



Termomeccanica Industrial Process

Termomeccanica Group



Company Profile

August 2016

ООО «ТИ-СИСТЕМС» ИНЖИНИРИНГ И ПОСТАВКА ТЕХНОЛОГИЧЕСКОГО ОБОРУДОВАНИЯ
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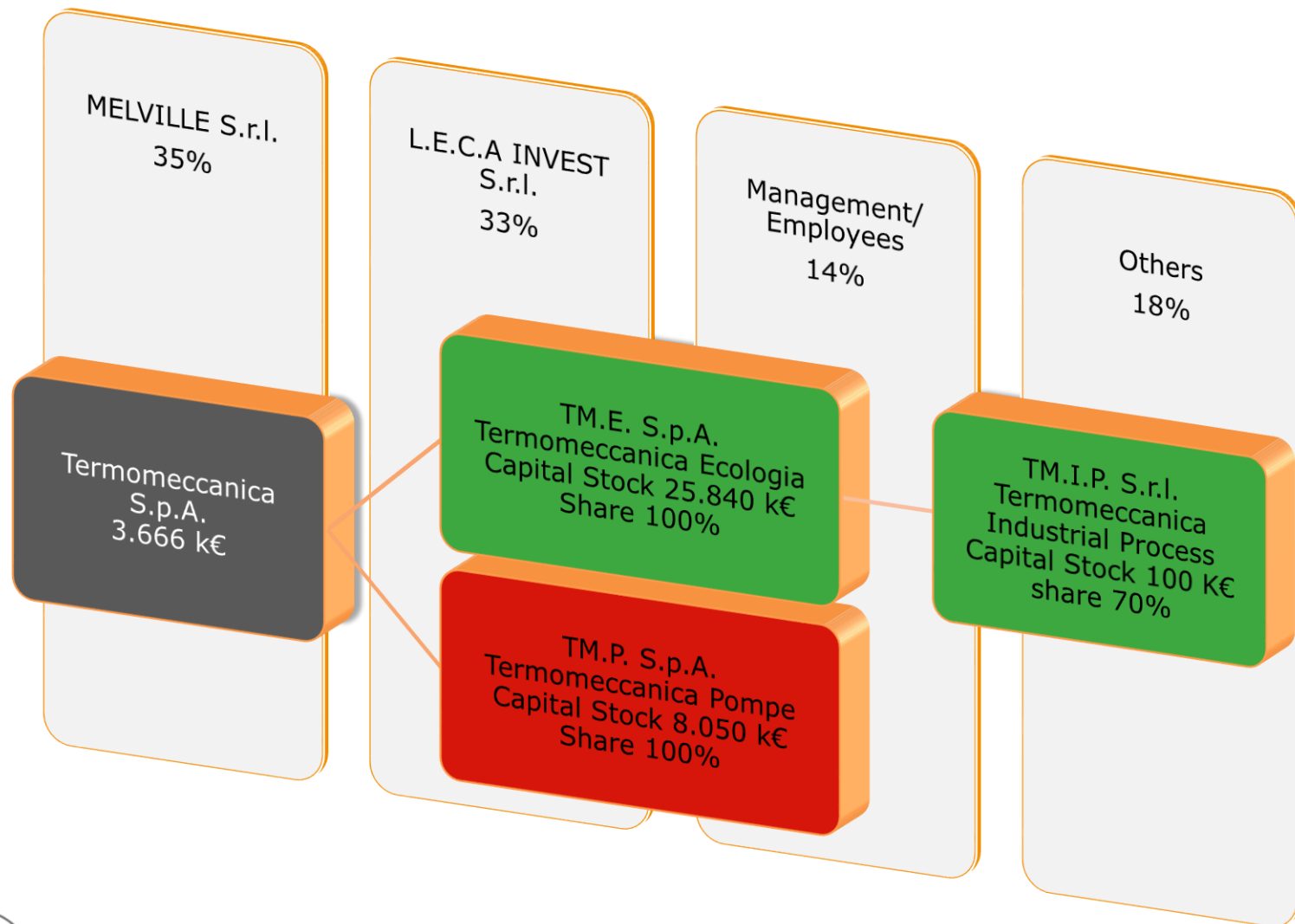
Tradition, technology & innovation



• January 1995	- From "Termomeccanica Italiana" (EFIM Group) to "Termomeccanica S.p.A", a private company with the aim to carry on the Company tradition.
• 1950s	- Widening the range of activities to environmental plant engineering, for civil and industrial waste water treatment, municipal and industrial waste treatment, renewable energy production
• 1930s	- Development of projects for refrigeration units, with high-speed compressor (for marine and land applications)
• '14-'18 & after	- Manufacturing of machines with different type of motorization (mechanical, electric and steam) for Industry, Military Navy & Merchant
• 1912	- Established in La Spezia as "Società CerPELLI & C.", afterwards turned into a stock company "Termomeccanica Italiana S.p.A."; Designing and manufacturing



Shareholders and parent company



Turnover (TM Group)

KEY NUMBERS:

- Turnover 2015: 190 М€
- EBIT 2015: 12 М€
- STAFF 2015:
 - ✓ Head Office: 337 units
 - ✓ O&M: 441 units



Quality management system / Environmental management system



TM.I.P.

“TM.I.P.” was founded towards the end of 2011 to incorporate the know-how, the engineering and constructions technology and of the company “C.M.G.” founded in 1977.

The company operates in the environmental protection and production sectors making use of C.M.G. credentials, patents and technical expertise in synergy with the know-how and industrial experience of “Termomeccanica Group”.

It is organized into two sections:



Environmental protection plants



Production plants



“Environmental protection plants”

The “**Environmental protection plants**” section operates in the design and construction of plants (turn key) for the recovery of chemicals (solvents, light and heavy hydrocarbons, etc.) and for treatment of liquids, sludge and gaseous effluents from industries like:

- Chemical industry & auxiliary chemicals production
- Pharmaceutical industry
- Textile industry, synthetic leather production and other coated or impregnated products (fiberglass / carbon fiber)
- Adhesive tapes production and protective film
- Printing (rotogravure and flexo) - painting industry
- Resins production
- Oil&Gas and petrochemical



“Environmental protection plants”

The compound chemicals are recovered by distillation, adsorption and absorption. The recovered product can be used directly in production therefore their installation is high profitable.

Where selective recovery systems are not possible due to economically or feasibility reasons, thermal oxidation plants can be installed. In case of thermal oxidation (regenerative, recuperative, catalytic) can be convenient to equip the plant with a heat recovery system (steam, thermal oil or hot water).

The company has complete know-how in waste gas treatment system (wet and dry cleaning system, catalytic system for NO_x reduction).

All the engineering has been developed on proprietary know-how. All the engineering activities basic and detailed engineering, commissioning and start-up can be performed.



“Environmental protection plants”

Technologies plants:

Thermal valorization

- Thermal valorisation of organic liquid wastes or Aqueous wastes polluted by organic compounds
- Thermal valorisation of solids and sludge

Gaseous Waste Oxidation

- Thermal Oxidation Plants (recuperative)
- Catalytic Oxidation Plants
- RTO (Regenerative Thermal Oxidizers)

Solvent Recovery

- Distillation Plants (Continuous, Batch, Multiple Effects, etc.)
- Adsorption Plants (Activated Carbon)
- Absorption Plants (Physical and Chemical Absorption)

Gas Treatment

- Adsorption Plants (Activated Carbon, Iron Scavenger, Molecular Sieve)
- Absorption Plants (Physical and Chemical Absorption)
- Flue Gas Treatment (Dry and Wet Abatement)

Liquid Treatment

- Stripping Plants
- Water Contaminated by Organic Compounds
- Evaporation and Concentration Plants



“Production plants”

The “**Production plants**” section operates in the design and construction of plants for the production of compound chemicals (adhesive, wood board glue , formaldehyde , resins, PU and PVC paste for coating process , tannery and textile auxiliary chemicals , wood derivatives as furfural and tannin, fruits extract as pectin, etc.) and in the mixing process for industries like:

- Chemical industry & auxiliary chemical
- Pharmaceutical industry
- Textile industry, synthetic leather production and other coated or impregnated products
- Lubricants blending
- Adhesive tapes production and protective film
- Resins production



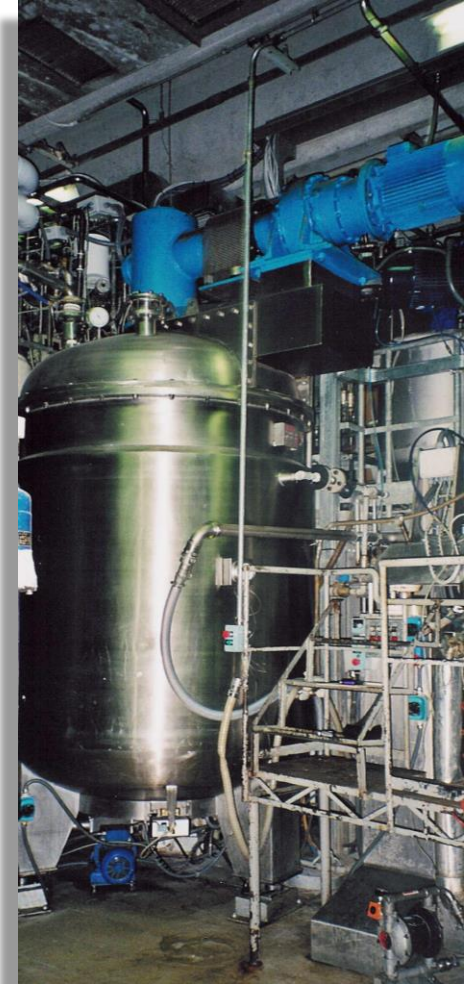
“Production plants”

TM.I.P. builds production reactors and mixers from a capacity from 2'000 to 60'000 litres.

TM.I.P. designs and builds:

- “Turnkey” plants for batch or continuous production of chemicals products with the latest automation systems
- Reactors – vacuum and pressure mixers with more settings for the pharmaceutical and cosmetics industries
- Complete plants for production of chemical products

TM.I.P. is able to provide in addition to the basic and detailed engineering for the construction of the entire production plants also formulations , training , start up assistance to ensure the customer the quality and characteristics of finished product.



“Production plants”

Technologies plants:

Formaldehyde derivatives (glue and urea formaldehyde)

Adhesive (rubber and solvent based and acrylic)

Auxiliary chemicals for textile and tannery

Blending plants for lubricants production

Resins

Wood derivatives (tannin and furfural) and fruits extract (pectin)

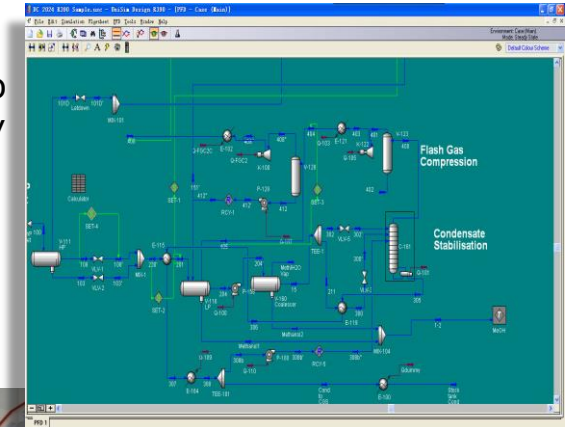
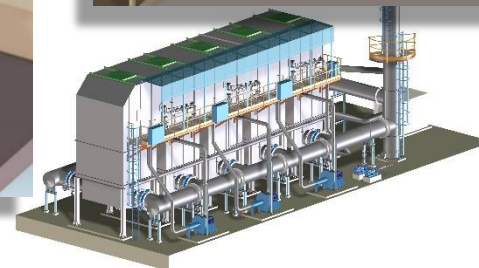
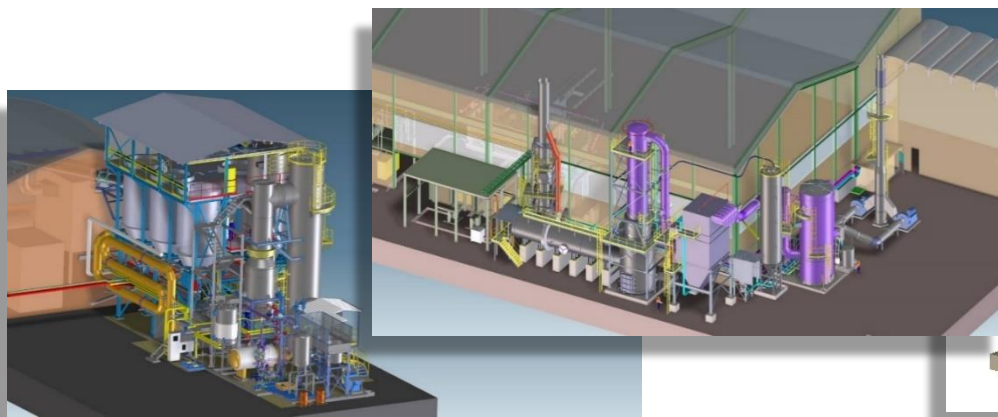


New Technologies development and process

TM.I.P. uses **UniSim Design** software as a process simulator to optimize distillation, absorption, stripping and energy recovery plants, in order to:

- Elaborates material and thermal balances
- Verifies the correct sizing of equipment
- Defines the best technology for energetic recovery
- Optimizes the functioning cycle efficiency

and **CAD 3D Autodesk Inventor** modelling software:



Technologies list



Plants for
Environmental
Protection

- **Gaseous Effluents Treatment**

- **SC** - Washing towers and scrubbers;
- **TO** - Regenerative and recuperative thermal combustion plants;
- **CO** - Catalytic oxidation plants (VOC abatement, Ammonia oxidation);
- **CC** - Cryogenic condensation (Benzene recovery);
- **AC** - Absorption plants by activated carbon (Hexane / toluene / gasoline recovery);
- **RP** - Recovery plants of organic and non-organic compounds (Solvents – plasticizers recovery);
- **FG** - Flare Gas Recovery System and Vapour Recovery Unit;
- **ST** - Stripping Tower (BTEX removal, Ammonia Stripping).

- **Industrial Hazardous Wastes Treatment:**

- **WI** – Combustion plant for liquid waste, sludge, solid complete with steam/thermal oil and/or electricity production, and flue gas treatment (wet and dry pollutants abatement);
- **DI** - Solvents recovery from solvents mixture or solvent solutions by distillation



Technologies list

Plants for Production:

RPP

- Complete plants for Resin Production: (Polyester, Alkyd, Amino, Acrylic, Epoxy, Polyurethane resins);
- Wood board glue and formaldehyde production plant

BAP

- Batch plants for production of chemicals;

PPP

- Plants for preparation of Polyurethane paste or PVC paste;

ADP

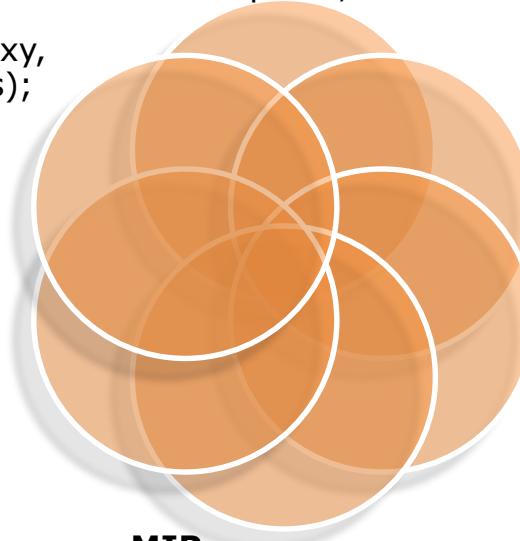
- Plants for preparation of Adhesive paste;

APP

- Production plants for Tannery or textile auxiliary chemical products;

MIP

- Mixing units and complete automated mixing plants;



Example of ...

	Chemical industry & auxiliary chemicals	Pharmaceutical industry	Textile industry, synthetic leather production and other coated or impregnated products	Lubricants blending	Adhesive tapes production and protective film	Printing (rotogravure and flexo) - painting industry	Resins production	Oil&Gas and petrochemical
SC	X	X	X				X	X
TO	X	X	X			X	X	X
CO	X	X				X	X	
CC	X	X						X
AC	X	X			X	X	X	X
RP			X				X	
FG								X
ST	X							X
WI	X	X					X	X
DI	X	X	X		X	X	X	
PPP			X					
ADP					X			
APP			X					
RPP							X	
MIP	X			X				
BAP	X							



Other...

THERMAL OXIDATION



"MADE in ITALY"

Main advantages of TMO

- Tailored and Optimized Solutions
- DRE higher than 99,9 %
- Customized design
- Special attention to client needs
- High turndown and flexibility
- Design Life higher than 20 years

ABSORPTION



"MADE in ITALY"

Main advantages of TMO

- Tailored and Optimized Solutions
- Abatement efficiency higher than 99,9 %
- Customized design of internal components
- Special attention to client needs
- High turndown and flexibility
- Design Life higher than 20 years

DISTILLATION



"MADE in ITALY"

Main advantages of TMO

- Tailored and Optimized Solutions
- Recovery higher than 98 %
- High purity of recovered components
- Special attention to client needs
- High turndown and flexibility
- Design Life higher than 20 years

The BIGGEST solvent recovery plant IN THE WORLD



"MADE in ITALY"

- Airflow **500.000** m³/h
- **3000** kg/h recovered solvent
- **2000** kw installed power
- **10** absorbers D 3000mm L 12m

ADHESIVE preparation plants



The "MADE in ITALY" plants

The state of the art MIXERS!

- Enhanced productivity
- **6,5** tons of adhesive in 4h

