

**SPECIALISTS IN
DESIGNING AND BUILDING
CUSTOM MADE
PILOT PLANTS**

Primotion 

POLYMERIZATION

The Polymerization Pilot Plant, developed by Primotron, is designed for continuous production at microscale. Primotron in different collaboration projects has developed a pilot plant to produce polyolefins. The plant consists of two continuous stirred-tank reactors that operate in series and it also includes a pre-treating raw material area. Primotron computerized process control system allows direct control of temperature, level, pressure and gas composition in the reactors. Micro - Pilot Plant is fully automatized and all of the process parameters, such as gas and liquid flows, operating pressure and temperature, residence time per reactor, etc., can be selected by the user, or modified within a wide range



2

MAIN FEATURES

Feed and conditioning of gas and liquid feed stocks

- Up to five independent gas lines for both monomer and co-monomer feeding into each reactor and a nitrogen line for inertization purposes
- Two solvent lines. A common stream is divided in two, feeding the solvent into each reactor at real time
- A catalyst line for catalyst addition in slurry phase into the first reactor
- A co-catalyst line for its addition in a homogeneous solution into the first reactor

Reactors and flashes

- The plant consists of three SS316 stirred tanks with high pressure closure system
- Each one is provided with a magnetically coupled stirred head, a heating jacket, a cooling coil, valves and accessories
- In addition to temperature and pressure control, monomers composition ratios are measured continuously, near-real time.
- In this way, the integrated control pressure/ relation loop allows the user to work maintaining simultaneously a stable desired pressure and a stable desired monomers ratios during the reaction time

SEPARATION COLUMNS

▶ Distillation column

Distillation is one of the most studied basic operations in Chemical Engineering, both at educational level and research centers to optimize new or conventional process with promising chemicals. Primotron can design and commissioning distillation columns according to customer requirements

- Tailored to specific requirements of each process
- Packed column
- Operation in continuous or batch mode
- Stainless steel as standard material of construction
- Controlled by PLC and touch screen



▶ Liquid- liquid extraction column

Liquid-liquid extraction is a well-known basic operation used to separate a component from a liquid mixture employing a solvent with high chemical affinity for this component. Apart from supercritical extraction pilot plants, Primotron designs and supplies extraction columns to efficiently integrate the unit into a main process

- Magnetic agitation system to avoid leaks when high pressure is involved
- High surface contact
- Sight ports at different column heights to visualize the separation process
- Level control system (total and interface level)
- Jacketed column with temperature control for high temperature applications

WATER TREATMENT PILOT PLANT



► Membrane Bioreactor

The Membrane Bioreactor (MBR) has been specifically designed to carry out waste water treatment studies under controlled conditions. Its compact and modular design makes the MBR an easy operable lab scale unit for biological water treatment

- Continuous operation for several months (until membrane saturation)
- Continuous waste water with suspended solids influent, treated water (permeate) withdrawal
- Gas recycle with compressor and sparge tube
- Possibility of chemical cleaning step implementation without dismantling
- Built in poly methyl methacrylate (PMMA) as standard
- Easily detachable
- Inerting system
- Lighting system over sliding rails for optimal distance selection for photocatalytic process
- Temperature, pressure, level, pH and conductivity measurement
- Several sampling points
- A membrane as standard, with the possibility of multiple membranes in parallel configuration
- Atmospheric pressure
- Ambient temperature as standard, possibility of temperature control under request

► Supercritical Water Oxidation Pilot Plant

The Supercritical Water Oxidation (SCWO) is one of the most promising technologies to convert waste water to innocuous product. Primotron SCWO Pilot Plant is a modular flexible unit which allows the researches to explore different possibilities with the aim of applying their findings in a larger scale equipment or industry

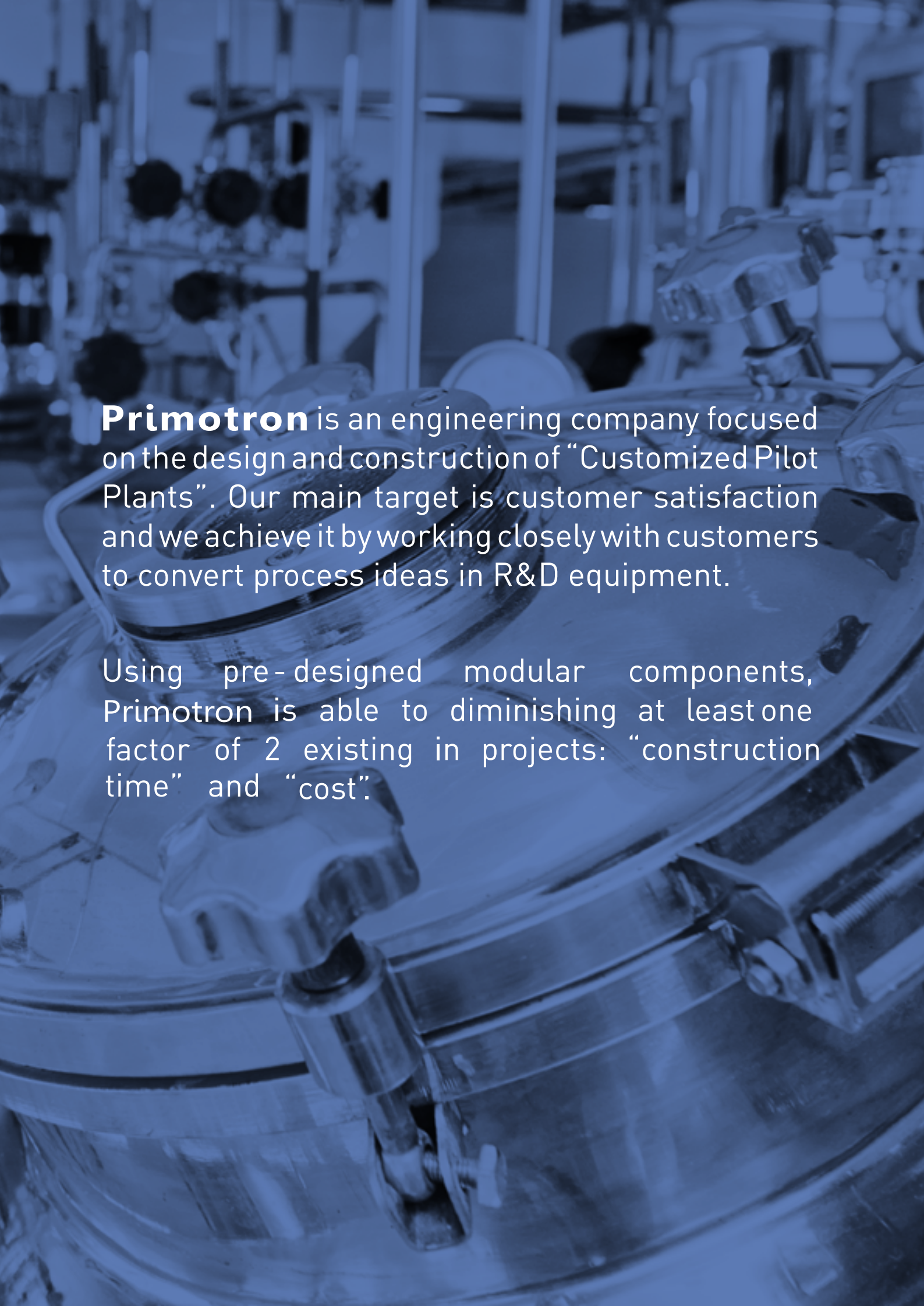
- High pressure (up to 250 barg as standard)
- High temperature (up to 400 °C as standard)
- Waste water flow rate of 15 L/h as standard
- Resistant materials for the operating conditions
- Designed for continuous operation
- Compressor system for oxygen

► Desalination Pilot Plant

Each Primotron Desalination Pilot Plant is designed according to specific requirements of each research group, employing the accumulated knowledge during years of experience

- High capacity tanks (100 – 200 L) for brine water and treated water storage with heated elements and temperature control if required
- Corrosive and temperature resistant materials (PVC, PP, PVDF, PPH...)





Primotron is an engineering company focused on the design and construction of “Customized Pilot Plants”. Our main target is customer satisfaction and we achieve it by working closely with customers to convert process ideas in R&D equipment.

Using pre-designed modular components, Primotron is able to diminishing at least one factor of 2 existing in projects: “construction time” and “cost”.

CUSTOM MADE



High Pressure Co-Gasification with recirculation

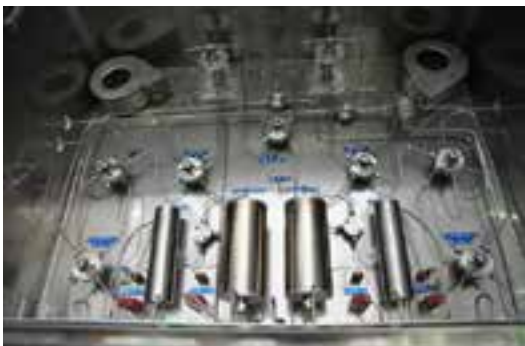


Biodiesel Pilot Plant

6



Entrained Flow Pyrolysis of Biomass at High Pressure



Multi Purpose Pilot Plant



Hydrates Pilot Plant

OTHER LAB EQUIPMENT

► Gas mixing box

Gas mixing box is designed for each customer according to specific requirements of the involved process

- Up to 6 gases as standard
- Operating pressure up to 100 bar as standard
- Flow rate is measured and controlled through high quality mass flow controllers with 1% of precision and 0.1% of repeatability
- Easy calibration for other gases
- Controlled by PLC and touch screen



► Liquefied gas feeding system

This system allows feeding different gases in liquid phase into a main process

- Flow rate from 0.1 to 5.0 mL/min as standard , up to 130 mL/min as special configuration
- Operating temperature from -10 to 5 °C as standard in the pump head
- Operating pressure up to 150 bar as standard
- Gases such as ethane, propane, butane, carbon dioxide, ammonia...
- Skid mounted



► Scrubber

A scrubber can be used to remove pollutants from a gas stream to meet the emission regulations. PID Eng&Tech unit is designed specifically for each process requirements and it can be installed both in our pilot plants and at the final step of the customer process

- Tower dimensions: 1000 mm, D 200 mm
- Treated water tank: 200 L
- Tank dimensions: 600 mm, D 550 mm
- Recirculation magnetic pump: power 1/2 CV
- Gas flow: 200 NL/min
- Gas pressure: 0.5 barg



**SPECIALISTS IN
DESIGNING AND BUILDING
CUSTOM MADE
PILOT PLANTS**



CONTACT

Primotron

Address: No. 54 Villa Beatriz Barangay
Matandang Balara Quezon City,
Manila, Philippines

Tel.No,: -8-2556914

Fax No,: -82556910

Commercial@primotron.com

Primotron 