CHEMPROD srl Via Stradella, 3 20129 Milano - Tel. 02.742095.1 Fax 02.29532744
www.chemprod.it e-mail chemprod@chemprod.it

CHEMPROD

s.r.l.

Process and Detailed Design for Chemical Industry

2020

ABOUT US

CHEMPROD has established in January 1995 as a Process Engineering service company mainly operating in the chemical, petrochemical and oil fields, whose aim is to support the great Italian engineering companies in the development of large industrial processes.

Over the years thanks to the feedback and appreciation shown by our customers while looking for a single partner to develop their most complex projects, we have completed our range of services covering the specialized activities relevant to Detailed Engineering.

Nowadays, CHEMPROD is a multidisciplinary engineering company that has completed its expertise with Instrumentation, Electrical, Piping and Drafting offices, while maintaining process services the main business sector.

At the same time we have expanded our business by adding Pharmaceutical and Environmental Energy to our reference markets.

CHEMPROD is therefore able to accompany customers from the beginning of the design phase (feasibility study) up to detailed engineering including assistance in the construction phase.

Nowadays we are a reliable and consolidated reference point in the Engineering sector with a production capacity of over 70,000 hours / year with a high technological content.

CHEMPROD consists of:

+ 25	+ 40	+ 700	+ 150
Years of activity	**Technical Staff**	**Projects Developed**	**Clients**

QUALITY SYSTEM

In 1999, shortly after its foundation, Chemprod has been certified by DNV (Det NorskeVeritas) complying with the Quality System Standard UNI EN ISO 9001:2015 in the following fields:

Feasibility Studies, Process Engineering and Detailed Engineering for Oil, Petrochemical, Chemical and Technological Plants.

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificato no./Certificate No.:
CERT-05151-99-AQ-MIL-SINCERT

Data prima emissione/Initial date:
05 novembre 1999

Validità:/Valid:
07 ottobre 2018 - 07 ottobre 2021

Si certifica che il sistema di gestione di/This is to certify that the management system of

CHEMPROD S.r.l. - Sede Legale e Operativa
Via A. Stradella, 3 - 20129 Milano (MI) - Italy

È conforme ai requisiti della norma per il Sistema di Gestione Qualità/
has been found to conform to the Quality Management System standard:
ISO 9001:2015

Questa certificazione è valida
per il seguente campo applicativo:

Studi di fattibilità, ingegneria di processo, ingegneria di dettaglio per impianti petroliferi, petrolchimici, chimici e tecnologici (EA: 34)

This certificate is valid
for the following scope:

Feasibility studies, process engineering, detail engineering for crude oil, petrol chemical, chemical and technological plants (EA: 34)

Luogo e Data/Place and date:
Vimercate (MB), 20 giugno 2018

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

SGQ N° 003 A
SGA N° 003 D
SGE N° 007 M
SCR N° 004 F
EMAS N° 009 P
PRD N° 003 B
PRS N° 094 C
SSI N° 002 G

Membro di MLA EA per gli schemi di accreditamento SGQ, SGA, PRD, PRS, ISP, GHG, LAB e LAT, di MLA IAF per gli schemi di accreditamento SGQ, SGA, SSI, FSM e PRD e di MRA ILAC per gli schemi di accreditamento LAB, MED, LAT e ISP

Per l'Organismo di Certificazione/
For the Certification Body
DNV GL – Business Assurance
Via Energy Park, 14 - 20871 Vimercate (MB) - Italy

Zeno Beltrami
Management Representative

La validità del presente Certificato è subordinata al rispetto delle condizioni contenute nel Contratto di Certificazione/
Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
DNV GL Business Assurance Italia S.r.l., Via Energy Park, 14 - 20871 Vimercate (MB) - Italy. TEL:039 68 99 905. www.dnvgl.it

OUR MILESTONES

THE QUALITY of the services rendered, associated with a high technological content, to facilitate the approach towards new customers. CHEMPROD has heavily invested in quality, always ensuring an adequate number of resources with experience throughout the Process office, supporting it supplied with the other disciplines.

The EXPERIENCE of key personnel to ensure the quality of services and at the same time to train young people. Within the same framework and without prejudice to the key figure of reference for the Customers, all the Staff rotate from time to time in the various sectors of interest in order to acquire more skills. In CHEMPROD there are no closed working groups.

CUSTOMER LOYALTY achieved through a collaboration participated by both Parties. For CHEMPROD, every customer is seen more as a partner than as a simple client, precisely because only partnership can be a harbinger of mutual satisfaction.

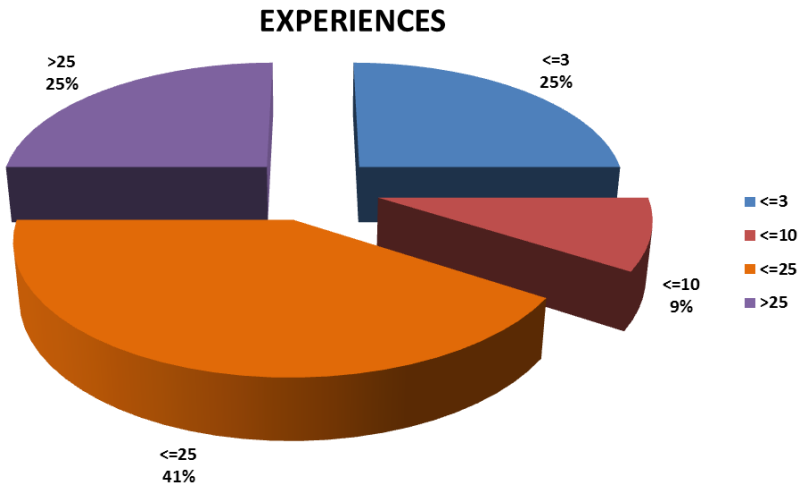
THE TRAINING of CHEMPROD staff is fundamental in a logic of continuous expansion of the fields of interest. The training was the basis for the extension of the application sectors, from the oil and gas of origin to the various chemical sectors in the intermediate period to arrive today in the pharmaceutical and logistics sectors, and will also be for the next towards sustainability towards global sectors of the green economy areas.

AUTOMATION of systems and work tools not only with a view to reducing execution times and costs, but also as a technological innovation that allows CHEMPROD to be constantly in step with the times. In this way, the quality of CHEMPROD production is increased and a circularity of the milestones is established.

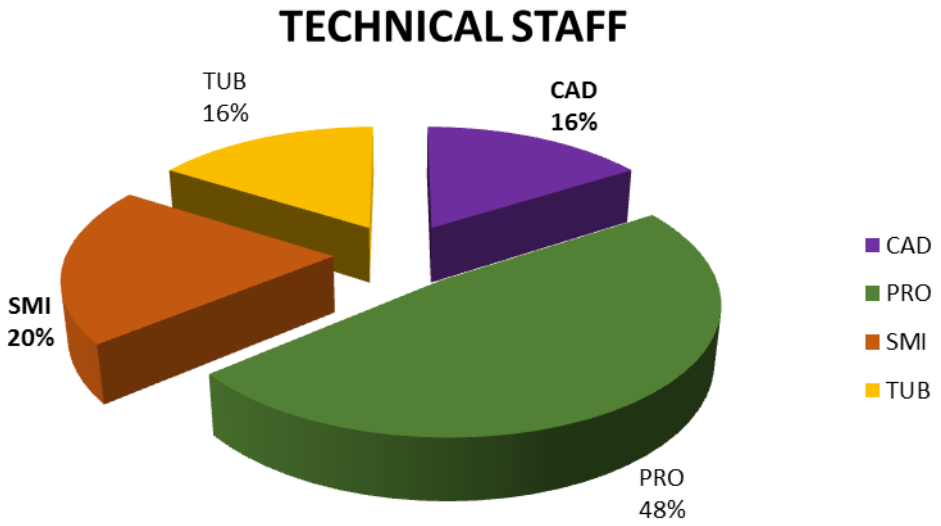
TEAM

The main resource and the first reference of CHEMPROD are people who make it up: a highly qualified work team that allows us to better face the projects and the challenges of our Customers.

The company staff consists of people with over ten years of technical experience, gained also through the realization of projects on behalf of other Companies which are leaders in various areas of the Chemical Industry.



From the beginning until nowadays Process Engineering is our core business, indeed almost half of our technical staff is composed of Process Engineers graduated in Chemical Engineering.



SERVICES

CHEMPROD can completely develop a project as a single supplier or can offer support for individual disciplines to the Customer's project team, both with lump sum activities and providing resources to complete the project team.

Our task is to satisfy the customer's needs in order to guarantee the best development of projects both on technical and commercial level.

CHEMPROD provides the following services:

- **Feasibility Studies**: it is the first step of engineering design that can be developed in some cases as a result of pre-feasibility studies. It includes the process information that allows the customer to arrive to a first estimate of Plant's cost;
- **Basic Engineering Design**: it is the intermediate level of design and includes the basic information, mainly process information, which allows the Customer to issue the documentation to convene a subsequent tender for detailed engineering activities (Tender Document). In this phase the development of the engineering is oriented to allow the issue of bid requests and following technical alignments; the project cost estimate is significantly confirmed;
- **Detailed Engineering Design**: It is the final step of the design and represents the implementation phase of the project with the definition of documents relating to all technical disciplines and detailed information for the purchase of materials and equipment, the construction, start-up and management of the plant;
- **Engineering Endorsement developed by other companies**: critical verification and completion of the documentation developed by other companies;
- **New Process Development**: starting from Customers' ideas or from research laboratories information, we develop new production processes at pilot plant level and / or taking care of the industrial scale;
- **Site survey**: survey plants or production sites in order to gather the information necessary to update the available documentation or to start new engineering activities;

- **Plant Performance Monitoring**: identification, in collaboration with the personnel who manage the plants, of the critical variables, the definition of the composite indexes and the identification of any possible corrective actions in order to reduce energy consumption or optimize production;
- **Revamping / Debottlenecking of existing Plants:** studies oriented to the production increasing, the improving of the quality and yield of products, the lowering of emissions, or the design of new processes using existing equipment and optimizing the necessary interventions;
- **Construction Assistance and Start-up**: the same working team of Detailed Engineering supports Customer during the construction and start-up phase of the plant;
- **Procurement Assistance**: supplier BID request issue, evaluation and technical alignment of the received offers;
- **Expediting**: verify that suppliers comply with the requirements of the Customer's order, respecting the terms and delivery times.

DISCIPLINES

CHEMPROD deals with all projects with the best resources available: the quality and experience of its staff to best realize all our customers projects.

CHEMPROD is able to offer 70,000 hours of engineering services per year split among various disciplines. The offer can reach 100,000 hours per year by integrating the services of our qualified suppliers, with whom we maintain multi-year collaborations.

The Disciplines offered by CHEMPROD are:

Process Engineering

It defines the plant scheme, the material balance, the equipment sizing and the control of chemical processes through the main simulation software available on the market. Each plant, whether new or existing, is analyzed according to Customer's requests to define the optimal plant condition.

Activities:

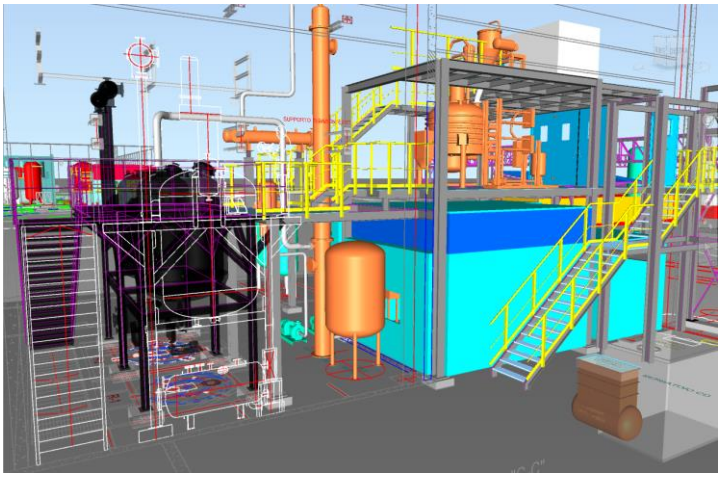
- Plant scheme definition
- Simulations of both continuous and discontinuous processes
- Dynamic process simulations
- Preparation of material and energy balances
- Utilities consumption estimation
- Process Flow Diagram (PFD)
- Process & Instrumental Diagram (P & ID)
- Equipment sizing
- Preparation of Duty Specification
- Sizing of regulation and safety valves
- Operating Manuals
- Definition of fire protection systems
- Flare networks simulations
- Preparation of Material Requisition
- Preparation of BID Requests
- Technical evaluation and alignment of offers

Software:

- AspenONE® Engineering for E&C, including the software Aspen HYSYS, Aspen PLUS, Flarenet e Batch Modeler
- PRO II SimSci

- PIPENET Vision Transient Module
- Various calculation tools internally developed and properly tested and validated.

Mechanical and Piping Engineering



It represents the passage from process engineering to plant reality through the design of lines, equipment, machineries and package systems. It provides the placement of the equipment and of their connection lines. The design is performed by means of 3D softwares that allow immediately to see the recommended solutions.

Activities:

- Line List
- Definition of the nozzles orientation on the equipment
- Equipment positioning plans (setting plan)
- Sizing and positioning of pipe supports (layout)
- General Plot plan
- 2D and 3D design of piping routes
- Isometric drawings (sketch)
- Stress Analysis
- Material Take Off (MTO)
- Drafting of specific insulation painting techniques, insulation and tracing
- Technical specifications of purchase, BID requests
- Technical evaluation and alignment of offers
- Mechanical works specifications

Software:

- Navisworks
- Cadworx Plant Professional
- Orthogen
- Cesar II
- Esapro 3D Piping

Electro-Instrumental Engineering

It deals with the electrical networks design (high, medium and low voltage) and the instrumental systems used to guarantee the control and regulation of the systems.

Activities:

- Electrical Load List
- Electrical balances
- Calculations and sizing of the ground system
- Calculations and sizing of electrical protections
- Calculations and sizing of electrical cables
- Lighting calculations
- Single and functional diagrams
- Technical data sheets of electrical equipment
- Assembly and detail drawings of the electrical utilities, the cable ways and the earth network
- Electrical wiring diagrams
- Instruments and valves List
- Technical data sheets of instruments, control valves and safety valves
- Assembly and detail drawings of instruments, junction boxes and cable routing
- Hook-up
- Wiring junction boxes drawings
- Wiring diagrams
- Electrical and instrumental cables lists
- Material Take Off (MTO)
- Preparation of BID request
- Preparation of technical specifications for the purchase
- Technical evaluation and alignment of offers

Software:

- Instrucalc
- Smart Plant Instrumentation
- Prog Ex (CEI)
- Etap
- Various calculation tools internally developed and properly tested and validated.

Automation and Control Engineering

It defines the automation and control systems that allow the operators the regulation and control of the industrial plants.

Activities:

- Drafting of the functional specifications of the automation / control systems
- Cause/effect matrix
- I/O List
- Loop diagrams
- Logical automation and regulation schemes
- Drafting of technical specifications for the purchase

Standard and Smart Graphic Design

It realizes technical drawings developed by various internal disciplines to support the Customers' technical offices.

Activities:

- Computerized technical drawing (Civil - Electro-Instrumental - Mechanical - Piping - Plant engineering)
- Scanner acquisition
- Regeneration of old drawings / archives
- Electronic archiving
- Plotting

Software:

- Autodesk AutoCAD
- Bentley Microstation
- BricsCAD Pro
- Cadworx P&ID
- EsaPro P&ID
- Smart Plant P&ID

SECTORS

Offshore: Activities on sealines, downstream of well heads (flowlines) and submarine systems. Collection, separation, storage and transportation onshore of separate hydrocarbon phases. Auxiliary systems and treatment of production water for discharge overboard or transfer onshore.

Onshore: Onshore activities, downstream of sealines and or flowlines. Central Process Facilities (CPF) are developed by taking into consideration the diverse process conditions and future field depletion.

Petrochemical, chemical refining: Open-art or licensed plants, polymerization, solvents recovery, Fluorine chemistry, Chlorine chemistry. Continuous and batch process plants.

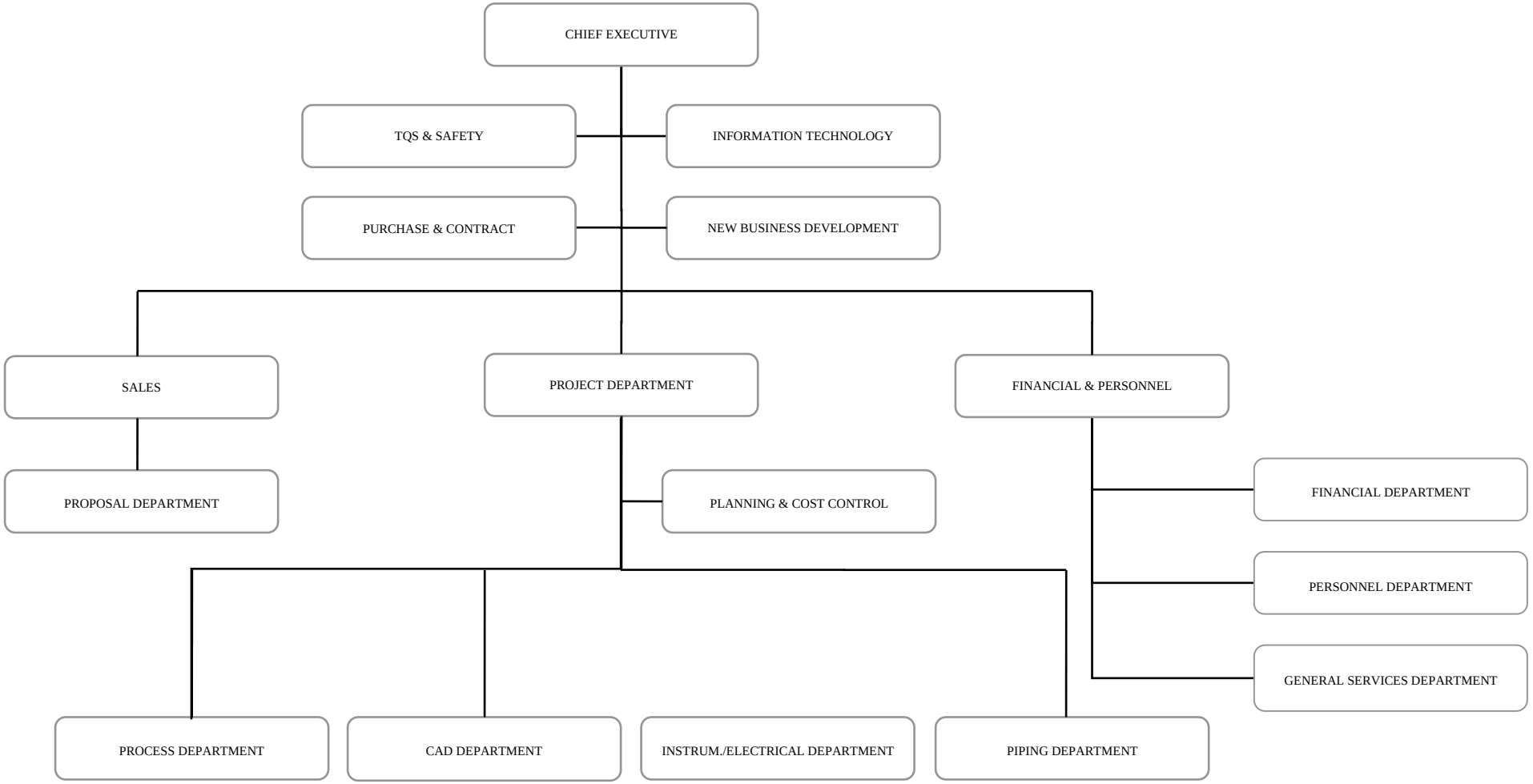
Technical gas, biogas and cryogenics: Analysis of existing systems to improve production capacity and quality. The study of new Biogas and Biomethane plants. Storage and transportation of cryogenic fluids.

Pharmaceutical plants: Development of new plants on research laboratory indications. Participation in Technology Packages. Compliance with GMP rules and specific quality protocols.

Utilities: Design of utility systems necessary for the functioning of process units.

Logistics: Analysis of loading, unloading and storage systems for raw materials and finished products. Analysis of handling activities and distribution paths in areas of the plant.

ORGANIZATION CHART
CHEMPROD S.r.l.



CHEMPROD CHEMICAL PROCESS DESIGN

MAIN CLIENTS

ACS DOBFAR
desmet ballestra
La. Chi.
addivant™
Engineering Management Contracting
lamberti spa chemical specialties
Air Liquide creative oxygen
EMERSON
LANXESS Energizing Chemistry
amri Complex Science. Expert Solutions.
eni
Linde
Arkad ABB
eni progetti
Maire Tecnimont
BASIS ENGINEERING
EUROTECNICA
MOREL
CASALE
gnosis advanced biotech
SAIPEM
coim
KT Kinetics Technology
SIAD
TPI TECNO PROJECT INDUSTRIALE SIAD Group
Siirtec Nigi
MacDermid Enthone INDUSTRIAL SOLUTIONS
3V TECH
SOL SOLGROUP
XSIGHT BY SAIPEM
WOOD GROUP
amec foster wheeler
suez environnement
TECHINT

QUALIFICATION AND FRAME AGREEMENT

CHEMPROD has frame agreements with:

CLIENT	ACTIVITY
ENIProgetti	Process Engineering Services
SAIPEM	Process Engineering Services - Onshore & Offshore Instrumental Engineering - "Valves" Instrumental Engineering – Plant Design Instrumental Engineering - Advanced Control System CAD Design - Smart P&ID (SPPID)
KT Roma	Process Engineering Services Qualified for BDEP of Sulphur Recovery Plant
ARKAD ABB	Process Engineering Services
CASALE	Process Engineering Services Instrumental and Electrical Engineering
TECHINT	Process Engineering Services Instrumental Engineering

CONTACTS

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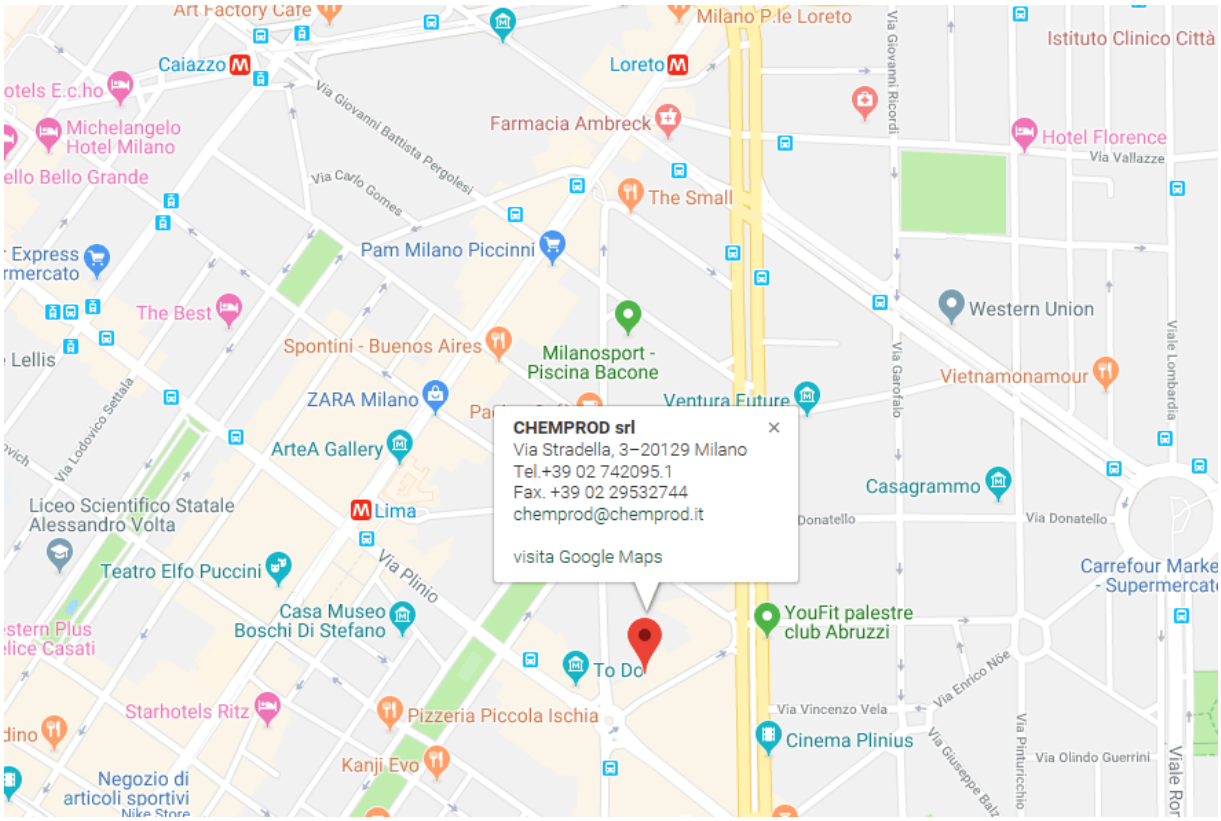

How to get:
Metro Line 1 (Lima), Line 2 (Loreto) or by Bus Lines 60 and 92 or Tram Line 33.

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