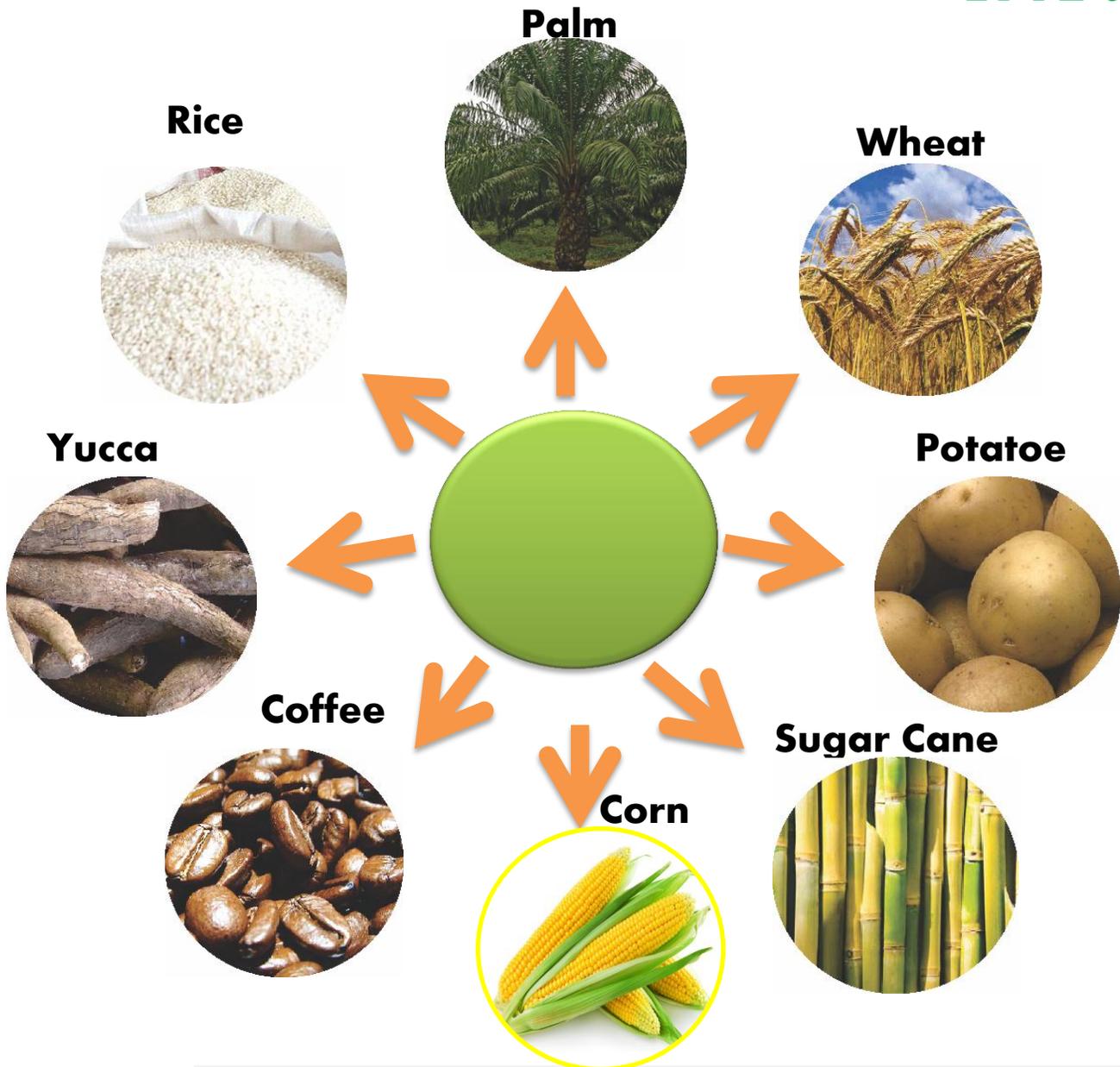




# Bioethanol production Plant

Technology To Replace Fossil Fuel

LT-PE-01



- ✓ Ethanol from biomass
- ✓ Research on other cellulose alternatives.
- ✓ Learn all the processes involved in these technologies.





# Bioethanol production Plant

The world is currently needing a change to improve the vital conditions. In the quest for oil's substitutes, researchers have been exploring renewables materials like wheat, sugar cane and oil plant, but since these ones are considered food, most of the scientists agree on the fact that food security can be affected. Recently a new trend has increased biofuel from algae (See our biofuel from algae plant).

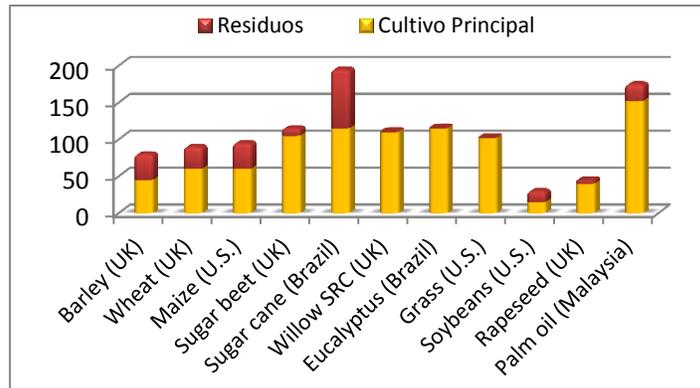
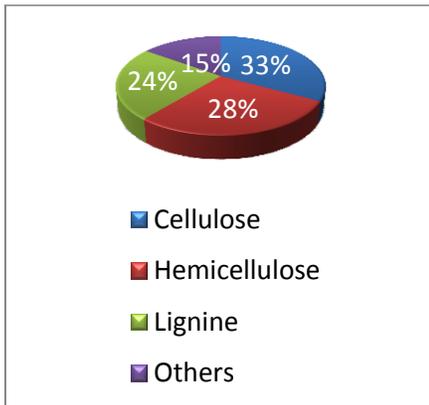


AMBIENTALMENTE RESPONSABLES

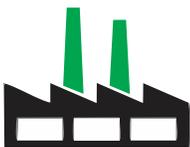
## Excellent for Research and Education.

Our bioethanol production plant is the ideal match for any research on biofuel production from biodegradable material (Biomass) or cellulose in general, allowing you experimentation from different angles.

### Research and Education.



## Research



This Bioethanol production plant is sable to produce small batches of ethanol from different vegetable raw material, to allow the experimentation and research on their efficiency.

## Education

This production plant can be adapted according to the education curriculum train on multivariable control in technical disciplines related to mechatronic, electrical, electronic or industrial engineering.

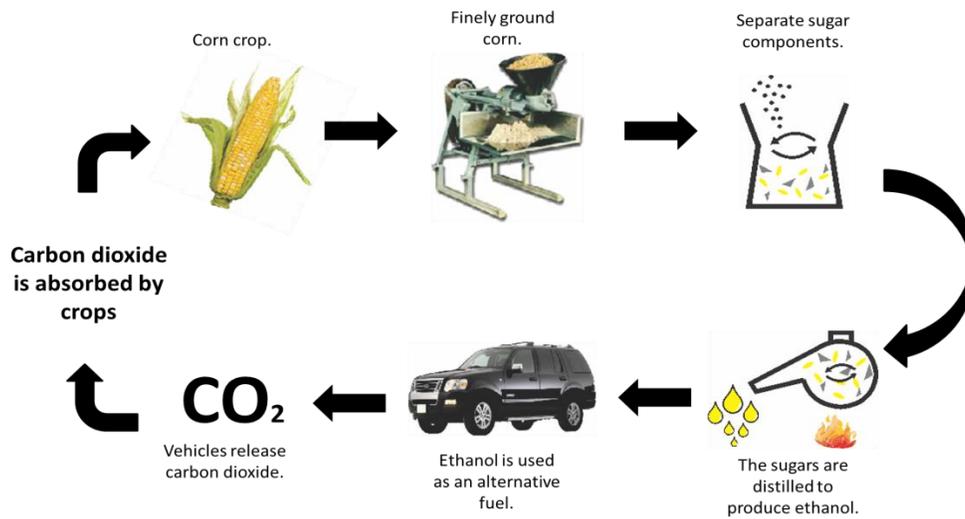




# Bioethanol production Plant

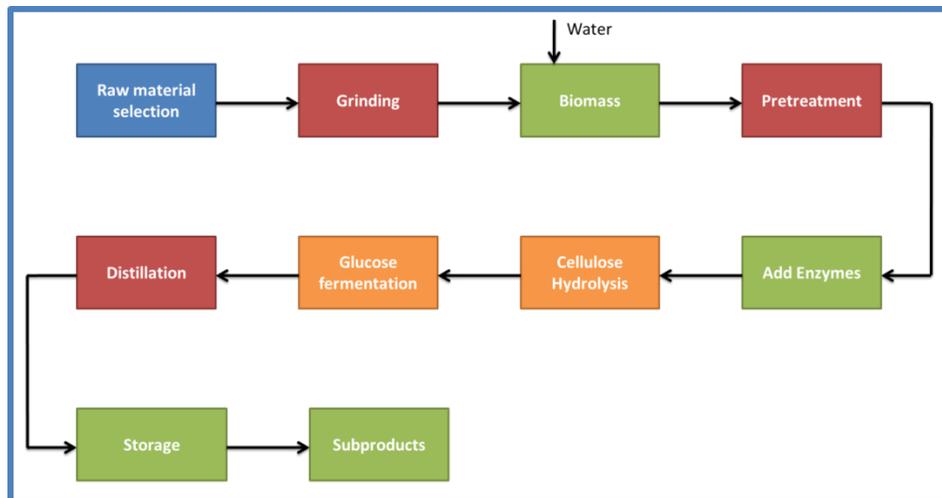
One of the big advantages of our plant relies on the fact the several groups of students can work simultaneously on the equipment. The control is not limited to a particular brand so you can use multiple controllers or PLC manufactures. However, if you use our PTSF1616[\*] you will have a versatile and economic solution to perform both: simple and advanced process control.

## Carbon Cycle



## Bioethanol production process

The process of making a fuel depends on several stages, where the control of variables and raw material, are really important to obtain a very good product.



The above figure shows the processes involve on the ethanol production.

**Important:** In this information, because of serious patent reasons, schematics are not included. Confirming your interest all this info can be revealed to you.

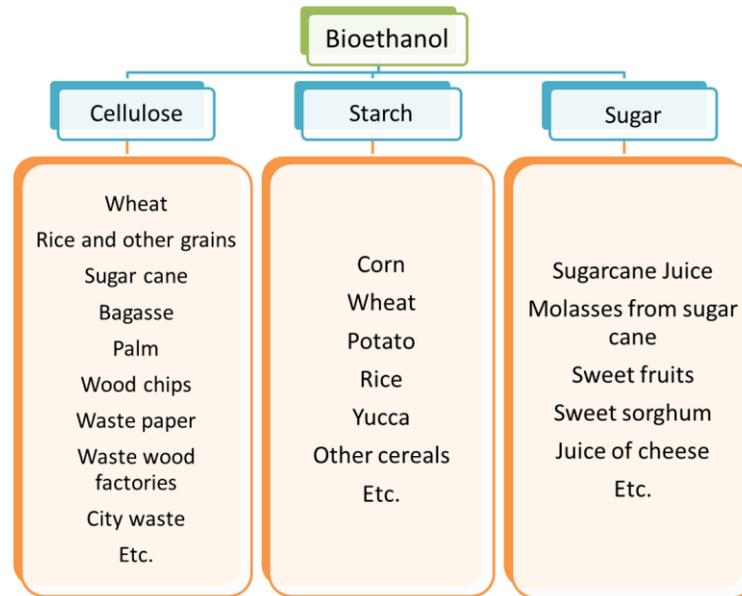




# Bioethanol production Plant

## Raw materials for Bioethanol production

The bioethanol can be obtained through processing different vegetables; one of them is the cellulose coming derived from grains, sugar cane African oil palm, wood, among other. Another raw material is the starch, which can be obtained from corn, wheat, potatoes, rice, etc. For instance, the sugar obtained from the juice of sugar cane, sweet fruits, can also be used as raw material.



## Statistics and yields of raw material.

Material	Sugar [%PF]	Culture [T/ha]	Ethanol [L/T]	Yield [L/ha]
Sugar Beet	16	60	100	
Jerusalem Artichoke	16	40	90	6000
Potato	20	20	120	3600
Grass		2 - 13(MS)	150	2400
Molasses (40 kg / t beet)	50	(2.4)	300	300 - 1950
Corn	58	8.3	390	-720
Wheat	60	5.5	370	3000
Cerum	4.9		23	2040





# Bioethanol production Plant

## ¿How can you order this production plant?

### 1. Like a pilot plant.

*In this version a control panel handles all the related processes and allows you for any intervention. Through a touch panel you can perform manual or automatic operation, observing all the production variables, diagnose or stopping of the process.*

*This production plant is made for all of those research and education disciplines which want to focus on the process directly and not on the control features of every device. It's guaranteed to have an easy, safe and reliable operation.*



### 2. Like a set of control workstations.

*The plant is designed not just like an integral process, but like a group of separated sub processes which can be individually operated. The variables, involved in every stage, are channeled toward an individual panel or module where can be connected to our control system PTSF1616[\*] or to any other brand controller.*





# Bioethanol production Plant

On every workstation, a group of students can develop all kind of control algorithm trough manual, remote or automatic control. Stand-alone or pc control also can be achieved.

This is one of the best educational tools for courses on: control, automation, mechatronics, industrial and electronics.

One of the big advantages is that every workstation doesn't affect the others. This is very useful to simultaneously serve a bigger numbers of students. At the end of the course, all the group can collaborate together to run a production batch

## ¿Que está incluido en la planta?

### General

- Macerator
- Fermenter
- Distiller
- Product i
- Activatio
- Pumps
- Pressure
- Tempera
- Intercon
- Water Su



### Pilot Plant

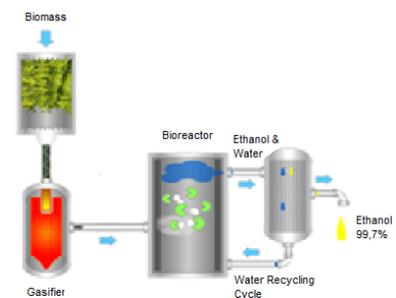
- Touch Panel.
- Panel.
- Output Software
- Acquisition Software
- Courses for
- Courses for

### Educational Process

- PTSF1616[\*<sup>1</sup>] Control Workstation
- Connecting cables.
- DAS for every workstation.
- Up to Four Workstations.
- Training Courses for Professors.

## What Control Processes Can You Make?

1. Level control and measurement.
2. Stirring and homogenization.
3. Temperature control and measurement.
4. Heating and cooling.
5. Product doses
6. Fermentation.
7. Distillation.
8. Flow control and measurement.
9. Pressure control and measurement.
10. PH control and measurement.
11. ON/OFF proportional control.
12. Variables monitoring.
13. Control algorithm.
14. SCADA[\*<sup>2</sup>] Supervisory control (Optional).
15. Caudal rate.
16. Design of safety and intrinsically safe system.



LATIN TECH INC.





# Bioethanol production Plant

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Discover and new experience  
in education and research.  
More realistic lab practices.

1616

[\*<sup>2</sup>] See Brochure SCADA

**Services & Products**

- *Climate change Fitotrón.*
- *Algae Biofuel Pilot Plant.*
- *Mini-Plant Malt/Beer/Soda production plant.*
- *Inverter Pendulum.*
- *Speed, position and generation plant.*
- *PLC trainer (Generic, AB, Simens, e.t.c.).*
- *Solar heating system.*
- *Hydrogen cells trainer.*
- *Solar and Eolic energy trainer.*
- *Water supply plant.*
- *Motor-generator plant.*
- *Drives.*
- *SCADA.*
- *Others didactic process (in preparation)*
- *Grupo motor-generador.*
- *Variadores de frecuencia.*
- *Motores de paso y servomotores.*
- *SCADA*
- *Otros procesos didácticos (en preparación).*

