (Exploration Drilling Rigs), Petrochemical, Power, Steel, Heavy and Light Industries, Mobility (Temporary Construction Sites).

Main Options

- ❖ Base station for wireless communication by means of DECT terminals and headsets.
- ❖ Multi-functional pillars to include intercom station, amplifier, loudspeakers, visual beacon, alarm keyboard and an integrated junction box in a single, easy to move unit.
- ❖ Interfacing with other existing Public Address & Intercom Systems.
- ❖ Telephone interface with the plant Telephone System.
- ❖ Radio interface with the plant Radio System.
- ❖ Broadcast of pre-recorded messages and music through radios, CD readers and MP3 players.
- ❖ Dual feeders power supply managing.
- ❖ Central cabinets fitted with surge protectors.
- ❖ Central cabinets fitted with antiseismic kit.
- ❖ Power supply unit in redundant configuration "1+1".



- 0dB audio signal cable for loudspeakers
- 24Vdc power supply cable for intercom stations and loudspeakers
- CAT.6 cable for LAN connections

layout of the system



AstroLess Public Address & Intercom Systems with VoIP Intercom Stations

Main Features

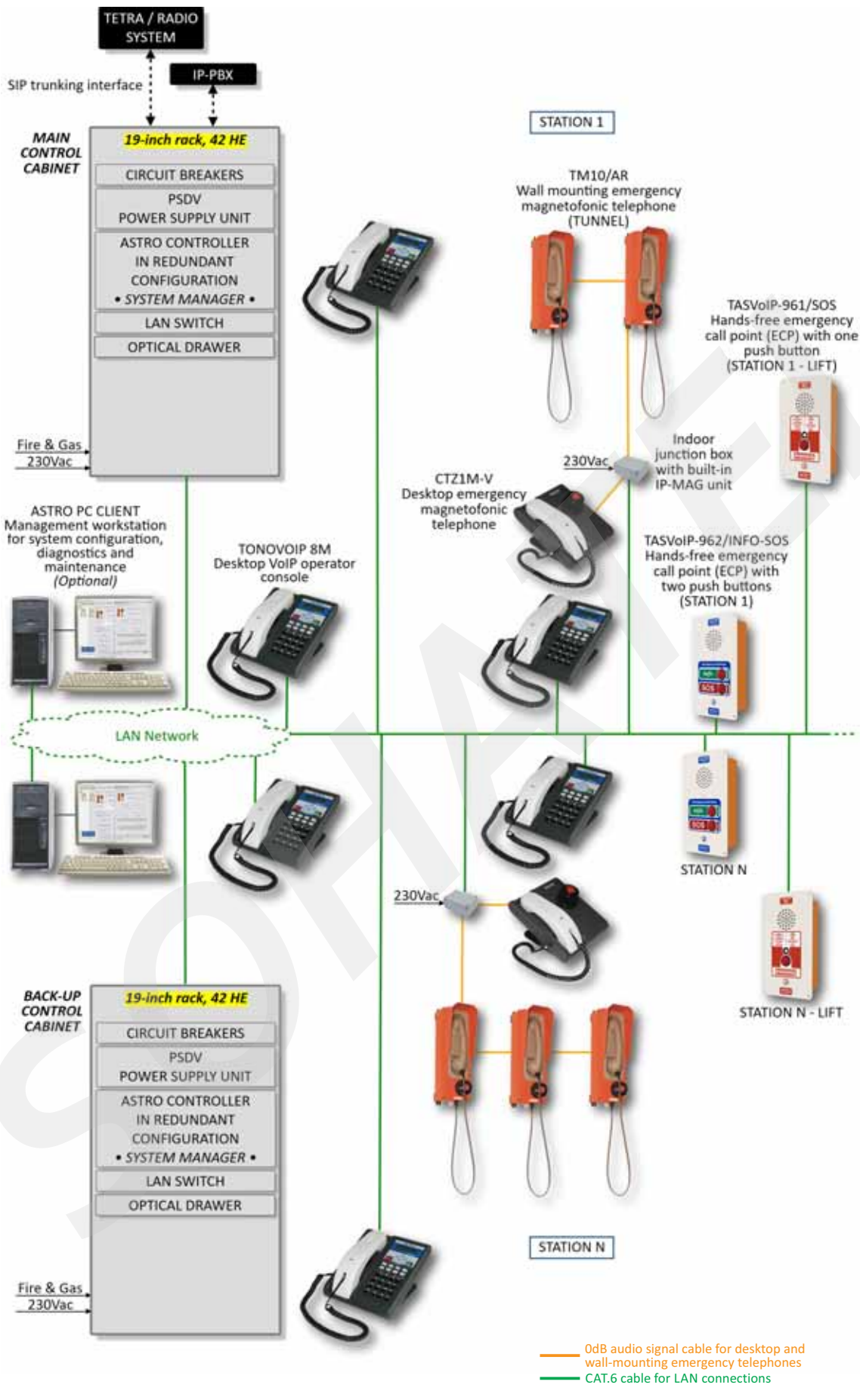
- ❖ **AstroLess** (with no ASTRO server required) is the application of ASTRO server manager used for managing the communication functions in small systems (up to 20 VoIP nodes), using network IP technology implemented in each VoIP node.
- ❖ Based on the standard SIP and FastPA multicasting technology, the system offers high voice quality (16kHz audio band) with very simple installation and very easy-to-use operation.
- ❖ Programming of each VoIP node using the PC's web browser.
- ❖ Echo and noise cancellation management in each VoIP station.
- ❖ Full configurable voice matrix and priority configuration between SIP and FastPA communications.
- ❖ Fully integrated Public Address & Intercom System.
- ❖ Distributed amplification performed through the use of self-amplified loudspeakers with built-in power amplifier.
- ❖ Self-amplified loudspeakers (rated power: 15W or 25W; power supply: 24-48Vdc) fitted with continuous volume control from 0W to the max rated power.
- ❖ Extended intercom operation (omnibus page/party, selective point-to-point, group calls and conference calls limited to 3 participants), with virtually up to 20 VoIP nodes (including the PA amplifiers).
- ❖ Paging zone calls (including single zones, any combination of zones and all zones).
- ❖ Alarm tones and/or prerecorded messages zone broadcasts (including single zones, any combination of zones and all zones), with manual activation from the access panels.
- ❖ Public Address / Intercom stations fitted with double full-duplex conversation mode: with handset or hands-free (without handset).
- ❖ Possibility to utilize as Public Address / Intercom stations any type of Fitre IP telephone sets (indoor, weatherproof and explosion-proof, including cordless/DECT).
- ❖ Main Public Address / Intercom stations (access panels) VoIP based, fitted with handset and keypad. If required, also equipped with gooseneck microphone and additional 40 buttons (up to 48 in total) keypad for direct activations.
- ❖ Very cheap and cost-effective cables network (LAN network to interconnect all IP Public Address / Intercom stations and two standard telephone pairs for each loudspeaker).
- ❖ All Fitre VoIP terminals (Public Address / Intercom stations and access panels) can be connected with a maximum allowed distance of 250 meters from the relevant LAN switch (instead of 100 meters as per usual standard).
- ❖ System architecture allowing, in case of fault of a field device (Public Address / Intercom stations, speakers and beacons), the complete operation of all other field devices even in case of multiple fault events.

Main Applications

Oil & Gas, Petrochemical, Power, Steel, Heavy and Light Industries.

Main Options

- ❖ Self-amplified loudspeakers fitted with ALC (Automatic Level Control) of the output power according to the variation of the ambient noise level.
- ❖ I/O card in each VoIP node (e.g. for managing an external contact to activate an external visual beacon in each station, an automatic direct call and/or a local CCTV camera).
- ❖ Support for ReteMatic™ architecture (up to 500 meters distance Ethernet connection transporting data and power over existing two wires cable in very hard industrial applications).
- ❖ Full compatibility with larger and powerful ASTRO systems.



layout of the system



Emergency Telephone Systems with VoIP Emergency Call Points and Self-Powered Emergency Telephones

Main Features

- ❖ Fully integrated Emergency Telephone & Self-Powered System.
- ❖ Centralized ASTRO Call Manager provided in back-up configuration (one in the Main Control Center and the other one in Back-Up Control Center).
- ❖ Real-time monitoring & fault reporting.
- ❖ Remote configuration and diagnostics from the Control Center through a suitable PC workstation with relevant software.
- ❖ ECP (Emergency Call Points) usually installed in the railway/subway stations (including lifts) consisting of VoIP emergency telephones fitted with one or two call buttons (typically: "SOS" for emergency calls and "INFO" for information calls).
- ❖ Emergency telephones usually installed in the tunnels consisting of self-powered telephones with call generator connected in parallel on the same two wires cable and not requiring any kind of power supply.
- ❖ Lifts Emergency Call Points fitted with one "SOS" call button for direct communication with the relevant Control Center digital operator console.
- ❖ Station Emergency Call Points fitted with one "SOS" call button for direct communication with the relevant Control Center digital operator console plus one "INFO" call button for direct communication with the relevant station digital operator console.
- ❖ In case of normal system operation, all emergency calls coming from the self-powered emergency telephones are addressed (through the station IP-MAG unit and the LAN network) to the relevant Control Center digital operator console.
- ❖ In case of IP-MAG unit and/or LAN network fault as well as in case of station complete power supply loss, all emergency calls coming from the self-powered emergency telephones are automatically addressed to the station emergency self-powered operator console and in parallel also to the extreme emergency self-powered operator console of the next station, so as to guarantee the full redundancy of the station emergency self-powered operator console.
- ❖ Emergency Call Points connected to the LAN network through standard PoE with CAT.6 cable.
- ❖ Maximum distance between two self-powered emergency telephones (or operator consoles) of 6-8 kilometers depending on the size of the copper cable (typically, it is recommended a twisted pair 2 x 1.5 mm²).
- ❖ System architecture allowing, in case of fault of a field device, the complete operation of all other field devices even in case of multiple fault events.
- ❖ Emergency Call Points fitted with digital noise cancelling and noise reduction algorithms, so as to allow the intercom user to communicate in hands-free and full-duplex mode even if the ambient noise level is more than 100dB.

Main Applications

Mobility (Metros, Railways, Highways, Roads and Tunnels).

Main Options

- ❖ ASTRO Call Manager in redundant configuration "1+1" in each Control Center cabinet.
- ❖ SIP trunking Wi-Fi interface with the on-board intercom system.
- ❖ ECP (Emergency Call Points) equipped with front window fitted with a suitable vandal-proof glass to protect the integrated built-in CCTV camera and relevant fixing mechanical support.



"Always side by side with our Customer"

"Help our Customers solve their demands in the best possible way".

The commitment and the mission of **Fitre**, and in particular of our "**Systems Division**", is to support the client Companies in all the project phases, from the analysis of the required performances, with the identification of both the critical issues and then the opportunities, to the determination of the project solutions with their estimation, providing adequate and detailed description of the proposed solutions.

The "Systems Division" of Fitre

Our advisors and technicians, assisted by our hardware and software laboratories, are at disposal to develop the most appropriate executive solutions, with the strength of being able to package a truly customized system, down to the smallest detail, to meet the more specific and stringent requirements.

Our systems are usually factory pre-configured and tested. Upon request, our engineers also provide a complete assistance during installation, programming and commissioning as well as the final testing of the installed systems, interacting with all the teams involved. All the systems are provided with a detailed documentation.

In addition, we can provide training for users, also directly on-site, concerning the installation, the programming and the maintenance of the systems, even for different operational levels.

Our support and assistance to the Customer is therefore always the highest possible, ever providing the maximum effort in problem solving.

Our Assistance Service Department holds the same technical mastery of our design departments, being able to determine the most appropriate fixing solution to the needs of the user.

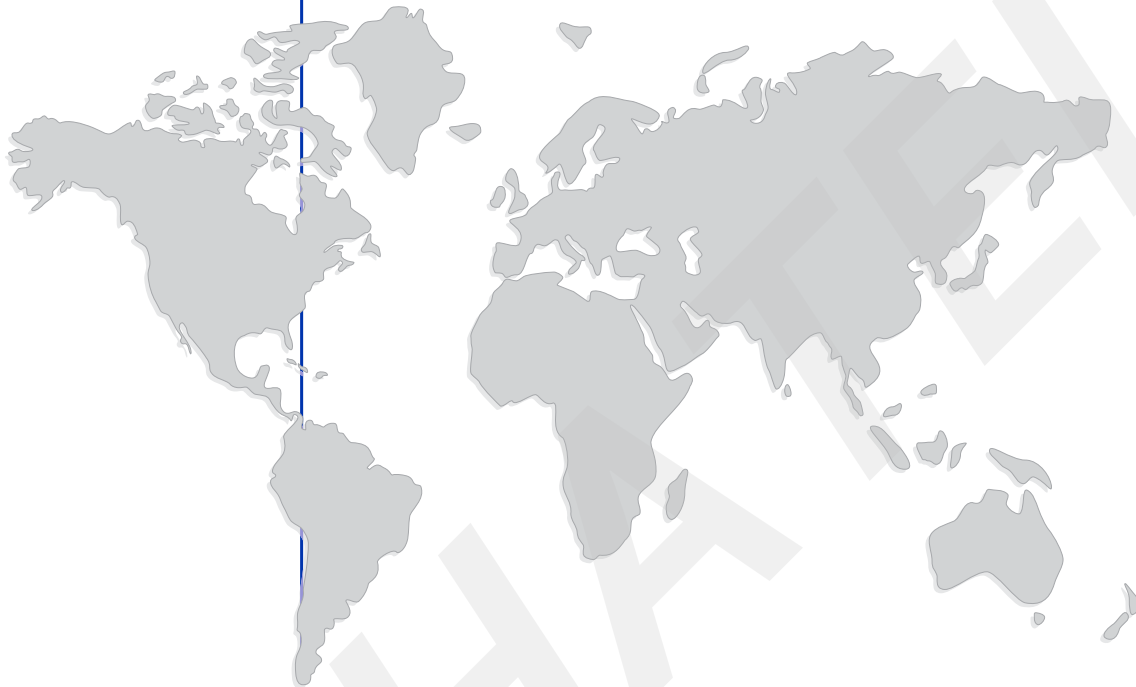


In the last forty years, it has been nearly 700 the systems by **Fitre** installed worldwide, in more than forty countries.

Fitre had solved the most difficult specifications, by leading the Customers towards appropriate and smart solutions, while guaranteeing a decades-long continuity in the supply of spare parts and system expansions.

Many of the systems installed decades ago are still functional and operational.

If you are interested in having more information on the installed systems, to know the details of the solutions adopted and the way in which **Fitre** has been able to solve the specific requests, contact us explaining what you need to solve.



send us an email
to get more information
about our references
all over the world

Fitre is a manufacturer with an enviable experience in the industrial telecommunications sector, found in a very complete and wide range of products, offering the most advanced technical solutions for communications in Transports and Heavy Industries as Petrochemical, Power and Industrial Plants and other harsh environments. That is proven by countless worldwide installations.

Strongly focussed to provide real added value and creative problem-solving solutions to its Customers, **Fitre** often is partner with leading manufacturers to supply state-of-the-art products on the whole product range.

With its own Hardware and Software Laboratories, **Fitre** develops systems and equipment based on the most up to date communications technologies, both analogue than VoIP, and corresponding the most stringent certification standards.

It has to be particularly highlighted the Emergency Systems with centralized diagnostic, designed for applications in Oil & Gas Plants, Railway Stations, Tunnels and on-board trains, certified according to EN50155 & EN54-16 rules.

The heart of these systems is "**Astro System Manager**", a perfect integrated digital IP system, modular and flexible for optimally managing the communication services for all these applications.

With the own specific and distinguishing flexibility, each system may be configured meeting all the Customer's specifications, even developing special functions.

Astro is designed for operating as a stand-alone system and has a modern IP based digital scalable architecture, either in software and in hardware, so that it offers the maximum

level of flexibility and modularity and it can be expanded just adding software functions and/or hardware modules.

A common platform for managing both Intercom, Emergency and Public Address functions: thanks to this fully exploitable system setting, **Astro** is the perfect solution to fulfil every communication demands.

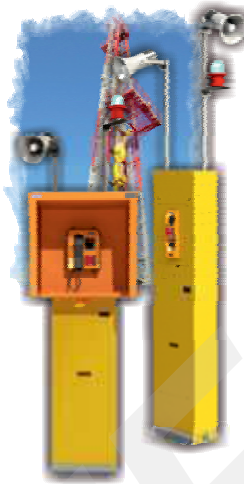
Everything is designed for meeting the high sophisticated demand in terms of safety and reliability, proposing redundant as well hierarchic architectures.

If that were not enough, **Fitre** guarantees the maximum level of flexibility and integration of the system respect to the functional point of view, configuring the "**Astro System Call Manager**" according to the Customer's specifications and providing the interfaces with the external systems (also supplied by others) through appropriate standard software tools. The operator has a real-time control of the system status and he can manage even by remote, through a standard Internet connection.

Even in case of long-distance connections between the LAN switch and the intercom/telephone stations, **Fitre** supports own Customers offering **ReteMatic**, the state-of-the-art technology based on two only wires connection, for transporting either the power supply voltage and the digital SIP protocols.

To satisfy all needs, **Fitre** manufactures a very wide range of station types: flush mounting, wall mounting and desk stations, weatherproof and vandal-proof, also with the required customized keys.

highlight



IF-PowerDrill

The most advanced Intercom and PAGA System for exploration Drilling Rigs



ASTRO PAGA

Public Address & General Alarm
EN 54-16 Certification



TASVoIP-952

Digital Emergency/Info Call Telephone Point

TASVOICE 164/2

SOS Emergency call point for on-board Railway applications



Explosion-proof VoIP Telephone and Intercom Stations

ATEX certified for Zone 1, either with handset or hands-free, fully suitable for the Oil & Gas world



Look online at the main certifications of our Quality System and our products



AC6535 • T00 • ed.201909.r03 A4

CommunicationsFirst

Specifications subject to change without notice



COMPANY WITH
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CERTIFIED
QUALITY SYSTEM

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