



OPENENGINEERING

engineering gives way to innovation



COMPANY PROFILE

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engineering gives way to innovation



Opengineering is the engineering Company located in Rome among the main companies as concerns Technological Systems Design, Supervision of Works and Tests. The Company is a member of OICE, the trade Association that joins Confindustria (Italian Manufacturers' Association) and represents the Italian Engineering, Architectural and Technical-Economic Advice Associations.

The company runs complex projects, both at a national and international level, for all clients who want to carry out a safe and flawless plant engineering design. Being able to satisfy every request and counting on specific and advanced professionalism, each project is run counting on a long-term experience that was gathered from the carried out projects and the skills developed inside the company.

The Engineers and Professionals who work in the Company

form a highly qualified Staff which, thanks to its specialized know-how, to the innovative data processing instruments and to modern technologies, works in such a way as to guarantee the client's full satisfaction and the achievement of the set targets.

Over the years, the Company optimized its own organization, today it is supplied with an efficient management, appropriate structures and skills. It therefore guarantees reliability, not only to its employees and members of the staff, but to all its clients as well.

The Company is characterized by the way it works, which is marked by professionalism and a clever management, with a flexible organization that guarantees high performances and the preservation and constant improvement of its quality standards.



Mission

The company works in the field of Electric Installation, Mechanical and Special System Design, in the field of Fire Fighting Safety and Energy Conservation. In addition to the above mentioned activities, the company offers services supporting the planning, such as Supervision of works, Project Management, Maintenance Management, Tests and Technical Advice.

The Opengineering company sets the target of supplying an advanced engineering help, dealing with technological design with the aid of all global services, while keeping in mind the client's requests and satisfaction. The company can carry out the design intervention at all various stages, from the requirement analysis, to the making of the plan till the final delivery, following top quality standards and using advanced information systems.

Vision

The Opengineering company aims at becoming a leader in the design of innovative technological systems and being a constant point of reference as far as the development of new design concepts and technically advanced solutions is concerned.

To that purpose the company devotes increasing energy and resources to the constant training and updating of its professionalism. The aim is consolidating and enhancing, by

means of its own resources, the essential skills for strengthening and stabilizing the company's position within the relevant market thus becoming one of the most well-known Engineering Company at a national level.

Today that is a tangible ambition because Opengineering reduced the time spent to make graphical work thanks to advanced hardware and software tools, thus achieving a constantly increasing design autonomy.

Obviously, the concept of constant improving that is applied to all its internal processes, makes their updating and optimization possible by means of a precise and shared definition of the activities, of the responsibilities and of the performance levels that are to be achieved.

Quality

Opengineering meets the standards provided by the ISO 9001:2008 rule concerning the Quality System Management, applying them to all its processes from the signing of the contract to the delivery of the finished project.

All the offered services are based on processes that aim at managing all the design and organizational activities in a systematic way.

The management system for the above mentioned ISO 9001:2008 quality aims at ensuring the achievement of results that adequately satisfy the clients' needs and expectations, in compliance with the project requirements.

Organization

Opengineering has a flexible and integrated organizational structure where the General Management Unit is the point of reference of the several managerial and operational units, supported by the company aid units:

- Legal Office
- Administration and Accounting Office
- Business Office
- Planning and Control
- Project Management
- Technical Administration
- Operational Units: Thermal Fluid System Business Unit, Electric Installation Business Unit, Special System Business Unit, Fire fighting Business Unit
- Quality and Safety
- Information Systems
- Secretary's Office
- Purchase Department

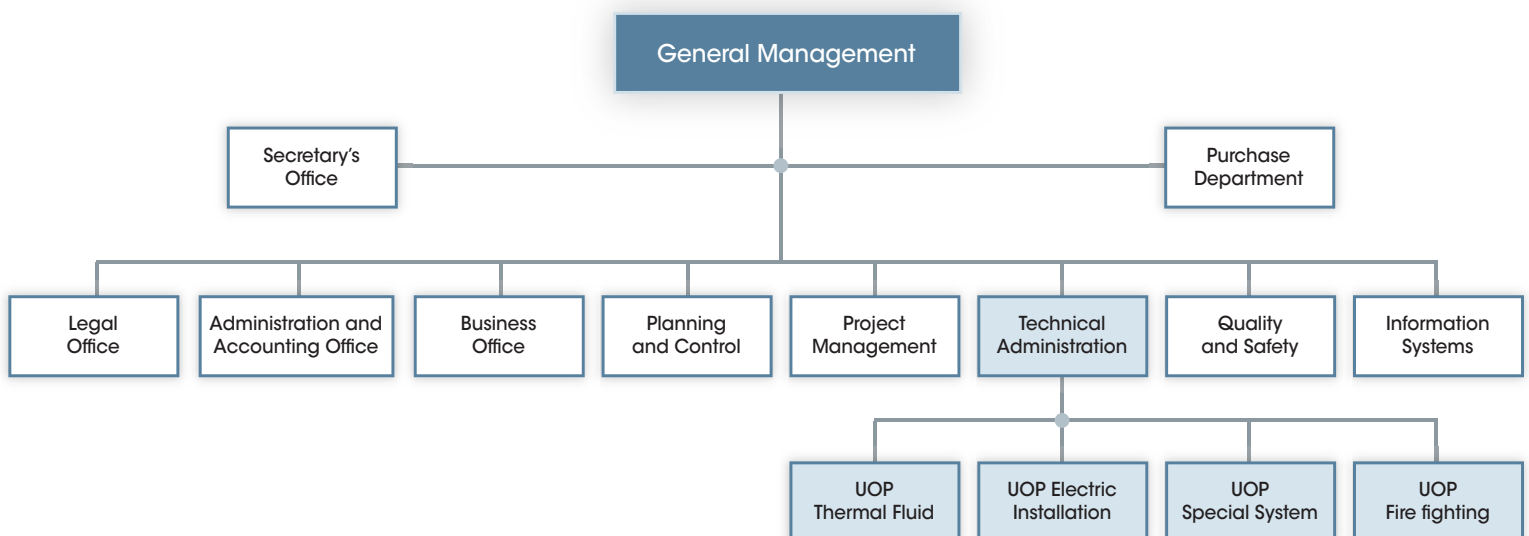
Opengineering structures its organization on the basis of Business Units which differ among them for the system typology. Each unit, in its turn, has specific skills which are characterized by well defined functional roles.

That organizational model ensures maximum flexibility while meeting the requirements of each project, using all the necessary skills.

Each business unit is organized in the following functional roles:

Person in charge of the Project: provides for the organization of the work, for the arrangement of the project multidisciplinary verifications, for the compliance controls and the solution of skill conflicts.

Senior Designer: provides for the measuring, positioning and calculation concerning significant works and systems, he controls and corrects them as far as graphical, geometric, numeric and prescriptive aspects are concerned within his specialization area.





Junior Designer: provides for the measuring, positioning and calculation concerning works and systems, he controls and corrects them as far as graphical, geometric, numeric and prescriptive aspects are concerned within his technical area.

Draftsman: provides for drafting graphic printouts, controls and corrects them as far as graphic, geometric and prescriptive aspects are concerned.

Person in charge of reckoning: provides for the drafting of calculations and estimates, he controls and corrects them as far as geometric, numeric and prescriptive aspects are concerned. Opengineering runs each project from the beginning to the end, appoints a Project Manager who is the person in charge of the project organization and has the task to plan, to schedule the activities and to monitor its development stages. The Project Manager works by mutual consent with the Person in charge of Planning and Control who coordinates all the projects noting down their economic aspect, so that the job order budget is respected and the project costs are constantly monitored and all the necessary actions aiming at monitoring them are taken.

Professional Sectors

Opengineering can boast a specialized and technical know-how in many different sectors of the general plant engineering design. Particularly the works concern complex electric installations, thermal fluid and special systems and while they are made, great attention is paid to the technological innovations of the relevant sector, in order to guarantee top efficiency and an easy and inexpensive post-test maintenance.

The intervention sectors are listed below.

Thermal fluid

- Air conditioning and ventilation
- Water health
- Purification and sewer

Electrotechnical

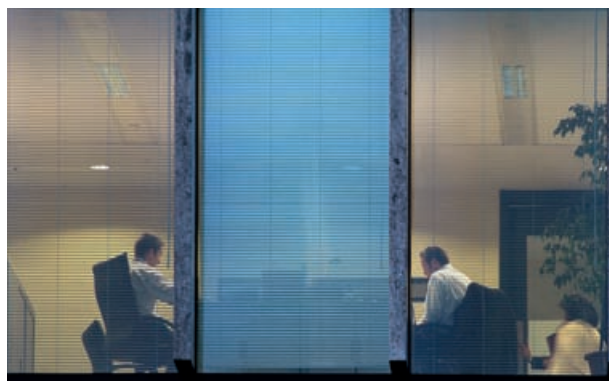
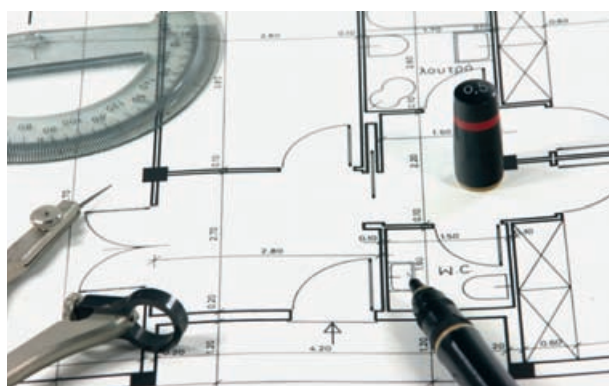
- Motive power
- Electric switch panels
- Lighting
- Technological

Fire fighting Safety/Special

- Telephony and Data Networks
- Audio alarm
- Anti-intrusion
- Access Control
- Videosurveillance
- Supervision
- TV

Offered Services

- Market Surveys and Preliminary Studies
- Technical-economic Feasibility Studies
- Project Financing Studies
- Risk Assessment Studies
- Preliminary, Definitive, Executive and Structural Design
- Construction Management
- Prices Analysis, Metrical Reckonings and Estimates
- Project Management
- Supervision of Works
- Tests
- Support to Tenders
- Projects Validation



Information System

The efficient internal organization is supported by the advanced information tools that Opengineering use in the design work. That made the reaching of a complete planning autonomy possible, as well as the reduction of the time spent for the graphic and calculation work which increases the time to study innovative ideas and solutions. The use of an Information system suitable for the related quality standards makes it possible to always have in real time all the useful and updated information for the professional carrying out of the project.



The constant monitoring of the budgetary aspect of each job order is supported by the tools of report and costs and revenues summary that, thanks to the numerous graphical functions at the company disposal, make it possible to have an immediate and complete vision of the economic situation of the project.

The entire project process uses an Integrated Application Platform, used to organize and control the project stages and their development and to manage the relevant documentation. That platform can also manage all the application instruments which characterize the engineering design, such as calculation instruments, plans drafting, reckoning and technical reports drafting.

The activities that are necessary for the project development is included in a structured workflow which constantly enables a clear vision of the Project Condition, and allows the planning and scheduling of the activities, the control of its deadlines, the resources allocations, the costs management.





OUTSTANDING PROJECTS



Adisu Residential Complex - Rome

The Agency for the Right to University Studies in the Lazio region, called "Adisu" till November 2004 and then named "Laziodisu", is the body providing for the grants, apartments, monetary contribution awards according to the regional law n.25/2003. The Agency registered office is in Rome and it also has five decentralized offices called "Laziodisu territoriali" which are subordinated to the state universities, to the state university institutes and to the institutions for high artistic education.

The project, which involved the territorial ADiSU office of Roma-La Sapienza, consisted in the building of a university residential complex with about 600 beds, supplied with common areas and study rooms, with a 9908 square metre overall residential surface and a total cubature of 59573 cubic metres. Particularly the intervention was made on:

- n.120 24,00 square metre single bed rooms
- n.192 28,80 square metre double bed rooms
- n.12 38,40 square metre rooms for disabled people

All the electric installations and special systems were designed to guarantee a good environmental comfort both to the residing guests and to the personnel working in the complex as well as to guarantee that all activities take place safely. Particularly, the design aimed at defining the following works:

- electric installation
- ordinary and emergency lighting system
- Telephony and data network
- TV system
- fire detection system
- CCTV system
- access control
- atmospheric disturbance protection system

The lighting system was designed to guarantee the correct

light according to the function of each room, thus avoiding bothersome sensations in the eyes. The emergency lighting, instead, was designed to automatically switch on when, due to an abnormal condition in the public system of the energy distributor or in the main system inside the complex, the ordinary lighting is gone.

The general electric installation supplies power to the centralized launderette the laundry, the kitchen, the technological systems devices and all the sockets of the complex. In order to improve the reliability of the systems, or in order to reduce inefficiencies and increase the safety level inside the residential complex, a centralized system of management and control of the electric installations was planned.

The telephony and data network was designed according to the structured wiring technique, whereas for the TV system, an integrated system of antennas for the reception of TV programmes broadcasted both by cable and by satellite, which manages the sending of the received TV signals to the different users.

As far as the fire detection system is concerned, considered the specificity of the building, the protection of all high risk areas was planned by means of the installation of optical detectors inside the area. Surveillance was also extended to all technical premises and to kitchens, where accidents can easily occur. The fire fighting system was also extended to the false ceiling internal spaces, to the small courtyards, to the spaces under the floors, where the presence of electric installations increases the accident risk. A modular, flexible and easy to widen system was used during the planning phase, that is based on the most advanced relevant technologies, the system can send optical and sound signals to the alarm control room.

The designed CCTV system make the control of the video-surveilled area 24hours a day possible and it consists of:

- high sensitivity, black and white cameras
- cyclical selector for the management of video signals, with operator keyboard
- 3 monitors for the control and protection rooms
- time-lapse videorecorder with a 3h speed in real-time till 960h speed in time-lapse

The access control system was designed to control the accesses through magnetic head badges and it consists of magnetic badge readers, a concentrator for the readers management, a central control unit. The premises controlled through the system are:

- entrance doors

- stairs
- garage
- corridors
- secretary's office
- first floor premises

The protection system for atmospheric disturbances was designed with the aim of protecting the entire complex from dangers originating from the atmospheric disturbances and from dangers deriving from accidental contacts with metal parts which are usually voltage free but that could have voltage if the insulating parts which protect the electric devices collapse.



TECHNICAL CHART

WORK

Agency for the Right to University Studies (A.Di.S.U.)
"La Sapienza" - Rome

CUSTOMER

A.Di.S.U. www.laziodisu.it

VALUE OF THE WORK

24.456.886,03 €

YEAR

2006

ARCHITECTURAL PROJECT

Reconsult spa
www.reconsultspa.it
Prof. Arch. Franco Purini
Prof. Arch. Laura Thermes

THERMAL FLUID SYSTEM PROJECT

Studio Ing. Cuda

SPECIAL SYSTEM

AND ELECTRIC INSTALLATION PROJECTS

Opengineering S.r.l.

SUPPLIED SERVICES

Preliminary and Definitive design for Electric and Special Systems

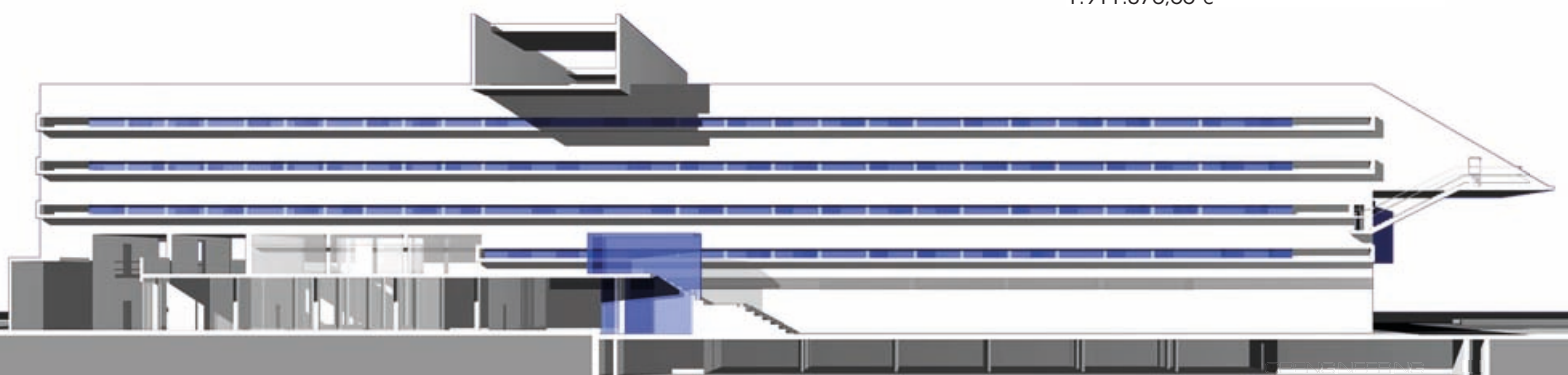
TASK ASSIGNED BY

Reconsult S.p.A.
www.reconsultspa.it

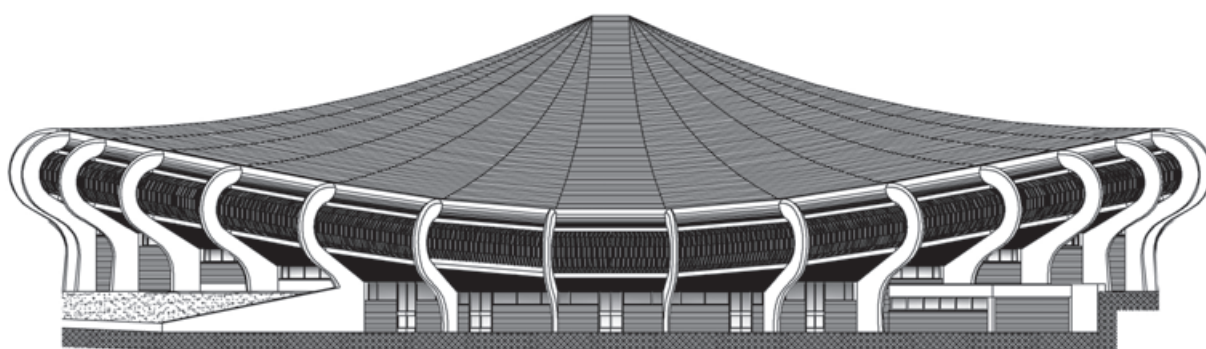
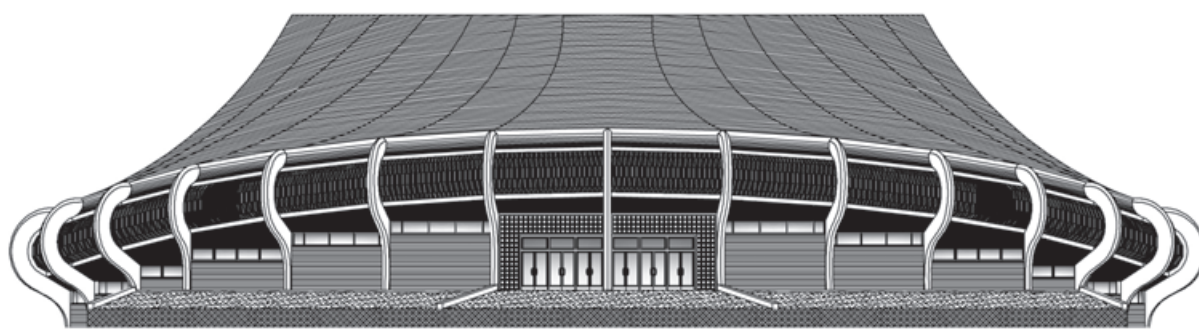
SPECIAL SYSTEM

AND ELECTRIC INSTALLATION AMOUNT

1.911.376,55 €



Fijlkam Olympic Federal Centre - The Ostia Lido, Rome



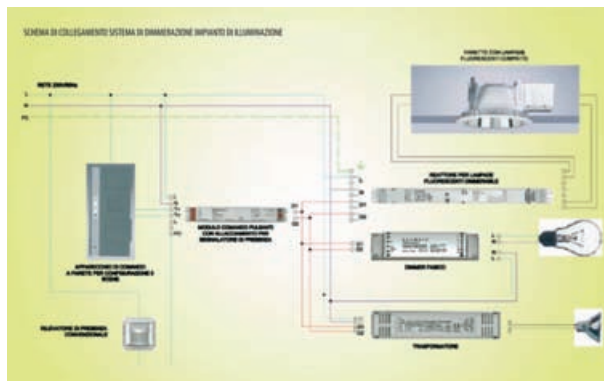
The FIJLKAM Olympic Federal Center, consisting of the Olympic Training Center and the "Palafijlkam" Federal Indoor Stadium, is the seat of the activities of the "Federazione Italiana Judo Lotta Karate Arti Marziali" (The Italian Federation of Judo Wrestling Karate Martial Arts). It was built during the '90s and it is today an important international activity centre: it is the official seat of the "Scuola Superiore di Lotta" (Superior School of Wrestling) for the Federation Internationale des Lutttes Associees (FILA); it is a venue of the meetings of the International Judo Federation and of the Union European de Judo; moreover it is the seat of the "Scuola di Formazione dell'Unione delle Federazioni Mediterranee di Karate" (Training School of the Karate Mediterranean Federations Union). Also the major international bodies of the Weightlifting, the

International Weightlifting Federation (IWF) and the European Weightlifting Federation (EWF), undertake some of their activities in the Centre.

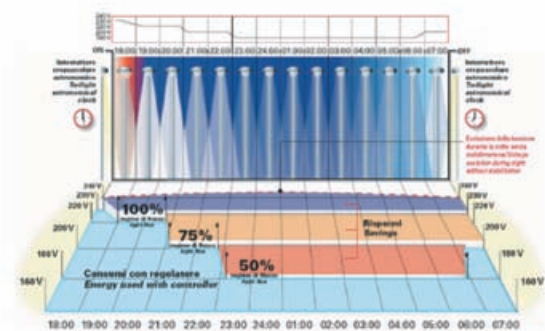
In over 15 years of activity, international champions and young talented athletes trained on the wide parterre of the centre; thanks to its annexed services, it successfully hosted outstanding events such as open competitions and federal assemblies.

With a 15.800 square metre area, the stands of the center accomodate up to 2.500 spectators and with its sail-shaped covering - unique of its kind - the Palafijlkam is one of the most prestigious venues, on the Roman coast, for the organization of international level sport events.





Representation of the particular false ceiling structures, where the recessed lighting fixtures are located, the devices illuminate many areas such as the meeting hall, the café area and the reception area . Technical details of the



dimmer system of the lighting system and summary scheme for the reduction of energy consumption according to the type of lighting device and to the conditions of the system.

TECHNICAL CHART

WORK

Fijlkam Olympic Federal Center - Lido di Ostia - Roma

CUSTOMER

FIJLKAM
www.fijlkam.it

VALUE OF THE WORK

6.552.377,07 €

YEAR

2009-2010

ARCHITECTURAL PROJECT

Arcomproject S.r.l.
www.arcomproject.com

STRUCTURE PROJECT

Studio Ing. Peroni

SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Definitive Planning, Executive Planning for Thermal Fluid, Special Systems and Electric Installation Redevelopment

TASK ASSIGNED BY

FIJLKAM - www.fijlkam.it

THERMAL FLUID SYSTEMS AMOUNT

749.953,42 €

ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS AMOUNT

1.051.991,69 €



Medusa Multiplex - Rozzano, Milan



The Project accomplished the multiplex complex for the 'Medusa spa' (Medusa joint-stock company) and all the related structures for the commercial and recreational activities. The complex has 3 cinema halls for a total of 2.968 seats, and an additional cinema hall with 500 seats, which is located in an independent structure and, at the same time, united to the remaining part of the complex.

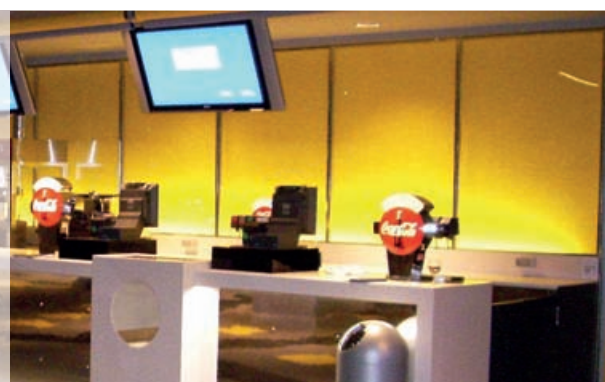
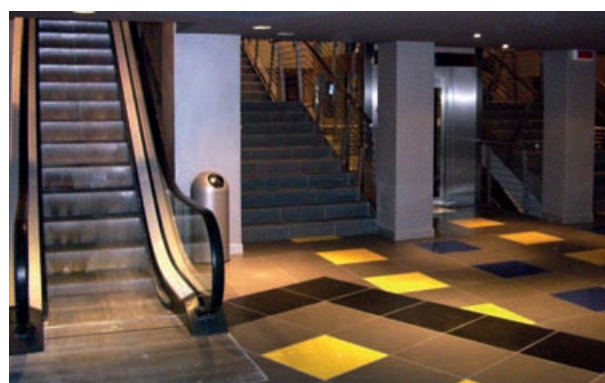
The structure consists of 6 levels plus the covering and the technical premises. The 2 underground levels accommodate more than 300 car parks each, for a total surface of 26.000 square metres. On the remaining floors, the following areas are located:

- Recreational areas
- Floor Bathrooms
- Floor foyer and entrance to the halls
- Floor refreshment and café area
- Projection rooms
- Offices and personnel's changing rooms

Opengineering took care of the Supervision of Works and of the Planning of the Electric installations and of the Special systems of the entire complex and of each single area of the complex. In particular the planned works were the following ones:

- condominium general electric installation
- multiplex general electric installation
- ordinary lighting system
- emergency lighting system
- external lighting system
- atmospheric disturbance protection system
- Telephony and data network
- fire detection system
- sound diffusion system
- anti-intrusion system
- CCTV system
- terrestrial and satellite TV system





Details of the ordinary lighting in the hall entrance common areas and of the escalators. The safety lighting of the emergency exits and of the

exits was installed using autonomous self-powered devices with a double level of lighting.

TECHNICAL CHART

WORK

'Medusa' Multiplex, Rozzano - Milan
www.medusacinema.it

CUSTOMER

Arrivederci S.r.l.

VALUE OF THE WORK:

27.510.012,49 €

YEAR

2004

ARCHITECTURAL PROJECT

Reconsult S.p.A.

www.reconsultspa.it

STRUCTURE PROJECT

Reconsult spa

www.reconsultspa.it

THERMAL FLUID SYSTEMS PROJECT

Studio Ing. Cuda

ELECTRIC INSTALLATION

AND SPECIAL SYSTEM PROJECTS

Opengineering S.r.l.

PROVIDED SERVICES

Preliminary, Definitive, Executive Planning, Supervision of the Works for Electric Installations and Special Systems

TASK ASSIGNED BY

Reconsult S.p.A. - www.reconsultspa.it

ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS AMOUNT

1.901.138,00 €

La Leprignano Residential Complex- Fiumicino, Rome



The residential complex is located on a green hill of Leprignano, just outside Rome, alongside Aurelia street. Under the project, 450 luxury semi-detached houses, and luxury houses divided into three or four independent buildings, with garden, inhabitable basements and bower will be built. In addition to that there will be a park and several facilities such as tennis courts, swimming pools and a multi-functional, recreational structure that is developed on 2 levels for an overall space of 1.200 cubic meters.

Opengineering worked for the entire complex thermal fluid, special systems and electric installations. In particular the planned thermal fluid systems include:

- the production and distribution of hot and chilled water at the disposal of the entire building
- air conditioning
- waterworks and sanitary fixtures
- irrigation system
- water purification system

The air conditioning in the rooms is guaranteed by the use of radiant panels on the floor, and by means of air treatment units and radiators in the bathrooms. The hot water of the circuits, of the radiant panels and of the air conditioners bat-

teries is produced thanks to a condensation boiler, whereas the swimming pool exchanger is powered by a floor standing boiler. Both boilers are powered by marsh gas. In the multi-purpose hall, which includes wine bar, video hall and billiard table, in the small halls, in the changing rooms and in common areas, the heating system was installed with radiant panel system fixed on the floor. The canalization for air distribution follows hidden paths, flowing inside the false ceilings or the dedicated shafts. The regulating systems of the hot and chilled water distribution and production systems has an automatic regulation centralized control unit, made with programmable logics electronic and electric devices.

The electric installations and special systems that were planned are the following:

- general electric installation
- safety and ordinary lighting system
- telephony and data system
- sound-video diffusion system
- anti-intrusion system

The lighting system includes all the lighting fixtures, the relative control devices, the laying and connecting accessories, the secondary energy supply lines deriving from the secondary switch panels. The lighting system is divided into ordinary and safety lighting. The system is installed by means of fixtures provided with fluorescent lamp with photometric efficiency that guarantees energy conservation. In the entertainment areas the lighting control is possible thanks to a bus system management, with a microprocessor centralized control, in order to obtain different kinds of lighting through a variable and personalized regulation. The lighting concept of the internal halls is the "bright canal" one with a number of built-in lighting device in the internal area of the canal, whereas in the café area pendant fixtures are used, provided with compact fluorescent lamps, which descend over the counter of the café. Inside the swimming pool and along its borders, low

General planimetry of the residential complex, with the park, swimming pools and tennis courts.



voltage LEDs were planned. As far as the emergency lighting system is concerned, the emergency exits are highlighted with autonomous fixtures with lamps installed on the emergency exits, provided with pictogram in compliance with the regulation in force.

As far as the telephony and data transmission network is concerned, it functions as a connector between the peripheral elements and the concentrators, supposing a number of services and information which can be exchanged among the parts which take part in the use and control of the numerous activities inside the building.

A control unit was planned for the video diffusion signal system, the following elements are controlled by that unit:

- reception antennas of the terrestrial diffusion UHF and VHF TV signals
- satellite signal reception antenna;

As concerns the basic sound diffusion system, two types of device were chosen for the two levels of the building: on the ground floor, built-in speakers were installed in the false ceiling; on the second floor, the speakers are wall recessed speakers, for external areas, with an adequate protection level. In the project an anti-intrusion system was planned, that can actively protect the internal part of the structure. The anti-intrusion system consists of double-technology volumetric detectors that are placed in strategic points and fit for detecting the presence of moving bodies. All the sensors are controlled by a detection central unit provided with an optical-sound alarm signaller and by a telephone dialer. The installation of the detection central unit is adequately placed inside the technical room on the ground floor. The remote control of the central unit is accessible by means of a keypad and LCD display.



TECHNICAL CHART

WORK

Residential complex "La Leprignano"
- Fiumicino (Rome)

CUSTOMER

Edilizia Roma Ovest (Parsitalia S.p.A.
www.parsitalia.it - Lamaro Appalti S.p.A.
www.lamaroappalti.it)

YEAR

2008

ARCHITECTURAL PROJECT

Studio Nira
www.studionira.it

STRUCTURE PROJECT

Ing. Adriano Cera

SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Executive Planning, Supervision of the Works, Thermal Fluid System Test, Electric Installations and Special Systems Tests

TASK ASSIGNED BY

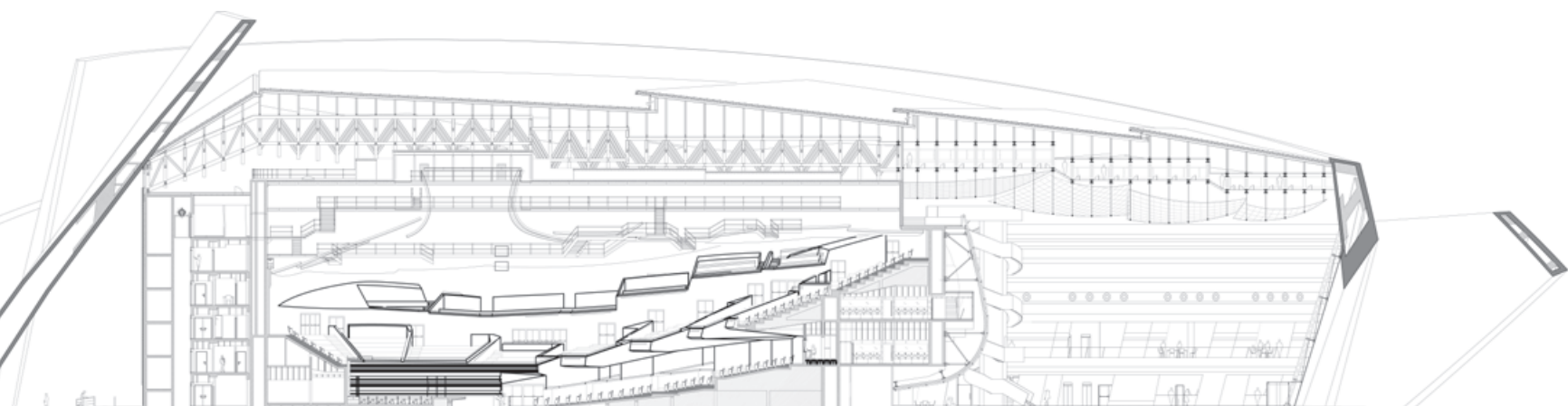
Edilizia Roma Ovest

THERMAL FLUID SYSTEMS

234.356,81 €

ELECTRIC INSTALLATIONS AND SPECIAL SYSTEMS AMOUNT

580.172,71 €



Concert Hall - Astana, Kazakhstan



Concert Hall - Astana, Kazakhstan



The hall was designed on a commission of the Presidency of the Republic of Kazakhstan that, through its Building Department, wanted to build a Concert hall and all the areas connected to it in Astana, the capital city, for a total area of 50.000 square metres. All the works consist of the following functional areas:

- n° 1 hall with 3500 seats, with orchestra pit and annexed premises
- n° 1 hall with 400 seats and annexed premises
- n° 1 hall with 250 seats and annexed premises
- square, offices, restaurants and café

Opengineering took care of the preliminary, definitive and executive planning both for the Electric installations and the Special systems, as follows in detail:

- General electric installation
- Ordinary lighting system
- Emergency lighting system
- Fire detection system
- Sound diffusion system for guided evacuation
- Anti-intrusion system
- CCTV system
- Telephony and Data network
- Terrestrial and satellite TV system

For the electric systems the following interventions were planned:

- new transformation MV-LV cabin
- ordinary lighting system
- emergency lighting system

- sockets system and distributed motive power
- energy supply electric installation of the air conditioning systems

The general electric installation consists of three primary electric systems, called the Normal system, the Preferential system and the Continuity system. The normal system is powered only by the national electric system, the preferential system is powered also by the generator set, while the continuity system is powered also by the UPS. The electric distribution is divided into two levels of Primary and Secondary Distribution. The Primary one is the totality of the elements that make the electric connection among the devices located in the electric central unit and the local electric switch panels possible. The Secondary Distribution level is the remaining part of the system, consisting of the electric circuits that, starting from the secondary electric switch panels, power the final devices. The lighting system was planned combining the use of the following sources of light:

- lighting of the space beneath the flight of steps
- lighting of the stalls
- additional lighting for the cleaning
- perimetric wall lighting
- indirect lighting on the ceiling
- general lighting of the hall
- lighting of the speakers' box
- Illuminazione gradini
- Bright decorative border
- Rows lights

In all the areas, a preferential lighting was planned in order to guarantee a level of lighting of about 1/3 as compared to normal lighting and it functions as an additional safety lighting, in the event of a voltage reduction in the general electric system. It will be usually switched on and it will switch off when the electric system voltage goes. The signalling and lighting of the exit ways is executed by "dedicated LED" devices, connected to the normal electric system, provided with pictogram and placed above the exit doors and anywhere it is necessary to signal a direction. In the outside, above the main emergency doors, a number of 150 W halogen spotlights will be installed, the spotlights are connected to the continuity circuits and function even when there is no voltage in the electric system, in order to guarantee a sufficient level of security when people go out.

The entire complex is constantly monitored by means of a complex fire detection system of the analog, addressable type, which was designed in such a way as to inform in good time the internal security service as soon as a fire starts. The fire signalling can start in two ways, manual and automatic. The characteristic of the analog, addressable system is that all the elements, belonging either to the manual detection system or to the automatic one, are provided with their own address, so that, after an accurate programming of the central unit, it is possible to rapidly know which element signalled an alarm. The fire detection system consists of about 1500 addresses depending on 2 control and signalling cen-

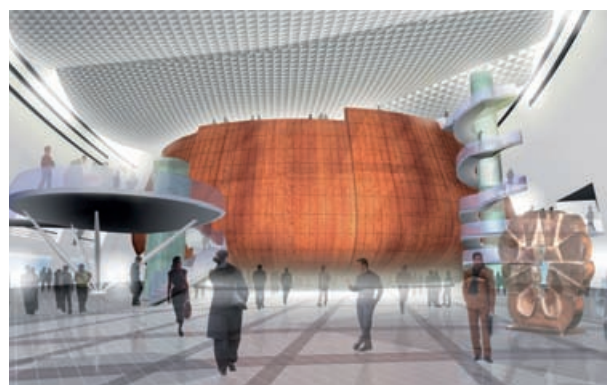
tral units.

The entire complex was provided with a centralized sound diffusion system to manage the emergencies. The system consists of a control unit, located in a dedicated room and of a number of speakers. In addition to the specific functions concerning the warnings, the system can also send courtesy messages.

The building was provided with an anti-intrusion system and with a closed-circuit TV system for the control and prevention of non-authorized accesses inside the building. The system has the task to mainly guard the accesses that from the outside lead to the inside, and some particular areas such as, for instance, the halls and the foyer. The integrated system will prevent certain events from happening, such as thefts, vandalism, robberies, acts of sabotage and others, which can jeopardize people's security and cause the loss or damage of tangible and intangible valuable assets.

An integrated network for telephony and data transmission was planned for the entire building, with the aim of connecting the peripheral elements and the concentrators for the exchange of a number of services and information among the different parts which use and manage the activities inside the building.

The building was provided with satellite and terrestrial TV signals reception system which can receive and distribute the signals coming from national and international tv broadcasting stations.



TECHNICAL CHART

WORK

Universal Concert Hall - Astana (Kazakhstan)

CUSTOMER

Presidency of the Republic of Kazakhstan - Astana Building Department

YEAR

2005

ARCHITECTURAL PROJECT

Studio Nicoletti
www.manfredinicoletti.com

STRUCTURES PROJECT

Mario Salabè - Ingegneri Associati

SYSTEMS PROJECT

Enetec S.r.l. - www.enetec.it

PROVIDED SERVICES

Preliminary, Definitive, Executive Planning for Electric Installations and Special Systems

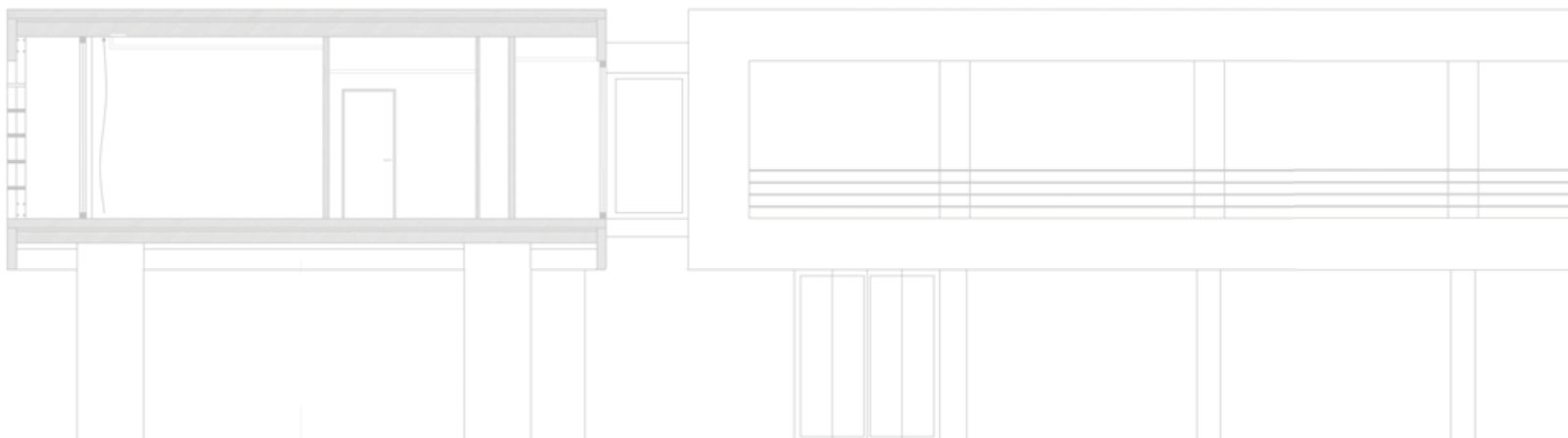
TASK ASSIGNED BY

Enetec S.r.l. - www.enetec.it

ELECTRIC INSTALLATIONS

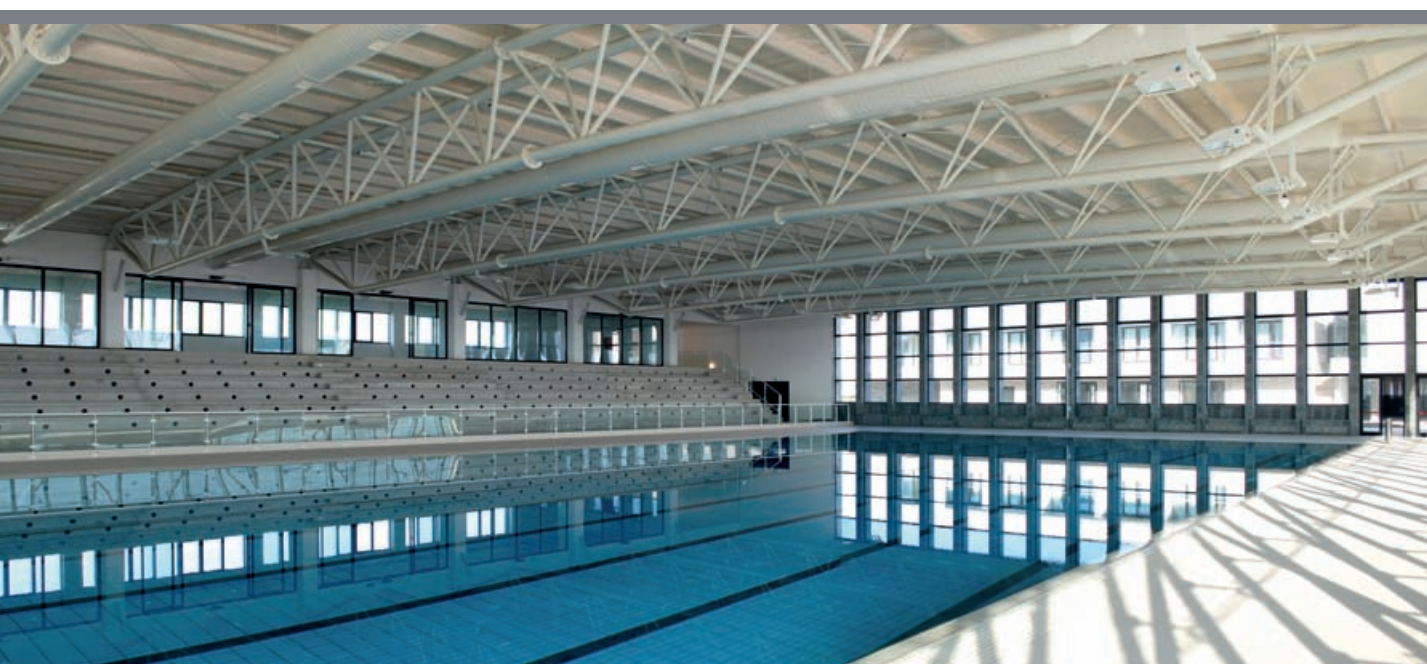
AND SPECIAL SYSTEMS AMOUNT

6.837.399,6 €





Fin Swimming Complex XIII Municipality - The Ostia Lido, Rome



The FIN Swimming Complex Project carried out on the Ostia Lido, Rome, is included in the general plan illustrated by FIN (Italian Swimming Federation) during the 13th edition of the Rome 2009 Swimming, Water polo, Diving, Synchronized Swimming, Open Water Swimming World Championship. The World Championship brought back to Rome the elite of the world swimming after 15 years, with about 2500 athletes and 1500 technical officials which represented more than 170 countries, drawing the attention of 1500 media operators.

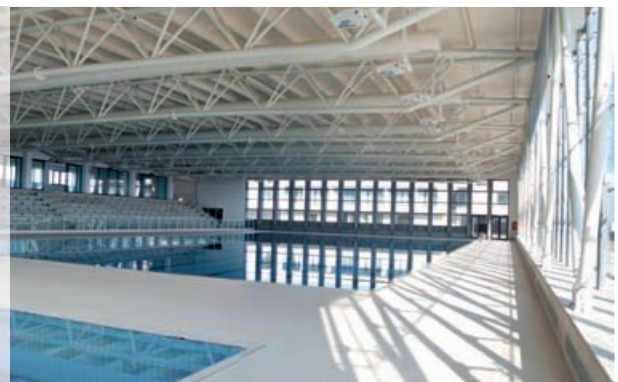
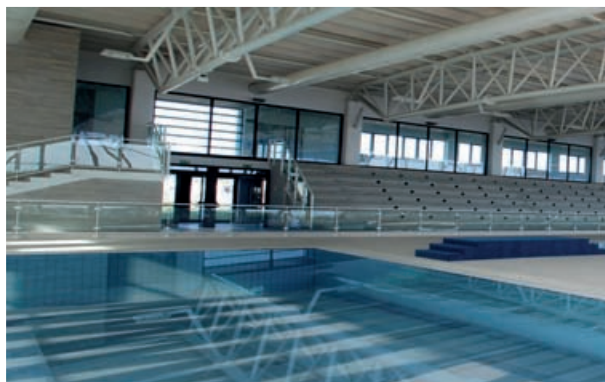
The Fin, together with the Town Council of Rome and supported by the Italian National Olympic Committee, the Provincial Administration of Rome and the Lazio Region Administration, commissioned a number of works aiming at renovating, restoring and extending the existing complex and building three new sport-swimming complexes and, among them, the new complex of the Swimming Complex of the XIII Municipality. The building of the new sport-swimming complex took place in compliance with the technical and dimension-

al criteria imposed by the Italian Swimming Federation for the validation, to sport purposes.

The Ostia Lido Swimming Complex develops on an overall surface of 31.651 square metres and it consists of the following structures:

- 50x25 m. olympic outdoor swimming pool with 8 lanes
- 33x21 m. indoor swimming pool with a variable depth from 3 m. to 2,8 m.
- 10x21 m acclimatization pool with a constant depth of 1,2 m
- open terraces with 900 seats
- closed terraces with 500 seats
- federal offices
- restaurant and café
- changing rooms
- conference hall with 200 seats
- guestrooms with 79 rooms
- 200 square metres gym
- 15.000 square metres parking area





The indoor swimming pool lighting, which, with its terraces can accommodate up to 500 spectators, was accomplished using 40 spotlights provided with HPI-400 W lamps, for an average lighting level of 500 lux. Whereas for the outdoor swimming pool, that was designed with a number of terraces that can accommodate

900 spectators, the lighting was accomplished using four tower-lights placed respectively in the four corners of the pool. Above each tower-light, which is about 20 metre high, 8 spotlights provided with MHN-1000 W lamps were installed, for an average lighting of 300 lux.

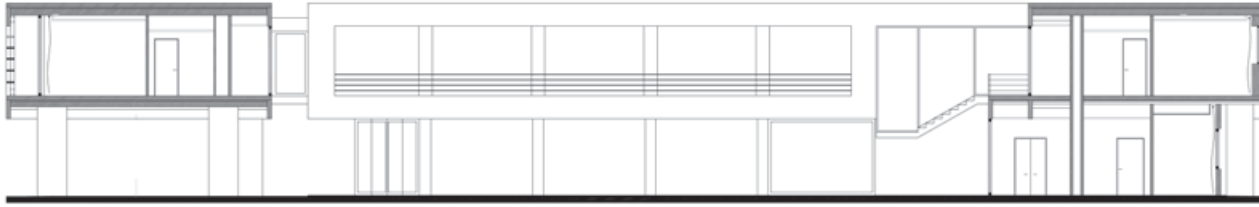
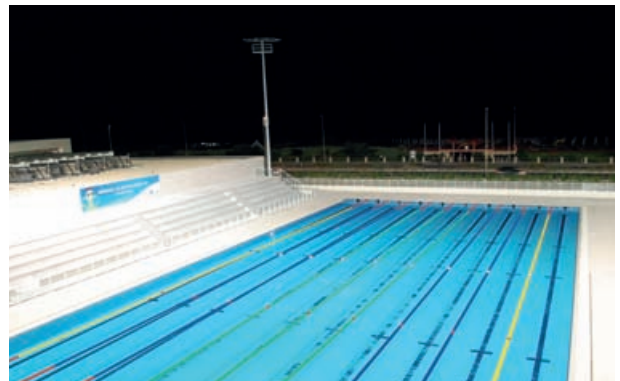


Image on the top: longitudinal view of the northern side of the sport complex, whose facade is entirely made of travertine marble. It is possible to see the slits made for the external air intakes and for the ejection

tion of the air conditioner of the indoor pool. Below: longitudinal view of the southern side of the sport complex where the indoor swimming pool is located as well as the covered terraces with 500 seats.





Details of the thermo-technical plants, with a water production plant for the changing rooms, electric recirculation pump, filtering system, high efficiency

thermal power plant, pumping plant and air conditioner for the indoor swimming pool.

TECHICAL CHART

WORK

FIN Swimming Complex XIII Municipality
The Ostia Lido - Roma
www.federnuoto.it

CUSTOMER

Office of the Delegate Commissioner
of the Presidency of the Council of
Ministers

VALUE OF THE WORKS

22.000.000,00 €

YEAR

2008-2009

ARCHITECTURAL PROJECT

Studio Angelo Zampolini

STRUCTURES PROJECT

Studio Ing. Peroni

SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Definitive, Executive Planning, Construc-
tion Management for Thermal fluid, Spe-
cial Systems and Electric Installations

TASK ASSIGNED BY

Marziali Costruzioni Generali S.r.l.
www.mcgsrl.com

THERMAL FLUID SYSTEMS AMOUNT

3.996.586,71 €

ELECTRIC INSTALLATION

AND SPECIAL SYSTEMS AMOUNT

3.022.615,40 €

Offices of the Super3 TV Network - Rome



The SUPER 3 TV network was established in 1977 and it was originally called Teleroma Europa, whose acronym T.R.E., aimed at specifying it was the third national tv channel. It was the first commercial television and it can now boast more than 30 years of experience.

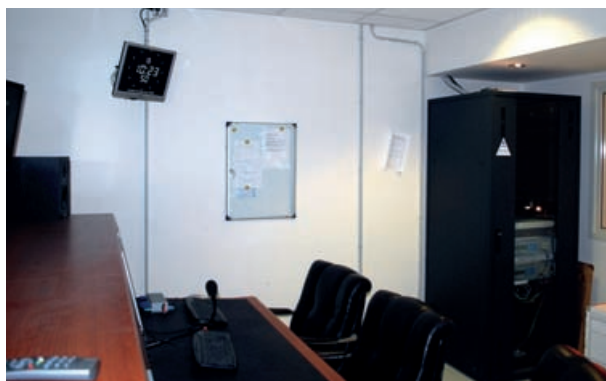
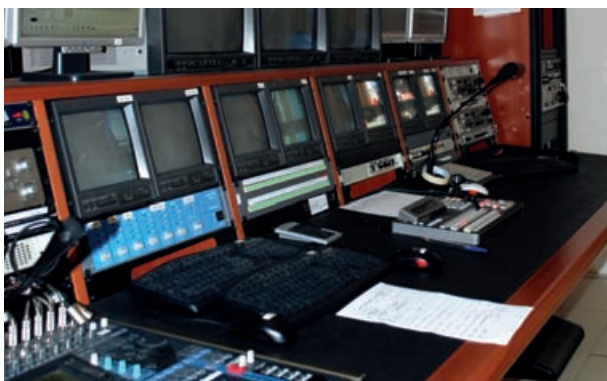
The planning of the new offices of the Rome tv broadcasting station consisted of building a new structure that could include the following functional areas:

- halls and corridors
- administrative offices
- editorial offices
- business offices for production, direction, editing and broadcasting
- conference room

The planning of the electric installations and of the special systems particularly aimed at making:

- new emergency and ordinary lighting systems
- new telephony and data networks
- new anti-intrusion system

As far as the electric installation is concerned, the choice and arrangement of the components was particularly taken care of, in order to guarantee the requirements of inaccessibility and insulation of those parts where voltage is present, for security reasons. All the materials, the electric devices and components were chosen according to the requirements of suitability to the rooms and, therefore, able to resist to mechanical, chemical and thermal actions, to which they



could be exposed during the use.

For the lighting system of corridors and halls, recessed fixtures provided with fluorescent compact lamps were used. In the clients' reception area a track lighting system with ten halogen spotlights was planned, in order to make the room pleasant and keep lighting levels not too high. In the offices, that are provided with a false ceiling, lighting fixtures provided with compact built-in fluorescent lamp were used, that means they are fit to be installed in rooms where the use of video terminals is expected. The light emission of the above mentioned devices, the so called "soft light", guarantees a pleasant lighting effect also on the walls. Inside the business offices (production, direction, editing and broadcasting) a double lighting system was planned: the first one consists of devices built in the false ceiling and provided

with a compact fluorescent lamp, with a light emission strictly controlled; the second system consist of halogen lamp fixtures, also built in the false ceiling. In the conference room, on the mezzanine, some wall-mounted fixtures with direct/indirect lighting were installed, they are provided with two fluorescent linear lamps and a floor lamp made of the same materials as the wall-mounted fixtures, in order to create an effect of uniformity.

For the emergency lighting system, the pointing out of the exit ways was accomplished by means of autonomous fixtures provided with integrated power supplier batteries, with LED lamps installed on the emergency exits, provided with pictogram in compliance with the regulation in force.

A telephony and data network was installed, it originates from the distributor rack and connects all the working areas.



TECHNICAL CHART

WORK

Offices of the Super 3 TV Network - Rome

CUSTOMER

Super 3 TV Network
www.super3.com

VALUE OF THE WORK

564.925.78 €

YEAR

2007

ARCHITECTURAL PROJECT

Reconsult S.p.A.
www.reconsultspa.it

THERMAL FLUID SYSTEMS PROJECT

Studio Ing. Cuda

SPECIAL SYSTEMS

AND ELECTRIC INSTALLATIONS PROJECT
Opengineering S.r.l.

PROVIDED SERVICES

Preliminary, Definitive, Executive Planning, for Special Systems and Electric Installations

TASK ASSIGNED BY

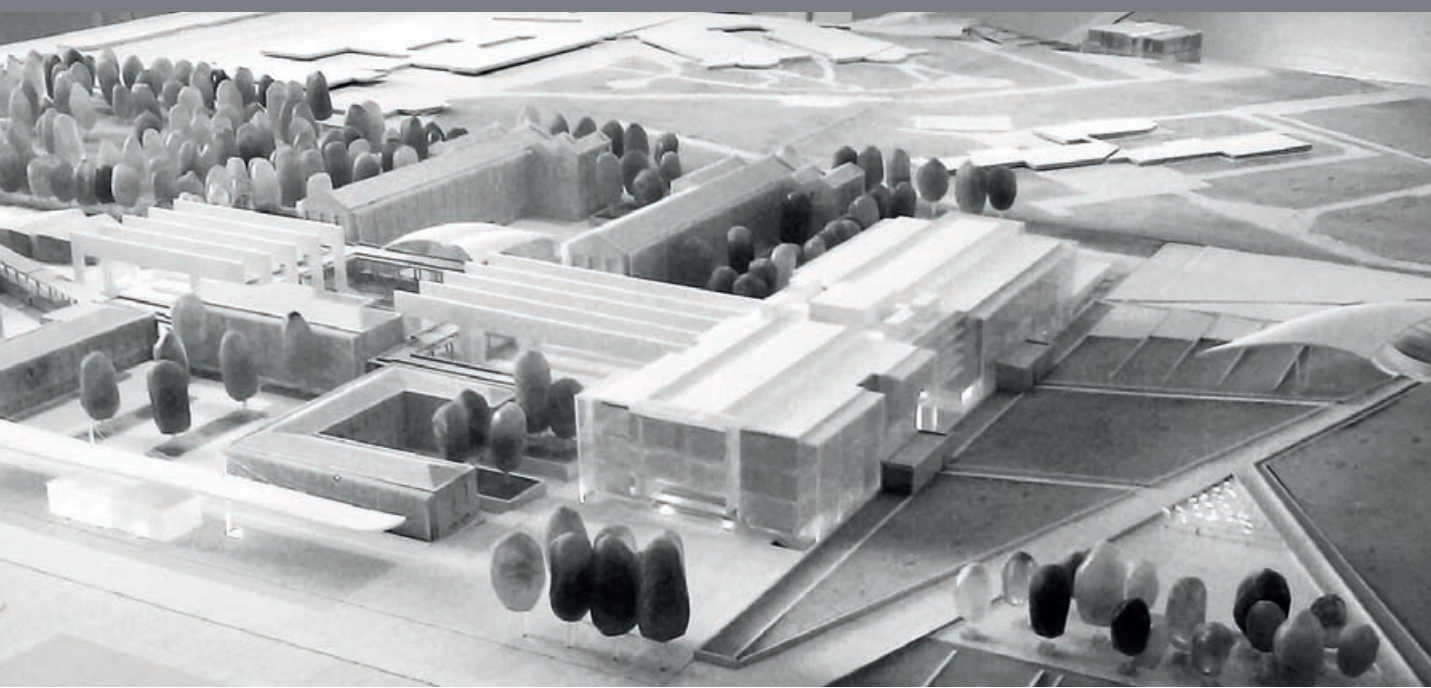
Reconsult S.p.A. - www.reconsultspa.it

SPECIAL SYSTEMS

AND ELECTRIC INSTALLATIONS AMOUNT

213.751,32 €

Provincial Centre of Excellence, Innovation and Work - Milan



The Project is included in the renovation and building of new works for one of the premises dedicated to vocational training, already existing in Milan and run by the Provincial administration. On an overall area of 70000 square metres, a number of works was planned: rooms for vocational training, a 1000 seat auditorium, a 3 underground floor parking, 6500 square metres of exhibition areas and areas dedicated to research, innovation and work. The Project target is creating a centre where universities and firms can meet to transform research into innovation and applied technology and, moreover, there is the willingness to create a centre that can be an international showcase for the promotion of excellences and for the active and creative economy of Milan.

The main concept of the work is that spaces and functions distribution can induce students and professors to meet more than once during the day, in the so called "Market-place", that means the common area that is so important in today's life. The existing architectural elements become up-to-date thanks to the addition of steel elements which have different purposes, because on the one hand they support the cantilever roof which protect the facades from bad weather but, on the other hand, they are used like portals for the curtains made of plastic reinforced by incorporated fiberglass that serve as a solar shield. All that contributes to giving a touch of strict and educated present-day aspect to the entire building and, at the same time, it adequately suits the typical Milan style. The outdoor or indoor exhibitions pavilions are conceived as concrete portals rhythmically dis-

tributed and covered with glass that, if needed, can be transformed into light and shadow paths, as well as into everyday life areas. Finally, both the new and old teaching areas were planned to be extremely flexible, as they can be widened or reduced according to one's needs, whereas general spaces can host conferences, receptions and meetings.

From a plant engineering point of view, a new solution of ordinary lighting was found, it is accomplished using lighting fixtures with low luminance optics and with an efficiency higher than 75%. That makes the reduction of about 20% of the lighting devices possible and, consequently, energy conservation and lower maintenance costs. The reduction of the number of lighting devices and the choice of the rectangular shape of such devices made it possible to obtain an easier distribution of the radiant panels placed on the ceiling.

As far as the emergency lighting is concerned, autonomous emergency devices were installed; such devices are provided with an integrated power supplier which starts when ordinary lighting goes. Thanks to that, safety circuits are unnecessary and the damage due to the unavailability of the very power supplier is reduced.

For the distribution of the motive power systems and for the arrangement of the special systems, metal platforms underneath the floating floor were installed, thus making the canals rested in the false ceiling lighter. Thanks to the floating floor it was possible to plan foldaway turrets instead of the traditional socket groups placed on sight on the walls, thus making the rooms more elegant.



Internal and external views of the new structures, designed to host the vocational training rooms, the 1000 seat auditorium, the exhibition area and the areas dedicated to research and innovation and work. In order to give more elegance and consistency to all areas, all the plant engineering solutions

that were taken in the electric, special and lighting sectors, were installed in the less invasive possible way. Moreover, great importance was attached to energy saving, safety and easy maintenance.

TECHNICAL CHART

WORK

Provincial Centre of Excellence, Innovation and Work - Milan
www.cantieredelnuovo.it

CUSTOMER

Provincial Administration of Milan
www.provincia.milano.it

VALUE OF THE WORK

38.300.000,00 €

YEAR

2008-2010

ARCHITECTURAL PROJECT

Dante O. Benini & Partners Architects
www.dantebeniniarchitects.com

STRUCTURES PROJECT

Favero&Milan Ingegneria S.p.A.
www.favero-milan.com

SYSTEMS PROJECT

Manens Intertecnica S.r.l.
www.manens.com

PROVIDED SERVICES

Planning and Executive Supervision of the Thermal Fluid and Special Systems and of the Electric Installation

TASK ASSIGNED BY

ATI Polo Eccellenza S.C.A.R.L.

SYSTEMS AMOUNT

11.600.000,00 €





Sheraton Golf Parco de' Medici Hotel- Rome



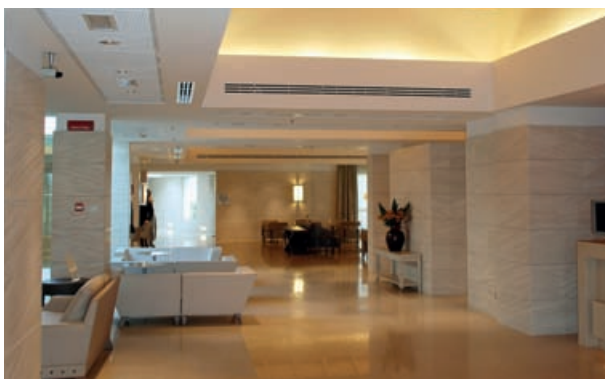
Located in a 80 hectare park and surrounded by a 27 hole golf course, the Sheraton Golf Parco de' Medici Hotel & Resort of Rome is a fascinating country style hotel, located 18 km away from Fiumicino airport and 12 km away from the town centre of Rome.

The complex develops on 5 floors, one of them is underground and has 306 rooms provided a 24 hour Wi-Fi connection and fast internet access, conference rooms and common areas. It is also provided with the following functional parts:

- two swimming pools
- two gyms
- sauna and spa

- a restaurant
- business centre and internet point
- theatre
- 3 conferences centres
- 40 meeting rooms
- 1500 car parking area

In order to allow the management, the use, the safety and control of the entire complex and of each single room, with its characteristics and functions, electric installations, telephone network, data transmission and special systems were accomplished.



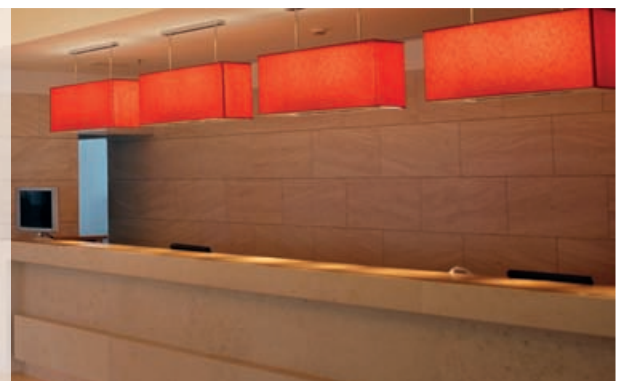
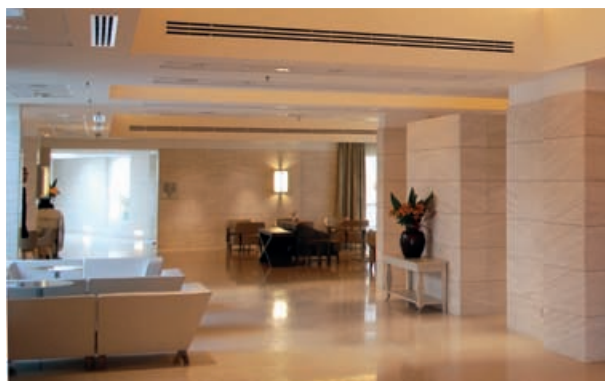
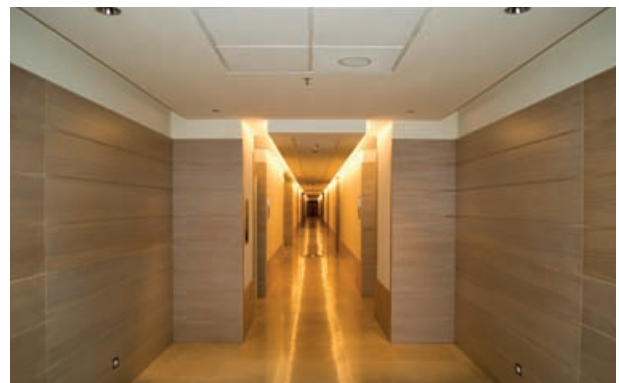
The general project of the electric installations and special systems, concerning the entire complex, was developed keeping in mind a number of element such as:

- the different areas and their relative use requirements: rooms, offices, entrance hall, halls, etc., as well as the availability and continuity of the electric power supply, as well as the consequences on the service, on people's safety and on the functionality of certain systems such as data transmission and telephony, videosurveillance system, fire fighting system;
- the identification of the electric scheme and of its func-

tioning in order to guarantee the availability and continuity of the service with the desired reliability;

- the execution typology of the systems accordingly to the different floors and rooms where they are used;

Finally, it is important to underline that the particular use of such systems pointed out the security and reliability requirements that were reflected on the definition of the main scheme, of the emergency systems and of the components choice and on the choice of the fundamental devices that had to be installed.





The electric installation was designed considering the installation of a 800 kva



generator set, which can supply power to all the preferential consumption units.





The transformer vault mainly consists of two 1000 kva transformers of the middle voltage switch panel and of the low voltage general switch panel, accomplished in shape 4.



The lighting was planned attaching great importance to energy conservation and trying not to compromise the perceptive-aesthetic features of the system.

TECHNICAL CHART

WORK

Sheraton Golf Parco de' Medici Hotel
www.sheraton.com

CUSTOMER

Società Quaranta Rubbie S.r.l.

VALUE OF THE WORK:

19.835.843,35 €

YEAR

2005

ARCHITECTURAL PROJECT

Reconsult S.p.A.
www.reconsultspa.it

STRUCTURES PROJECT

Studio Tecnico Ing. Cinuzzi

THERMAL FLUID SYSTEMS PROJECT

Studio Ing. Cuda

ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Preliminary, Definitive, Executive Planning, for Special Systems and Electric Installations

TASK ASSIGNED BY

Reconsult S.p.A.

ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS AMOUNT

2.861.087,10 euro

Porta Nuova Station - Turin



Torino Porta Nuova is the third major Italian station, with its 192 thousand daily transits and 70 million visitors each year. It is strategically located inside the city and it is the biggest crossroads of public transport lines, because it hosts around 350 trains every day.

The station requalification project included the various floors of the structure:

- the underground floor, which is at -3,50 metres and hosts the

FS (State Railways) sections area and the shopping area.

- The urban level floor, consisting of the travellers' building where shops, passengers' services and platforms are located.
- The 1st, 2nd, 3rd, 4th and 5th floor, where the station offices and postal service are located.
- the seven buildings located along Nizza Street and Sacchi Street, where the thermal plant, the technical rooms and offices of the FS are located.



The planning included the electric installations and special systems, both for the entire complex and for each area, as listed below:

- general electric installation
- ordinary lighting system
- emergency lighting system
- telephony and data networks
- sound diffusion systems
- TV systems

As far as the electric installation is concerned, all the electric switch panels were dimensioned to contain 30% more of the installed switches, without intervening on the structural works. The circuits were divided into the three phases in order to balance the loading of the line. Moreover, in each electric switch panel, a ground collector was placed, all the protection conductors were connected to it.

A digital and modular sound diffusion system was designed, which is appropriate to be connected with the remote control station. The system serves the following areas:

- Primary and secondary services
- Entrance hall
- Passengers areas
- Ticket office
- Changing rooms

- Warehouses
- Offices and control room
- Bathrooms
- Technical rooms
- Platforms

In order to solve the communication problem inside the building and to supply a high quality level telematic services, for all the areas a wiring system that is structured for an integrated telephony and data transmission network was planned. The vertical and horizontal wiring was made with copper cables and pre-arranged for the optical fibers connection in the event that distances did not meet the expected standards.

A terrestrial and satellite TV system was planned for the passengers' services and for primary and secondary services, it has a modular central unit with centralized decoders for the distribution of 12 terrestrial channels and 12 satellite channels. Some amplification subunits were planned along the TV signals distribution lines in order to guarantee an adequate signal level to the terminal sockets.

As far as the ordinary lighting system is concerned, the following aspects were considered during the planning phase:

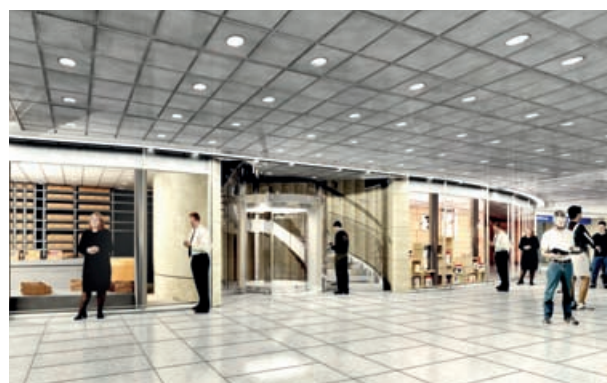
- avoiding luminance contrasts in the field of vision
- avoiding reflections of high luminance surfaces



The emergency lighting instead, was installed using illuminating fixtures provided with airtight batteries fluorescent lamps, which can guarantee at least a 60 minute functionality and a lighting level not lower than 5 lux, for the areas arranged for evacuation operations, and at least 2 lux for the remaining areas. The corridors, stairways and exit ways lighting was guaranteed by means of self-powered lighting devices with NiCd high

temperature internal batteries that have at least an autonomy of 1 hour. The entire emergency lighting system is controlled by means of a control unit that can manage the execution of recurrent functionality tests of the emergency lamps. The lighting devices belonging to the "No - break lighting" system are the same type of those belonging to the ordinary lighting, but powered by circuits which use uninterruptible power supply.





The ordinary lighting for all areas is guaranteed by the use of self-powered lighting devices. The emergency lighting is guaranteed by the use of lighting devices provided with airtight batteries and fluorescent lamps. All the station areas

are provided with a structured wiring system that includes telephony and data. In the passengers' area and in the primary and secondary service areas, a terrestrial and satellite TV system is installed.

TECHNICAL CHART

WORK

Porta Nuova Station - Turin

CUSTOMER

Grandi Stazioni S.p.A.
www.grandistazioni.it

YEAR

2005

ARCHITECTURAL PROJECT

Studio Valle
www.studiovalle.com

STRUCTURES PROJECT

Studio Valle
www.studiovalle.com

SYSTEMS PROJECTS

Enetec S.r.l. - www.enetec.it

PROVIDED SERVICES

Executive Planning, for Special Systems and Electric Installations

TASK ASSIGNED BY

Enetec S.r.l. - www.enetec.it

SPECIAL SYSTEMS

AND ELECTRIC INSTALLATIONS AMOUNT

3.625.786,56 €





École Française de Rome - Rome



The French School of Rome is a public institution for research and education under the auspices of the Ministry of Education. It is a point of reference in Italy and in the Mediterranean countries as far as the French scientific and research activity in history, archeology and social science is concerned.

At the beginning it was well-known as the Rome seat of the "Scuola Francese d'Atene" (The French School of Athens) and then as the "Scuola d'Archeologia" (the School of Archeology), it was established in 1875 and has three main seats: Farnese Palace, Navona Square and the Baldi Crypt. It has a rich library which, with its 200.000 works, brings prestige to the French institution. In the School currently work 18 officials, interns and people who attend a doctorate of research (Ph.D.), university and CNR (National Council of Researches) researchers.

Opengineering worked for the renovation of the historical seat of Navona Square 62, which hosts young researchers and people who attend doctorates. The building is very prestigious from an historical and architectural point of view, it has six floors and a mezzanine and it is structured in the following functional areas:

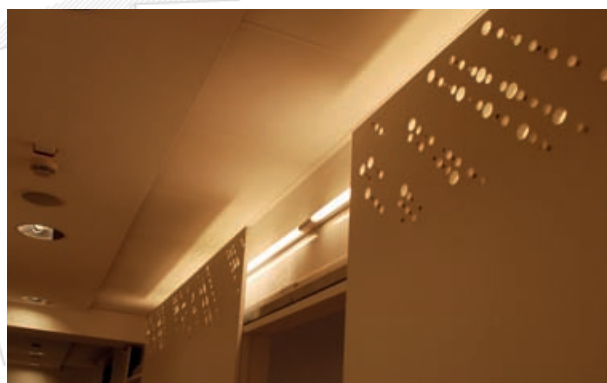
- Multipurpose Exhibition Hall
- Seminars Hall with 30 seats
- Conference Hall with 100 seats

- Residences and Offices
- Technical premises

Opengineering worked for the rebuilding and adjustment to the electric installations and special systems in compliance with the in force regulations concerning that matter. The plant engineering-technical project is articulated as follows:

- rebuilding of the general low-voltage electric switch panel
- rebuilding of the floor and sector electric switch panels
- new electric switch panels for the students' rooms
- new electric primary distribution
- rebuilding della distribuzione elettrica secondaria
- rebuilding of the systems serving the air conditioning devices
- new ordinary and emergency lighting system
- new fire detection and fire alarm system
- new structured cabling system for telephony and data networks
- new disabled people alarm system
- TV system

The planning and Supervision of the Works executed by Opengineering Company had the main target of modernizing the building, respecting both its function of education and research scientific institute and its function of residence for the accommodation of scholarship holders and people who attend doctorates.



The fire detection system was planned to be provided with a microprocessor central unit which control all the field elements, such as detectors, alarm buttons, sound-optical signalers, holding magnets, fire stop doors and control modules, which are installed in the lobbies, in the common areas, in all corridors and

in the halls. The detectors were placed in such a way as to protect the entire covered area of the complex. The central unit provides for the constant monitoring of the condition of all the connected devices with cyclical tests to determine the possible alarm, pre-alarm, trouble or normal condition.

TECHNICAL CHART

WORK

École Française de Rome - Roma

CUSTOMER

École Française de Rome
www.efrome.it

VALUE OF THE WORK

3.627.191,00 €

YEAR

2005-2009

ARCHITECTURAL PROJECT

Atelier SERAJI - www.seraji.net
Seste Engineering S.r.l. - www.studioseste.it

STRUCTURES PROJECT

Studio Tecnico Di Cintio

FIRE FIGHTING SECURITY

Arch. Roberta Ripani

EVALUATIVE METRIC RECKONING

Studio Tecnico Geom. Roberto Musto

THERMAL FLUID SYSTEMS PROJECT

Costruzioni Generali OIKOS '92 S.r.l.

ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Definitive, Executive Planning, Supervision of the Works for Special Systems and Electric Installations

TASK ASSIGNED BY

École Française de Rome - www.efrome.it

ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS AMOUNT

524.013,42 €

Apulia Touristico Hotel Complex - Marina D'ugento, Lecce



The Project was dedicated to the building of the Iberotel Apulia tourist hotel complex, an elegant 4 star hotel overlooking the Jonio sea perfectly integrated with the surrounding natural environment and with the building style of the Salento area.

The complex consists of 10 houses called 'corti' which on the whole host 333 residences, provided with all comforts and modern technologies. In addition to those, there are the common areas where the following functional areas are distributed:

- warehouses
- servizi
- reception
- administration
- restaurants, cafés, kitchens
- spa and sport facilities
- meeting center with 3 congress halls
- amphitheater
- parking area

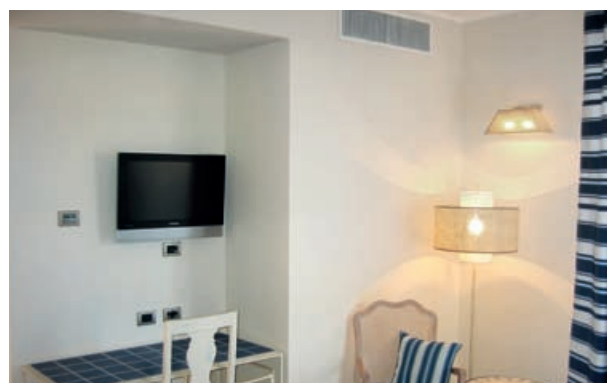
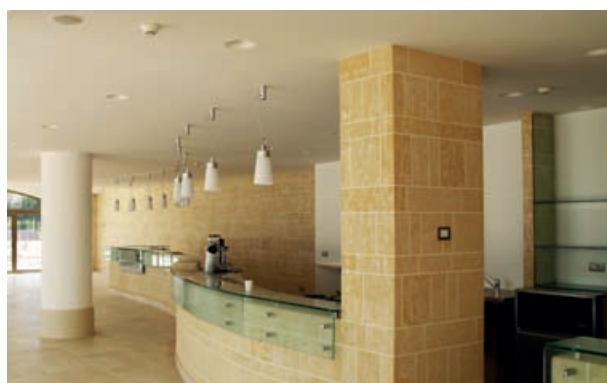
The residential complex extends on a 18786 square meter total surface, 11100 square meters of which are devoted to residences and 7686 square meters are devoted to the serv-

ice and entertainment common areas.

The general project of the electric installations and special systems concerning the entire complex and each single area was developed in the following sections:

- ordinary and emergency lighting systems
- electric installation
- telephony and data networks
- anti-intrusion system
- fire detection system
- room management system
- sound alarm system
- tv system
- supervision system

The technological systems were planned according to the different use in the various floors and areas (rooms, offices, lobbies, halls, etc.) considering the power availability and continuity, and the consequences on the service, people's and installations safety. Moreover, the particular use of such systems required specific safety and reliability characteristics and that is reflected in the main scheme, emergency systems and main components and devices which had to be installed.



general views of the entire hotel complex with the 333 residences. Execution examples of the external lighting of the entire complex and of the internal

lighting of common areas. A detail of the ordinary lighting and of the TV system inside the rooms.

TECHNICAL CHART

WORK

Apulia Iberotel Tourist Hotel Complex
- Marina d'Ugento (LE)
www.iberotelapulia.com

CUSTOMER

Ugento S.r.l.

VALUE OF THE WORK

26.973.000,00 €

YEAR

2005-2007

ARCHITECTURAL PROJECT

Pellegrino Associati S.r.l., Reconsult S.p.A.
www.reconsultspa.it

STRUCTURES PROJECT

Studio Ing. Cinuzzi

THERMAL FLUID SYSTEMS PROJECT

Studio Ing. Cuda

ELECTRIC INSTALLATIONS AND SPECIAL SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Preliminary, Definitive, Executive Planning, Supervision of the Works for Special Systems and Electric Installations

TASK ASSIGNED BY

Reconsult S.p.A. - www.reconsultspa.it

ELECTRIC INSTALLATIONS AND SPECIAL SYSTEMS AMOUNT

5.081.195,43 €

Luiss University - Rome



The project consisted in the preservative restoration intervention and technological adaptation of the electric installation and special systems of all the university premises:

- lecture halls
- reading room
- executive offices and academic offices
- frontoffice and Data Processing Center
- teachers' residences
- archives
- canteen
- service premises: kitchen, bathrooms, corridors, stairways, technical premises
- watchman room

for an overall surface of 17540 square metres divided into the following functional areas:

- Institute: 13047 square metres
- Heritz Villa: 1486 square metres
- Farmhouse and stable: 939 square metres
- Church: 1295 square metres
- Guardian house: 100 square metres
- Basket court: 673 square metres

Opengineering took care of the definitive planning for the following system:

- electric installation
- lighting system

- telephony and data networks
- terrestrial and satellite tv reception networks
- smoke detection
- sound-alarm system
- emergency lighting
- closed-circuit tv system
- anti-intrusion system

The electric installation consists of a preferential network, powered by the national network and by the motor generator, and of a power continuity system, powered by the national network, by the motor generator and by the UPS. Considered the importance of the intervention, a remarkable number of electric switch panels were installed which are directly powered by the general low tension electric switch panel and, partly, by the building electric panels. The number and location of the electric switch panels was planned in such a way as to easily distribute the secondary electric circuits, limiting as much as possible their length.

As far as the ordinary lighting system is concerned, it was planned in such a way as to guarantee a level of lighting that is appropriate to the premises function. The lamps that were used are fluorescent and metal ion ones of the "warm" light type (2700/3000°K).

The emergency lighting instead, was made with the same

devices used for the ordinary lighting, but provided with an autonomous emergency motor generator that can guarantee 1 hour autonomy and a recharge in 12 hours. The emergency system guarantees a level of lighting not lower than 5 lux, at 1 m from the floor along the exit ways. All the emergency devices are monitored by means of a centralized system: each device is provided with an addressable interface which enables the remote control of the efficiency condition of its lamp and battery.

The telephony and data transmission network has the function to connect the preferential elements and the concentrators and it was planned thinking about a number of services and information which can be exchanged among the various parties that use and manage the activities inside the buildings.

A terrestrial and satellite centralized reception TV system was planned for the entire Institute and a separated one for the building that accommodates the teachers' residences.

The fire detection system, that can constantly monitor all the buildings, combines the following functions in one system:

- automatic detection and signalling, as fast as possible, of a fire
- manual signalling (by means of a special button) of a fire detected by a man instead of the suitable detectors



- beginning of the rapid evacuation of people
- activation of the emergency and relief programmes
- activation of other possible systems of fire fighting and of the safety measures, such as, for instance, the closing of the fire stop doors and shutters.

The entire complex was provided with a centralized sound diffusion system to manage the emergencies, consisting of a control central unit and of a number of sound diffusers that, apart from their specific warning functions, can diffuse messages and announcements as well.

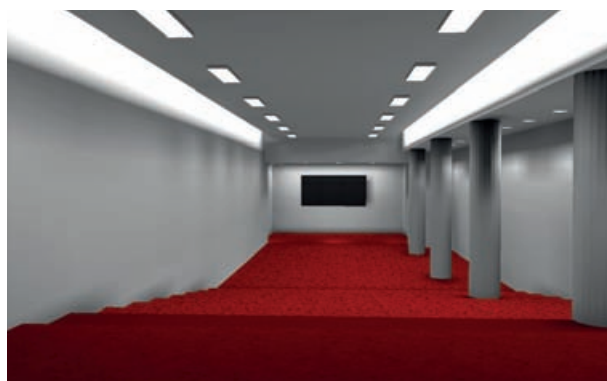
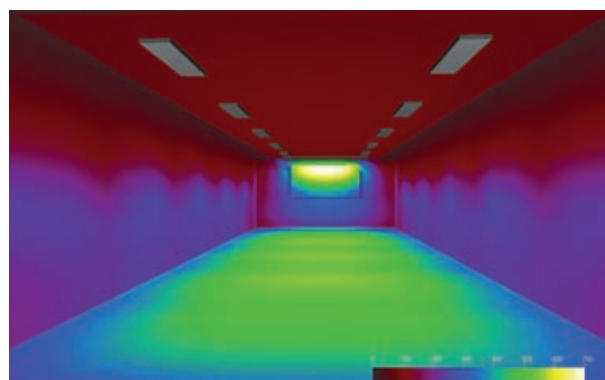
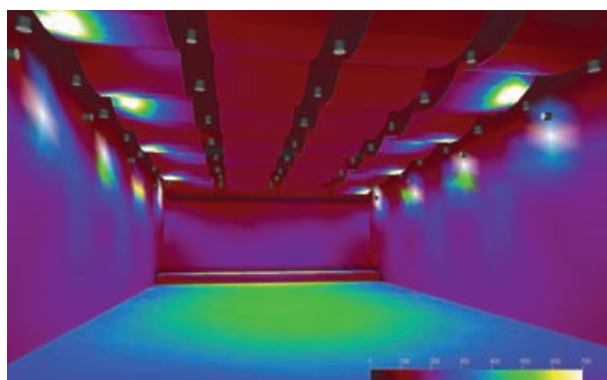
In each lecture hall of the Institute, the sound diffusion system consists of an amplifier, a radio microphone, a wire microphone and a number of sound diffusers. Nevertheless, thanks to the signal switches which are placed in each lecture hall, in the event of an emergency the diffusers of the lecture hall can be used by the sound-alarm unit to diffuse the emergency signals.

The building subject to the intervention are provided with an

anti-intrusion system and with a closed-circuit TV to control and forestall unauthorized accesses.

The system has the task of mainly supervising all those accesses that conduct from the outside to the inside and the accesses to private areas, such as academic offices and information rooms.





All emergency devices are supervised by means of a centralized system which executes the remote control of their condition. Each device is in fact provided

with an addressable interface that make the control of the efficiency condition of its lamp and battery possible.

TECHNICAL CHART

WORK

'Guido Carli' Free International University of the Social Studies - LUISS (Rome) - www.luiss.it

CUSTOMER

Lamaro Appalti S.p.A.
www.lamaroappalti.it

YEAR

2006

ARCHITECTURAL PROJECT

Studio Nira S.r.l.
www.studionira.it

STRUCTURES PROJECT

Studio Nira S.r.l.
www.studionira.it

SYSTEMS PROJECTS

Enetec S.r.l. - www.enetec.it

PROVIDED SERVICES

Definitive Planning for Special Systems and Electric Installations

TASK ASSIGNED BY

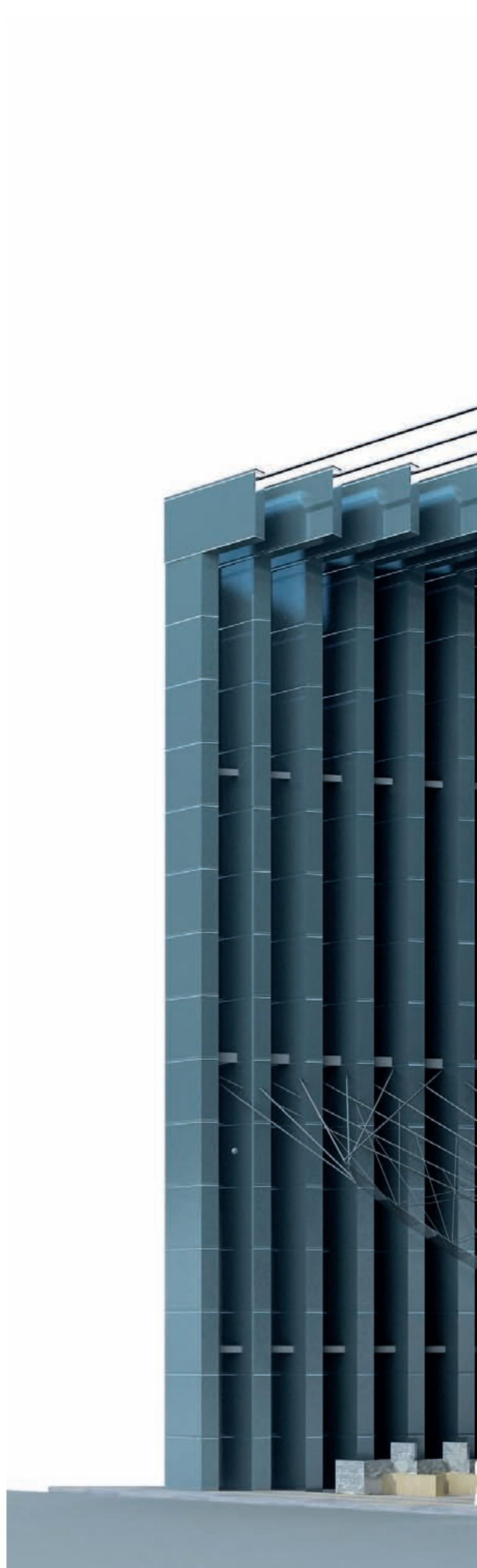
Enetec S.r.l. - www.enetec.it

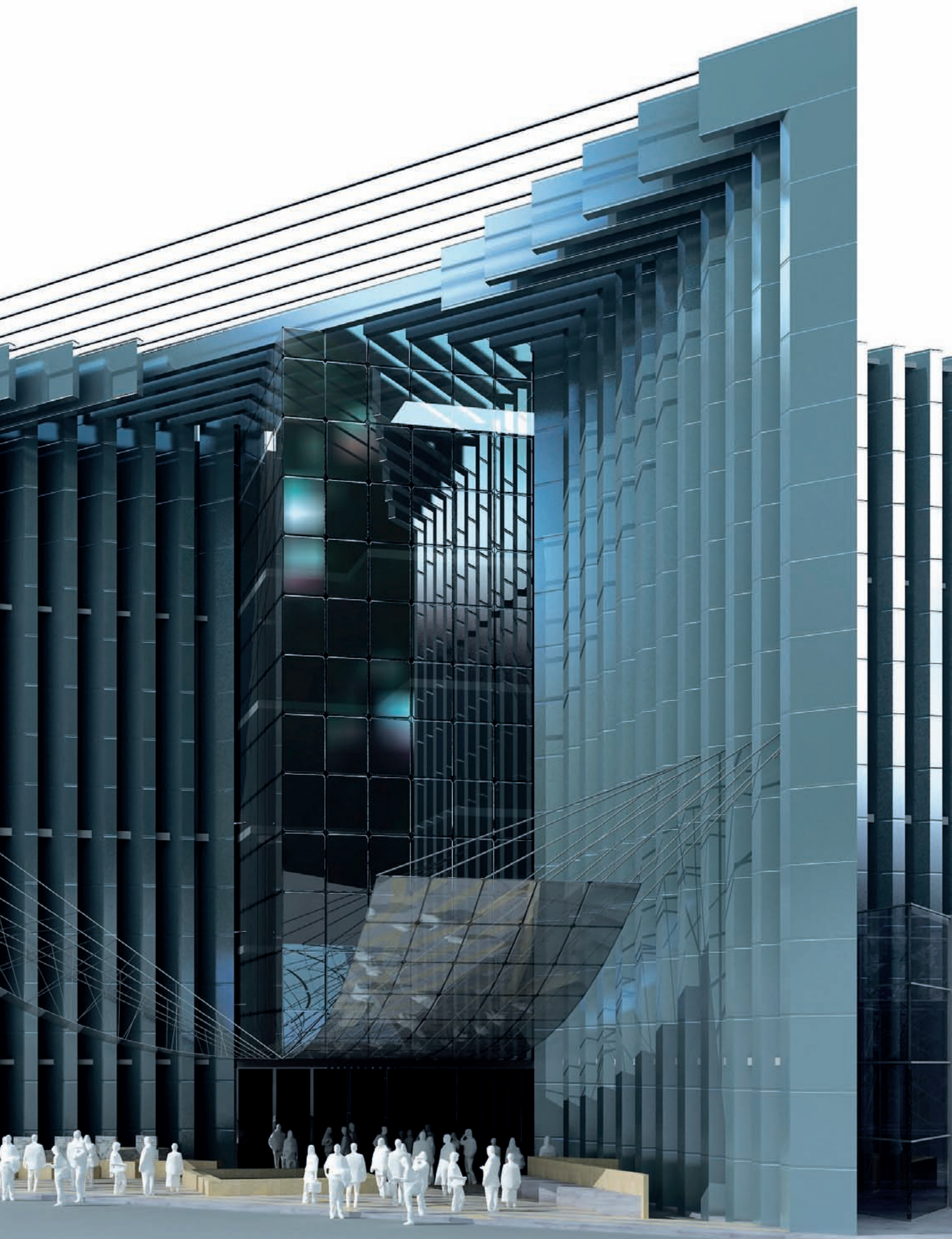
ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS AMOUNT

3.710.526,74 €

The City of Science and Technologies - Rome





The City of Science and Technologies - Rome

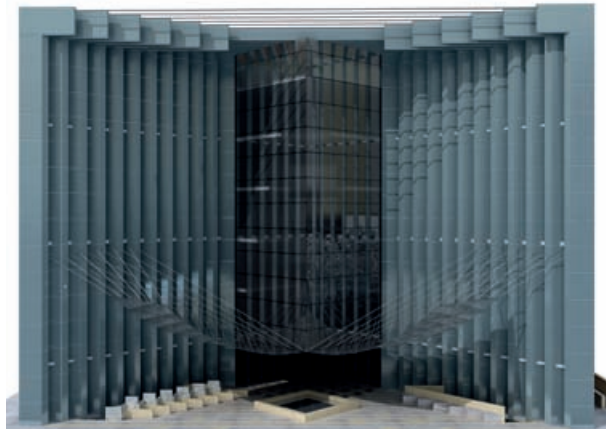


The City of Science and Technologies of Rome project plans the creation of a wide scientific communication system in the Flaminio area.

As far as the plant engineering is concerned, the Opengineering Company took care of the aspect attached to the following functional parts:

- primary distribution
- motive power
- electric switch panels
- ordinary and emergency lighting system
- external lighting system
- VoIP telephony and data transmission networks
- TV system and CCTV system
- fire detection systems
- sound diffusion system
- anti-intrusion system
- electric installations supervision and management system

The lighting system includes all the devices with the respective control devices, the laying and connection accessories, the secondary power supply lines derived from the secondary electric panels, and it is divided into ordinary, preferential and safety lighting. The ordinary lighting was designed to guarantee the lighting levels compliant to the regulations in force. Particular attention was focused on the use of new illuminating engineering technologies such as the LED sources. The system maximum flexibility was planned not only to illuminate in the best possible way the exposed objects, but also to protect the most vulnerable objects from the thermal and ultraviolet radiations. The system is accomplished thanks to



the use of devices which are provided with LED, discharge or fluorescent lamp. While using the above mentioned sources, particular attention was focused on energy conservation, trying not to compromise the aesthetic-perceptive performances. As far as the lamps are concerned, the fluorescent ones were chosen for the general lighting, for the conferences halls and for the offices. Whereas for the accent lighting inside the exhibition halls, LED lights with adjustable colour temperature were chosen, with the aim to guarantee the highest possible energy conservation according to the perceptive and aesthetic performance.

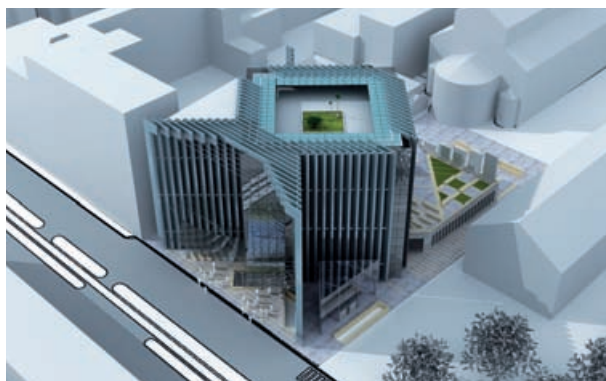
The various types of lighting were structured to be controlled by a dimmer system which is active on the various floors and conferences halls, consisting of various touch screens that can control the different devices on DALI channels. In that way it was possible to control the various sceneries according to real necessities.

The accomplishment of an integrated network for data transmission and VoIP telephony, for the sharing of local resources and the access to telephony systems was planned. The data transmission and telephony network has the function to connect the peripheral elements with the concentrators assuming a number of services and information that can be exchanged among the various parties which carry out various activities inside the building. The structured wiring system in 6th category (EIA/TIA standard) or higher (7th Category or optical fiber) was used in order to enable the connection of

each single connector and the installation of local network of the Ethernet type (10 Mbit/s), of the serial type, AS/400, FDDI, Fast Ethernet (100 Mbit/s), 10 Gbit etc. All the floor or area cabinets will be connected with the building distributor by means of multi-optical fibers backbones.

For the control of the museum vulnerable areas, such as the main entrances, the protected areas and the internal premises of the buildings, a CCTV system with fixed and portable video cameras was planned. That system is based on an digital system that is open and with modular components which can be extended, both of the hardware and software type. The system uses standardized communication protocols of the TCP/IP type that enable the interfacing in LAN and WAN areas, perfectly integrating with the higher level Building Management system. The video routers central units of the area will control the premises and the internal and external areas of the buildings. All system video signals will be submitted to specific recording video devices of the high definition digital type. The video routers central units, thanks to optical fibers connections, will be connected to a video router master central units, placed in the "centrale operativa" (business central unit), which is where the supervision central unit will be placed as well and it will enable the management, control and integrated vision of the video and data systems.

The fire detection system was designed planning a micro-processor central unit which controls all the field elements such as detectors, manual buttons, optical-sound signallers, holding magnets, fire stop doors and control modules. The



detectors and alarm buttons are installed in the lobbies, halls, corridors, central units and common areas. The detectors were placed in such a way as to protect the entire covered area of the complex. The central unit provides for the constant monitoring of the condition of all the connected devices with cyclic tests to determine the possible pre-alarm, alarm, trouble or normal condition. By means of a special interface, provided with a LCD display and functional keys, the operator can read the condition of the connected devices, modify the alarm, pre-alarm thresholds or other indicators. The fire detection system was planned in such a way as to be integrated with the Building Management System, that completely controls it.

The sound alarm system instead, integrates the alarm functions with the sound and informative diffusion. Obviously, the main target is diffusing the information in the event of an alarm and, to that purpose, all the building areas were provided with a sound diffuser.

An anti-intrusion system was planned as well, it can protect the perimeter of the structure. The system was accomplished

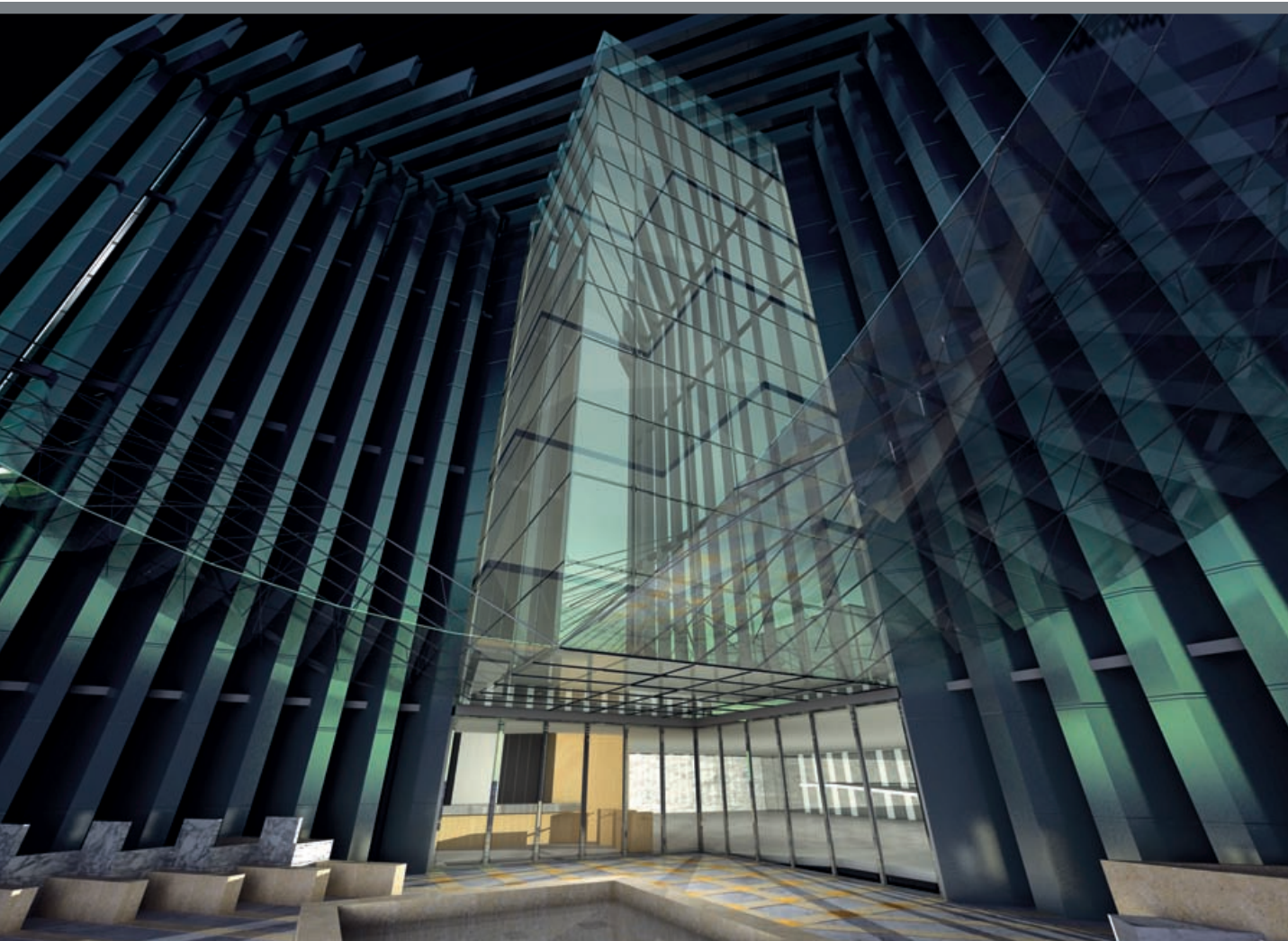
by means of double-technology volumetric detectors and magnetic contacts on the access doors.

And finally, an electric installation supervision advanced system was planned, it can collect a considerable amount of data in real time, manage their processing, interpretation and presentation. Such system guarantees the three following functions:

- The measures gathering
- The measures organization and transmission to facilitate their analysis by means of the various pertinent services of the company: production, maintenance, accounting, site management
- The control of the results which were obtained thanks to the solutions aiming at improving the electric system.

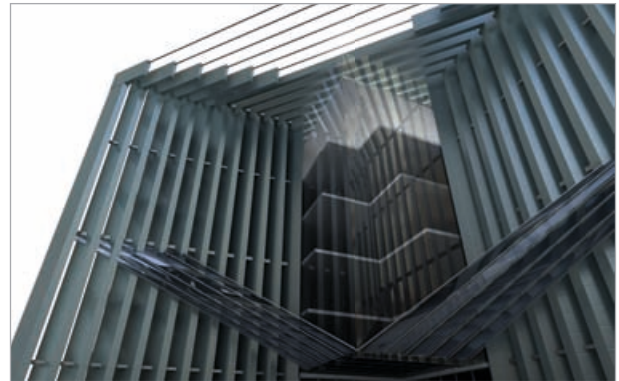
Through the supervision and control system it is possible to accomplish a number of measures and detections which are useful for the analysis and monitoring of the systems condition:

- current, voltage, power, power factor, active and reactive energy;



- fault current measures;
- number of interventions recording and analysis of the causes of the intervention;
- alarm signalling (lack of voltage, current overload, over temperature and short circuit);
- manouvre cycles and switches hours of functioning calculation.

The supervision and control system is an information measuring and processing instrument that makes the management of the electric installation possible, and it also makes the achievement of three strategic and fundamental targets possible, such as the reduction of the energy costs, the improvement of energy quality and the improving of reliability and service continuity.



For the control of the museum vulnerable areas, such as the main entrances, the protected areas and the internal premises of the buildings, a CCTV system with fixed and portable video cameras was planned. It is based on a digital system that is open and with modular components that can be extended, hardware and software type. The local video routers central units,

that control the premises and the internal and external areas of the buildings, are connected through an optical fiber, to a master video router located in the 'operational central unit', where also the supervision central unit that manages, controls and executes the integrated vision of the data and video system is located.

TECHNICAL CHART

WORK

The City of Science and Technologies - Rome

CUSTOMER

The Presidency of the Council of Ministers - Tourism Development and Competitiveness Department

VALUE OF THE WORK

32.742.400,00 €

YEAR

2007

ARCHITECTURAL PROJECT

Ecosfera S.p.A.
www.ecosfera.it

STRUCTURES PROJECT

DMS Engineering S.r.l.
www.dmsge.it

THERMAL FLUID SYSTEMS PROJECT

Ing. Emilio Chinappi

ELECTIC INSTALLATIONS

AND SPECIAL SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Definitive Planning for Special Systems and Electric Installations

TASK ASSIGNED BY

Eugenio Ciotola S.p.A. - www.eciotolaspa.it

ELECTIC INSTALLATIONS

AND SPECIAL SYSTEMS AMOUNT

2.022.953,13 €

Vatican Museums and Pio Clementino Museum - Rome



The Vatican Museums were established in the 16th century by Pope Julius II who collected the first group of sculptures placed in the so called "Cortile delle Statue", today Cortile Ottagono. The idea of arranging artistic collections in special buildings accessible to the public, namely the Museums and the Papal Galleries, was generated in the 18th century by Pope Clement XIV and Pope Pius VI. It is due to Clement XIV in fact, in 1771, the foundation of the Museum, later named Pio-Clementine Museum, whereas the subsequent enlargements are due to Pope Pius VI, among which the monumental entrance with the Atrio dei Quattro Cancelli and the

Scala Simonetti. Within today's Vatican Museums, the Pio-Clementine Museum today is the biggest museum complex, it accommodates in 12 halls the most important Greek and Roman masterpieces that are guarded in the Vatican State. The project of rebuilding and adapting the electric installations and special systems, originated from the need to extend to the evening hours the opening of some Vatican Museums halls and, particularly of the Pio-Clementine Museum. That determined the necessity of dealing with the ordinary and safety lighting subject for all the museum premises in a systematic and coordinated way, as well as the necessity of plan-



ning an automatic management system of the lighting and an absolute uninterruptible power supply system devoted to the electric installations of the emergency lighting.

The ordinary electric lighting of the museum premises was planned considering the preliminary definition of a number or artistic, architectural, technical and normative requirements, pointed out together with the Customer, in order to accurately take into consideration the particular context with the aim to guarantee high enjoyment, protection and security level of the masterpieces and the halls where they are placed, as well as the visitors and operators.

Opengineering project proposal was developed keeping in mind the following characteristics:

- providing an electric lighting for the museum premises which make the evening visits possible, even when natural light is completely absent;
- reducing as much as possible the visibility and size of the new lighting fixtures in order to respect and enhance the architectural and artistic characteristics of the halls;
- ensuring the optimum lighting to the different types of works of art placed in the halls;
- meeting the minimum lighting engineering requirements provided by the safety rules in force in Italy;
- finding devices and components which provide an optimum energy balance and reduce as much as possible and simplify the maintenance interventions;
- providing the minimum necessary lighting during the re-

current controls of the personnel in charge of the museum security;

- integrating the necessary security and control devices system (fire detection, anti-intrusion, CCTV).

The technical-lighting project, with the aim to meet the above mentioned requirements, aims at setting a number of minimum conditions that are to be respected while planning the system of the relevant halls, and aims at defining the technical and functional characteristics that the devices should have. Therefore, the lighting engineering proposed solution was different for each hall, according to the architectural, artistic and functional characteristics of each one of them.

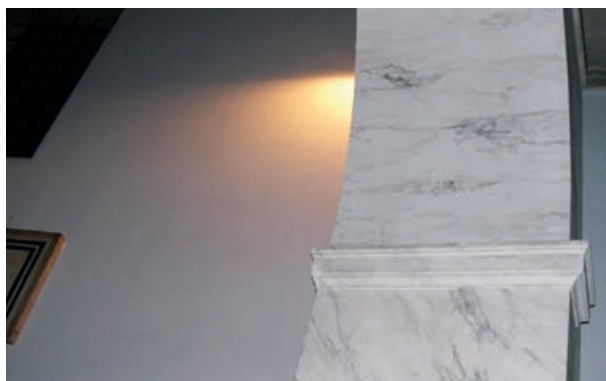
For all proposed solutions the following criteria are valid.

All sources which are used from the chosen fixtures have a high color rendering, with a CRI > 90; Particularly, those for the direct accent lighting will be halogen long life lamps (10.000 h) with a CRI near 100.

All the proposed fixtures will have high lumen/W emission sources and long life lamps, in order to curb energy consumption and therefore management and maintenance costs.

As far as safety lighting is concerned, the approved solution keeps into consideration the Administration choice to set under absolute continuity the entire system thus avoiding the double circuits but allowing the power regulation of the secondary circuits.

As far as the lighting management automatic system is concerned, the project provides a considerable energy con-

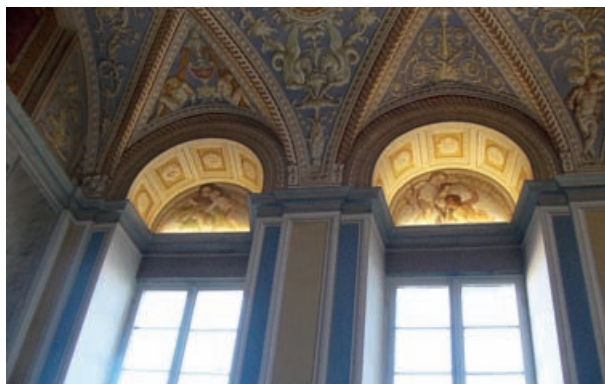


servation and the reduction of the maintenance costs. The system in fact, controls the lighting flow of the switched on lamps according to the natural light flow coming from the outside, it also regulates the lighting so that it is always possible to have the required value of brightness for the controlled areas (increasing or decreasing the light flow radiated from the lamps). The system, if necessary, can also control the use of the halls by means of 360° sensors, switching off the sensors lighting when the presence of personnel is not detected for a certain time, then switching it on immediately if the personnel is present. That centralized lights management system enables the management of lighting levels inside every single hall, providing a striking sequence of light scenarios to the visitors. The management and control system will consist of BUS addressable digital modules, that are controlled by a microprocessor control central unit that can be controlled in a centralized way through a touch screen, according to programmable scenarios.

In order to support the safety lighting system an absolute uninterruptible power supply system, in compliance with the regulation in force, was planned. The main difficulty of the museums electric installations, both light and motive power, is the power supply from the normal electric system that is distributed from three separated electric substation; doing so, the service continuity only depends on the availability of such electric system, because there is neither a power supply source from a motor generator (short-break), neither one from UPS (no-break).

In order to solve that difficulty and eliminate any dangerous situation caused by possible inefficiencies of the normal electric system, the project included a power supply system divided into normal power supply, and absolute uninterruptible power supply, to which a part of the current lighting system can be connected in such a way as to provide an emergency lighting system that have an autonomy of at least one hour, as provided by the security regulation in force.





The entire project of rebuilding and adaptation of the electric installations and special systems, that originated from the need to extend to the evening hours the opening of the Museums halls, was dealt with in a coordinated and systematic way, it also provided the necessary technical solutions for the ordinary and emergency lighting, guaranteeing its automatic management and its absolute

uninterruptible power supply. The lighting engineering solution for each exhibition hall was found taking into consideration its functional and architectural characteristics. The light centralized management system made the control of the lighting level inside every single hall possible, thus providing the visitors a striking sequence of light sceneries.

TECHNICAL CHART

WORK

Pio-Clementine Museum and Vatican Museums - Rome

CUSTOMER

Vatican City - Governorship - Technical Services General Administration

YEAR

2007

GENERAL COORDINATION OF THE PROJECT

Ing. Sergio Fusacchia
Ing. Fabrizio Marchi

TECHNICAL-LIGHTING PROJECT

Arch. Fabrizio Ventura

ELECTRIC INSTALLATIONS

AND SPECIAL SYSTEMS PROJECT

Opengineering S.r.l.

PROVIDED SERVICES

Preliminary, Definitive, Executive Planning, for Special Systems and Electric Installations

TASK ASSIGNED BY

Electra Impianti S.r.l.

Italia “Nuvola” Conference Centre - EUR, Rome



In a strategic area of the historic Eur area, one of the most important architectural works of the third millennium planned in the Italian capital city. The new Eur conference Centre, projected by the Architect Massimiliano Fuksas, is already considered one of the biggest among European and Mediterranean basin conference centres, thanks to the fact that it can accommodate events which significantly differ among them and it can host 9.500 people.

The project in its whole is developed in an underground part, where a 615 car parks garage was planned, the multipurpose auditorium halls respectively for 5.000 and 1.500 people, meeting rooms, the 'concorse' (the accesses from the Cristoforo Colombo boulevard and Shakespeare boulevard to the Centre), and the annexed services and in a ground level part which is the result of the interaction of various elements, among which the so called 'Teca' stands out, it contains the well-known 'Nuvola', and a narrow and long shaped building that will host a five-star hotel with 439 rooms. Such parts, separated among them but perfectly integrated, are developed on an overall surface of about 55 thousand square metres, for a total volume of about 327 cubic metres.

In particular, the 'Teca' is an approximately 30 m high big transparent and translucent parallelepiped, and inside it there is the so called 'Nuvola', an approximately 3500 square metre structure made of steel and Teflon, that is pending on a surface of 10.000 square metres, and hosts an approximately

1800 square metre auditorium that can host 1.850 spectators and some meeting halls.

The conference centre will also have a 15.000 square metre multipurpose overall area, that will host three more halls, foyers, cafés and restaurants.

In the outside part there will be two squares: one of them will be possible to be travelled over from Europa boulevard to Shakespeare boulevard, the other one was designed like a flexible space and for welcoming the members of the conferences.

Next to the real conference structure there will be the building that will host the 439 rooms of the luxury hotel. The building will be around 55 metres high, with 17 aboveground floors, it will be provided with 6 panoramic view elevators placed in a space that will separate the two main bodies of the building where the rest of the centre will be built.

As far as the works management is concerned, the Opengineering company put at the ATI Dress&Sommer and Ecosfera disposal, that was assigned the Construction Management of the work, some of its professionals who, within the Supervision of works staff, hold the posts of operational managers and building yard inspectors for all systems planned in the project.





An overall view of the building ground of the new Conference Centre located in the area among Cristoforo Colombo boulevard, Asia boulevard, Shakespeare boulevard and Europa boulevard.

Building details of the underground part where a 615 car parks garage, the multipurpose auditorium halls, respectively for 5000 and 1500 people, the meeting halls, the concourse and the annexed services are placed.

TECHNICAL CHART

WORK

Italian Conference Centre - Eur - Rome

CUSTOMER

EUR S.p.A.
www.romaeur.it

VALUE OF THE WORK

216.000.000 €

YEAR

2008-2009

ARCHITECTURAL PROJECT

Arch. Massimiliano Fuksas - Fuksas Associati S.r.l. - www.fuksas.it

SYSTEMS AND FIRE FIGHTING PROJECT

AI Engineering S.r.l.
www.aigroup.it

SAFETY COORDINATOR

Studio Ing. Gilberto Sarti
www.studiosarti.it

STRUCTURES PROJECT

Studio Ing. Massimo Majowiecki
www.majowiecki.com
Studio Ing. Gilberto Sarti
www.studiosarti.it

PROVIDED SERVICES

Executive and Building Ground Supervisors for Special and Thermal Fluid Systems and Electric Installations

TASK ASSIGNED BY

ATI Dress&Sommer a.g.
www.dreso.com
Ecosfera S.p.A.
www.ecosfera.it



Metro Line C - Route T4 - Rome



The Third Metro of Rome called Line C, is the metro line that directly connects the city areas along the North-Western and South-Eastern axis. The metro line passes underneath the Tiber river and the old town centre of Rome, it reaches Pantano, an outlying administrative division of the municipality of Montecompatri, passing along the axis of the Casilina street beyond the Rome ring road. The planned route makes the doubling of the extension of the currently existing urban metro possible.

The new Line C, thanks to its high technology, is already a model for the future metro. It is in fact the first big Italian public transport infrastructure, that is entirely guided and remotely controlled by a full automation system.

Once it is finished, the most modern metro of our country will give Rome a railway public transport network similar to those of many European cities. It will be able to carry 600.000 people a day, being capable of carrying 60.000 passengers in the rush hours.

The urban planned route is divided into stretches of route (Tratta), according to functional and project needs.

The fundamental part of the planned route called 'Tratta T4' is the underground route that, from the Malatesta station, in the Malatesta square, goes to the San Giovanni station, nearby

the Basilica. The Route T4 is developed along a 3 km run with 4 stations:

- San Giovanni, exchange junction with line A
- Lodi
- Pigneto
- Malatesta

and it has a 3km average length, a 0,01km minimum depth and a 0,03km maximum depth.

The Opengineering company, for the above mentioned works, took care of the Executive Planning of the stations and galleries electric installations and special systems, starting from the LV energy supply. The areas where the interventions took place are the following ones:

- main switch panels
- secondary switch panels and particular power consumption unit switch panels
- primary and secondary distribution
- motive power output
- secondary ground system
- safety and ordinary lighting system

All the power consumption units of the stations and galleries are powered, in compliance with the ministerial decree 11.1.88, by two automatically convertible alternative electric

energy sources. Moreover, in each station, the energy consumption units that need an absolute continuity power supply are powered by UPS. The gallery systems are partially divided among the systems of the interconnected stations; with the exception of the ventilation systems of the wells along half of the route, that are powered by 1 transformer vault, that can be powered by two automatically convertible alternative electric energy sources. The electric installations power two fundamental types of energy consumption units:

- the "normal" energy consumption units for which power supply can possibly be provided by the two MV/LV vaults, alternatively;
- The "NO-BREAK" energy consumption units for which power supply can possibly be provided by the two MV/LV vaults, as above, but by means of the static no-break power. Some "NO-BREAK" energy consumption units (about 20% of the lighting devices) will be provided with battery power supplier for the accomplishing of the safety lighting.

The galleries lighting is accomplished by means of two systems, separated from an electric point of view, called "no-break system" and "reserve system". The no-break system is usually on, whereas the reserve system is usually off. The reserve system can be activated, through the remote control, by the supervision system simultaneously with the no-break system, for maintenance interventions and in the event of the evacuation of a train in the gallery.

The safety lighting system (included the safety warning signs) is accomplished by providing about 20% of the devices of the power supplier emergency light (inverter with 1 hour autonomy batteries). The lighting devices belonging to the systems "safety light" and "no-break", are placed in such a way as to favour the areas where the devices that are subject to manual manouevres during an emergency are located. The safety lighting system is provided with a control central unit that can execute recurrent functional and autonomy tests.

The anti-intrusion system ensures the control of the access in the technical premises and in the gallery, through the ventilation shafts. The system is controlled by a central unit, that is autonomous from a functional point of view and that is self-powered and interfaced with the general Supervision and Control System.

The fire detection system of the stations has the task to signal possible fires in their initial phase, by means of interactive fire and heat detectors: the signals sent to the control central unit enable the operator to react with the appropriate counter-measures and to activate the planned intervention provisions, in compliance with the ministerial decree 11/1/1988, "Norme di prevenzione incendi nelle metropolitane" (Fire prevention rules in the underground railways). In the galleries instead, the fire detection is executed by means of a heat linear detection system that can give information about the size, location and direction of the fire.



TECHNICAL CHART

WORK

METRO Line C - Route T4 - Rome

CUSTOMER

Metro C S.p.A.
www.metrocspa.it

YEAR

2006

PROVIDED SERVICES

Executive Planning for Special Systems and Electric Installations

TASK ASSIGNED BY

3D System srl

SYSTEMS AMOUNT

7.657.229,78 €



Metro Line C - Route T6 - Rome



Building the Line C required the digging of 4.300.000 cubic metres of earth and more than 29 kilometres of galleries. Along the main planned route there are 30 stations, 21 of which are underground and 9 on the ground level, designed as wide and bright areas where functionality and comfort are perfectly combined. Those who designed the stations made use of the experience gathered by those who designed the same areas as meeting points, with shops, cultural, recreational activities, exhibition areas, automatic ticket offices and services.

In the peripheral areas, where the stations were designed to be built on the ground level, the accomplished works were a chance to re-design the areas nearby the metro.

The Route T6, called Alessandrino-Torrenova is an 2,8 km long underground route, with maximum longitudinal slopes of

the 35‰ and planimetric radii of curvature usually not lower than 270m has the 3 following stations:

- Torrespaccata
- Giglioli
- Giardinetti

The Definitive Planning that was accomplished for the electric installations and special systems of the 3 stations, of the galleries and ventilation shafts relevant to the gallery routes between two neighbouring stations, concerned in particular the following points:

- ordinary lighting system
- emergency lighting system
- anti-intrusion system
- supervision system

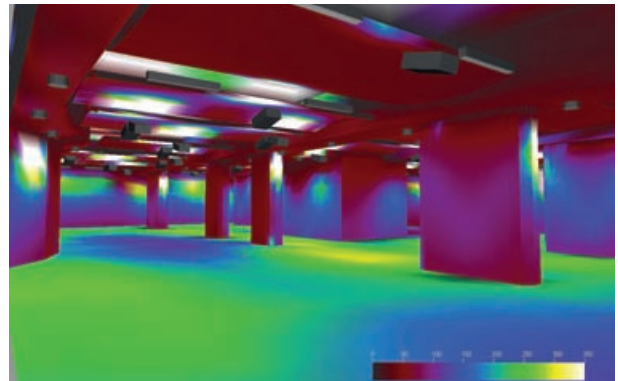


The lighting system was planned for the technical premises, gallery and areas that are open to the public.

The anti-intrusion system planned for the 3 stations and galleries of the route T6, consists of an addressing central unit, provided with a control master terminal, magnetic contacts and volumetric detectors placed on the field and interconnected through a parallel bus distribution system. The anti-intrusion system ensures the control of the access to the various technical premises and to the gallery, through the ventilation shafts. The system consists of the following parts: a central unit that constantly monitors and supervises the condition of the peripheral sensors, the information processing and record-

ing, the alarms management, the connection with the CCTV for the coordination of the video cameras, interfacing with the Supervision and Control general system, management of a local operator interface; the elements that consist of concentrator modules, sensors and electrical locks.

The anti-intrusion system is controlled by a central unit that is self powered and autonomous from a functional point of view, and it is interfaced with the Supervision and Control general system, which consists of autonomous under-systems, each one of which is subordinated to a specific plant. Each under-system can obtain and process the data coming from the field instruments, interfacing with the other under-systems.



TECHNICAL CHART

WORK

METRO Line C - Route T6 - Rome

CUSTOMER

Metro C S.p.A.
www.metrocspa.it

YEAR

2006

PROVIDED SERVICES

Executive Planning for Special
Systems and Electric Installations

TASK ASSIGNED BY

Sistra2000 snc
www.sistra2000.it

SYSTEMS AMOUNT

6.683.439,31 €



Metro Line C - Route T7 - Rome



The route T7 is developed along the Torrenova-Pantano axis for 8,2 km, where the following 10 stations are located:

- Torrenova station
- Torre Angela station
- Torre Gaia station
- Grotte Celoni station
- Fontana Candida station
- Borghesiana station
- Bolognetta station
- Finocchio station
- Graniti station
- Pantano station

The executive planning for the following electric installations and special systems was carried out:

- electric installations
- ordinary and emergency lighting system
- special systems: fire detection and anti-intrusion
- supervision system

The fire detection system is structured as follows:

- station fire detection system
- switching station fire detection system
- gallery fire detection system

The fire detection system of the station consists of the following components:

- fire detection central unit
- interactive smoke detectors

- interactive heat detectors
- interactive alarm buttons
- interactive access modules
- air pipes sampling unit
- optical signallers

The fire detection in the gallery is accomplished through a heat linear detection system that can give information about the size, location and direction of the fire.

The special system for the anti-intrusion aims at constantly controlling the access to the various technical premises and in the gallery and the 'open' or 'closed' condition of the station and gallery doors and locks, both for security and for the good functioning of the other station and gallery technological systems.

According to the supervision system there will be three functional levels:

- Central Level: to which belong the centralized, control and maintenance functions of the station and gallery peripheral systems.
- Station Level: to which belong the control and maintenance functions of the station and gallery. In the event of faults of the Central level, the Station level will be able to completely manage the peripheral systems
- Field Level: to which belong the single under-systems of the ancillary technological systems of the station and gallery.

The part of the supervision system that is devoted to the anti-intrusion system, has the function to signal all alarm condi-

tions to the station supervision and control system and to the control central hall, that are related to the control of the access to the various technical premises of the station and gallery. The management of the anti-intrusion surveillance system is assigned to a microprocessor intelligent control central unit that can ensure a high level of reliability of the various station, shaft and gallery premises.

The central unit constantly monitors the peripheral detectors condition and it processes all the condition variations, it can also know the location of the intrusion, recognize the possible intrusion and transmit data to the central control system for the coordination of the interventions by the station officer and the operator who works in the control central unit.

The ordinary lighting system was designed increasing the

lighting engineering values pointed out by the UNI 8097 rules, in order to obtain better results. As concerns the working premises, the new UNI EN 12464-1 regulation, in force since 01.07.2003, was taken into consideration. The illumination values that were obtained in emergency conditions approximately accounts for 10% of the value that was obtained in normal conditions. All lighting devices were placed in such a way as to be easily accessible. their vertical radiation falls within the first walking floor below, right before the lighting devices used for the stairways and escalators lighting. The emergency lighting, that functions whenever the ordinary lighting goes, is ensured by static no-break power that supplies power to 50% of the ceiling light fixtures used for the ordinary lighting.



TECHNICAL CHART

WORK

METRO Line C - Route T7 - Rome

CUSTOMER

Metro C S.p.A.
www.metrocspa.it

YEAR

2006

PROVIDED SERVICES

Executive Planning for Special
Systems and Electric Installations

TASK ASSIGNED BY

Tecnosistem S.r.l.
www.tecnosistemspa.com

SYSTEMS AMOUNT

5.264.654,34 €

Drawing and Planning Application Softwares

Plumbings

HvacCad Pro – MC4 (IT): is the complete instrument for the hydraulic and thermotechnical project design, with graphic input AutoCAD compatible.
www.mc4software.com

Ventilation Systems

Duct Pro – MC4 (IT): is the instrument for air duct system design and terminals design, with automatic functions for the insertion of special components and graphic input AutoCAD compatible
www.mc4software.com

Fire Fighting Systems

FireCad Pro – MC4 (IT): is the professional software, with graphic input AutoCAD compatible, for the fire protection system, for the calculation of the fire loads and the verification of the stability (ST), seal (S), thermal insulation (TI) structure.
www.mc4software.com

Thermo-refrigerating plants (Piping)

PipeCad Pro – MC4 (IT): is the software for the design and drawing of the thermo-refrigerating plants and piping systems, that allows the automatic insertion of special 3d components. It is provided with a graphical input AutoCAD compatible
www.mc4software.com

MV-BV Electric systems

- Progetto Integra – EXEL (IT): is the software application for the electric design, the verification and coordination of the protection devices and middle voltage electric wires in compliance with the regulations in force.
www.exel.it
- Ampere Professional – ELECTROGRAPHICS (IT): is the software used for calculating the BV and MV electric systems in compliance with the rules CEI (The Italian Electrotechnical Committee) 64-8, 11-17, 11-25 e 17-1.
www.electrographics.it

Electric Installations and Electric Switch Panels

Cadelet Professional – ELECTROGRAPHICS (IT): is the software application fused for the electric design and schematic drawing in AutoCAD.
www.electrographics.it

Illumination Engineering Planning

Dialux – DIAL (D): is the illumination engineering planning software provided with constantly updated design data and is open to lighting devices of any manufacturer.
www.dialux.com

Impianti Protezione Scariche Atmosferiche

- Zeus – TNE (IT): is the software for the lightning risk assessment in all its aspects and that suggests the necessary protections, in compliance with the EN 62305 (CEI 81-10) rules.
www.tne.it
- SPD – TNE (IT): is the instruments for the evaluation of the necessity to install atmospheric overvoltage protection devices in a building.
www.tne.it

Photovoltaic Systems

Solergo – ELECTROGRAPHICS (IT): is the application software for the complete photovoltaic system design that are grid connected, in compliance with the ministerial decree 19.02.2007 and the A.E.E.G. (Authority for Electricity and Gas) resolutions.
www.electrographics.it

Closed Circuit TV Systems

VideoCad – CCTV CAD SW (RU): is the multifunctional tool for video surveillance system design, modeling and measuring parameters of video image and video equipment.
http://cctvcad.com

Building Energy Analysis and Solar Thermal System Design

- L10 Impianti Pro – MC4 (IT): is the application software compliant with the UNI/TS 11300:2008 rule, for the energy analysis and the solar thermal system design. With graphical input AutoCAD compatible.
www.mc4software.com
- Cartem PRO – MC4 (IT): is the module used for the calculation of summer thermal loads in a dynamic condition according to the transfer function method (ASHRAE).
www.mc4software.com

Building Sound Performance Assessment

Noise CAD Pro – MC4 (IT): is the software application dedicated to the professional analysis of the building sound requirements, it allows the application of efficient solutions as far as the building sound resistance is concerned. It uses graphical input AutoCAD compatible.
www.mc4software.com

Metrical reckonings and Price Analysis

STR VISION – STR (IT): is the tool that allows the metrical reckoning, analysis and accounting management. The functional efficiency guarantees the compliance with all normative requirements.
www.strvision.com





Educational

The Opengineering company is committed in the Educational field, in fact it started an integrated education and vocational training courses plan dedicated to young people who hold a technician diploma. The plan has the twofold aim to guarantee both the professional improvement and the increasing of the intellectual know-how inside the company.

The cooperation started with the "Istituto Tecnico Industriale Faraday" (Faraday Technical-Industrial School) in the Rome Lido.



Sponsorship

In recent years the Opengineering company has been committing itself in the youth sport sector and in particular in the football sector, as the official sponsor of the amateur level sport associations.

Its main target is supporting and rewarding the amateur level clubs that belong to the FIGC (Italian Football Federation) that focus maximum attention on the youth football, aiming at increasing the skills and talent of its boys, thus fostering their willing to improve.



Graphical project, layout and pagination
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