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• **Specialists in  
BIODIESEL purification  
and process optimization**

• **Installations for  
biomass drying**

• **Sewage water  
minimization**

• **Drying and stabilization  
of sludges**

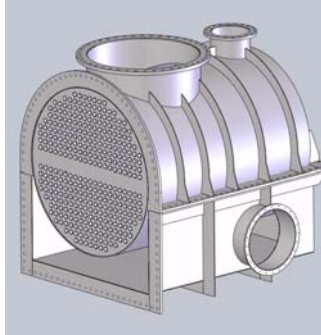
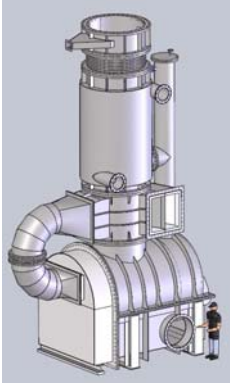
• **Regeneration of polluted  
solvents**

**GRUPO VENTO** offers its experience in the field of renewable energy and environment sectors.

In the **energy sector**, the company develops processes and constructs installations for biodiesel production and drying of biomass.

The most remarkable **environmental** actuations of **GRUPO VENTO** consist in minimization of sewage water with high inorganic load by evaporation, drying and stabilization of sludges and by-products, regeneration of polluted solvents by distillation and VOC's absorption and recovery.

The experience of **GRUPO VENTO** starts in the 1940's acquiring large knowledge in industrial technology for evaporation, distillation and drying processes, successfully applied to a large number of customers from different countries and sectors such as wine and liquors industries, juices, chemical, agro-food, biofuels and environment fields.



**Pyrolytic furnace**



**ZLD for landfill leachates**



**R+D studies**

## ENVIRONMENT DIVISION

**Wastewater minimization, Zero Liquid Discharge (ZLD) systems:** Wastewaters from industrial processes with high conductivities are difficult to treat by biologic systems. **GRUPO VENTO** has developed and successfully installed ZLD systems based on evaporation-crystallization in sewage waters from different sources such as landfill leachates, reverse osmosis refuse waters, and agro-food industries. This technology produces purified water with excellent features, suitable to be reused, and a solid concentrate easier to manage. We name this technology Zero Liquid Discharge because it avoids managing liquid wastewaters.

**Sludge drying:** Radiant Stirrer Dryers (RSD) manufactured by **GRUPO VENTO** allows the continuous removal of water from different waste materials providing weight reduction and biological stabilization like sewage sludges.

**Dirty solvent regeneration:** Dirty solvents generated in many industrial processes are expensive and difficult to manage wastes. The process developed by **VENTO** consist in regenerate these solvents by distillation. In this way a clean solvent is obtained to reuse and the amount of waste is greatly reduced.

**VOC absorption and recovery:** Volatile Organic Compounds (VOC) air emissions in companies handling solvents are usually high. Technology used by **VENTO** consists in an absorption system followed by a distillation column. By this, clean air, suitable to emit, and recovery of solvent, appropriate to reuse, are both obtained with the resulting environmental and economic benefits.



Dirty solvent regenerator



Multiple effect evaporator

## Wastewater MINIMIZATION & ZLD:

- Evaporation technology for difficult to treat wastewater.
- Concentration up to total water evaporation avoiding liquid discharge (ZLD).
- Valorization of concentrate

## Sludge DRYING & STABILIZATION

- Waste reduction
- Odour control

## Dirty solvent REGENERATION

- Clean solvent production
- Economic & environmental benefit
- Waste reduction

## VOC ABSORPTION & RECOVERY

- Air VOC removal
- Solvent recovery
- Economic & environmental benefit



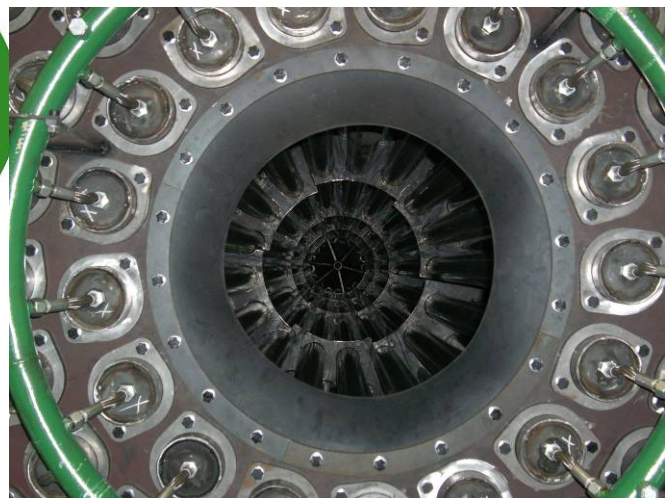
Radiant Stirrer Dryer (RSD)

## ENERGY DIVISION

- **BIODIESEL process optimization:**
- **HIGH FAME quality from low quality materials.**
- **Methanol and glycerine recovery & purification**
  
- **BIOMASS drying from different sources:**
  - **Almond shells**
  - **Forest residues**
  - **Olive and grape pomace**

**Biodiesel:** The **Company** has developed and successfully built equipment to optimize the process of producing biodiesel. The most important achievement is the **FAME purification** obtaining a high quality biodiesel from feedstock high degrees of impurity such as olein, used oils and fats etc. These optimizations also consider methanol and glycerine recovery and purification providing an economic and environmental benefit.

**Biomass:** **GRUPO VENTO** has experience in designing and manufacturing equipment for the drying of biomass from different sources, such as almond shells, forest residues, marc, pomace...Increasing the value of the available energy sources by increasing the calorific value of the biomass.



Tromel dryer

