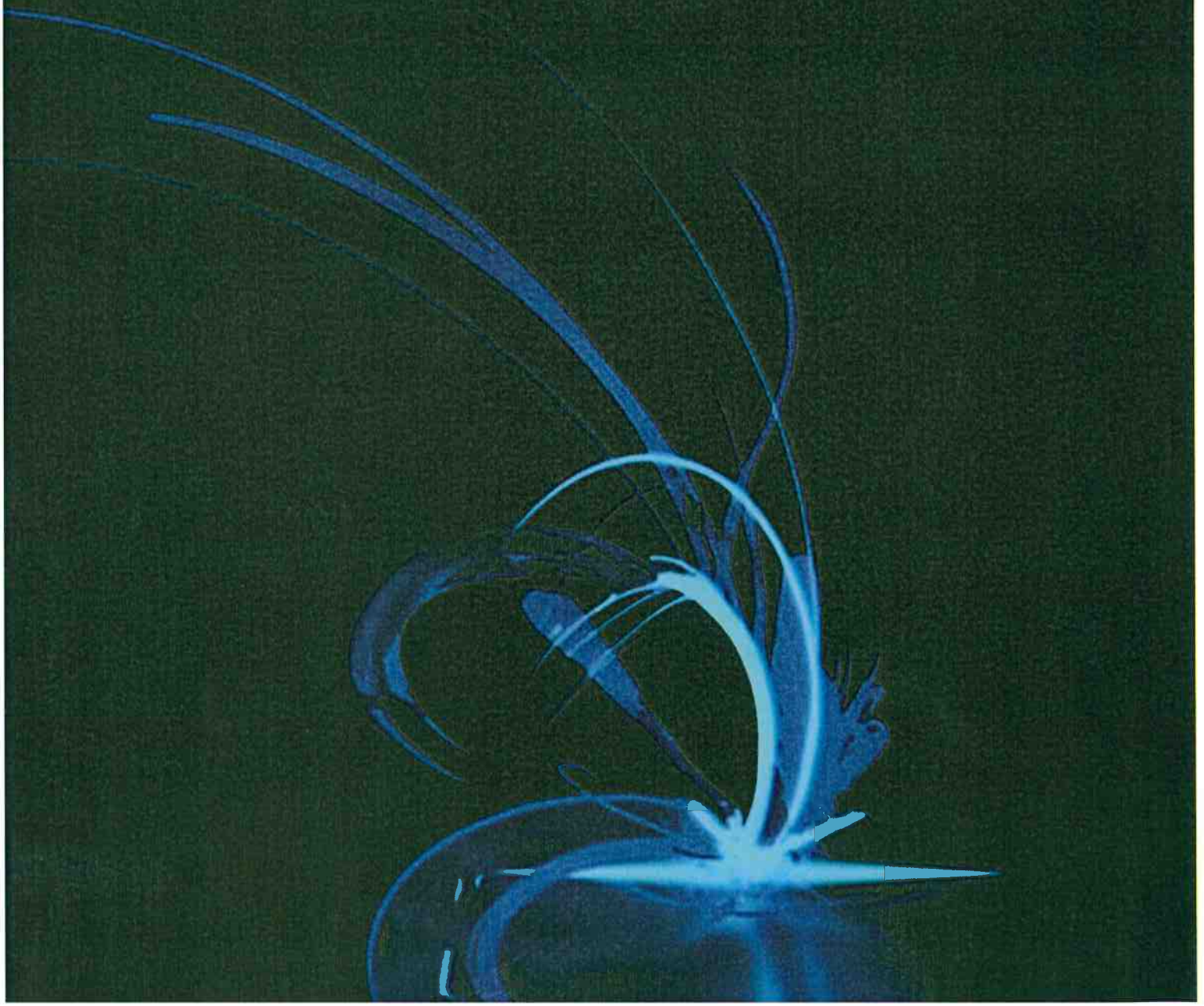
IG

Engineering



IG Engineering

IG Engineering was founded in 2013 by professionals from various engineering sectors operating for years in leading companies in the civil and industrial plant market. With the main objective of providing public and private, a highly specialized service, in the design, consulting and implementation of technological systems, fire prevention and civil and industrial works

Consulting, Design and Implementation

IG Engineering, offers a service that covers all the issues of plant engineering and civil and industrial works, in compliance with all national and international regulatory standards UNI, NFPA – FM - VDS - NF.

Our engineering solutions offer basic designs, detail and execution, up to obtaining the approval of the project by the relevant authorities.

The IG Engineering is able to realize:

- Civil and industrial works;
- Design, project management, construction, expansion, upgrading and maintenance of electrical and mechanical systems technology, conditioning and heating systems whether for civil and industrial;
- Building automation with software platforms and integrated global management of all related applications:

  Fire detection - Management exodus - extinguishing systems (Dry and Wet)
  TVCC - access control - Intrusion - management platforms
  Total Building Solutions - Room automation - Energy efficency

- Design works management construction Electrical systems of low and medium voltage. Construction transformer stations and switchgear (MT/BT).

CIVIL AND INDUSTRIAL BUILDING DIVISION

The division comes from the experience gained by the Geom. Magri Innocente over the past thirty years.
He collaborated with the construction companies of the country, obtaining consensus at national and international level.

Some completed works:

- Construction of the Baghdad nuclear power plant, from 1978 to 1980, of which it is not possible to have images and certifications as a strategic place;
- With the Foster company in Milan, a commercial complex in Cote d'Ivoire;
- With the company Foster e Snia a gas pipeline in Yemen;
- Partecipation whit the company Pizzarotti SpA, Italian leader in the sector, to the execution of the De Gaulles airport in Paris;
- With the Gabassi company, construction of the Assago Forum in Milan;
- Construction and maintenance of road rail sections with Ferrovie Nord in collaboration with the A.C.V.

SOME OF OUR WORKS CIVIL AND INDUSTRIAL BUIDING DIVISION

Value of work from € 200.000.000,00 to 300.000.000,00

Power line
Malnate – Varese/Italia

Buildings Railway Armament

Railway armament Italia – Svizzera Line. Valmorea – Varese.

Civil Building
Ecological disposal platform – Malnate – Varese/Italia

Industrial Building 7000 m^2
Mozzate/Italia

Adjacent roads
Milano/Italia – Malpensa railways

Residence n.230 tourist and housing apartaments
Residence on the sea – Via Campo Cadorna Loano (SV)

Residence Villa Grison n.86 class accommodation A
Realization a Montano Lucino/Italia

Demolition and recostruction railway bridge
Bridge Quadron Varese/Italia

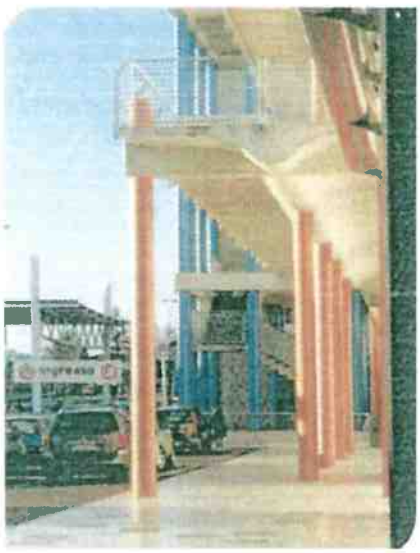
Building shopping center
Milpar srl "shopping center" – San Giuliano Milanese/Italy

Car company building

Car company Porche Itlaia SpA – Milano/Italy

Civilian building with park
Bovis Lend Lease srl - Segrate/Italy

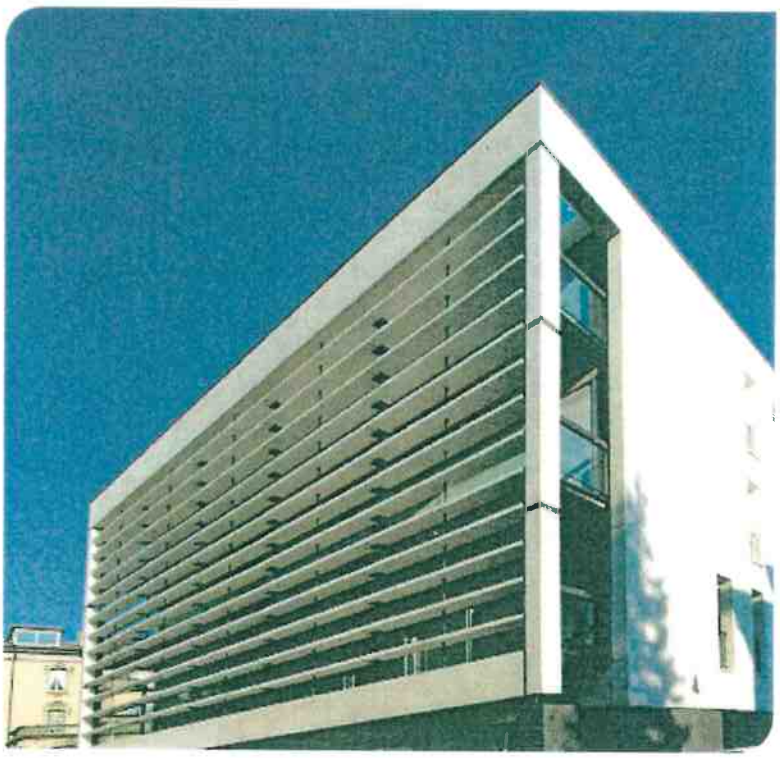
Commercial multifunctional park
Tradate (VA) / Italy



Restructuring of a sales group consisting of shops and offices
Lafin "Delfino Blu" - Milano/Italy

Demolition and reconstruction of a residential and tertiary building
Immobiliare Ritz "Residenza Broseta 2" - Bergamo/Italy

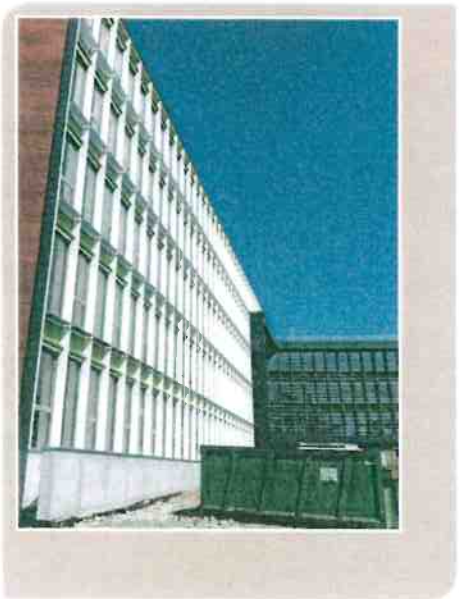
Prestigious residential building and offices
Immobiliare Ritz “Residenza Verdi”- Bergamo/Italy



Technologies used for building construction
Italy

Technologies used for building construction
Italy

Technologies used for building construction
Italy



Prefabricated steel structures
Italy

Hotel realization

Gi Hotel srl "Holiday Inn Express Bergamo West"- Mozzo (BG) / Italy

Fitness center with swimming pool and golf course
Gi Holding SpA "Golf Indoor"- Mozzo (BG) / Italy

FIRE SAFETY DIVISION

Management of civil works and installations

1. Analysis of Need
2. Risk Rating
3. System Design
4. Economic evaluation of the project
5. Implementation of the project executive
6. Training of professionals
7. Periodic maintenance of the system
8. First Aid with availability 24h

Our company has teams of engineers divided by skills: construction, mechanics, electrical, electronic; coordinates by a staff of managers capable of ensuring that even the most complex systems are perfectly integrated with one another, to ensure the highest degree of reliability and security.

Global Maintenance of Equipment

Integrated management of a plant, provides scheduled maintenance performed by trained personnel, which ensures maximum efficiency of the system.

To ensure proper investment, we must ensure efficient maintenance of any type of system or plant.

Integrated security

The concept of security we have today is aimed at a broader view of the term. Security is a social good because the city needs it, needs to feel it before you even see it built.

The same collective demand is constantly changing, from the simple request of technologies aimed at solving every problem is shifting to the research of global systems, able to prevent all types of threats.

In this context we understand the concept of security as a complex discipline that must be analyzed, designed, designed, constructed, maintained and managed over time.

This is our logic.

SOME OF OUR WORKS FIRE SELECTION

Value of work from € 10.000.000,00 to 100.000.000,00

Gas
Prime European Therapeuticals SpA
Euticals – Rozzano/Italia

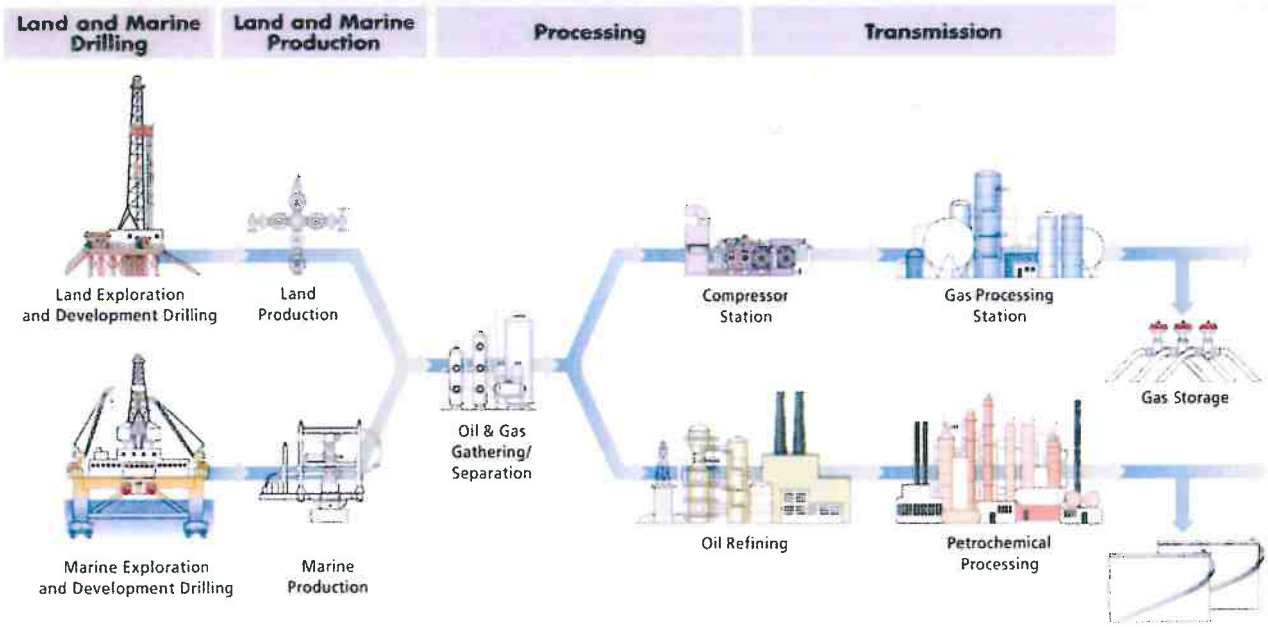
Pumps
Hilti SpA
Carpiano/Italia

Foam HI-EX
L'Oreal Paris
Villanterio/Italia

Sprinklers valves
L'Oreal Paris
Villanterio/Italia

OIL & GAS

OIL & GAS BUSINESS PORTFOLIO



OIL & GAS

OIL&GAS - ON SHORE APPLICATIONS

Fire-fighting solutions dedicated to the whole platform

Fire and gas detection systems fully integrated with the extinguishing system.

Pumping stations providing supply water required for all the water or water/foam fire-fighting systems. The pumps can be supplied inside containers or assembled on skids.

Fire-fighting boxes and nozzles located in the system points having the highest risk. They are provided with collars, couplings and safety material.

Hydrants located in the plant points having the highest risk.

Water or foam monitors located in the plant points having the highest risk. The monitors can be designed to be operated locally or remotely through electric or hydraulic automation devices.

Deluge valves typically assembled on skids, used to direct water quantity from the pumping station to the fire-fighting sub-system which is designed to extinguish fire (foam to protect a tank etc.).

In a sprinkler system they are called sprinkler valves.

System areas having a specific risk: foam and water extinguishing system

Tanks: foam systems to protect tanks containing oil, gas o derived products. Different types of systems should be selected in accordance with the tank structural design (fixed roof, floating roof, etc.)

Tanks: deluge cooling systems which operate on the structure external part. This system is usually combined with the above-mentioned one.

Containment dams: protection through foam layer.

Loading an unloading areas: foam deluge systems to protect the loading and unloading areas of the lorries and/or train.

Helicopter landing platforms: foam systems with dedicated monitors (also remotely operated).

Wooden cooling towers: deluge systems.

System areas having a specific risk: gas and water mist extinguishing systems

Compressors: CO2 or water mist systems.
Electrical control panels, transformers, control rooms: gas systems (CO2 or inert gas).

OIL&GAS - OFF SHORE APPLICATIONS

Fire-fighting solutions dedicated to the whole platform

Fire and gas detection systems fully integrated with the extinguishing system.

Pumping stations which provide the supply water required for all the water or water/foam extinguishing systems. The pumps can be provided inside the containers or assembled on skid.

Extinguishing boxes and nozzles located at the plant points having the highest risk. They are provided with collars, couplings and safety materials.

Sprinkler systems (water or foam) to protect the workplaces.

Water or foam monitors located at plant points having the highest risk. The monitors can be designed to be activated locally or remotely through electrical or hydraulic automation devices.

Deluge valves typically assembled on skids, used to take the water capacity from the pumping station to the extinguishing sub-system designed to extinguish fire (foam to protect a tank etc.). In a sprinkler system they are called sprinkler valves.

Plant areas having a specific risk: foam and water extinguishing systems

Helicopter landing platforms: foam systems with dedicated monitors (also remotely operated).

Plant areas having a specific risk: gas and water mist extinguishing systems

Compressors: CO2 or water mist systems.

Electrical control panels, transformers, control rooms: gas systems (CO2 or inert gas).

Living quarters: sprinkler or water mist systems.

POWER GENERATION

Fire-fighting solutions dedicated to the whole plant

Fire and gas detection systems fully integrated with the extinguishing system.

Pumping stations.

Sprinkler systems which cover the whole plant.

Hydrants located outside the plant.

Extinguishing boxes and nozzles located at the plant points having the highest risk. They are provided with collars, couplings and safety materials.

Deluge or sprinkler valves.

Plant areas with a specific risk

Generators: water mist or gas systems.

Turbines: water mist or gas systems.

Sub-stations: water mist or gas systems.

Cables: water mist systems

Coal conveyor belts: water mist system

Coal stocks: water mist or gas systems.

Safety systems dedicated to Industry and business

In the civil area the protection against the fire risk and for the property safety are often connected with the large number of people in this environments.

Hospitals, hotels, railways stations, airports and commercial centers are places where an high risk connected with the hazard of each product doesn't occur, but where the presence of a constant high number of people dictates that complex systems should be provided, designed and installed an they should be interfaced among them to have a continuous control, but especially to be able to activate in short time evacuation and emergency plans in order to protect all the people who are inside this facility and to have rescue means intervene.

Therefore, in addition to fire protection which uses the common technology described in the Industry market, in this area we can provide full "turn key" solutions also for the property safety, therefore Security systems such as:

Anti-intrusion systems,

surveillance videos,

access control,

Surveillance and control integrated systems.

Supervision and software systems for integrated management of plants.

The Systems Division tackles all safety related issues: from the risk assessment, to the planning, supply and start-up of systems and their maintenance.

ENGINEERING

The technical office, thanks to dedicated software managed by highly specialized operators, can design systems and equipment to protect in the best possible way persons and property and provide turn-key systems which comply with UNI- CEI- VDS- NFPA- FM GLOBAL standards.

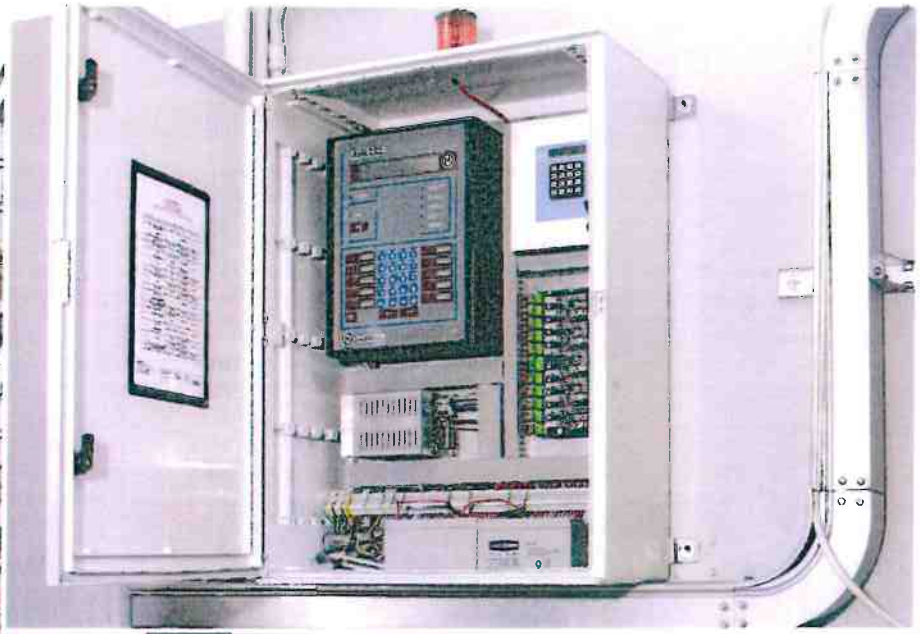
INSTALLATION

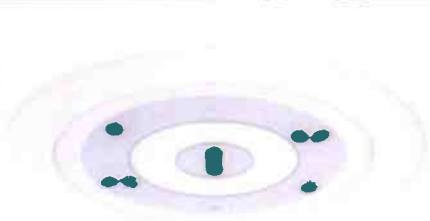
The Division includes operator teams, subdivided according to their mechanical, electrical, electronic skills, coordinated by a staff of project managers that can ensure that even the most complex systems are perfectly integrated, in order to guarantee the maximum reliability and safety degree.

TECHNICAL SERVICE AND MAINTENANCE

It is one of the most important activities of the Division, which is fundamental to guarantee safety and reliability over time to all the system. The fifteen technicians concerned are equipped with special tools in order to perform most of operations directly at the customer's site, fully in accordance whit the applicable standards.

Fire-fighting systems



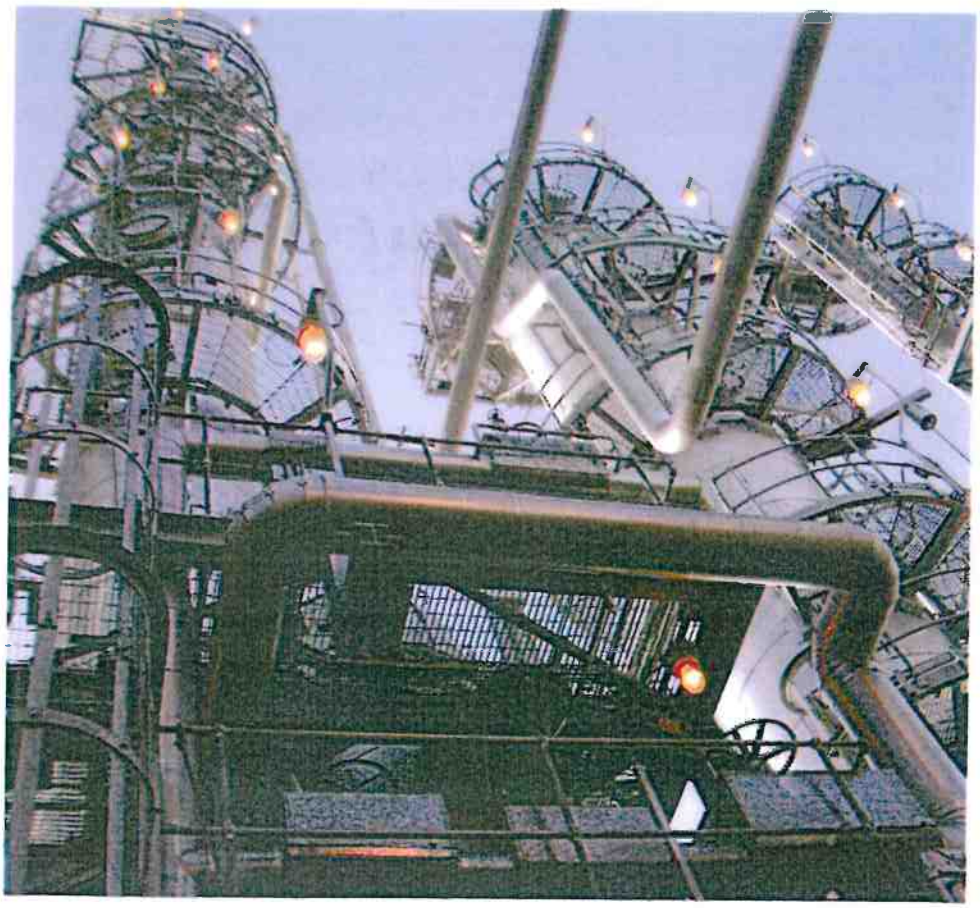


In accordance with EN54 standards, fire-fighting systems detect fire in the shortest possible time and provide alarm in a visible and audible way in the area under surveillance or its immediate vicinity, and shall allow a fast and precise identification of the hazard area. It is clear that, to have all these requirements the systems should be properly designed and made up of quality products which are in conformity with the manufacture standards.

largest ones and includes brands known all over the world which have top quality features.

CONVENTIONAL SYSTEMS fitted with
- point-like smoke optical detectors
- temperature detectors (static, differential, rate of rise type)
- optical/thermal linear infra-red (barriers) detectors
- optical/ thermal/ thermal rate of rise/CO point-like detectors
- IR, UV, UV-IR flame, triple technology
- point-like laser detectors

SUCTION AND ANALYSIS SYSTEMS provided with:
- standard optical detectors
- laser detectors



A gas is any substance which at the temperature of 25° C and the pressure of 760 mm of Hg is at gaseous state. There are many gases which can represent a danger for the safety of people and which can be subdivided into 2 large categories:
- FLAMMABLE AND EXPLOSIVE GASES
- TOXIC GASES

Gruppo Sicura can design and install systems to detect both types of gases belonging to these 2 categories by using the best technologies available on the market. In fact, for each type of gas to be detected of a different technology and therefore a specific system design is used. Our gas detection systems provide the use of semiconductor, catalyctic, electrochemical cell and infra-red detectors, which therefore, can detect through different precision degrees, any type of gas. It is important to detect the presence of gas on the threshold of 20-30% of E.L.L. (Explosiveness Lower Limit) so that the presence of the dangerous gas substance can be detected through appropriate signalling well in advance. Therefore it is essential, in a gas detection system, to use high efficiency and reliability devices, in addition to a maintenance programme performed through devices which are appropriate to carry out actual tests on each detector.

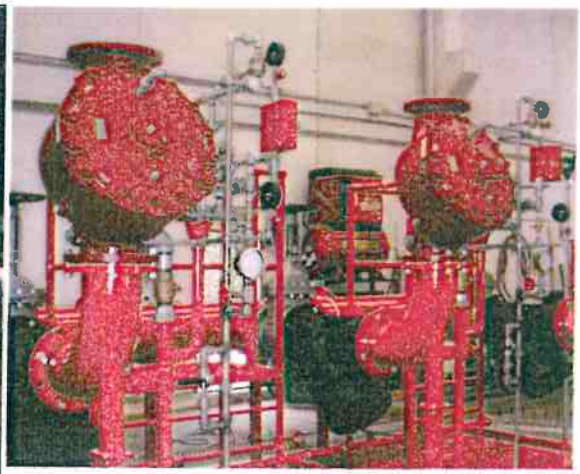
Fire-fighting systems

The pressurization units, coupled with an accumulation tank, are certainly the most common type of private type fire-fighting water supply. The reference standards in this field are EN 12845 or EN 12259 part 12 and on an international level, NFPA20.
EN 12845 establishes the power supplies admitted and the main requirements to be met and provides detailed indications for project, test and operation of gravity tanks, pressure pumps and tanks. The units are made up of one or more electro- pumps and/or service motor pumps and of a compensation pump (Jockey) which is used to compensate small leakages or temporary drawing from the controlled system, according to the level of reliability of the required water supply. According to the position of the pump axes with respect to the water reserve there may be some flooded suction units (to be preferred) or overhead units.

The fire-extinguishing hydrant systems are certainly the most used ones to the extent they can be defined "the essential base" of protection against fire to safeguard persons and things. This system can distribute in a widespread and homogenous way the necessary water through hydrants or hose reels. This also ensure the programmed so that any possible fire can be effectively fought in the protected area. The technical standards applied for the design and maintenance of these systems are UNI10779.

Fire-fighting systems

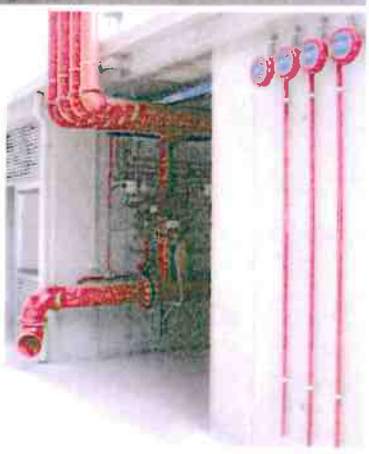
The Sprinkler fire-fighting systems, also called rain-like automatic systems, are the most widespread in the world for the protection against fire in civil and industrial activities. They were officially devised in 1875 by the American Parmalee through the manufacturing of the first modern era nozzle. A sprinkler system is made up of a network of pipes constantly under water pressure (wet systems) or air (dry systems) to which nozzles closed by heat sensitive elements are connected. One of its characteristics is the completely automatic operation which requires automatic water supply and very high reliability, considering that studies performed by the insurance company (Factory Mutual), 80% of fires can be controlled through the maximum opening of 9 heads and 50% through a maximum of only 3 heads. The reference standards of these systems is quite articulated and complex but we can say the most used standards in the world are NFPA13 while for what concerns Italy is the new European standards EN12845.



WET SYSTEMS
They are very common and have pipes constantly full of pressurized water. The opening of one or more heads determines the immediate flow of water out of the system and, through the wet control unit, an acoustical signal is provided through a sound device and an alarm is sent through pressure switch to an attended location.

DRY SYSTEMS
They are used in areas with risk of freezing and have their pipes constantly filled with air thanks to appropriate supply devices. The opening of one or more heads causes the system air to flow out which gradually loses pressure and allows, in turn, the opening of a dry control valve (normally closed by water pressure) through which air can reach the previously opened heads and come out.

PREACTION SYSTEMS
They are only used in those applications where the "protected" goods is sensitive to water damaging. They are particular systems which require, for their activation, the intervention of an additional system, independent irrespective of the main protection system, which detects the actual presence of fire before allowing the system to intervene.



Fire-fighting systems

Water Mist (or Fine Water Spray) extinguishing systems use the most common extinguisher, water, finely subdivided in parts which can vary from tens to hundreds of micron to extinguish or control the fire.
This system has been already developed for decades in the marine field but its extraordinary effectiveness and reliability has contributed to its higher and higher diffusion even in many other sectors. Through finely subdivided drops we can operate on fire through the combination of effects such as cooling, inertization and the block of transmission of radiating heat; moreover, for high atomization systems classified into class I by reference American standards (NFPA70) a given amount of water lower than that of other systems (from one tenth to one hundredth). The American standards NFPA750, classify Water Mist systems into 3 classes according to the sizes of particles from class I (drops from 100 to 200 micron) to class III (from 400 to 1000 micron) and refers to the capacity the system should have to pass an appropriate "test protocol" for the use or the fire class for which it should be employed.

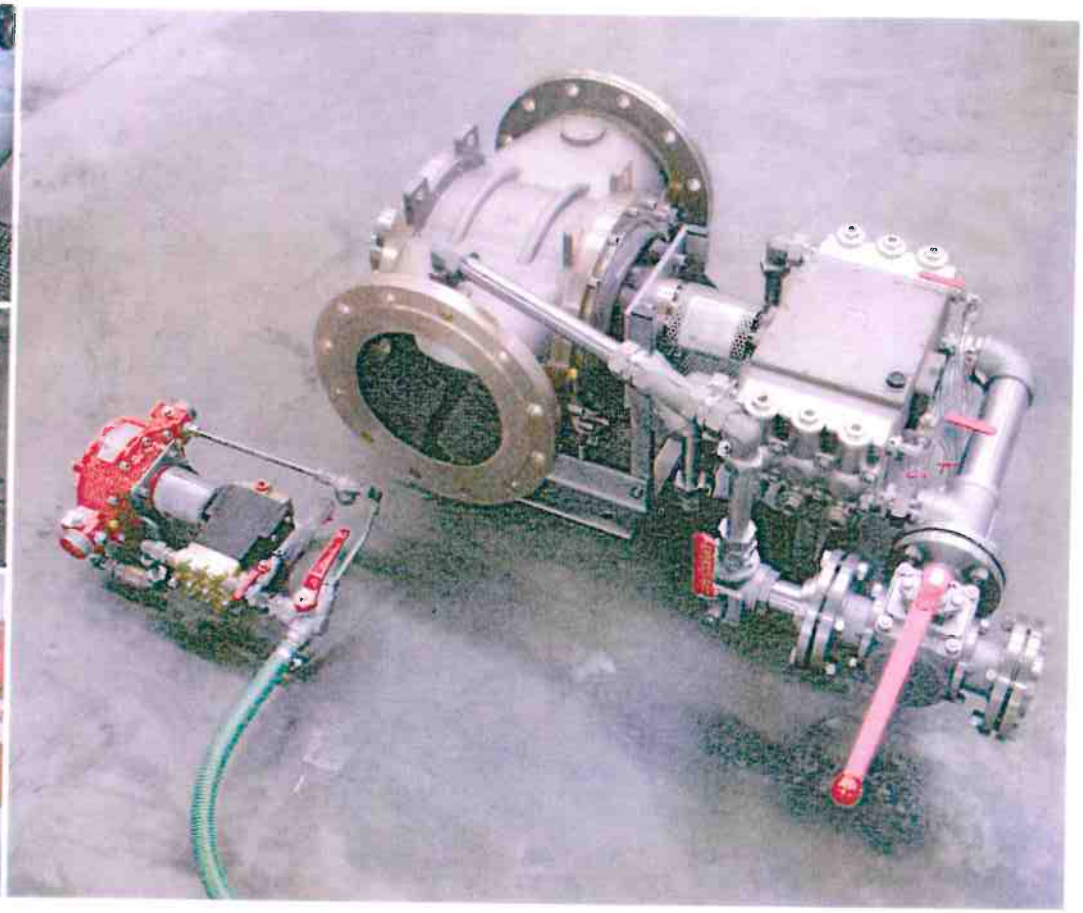
Fire-fighting systems

The fixed foam fire-fighting systems are included among the ones which technical standards classify as special systems, to indicate those particular fire-fighting systems used to extinguish or control fires caused by easily flammable substances (among which flammable liquids, chemical products, rubber and plastic). An important subdivision of these systems can be based on the type of foam to be produced, that is at high, medium or low expansion ratio (therefore, low, medium or high foam expansion systems are provided). The three systems require different characteristics of the manufacturing components as provided by different standards. The low expansion systems use foam extinguishers suitable to be directed on fire to make up a cover through appropriate nozzles or spouts; medium expansion systems use foam extinguishers suitable to be injected on the fired liquid or to be thrown to the borders of fire at short distance; high expansion systems use foam extinguishers which reach the fire through fall or jet due to appropriate generators. To guarantee the appropriate design and installation of these systems our technical office is specialised in the use of the most important international standards for this sector such as NFPA13, NFPA15, NFPA11, NFPA16, or FM standard.

The main components of the foam systems are:

- control units
- storage and mixing (line mixers, membrane pre-mixer tanks, proportional pumps)
- foam generation and supply (nozzles, suck nozzles, needles, generators)

Fire-fighting systems



The mixers can be defined as "the heart" of a foam system, where the mixing between water and the appropriate foam extinguisher occurs. Sicura uses in this sector one of the most advanced mixing systems, the Fire Dos, which is a mechanical operating system exclusively driven by water flow and can be used as a mobile unit (fire-fighting vehicle) or as a fixed one (water-foam sprinkler systems, high, medium and low expansion systems). In practice it is made up of an hydraulic driven system and a dose pump which can be a piston pump (for small capacity) or a rotation pump (for medium and high capacity) and which can cover a large capacity field ranging from 1 to 10,000 l/min.; in addition, adjustments of mixing percentage can be obtained from 0,3% to 6% or even, for some applications, from 0,01%.
This system guarantees low load losses which can vary from 0.5 to 2 bar and has also a very low economic impact on maintenance operations. Today Fire Dos is the safest and most reliable foam mixing system on the market.

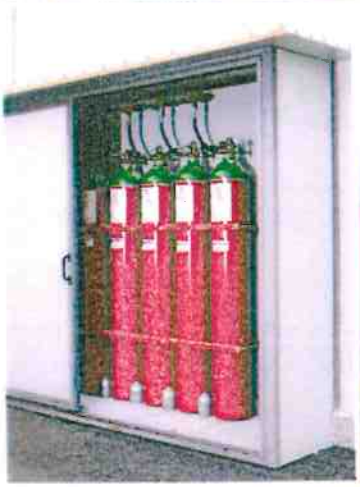
Fire-fighting systems

gas suppression

These systems belong to the "special fire-fighting systems" and distinguish themselves from other systems because they are independent, for both the extinguishing and the power required to convey it on the fire. They are especially used for the protection of data processing centres, paper archives, small deposits, or in those applications

Fire-fighting systems

gas suppression



These systems are essentially made up of: extinguisher cylinders, propeller gas cylinders, valves, devices for the automatic and/ or manual operation, for the control and the reload, distribution nozzles. In this type of systems we can use chemical gas (or PF23 and FM200 type clean agent) or inert gases (IGO1- IGO100-IG55) which can be assimilated to nitrogen, argon or 50% mixtures of these two gases.

DOOR FAN INTEGRITY TEST

As provided by the UNI EN 15004 standard Door Fan test (Appendix E), to be able to certify the appropriate installation of all the gas extinguishing systems, all the tests which check the tightness in rooms should be performed through certified equipment and by skilled technicians. The test required by the standards is necessary to check the room gas tightening where total saturation systems are installed.

Tests are performed through a fan which is included in a structure which can be adapted to most access doors for the room to be checked and through pressurization and depressurization of the protected volume, a number of measurements of the pressure and air flow can be performed by which the loss characteristics of the protected volume can be found.

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