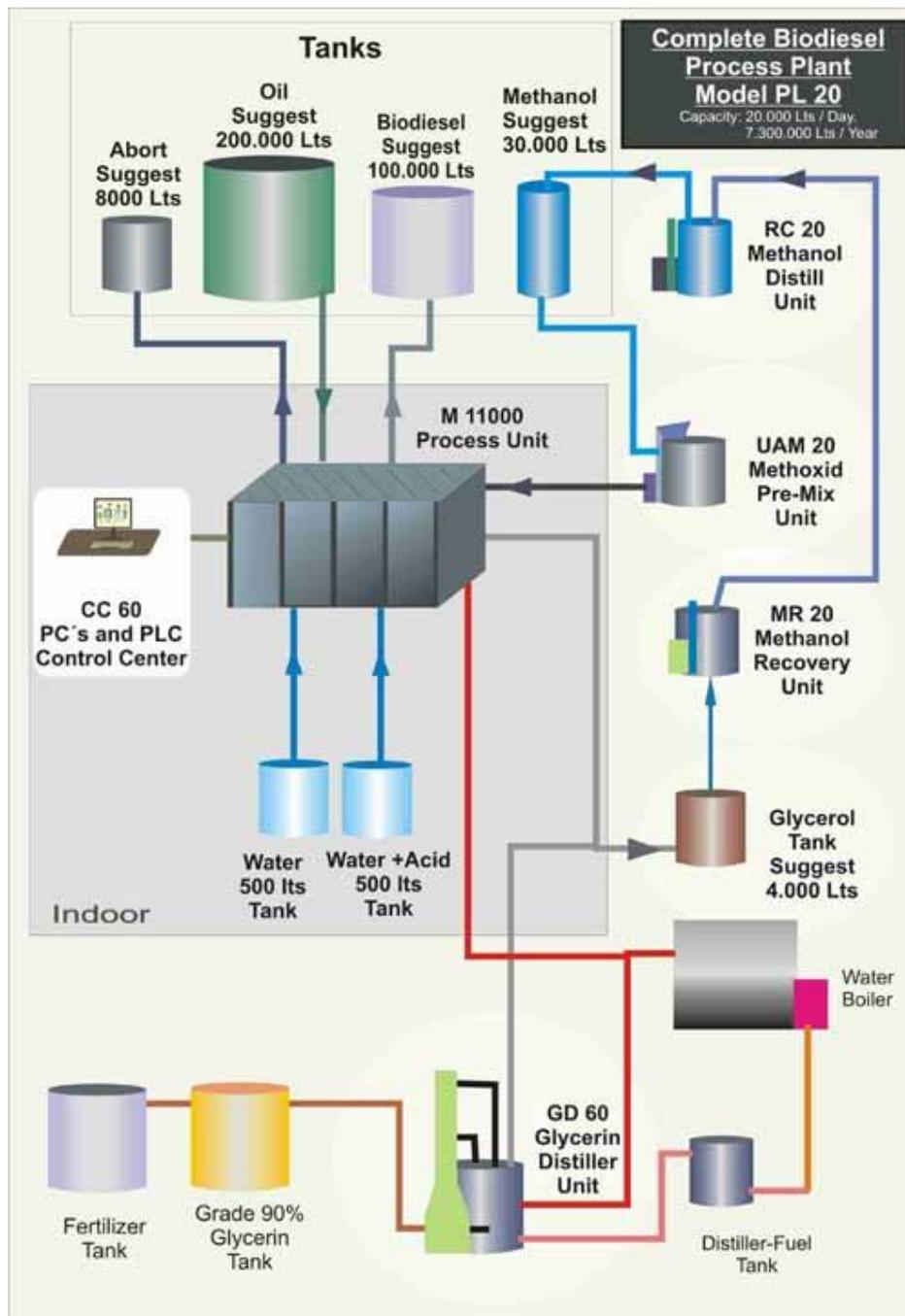


Planta PL- 1000



This plant processes 20.000 biodiesel lts/day considering a weekly stop for maintenance and services.

The Plants are composed for:

- Design of plant. Model DI 20
- 1 Process Unit, Model: M 11000 that produces 1000 biodiesel lts/hour.

- Methoxid Pre-mixture Unit, Model: UAM 20 , with production capacity superior to to 4.000 lts per day.
- Unit of recovery of methanol of the glycerol, Model: MR 20 , it recovers 950 methanol lts approximately and it processes 2.000 glycerol lts per day.
- Unit of methanol concentration. Model RC 20 it distills 4.000 methanol lts per day.
- Center of control Model DC 20. Table and 2 screens keyboard and mouse of PC, rack with CPU´s and server, for plant control, control program and communications, programm of extraction of statistical of production, consumptions times of stop, etc.
- Setting in march, hand-key. Model PM 20

DI´s (Plant Design)

Based on the physical planes of the place where it will implement the plant our professionals are carried out the design of pipes and disposition of the equipment.

Process Units

It is formed by one fully automatic unit, Model: M11000 (to process 1000 lts/h)

That contain the following elements:

- **Reactor** , external thermal covering.
 - Pipes in steel.
 - Mechanical agitator.
 - Valve of relief, valve of security.
 - Magnetic level Sensors.
 - Heaters.
 - Electronic sensor of temperature.
 - Sensor of pressure.
 - Recirculation and exchange pump .
 - Methoxid Dose.
 - Electronic optic level sensors.
- **3 Decants** made in steel.
 - Pipe in PPP .
 - Reflux methanol condenser.
 - Exchange pump.
 - Electronic optic level sensors.
- **Laundry** tank, made in steel.
 - Valve of relief, valve of security.
 - Water dose.
 - Acid dose.
 - Electronic optic level sensors.
 - Recirculation pump.
- **Dry** tank, made in steel reforced.
 - Valve of relief, valve of security.
 - Electronic optic level sensors.
 - Recirculation pump.
 - Vacuum pump.
 - Vacuum electronic control
 - Heaters
 - Electronic temperature sense.
- **Elements** common to all the units.
 - 3 exchange pumps.
 - 30 Electro Valves.

- 2 pumps of recirculation of water.
- 1 pumps for entrance and exit of fluids.
- **Electronic** circuit of control.
 - CPU and support microcontrollers.
 - 48 relay output.
 - 20 analogical inputs.
 - 4 digital inputs.
 - Battery of back up.
 - 1 Display.
 - 1 Remote infra red control.
 - Communication Port 485
 - Communication RS 232

UAM's (Pre-mixture of methoxid of sodium Unit)

This units prepares the methoxid in automatic form, diminishing the risk for the handler of dangerous substances and assuring the constant quality and matter dose prevails.

- Internal basket for load the NaOH
- Revolving valve of dosage.
- Recirculation pump.
- Level sensors.
- Cold finger.
- Tank of methoxid reception with daily capacity.

MR's (Methanol recovery from the glycerol Unit)

this unit allows to extract the residual alcohol that is caught in the glycerol. Together with the condenser, incorporate into the main processor, they almost recover 50% of the alcohol used in the process of elaboration of Biodiesel.

- 4 Interchanges of heat of helmets and tubes.
- 3 Recipients of separation liquid-gas.
- 1 hole pump.
- 1 liquid-liquid separation recipient.
- 3 Pumps of liquid.

RC's (Methanol Concentration Unit)

This Unit processes the methanol to extract the water that impedes the Transesterification process in the reactor.

The unit consist in:

- Column of distillation.
- Condenser .

- Internal Boiler.

CC's (Control center.)

It is the neurological center of the plant of biodiesel process.

Through these screens and their PC's and they control it is administered all the matters cousins, their doses, and quantities. The times, temperatures and pressures of all the units are programmed linked to the system.

The alarms are received by damages, matter lack prevails, etc in anyone of the external tanks, or in the process units.

They are also extracted statistical of production, consumptions for periods, etc.

- Rack including 3 CPU of control for plants and external tanks.
- PC, PENTIUM 4 2.8GHZ 512 MB HD 80G MON. 17"
- Server for intranet communications.
- Software of Control and statistical.

PM's (Setting up and training.)

Personel of our company will travel for the setting up of the plant and the personnel's training that will be to position.