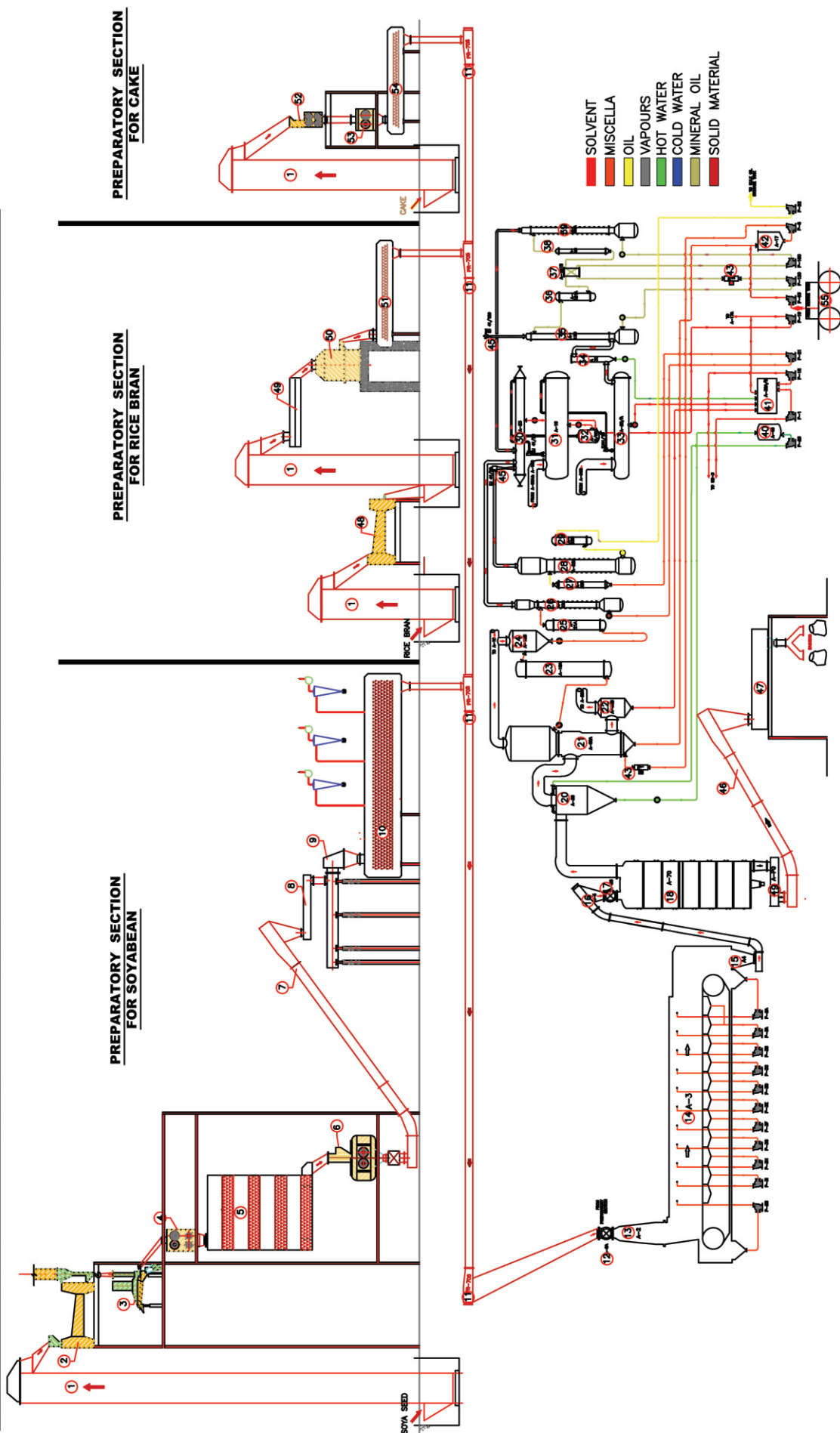


STRIKE GOLD WITH OIL SEEDS



Ace Oils Continuous Solvent Extraction Plant



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Oils bearing materials are mainly classified into 2 groups. The first include proper oil seeds like Rapeseed, Cottonseed, Sunflower seed, Castor seed, Sesame seed, Soybean etc. The second include by-products derived from other processes like corn germ, rice bran etc.

CLEANING OF OILSEEDS

Oils seeds delivered to oil mill always contain foreign material such as sand and dirt, stones, tramp iron & sundry material (cords, rags etc). Sand, dirt & stones are usually removed by using a combination of screens & air streams thus separating undesirable material from oilseeds. Separation is carried out by exploiting the difference in specific gravity between oil seeds & such foreign matter. Tramp iron is removed by installing permanent magnets over the conveying troughs.

PREPARATION OF OILSEEDS

Preparation means all treatment to which oilseeds should be subjected to obtain the optimum conditions for the extraction of oil.

COTTONSEED

Cottonseed is composed of fiber, hull & meat. In order to make the processing of this seed easier delinting & dehulling is carried out to recover the cotton fiber which is still adherent to the hull after ginning & to remove the hull thus facilitating subsequent processing.

SUNFLOWER & SAFFLOWER

Sunflower and Safflower seeds may be processed either as such or decorticated. In the former case the de-oiled meal obtained has a low protein value, whereas in the latter case the meal is high in protein content. Sunflower seeds are dehulled in a way similar to cottonseed.

SOY BEANS

To meet the increasing demand of high protein meal we recommend soybean dehulling. Soybeans are covered with a hull which constitutes 6-8% of the weight of the seed. Such a coat is removed by using special equipment consisting of a beater designed to detach the hull from the kernel & a separator intended for separating the kernel from the hull.

PRETREATMENT OF OILSEEDS PRIOR TO EXTRACTION

The pretreatment process is carried out mainly by the following machines:

- ✧ Roller mill
- ✧ Cookers
- ✧ Flaking mill

Roller mill consists of two pairs of corrugated rolls, the main purpose being to break the seed in small pieces. The two pairs of rolls rotate at different speeds & in opposite direction to effect cutting action & are kept under pressure by use of Belleville washer. Cookers are used for heating the cracked seed & controlling its moisture content. Depending on the material, either horizontal (mainly used for rice bran) or vertical type cooker is used. The horizontal type cooker is composed of steam heated cylinder whose longitudinal shaft is fitted with mechanical stirrer designed to move the material & bring it in contact with the heated walls of the cylinder. For soy bean, vertical superimposed pan type cooker of suitable diameter & height is used.

COOKING HAS THE FOLLOWING ADVANTAGES

The oil cells which are distributed throughout the seed mass are ultra microscopic in size. Because of the increase in temperature they coalesce into larger droplets which flow more readily from the seed mass. Our cookers are designed with utmost care to ensure that the heating is carried out at correct temperature to ensure that no organoleptic & physico chemical changes occur in the oil contained in the seed. Flaking mill are equipped with cylindrical rolls with large diameter. The rolls rotate at different speed (inward direction). The arrangement of flaking rolls ensures flattening of the seed to 0.2 -0.4mm thick flakes which are most suitable for efficient extraction process.

RICEBRAN

After passing the powdery rice bran through horizontal cooker, it is converted into pellets of suitable size in a pelletizing machine. The pellets are passed through a horizontal pellet cooler which also reduces moisture, making it suitable for extraction.



OIL CAKES



The cake conveyed from Oil Mill is broken to small pieces by a Cake Breaker consisting of spiked rolls made of special alloy. The oil cake is further processed in a roller mill, dried & then sent for extraction.

We use horizontal countercurrent flow extractor where in the material and fresh solvent (hexane) enter the extractor from opposite ends. Fresh solvent is sprayed towards the discharge end of the extractor & circulated through a series of high capacity centrifugal type pumps. The number of spray pumps depends on the nature of material.

OIL EXTRACTION



PERCOLATION TYPE HORIZONTAL EXTRACTOR

The pretreated material enters the extractor through a rotary valve & feeding hopper. Hexane is pumped in & allowed to percolate through the material to extract oil. The extracted oil & hexane miscella are transferred to a solvent recovery unit. The cake is treated separately in a Desolventiser / Toaster to remove residual solvent.

DISTILLATION



Miscella from last miscella hopper (towards feed end of Extractor) of continuous extractor overflows into the Miscella Tank by gravity from where it is sent to the Distillation Section. Distillation is done in 3 stages. Miscella from Miscella Tank (A-17) pumped to Ace Oils Economiser (A-60A). To recover solvent from Miscella requires heat energy by Steam. Ace Oils Economiser specially designed to utilize heat of vapours emerging from the Desolventiser Toaster (A-70) to reduce consumption of steam in the plant. In A-60A, we use waste vapours from DT A-70 to Heat miscella coming from A-17 Miscella Tank.

After Initially Heating Miscella is again heated in First Evaporater A-18A and then enter into Flasher A-18B to Flash off Solvent. The Oil Rich miscella thus obtained is charged into the Second Evaporator A-21A and Flasher cum stripper A-22A. The Flashed off Solvent Vapours from A-18B and 22A are condensed in the condensers A-19 and A-23 respectively & liquid Solvent is recirculated back to the process through Solvent Water Separator A-32A/B and 34.

MEAL DESOLVENTISING SECTION:



The extracted meal is sent through a solvent tight conveyor (A-5) to a desolventiser toaster in which it moves by gravity into a tower consisting of a 6 to 7 trays filled with a number of mechanical paddle agitators which move the meal from one tray to the next until it reaches the discharge. The level of meal is controlled by a pneumatically operated level control system. All trays have false bottoms & are heated by indirect steam at high pressure. Heating is also done by live steam which is injected through the meal bed, which is agitated by the paddles of the mechanical stirrer. Since the solvent in the meal boils at a temperature lower than the condensing temperature of steam, it is entirely vaporised.

RECUPERATION GROUP

The solvent from the desolventiser is condensed, so that the heat of condensation can be applied to the distillation of the solvent from the miscella. The uncondensed Hexane vapors from water cooled condensers proceeds to contact cooler and then to the recuperating systems where Hexane vapours are absorbed in recuperating oil (Mineral oil) and balance air is vented out by Ejector. Hexane is recovered by Heater and the hexane vapors are sent to condenser A-20. The mineral oil is recirculated and hence there is no consumption of Mineral Oil.



MEAL CONDITIONING SECTION

The meal leaving the Desolventiser Toaster is at a temperature of 100°C. This is precooled in a Meal Cooler to 50°C and then sent to a humidifier through a conveyor. The humidifier comprises of a mechanical paddle stirrer that turns over the meal and assists it in moving. The top of the humidifier is equipped with water sprayers which inject a set amount of water through the meal mass. The moisture level is raised to 10 to 14% by humidifier



OUR ASSETS

1. A Team of Highly qualified and Trained Engineers with vast experience in Solvent Extraction and Vegetable oil field.
2. The knowledgeable, experienced and committed team of skilled workers with well equipped and latest advanced machinery.
3. Qualified Execution Team to execute project within schedule time.
4. Design cum R & D team is constantly engaged for economical, skillful engineered design that provides you latest technologies with optimum utilization of energy and safety device.

OUR CONSOLIDATED ACTIVITIES AT A GLANCE:

1. Solvent Extraction Plant
2. Vegetable Oil Refinery
3. Acid Oil Plant
4. Dewaxing Systems
5. Vanaspati & Industrial Hydrogenation systems
6. Expander Systems
7. Proteins & Edible Flour
8. Oil milling systems
9. Bakery Shortening Plant
10. Margarine Plant
11. Lecithin Plant
12. Bio diesel Plant
13. Fractionation Plant
14. Interesterification and Transesterification



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