

VEGETABLE OIL PROCESSING PREPARATION OF RAW MATERIAL

Methods of preparing raw materials for pressing vary widely according to the particular material in question. These methods commonly include some or all of the following:

1. Feeding material to the mill at a uniform regulated rate.
2. Cleaning thoroughly using shaker screens, aspirators, etc.
3. Weighing incoming press plant materials employing automatic dump scales or bulk weighing scales.
4. Magnetic separation of tramp iron.
5. Delinting (cottonseed only)
6. Decortication, as required, for cottonseed, sunflower seed, etc.
7. Crushing, grinding, cracking, or rolling, as required by material.

When these preliminary preparations have been accomplished the following procedures will vary according to the type of material being processed.

Cooking and Drying

All materials require preconditioning prior to entering the Expeller®. For this reason, all Expellers are provided with a conditioning vessel. This vessel will permit final temperature and moisture adjustments for the most efficient pre-press or full press operation.

Proper cooking and drying are the most important factors in determining Expeller efficiency and can be the difference between good and poor operation. Oil content of the cake, quality of the oil, ease of operation, and the amount of footing will be influenced greatly by proper cooking and drying. In an oil mill plant, the Expeller itself is a very versatile unit operating on practically all oil and fat bearing materials.

Minor adjustments may be required when varying the capacity or when changing from one material to another; the original plant design does not need to be changed when the operator desires to take advantage of this flexibility. This flexibility also exists to a degree in the cooking and drying equipment; however, the capacity and type of raw materials must be considered in the original plant design.

To meet this need, Anderson International Corp manufactures two different types and sizes of cooking-drying equipment. The most versatile is the Anderson Cooker-Dryer. The Anderson Cooker-Dryer is a steam jacketed vessel that may be installed directly over an individual Expeller or based alongside the Expeller location (depending on the type of material being processed). Aware that proper cooking-drying equipment is an important factor in the original design of an oil mill plant, close attention must be paid to the type of equipment chosen. The Anderson engineer or representative should be consulted in equipment selection.

Feeding the Expeller

For best performance, the Expellers must be fed



ANDERSON INTERNATIONAL CORP

4545 Boyce Parkway, Stow, Ohio 44224 U.S.A. • Phone: (216) 641-1112 Fax: (330) 688-0117

Web: www.andersonintl.net

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continuously at a regulated rate equal to the Expeller's full capacity. Uniformly prepared by-product material (such as filter press cake, overflow feed material, and coarse fines from the Anderson Screening Tank) must be slowly and carefully mixed back into the freshly prepared material stream feeding the Expellers. If these by-products materials are not slowly and carefully mixed into the the Expeller® feed stream, they will adversely affect the efficiency and capacity of the Expeller.

In order to accomplish the above, the following method for feeding the Expeller was developed: The cooked and dried materials, including the the mixed by-products, are elevated from the floor conveyor and up into the overhead conveyor feeding the conditioner feeders over the Expellers.

Anderson recommends a magnetic separator be installed in all conveyor chutes feeding the cracking rolls, the roller mills, the cooker units, the Expellers, and the cake grinders. The magnetic separators will remove tramp iron and will protect the equipment.

Hot dry cake from the Expellers may be humidified and cooled in the Anderson Cake-Cooler unit prior to grinding. For accurate capacity control of the cake grinding and bagging equipment, the cake is temporarily stored in a cake bin and fed at a metered rate to the grinder.

Handling and Filtering of Crude Oil

Crude product oil from the Expeller will contain a small amount of suspended particles which are

called fines. These fines can be removed by settling, screening and filtering the oil. We recommend the Anderson Screening Tank. The crude, unfiltered product oil (from the Expeller) gravitates into the Screening Tank where the majority of the fines settle out. The settled fines are continuously drained and fed back into the Expeller feed stream and re-pressed. The settled crude oil that overflows the Screening Tank and into the product overflow section, is automatically pumped by the product oil pump to the filter press area. Fines in the unfiltered oil tank are kept in suspension by employing a mixer mounted in the tank. The unfiltered oil is then pumped through the filter press by an air operated filter feed pump. The filtered oil from the filter press then gravitates into the filtered oil tank. The filtered oil is then pumped to storage. An oil meter in the line automatically records all the filtered oil that is pumped to storage.

Oil Cooling System

The Expeller generates sufficient case frictional heat to elevate pressing temperatures above the level considered optimum for efficient pressing. To compensate for this elevated temperature, Anderson draws relatively clean hot oil from the middle of the Screening Tank, pumping it through heat exchangers to cool the oil to the desired temperature, then distributing the oil over the Expeller's drainage barrel. This cooling oil not only cools the metal components of the the barrels but also the hot oil being released from the barrels, producing a better quality oil. This circulating oil, along with the additional pressed product oil, continuously and automatically gravitates back to the Screening Tank.



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