



Refining Plants

Andreotti Impianti is an Italian Company active in the design, manufacture, erection and start-up of oilseeds and edible oils processing plants. Born in 1955 on the initiative of Mr. Argentino Andreotti, ANDREOTTI IMPIANTI S.p.A. has through the years remained a totally private family Company, consolidating its position as Italian Leader, reaching up a notable reputation also on the international markets, where its growth factor has been on a continuous remarkable uptrend over the last few years.

This year we'll celebrate our 60th anniversary. Many things have been changed over these first 60 years of activity, apart from considering each of our Client as our greatest asset.



ANDREOTTI IMPIANTI, WORLDWIDE SUCCESSFUL
FOR OVER 60 YEARS, NOW



Refining Plants

This Division covers all the necessary plants and equipment for all type of vegetable oils and animal fats refining, for either edible or technical use. The right type of plant is selected according to the nature of crude oil and fat to be processed.

Particular care is devoted in this division to the design and for the process parameters optimization, in order to reach the best quality results with the lowest possible consumptions and environmental impact.



Great efforts have been made by us in the last few years towards the drastic reduction of environmental impact of our plants, which has allowed us to obtain remarkable results, as:

- Reduction by over 30% in used chemicals
- Zero process water consumption
- No odor emission
- Effluent reduction by over 50%
- Low steam and fuel consumption



Our range of production includes the following main technologies, which have been successfully installed worldwide:

- Crude oil Neutralization and Degumming
- Bleaching
- Winterizing / Dewaxing
- Deodorizing



Crude oil Neutralization and Degumming:

- Special degumming
- Water degumming
- Water degumming
- Enzymatic degumming
- Short /Long mix caustic neutralization
- Cold refining with wet dewaxing

Andreotti Impianti's COLD REFINING special design main advantages:

- Reduction by over 50% of bleaching earth consumption
- Energy saving
- Reduction in deodorizing and physical refining temperature
- Better cold test stability of refined oil



Andreotti Impianti's ENZYMATIC DEGUMMING design main advantages:

- Same final oil quality
- Higher oil yields
- Less wastewater produced.
- Gums produced are more liquid, than easier to be stored



Cold refining & Enzymatic degumming



Bleaching and Filtering Plant

- Continuous Bleaching
- Continuous Dry Degumming and Bleaching
- Continuous filtering with or without Oil recovery
- Fully automatic filtration cycle management through dedicated PLC

Andreotti Impianti's special design main advantages:

- Lower bleaching earths consumption
- Lower refining cost
- Lower losses
- Reduced wastes

This result was obtained thanks to:

- Reaction in absence of water and steam
- Extremely precise and programmed dosage for total exploitation of bleaching earth activity
- Improved intimate mixing and high vacuum

The filter discharging is fully automatic and is totally manageable through PLC.

- Easy management
- Reduction of risk to human mistakes
- Permanent follow up
- Reduction of required times



Bleaching and Filtering Plant



Winterizing plant:

The purpose of winterizing plant is to remove from the oil those substances which, at room temperature, make oil cloudy as Triglycerides with high melting point and Waxes.

Above substances can be removed by filtration after crystallization at low temperature.

The filtration cycle is automatically managed through dedicated PLC

Automatic filtration cycle is mainly controlled by:

1) One PLC for automatic control of complete filtration cycle that operates all pneumatic valves and related opening and locking switches, level switches and pressure switches.

Controlled automatic phases of cycle are:

- 1 Stand by
- 2 Filling
- 3 Precoating
- 4 Indirect filtration
- 5 Direct filtration
- 6 Emptying
- 7 Cake blowing
- 8 Cake discharge

The PLC controls and allows the automatic passage from one phase to the following, while only one phase that must be authorized by the operator is that of passage from cloudy filtration to clear filtration. In case of anomalous working, program stops, and calls for operator intervention.

Manual plant operation can be done, and in this case, the operator manages different phases from electric control board by switches selector.

The total automatism is complete with:

- Complete set of pneumatic control valves with opening and locking stroke ends.
- Set of pressure switches, electric levels and accessories.

Winterizing plant automation system:



Deodorizing plant:

- Continuous / Semicontinuous deodorizing and physical refining with or without quick product change over
- Continuous packed columns for mild physical refining
- Vacuum systems with surface/ice condensation

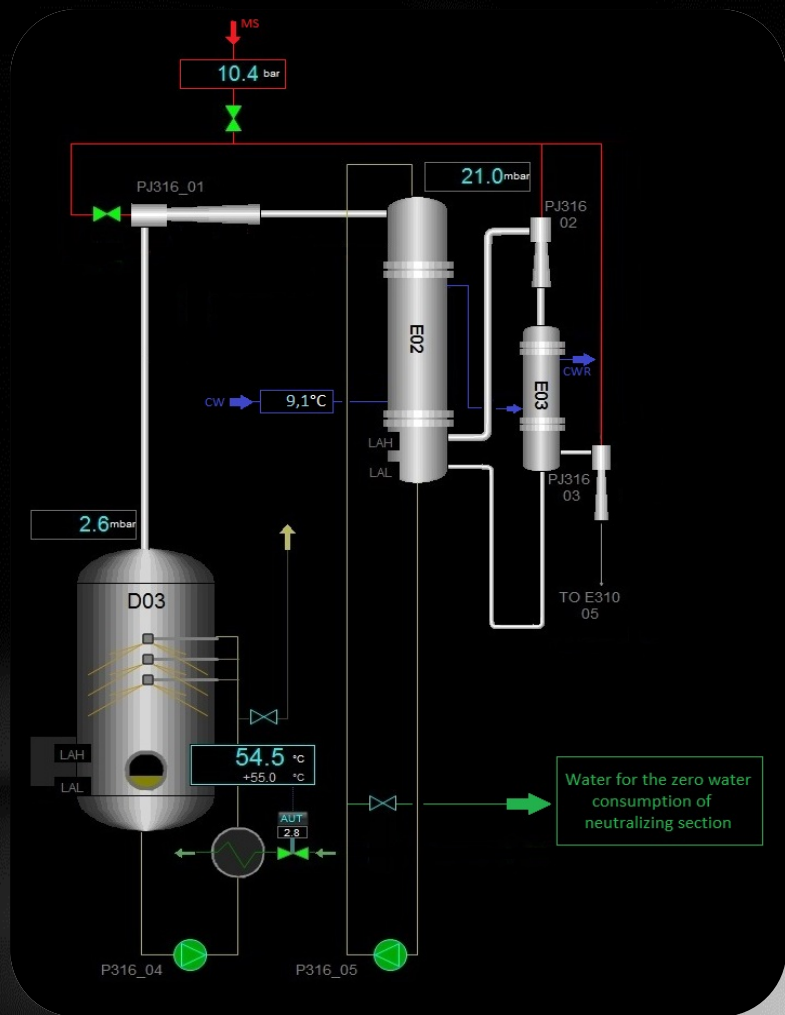
Andreotti Impianti's special design main advantages:

- compact layout
- low trans isomer formation thanks to long retention time at reduced temperature
- heat recovery $\geq 80\%$
- no contamination between each tray thanks to a separate vapours suction from each stage
- Easier fatty acids condensation and a better quality of same thanks to vapours low temperature,
- high efficiency vapour scrubbing, less than 50 grams of fatty acids losses per ton of oil processed,
- quick product change over without significant contamination
- special design mammoth pumps in deodorizing trays, allowing for better distribution of sparge steam, hence better and more complete stripping action of same, improving oil quality and shelf-life
- great flexibility for future plant capacity up grading

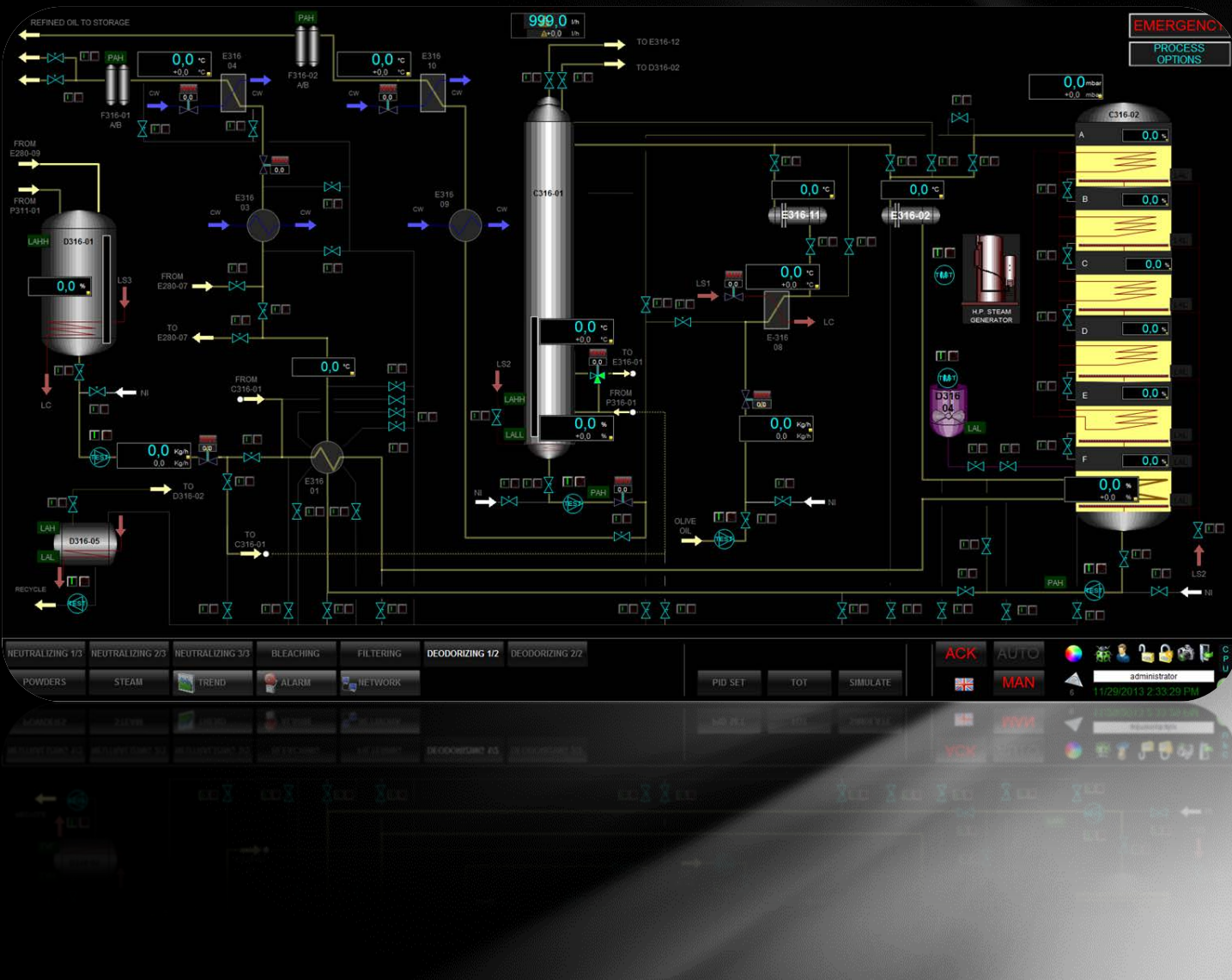


Deodorizing plant

The use of vacuum groups with surface condensation, replacing the direct contact condensation, has enabled us lately to bring process water consumption to nil and to remarkably reduce (by 50%) the quantity of waste waters. This allows us to state that today our refineries are Zero Water Consumption ones.



Zero Water Consumption Refining Plant



Automation and Supervision system

Typical screenshot of supervising control system of a continuous deodorizing and physical refining plant
Easy automatic system for plant control.

All actions are easy to be carried out and the ergonomics of the graphic pages, helps the operators understand how to proceed with the operation sequence.



Made In Italy

ANDREOTTI IMPIANTI S.p.A. manufactures the core pieces of equipment of all designed process plant in highly qualified workshops in Italy for assuring an unexceeded construction quality control.



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