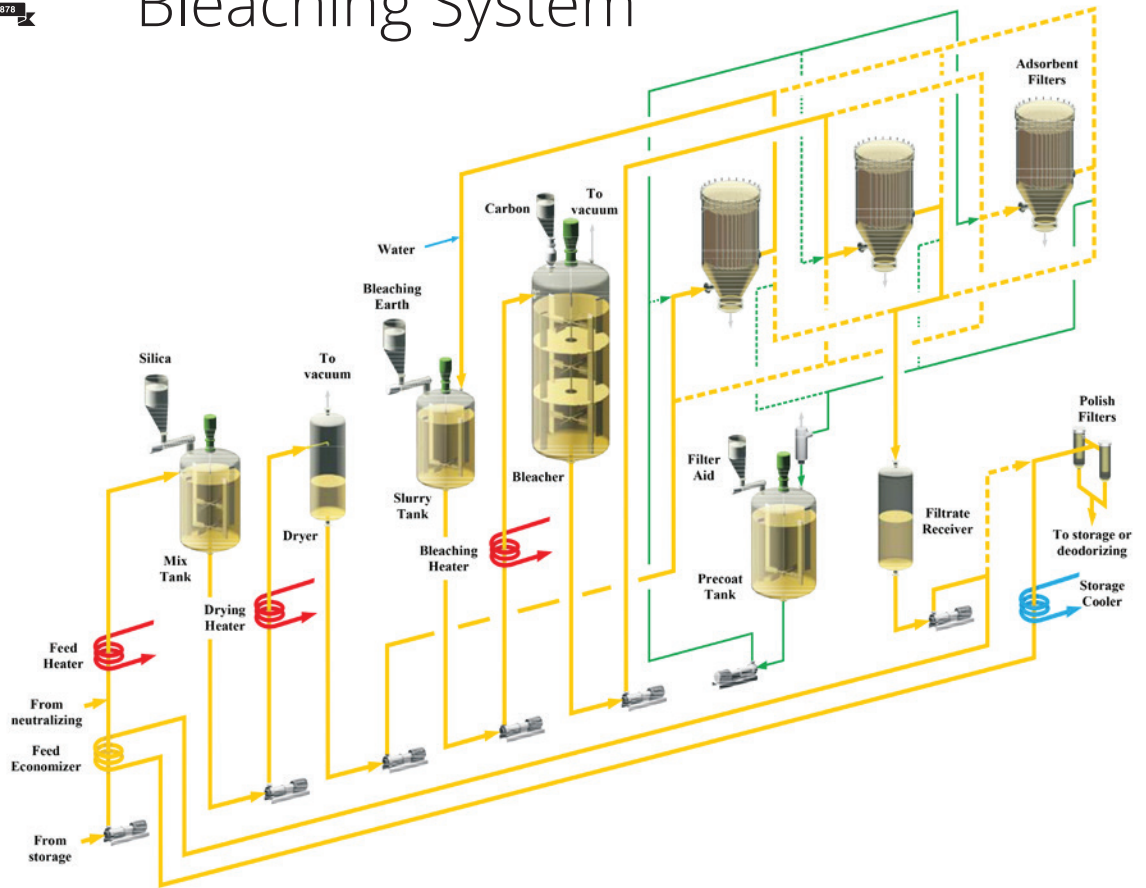




DoublePass Bleaching System

- Silica Pre-treatment eliminates need for water washing (in neutralizing) and reduces earth consumption and oil losses by up to 20%.
- DoublePass Filtration reduces earth consumption and oil losses by up to 30%



REDUCE OIL LOSSES BY UP TO 30%

Process Basics

Silica Pre-treatment: The incoming degummed or neutralized oil is mixed with a special silica designed to adsorb soaps and phospholipids (gums). The treated oil is dried and filtered (1st Pass) through a bed of once used bleaching earth in one of the Adsorbent Filters.

The silica with adsorbed soap and gums is deposited on the filter bed. As the oil passes through the bed of bleaching earth a large part of the color bodies in the oil (mainly chlorophyll) is removed by the still active bleaching earth.

Bleaching: The pre-bleached and filtered oil is slurred with bleaching earth before entering the Bleacher where the earth adsorbs the residual color bodies and other impurities. Residual moisture and air are minimized as well by applying vacuum.

The oil is filtered again (2nd Pass) in a second Adsorbent Filter where the earth containing impurities and color bodies etc. is retained. The fully bleached oil is collected in the filtrate receiver and cooled before going to intermediate storage. Alternatively, the hot filtered oil can be sent directly to deodorizing.

Filter Operation: The system is equipped with three filters that are cycled so that while one is being used to separate bleaching earth another is separating silica as described above. In the meantime the spent silica and earth collected in the 3rd filter is dislodged and removed from the filter screens, and the cleaned filter pre-coated and readied for a new cycle. The cycling of the filters is automated and triggered by either high pressure or elapsed time.

Features and advantages

- Eliminates need for water wash step in “Long-Mix” neutralizing by removing residual soap with silica adsorbent.
- Reduces earth consumption up to 20% by separate filtration of spent silica before adding bleaching earth.
- Reduces earth consumption by up to an additional 30% by prebleaching incoming oil in a filter already filled with a packed bed of still active bleaching earth.
- Separate slurry system for earth and oil allows for addition of water and “wet” bleaching.
- Fully automated filtration cycles with minimal operator interaction.
- Optional vertical or horizontal tank filters.
- Optional mechanical or steam agitated bleacher.
- Optional system for addition of activated carbon.
- Plant sizes from 50 to 1,200 TPD (metric tons per 24 hours).



Utility Consumption

Typical figures per metric ton of oil heated to 90 °C by bleached or deodorized oil in Feed Economizer:

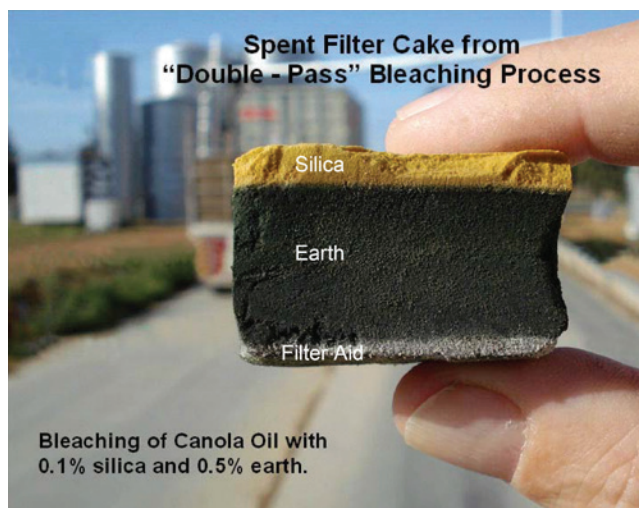
Electric Power:	4 - 6 kWh depending on plant size
Steam (2 - 10 barg):	20 - 30 kg depending on type of oil
Cooling Water (30 °C):	2 m3 at ΔT 6 °C
Filter Aid:	0.8 kg
Silica:	0.5 - 1.0 kg depending on oil quality
Process Water:	0 - 5 kg depending on type of earth
Bleaching Earth:	3 - 8 kg depending on type/quality of oil

Note: Control room, MCC and adsorbent handling not included.

Equipment Space Requirements

50 – 200 TPD:	Two levels, each 110 m2 with 6 m elevation
200 – 600 TPD:	Two levels, each 215 m2 with 8 m elevation
600 – 1200 TPD:	Two levels, each 350 m2 with 8 m elevation

Note: Control room, MCC and adsorbent handling not included.



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