Termomeccanica Industrial Process

Termomeccanica Group

Pharmaceutical Solutions

June 2020

Introduction

TM.I.P. S.r.l. – Termomeccanica Industrial Process

The company TM.I.P. designs, manufactures and commissions process packages, process equipment and turn-key process plants, covering a wide range of hydrocarbons and solvents treatment.

All the engineering has been developed on proprietary know-how.

All engineering activities BE, EPCM commissioning and start up can be performed.

Technologies

Thanks to agreements with research institutions and technological experimentation, the company can develop test and new technologies by laboratories and pilot plants.

Introduction

Pharmaceutical industry production:

- API (Active Pharmaceutical Ingredient) – Production by chemical reaction
- By fermentation: Antibiotics, vitamins, others..
- Semisynthetic and synthetic antibiotics

Main waste gas streams:

All waste gas streams can be polluted by acid gas as HCl or SO_2, basic gas as NH_3 and ammine or by organic compounds as MeOH, MC, EtOH, IPA, acetone, etc..

Main waste liquid streams:

- Highly polluted water, normally process water containing organic and salts at high concentrations
- Low polluted water containing biodegradable organic compounds as MeOH, acetone, etc...
- Low polluted water containing no-biodegradable solvent: benzene, toluene, etc..
- Complex mixture of solvent
- Simple mixture of solvent
- Water soluble solvent (IPA, MeOH, EtOH, DMF, NMP, acetone, etc..)

Introduction

The application of VOC emission control and solvent recovery equipment for the pharmaceutical industries requires a well-established knowledge and understanding of the customer's process and requirements, having the capability to offer tailored solutions. TM.I.P. has global experience in finding solutions to support the pharmaceutical industries worldwide, as well as our range of plant solutions including:

- Solvent mixtures distillation plants (complete of tank farm for raw solvents and distilled solvents);
- Liquid and process gases incineration plants with heat recovery (steam / thermal oil / hot water production) and flue gas treatment;
- Production plants: turbomixers, stirred reactors;
- Process vents treatment plant:
  - Thermal oxidation (chlorinated and solvents too);
  - Wet scrubbers;
  - Fractional condensation systems;
  - Adsorption on activated carbon or molecular sieves;
- C.I.P. system;
- Utilities (steam, cooling water, nitrogen, demin water, chilled water, etc..).

Distillation

Distillation

TM.I.P. also provides stand-alone continuous / batch distillation plants to purify waste water to make it suitable for disposal, recovered solvents are: Ethanol, eliminating high disposal costs, or to separate solvents and recovery them.

Typical Methanol, Acetone, Ethyl Acetate, Isopropyl Alcohol, Methylene Chloride, Acetonitrile, Acetic Acid, TEA, DEA, Amines etc.

Incineration

Waste Liquid and Gases Incineration

Incineration plant for waste liquid and process vents , containing chlorinated compounds too, with heat recovery
(steam production).
Flue gases treatment with dry abatement by injection of sodium bicarbonate.

Thermal oxidation

Thermal Oxidation
Regenerative Thermal Oxidizer for process vents , also containing chlorinated compounds, with treatment of the flue gases with dry and wet abatement by injection of bicarbonate and wet scrubber.

Condensation

Vents treatment plants through fractional condensation

Vents treatment containing solvents, through fractional condensation in order to optimize of energy consumption

Adsorption

Adsorption on Activated Carbon

In a carbon adsorption system, the solvents are adsorbed on activated carbon, and when the carbon is saturated, it is regenerated with steam or nitrogen to then be condensed, recovering the solvent. Non-water miscible solvents can often be reused without further processing. Water miscible solvents can often be distilled and purified with TM.I.P.'s distillation equipment, to make them suitable for reuse.

Water treatment

Water treatment
This solution is capable to treat waste water with high concentration of VOC, salts, metals and organic compounds.
The solution generally is made: ***distillation****, the separation between the VOC (re-used or used as combustible in the thermal oxidation) and the other pollutants, used for the* ***evaporation*** *phase, where the salts, metals and organic compounds are collected and the evaporated stream can be send to a treatment.*

thank you

Termomeccanica Industrial Process

Termomeccanica Group

TM.I.P. S.r.l. - Termomeccanica Industrial Process
Via Fossamastra 22- 19126
La Spezia – Italy
Tel. +39 0187 513.410 - Fax. +39 0187 515.352

www.tmip.termomeccanica.com