
WELCOME
Master
MIPET
industrial plant
engineering and
technologies
15

The Master in Industrial Plant Engineering and Technologies of the Genoa University

Master MIPET industrial plant engineering and technologies

MIPET

XV Edition 2024

Scuola Politecnica
Università degli Studi di Genova

DIME

CONFINDUSTRIA GENOVA

Ordine Ingegneri Genova

ANIMP

Simulation Team
www.simulationteam.com



Mastering Industrial Plant Engineering and Technologies is an initiative promoted by a joint Team of Academic Institutions, Industries and Associations. MIPET includes an International Master focused on these Issues. The MIPET Excellence is based on the strong cooperation among Academic and Technical Experts coming from Prestigious Universities and Leading Companies operating in this area with special attention to Energy, Iron & Steel, EPC, Large Industrial Plants and Process Industries, Oil & Gas

ABB
DANIELI CENTRO COMBUSTION
JG Lab, Keqiao
PAUL WURTH
FAGIOLI
tenova
DUPONT
WOOD GROUP
STARA GLASS
Duferco Engineering
PRISMA Impianti
blackship
BOMBARDIER
projenia
CSM Centro Sviluppo Materiali
DAPPOLONIA
UAB
FISIA ITALIMPIANTI

Prof. A.G.Bruzzone
MIPET Director

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Academia, Institutions & Industries

MIPET ORGANIZERS & SUPPORTING INSTITUTIONS

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Università degli Studi di Genova

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SUPPORTING COMPANIES

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CSM Centro Sviluppo Materiali

DAPPOLONIA

SpecTec

PARTNER UNIVERSITIES & INSTITUTIONS

PAUL WURTH

UAB

WHAT IS MIPET

MIPET is the ***International Master in Industrial Plant Engineering of Genoa University*** (il ***Master Internazionale in Impiantistica e Tecnologie, Scuola Politecnica, Ingegneria, Università di Genova***).

MIPET is the *1st* and *most consolidated* International Master Program of Genoa University, **fully sponsored privately by Major Multinational Companies**, investing on young Engineers and looking for talents. **12 Successful Editions in 12 years** confirm the strong Industrial Interest in **MIPET**

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4 MONTHS TO WORK

MIPET XV Edition starts end of **June 2024** and puts you at **Work in only 4 months**. After Labs & Lectures, you will conduct your **Internship in a Leading Industry** for 3 additional months, just to present your **Project Work** and being ready to evaluate final Job Proposals by Companies. MIPET Industries participate in Selection Process, they invest time & money in **MIPET**, so it's not surprising that our **Placement Rate overpasses largely 80%**.

* *MIPET guarantees possibility to participate to Engineers graduating in April, Academic Year last session First Week is focused on English Lectures and there is a Summer Break in August*

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LEADING ENGINEERING … AND MORE!

MIPET Program is developed by Industrial Top Experts & Academic Scientists sharing 50% teaching on Practice & Theory of **Technical Advances of Industrial Plants and Technologies**. In addition, **Soft Skills Courses** (e.g. Project Management, People Management, HR Orientation*, Spanish for Latin American Markets) and **Seminars**, by Managers, Engineers and Scientists of 5 Continents, prepare you to **Work all around the Globe**.

* HR Human Resources

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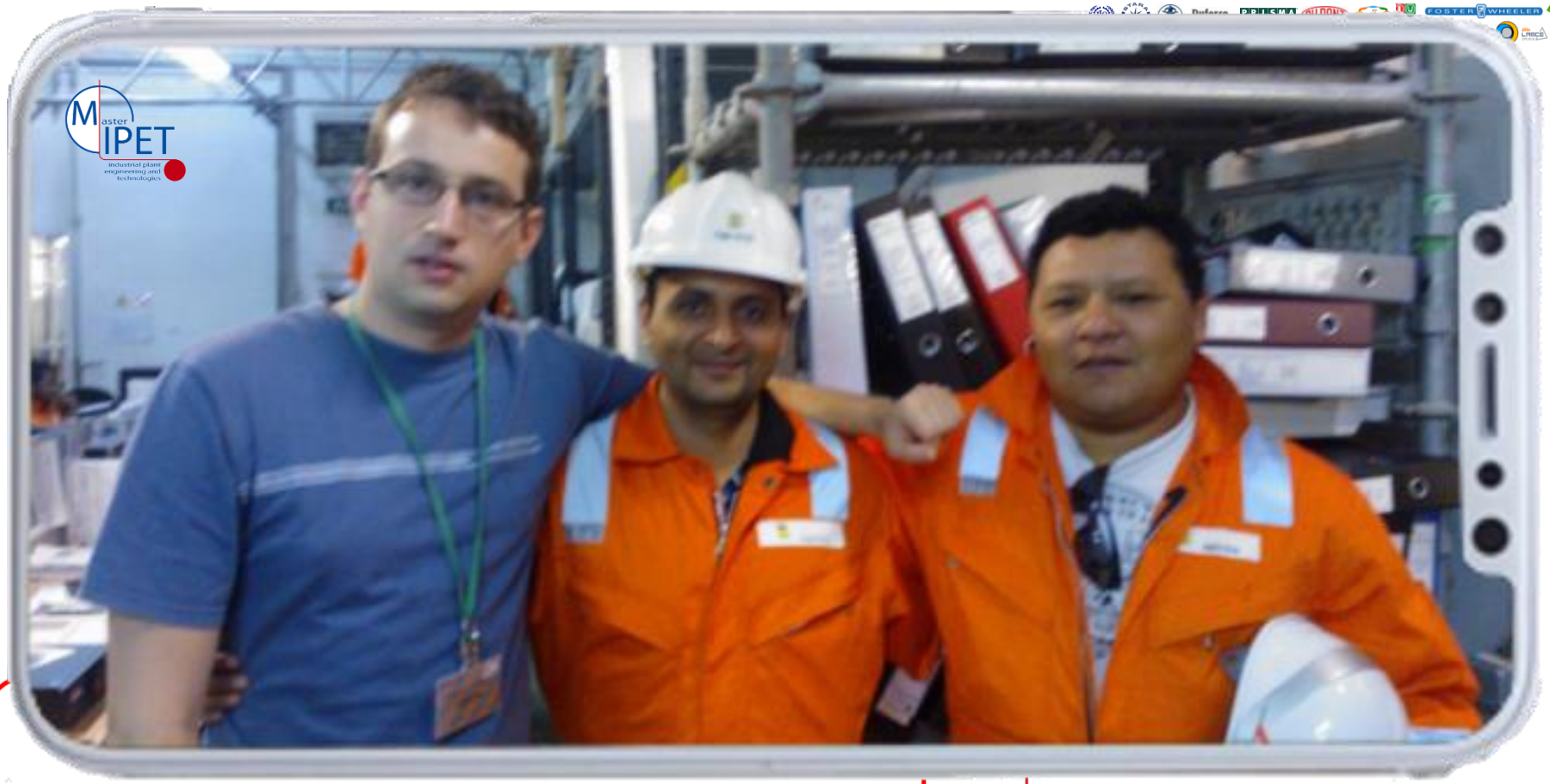
GOOD OPPORTUNITIES FOR JOB & YOUR CAREER

MIPET Outstanding Candidates get free registration, while large majority (usually 90%) receives **Grants** and have to pay only 1’900 Euro; by the way, MIPET Sponsors are expected to refund even this amount to students that they hire at the end.

The MIPET Internships are usually paid by Industries.

This year, the Companies are offering **Great Job Opportunities** to **Italian Engineers** attending MIPET and willing to work, based in their Genoa Offices or in Italy.

Join MIPET



Questi Volantini sono una delle poche cose in Italiano nel MIPET

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www.itim.unige.it/mipet/join

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INDUSTRIAL PLANT ENGINEERING 4.0 & OVER

MIPET addresses the New Enabling Technologies to support the development of New Solutions, Services and Products for ***Industrial Plant Engineering***, relying in **Industry 4.0** Paradigm and using new generation **IIoT**, **M&S**, **VR**, **AR** & **AI**.

These aspects evolved quickly along recent crisis to learn how to support ***Design***, ***Installation***, ***Commissioning*** & ***Operations*** by real **Digital Twins**, **Remotely** and **Effectively** Industrial Plants

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MIPET ENGINEERS TO BRING INNOVATION AT WORK

To be aware and to understand how to get benefits of New Enabling solutions requires know how as well as the ability adopt a new ***Mindset***

So, MIPET Engineers have opportunity to look at ***Industrial Plants*** as ***Cyberphysical Systems***,

Extended Reality (XR) And Digigal Twins drives also inexperienced operators to quickly and properly act over complex systems, as well as to solve problems

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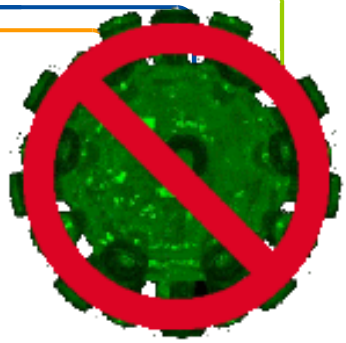
FROM TRAGEDY TO NEW OPPORTUNITIES`



T nd to get abling know ability

XR Extended Reality)
AI Artificial Intelligence

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MIPET: LEARNING BY WORKING WITH EXPERTS

You will work in **International Teams**, talking English all the time, while our Technical English Lectures will further improve you on it. The **4 Months** of **Full Immersion in Labs Activities, Computer Simulations, RPGs*, Plant Visits, Exercises & Lectures**, will make you ready to start a **Real Project Work in a Major Company** in the Fall, usually paid by Hosting Company.

* *RPG Role Play Game*

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DESCRIPTION & SCOPE

MIPET is an One-Year Degree Program focused on preparing new generations of young specialist dedicated to Process & plant engineering, projects and activities in Industrial Plants, EPC & Constructions. MIPET is directed by the DIME, UNIGE & Polytechnic School in close cooperation with Industrial Partners which represent best reputed Global Players in Engineering and Construction Market for Iron & Steel, Energy and Automation. MIPET main goal is to meet the requirements of such Industrial Partners in terms of Professional Skills and Technological Competencies for Young Talented Engineers.

MIPET exploits the synergy among Genoa University Engineering Faculty and top level Companies and pursues the Innovation & Excellence in Processes and Products through a Continuous Enhancement of their Competitive Assets: Human Capital, Technologies, Know How, Models and Skills.

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MIPET 11th Edition Class

The International Master in Industrial Plant Engineering of Genoa University
Master Internazionale in Impiantistica e Tecnologie, Scuola Politecnica, Ingegneria, Universita' di Genova

MIPET is the 1st and oldest International Master Program of Genoa University, fully sponsored privately by Major Multinat and looking for talents.

MIPET 11th Edition started in Spring 2020 regularly despite covid-19 crisis, thanks to web education. The Class is follo

Id	Ranking	Picture	Name	Background	Country	Email
1	1		Mariano Longo	Chemical Engineering	Italy	mariano.longo95@outlook.com
2	2		Nicolo' Paolo			
3	3		Paolo Zappala'			

MIPET 9th Engineers

Eng. Beatrice ZACCARO
Eng. Sneha ARKALA
Eng. Alberto VICENTINI
Eng. Judeson MALLAVALLI
1994, India
Mechanical Engineering
Eng. Yogesh Reddy KARKALA
1993, India
Electronics and Communication Engineering

Eng. CHENJERAI CHABATA
16/03/1987, Zimbabwe
Mechanical Engineer

Eng. DANILO GODINO
08/04/1988, Italy
Chemical Engineer

Eng. MATTEO FICHERA
11/12/1989, Italy
Environmental and Energy Engineer

Eng. KUMAR KANDUNURI PRAVEEN
06/09/1988, India

Eng. ALIREZA KARIMI QOMBOVANI
26/05/1980, Iran

Eng. FRANCESCA MUSSO
23/12/1987, Italy

Eng. KAMEL RHILI
20/05/1982, Tunisia

MIPET VIII Edition: Selected Candidates

Belén PLAZA FERNÁNDEZ-RENAU
Spain
Agricultural Eng.
Spanish, English, Italian

Giuseppe GILIBERTO
Italy
Environmental Eng.
Italian, English, Spanish

Suseender NEELAKANDAN
India
Mechanical Eng.
English, Tamil

Mario TROTTA
Italy
Nanotechnology Eng.
Italian, English

Jude UDECHUKWU
Nigeria
Computer Science Eng.
English

Nitish AKUPATHNI
India
Mechanical Eng.

Karthik Reddy PEBBETI
India
Mechanical Eng.

Sivaramaprasad RAMISETTY
India
Mechanical Eng.

Abdul Hasseb MOHAMMED
India
Mechanical Eng.

Karthik PURUMALLA
India
Civil Eng.

Eng. Vishal MANIVANNAN
1994, India
Mechanical Engineering

Eng. Bharath Kumara GADUPURI
1993, India
Electronics and Communication

1	410	Andrea	Biliotti	Active	Civil Engineer
2	417	Andrea	Castelli	Active	Power System Engineer
3	414	Matteo	Coduri	Active	Mechanical Engineering
4	416	Enza	Compagnone	Active	Chemical Engineering
5	411	Danile	D'Amico	Active	Material Engineering
6	420	Guido	Libanati	Active	Civil Engineer
7	404	Aldo	Mongelli	Active	Mechanical Engineering

ant Engineering and Technologies

Name	Status	Background	Picture
	Active	Naval Engineering	
	Active	Mechanics & Automation Engineering	
des Veira	Active	Mechanical Engineering	
	Active	Chemistry	
son Moises	Active	Physics	

Nazi Bahrayni
Emma Brignole
Francesca Colla
Enrico Coltri
Giovanni Cutolo
Hany Gaber
Davide Pergola
Elisa Porcheddu
Tommaso Robbiola
Alessio Tarantini

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INTELLECTUAL CAPITAL FOR FUTURE OF ENGINEERING

Jack Welch *(GE CEO 1981-2001* from $14 billions market value to over $410 billions): Globalization has changed us into a company that searches the world, not just to sell or to source, but to find Intellectual Capital - the World's Best Talents and Greatest Ideas








Scientists investigate that which already is; Engineers create that which has never been
Albert Einstein *(Physics Nobel Price 1921, Princeton University)*

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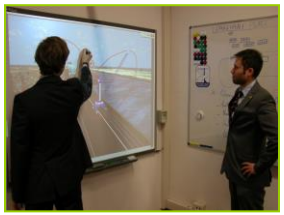
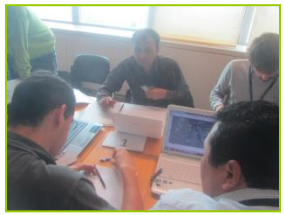
MIPET OUTCOME

This Master is devoted to create System and Process Engineers, Technical Coordinators operating effectively in Project Teams within Global Engineering and Constructions.

MIPET provides a deeper insight in Industrial Plants and enables the students to get a complete overview of a Project with all its technical aspects along each phase: Proposal, Basic & Detailed Engineering, Procurement, Manufacturing, Erection, Commissioning and Service. MIPET Graduates acquire capabilities in all the critical areas (Mechanical, Processes, Components & Materials, Electrical, Instrumentation & Automation, Safety Engineering, Cost Estimates, Project Management, Risk Analysis, Quality Assurance) combined with a specific training in specific industrial sectors (e.g. Power, Renewable Energy, Hot Metals, Sustainability) as well as with valuable Internship Experiences in Companies.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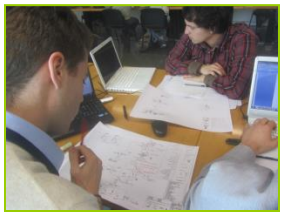
WHO SHOULD ATTEND

- Young Engineers with strong potential and technical background
- International Excellent Students of Engineering Departments from all around the world
- Young Engineers with experience in Plant Engineering from world-wide
- Engineers already employed in Engineering and Construction Companies who are interested in attending specific Operative Modules of the MIPET Master Program such as Project Management, Constructions, Standards and Regulations, Safety, Security & Risks or to negotiate possibility to take the full Degree



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MIPET ADDED VALUE

BENEFITS FOR YOUNG ENGINEERS

- High Profile Professional Education devoted to provide High Value Skills in Industrial Plant Engineering and Technologies
- Continuous Interaction with Top Quality Experts from Academia, Institutions and leading Engineering & Construction Companies.
- Very Qualified Selection and Evaluation Processes that guarantee the Master Attendees as highly qualified resources for top companies.
- Opportunities to complete Experiences on Field on complex Industrial Plant Projects and to work on International Frameworks
- Contacts and visibility to major E&C* Companies and EPC** Contractors (EPC) operating at International Level.
- Development of Human Potential by training and improving their Individual skills & Team Working with other engineers from worldwide
- Courses of Technical English and other Languages: e.g. Italian, Spanish





* *E&C Engineering & Contracting*
** *EPC Engineering, Procurement & Construction*

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GENERAL PROGRAM

The Master in Industrial Plants includes:

- **Basic Modules for Industrial Plant Engineering and Construction, including Process Engineering, Plant Automation, Materials & Technologies, etc.**
- **Operative Modules on Critical Issues for Industrial Plants (e.g. Engineering Standards and Regulations, Project Management, Safety Engineering, etc.)**
- **Thematic Modules on Innovative Solution for Specific Plant Sectors (e.g. Power, Renewable Energies, Iron and Steel, Water Treatment, Sustainability)**
- **Company Internships devoted to acquire on-field experience, including the development of the Project Work related to a Real Case**
- **Visits to Industrial Plants and Engineering, Research & Development Centers and Labs.**
- **Tests for certifying individual skills and capabilities acquired by the Attendees on specific topics at the end of each single module.**
- **Professional Modules, integrated in the Master Program, but open for external attendees as stand alone courses. These modules include individual and team Projects Works to be carried out in competition/cooperation interacting with experts.**

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OPERATIVE MODULES

Operative Modules are compact and specific courses (1-5 days), which are an integral part of MIPET and at the same time are open and offered to External Companies, Technical Employees or Professionals interested in these subjects. MIPET Sponsors get 2 free seats in each Operative Module and they have discounts & opportunities for further registrations into Operative & Thematic Modules.

These modules are carried out jointly by the Industry and the Academy and are characterized by strong interaction between students and teachers through Simulations and Role Play Games performed on specific case studies. Among the others the following modules are foreseen:

- **Engineering Standards and Regulations**
- **Construction**
- **Project Management**
- **Safety & Risks**
- **Innovative Technologies, Techniques and Methodologies for Industrial Plants**

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EDUCATIONAL PATH

Educational Framework




Basic Modules 80 hours → **Operative Modules** 180 hours → **Thematic Modules** 160 hours → **Internship & PW** 480 hours

420 hours in Classroom and Labs

480 hours as Internship and Project Work (PW)

120 hours in International Seminars, Language, Orientation & Other Courses

Int.Seminars	30 hours
Languages	70 hours
Orientation	20 hours

The Education framework of MIPET is focusing on industrial plant engineering and technologies by adopting different methods such as Lectures, Case Studies, Exercises, RPG (Role Play Games), Computer Simulations, Use of Models and Software Tools, Interactive Blended Education, Industrial Plant guided Visits and R&D* Lab Experiences

** R&D Research & Development*

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MODULES

Educational Module Topics

Basic Modules
80 hours

- Fundamental Concepts related to Industrial Plants Projects
- Fundamentals of Financial Analysis for Industrial Plants
- Processes Engineering and Components in Industrial Plants
- Design and Engineering for Industrial Plant Systems
- Material Technology, Mechanical Design and Industrial Plants
- Automation in Industrial Plants
- Software Systems for Supporting Industrial Plant Design & Evaluation

Operative Modules
180 hours

- Standards & Regulations
- Project Management
- Construction
- Safety & Risks
- R&D in Industrial Plants
- M&S in Industrial Plants
- Comm. & Team Building
- MIPET International Seminars ~40 hours

Thematic Modules
160 hours

- Power Plants
- Iron & Steel Plants
- Plants for Environment
- Processes & Machines in Industrial Plants
- Desalination & Water Treatments
- Environment & Sustainability for Industrial Plant Engineering
- MIPET Other Modules ~90 hours English, Chinese, Italian, Spanish, Orientation

Prof. A.G.Bruzzone
MIPET President

mipet@simulationteam.com

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Engineering Standards & Regulations

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Operative Module of MIPET

Industrial Plant Engineering & Technologies

ABB · DANIELI · PAUL WURTH

Objectives

Engineering Standards & Regulations is devoted to organically present the existing and future norms to be adopted for the design and construction of Industrial plants; the course provides knowledge for supporting problem solving for companies facing for the first time regulations and codes in National and International industrial plant projects

Course Attendees

Engineering Standards & Regulations is designed for young engineers, specialists and professionals active in Industrial Plants enabling them to make use of the state-of-the-art norms, codes and standards for the design of equipment and systems.

Structure and Approach

This modules is organized as a 36 hours course to be completed in 5 days by interactive sessions with experts coming from Industry and R&D. The approach includes lecturing, case studies, exercises, experiences, RPG, competitive and cooperative simulations

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Safety & Risks

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ABB · DANIELI · PAUL WURTH

Operative Module of MIPET



Industrial Plant Engineering & Technologies

Objectives

Safety and Risks Module is devoted to present methodologies, techniques and technologies related to safety and risk evaluation during design, construction and operation of an Industrial Plant.

Course Attendees

Safety and Risks Module is designed for young engineers, technicians and professionals active in the engineering of Industrial Plants enabling them to deal with safety rules and risk analysis according to the state-of-the-art legislation.

Structure and Approach

This modules is organized as a 36 hours course to be completed in 5 days by interactive sessions with experts coming from Industry and R&D. The approach includes lecturing, case studies, exercises, experiences, RPG, competitive and cooperative simulations

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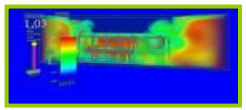
MIPET Operative Modules

Standards & Regulations

- Large Industrial Plants: an Overview on Standards, Regulations and Administration Authorization Processes along Project Life Cycle
- Case Study on Impact of International Regulations on Industrial Plants with Special Attention to Directive 2006/42/CE, ATEX, PED.
- Quality Assurance and Control in Industrial Plants
- Quality, Safety and Environment Integrated Management in term of standards and regulations
- Environmental Impact Evaluation
- Introduction on Fire Safety and Explosion Risk for Industrial Plants. Risk Analysis for Fires and Explosions: methods, documents and classification
- Safety Concept. Innovative Engineering Solutions forn Fire and Explosions in Industrial Plants. Combination of Explosion/Fire Risks
- Fire Safety and Explosion Simulation
- Actions: organization, prevention, protection and mitigation solutions
- EXPLOSAD (Experience on Process Plant Safety Design): Case Study based on Simulation applied to fire and explosion protection applied to an industrial plant



Safety & Risks

General Safety concepts related to Industrial Plants Life Cycle (accident pyramid, cause effect analysis, risk analysis, training and information, BBS, main indexes and matrixes, organization)

- Specific safety characteristics on Process Plants
- General Risks on Industrial Plants
- Methodologies and behavioral aspects related to safety and risks to be considered in plant design and construction
- Behavioral aspects influence on accident frequency
- Safety Design
- Quantitative and Qualitative methods to support risk evaluation and management
- Introduction to integrated safety and risk evaluation systems
- Case Study on Safety Integrated Solutions
- Introduction to SBRA Methodology
- Exercise: application of SBRA (Scenario Based Risk Assessment) Methodology on a Construction Yard
- Case Study Resolution on the Construction and Debriefing on SBRA (Scenario Based Risk Assessment) application
- Introduction to Industrial Plant Service impact on Safety along Plant Life Cycle: Availability and indexes, Alternative Approaches, EOH, Impact of Engineering on Service and Safety, Service Inventory, Consistency and Optimization of Inspection and Revision Policies
- Service for Complex Industrial Plants

Each Operative Module includes a knowledge assessment and the attendees successfully completing each single Module receive a certificate from Genoa University. The Educational Material specific of the course is provided to each attendee

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Project Management

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Operative Module of MIPET

Industrial Plant Engineering & Technologies

Objectives

Project Management Module presents critical aspects related to Industrial Plant PM and provides basic concepts and methodologies in Project Management. The course provides knowledge for facing issues in Project Organization, Risk Management, Cost and Time Management, Planning & Control, Quality, HR and Communications

Course Attendees

Project Management Module is designed for young engineers, technicians and professionals intended to operate as Project Engineers in complex Industrial Plants projects;

Structure and Approach

This modules is organized as a 36 hours course to be completed in 5 days by interactive sessions with experts coming from Industry and R&D. The approach includes lecturing, case studies, exercises, experiences, RPG, competitive and cooperative simulations

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Construction

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Operative Module of MIPET

Industrial Plant Engineering & Technologies

Objectives

Construction Module presents critical aspects related to Constructions in Industrial Plant and provides basic concepts and case studies as methodologies. The course provides knowledge for facing issues in Site Management, Erection Planning, Cost and Time Control, Safety and Risks during erection and commissioning.

Course Attendees

Construction Module is designed for young engineers, technicians and professionals active in Industrial Plants and dealing with Construction issues, enabling them to understand and make use of the key tools for the control and the management of the construction stage of an Industrial Plant.

Structure and Approach

This modules is organized as a 36 hours course to be completed in 5 days by interactive sessions with experts coming from Industry and R&D. The approach includes lecturing, case studies, exercises, experiences, RPG, competitive and cooperative simulations

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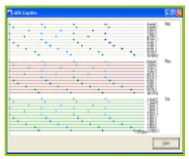
MIPET Operative Modules

Project Management

- Project Management and specific issues related to Industrial Plants
- Project Life Cycles
- Reporting & Metrics for Project Management: PMB & KPIs
- Cost and Time Management, Techniques and Methodologies for supporting planning and control
- Risk Analysis & Risk Management: Risk Source Identification, Quantification, Decisional Trees, Statistical Methods and Simulation
- Communications: Technological Solutions, Information Distribution Policies
- HR in Project Management, organizational planning, People Management
- Quality Management: methods, constraints and critical issues in Industrial Plants
- Project Management Networks and Certification Processes
- Coordination Engineering, Purchasing, Erection, Commissioning
- PM Certification, Societies and International Overview
- Role Play Game: Celebes (Cooperative Engineering Plant, Project Business Exercise and Simulation), work to be completed by coordinated teams concurrently working on a complex industrial plant under coordination of real Project Managers and operating on a distributed simulation

Construction

- Construction of Industrial Plants
- Industrial Plant Construction from Project Start, Precommissioning, Commissioning, Closing
- Case Studies on Project Logistics in National International Frameworks
- Interaction between Engineering and Purchasing
- Case Study on Engineering Purchasing interactions
- Managing Construction Projects on Site
- Case Studies on Construction Yard Management
- Planning and Control on Site Construction
- Case Study on Construction Yard Activities
- Safety on Erections, Heavy Transport and Heavy Lifting during Construction
- Babel Experience: competition between two teams each one divided between Site and Office on a Construction Project; the experience is devoted to outline the critical issues related to coordination/cooperation between engineering and constructions as well as aspects related to communication, human resource management and project documentation


Each Operative Module includes a knowledge assessment and the attendees successfully completing each single Module receive a certificate from Genoa University. The Educational Material specific of the course is provided to each attendee

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Innovation for Industrial Plant

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Operative Module of MIPET

Industrial Plant Engineering & Technologies

ABB · DANIELI · PAUL WURTH

Objectives

Industrial Plant Innovation Module presents innovative methodologies, techniques, models presented by experts at international level able to guarantee a competitive advantage in Industrial Plant. The course addresses both technical and management issues in relation to different types of challenging problems in Sustainability, Oil and Gas, Smart Energy Management.

Course Attendees

Industrial Plant Innovation Module is designed for young engineers, technicians and professionals intended to being updated on new Models and Innovative Methodologies to address complex Industrial Plants projects

Structure and Approach

This modules is organized as a 36 hours course to be completed in 5 days by interactive sessions with experts coming from Industry and R&D. The approach includes lecturing, case studies, exercises, experiences, RPG, competitive and cooperative simulations

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MIPET Operative Modules

Innovation for Industrial Plants

R&D, Innovative Technologies, Techniques & Methodologies for Industrial Plants

- Research and Development for Industrial Plants
- Risk Analysis in R&D
- Opportunities in China: Innovation from Far East
- EU Project Case Study
- R&D in Industrial Plants, Patents, IPR and Competitiveness
- Smart Solutions in Industrial Plant Engineering
- Challenges for Engineering in Sustainability
- Smart Energy Management
- Smart Solutions in Industrial Plants based on innovative models
- Case Study: applying Innovative Techniques for Sustainability in Industrial Plants

Modeling & Simulation in Industrial Plants

- Simulation for Industrial Plants
- Modeling Mining in Australia
- Operational Training Simulators
- Examples: System Simulation in Iron and Steel Plants
- Models for Structural Analysis on Critical Sections of large Industrial Plants

Communication Skills & Team Building for Engineers

- Communication Skills
- Communication Channels
- Relationships
- Public Speaking
- People Management
- Team Building
- Interpersonal
- Leadership
- Lateral Thinking
- Managing Meetings and Relationships: how Young Engineers have to play

Seminars on Industrial Sectors and Emerging Opportunities

- System of Systems Engineering
- Modeling for Large Transportation Infrastructure Design
- Power Industry in Mexico and Latin America
- Process Control in Chemical Plants
- Topics and Areas for Engineers entering in Oil and Gas Industries
- Immersive Technologies for Oil & Gas Industries

Each Operative Module includes a knowledge assessment and the attendees successfully completing each single Module receive a certificate from Genoa University. The Educational Material specific of the course is provided to each attendee

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Thematic Modules

Thematic Modules are dedicated to prepare MIPET Students on Business Sectors and Specific Thematic Areas. Major areas include Hot Metals, Power Plants, Water Treatments. Specific Attention is devoted to innovative solutions, automation and autonomous systems to be integrated into industrial plants.

Iron & Steel

Iron & Steel Plants. Iron & Steel Industry Processes. Iron & Steel Market. From Raw Material to Blast Furnace. Fundamentals of Metallurgical Processes. Metal Making. Industrial Furnaces. Blast Furnaces. Iron & Steel Plants: Sinter, Pellet, Steelworks. Steel Rolling Processes & Heat Treatment. Strip Processing. Cold Milling Rolling. Roll Shops. Material Handling. Coke Plants. Flue Gas Treatment in Iron & Steel Industry. Tour to an Steel Mill.

Power Plants

The focus of this module is on Power Plants. Electrical Plants. Alternators. Boiler & Heat Echanger. Gas Turbine & Steam Turbines. Fossil Plants & Conventional Plants. Combined Cycle Plants . Electrical Energy Distribution and Consumption . Energy Efficiency Techniques. Renewable Power Plants: Wind Solutions, Solar Plants, Hydroelectrical, etc. Power Plant Simulation & FAT. Interactive Visit to Power Plants. Fuel Storage Facilities.

Processes & Machines

Processes & Machines in Industrial Plants. Fluid Dynamics & Heat Exchanges in Industrial Plants. Condition Monitoring, Diagnostics, Non destructive Controls and Plant Maintenance. Vibration Analysis, Modal Analysis, FEM for Vibration Analysis, TPA, Durability. Mission synthesis, Acoustic Intensity and Holography. Simulation and Dynamic Analysis of Plants and Machines. Plant Management & Maintenance. Plant Service. Safety & Security. Examples: Company Organization within a Power Plant Producer and in a Steel Mill.

Water Treatments

Desalination and Water Treatments. Waste Water Treatment. Municipal Solid Waste Treatment: Incineration Plants, Pyrolysis and Gasification. Case Study: MSW Gasification Plant. Desalination Plants, Heat Exchange & Plant Processes, Material Transfer and Pumping Operations, Alternative Technologies.

Sustainability

Environment and Sustainability for Industrial Plant Engineering. Environmental Control Techniques . LCA Sustainable Engineering. Green Technologies. Design for Environment and Sustainability. Modelling Industrial Ecology. Urban Solid Waste Treatments. Case Study: Gasification Plant MOSES: Computer Simulation on Comprehensive Scenario involving negotiation between Authorities and Investors respect a new Large Plant Project.

Combustion

Combustion Technology. Fluid Dynamics & Heat Exchanges in Industrial Plants. Operational Procedures in Combustion. Combustion Models for Industrial Plants. Overview on Heating Furnaces. Technological Trends in Industrial Furnaces. Flue Gases & Treatments. Example: Hot Treatment Furnace Design.

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This Master is coordinated by a Technical Scientific Committee composed by the following members:

- **Agostino Bruzzone** (Full Professor of Industrial Plants in DIME, MIPET President)

- **Matteo Agresta** (Simulation Team - University of Genoa)
- **Giorgio Cannata** (Professor of Automation, DIST)
- **Micaela Caserza** (MAILAB - University of Genoa)
- **Marco Del Borghi** (Full Professor of Chemical Processes, DICHEP)
- **Carla Gambaro** (Professor of Technologies, DICHEP)
- **Pietro Giribone** (Full Professor Industrial Plants, DIME)
- **Aleramo Lucifredi** (Full Professor of Applied Mechanics, DIME)
- **Andrea Reverberi** (Professor of Chemical Processes, DICHEP)
- **Luca Tagliafico** (Full Professor of Thermo-Energy, DIME)
- **Angela Taramasso** (Professor of Civil Eng., DIST)
- **Flavio Tonelli** (Professor of Industrial Plants, DIME)
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- Joint University-Industry stimulation of Interest and Research Projects on subjects related to Plant Engineering & Technologies
- Development of a Fertile Background in Industrial Plant, Global Engineering and Construction devoted to enhance the competitiveness of the whole system.

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References

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