



Ferro Oiltek Pvt. Ltd.

An ISO Certified 9001:2015



PRODUCT BROCHURE

From Planting the Seed,
Till the Extraction of Oil,
We Walk with You in Every Step
as a Loyal Partner,
Its **Ferro's** Passion to Perform...

www.ferrooiltek.com

Centrifuge Separator
Sales Partner

Macfuge

DOWNLOAD
BROCHURE



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“The Complexity of Modern Industry is increasingly diverse & understanding its needs is paramount to Ferro Oiltek.”



ferro Oiltek Pvt. Ltd.





“

Because your milling concern are also ours, We are constantly striving to develop solutions adjusted to your needs. Longevity, robustness & simplicity are the core of our passion & innovations are our total commitment to you.

The Result?

Your satisfaction over the years.

Our Pleasure? To know that our products help you quickly & efficiently managing, the constraints that emanate from your resources & developments.

Mr. Ramnivas Bohra

(Chairman & Managing Director)

”

ABOUT FERRO OILTEK PVT. LTD.

TOWARDS EXCELLENCE...

Your one stop solution for all your needs to Seed Processing & Edible Oil Industry. A complete setup under one roof. The group started in the year 1995 with an initial micro level production of its vibro separator. De-stoner, maize processing & grain processing plant.

With two decades of backed knowledge in seed processing & hard-working attitude of Sri. R. N. Bohra (M.D) group launches its products in cottonseed, sunflower & other oil seed processing industry in 1999. The dream of providing something better, indigenous & economic to oil seed industry. Group develops its unique & simpler machines for Delinting, Decorticating, Preparatory, Solvent Extraction & Edible Oil Refining.

Today Ferro Oiltek is certified ISO 9001:2015 & ISO 9001:1401 UKAS Accredited with various pressure vessel directive manufacturing setup.

Ferro Oiltek's head office located in Ambernath (Mumbai) and 25000 Sq. meter Manufacturing plant at Malkapur (Maharashtra). With 200 Skilled technician, QC Personnel, Experienced workmen and latest state of art machinery.

We have Solid Works (Premium Packages) provided by Dassault Systems US[®]. Capable of designing oil seed processing, preparatory machines, High pressure vessels for Solvent Extraction & Edible Oil Refinery. Also, we have Solid plant[®] for designing complete plant layouting with piping, supporting structure arrangement etc.

Our inhouse manufacturing facility consist of latest 7D Flow waterjet, Hurco VMC, Hurco CNC Lathes, Juaristi Horizontal Boring, etc.... with giant assembly and fabrication bay.

Ferro Oiltek is also proudly associated with MACFUGE by Servizi Industrial Srl. Bologna, Italy for sales and services of Disc type Centrifugal Separators for Vegetable Oil, Bio-Diesel and other applications.

We grew along with our dreams & now Mr. R. N. Bohra our M. D. has his two sons Mr. Jenendra Bohra & Mr. Jitendra Bohra at his side with whom this organization is going to reach new level, but at the same time will offer the same dedication & the personal touch to our work as we had until now.



Ferro Oiltek Pvt. Ltd.

Vision

To be pioneers in serving the cotton and edible oil industry efficiently, economically and effectively. In doing this, to keep ourselves abreast with state-of-the-art technological innovations, maintain premium quality of service, product and teamwork.

Mission

To fulfil every intricate need of the cotton seed and edible oil industry to the fullest of our abilities. Doing this by providing indigenous solutions, world class products and doorstep service in order to satisfy every client with utmost sincerity.



CERTIFICATION & RECOGNITION

UKAS MANAGEMENT SYSTEM

UKAS CERTIFIED ENVIRONMENTAL
MANAGEMENT SYSTEM

GMP (GOOD MANUFACTURING PRACTICE)

D&B (D-U-N-S No.65-065-9936)

GOVT. RECOGNISED STAR EXPORT HOUSE

EXATEX

Our Services

FERRO - Helps you to identify the proper technology and selection of right technology, machineries and equipments with modern technology in various processes. In the cotton seed processing plant, we help the client to select authentic machinery and equipment so that the capacity goes up as well the life of the machinery increases. We ensure that customer gets maximum yield of efficiency with minimum utility consumption.

TECHNOLOGY IDENTIFICATION

FERRO is a system that helps identify the proper technology, machinery and equipment with state-of-the-art processes. In the cotton seed processing plant, we guide our clients genuinely to select right machinery and equipment so that the capacity of the machinery increases. This also helps increase the life of the machinery. We ensure that the client gets maximum yield due to the efficient functioning of the machinery, with minimum utility consumption. In the oil milling section, we help the client select appropriate preparation equipment. This helps maximize the equipment's efficiency according to its capacity. Coming to the solvent extraction section, here we guide clients to select appropriate equipment, the right processes, accurate bed height for extractor and the correct retention time for reacting vessels. This results in maximizing the extraction with minimal loss of hexane and utility consumption. In the oil refining section, we suggest authentic processes to clients so that the quality of refined oil is produced is of high standard & attains the competitive edge in the market.

PROJECT EXECUTION

FERRO- We assign an experienced and well-knowledgeable engineer to your project. This engineer ensures end-to-end coordination of the project. The project manager comes with many years of experience and serves as a single-point contact between the various individuals working on the project.

INSTALLATION

At FERRO, we have a strong and reliable team for installation of equipment. Our team ensures proper installation of all pieces of the equipment into their prepared foundation. They also ensure smooth installation of the associated machinery including interconnecting equipment and piping work. Our installation team is well-trained in all the crucial steps. This includes shifting of equipment foundation layouts, piping, instrumentation, cabling, insulation, and piping.

COMMISSIONING

Post installation, there is also commissioning duty for which we have teams with expertise of process. Our commissioning team installs and commissions plants all over the world. They will intricately bring the plant to full performance before handing it over to the client. Until the equipment is operating smoothly without any glitches, we do not consider our jobs completed for that project. We ensure that the equipment is fully operational for maximum profitability before handing it over.



Oil Seed Technology

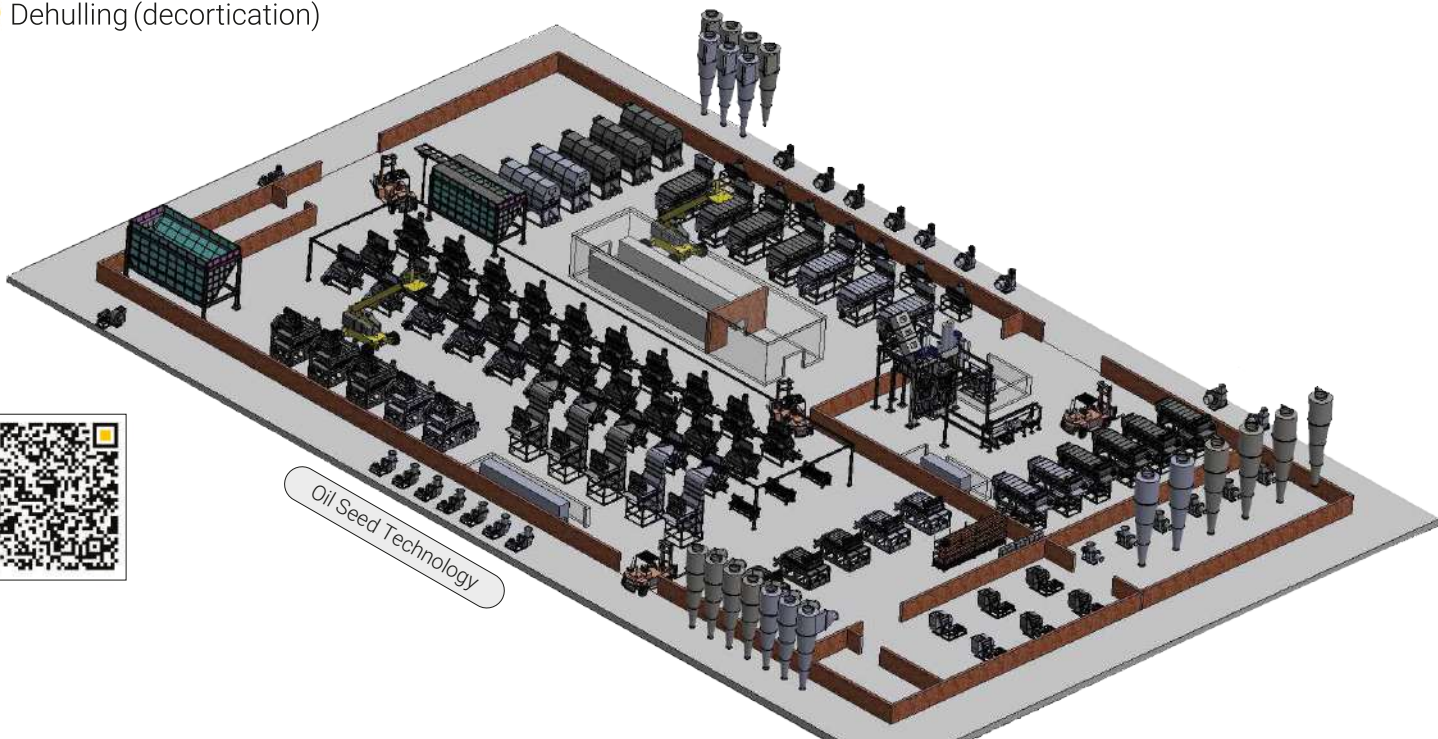
Fats and oils are one of the five essential ingredients of human diet, and the others are protein, carbohydrates, minerals, and vitamins. In a balanced diet, the oils, and fats requirement per person per day is 35 g for vegetarians, 39 g for non-vegetarian and 38 g for average diet. The major oilseeds of India are Cotton, Sunflower, Soybean, Groundnut, Rapeseed, Mustard, Linseed, Sesame and Castor. Groundnut and rape seed mustard account about 85 percent of the total production of oilseeds in the country. In other words, groundnut among the major oilseeds is accounted as about two—third, mustard seed one fourth of linseed and Sesame five percent of castor, and three percent of total production. Soybean, Sunflower, Safflower, Cotton seed and Coconut are the other important oilseeds produced in India.

Post-harvest technology plays a key role in minimizing losses during handling, processing and preservation of oilseeds and their products. By adopting proper post-harvest technology, the input cost in processing of oilseeds is reduced and oil yield is increased. Besides, several value-added products can also be produced even at rural level by introduction of appropriate post-harvest technology and thus the farmers can be motivated to grow more oilseeds.

Ferro Oiltek is a leader for design and construction of plants for vegetable oils preparation, extraction, and refining. Through the preparation, extraction and refining up to the process phases, the experience acquired over the years allows us to offer solutions to a wide range of products such as:

Oil Seed Processing Steps:

- ✓ Handling, Drying and Storage
- ✓ Seed Grading
- ✓ Pre-treatments
- ✓ Cleaning
- ✓ Delinting (Cotton Seed)
- ✓ Dehulling (decortication)
- ✓ Cooking
- ✓ Flaking
- ✓ Expanding/Expelling
- ✓ Solvent Extraction
- ✓ Refining





Cotton Seed Processing, Oil Extraction & Refining Plant

Cottonseed could either be processed by the traditional crude method of crushing seed without Delinting in undecorticated form or by scientific processing, which involves removal of linters, decortication, separation of hull, expelling, solvent extraction and refining of oil. Scientific processing results in extraction of nearly entire cottonseed oil, while the oil cake obtained by traditional method still contains about 7% residual oil. This high residual oil is not required by the animals but ironically much in demand because of misconception among the dairymen. The cottonseed meal obtained through scientific method contains negligible oil and has very high by-pass type protein content of around 40 to 42%. And as we know the cattle only need to have more protein in meal not oil.

Process Description of Scientific Processing of Cotton Seed:

In scientific processing first cotton seed is sent for cleaning operation that is in seed cleaner all impurities are removed (like; unginned cotton & all type of foreign partials etc.), then cleaned seed is sent to Delinting operation here the short fiber which is there on the surface of cotton seed known as linters is removed by Delinting operation and these delinted linters need to be cleaned so it sent for lint cleaning operation where small hulls and motes come along with linters are separated & then sold out as a product in the form of bales which is formed in a bailing press machine.

After Delinting operation we get a delinted seed. This seed is then sent it for decortivating operation that is, here in decortivating section cotton seed hulls & meat is separating from each other with the help of series of machines;

- 1. Decorticator machine**
- 2. Density separator machine**
- 3. Hulls Purifier machine etc.**

After these three stage operation we get separate hulls & meat. Then the meat is sent it for further process that is for seed preparation, oil extraction process, refinery process & hulls that we can sell for further process or we can used it as a boiler fuel.





PRE-NITROGEN REFINING

THE NEW ERA FOR COTTON SEED PROCESSING :

An alternative technology for conventional process of cotton seed-based SEP & Refining process, which advantage zero effluent discharge & getting the best colour unit result, the technology called miscella refining.

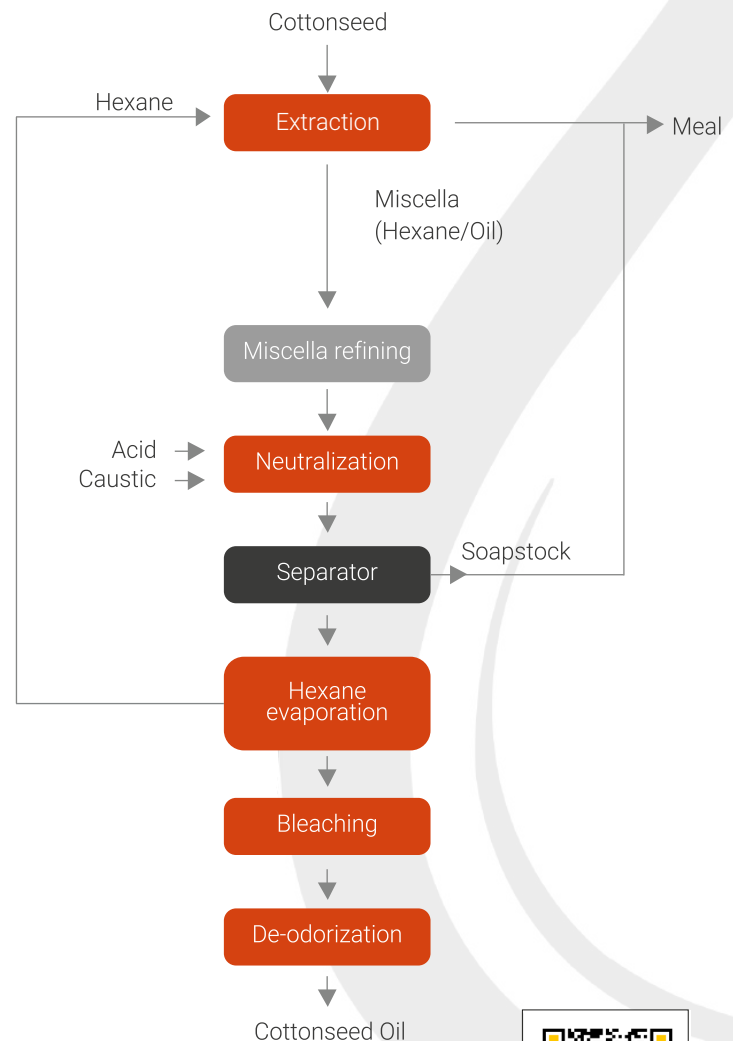
This process refines the crude oil at extraction stage and it was developed specifically for the neutralization of cottonseed oil to remove gossypol (a particularly stubborn pigment) effectively.

The calculated concentration of miscella (hexane + oil) gets neutralized by caustic dosing and this mixture passes through Nitrogen blanketing Centrifuge and gets separation of soap stock, then hexane is removed from the neutral miscella by the evaporators in SEP plant and then oil is finally bleached and deodorized at refinery plant.

The crude miscella first enters into special design FX-Miscella Reactor, where the caustic is intimately mixed and dispersed.

Then the recipe is kept for a time interval for complete the rate of reaction. Then the reaction complete recipe get at proper temperature before inlet into the centrifuge separator (NITROGEN BLANKETING SELF CLEANING CENTRIFUGE). The online centrifuge separator gives outlet Light phase neutral miscella whereas at heavy phase outlet, the dark brown gelatinous soap stock removes.

The refined miscella then send for further process i.e. hexane evaporation process. After evaporation operation done, the solvent free crude oil is now sent for further final refinery process that is bleaching and deodorization process and then fine polishing filter, then packing & storage.





Soybean Seed Processing, Oil Extraction & Refining Plant



- ✔ **Soybean Seed Cleaning and Dehulling** : The first step in processing soybeans is to properly clean soybean for dehulling. This step typically involves using magnetic feeder/Magnetic Drum to remove metal and screening to remove impurities that can interfere with the dehulling process. Next, hulls are moved to both increase the protein content of the final meal product and to improve the efficiency of the solvent extraction process. Finally, using FX Flaker Machine make the thin flakes and rupture the cells containing the soybean oil.
- ✔ **Extraction** : The extraction process uses hexane or other solvents to wash the soybean oil from the prepared soybean flakes. The design of the equipment varies so that we can optimize the amount of solvent and bed depth needed to efficiently wash the flakes, the contact time of the solvent and flakes, and the power and utilities needed to run the equipment. Soybeans are processed with the FX - Extractor.
- ✔ **Desolventising** : Once the oil has been removed by the solvent, the solvent must be removed from both the flakes and the soybean oil. For the flakes, heat and steam are used to strip and recover the residual solvent. For the soybean oil, a distillation system is used to recover the solvent. The desolventized flakes are now a product and ready for sale as a good source of protein. The soybean oil can be further refined from a crude product to an edible product.
- ✔ **Oil Refining and Processing**: Extracted soya crude oil must be refined to make an edible oil. Edible oils are refined to improve the flavor, odour, color and stability by using solvent processing.

Degumming, neutralization, Washing, Bleaching, deodorisation etc.

These Refining processes remove contaminants such as phosphatides, free fatty acids and pro-oxidants. Further processing of oils and fats is sometimes desired. Some oils are winterized or dewaxed and some are modified to change melting characteristics. By products may be further processed to create value-added products or reduce costs.





Sunflower Seed Processing, Oil Extraction & Refining Plant



In Sunflower seed processing, seed oil is cold-pressed and entails minimal processing to produce a light, flavorful oil suitable for some cooking needs. In Sunflower seed processing, seed oil manufacture involves seed cleaning, seed de-hulling, seed grinding, seed pressing and extracting crude oil, crude oil refining.

- ✓ **Cleaning:** In Sunflower seed processing, the prepared sunflower oil seeds are passed over magnets to remove the trace metal before de-hulled; and passed the special cleaning machine to remove other foreign matters.
- ✓ **De-hulling:** Sunflower seeds from the oil-type contain about 20%-30% hulls that are sometimes removed before oil extraction to ensure the quality of both oil and sunflower meal. In Sunflower seed processing, De-hulling is done when the seed has a moisture content of 5% after cleaning. The usual process consists of cracking the seeds by the mechanical action. Ferro 48" Decorticator, where the further process is followed by density separator and hulls purifier to achieve minimum oil left in hulls. Some oil sunflower seeds have thin hulls that are difficult to remove, so they can be free from de-hulling to avoid oil loss.
- ✓ **Grinding:** In Sunflower seed processing, the prepared sunflower oil seeds are passed over magnets to remove the trace metal before de-hulled. For more surface area to be pressed, the de-hulled seeds are grounded into coarse meal of proper consistency by mechanized grooved rollers or hammer mills. Then the meal is heated to facilitate the oil extraction. While during oil pressing, some impurities are also released with the oil, and they should be removed before the oil can be edible.
- ✓ **Pressing:** In Sunflower seed processing, the heated meal is continuously fed into a screw press. Pressure generally increases from 68,950 to 206,850 kilopascals as the oil is squeezed out through the slots in the barrel and is recovered.

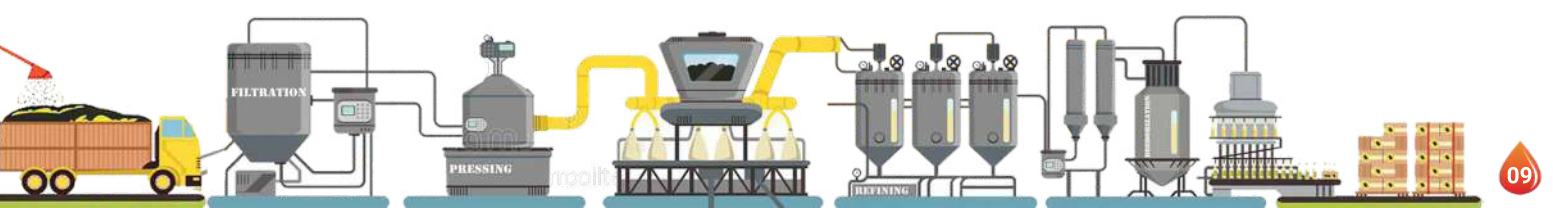




- ✔ **Extracting additional oil with solvents :** The remaining oil cake in the press can be processed by solvent extraction to get maximum yield. A volatile hydrocarbon (the most commonly used one is hexane) dissolves the oil out of the oil cake, and then the oil is recovered by distilling the solvent out, and then the solvent passes through the matter to be collected at the bottom.
Removing solvent traces: 90% of the solvent remaining in the extracted oil simply evaporates and it is collected for reuse. The remaining solvent is regained by the use of the stripping column. The oil is boiled by steam, and the lighter solvent floats upward, as it condenses, it is collected at the same time.
- ✔ **Refining the oil :** In Sunflower seed processing, we refine the oil to remove color, odour and bitterness. Refining involves heating the oil to 40°C -85°C (107-188°F) and mixing an alkaline substance such as sodium hydroxide or sodium carbonate with the oil. Then soap forms from the undesired fatty acids and the alkaline additive, and usually it is removed by centrifugal process. The oil will be further cleaned to remove soap traces and then dried.
- ✔ **Physical Refining :** Ferro has also developed physical refining process for sunflower oil refining whereas no harmful chemicals are used, the complete FFA is removed with the help of high retention distillation, also called as physical deodoriser. The free fatty acids are collected and sold for oleo chemical industry.

The oil is also de-gummed at this time by treating it with water-heated steam of 85°C -95°C (188-206 degree Fahrenheit), or water with acid. Most of the gum is the phosphatides to be precipitated out, and the dregs are removed by centrifugal process. Oil that will be used in cooking is then bleached by filtering it through fuller's earth, activated carbon, or activated clay that can absorb some pigmented materials from the oil. By contrast, oil that will be refrigerated (for use in salad) is rapidly chilled and filtered to remove waxes. This procedure is to ensure the oil will not partially solidify in the refrigerator. The final process is the deodorization of the oil, in which the steam is passed over hot oil in a vacuum at 225°C -250°C (440-2485°F) to distill the volatile and odour components from the oil. Typically, to avoid the trace metals that might promote oxidation within the oil and hence shorten the oil's shelf-life, as sunflower oil naturally contained wax, lecithin is treated by dewaxing operation whereas the oil is further clarified by filtration. If oil has to be marketed in very cold region, winterization process can be used as well.

- ✔ **Packing the oil :** In Sunflower seed processing, pure oil is measured/ packed in clean containers, and the usual ones are bottles for domestic sale, glass bottles for exports or domestic sales in specialty stores, or cans for exports.



Rice bran Oil is on hot sale in recent years and was recommended to be one of the best and healthier cooking oil and frying oil. It is praised for being versatile and having a neutral taste and stable when exposed to high temperatures. Many people prefer it for frying, BBQs, salad dressing and baking. Rice bran oil, compared to the other vegetable oils sold commercially, it has more Plant Sterols (Phytosterol) and Gamma-Oryzanol that has the ability to reduce LDL Cholesterol. Now, with the increasing awareness of rice bran oil, rice bran oil processing has been a hot investment business.

Rice Bran oil Processing plant adopts expansion technology, which increases extraction efficiency, reduces residual oil rate and improves the quality of the extracted oil. Rice bran oil extraction plant adopts negative pressure evaporating system, having the low evaporating temperature, the extracted oil has good quality and shallow color, saving steam consumption, it also adopts mineral oil system to reduce solvent consumption.

Preparatory & Pelletising : First the rice bran enters the cleaning screen in the rice processing oil plant to remove the impurities. Then magnetic separator is adopted to remove the iron impurities. Iron impurities can cause damage to the expander or pelletiser and influence the expansion effect. The rice bran goes through rice bran & broken rice separator to remove broken rice and whole rice. This process can ensure normal operation of the rice bran oil processing plant, reduce residual oil rate in the meal, reduce solvent consumption and increase the oil yield. The broken rice can be used for sugar and liquor making. Conditioning is to preheat the rice bran and adjust the moisture content. The moisture content can decide the elasticity and plasticity of the expanded materials. Preheating can improve the expansion effect and increase the capacity. The rice bran enters the conditioner for conditioning process in the rice bran oil production line.

Rice Bran Oil Extraction Technology





The conditioned rice bran enters the rice bran through pelletiser or expander and direct steam is injected. By the rotating of the main worm shaft, the materials are pelletized, heated, sheared and kneaded, the temperature and pressure, the moisture evaporates rapidly and the materials expand and form the porous pellets. The expanded materials have high temperature and high moisture content and shall be dried and cooled to meet the requirement of the extraction process. Usually Pneumatic dryer is adopted in the rice bran oil processing plant for the drying and cooling of expanded rice bran.

Solvent Extraction Process : The Expanded Rice Bran pellets enters the extractor or loop extractor in the rice bran oil extraction plant to extract the oil with a solvent. The Drained wet meal is sent to the desolventizer by the solvent sight redler conveyor. The thick miscella is pumped into the miscella centrifugal separator and continuous miscella filter to remove the solid impurities and finally pumped into the miscella holding tank. The solvent containing wet meal discharged from the oil extractor enters the desolventizer to separate the solvent from the meal. The mixed vapor from the desolventizer in the rice bran oil plant enters the shell pass of first long tube evaporator as the heat source.

The miscella from the miscella holding tank enters the first evaporator, the second evaporator and the disk stripping column in the rice bran oil plant to separate solvent and crude rice bran oil. The solvent vapor enters the condensing system. The crude oil enters the crude oil holding tank. The rice bran oil extraction plant adopts negative pressure evaporation technology, saving steam consumption and the extracted crude oil has good quality.

Refining of Rice Bran : Rice bran oil is normally refined by physical methods to keep the oxyzanol in the refined oil. Because in chemical refining process, oxyzanol get distributed by alkali reaction. The operation for physical rice bran oil refining are as follows:

- | | | |
|------------------------------|--------------------|-----------------------------|
| 1. Hot Water De-gumming | 2. Bleaching (PPE) | 3. Dewaxing... |
| 4. Post Bleaching (Optional) | 5. Deodorization | 6. Winterization (Optional) |





Mustard Seed Processing, Oil Extraction & Refining Plant

Mustard and Rapeseed form the second major oilseed crop in India. Most of the oilseed is used for oil extraction of Ghani's or expellers. In the traditional processing of mustard/ rapeseed the material is crushed without any de-hulling. Mustard/Rapeseed/Canola contains about 20% by weight of hull portions, which imparts dark colour, high amount of crude fibre (about 70%) in the mustard/rapeseed meal and dark colour to the oil. Hence an integrated approach for processing of mustard/rapeseed was developed for obtaining a good quality oil and mustard cake with low content of crude fibre suitable for food and feed uses.

PROCESS Integrated processing of Mustard/ Rapeseed involves the following steps:

- ✔ Seed pre-cleaning for removal of extraneous material like stones, mud, etc.
- ✔ Seed grading to obtain uniform size seeds.
- ✔ Conditioning the cleaned seeds for de-hulling
- ✔ De-hulling of the conditioned seeds
- ✔ Separation of de-hulled kernels and hull fraction
- ✔ Proper conditioning of de-hulled kernels for obtaining high pungent oil
- ✔ Extraction of oil in Ghani or Expeller
- ✔ Solvent Extraction of cake (optional)
- ✔ Refining of solvent extracted oil.





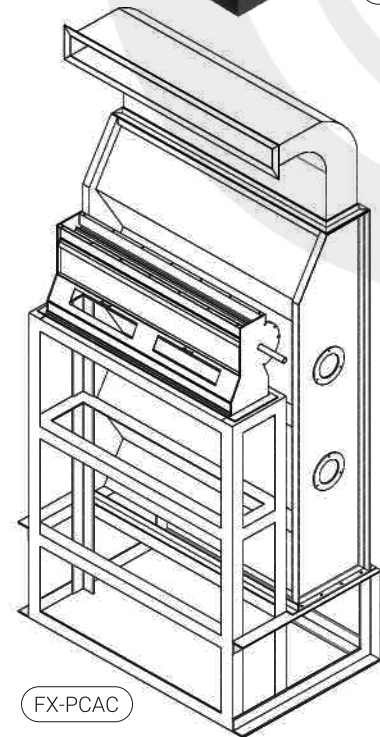
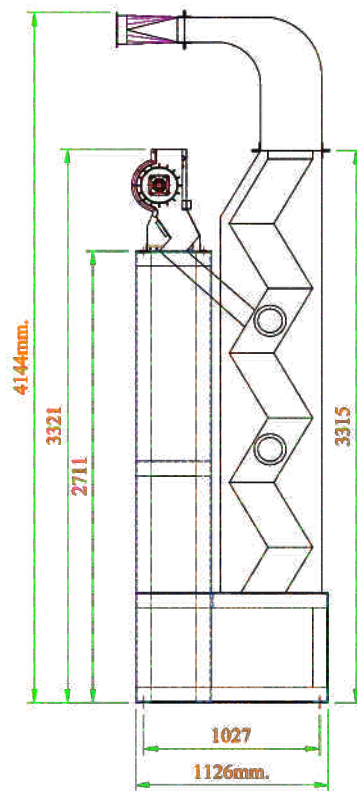
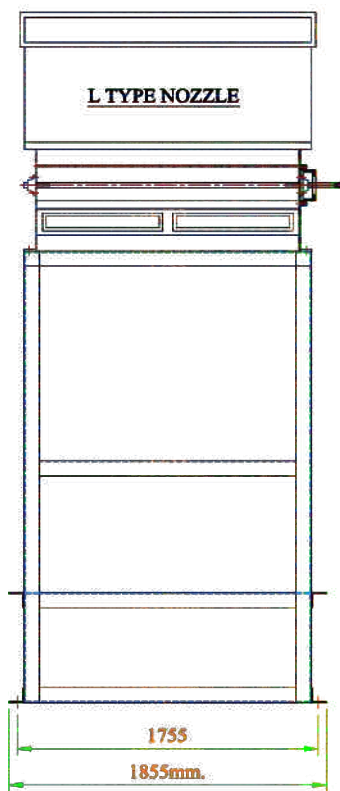
FX-PCAC: AIR CASCADE PRE-CLEANER

The Ferro Air Cascade Pre-Cleaner is designed to remove the fly dust and fuzziness of seed with a gentle air wash at Zig-Zag cascade. It is capable of separating fly dust from the seed and all lighter than seed impurities, which can result in poor quality linters if not separated. Thanks to efficient cascade, which not only helps for producing quality linters but also reduce the dust in the plant.

OPERATIONAL PROCEDURE

The seed will be feed through a rotary feeder into Air Cascade. The aspiration system from top will help the seed for an air wash and to lift the lighter impurities from the top, and drop the clean seed into the conveyor below. The lifted impurities will be collect to a dust cyclone.

TECHNICAL DIAGRAM



FX-PCAC-01

FX-PCAC

TECHNICAL SPECIFICATION

1) FEEDER MOTOR - 1HP/4 POLE

2) ZIG-ZAG BLOWER - 24" 10 HP/4 POLE



FX-PCRD: ROTARY DRUM PRE-CLEANER

The Ferro Rotary Drum pre-cleaner is designed especially For handling the high contamination in cotton seed comes from ginning. It is capable of pre-cleaning the Un-Ginned Cotton Balls, Leaves, Trashes, Suspended Plastics, Bigger Impurities and Fine Dust.

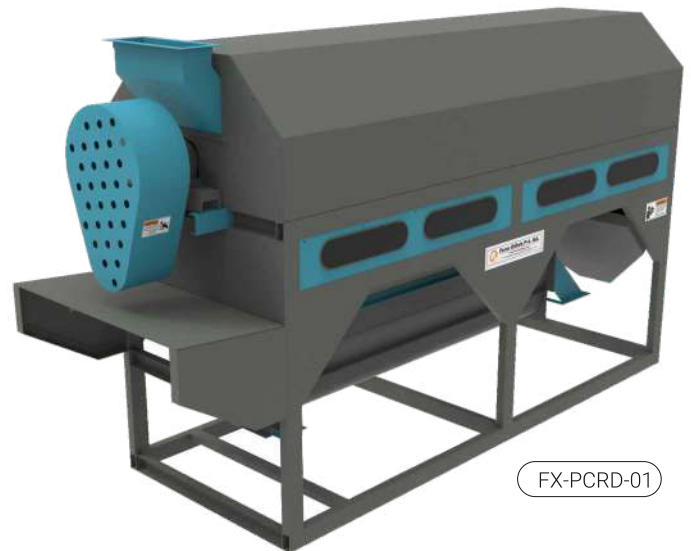
OPERATIONAL PROCEDURE

The cotton seed will be Feed through a rotary feeder, from the mouth of inclined rotary drum. The seed moves in rotary action and simultaneously meshed down the seed into bigger impurities (cotton leaves, sticks, un-ginned cotton, threads, etc.) gets collected at end hopper.

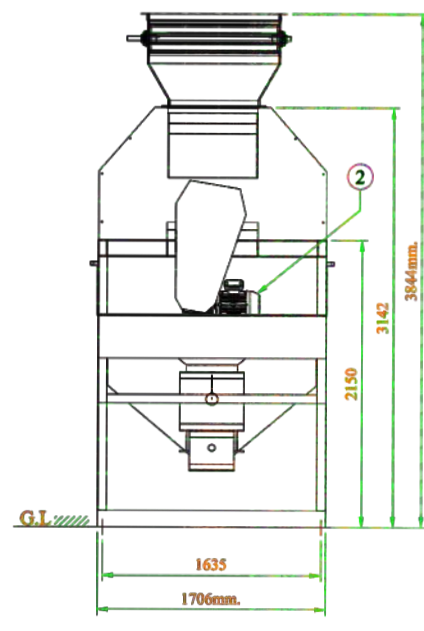
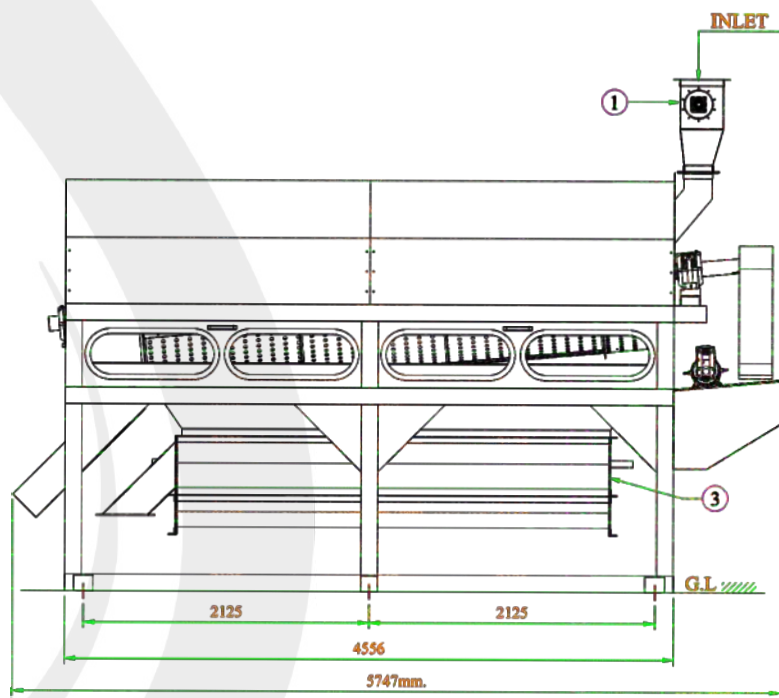
Further meshed down seeds are conveying through specially designed double deck conveyor. which used to mesh down the fine impurities (dust & other particles) and the remaining clean seeds gets collected at discharged end.

SUITABLE FOR :

- ✓ Removing all type of Impurities (Bigger and Fine) from Seeds.
- ✓ And also it can be used for all types of seeds only by changing the screen size of Pre-Cleaner Machine .



FX-PCRD-01



TECHNICAL SPECIFICATION

- 1) FEEDER MOTOR - 2HP/4 POLE 2) ROTARY DRUM - 7.5HP/6 POLE 3) SCREW CONVEYOR - 3HP/4 POLE



FX-PBTSC: PNEUMATIC BASKET TYPE SEED CLEANER

Pneumatic Closed Type Seed Cleaner is a uniquely designed machine with 8 stage basket beater which is used for getting maximum cleaning efficiency and minimizing the wear and tear for ease of removability & changeability. Cottonseed cleaner is the complete unit is designed to remove foreign material effectively and other all types of impurity from white cottonseed. We provide special stone separator & vacuum feeder for seed cleaning operation.

This machine used to produce clean seeds with higher cellulose, these cleaned seeds further obtained for Delinting & Dehulling operation. The Pneumatic Seed cleaner separates un-ginned cotton, stones, metal pieces, dust and fine impurities from seed at 99% cleaning off. Because of adroit seed cleaning other processing machines like Delinters & Hullers get protected. Due to higher cleaning efficiency the quality of bi-products (linters and DOC) gets improved.

Application: Cotton Seed, Sunflower Seed. Modification in the machine will be needed for different types of Seed.

Capacity range is 100TPD to 200 TPD.



FX-PBTSC-01



FX-PBTSC-02

CLEANING OPERATION



OPERATIONAL PROCEDURE

The seed first enters to a special stone separator unit through a rotary feeder, as soon as seeds reside in the zigzag, the pneumatic suction will lift the seed. The vacuum is adjusted by control valve which lift the cotton seed and heavy impurities gets fall down (stones and metal). Then seeds move into the 8 nos basket beater, this basket beater having different sizes of sieves which helps to separate sticky dust, un-gin cotton and other bigger size impurities from cotton seed.

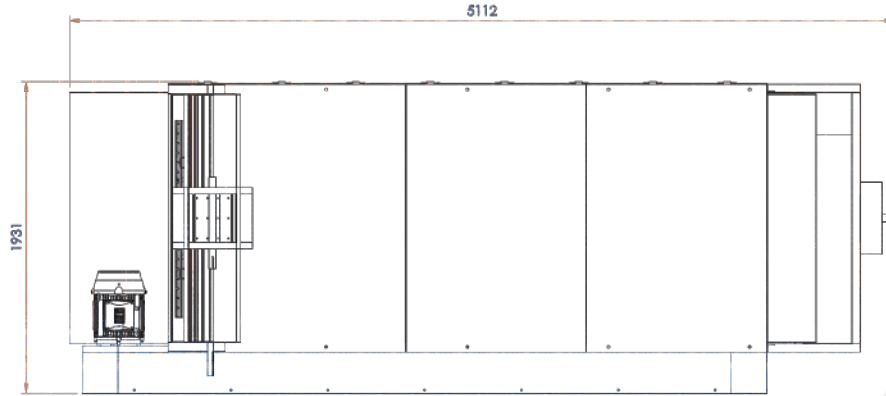
After beating operation is done, the meshed down seed gets collected into the clean seed carry conveyor.

MECHANICAL FEATURES

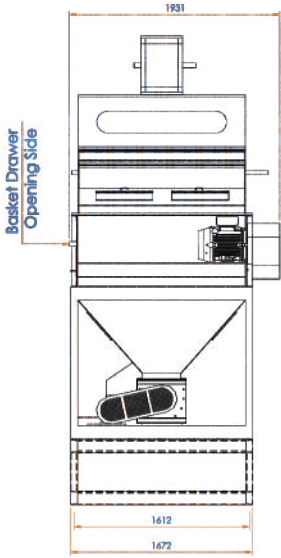
- ✔ The vacuum chamber is specially designed for easy operation & maintenance.
- ✔ The baskets are been designed for easy opening and closing operations, in order to clean them periodically while operations.
- ✔ Provision of Zero speed sensor on compound drive of Basket Beater which helps in detecting chain failure issue which results in avoiding the choking of machine after chain breakdown.
- ✔ Soft Starters & Harden SKF Sprocket for beater drives gives higher durability and least maintenance.



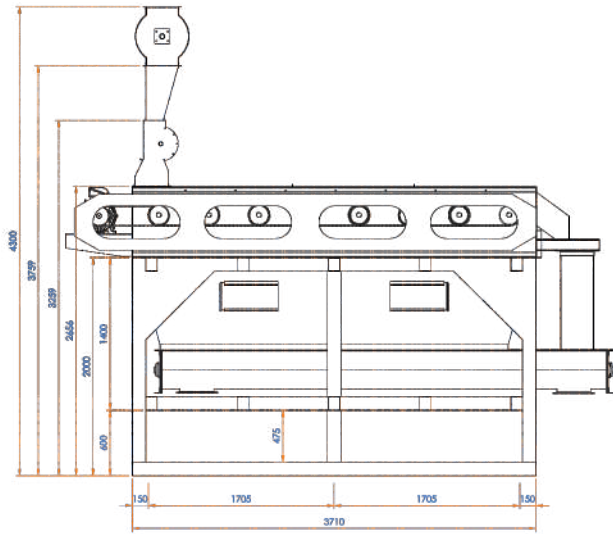
FX-PBTSC-03



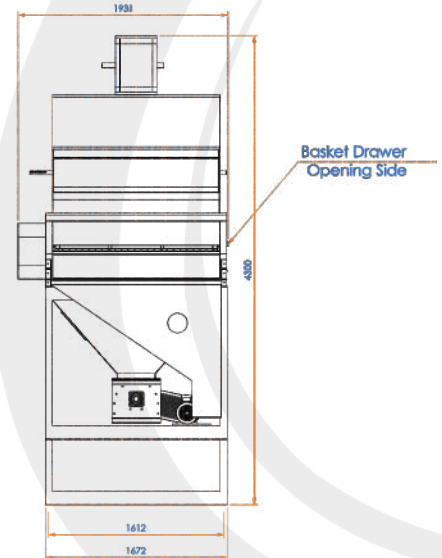
TOP VIEW



LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW

FX-PBTSC

SUITABLE FOR:

Removing all impurities from cotton seed/sunflower seed at cleaning efficiency 99%.

TECHNICAL SPECIFICATION

1) SEED CLEANER FEEDER: 1HP/1.5/2HP/4 POLE	5) STONE SEPARATOR FEEDER : 1HP/1.5/2HP/4 POLE
2) BASKET BEATER : 7.5/10HP/6 POLE/8 POLE	6) VACUUM FEEDER : 1.5/2/3HP/4 POLE
3) CONVEYOR : 2/3HP/4 POLE	7) BLOWER : 20HP/25HP/30HP/4 POLE
4) TRAY MOTOR : 2HP/4 POLE	



FX-BTSC : BOX TYPE SEED CLEANER

Ferro – New design Box type seed cleaner, with having high efficiency for removing all impurities from soybean, maize, grain, coffee, nut's etc. and also all type of vegetable oil seeds. This machine is available at aspirator unit, for dust free atmosphere in the processing area. Ferro provide special magnet plate into the cascade hopper to avoid the metal pieces entering.

OPERATION OF BOX TYPE SEED CLEANER :



OPERATIONAL PROCEDURE

- ✓ The oil seeds fed into the seed cleaner machine through feed chute of cascade hopper & which is installed at the beginning of tray & above seed cleaner machine. With the help of cascade hopper distribution of seeds properly done to cover full width of upper tray.
- ✓ Two vibratory motor provided on either side of machine and developed the vibration and by proper vibration we avoid the chocking of perforated screen holes.
- ✓ All larger size unwanted impurities left on upper tray & fine size, dust that all are dropped down on lower tray, and clean seeds collected from discharge hopper through air aspirator.



FX-BTSC-01

MECHANICAL FEATURES

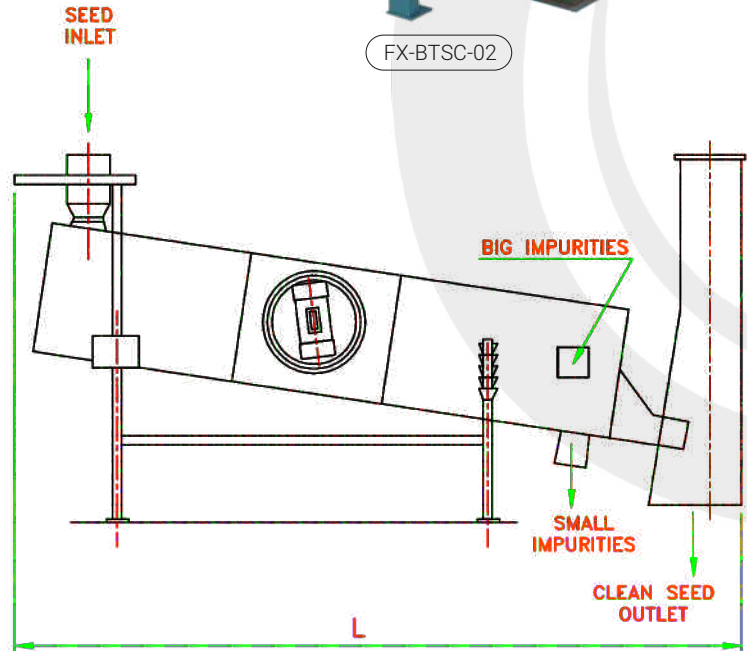
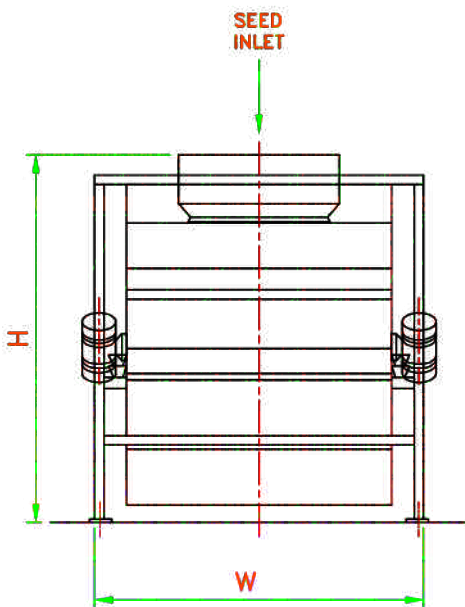
- ✓ With very high cleaning efficiency
- ✓ Maintenance cost low
- ✓ Low noise operation
- ✓ Simple & modern design

ADVANCED FEATURES

- ✓ Vibratory tray having rubber balls for self cleaning of perforated screen holes The machine having high capacity and low power consumption.



FX-BTSC-02



FX-BTSC

TECHNICAL SPECIFICATION

Model	CAPACITY T/Hr.							DIMENSIONS (mm.)			ALLOCATED POWER (KW)	
	WHEAT	MAIZE	GREEN COFFEE	ROASTED COFFEE	SOYA BEAN	SUN FLOWER	BARLEY & OATS	L	W	H	MACHINE	ASPIRATION SYSTEM
FSC-1	10	9	7	3	10	2	2.5	2455	1116	1477	2 X 0.25	2.2
FSC-2	15	13	10	5	16	3	4	2505	1486	1358	2 X 0.37	3.7
FSC-3	20	18	14	8	21	4	7	3105	1685	1450	2 X 1	3.7

FX-DDPT : DRY DESTONER

Basically Dry Destoner used in the application of soya seed cleaning and also it can be used for sunflower seed cleaning, wheat, maize, green coffee, roasted coffee, etc. The destoner used to separate stone, glass, metal pieces and other impurities present in soybean, maize, grain, rice, wheat, pulses, sunflower seeds, etc.

OPERATION OF DRY DESTONER :

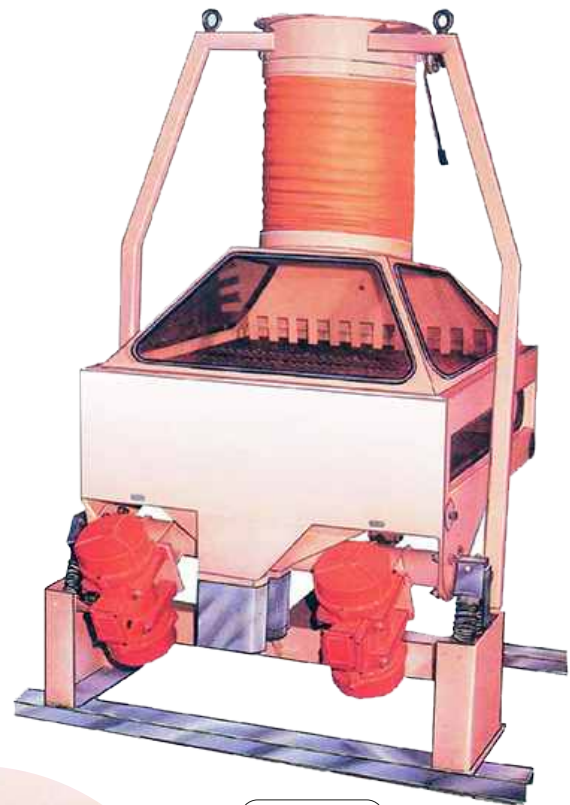


OPERATIONAL PROCEDURE

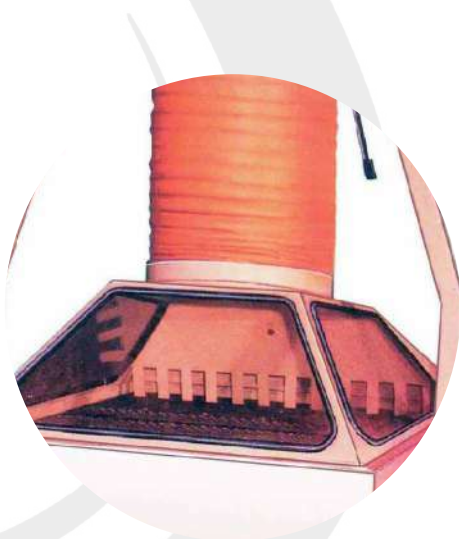
Ferro – New design Box type seed cleaner which gives high cleaning efficiency for removing all impurities from soybean, maize, grain, coffee, nut's etc. and also all type of vegetable oil seeds. This machine is available at aspirator unit, for dust free atmosphere in the processing area. Ferro provide special magnet plate into the cascade hopper to avoid the metal pieces entering.

MECHANICAL FEATURES

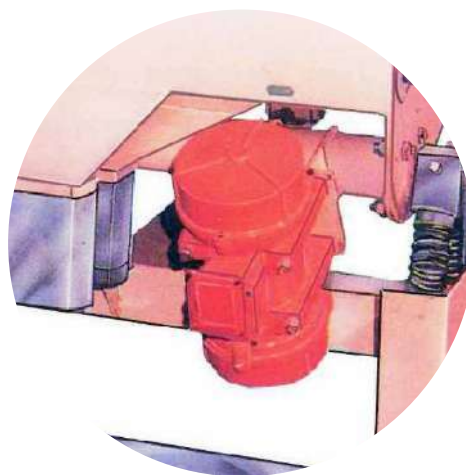
- ✓ High capacity machine with low power consumption
- ✓ Easy to service and low maintenance
- ✓ Easy to operate and simple adjustment



FX-DDPT-01

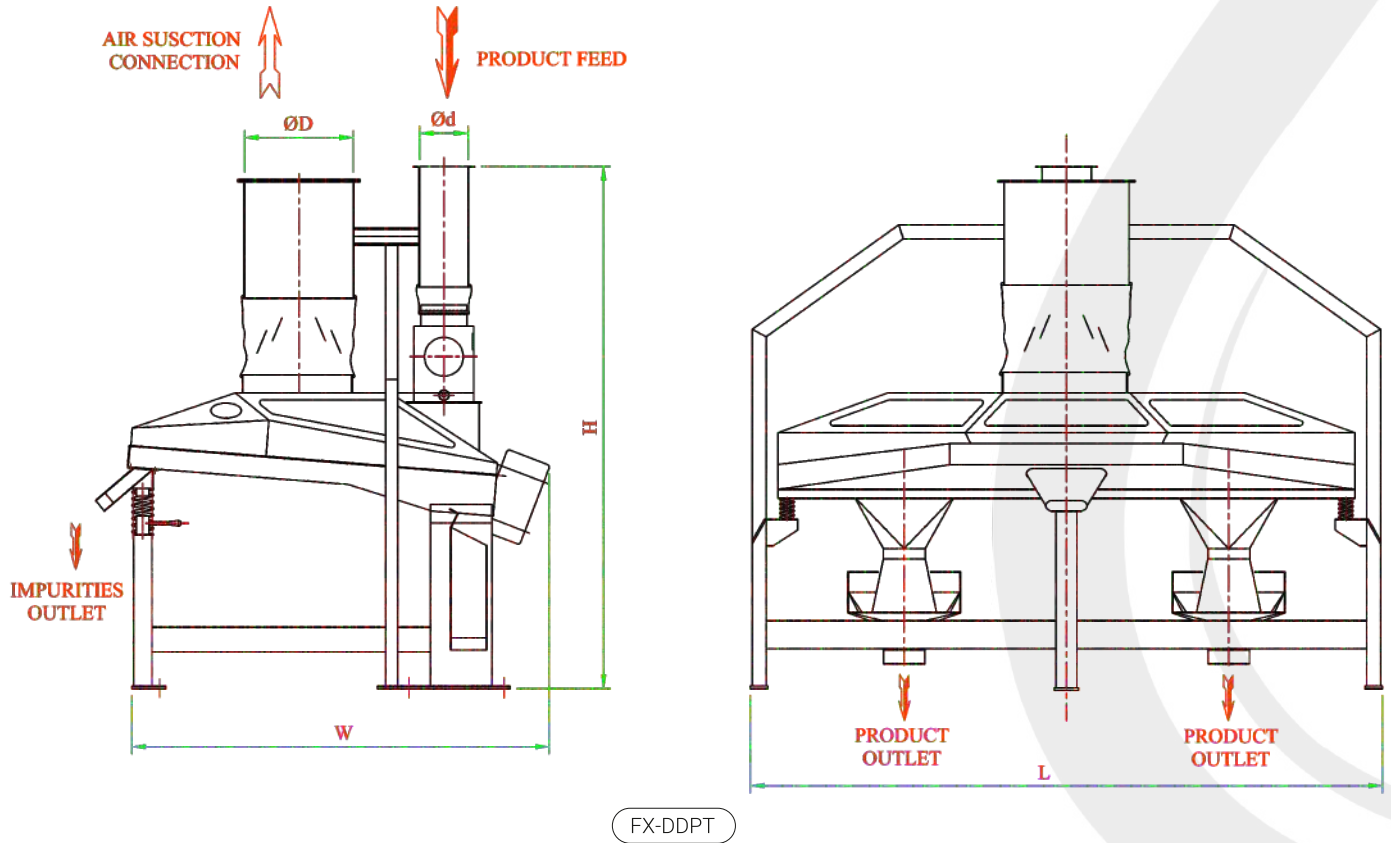


FX-DDPT-02



FX-DDPT-03

TECHNICAL SPECIFICATION



Model	CAPACITY T/Hr.						DIMENSIONS (mm.)					ALLOCATED POWER (KW)	
	WHEAT	MAIZE	GREEN COFFEE	ROASTED COFFEE	SOYA BEAN	SUN FLOWER	L	W	H	ØD	Ød	MACHINE	ASPIRATION SYSTEM
FDD-1	2.5	2	1.4	0.8	3	0.8	590	1220	1400	200	125	2 X 0.25	7.5
FDD-2	4	3	2.4	1.3	5	1.3	790	1220	1400	220	150	2 X 0.37	9.37
FDD-3	10	9	7	3.2	12	3.2	1650	1668	1835	360	200	2 X 0.37	11.25
FDD-4	15	12	10	5	18	5	2205	1668	1895	420	225	2 X 0.5	18
FDD-5	20	15	14	8	24	8	2500	1900	2250	450	250	2 X 0.75	22.5



FX-VS: VIBRO SEPARATOR

FERRO provide vibro separator for separations of dry & wet material. The vibro separator is suitable for all types of screen operations with below stated four broad categories. Dry classification, Solid / Liquid separation and Solid classification. Our Vibro Separators are designed to provide optimum performance. We Offers 6 different model Vibro Separator F-600, 750, 900, 1200, 1500, 1800 etc. And also we offered with MOC of SS-304, SS-316, SS316L, and Carbon Steel as per customer requirement. On Special request, MOC of non-ferrous can also be provided. All Ferro separators are backed by a full technical advisory service help to solved separation problem in industry.

OPERATION OF VIBRO SEPARATOR :



OPERATIONAL PROCEDURE

The material is fed on the center of the top screen and the bigger/oversized material is moved by the Multiplan motion to the periphery of the screen to be discharged through a tangential outlet. The undersize particles or liquids passes through the screen to produce fine sized fraction or clarified liquid.

APPLICATION OF VIBRO SEPARATOR

1. Chemicals separation: Polyvinyl Chloride, Melamine Phenolics, cellulose acetate, polystyrene, detergents, caustic soda flake, titanium dioxide, calcium carbonate silicon carbide, alum etc.

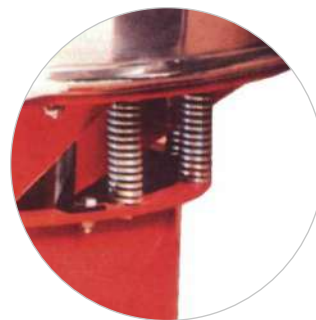
2. Dry separation/ classification: Separation of particles having different shapes & sized fraction. Pulps and Wood Products, Animal Feeds, Grains, Cosmetics, Tea, Petrochemicals, Foods, Pharmaceuticals, Fertilizers, Ceramics & Abrasives

3. Solid/liquid separation : Foods separation from expeller out crude oil, Dewatering and removal of Solid particles from liquid medium.

Paper & Pulp, Foods, Ceramics, Minerals, Waste Disposal



FX-VS-01

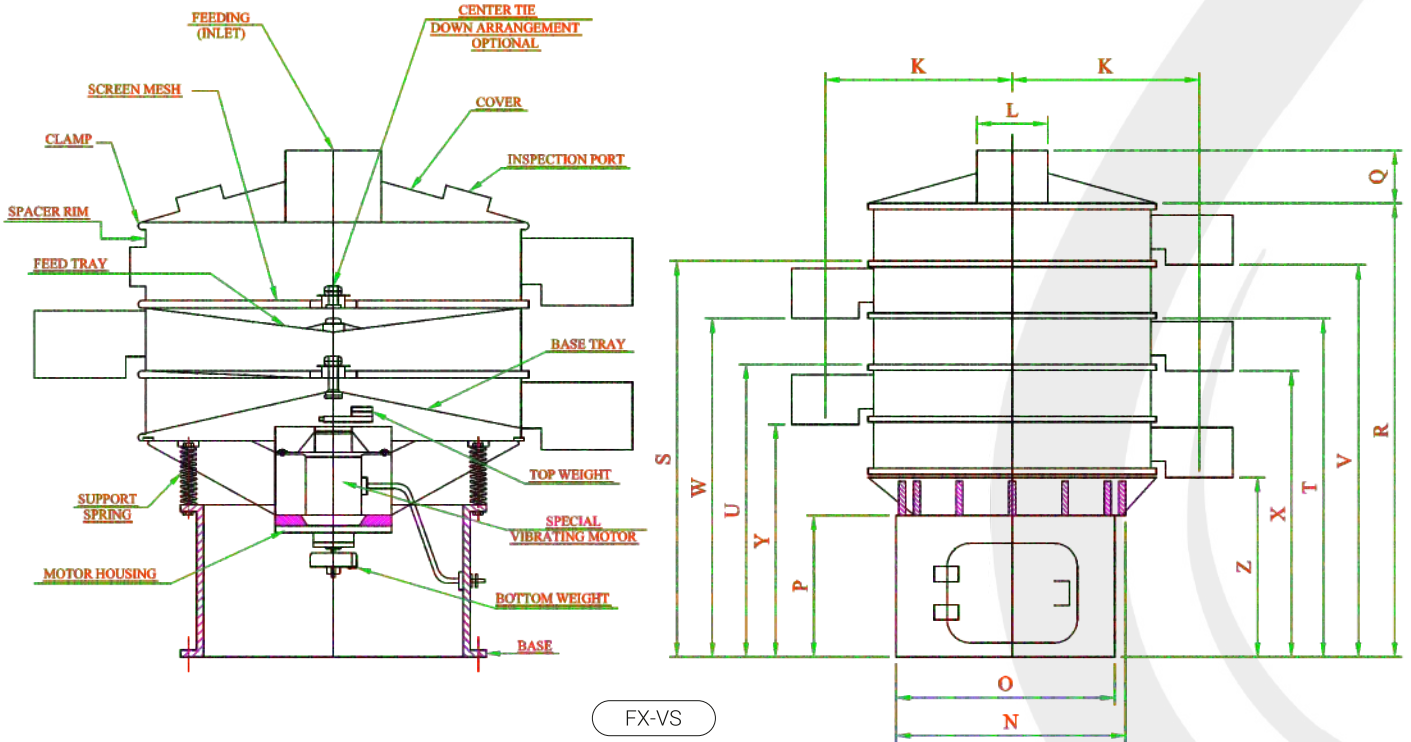


FX-VS-02



FX-VS-03

TECHNICAL SPECIFICATION



MODEL	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	MOTOR HP
F-600	387	501	616	730	845	635	749	863	978	114	305	114	501	622	152	400	0.5
F-750	387	501	616	730	845	635	749	863	978	114	305	114	635	762	152	490	0.5
F-900	422	587	701	815	929	724	838	952	1066	140	280	140	680	925	152	571	0.5
F-1200	565	711	882	1054	1225	901	1073	1245	1416	209	381	209	921	1206	203	743	1.5
F-1500	565	775	984	1194	1403	1016	1225	1435	1645	171	381	171	1118	1524	203	914	1.5
F-1800	568	816	1063	1311	1559	1083	1330	1570	1825	190	279	190	1264	1803	203	1035	2





FX-200DL: FX 200 SAW HIGH PERFORMANCE DELINTER

FX-200DL is a high capacity Delinting machine designed especially for cotton seed Delinting. It has the superior feature and functioning compared to any other Delinting machine in the cotton seed processing field globally. Its single machine capacity for cotton seed Delinting is upto 100tons per day. FX-200DL acquires smaller space compared to its production capacity and ensures minimum seed damage.

FX-200DL is an easy to operate and low maintenance delinting machine with lowest power consumption comparatively. Saw blanks that are used in FX-200DL are made-up of special grade steel with specialized heat treatment with uniform teeth cutting profile which boosts the efficiency and enlarges the life span of saw blanks. Along with FX-200DL, comes its separate HMI control panel, giving automatic control for the whole machine, intelligent control for cottonseed feeding, stable and reliable performance, where the operator can note and make settings for the required quality seed and linters.

DELINTING OPERATION



FX-200DL-01



FX-200DL-02



MECHANICAL FEATURES

- ✔ For the saw cylinder, we made special mechanical arrangements for Quick detachment of pulley and also the pulley is made lighter in weight so that it can be easily removed and attached.
- ✔ Saw cylinder tube, saw cylinder pulley, brush drum and float roll pulley are fully dynamically balanced which further reduces the ampere load on motor and reduces the running out problem.
- ✔ Saw cylinder made up of mechanical tubing which helps provide smooth operation.
- ✔ Heavy body structure eliminates the vibration of the machine.
- ✔ A specially designed feed chute for FX-200DL avoids the jamming problem and distributes the seed uniformly over the feeder.
- ✔ As a motor located for easy access and open area, allows well ventilated cool running.
- ✔ Provision of a heavy-duty hydraulic system is made for ejection of heavy rack with ease. Each of the hydraulic cylinders are manufactured investing high dedication and high-grade features to comply with the top-quality norms.
- ✔ To create a uniform lint cut with no seed messing with each other & to avoid vacant space, the seed charging chamber is newly designed.
- ✔ Special hardening treatments are done for grates, which in turn reduces its wear out problem and minimizes the sparking problem during its operation.
- ✔ High density brush strips are used in a brush roll.
- ✔ Ease of clean up & long-lasting appeal due to advanced painting technology. This is achieved through sand blasting & after getting paint baked in a special paint booth.

ADVANCED FEATURES

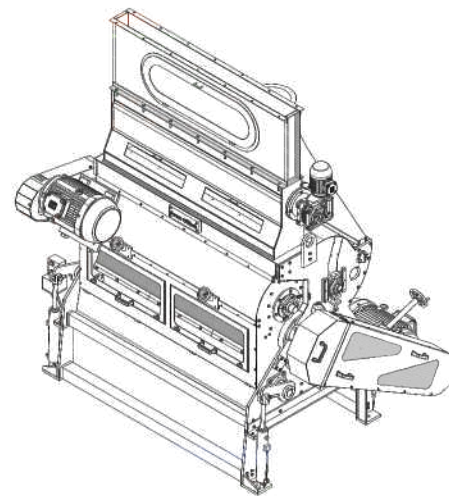
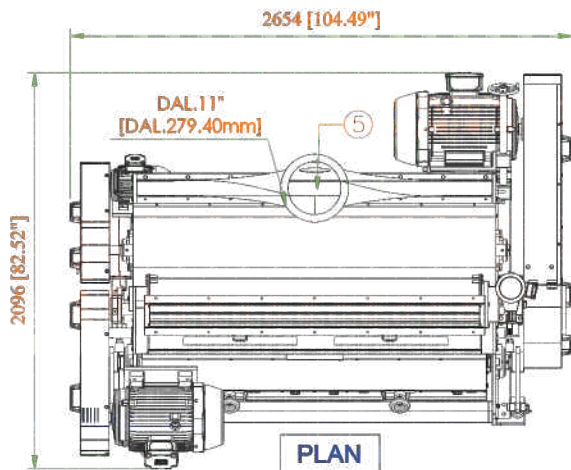
- ✔ Overall power load is reduced from 73HP to 54HP by using a heavy torque mechanism and efficient PLC controller.
- ✔ Auto Ejection system reduces time and effort for ejection of saw cylinders.
- ✔ Upto date safety features for avoiding any fatal incidents or accidents.
- ✔ The rack adjustment settings can be precisely and easily controllable.
- ✔ Heavy duty Rare-earth magnets are used in the feeder which ensures 100% blockage of Iron particles intrusion within the system.



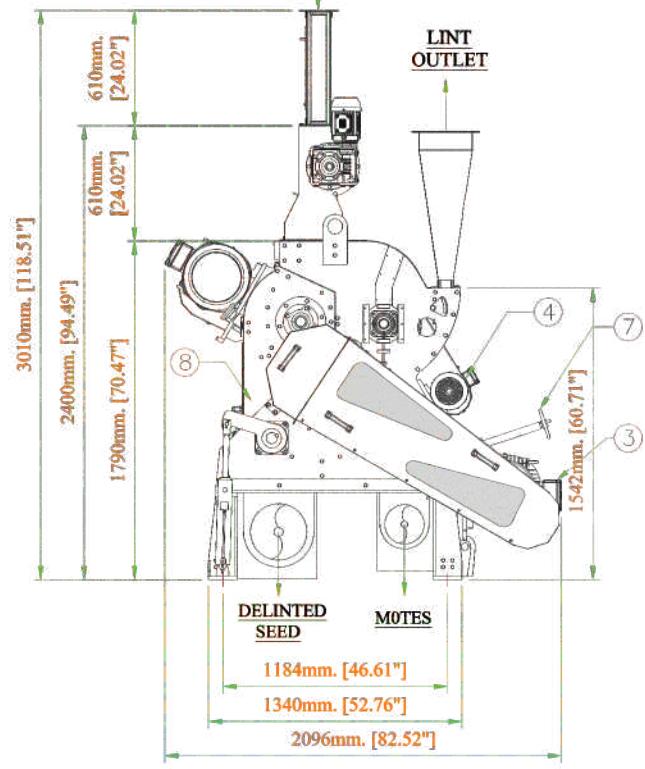
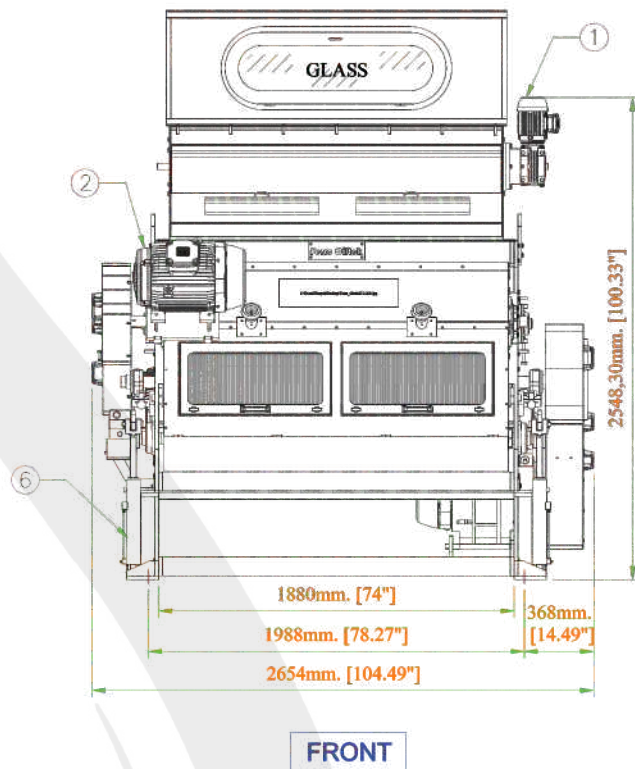
First of its kind PLC Controller

FX-200DL - PLC CONTROLLER

FX-200DL-03



**WHITE
SEED INLET**



FX-200DL

ELEVATION

TECHNICAL SPECIFICATION	
1) FEEDER MOTOR - 1HP/1440RPM	5) LINT AIR HOOD - 11" DIA.
2) FLOAT MOTOR - 20HP/960RPM	6) DUAL GRATEFALL ASSIST HYDRAULIC CYLINDER (600 PSI)
3) SAW MOTOR - 30HP/960RPM	7) POSITIVE MECHANICAL BELT TENSIONING
4) BRUSH MOTOR - 3HP/1440RPM	8) 200 - 18" DIA. X 0.045" SAW ON 7 15/16" DIA. CYLINDER



200 SAW AUTOMATIC GUMMER MACHINE

We have developed new technical improvements in saw sharpening process including the new gummer file. Capacity & quality of lint can't be controlled if you don't have good sharp saw tooth so this stand to reason you need best GUMMER MACHINE in order to maintain best filing operation. Ferro's gummer is precisely made with all dimensional accuracy and seasoned SG Iron castings.

THE FERRO – 176 & 200 saw automatic gummer machine maintains saw in good & effective condition all the times. Also a uniform sharpened tooth profile every time.

Ferro – Gummer File The new design gummer file is a process, not just a new product. The new gummer file which fits all factory standard spindle screws, provide an enhanced tooth profile which promotes higher Delinting capacity, less shattered seed out more robes saw tooth that last longer.

MECHANICAL FEATURES

- ✓ Completely automatic gummer with having perfectly machine tool accuracy
- ✓ Provide interchangeable parts for low maintenance and ease services.
- ✓ Special hardening material used to machine parts.
- ✓ Ruggedly built for smooth and reliable operation



FX-200AG-01



GUMMER FILES

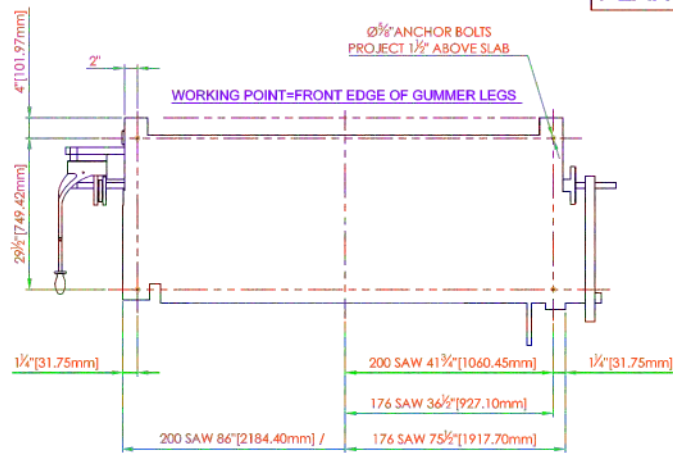
GUMMER SAFETY ENCLOSURE (Optional)

- ✔ The enclosure is for the safety of driving parts, clutch box, and for sound reduction while gummer operation in the plant.
- ✔ The enclosure comes with two way open hydraulically operated guard. Four transparent acrylic windows, LED light inside, suitable structure, lock and duly painted with Epoxy PU in RAL shade connection.
- ✔ Heavy Hydraulic for durable life.
- ✔ Multiple acrylic windows for observation while operation.

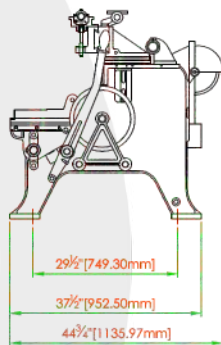


SAFETY ENCLOSURE

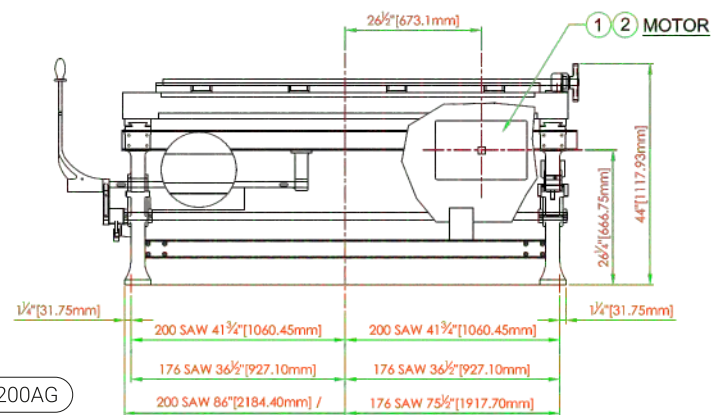
PLAN



ELEVATION



FRONT



FX-200AG

TECHNICAL SPECIFICATION

- 1) 176 Saw drive motor : 2HP, 710 - 740 rpm
- 2) 200 Saw drive motor : 3HP, 710 - 740 rpm

- ✔ Shipping weight : - For 176 saw 880 kg.
- ✔ For 200 saw 980 kg.

FX-SSLC : SEVEN STAGE LINT CLEANER

“7 STAGE LINT CLEANER” with basket beater section designed for lint cleaning i.e. for removing fine dust, hulls etc. Re-engineered friendly design is capable of handling the capacity of more than 8 to 12 tons per day. The linter cellulose yield is maintained at maximum. This lint cleaner have a removable screen for cleaning at desired interval.

Low maintenance, because we provide twin conveyor which eliminates the elevated shaker tray. Special square bar screen available for higher cellulose yield. This lint cleaner provides highest capacity & good quality of lint according to today's market need. Dirty linter recycling system for higher yield of cotton linter.

OPERATION OF LINT CLEANER :



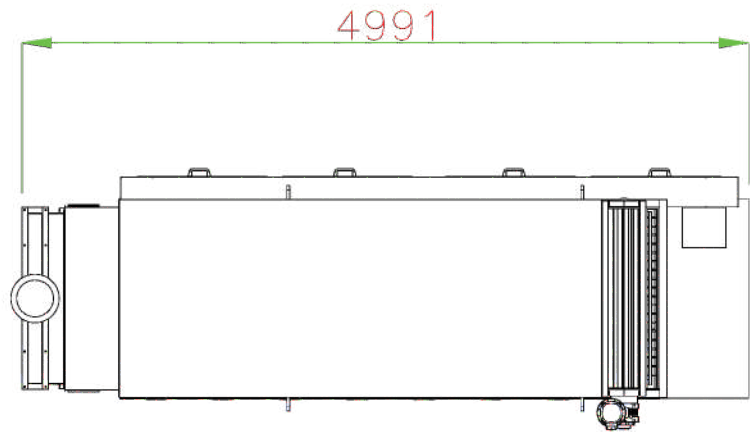
OPERATIONAL PROCEDURE

- ✓ Output of delinter i.e. lint is fed into lint cleaner basket beater.
- ✓ During beating of lint & motes, sticky dust & fine Impurities are stretched out.
- ✓ At the end of series basket beater, the lint falls into special air cascade device, here the controlled air can lift the pure lint, fine hulls & other impurities gets fall down.
- ✓ The meshed down impurities containing linters gets collected through twin conveyor & then move for second stage beater.
- ✓ After second stage beating, the meshed down fine linters with dust gets collected into the final shaker tray & finally after shaker tray, the fine linters from second basket beater gets recycled pneumatically.

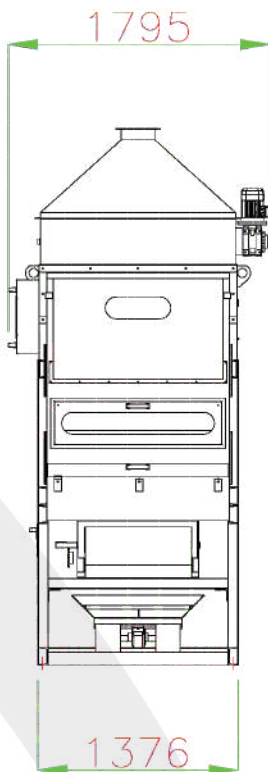
MECHANICAL FEATURES

- ✓ Heavy body FEA Analyzed Structure for zero vibration.
- ✓ Special Vacuum Feeder for proper distribution.
- ✓ Electrical Motors are conveniently located for ease of maintenance.
- ✓ Soft Starter and Hardened sprockets for beater drive.
- ✓ Zero speed sensor for beater drive available.
- ✓ Common drive for twin roll conveyor.
- ✓ Beater screen mounted in easy pull trays for quick change and ease of maintenance.

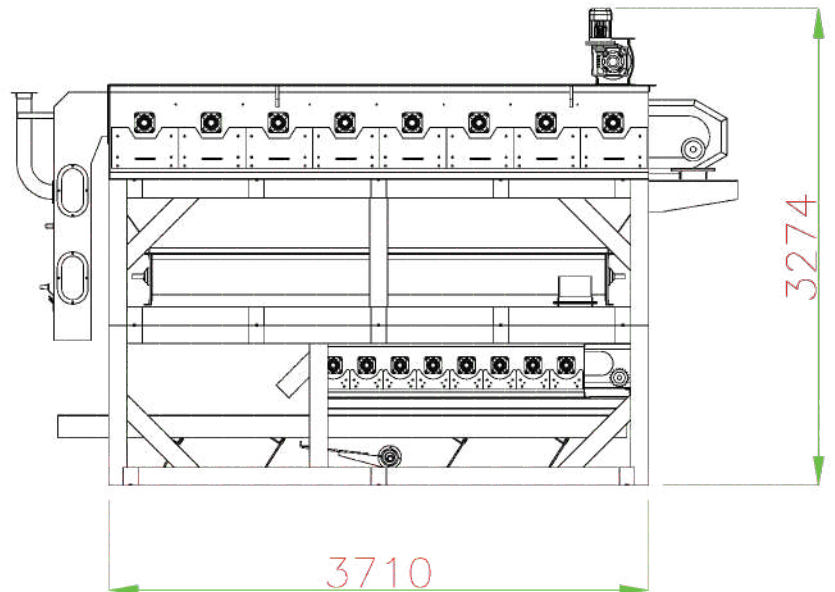




PLAN



SIDE VIEW



ELEVATION

FX-SSLC

TECHNICAL SPECIFICATION

1) Feeder Motor = 1HP/1.5HP/4 pole

2) Top Beater = 7.5HP/10HP/6 Pole

3) Twin Conveyor = 2HP/3HP/4 Pole

4) Bottom Beater = 3HP/5HP/4 Pole

5) Shaker Tray = 1.5HP/6 Pole

6) AIR HOODS = 10" DIA.



FX-BPSB: SINGLE BOX COTTON FIBRE BAILING PRESS

- ✓ Ferro cotton baling press is designed for compressing cotton of different grades.
- ✓ Reengineered Friendly design to Facilitate easy operation low power consumption & requiring minimum labor cost.
- ✓ Provision of proximity sensors, limits switches, check valves etc. which helps in avoiding any accident.
- ✓ Ferro baling press can be customized as per requirement under the side discretion of Ferro Oiltek.
- ✓ Ferro baling press comes with an advantage of multiple pushers as well as single pusher as per requirement of the customers.
- ✓ Parts of the press are standardized as per international standards.
- ✓ Extremely robust body structure provides zero vibration.
- ✓ ADVANCED PU COAT FINISH for easy cleaning, long lasting appeal & great aesthetics.

OPERATION OF BAILING PRESS



OPTIONAL FEATURES

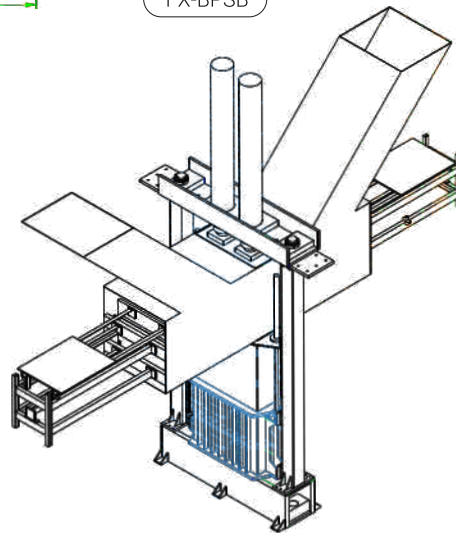
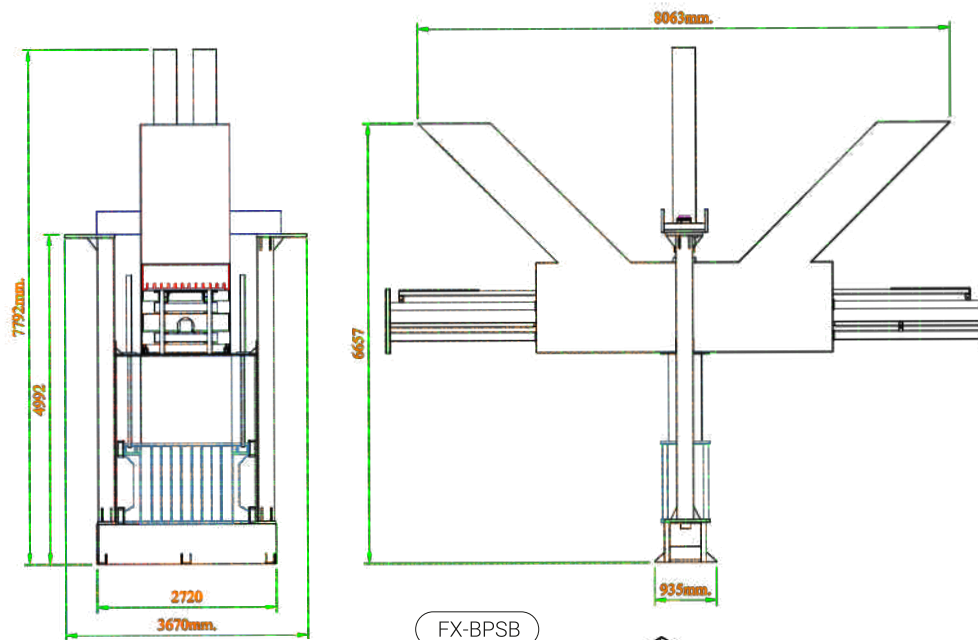
- ✓ Auto bale ejection
- ✓ Online bagging
- ✓ Online weighing
- ✓ Online sampling
- ✓ Safety mat

MECHANICAL FEATURES

- ✓ Redesigned lint box & pusher rollers for easy maintenance CNC machined parts for high precision.
- ✓ Compactly designed machine, which helps in saving valuable space as well as easier for machine operation.
- ✓ Easy Animated HMI PLC operation system makes it easy to operate Capable of delivering high speed operation support.
- ✓ Capable of delivering high speed operation support.
- ✓ Option of twin pusher makes the operation Fast.



FX-BPSB-01



TECHNICAL SPECIFICATION

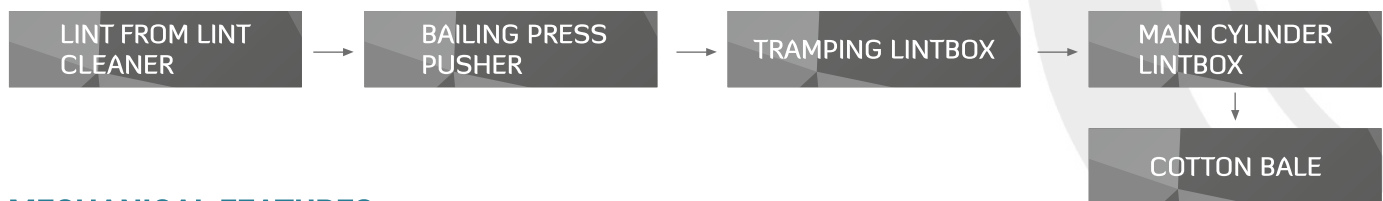
Main ram	Rod Dia -180mm(stroke 2580mm)
Lint box lifting cylinder	Rod Dia -60mm (2 no's) (stroke 1150mm)
Ejection cylinder	Rod Dia -30mm (stroke 140mm)
Installed power (HP)	Main motor -40 hp x1500 rpm. Auxiliary motor -10 HP x1500 rpm.
Hydraulic pump	Main pump -Double valve pump (35 gpm& 12 gpm) Auxiliary pump -12 gpm.
Bale size	55" X 21" X 28" (Universal Density) / 48" X 18" x 18" (High Density)
Bale weight	220 kg / 180 Kg
Bale density	Universal / High
Operating	PLC panel (Fully Automatic)
Shed size	14M x 12M x 12M
Production capacity	6-9 bales per hour
Pusher	Hydraulic



FX-BPSB: DOUBLE BOX COTTON FIBRE BAILING PRESS

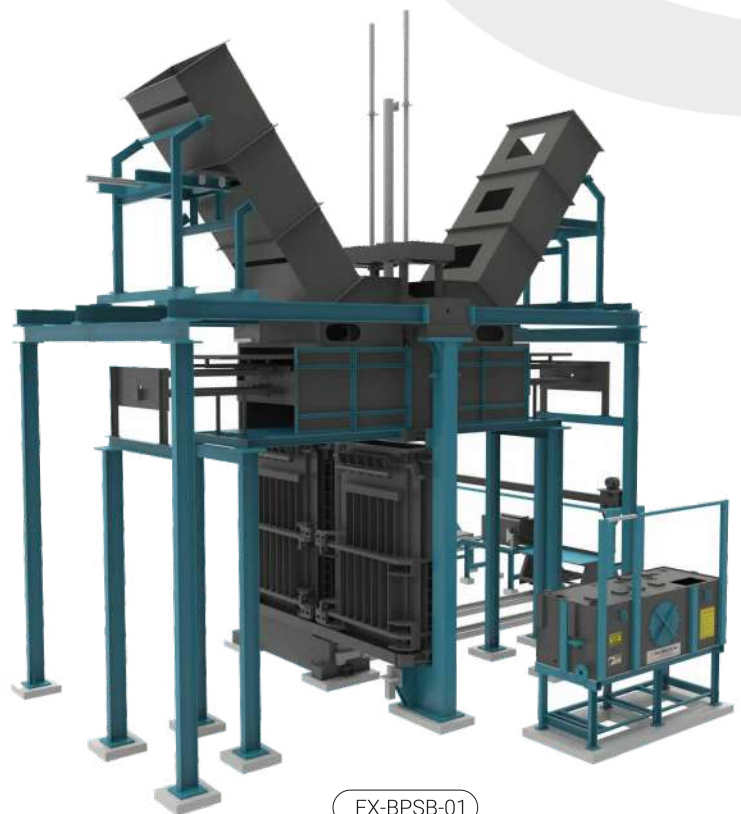
- ✓ The Double Box Bale Press is mainly used for high capacity of bale products.
- ✓ Ferro cotton baling press is designed for compressing cotton of different grades.
- ✓ Re-engineered friendly design to facilitate easy operation low power consumption & requiring minimum labor cost.
- ✓ Ferro double bale press is provided with proximity sensors, limit switches, check valves to avoid an accident.
- ✓ Ferro baling press can be customized as per requirement under the side discretion of Ferro Oiltek.
- ✓ Ferro baling press comes with an advantage of multiple pushers as well as double pusher as per requirement of the customers.
- ✓ Parts of the press are standardized as per international standards.
- ✓ Extremely robust body structure provides zero vibration.
- ✓ ADVANCED POWDER METAL FINISH for easy cleaning, long-lasting appeal & great aesthetics.

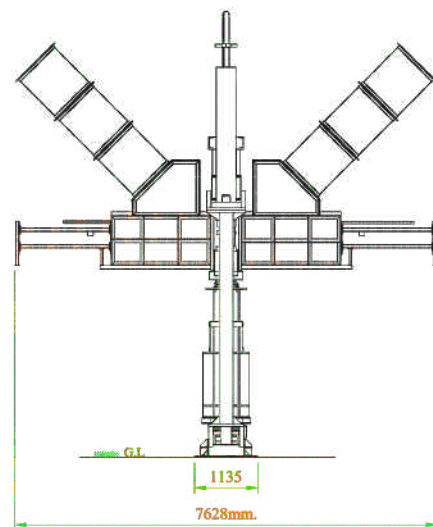
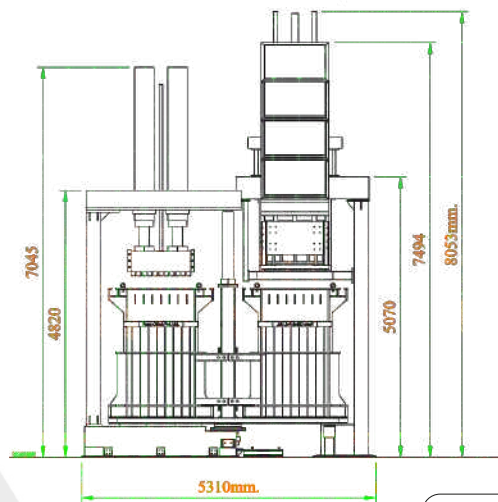
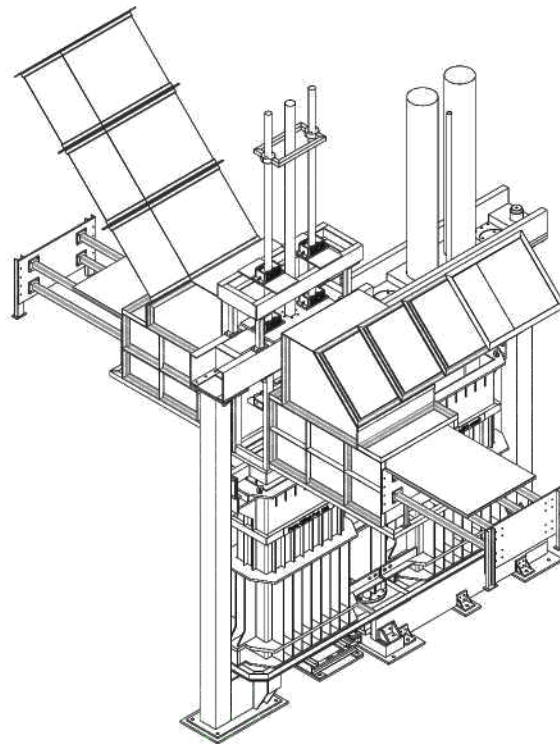
OPERATION OF BAILING PRESS



MECHANICAL FEATURES

- ✓ Ferro bale press comes with a fully automatic design which reduces manpower required to operate the press.
- ✓ Ferro double box baling press comes with door less mechanism & high speed automatic revolving boxes.
- ✓ Redesigned structure for better safety and heavy duty work, resulting in longer life.
- ✓ Ferro double bale press comes with high-pressure power packs & option of twin or double pusher.
- ✓ Redesigned lint box roller & pusher roller for easy & free-flow travel.
- ✓ Easy Animated HMI PLC operation system makes it easy to operate and many safety interlocks.





FX-BPSB

TECHNICAL SPECIFICATION

TECHNICAL DATA	HIGH CAPACITY	MEDIUM CAPACITY
Production capacity	32-38 Bale /Hr	12-18 Bale /Hr
Power required	70HP-Main press	50 HP -Main press
	25HP -Tramper	20 HP-Tramper
Bale size	55" X 21" X 28"(Universal Density)	48" X 18 X 18" (High Density)
Bale weight	220kg	180kg
Bale density	Universal / High	Universal / High
Shed size	16M x12M x12M	14M x 12M x 12M
Operating	PLC panel (Fully Automatic)	PLC panel (Fully Automatic)
Tramper	Hydraulic	Hydraulic
Pusher	Hydraulic(High speed)	Hydraulic (High speed)



FX-48HCTRD: HIGH CAPACITY TWIN ROLL DECORTICATOR

The FX Series Decorticator is used to dehull the oil seed (Cotton, Soya, Sunflower etc.) at very high efficiency & produces very minimum powder formation, which improves the production capacity & quality of product outlet.

This equipment cuts the seed and separates the hulls & meat with very efficiency, it has the provision of heavy duty twin roll magnetic feeder, which avoid the entry of metal particles into the DC machine. The Decorticator drums are made by special graded cold roll alloy steel with interchangeable knife, provision of heavy duty shaft & it is also mounted on heavy duty bearing & housing.

With the use of an adjustable feed damper and regulated speed control gives accurate & reliable feed rate which results in consistency in machine output.

The process of hulling begins with an adjustable metered roll feeder attached with powerful magnets designed to offer an absolute consistency and uniformity to the flow rate and also control the foreign particles.

OPERATION OF TWIN ROLL HULLER:



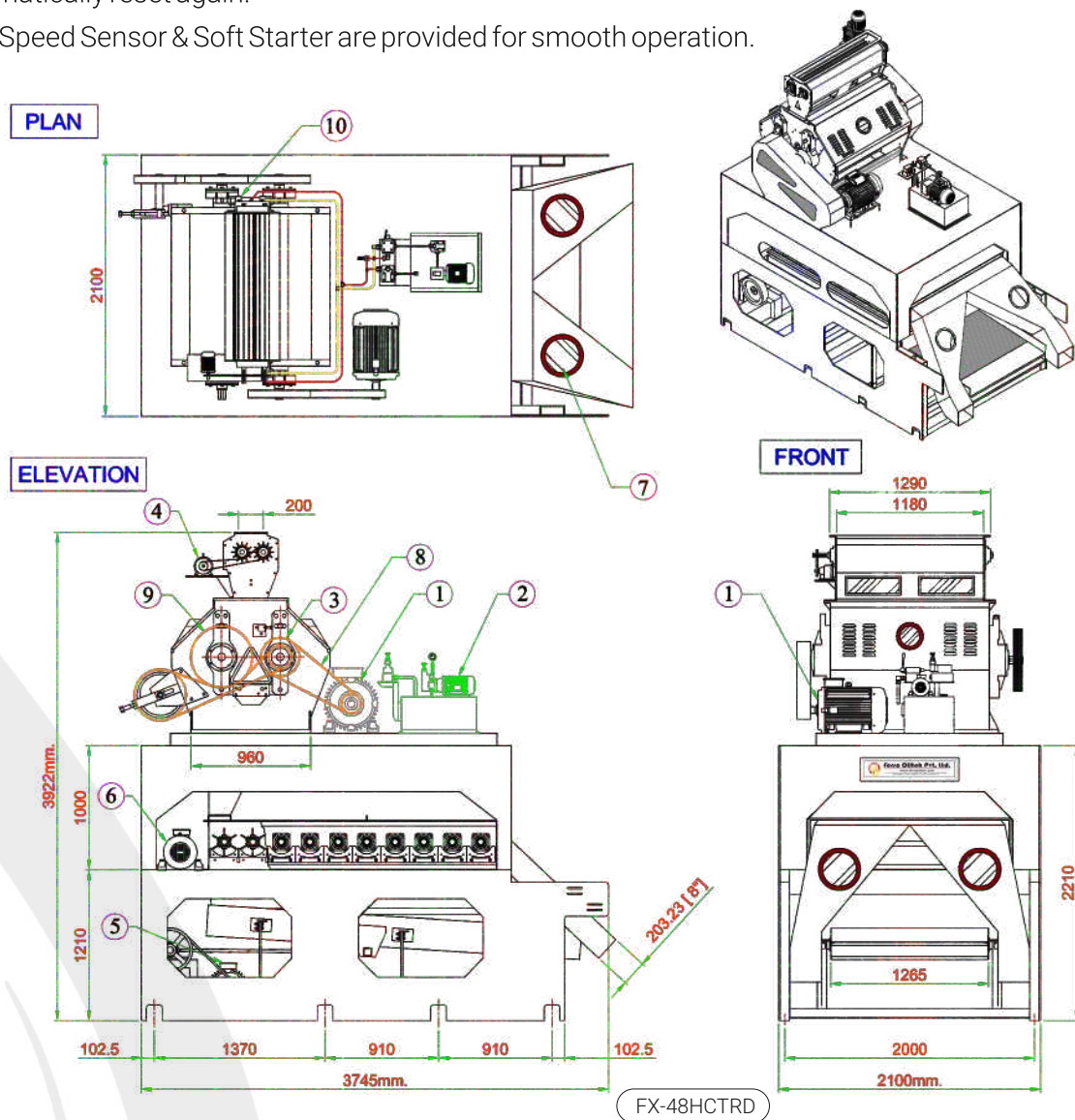
OPERATIONAL PROCEDURE

- ✓ As per design construction of huller, the first seed passes through special magnetic double roll feeding system & further it drops into the twin roll cylinder for Dehulling operation.
- ✓ After dehulling operation is done, the hulls, meat & uncut seed mixture forward into the basket beater where sticky meat is separated by beating operation, further hulls and remaining uncut seed in hulling process that will be recycled back by next operation i.e. density separator, now remaining hulls also separated by dropping down meat & fine hulls on shaker tray with the help of pneumatic suction at end of tray.
- ✓ Obtained pure meat is forwarded to further oil extraction.



MECHANICAL FEATURES

- ✓ Replaceable & interchangeable huller knife is made up of high grade alloy steel & induction hardened for extra-long life.
- ✓ Automatic Hydraulic system provides huller drum to protect the knife by damaging due to foreign particles.
- ✓ The movement of foreign particles is detected by pressure sensitive hydraulic systems.
- ✓ Hydraulic system consists of self-controlling pump unit instantly opens the roll & drop the particles down & automatically reset again.
- ✓ Zero Speed Sensor & Soft Starter are provided for smooth operation.



FX-48HCTRD

TECHNICAL SPECIFICATION

1) MAIN DRIVE MOTOR - 40HP/4 POLE & 30HP/6 POLE	6) BEATER MOTOR - 7.5HP/10HP/4 POLE
2) HYDRAULIC MOTOR - 3HP/4 POLE	7) INSPECTION WINDOWS
3) DOUBLE DRUM - 427MM Dia X 48" length CYLINDERS 427 MM Dia X 36" length CYLINDERS	8) BELTS "CC" - 4 GROOVE
4) FEEDER MOTOR - 1HP/1.5HP/2HP/4 POLE,	9) HULLER KNIFE 19/24 NOS
5) SHAKER MOTOR - 2HP/3HP/4 POLE	10) HYDRAULIC SAFETY SYSTEM

FX-DSHC: DENSITY SEPARATOR

Ferro Density Separator is specially design to allow complete separation of a variety products based on their density. It is the combination of density separator & basket beater separator for better operational results & low oil loss in hulls. The density separator consists of variable speed regulating feeder driven by suitable gear motor. The specially designed inside structure is suitable for separating the uncut seed, large hulls, and meat powder. Equipment is capable to maintain low oil in hulls.

OPERATION OF FERRO DENSITY SEPARATOR :



OPERATIONAL PROCEDURE

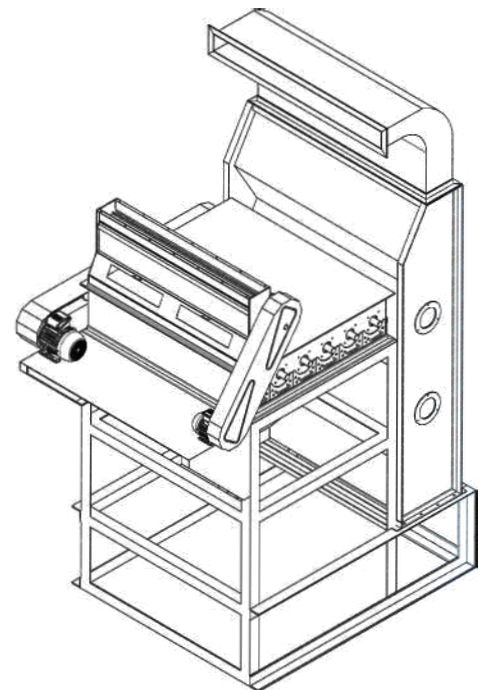
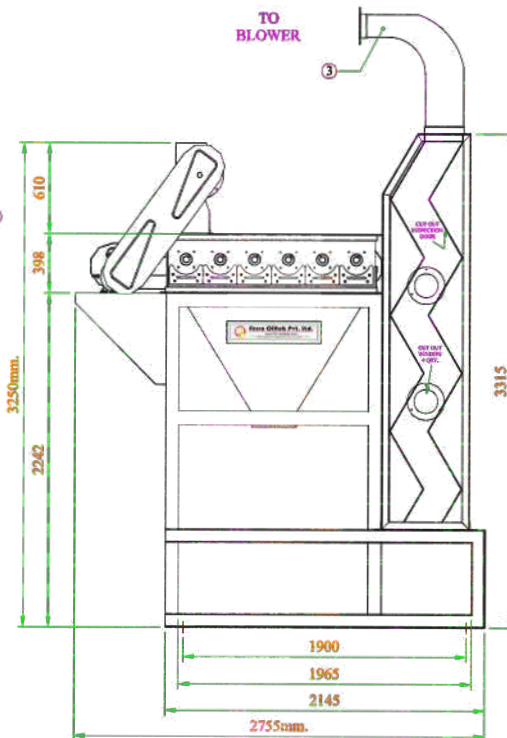
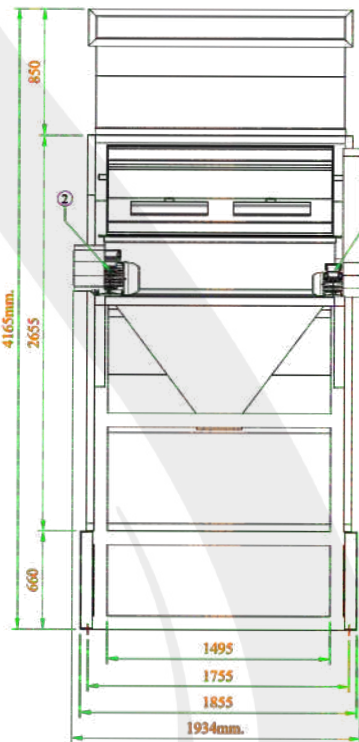
- ✓ Mixture of large hulls, meat & uncut seed fed into the density separator for separating on the basis of density that all are coming out from decorticator machine. First the mixture is fed into 6 stage basket beaters through variable speed regulating feeder, by beating operation sticky meat separated from hulls & drop down by screen of basket.
- ✓ Remaining hulls & uncut seed are move forward into zig zag chamber, where uncut seed drop down because of high density, and low density hulls removed from top of zig zag chamber.
- ✓ Separate out fine meat from basket, meat mesh gets collected in common meat conveyor. Further uncut seeds returns to decorticator and hulls which is pneumatically lifting, that goes for final hulls purifier machine.





MECHANICAL FEATURES

- ✔ Due to use of adjustable Air Damper System, air flow can be controlled.
- ✔ Heavy structure results in zero vibration.
- ✔ Common drive motor for all beater drive.
- ✔ Efficient aspiration system for hulls lifting



FX-DSHC

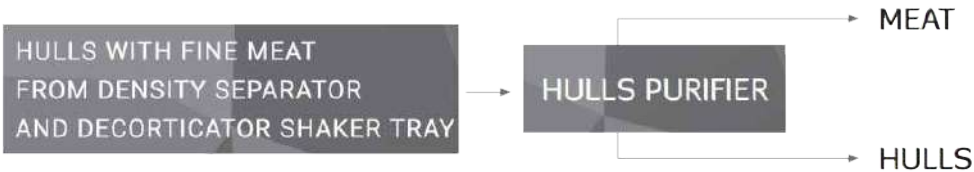
TECHNICAL SPECIFICATION

- 1) FEEDER MOTOR - 1HP/4 POLE 2) BEATER MOTOR - 5HP/ 4POLE 3) AIR CASCADE BLOWER - 20HP/4 POLE

FX-HPHC: HULLS PURIFIER

It is mainly designed for separation of hulls & meat. Hulls purifier produces minimum oiled hulls by removing fine meats from the hulls. It is capable of handling capacity up to 200 tons per day (on white seed basis). Machine consists of 10 basket beaters, mounted above shaker tray.

OPERATION OF HULLS PURIFIER



OPERATIONAL PROCEDURE

The mixture of hulls and fine meat which is coming from decorticator & density separator is fed into the hulls purifier machine. Hulls is passed through 10 cylinder basket beater where fine meat which is sticky with hulls is separated by beating and this fine meat drop down from screen of basket into the shaker tray and forwarded to meat conveyor & hulls move forward at the end of beater. All hulls collected by two way nozzle and dropped into the hulls conveyor.

MECHANICAL FEATURES

- ✓ The basket can quickly replaced so that maintenance become very easy.
- ✓ Shaker tray having self-cleaning mesh.
- ✓ Beater screen is mounted in easy pull trays due to which easy change and maintenance is possible.
- ✓ Zero vibration due to heavy body structure.
- ✓ Heavy duty eccentric used for long life & smooth operation.

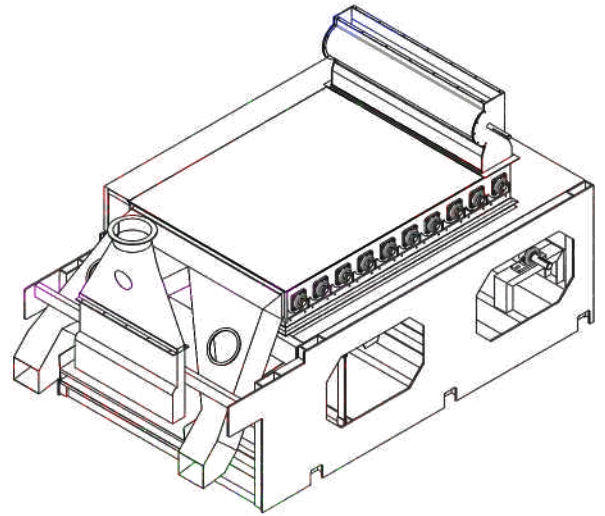
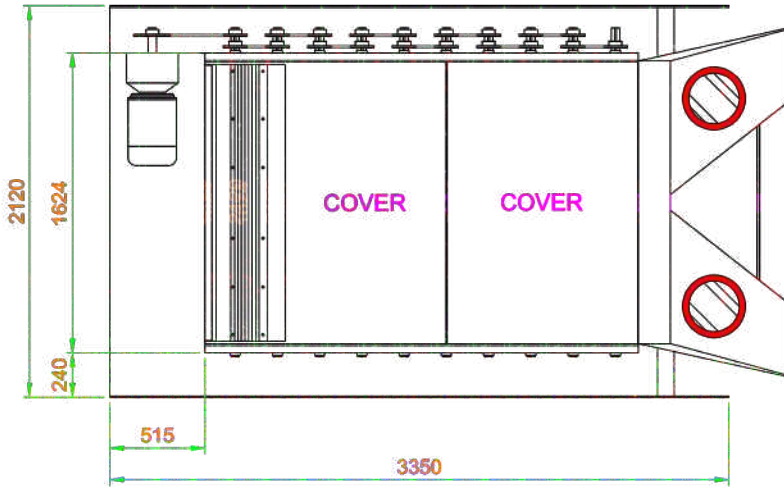


FX-HPHC-01

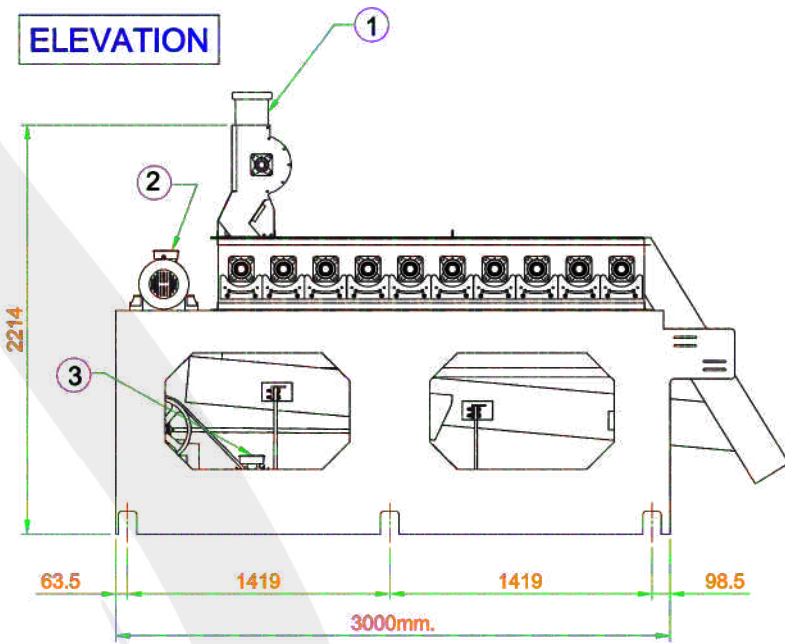


FX-HPHC-02

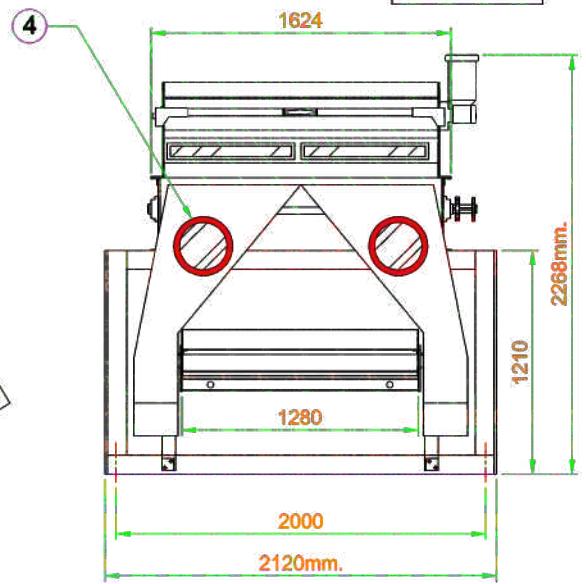
PLAN



ELEVATION



FRONT



FX-HPHC

TECHNICAL SPECIFICATION

- 1) FEEDER MOTOR - 1HP/1.5HP/4 POLE
- 2) BEATER MOTOR - 5HP/7.5HP/10HP/4 POLE

- 3) SHAKER MOTOR - 2HP/3HP/4 POLE
- 4) INSPECTION WINDOWS



COOKER CONDITIONING

The objective of cooker conditioning is to obtain the best conditions prior to flaking, by means of cooker conditioners. This is done by heating and altering the moisture content of various oil-bearing materials by subjecting them to pre-pressing or extraction processes thereby removing the fat contained therein.

It ruptures the oil cells by flushing off essential moisture from the steam and also it creates the moisture in the cell. It reduces the viscosity of the oil, making it simpler to remove. It is designed for all types of seeds. After proper cooking process is done, It helps in removing the oil very easily.

ADVANCED FEATURES

- ✓ The new design that includes rotating blades, helps into avoiding jamming problem and over cooking problem, which results in increasing the yield of oil extraction.
- ✓ The design reduces viscosity and adjusts the moisture content.
- ✓ It incorporates adjustable seed levels and residence time.
- ✓ The operation of the new design is simple and user friendly
- ✓ It's superior tray and shell design provides for years of trouble-free service.



FLAKER

Flakers function by means of flaking mills, which are made by special cold rolled alloy steel. They are particularly suitable for flaking oilseeds. In order to obtain low residual oil content in the meal after extraction, flaking is done before extracting solvents or pre-pressing.

With regard to the supply of solvent extraction plants, pressing plants for pre-pressing, full pressing, and cold pressing are required. Eligible suppliers in the market are identified and pressers are selected in accordance with the raw materials and product qualities.

Most oil seeds are built of tough oil-bearing cellular structure. These must be shattered or weakened prior to the cooking and extraction processes. The oil seed meat is passed between smooth rolls to produce flakes of 0.25 to 0.3mm. Flaking helps to activate oil cell structure and more oil extraction is available. Flaking also increases the surface area available for extraction of oil. Flakers are made up of one pair (two rolls), chilled, cast iron rolls mounted on a heavy duty roller bearing. In order to trap iron particles, the machine made of permanent magnetic feeder, The equipment is provided with optimum gaps in order to adjust the arrangement (of the Hydraulic Cylinders), for maintaining the gaps between two rolls.

Flakers are usually used to increase the oil extraction yield at the screw press stage or solvent extraction process. They are also used to essentially reduce wear and tear.

ADVANCED FEATURES

- ✓ Less vibration effect, because of using advanced technology eg. Cold cutting.
- ✓ The design occupies less space and is also energy reducing.
- ✓ It is quiet, clean, and safe for operation.
- ✓ It has an adaptable flake thickness during operation.
- ✓ Its overall output is very high.
- ✓ It uses very less energy.



SR.NO.	MODEL		CAPACITY	POWER	RPM
1)	FF 801	450 x 1000	75 -80 MT	30 HP	290
2)	FF 802	450 x 1300	100 MT	40 HP	300
3)	FF 803	500 x 1300	150 - 160 MT	100 HP x 2	300
4)	FF 804	600 x 1300	170 - 180 MT	120 HP x 2	300
5)	FF 805	800 x 1500	240 - 250 MT	150 HP x 2	305

CONDITIONER

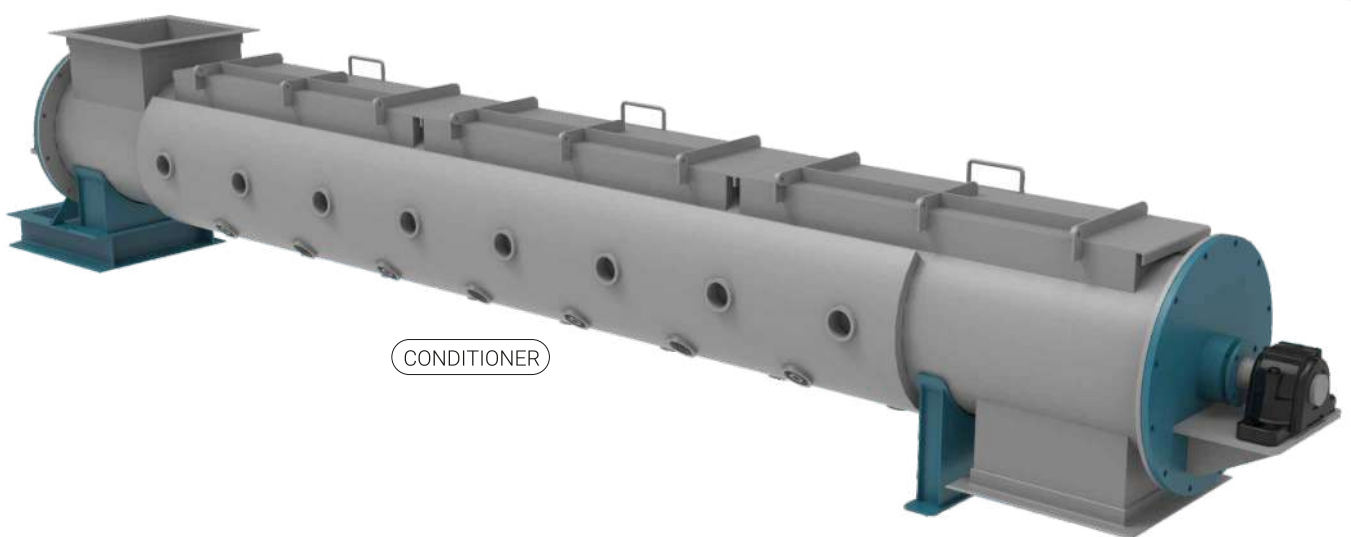
When preparing oil seed meat for further oil extraction, the meat needs to be prepared in the form of pellets or cake for proper oil extraction. For making this pellets/cakes the meat has to be heated and dried to the correct temperature and moisture. Conditioner FX-Series is designed to condition the meat correctly and efficiently without damage of its oil cells. Important parameters considered in conditioned design are its residence time and uniform conditioning. As the input feed rate is increased or decreased, the moisture content and the meat flow in the system can be changed to control the effective residence time.

ADVANTAGES

- ✓ Efficient conditioning for expanding or expelling process.
- ✓ Low power requirement
- ✓ Using low pressure steam for live steam and jacket steam.
- ✓ Required very short time for conditioning
- ✓ Available model from capacity range (50 TPD to 500 TPD)

DESIGN FEATURES

- ✓ Specially designed internal structure.
- ✓ Easy for maintenance
- ✓ Capacity can be varied by applying few changes in settings.
- ✓ No. of steam points provision, result proper heating & conditioning of meat for further process.
- ✓ Detachable spiral wings for easy maintenance.



SR.NO.	MODEL	CAPACITY	POWER	RPM
1)	FCOND 801 14"	100 MT	5 HP	30
2)	FCOND 802 16"	100 MT	7.5 HP	35
3)	FCOND 803 18"	125 MT	10 HP	35



MECHANICAL EXPELLER

The Ferro Expeller is a self-contained unit which has its own heating kettle or conditioner and an arrangement for automatic feeding. The expeller requires no attention after setting so long as proper temperature and moisture content of the seed meal is regulated.

Ferro Expeller is suitable for small, medium as well as large scale plant. Our machinery is known for its high oil extracting efficiency and being highly advanced for easy to use and continuous operation.

Our Expellers are capable to process variety of seeds and nuts such as Cotton seeds, Mustard seeds, Sunflower seeds, Soyabean and many more.

DESIGN FEATURES

- ✔ Ferro Expeller can be used for expelling oil out of variety of seeds just by applying few changes in machinery such as gap between the cage bars, conditioning of inlet meat, etc as suitable for the seed.
- ✔ Efficient power consumption by the Expeller motor providing suitable required torque.
- ✔ Rigid and Steady body for the machine as it generates high force while pressing.
- ✔ High grade steel worms are used, as it plays important role in satisfactory extraction of different oil seeds.

ADVANTAGES

- ✔ Low Equipment cost using high torque mechanism
- ✔ Low power consumption with the help of frequency converter
- ✔ Harden face worms of special alloy steel
- ✔ Instantly consumable crude oil production
- ✔ Oil has better nutritive properties



SR.NO.	MODEL	FULL PRESS	POWER	RPM
1)	FEXP 801	2 - 2.5 TPD	10 HP	18-24
2)	FEXP 802	5 - 6 TPD	20 HP	18-24
3)	FEXP 803	15 - 18 TPD	40 HP	18-24
4)	FEXP 804	20 TPD	50 HP	18-24
5)	FEXP 805	20 - 25 TPD	75 HP	18-24
6)	FEXP 806	30 - 35 TPD	100 HP	18-24
7)	FEXP 807	40 - 45 TPD	125 HP	18-24
8)	FEXP 808	50 - 60 TPD	170 HP	18-24

FX - EXPANDER

Ferro Expanders are interrupted flight screw machines that generate a high pressure and high shear environment to perform work on a material in various applications. An electric motor supplies the power through a gear box or v-belt drive to rotate a shaft within a fixed and sealed tube of continuous diameter.

The discharge of our Expander machine is fitted with an adjustable orifice called a choke, which is used to control the pressure at the end of the machine and to aid in the formation of a specific round shape for the final product called as Pellets/Collets.

Due to increased density and porosity created by the Expander the solvent plant can see up to a 50% increase in capacity, 40% reduction in solvent hold-up in the solid product and 20% reduction of solvent carry-over in the liquid product.

DESIGN FEATURES

- ✓ It has equi-distant steam ports throughout the main body, helping in uniform conditioning
- ✓ Rigid and Steady body for the machine as it generates high force while pressing.
- ✓ Efficient power consumption by the Expeller motor providing suitable required torque.
- ✓ Reduces fines generation.
- ✓ Hydraulic adiabatic attachment for oil recovery

ADVANTAGE

- ✓ The expanded product coming out of Ferro Expander can be 50% more dense than flakes
- ✓ You can squeeze 50% more material into the same space allowing for dramatic increases in rates
- ✓ Pellets/Collets provides maximized surface area for oil extraction for the meal
- ✓ Provides highly porous structure for efficient extraction in Extractor due to easy percolation



SR.NO.	MODEL		CAPACITY	POWER	RPM
1)	FEX 801	8"	100 MT	100 HP	257
2)	FEX 802	10"	400 MT	150 HP	257
3)	FEX 803	12"	800 MT	200 HP	257



VPLF (VERTICAL PRESSURE LEAF FILTER)

The Pressure Leaf Filter is a MS Vertical Vessel with Filter Leaves inside. The leaves are mounted vertically on a common manifold pipe, through which the filtered liquid flows out. The Filter leaves filter on both sides and hence a large filtration area is obtained in a relatively small vessel. Drying of cake is done with the help of Steam/Compressed air and the dried cake is shaken off the filter leaves with the help of air actuated vibrator.

This filter produces a high filtrate clarity after the clarification run and is also suitable for all kinds of filter aids. The regeneration time between the filtration cycles is short.

ADVANTAGE OF PRESSURE LEAF FILTER

- ✓ The first benefit of this technology is little to no costly spillage
- ✓ Keeps costs low since the pressure leaf filter does not require a filter cloth
- ✓ The increased rate of filtration leads to a high rate of production
- ✓ Easy vibro self cleanness



VPLF-01



VPLF-02



PLATE & FRAME FILTER PRESS

Ferro Filter Press offers excellent filtration parameters at low running cost and purchase price. The Oil Filter press are used for liquid and solid separation in oil mills. It uses pressure filtration, wherein a mechanically expressed oil is pumped into the filter press and is dewatered under pressure.

DESIGN FEATURES

- ✓ Plates of the Filter press are tested for casting defects before machining
- ✓ Flat bars provided at the sides are designed to stand extra pressure
- ✓ Grinding process is done on the faces of filter plates to avoid leakages at high pressure

APPLICATION USE

- ✓ Simple yet extremely robust design
- ✓ The maintenance of our filters is made easy
- ✓ These can hold more quantity of sediments, so more oil can be filtered at a time without opening the filter press.
- ✓ Less capital expenditure



PLATE & FRAME FILTER PRESS - 01



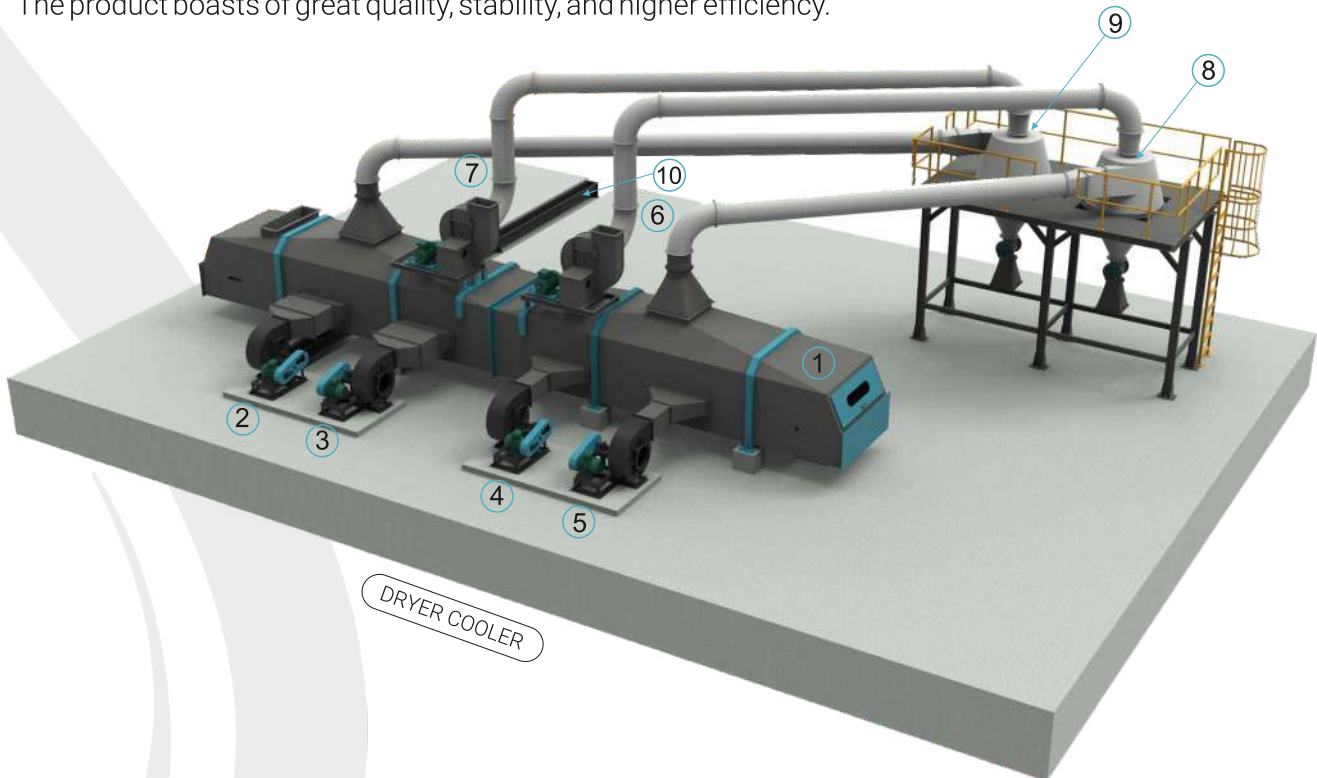
PLATE & FRAME FILTER PRESS - 02

DRYER COOLER

In case of a future expansion plan, the dryer cooler is advantageous as it has a modular type of construction that provides flexibility to increase capacity. The machine comes with one feed module and an unload one with additional intermediate modules for drying and cooling. Because of the aforementioned flexibility of its modular construction, drying or cooling modules can be increased in numbers. In order to increase efficiency, each module is sealed so that there is zero mixing of air. It also has a continuous chain with S.S or galvanised M.S trays to carry material. Every tenth tray has a heat resistant rubber scraper. These are meant for self-cleaning of fines that accumulate below on the return side of the chain and the bottom plate. Specially designed perforated trays are provided to give optimum area for flow of hot and cold air. At the same time, these trays help maintain air pressure and the required velocity. This helps clean the material accumulated between the carrying and returning sides of trays.

ADVANCED FEATURES:

- ✓ It takes less downtime and the maintenance costs are also much lower.
- ✓ The design takes into consideration, long term maintenance.
- ✓ There in-built integral cooling options provided.
- ✓ The product boasts of great quality, stability, and higher efficiency.



TECHNICAL SPECIFICATION

1) DRYER COOLER	5) COLD AIR BLOWER-2	9) DROPPER CYCLONE-2
2) HOT AIR BLOWER-1	6) INDUCED DRAFT BLOWER-1	10) REDLER CONVEYOR TO EXTRACTOR
3) HOT AIR BLOWER-2	7) INDUCED DRAFT BLOWER-2	
4) COLD AIR BLOWER-1	8) DROPPER CYCLONE-1	



FX EXTRACTOR

In an FX Extractor, the material enters through an inlet hopper and is swiftly saturated with miscella. The feeding hopper is equipped with a minimum & maximum level controller to form a further gas lock within the hopper. At low level the feed screw conveyor will stop and at high level the preparatory equipment will stop. The bed of the material is continuously washed with counter-current stages of miscella after the initial saturation process.

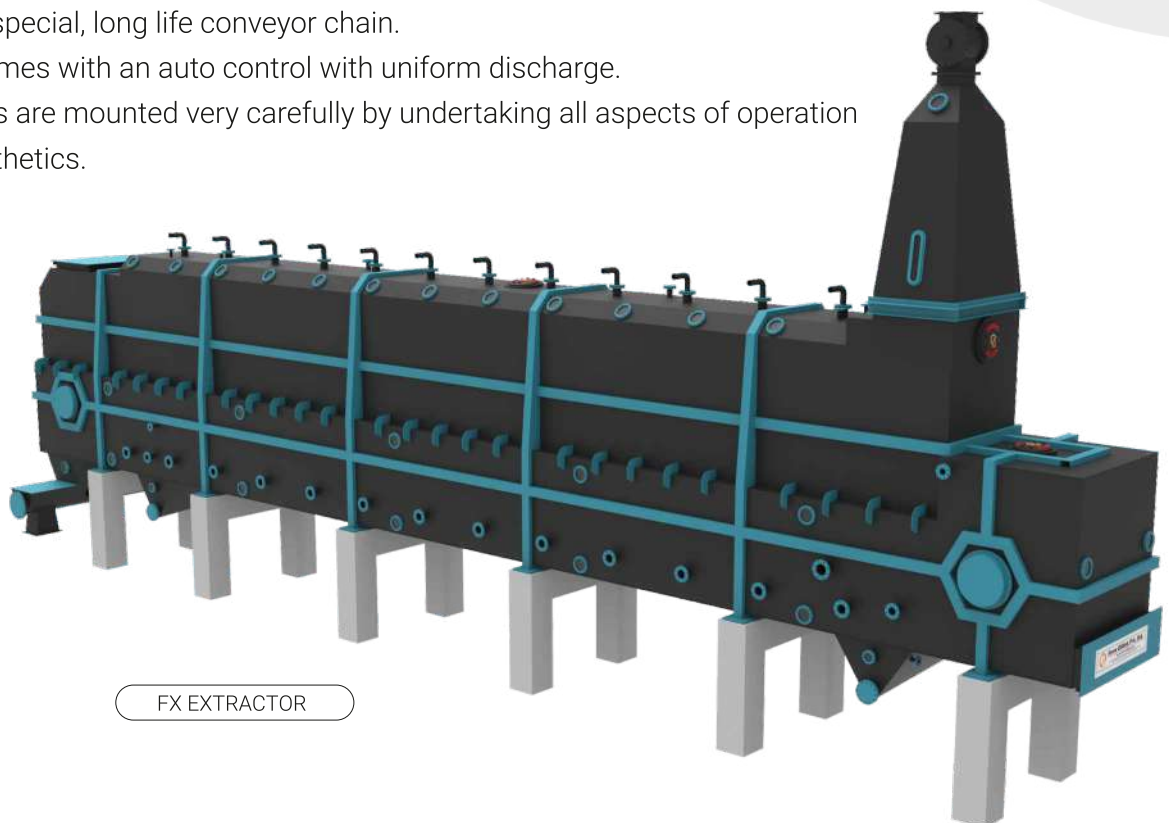
The surface of the material bed is provided with rakes. These rakes along with belt, maintain percolation and prevent miscella contamination. Compared to shallow bed designs, the miscella has more contact time in this one, to penetrate the flake. Hence, thicker flakes can be used to achieve the desired residual oil.

This is followed by a long percolation sequence where the stages of miscella are kept separate stages and remaining oil is extracted. The simplicity of the FX-Extractor designed and made by Ferro ensures it is reliable and therefore you have a competitive edge over others. The FX-Extractor optimises Reliability and Simplicity. It is user friendly with a rectangular housing enclosing a slow-moving belt, driven by a single head shaft.

The FX Extractor boasts of reinforced strength in construction with optional casing. It requires minimum site work for pre-assembly, resulting in rapid and low-cost installations. It also comes with stainless-steel, self-cleaning wedge bar or mesh screen, thus being versatile for different raw materials.

ADVANCED FEATURES

- ✓ It comes with exterior access to all the mechanical parts.
- ✓ The design is new and improved. It is easily mountable with a drive/foot mounted gear box.
- ✓ It boasts of a special, long life conveyor chain.
- ✓ The design comes with an auto control with uniform discharge.
- ✓ The mountings are mounted very carefully by undertaking all aspects of operation as well as aesthetics.



FX EXTRACTOR



DE-SOLVENTIZING & TOASTING

Our DT has six stages (can vary according to plant capacity or requirement) with top two stages for de-solventizing and subsequent stages for toasting without over heating to give light colored meal free of solvent and high in protein content. The meal exiting the extractor contains 30-35% solvents by weight. The meal is thus heavily solvent-laden and the purpose of the de-solventizing process is to remove the solvent. The goal is also to toast the meal so that antinutritional factors are controlled, and the moisture and temperature of the meal is reduced to levels appropriate for storage and transport. Live steam is condensed and latent heat is used to supply most of the heat supplied for evaporating the solvent from the meal. This simultaneously increases the moisture in the meal to facilitate toasting. Air is passed through a fluidized bed of meal and this way, drying and cooling of the meal is accomplished. Before passing on to distillation for heat recovery, the solvent and water vapours exiting the de-solventizing process, pass through a scrubber to remove meal particles.

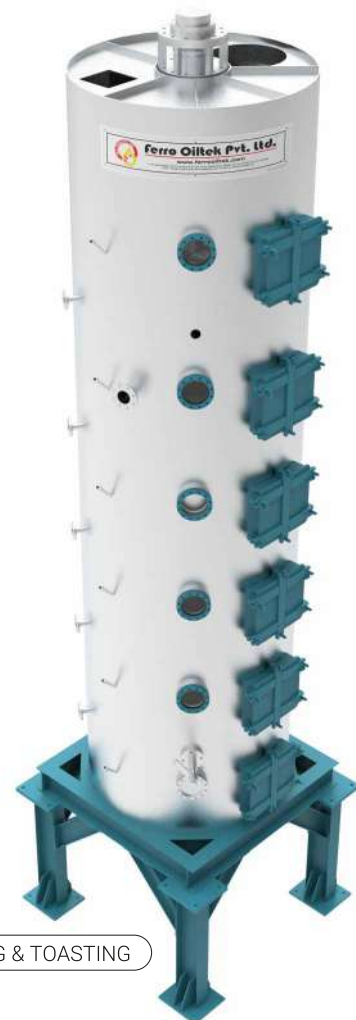
In our DT, the steam provided within DT chambers are controlled by automatic controlled valve. Hence chances of over heating and incomplete heating is reduced to meal. At each stage, the bed heights are controlled by vapor tight, carbon steel construction with numerous stages; and a bottom driven drive-mechanism with mechanical float and door system. The shaft is centrally driven with specially designed scrapper with a hardened face. There is also a provision for specially designed sparge trays to add steam open steam so that hexane losses are minimised. It also includes a precisely designed duct of vapor. The entire de-solventization process takes place with the help of direct and indirect steam.

ADVANCED FEATURES

- ✓ This design has a robust construction.
- ✓ It includes specially designed spurge trays for direct heating.
- ✓ It consumed very low energy.
- ✓ It includes a hardened face scrapper for efficient wear and tear.
- ✓ It also includes a factory aligned drive mechanism.
- ✓ The loss of hexane is considerably low.
- ✓ It is constructed with a single shell for easy maintenance.

DRYER COOLER OPERATION (Optional) :

From the DT, the cake is either conveyed to a dry cooler or in case of ferro the passed directly into drying section of the DC (Dryer Cooler). The Drying & Cooling are accomplished by blowing heated air in the drying section or using ambient air to cool the meal in the cooling section.

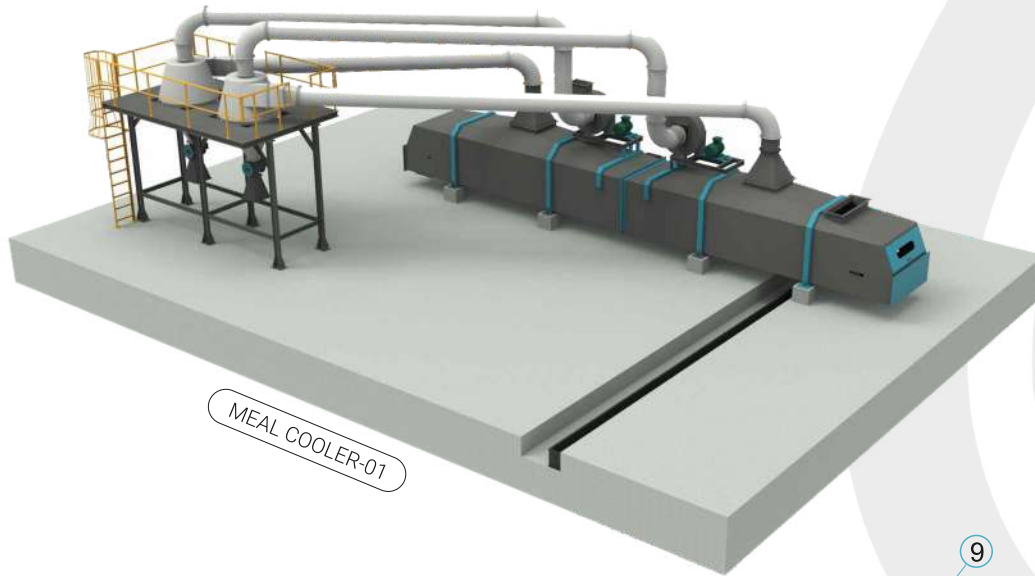


DE-SOLVENTIZING & TOASTING

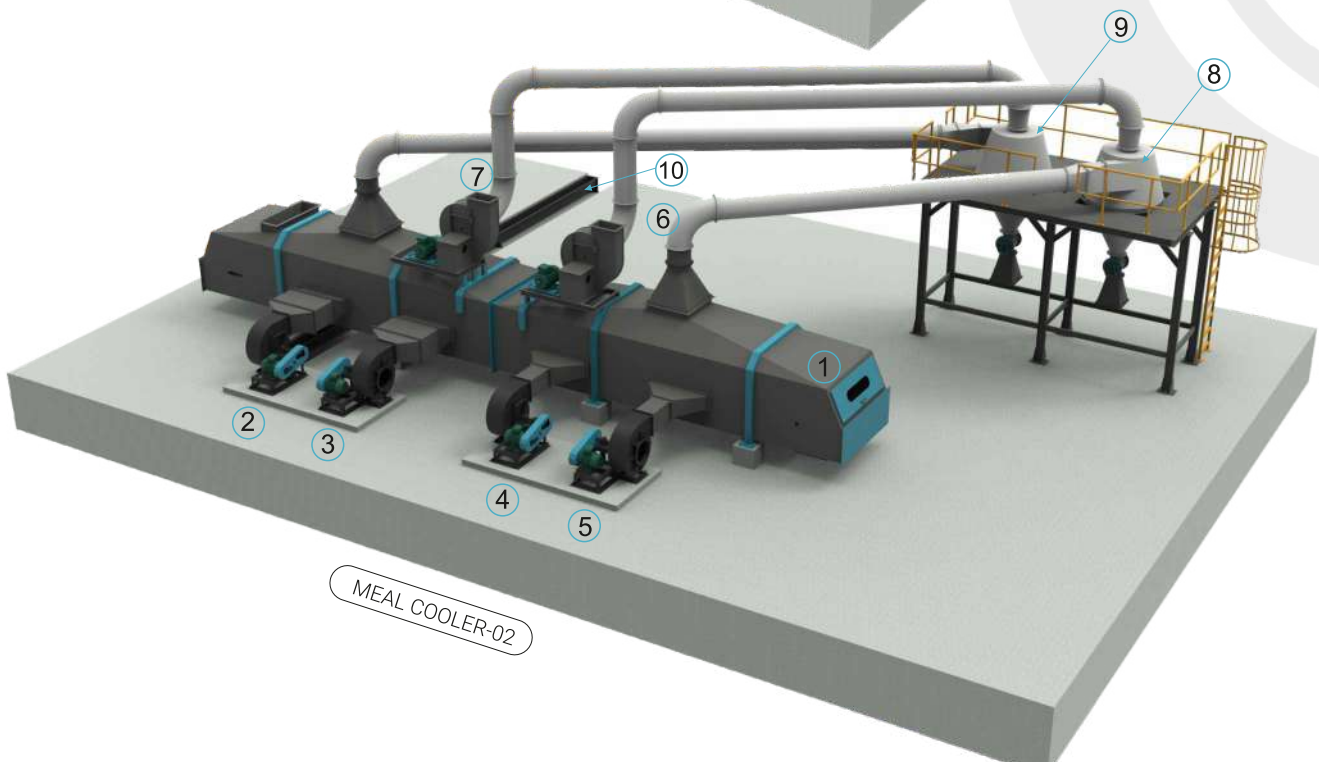


MEAL DRYER COOLER

The purpose of the meal cooling section is for cooling the de-solventised and toasted material. The meal is passed through series of heating and cooling chamber so that the meal get uniform density as well as at the discharged meal should be cool enough to handle openly. The meal cooler is fitted with alloy steel straps, a special conveying chain, and perforated sheets. This helps fluidization of the meal, complete with the driving mechanism.



MEAL COOLER-01



MEAL COOLER-02

TECHNICAL SPECIFICATION

1) MEAL DRYER COOLER	5) COLD AIR BLOWER-2	9) DROPPER CYCLONE-2
2) HOT AIR BLOWER-1	6) INDUCED DRAFT BLOWER-1	10) CONVEYOR TO BAGGING UNIT
3) HOT AIR BLOWER-2	7) INDUCED DRAFT BLOWER-2	
4) COLD AIR BLOWER-1	8) DROPPER CYCLONE-1	



MISCELLA DISTILLATION

"Miscella" is the industrial term used for the oil/solvent mixture that leaves the solvent extractor. The miscella leaving the solvent extractor contains 70-80% solvent by weight. The purpose of distillation is to thermally separate the miscella into two things - a liquid oil fraction and a solvent vapour fraction. Optimum use of available heat in the discharge vapour stream from the de-solventiser toaster, the available heat from the condensate flash tank, and the heat recovery within distillation itself helps maximize the energy efficiency of the distillation process. The cooling tower & condenser are very important parts of distillation process.

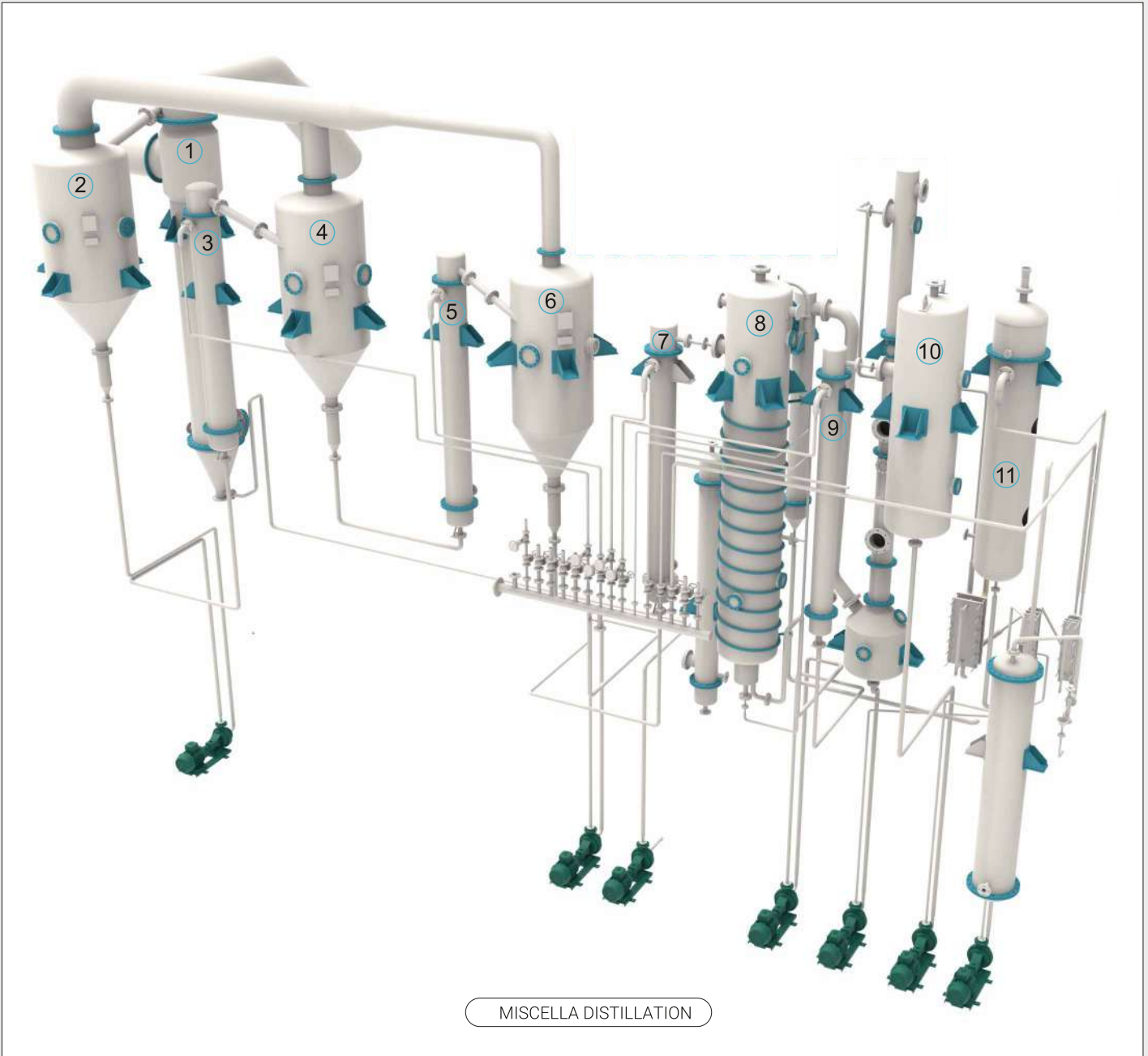
Ferro provides a series of equipments that connected in sequence to provide heating of miscella at a certain temperature, to make sure the hexane from the oil is vaporized and also the oil should not over heated affecting it's properties Ferro distillation unit collects these hexane vapours with the help of steam powered vaccum system which is highly efficient in working and it's risk free. With Ferro Oiltek, optimum efficiency is achieved through perfection in size and design of the distillation equipment. The miscella tank is amply sized so that it acts as a perfect buffer after extraction to ensure the smooth flow through distillation. In our distillation system, we recover as much energy as possible by using various heat exchangers, economizers and so on.

The whole control of heating in distillation is done by providing severe control valves at the steam line of these heaters. These enable the automatic achievement of required temperature within the equipment. Depending on the client demand the Ferro can provide semi automatic as well as fully automatic extraction unit.

ADVANCED FEATURES

- ✓ It uses low steam and power.
- ✓ It includes a specially designed stripper for removal of solvent.
- ✓ It also comes with a specially designed dryer to remove moisture.
- ✓ Comes fitted with Hydro-clones that are used for filtration of miscella before entering the distillation stage.
- ✓ The design enables the sludge to deposit in the lower evaporator tube avoiding frequent cleaning.
- ✓ It's specially designed condensers enable optimum solvent condensation at reduced vacuum and for a wide range of cooling water temperature.
- ✓ It has specially designed vapour absorption and stripping section that helps absorb the vent's un-condensed hexane before escaping to the atmosphere thereby, preventing solvent loss.
- ✓ It enables lower effluent generation.

This design ensures a whopping 75% lower residual solvent in oil due to maximized steam/oil contact. This is due to its improved sieve-tray type oil stripper as opposed to the conventional disc/donut designs. In this design, there is a requirement for 15°C lower miscella temperature. This helps save second stage evaporator steam and reduces degradation of the crude oil prior to oil refining process. The 2-pass second stage evaporator design also enables fast miscella tube velocity and minimizes tube fouling and frequency of cleaning.



MISCELLA DISTILLATION

TECHNICAL SPECIFICATION		
1) ECONOMISER	5) 2nd HEATER	9) 4th HEATER
2) ECO-FLASHER	6) 2nd FLASHER	10) OIL DRYER
3) 1st HEATER	7) 3rd HEATER	11) OIL COOLER
4) 1st FLASHER	8) STRIPPING COLUMN	



RECUPERATION UNIT FOR FINAL SOLVENT TRAP

Recuperation unit is specially design for Vent Vapour Recovery By Absorption process. The non-condensable gases with mostly air get into the system during the processes like extraction, drying and distillation. These gases can cause damage to the system, and thus, have to be vented out. For this, an absorption system is attached through which the vent gases are passed through. In this absorption system, there is vegetable or specially mineral oil that completely absorbs the solvent traces in the gases. A regular check on the oil has to be carried out for the presence of volatiles and as per the requirements, has to be rejected when these levels are visible.



TECHNICAL SPECIFICATION

1) RECUPERATION STRIPPER	3) CONTACT COOLER	5) CENTRIFUGAL PUMP
2) ABSORBER	4) PLATE TYPE HEAT EXCHANGER	



BATCH REFINING

In a batch oil refinery process, a measured quantity of oil undergoes a sequence of reactions or operations to make the crude oil edible by removing unwanted minor components that make oils unappealing to consumers, while trying to cause the least possible damage to the neutral oil as well as minimum refining loss.

The main stages in the refining process are-

- ✓ Degumming/Neutralizing
- ✓ Bleaching
- ✓ Deodorizing &
- ✓ Dewaxing (Optional)

It is the process if batch refining capacity below 30 TDP. This is essentially done in 3 batches per 24 hours. Batch process is recommended being low cost and easy to operate.

Crude oil obtained from expellers or solvent extraction plant consists of various impurities which are removed in each process one by one accordingly.

The main groups of compounds which are removed in process are-

- ✓ Degumming - Phospholipids
- ✓ Neutralization – Free fatty acids
- ✓ Bleaching – Pigments/Metals
- ✓ Deodorization – Volatiles/Free fatty acids
- ✓ Crystallization – Waxes/Triacylglycerols

Batch Refinery provided by Ferro includes all necessary features and automations needed for a plant to run efficiently and effortlessly with low maintenance and breakdowns. The high-pressure vessels are fully tested and the pumps and motors placed/mounted are purchased from a trusted and certified vendor.

Ferro ensures to provide all the necessary support while commissioning and erection of this plant and guarantees the efficient and long-time functioning of this plant under trained operator's supervision.

ADVANTAGE OF FERRO BATCH REFINING

- ✓ The operation is extremely flexible
- ✓ Ease of Operation
- ✓ All safety alarms and controls (High- and low-level indicators, High- and low-Temperature alarms)
- ✓ Low power consumption
- ✓ Steam ejector vacuum system is used instead of moving parts to compress a gas



TECHNICAL SPECIFICATION

1) NEUTRALIZER	6) FATTY SCRUBBER	11) CLOUDY OIL TANK
2) GUMS, SOAP & SLOPE TANK	7) OIL COOLER	12) VACUUM SYSTEM EJECTOR & BOOSTERS
3) BLEACHER	8) BLEACHED OIL STORAGE TANK	13) PROCESS PUMPS (CENTRIFUGAL & PD)
4) PRESSURE LEAF FILTER	9) LYE PREPARATION TANK	14) POLISH FILTERS
5) DEODORISER	10) HOT WATER TANK	15) HOT WELL



CONTINUOUS DE-GUMMING

This Degumming section is the first stage in Refinery plant. The purpose of degumming is to remove phospholipids or gums from the crude oil. Two types of phospholipids are present in crude oils according to their level of hydration, i.e., hydratable and nonhydratable ones. After addition of water (1-3%), most of the phospholipids are hydrated and are insoluble in the oil. The hydrated compounds can be efficiently separated by filtration or centrifugation and the non-hydratable compounds still remains in the oil after this section.

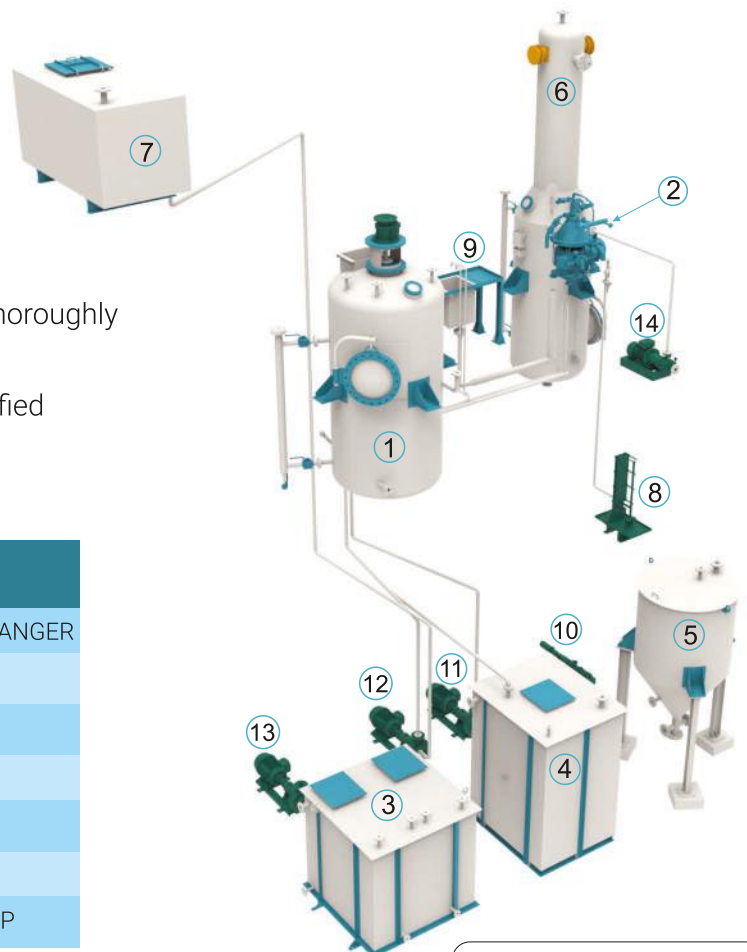
This separation of gums and soap from the oil is done by highly trusted MACFUGE equipment which are designed for centrifugal separation of solid-liquid, liquid-liquid-solid, liquid-liquid, in all its versions, types and materials. MACFUGE separator is a product of Servizi Industriali SRL located in Italy, is a partner with Ferro Oiltek for the supply of macfuge separator in India.

Depending on the oil composition, the degumming step can be eliminated as the phosphatides are also removed along with the soaps during the next step of neutralization. However, degumming is mandatory for physical refining and the content of phosphorus after degumming should be lower than 10 mg/kg.

In Ferro's Degumming section, the main equipments are Reactor vessels, Knife-mixtures, Centrifuge separators, Plate type heat exchangers, etc along with various sub-parts like flowmeters, pumps, control valves, hot- and cold-water tank, strainers, etc.

ADVANTAGE OF FERRO DEGUMMING

- ✔ Efficient Degumming
- ✔ No compromise with the quality and material of the equipments as well as any parts or fittings
- ✔ Capacity of plant can be varied easily within a range
- ✔ All safety factors are taken into consideration very thoroughly
- ✔ Easy to operate and low maintenance cost
- ✔ All vessels and equipments are well tested and certified



TECHNICAL SPECIFICATION	
1) REACTOR	8) PLATE TYPE HEAT EXCHANGER
2) CENTRIFUGAL SEPARATOR	9) WASH TABLE
3) LYE PREPARATION TANK	10) PD PUMP FOR GUMS
4) HOT WATER TANK	11) HOT WATER PUMP
5) GUM TANK	12) COLD WATER PUMP
6) VACUUM DRYER	13) CAUSTIC PUMP
7) COLD WATER TANK	14) SEPARATOR FEED PUMP

CONTINUOUS DE-GUMMING

CONTINUOUS NEUTRALIZATION

This is the second stage in Refinery plant. In this step, the oil is treated with caustic soda (sodium hydroxide) and free fatty acids are converted into insoluble soaps, which can be easily separated by centrifugation.

Thus, the main objective of this step is the removal of free fatty acids, although, as commented above, residual phospholipids in degummed oils or all the phospholipids in the crude oils are also removed as insoluble hydrates. Also, caustic neutralization improves significantly the oil colour partly by reacting with polar compounds and partly by solubilization. Alkali refining of oil is compulsory in crude oils of high acidity and pigment contents.

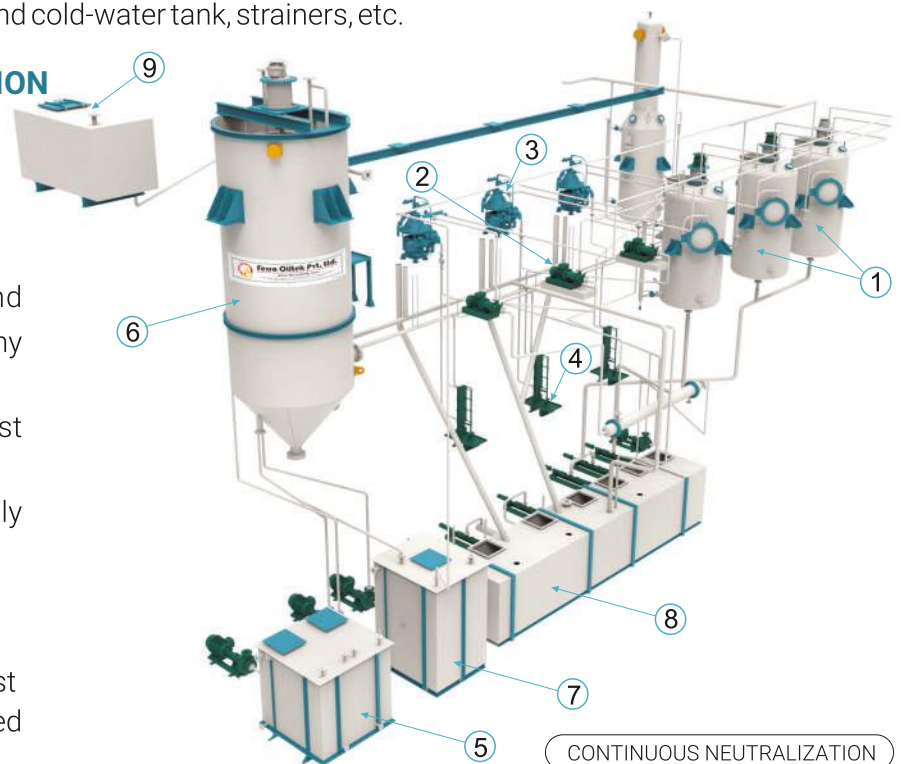
This separation of gums and soap from the oil is done by highly trusted MACFUGE equipment which are designed for centrifugal separation of solid-liquid, liquid-liquid-solid, liquid-liquid, in all its versions, types and materials. MACFUGE separator is a product of Servizi Industriali SRL located in Italy, is a partner with Ferro Oiltek for the supply of macfuge separator in India.

The free fatty acid content of the oil is the main factor that determines the amount and concentration of the caustic soda and also it excess for a minimum oil loss. After a reaction time of around 30 minutes at slow stirring and temperature around 75°C, the water phase is eliminated by centrifugation and the oil washed with water to remove the remaining soap.

In Ferro's Neutralization section, the main equipments are Reactor vessels, Caustic dosing tank, Phosphoric dosing tank, Knife-mixtures, Centrifuge separators, Plate type heat exchangers, etc along with various sub-parts like flowmeters, pumps, control valves, hot- and cold-water tank, strainers, etc.

ADVANTAGE OF FERRO NEUTRALIZATION

- ✔ It consumes less water supply as comparatively with other competitive machines.
- ✔ Efficient Neutralizing of crude oil
- ✔ No compromise with the quality and material of the equipments as well as any parts or fittings
- ✔ Output from this section has the best quality result.
- ✔ Capacity of plant can be varied easily within a range
- ✔ All safety factors are taken into consideration very thoroughly
- ✔ Easy to operate and low maintenance cost
- ✔ All vessels and equipments are well tested and certified



CONTINUOUS NEUTRALIZATION

TECHNICAL SPECIFICATION

1) NEUTRALISING REACTOR	4) PLATE TYPE HEAT EXCHANGER	7) HOT WATER TANK
2) SHEAR MIXER / KNIFE MIXER	5) LYE PREPARATION TANK	8) GUM-SOAP-SLOPE TANK
3) CENTRIFUGAL SEPARATOR	6) NEUTRALIZER	9) COLD WATER TANK

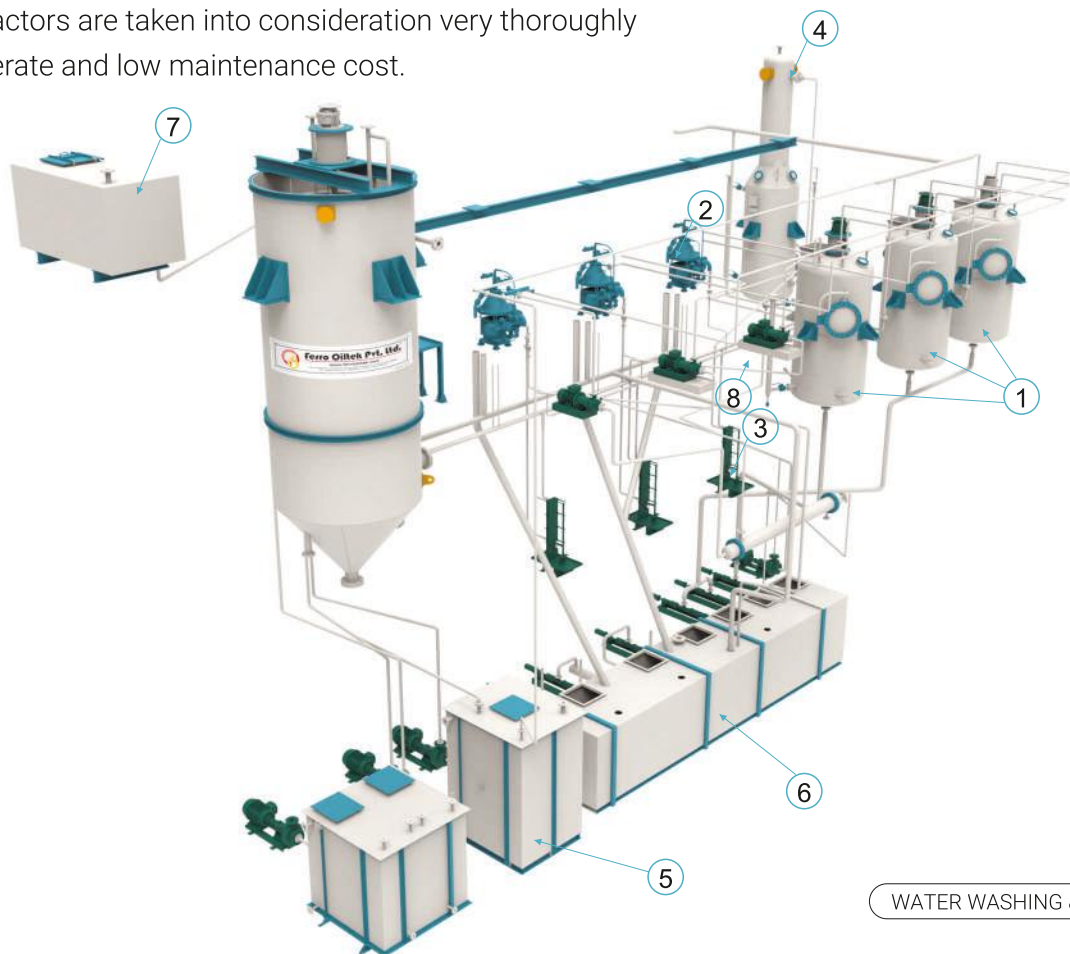
WATER WASHING & DRYING

Water washing is mandatory after the Neutralization reaction so as to wash out the chemicals used in Neutralization reaction which will definitely affects the end result of the oil; hence it is considered as a part of Neutralization reaction. Addition of oil washing and drying adds few more equipments to the list.

Ferro oil washing and drying units adds the equipments Washing centrifuge separator, Shear mixture, NOT CUM Vacuum dryer and Plate type heat exchanger with its necessary sub-parts like flow meters, pumps, control valves, sensors, strainers, etc.

ADVANTAGE OF WASHING AND DRYING

- ✔ Our technology helps in reducing minimum soap ppm, because of which bleaching earth requirement reduce and gives best quality output.
 - ✔ Efficient washing and drying
 - ✔ Negligible chemical residuals left
 - ✔ Oil is dried effectively after washing leaving negligible moisture in oil
 - ✔ All safety factors are taken into consideration very thoroughly
- Easy to operate and low maintenance cost.



TECHNICAL SPECIFICATION

1) REACTOR	4) NOT CUM VACUUM DRYER	7) COLD WATER TANK
2) CENTRIFUGAL SEPARATOR	5) HOT WATER TANK	8) SHEAR MIXER
3) PLATE TYPE HEAT EXCHANGER	6) GUM-SOAP-SLOPE TANK	

CONTINUOUS BLEACHER

Bleaching Process is the third step in vegetable oil refining which commences after complete of effective neutralization process.

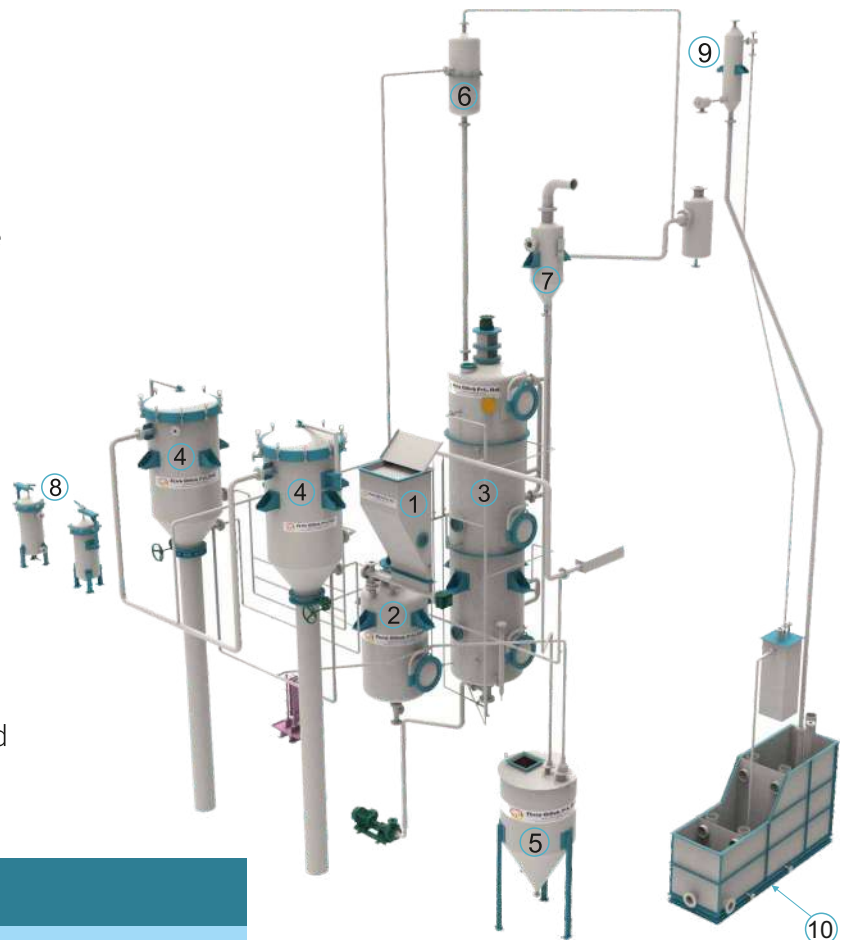
Ferro provides a SS-316 and SS-304 (as per customer requirement) pressure vessel named FX-Bleacher which is used to carry out the Bleaching Process. A Bleacher is carefully designed equipment based on design parameters to ensure perfect bleach-ability of the neutralized oil. The process has its own importance.

The purpose of Bleaching is to remove the color pigments contained inside Vegetable Oils. The neutralized oil is heated at additional temperature through low pressure steam within the coil inside the vessel. The oil is then treated with Bleaching Clays that absorb the color pigments. The addition of amount for bleaching clay varies from oil to oil. It also depends on the color content of the crude oil and the desired quality oil colour index. This bleached oil is then passed through the Pressure leaf filters to filter out the used Bleaching clay.

Bleaching Section by Ferro includes- FX-Bleacher vessel, bleaching earth dosing hopper, set of Pressure leaf filters, Cloudy oil tank, Steam cyclone, Vacuum system, Steam PRS, Polish filters, Cooling tower and in-between equipments like Plate type heat exchangers, Pumps, Flowmeters, Control valves, etc.

ADVANTAGE OF FERRO BLEACHING

- ✔ Colour results are up to the top due to perfect agitation and heating in Bleacher.
- ✔ Safe and Operator friendly automations
- ✔ Clean and residue free oil in the outlet due to use of two filtration stages
- ✔ Capacity of plant can be varied easily within a range by making minor changes in controls
- ✔ Low maintenance with negligible breakdowns
- ✔ Whole plant can be monitored in a single screen indicating temperature, pressure and levels and also many more detail of the equipments
- ✔ All vessels and equipments are well tested and certified



CONTINUOUS BLEACHER

TECHNICAL SPECIFICATION	
1) EARTH DOSING HOPPER	6) BALANCING TANK
2) SLURRY MIXER	7) STEAM CYCLONE
3) BLEACHER	8) POLISH FILTER
4) PRESSURE LEAF FILTER	9) VACUUM SYSTEM
5) CLOUDY TANK	10) HOT WELL

CONTINUOUS DEODORIZATION

Deodorization is the final stage of the refining process, which is a steam distillation at elevated temperature under vacuum pressure to remove FFA, volatile compounds like oxidative compounds (aldehydes and ketones) and other contaminants based on their vapor pressure and volatility.

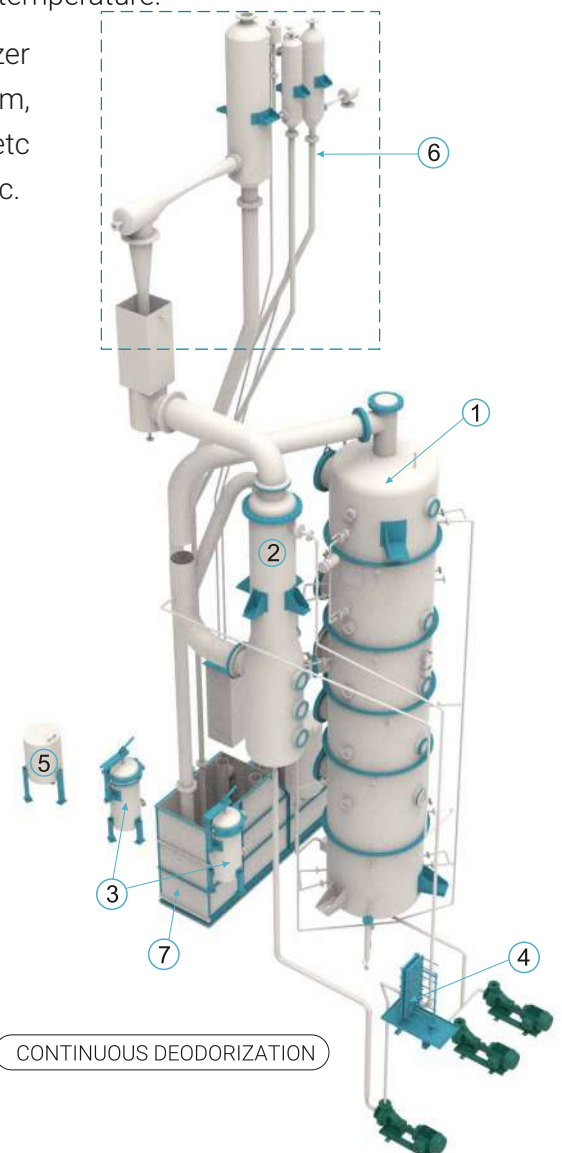
The current deodorization stage has three main concerns which are stripping of volatile components such as FFA and secondary oxidation products, removal of off-flavour, and thermal destruction of pigments. Deodorization improves the flavour and oxidative stability of the refined oil by nearly a complete removal of FFA and other volatile odour and flavour compounds by thermal destruction of hydroperoxides. The peroxide value of oil is brought down to the minimum value possible in this process.

Ferro provides SS-316 and SS-304 (as per customer requirement) vertical pressure vessel named FX-Deodorizer which is used to carry out the Deodorizing Process. It has 5-6 compartments/stages from top to bottom having various process friendly mechanisms within the compartments helping the efficient deodorization of bleached oil. With any heat introduced here, permanent damage is being done, which means the free fatty acids along with aldehydes, ketones, etc. in the oil are already quickly stripped off. The bottom compartment of deodorizer works as economiser in which the discharging oil is cooled by the incoming oil. Then this oil is passed through Polish filter and series of cooling heat exchangers to bring oil to atmospheric temperature.

In Ferro's Deodorising section, the main equipments are Fx-Deodorizer vessel, Deaerator vessel, Thermic fluid heater system, Vacuum system, Steam PRS, Plate type heat exchangers, Polish filter, Cooling tower, etc along with various sub-parts like flowmeters, pumps, control valves, etc.

ADVANTAGE OF FERRO DEODORIZING SECTION

- ✔ Excellent end result in terms of oil quality and testing parameters
- ✔ Safe and Operator friendly automations
- ✔ High quality products
- ✔ Capacity of plant can be varied easily within a range by making minor changes in controls
- ✔ Low maintenance with negligible breakdowns
- ✔ Whole plant can be monitored in a single screen indicating temperature, pressure and levels and also many more detail of the equipments
- ✔ All possible safety factors are considered while erection of plant
- ✔ All vessels and equipments are well tested and certified



TECHNICAL SPECIFICATION

1) DEODORISER	4) PLATE TYPE HEAT EXCHANGER	7) HOT WELL
2) FATTY-SCRUBBER	5) DOSING TANK	
3) POLISH FILTER	6) VACUUM SYSTEM	

DEWAXING / WINTERIZATION

This is optional stage in refining which is considered after client discussion.

Once all the above processes are done with, dewaxing of oil is begins. This is done by cooling tower water followed by chiller. In the crystallizer, sufficient time is spent for crystal growth. Once the waxes get crystallised, the oil is now subject to filtration. This dewaxed oil passes the cold test which gives clarity to oil even at low temperatures.

This process is used to remove the wax by cooling the oil down to prescribed temperatures. This then forms the wax crystal, membrane filter and filter press. Although this process is easy, the design of the crystallizer plays a very important role. When chilled or stored for long periods of time, Sunflower, Corn, Canola, Cotton seed, Rice and etc oils contain non-triglyceride compounds that create a haze or wax in the oil. Dewaxing/Winterization is the process of chilling followed by filtration that removes these compounds.

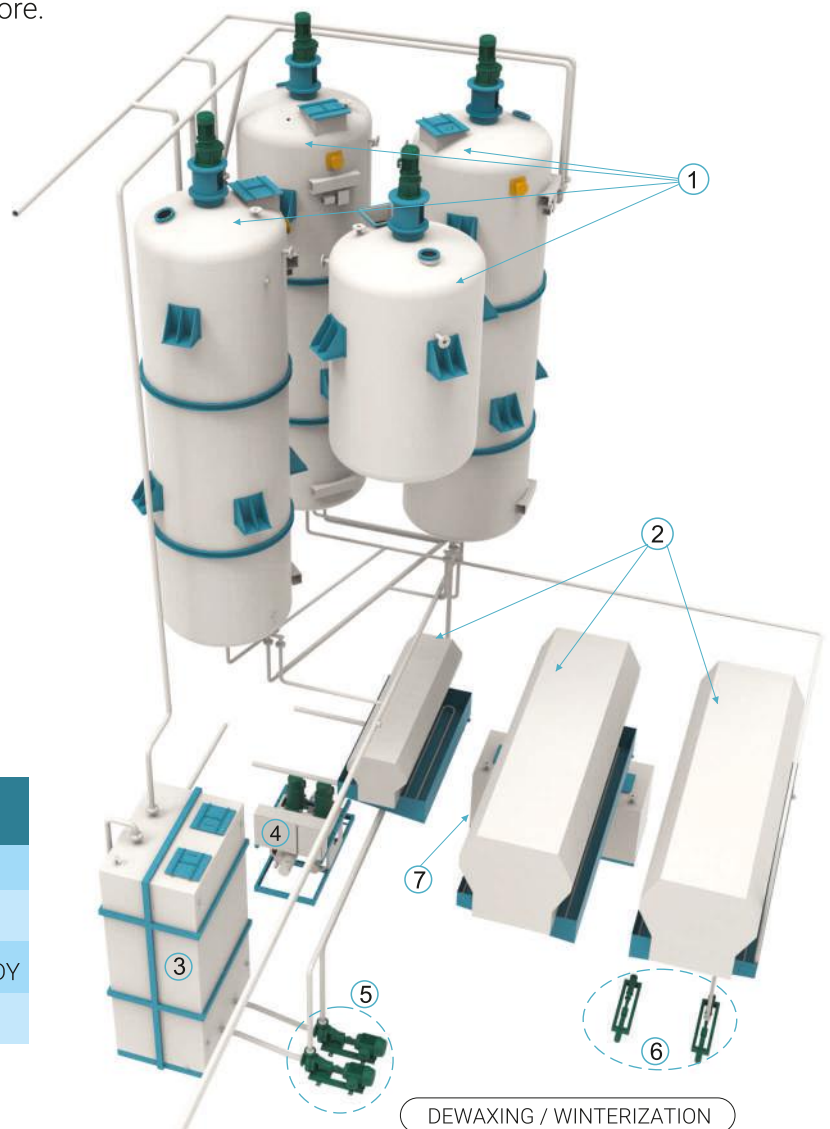
Ferro dewaxing section includes - oil retention tanks with agitator , chiller, filter press, storage tanks for dewaxed oil, press oil, cloudy oil & chilled water, PHE & few more.

ADVANCED FEATURES:

- ✓ It incorporates innovative and workable crystallizer designs.
- ✓ And result of dewaxed having superiority in testing parameters.
- ✓ Whole plant can be monitored in a single screen indicating temperature and oil levels in tank.
- ✓ Easy to operate and low maintenance
Capacity can be varied within a designed consideration by simply controlled few settings.

TECHNICAL SPECIFICATION

1) CRYSTALLIZERS	5) CENTRIFUGAL PUMP
2) PRESS FILTERS	6) PD PUMP
3) CHILLED WATER TANK	7) PRESSED, DEWAX & CLOUDY OIL TANK
4) CHILLER	



DEWAXING / WINTERIZATION

LECITHIN DRYING PLANT

Gums which are removed in Water degumming stage, pose a critical disposal problem. To overcome this, gums can be dried and converted to Lecithin. The hydrated gums extracted in water degumming process are heated to 90 – 100 deg C and passed through series of Scraped Surface heat exchangers and Evaporators where moisture is removed and brought to below 0.5%. It is a two stage drying process i.e. at 50 mm Hg abs and 20 mm Hg abs pressures. The resultant dried gums are very light in color which has high commercial value in local as well as global market. Dried gums are processed further for Lecithin powder manufacturing. Soy Lecithin is a very good emulsifier and is typically used in confectionaries, bakery products and pharmaceutical industries.

ADVANCED FEATURES

- ✓ Production of edible/pharma/export quality lecithin
- ✓ Specially designed scrap surface thin film evaporator
- ✓ Use of low pressure steam
- ✓ Completely PLC operated for consistent result
- ✓ Fabricated on skid mounting for easy installation.

ADVANTAGES

- ✓ Lecithin moisture below 0.5% maintained under vacuum drying
- ✓ MR1/MR2 quality lecithin produced
- ✓ Hermetically designed system



ORGANIC SOYA MEAL PLANT

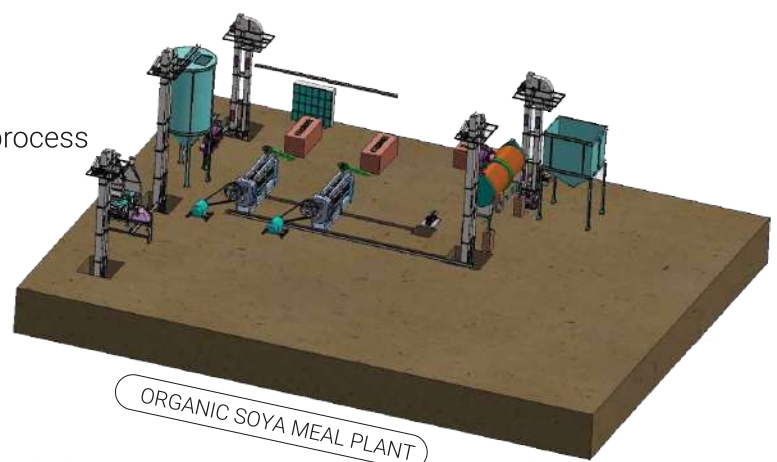
Ferro's organic soya meal technology working with growers and monitoring the crop from the beginnings. Tracking the variety of the seeds, where they came from, equipments & substances that were used or in contact with the seed of plant. Only accepting grain that meets high quality standards and procedure.

ADVANCED FEATURES

- ✓ Modern technology cleans the soya – beans
- ✓ Soyabeans are put through a dehulling system
- ✓ Oil is removed through a state-of-the-art expelling process
- ✓ Onwards oil is sent to refinery
- ✓ Remaining soya is crushed, cooked, rolled into seal and properly sized to meet your needs.

ADVANTAGES

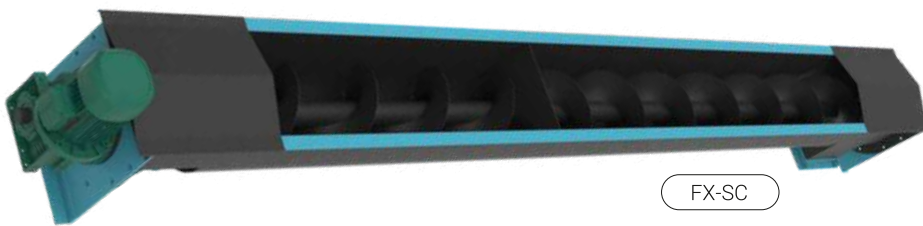
- ✓ High in protein
- ✓ Good source of omega-3 fatty Acid
- ✓ Lactose free.





FX-SC: SCREW CONVEYOR

Screw Conveyor is used to convey material from one to other without damaging the material. Available in various sizes up to 600 mm diameter. Die Press screw flights of high-quality material. SS-304 (as per customer requirement) provide the smooth surface with no sharp edges. All rotating parts are provided with the precision bearing and intermediate hanger bearings are provided to reduce friction for optimum efficiency. Mechanism requiring lower periodic maintenance. Bearings are enclosed in bracket housing with dust-proof covers thus enhancing the life. Troughs designed for optimum feeding and carrying of material to machine or for bagging.



SIZES		
6 inch	10 inch	16 inch
8 inch	12 inch	18 inch
9 inch	14 inch	20 inch

FERRO'S PNEUMATIC CONVEYING SYSTEM

Pneumatic conveying systems use air as the transport medium. Pneumatic conveying is facilitated by combination of following products:

A. Galvanized Pipes: We provide galvanized pipes from 5" dia to 36" dia for various applications these are made in length up to 6 mtr connected to each other by Flanges at the ends with suitable filler material to give leak proof joints.

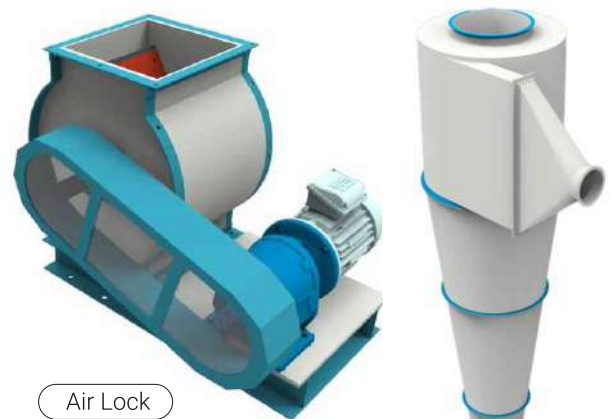
B. Elbows or bends: For vertical movement of material.

C. G.I./M.S. diverters: Are usually provided to facilitate multi point material lifting.

D. Centrifugal Fans: These are used to create pressure differentials to induce efficient airflow to carry the material. We have a wide range of Blowers which are manufactured as per American standards and dynamically balanced.

E. Cyclones: Ferro cyclones designed and manufactured to suit centrifugal fan discharge rate. These cyclones are made of mild steel and are used on high pressure discharges interiliac for following functions:

- 1) Collect and discharge trash/dust.
- 2) For material feeding to the machinery.
- 3) For lint flue systems.



Air Lock



Cyclone



Blower



FX-RL: FERRO ROTOR LIFT

FERRO'S Vertical Screw Conveyors are ideally suited to elevate wide range of bulk materials. Ferro's FX-RL: FERRO Rotor Lift consist of tubular housing section with a tangential inlet in the bottom section and the inclined outlet in the top section. It can be made up to 600mm dia. The tubular sections are specially designed to facilitate the maintenance and are easily removable. The top-mounted drive unit with integrated end bearing assembly is used from which the screw is suspended. These screws pipes can be in one or more sections with shafts and couplings at each end depending on the overall height of the assembly required.

ADVANCED FEATURES

- ✓ In comparison to other conveying systems these are smallest in overall dimensions.
- ✓ Low operational cost due to less wear & tear of parts.
- ✓ Variable pitch of screws across the lift.
- ✓ Material does not comes in contact with seals or bearings and the only part contacting material is rotating screw only.



FX-RL

SIZES	8 inch	10 inch
	12 inch	14 inch 16 inch

FX-BE: FERRO BUCKET ELEVATOR

Ferro's FX-BE: FERRO Bucket Elevators are ideally suited to elevate bulk materials from sluggish free long vertically. These buckets elevators are manufactured for capacities up to 30000 Kg/hr depending upon the material requirements Ferro's FX-BE: FERRO Bucket Elevators consist of rectangular rigid mild steel housing with a tangential inlet in the bottom section and an inclined outlet in the top section. Ferro Bucket Elevators are of the centrifugal type with rigid seamless mild steel buckets mounted on an open-ended belt. These belts are anti-static oil repellent in nature. The drive unit comprises of an electrical motor coupled to reduction gearbox mounted on the maintenance platforms attached to the top section.

ADVANCED FEATURES:

- ✓ Available in different models for specific requirements like bagging, transferring to conveyors etc.
- ✓ Bucket design ensures maximum fill in buckets and prevent discharge interface with proceeding buckets while in operation.
- ✓ Effective inspection windows on intermediate sections.
- ✓ Easy installation Facilitated due to quick connection between components.
- ✓ Precise machined head and tail pulleys to facilitate belt movement.
- ✓ Easily operated adjustment devices

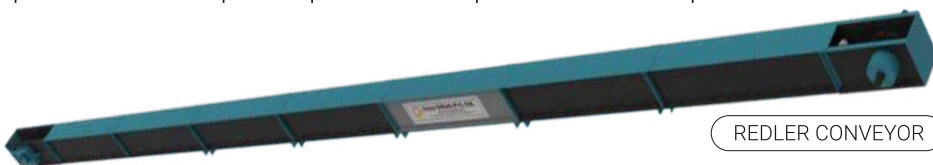


FX-BE

SIZES	8 inch	12 inch	16 inch
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REDLER CONVEYOR

It is bent chain conveyor used for horizontal and inclined conveyance of bulk finely grainy and granulated materials. It consists of two conveying chains connecting together with carriers and slide guarding of upper and lower chain branches. Available in carbon steel and SS-304 (as per customer requirement). The height , weight , capacity & speed of the transport depends on the product and the specific needs of each installation.



REDLER CONVEYOR

SIZES	180 x 40	235 x 40	270 x 40
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FERRO'S GENUINE SPARE PARTS

CSP SPARE PARTS

Ferro Genuine spare part perfect fit and perfect quality of the linter blanks, gummer files and critical items are crucial for a continuous production. We achieve that by using the best steel available worldwide, which guarantees us a consistent high quality, parallelism and precise thickness of the linter blanks. The precision-made and highly wear resistant gummer file ensures a top quality recut linter blank with a special metallurgy. Ferro leads in this section.



LINTER BLANKS

FERRO'S LINTER BLANKS

Available in 12.5/8" and 18" with thickness .035" or .045".
Bore sizes are available in 2.15/16", 6" and 7.15/16".
Special dimensions are also available if required.



GUMMER FILE

FERRO'S GUMMER FILE

Available in pack of 40 Nos.



DELINTER ALUMINUM SPACER RING

DELINTER ALUMINUM SPACER RING

Made with LM 6 Grade Aluminum, Special grinding process insure perfect thickness.



BRUSH STRIP

FERRO'S BRUSH STRIP

Made with superior quality horse hair, Precisely press for perfect grip.



GRATES

FERRO'S GRATES (LINTER RIBS)

Made with Alloy Steel and hardened, an accurate and uniform curve every time.
The special grinding process, insure accurate thickness.

FERRO GUMMER GENUINE SPARES



GUMMER GENUINE SPARES

SAW CYLINDER MIDDLE SPACER RING





AFTER SALES & SPARE PARTS

HULLER KNIFE

Ferro Genuine spare part perfect fit and perfect quality of Huller Knives made with CNC Grinding, Alloy Steel, gives a longer life., The Induction Hardening process, ensures long lasting sharpness and controlled thermal deformation at base of knife. Also, available in 9 Grooves and 7 Grooves and We provide Knives for all De-corticators available in market.



HULLER KNIFE



**Delinter Brush Roll Drum
Alluminium W Patti**



**Saw Cylinder Check Nut
Assembly**



**Delinter Saw Cylinder Housing
With Bearing**



Lint Cleaner Tray Eccentric Housing



Shaker Tray Eccentric Housing



Huller Drum Taperlock Bush



Huller / Delinter Hydraulic Cylinder



**Red Flat for Linter Cleaner
Shaker Tray**



AFTER SALES & SPARE PARTS



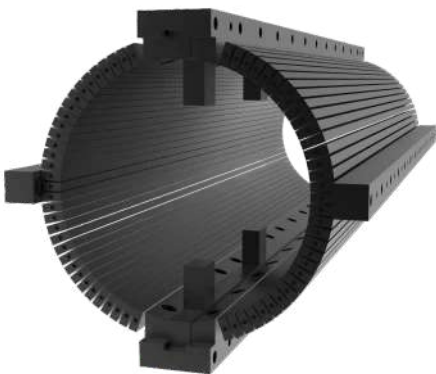
Huller Drum Housing



Elevator Bucket

All critical parts for Cotton Seed Processing Machinery are available with us. Kindly ask us for more information.

PREPARATORY SECTION SPARE PARTS



EXPELLER CAGE BAR

EXPELLER CAGE BAR

We manufacture cage bars in hardened or high wear resistance, welded quality for our Expeller. The bars are available with or without an integrated slot.



EXPELLER WORM

EXPELLER WORM

We manufacture High grade steel worms which possess great resisting power for pressure and abrasion, thus resulting in their long life.

All other critical spare parts for preparatory section are available with us. Kindly ask us for more information.

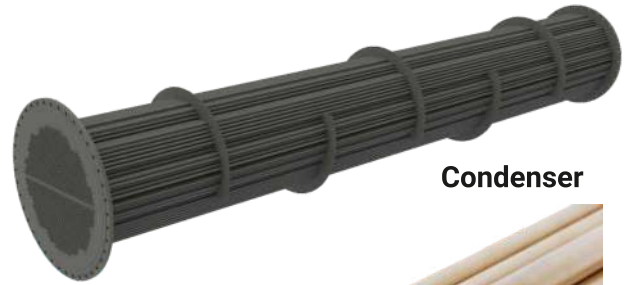


AFTER SALES & SPARE PARTS

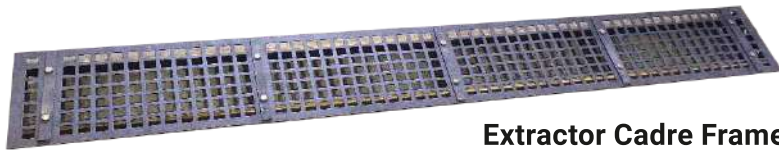
SOLVENT EXTRACTION & REFINERY



Extractor Chain



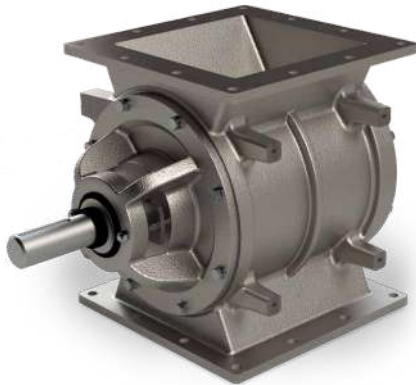
Condenser



Extractor Cadre Frame



Condenser Tube



Rotary Air lock Valve



Condenser Tube Sheet



Spray Nozzle for Bleacher & Deo

AGITATORS



Reactor Agitator



Turbine Agitator



Helical Agitator



Anchor Agitator



Paddle Agitator



Propeller Agitator



MCC CUM ELECTRICAL CONTROL PANEL

MCC Cum Electrical Control Panel: What It is and Why You Need One | Industrial Control Panels

Industrial equipment and machines require defined functions and orderly control to achieve their various process goals. Electrical control panels carry out these functions within manufacturing equipment. An understanding of what they are highlights their critical importance to industry.

ELECTRICAL CONTROL PANELS: ALL YOU NEED TO KNOW

In its simplest terms, an electrical control panel is a combination of electrical devices which use electrical power to control the various mechanical functions of industrial equipment or machinery. An electrical control panel includes two main categories: panel structure and electrical components.

PANEL STRUCTURE OF ELECTRICAL CONTROL PANELS

The structure of an electrical control panel is a combination of an enclosure and a back panel.

ENCLOSURES

The enclosure is a metal box which varies in size and is typically made of Mild Steel. The number of doors (usually one or two) needed on the enclosure determines its size in most industrial applications. The enclosure will come with a UL safety rating an IP rating, and NEMA classification. These listings help us to determine properties such as:

- **Indoor/outdoor use**
- **Waterproof/water resistance**
- **Dust/solid contaminants proofing**
- **Hazardous conditions rating**
- **Explosion-proof rating**

BACK PANELS

A back panel is a metal sheet mounted inside the enclosure that provides structural support for DIN rail mounting and wiring ducts. DIN metal rails feature standardized dimensions and provide a mounting structure for electrical devices. Wiring ducts provide for the routing and organization of wires while also assisting in the control of electrical noise between devices inside the box.

ELECTRICAL CONTROL PANEL ELECTRICAL COMPONENTS

We Provide Eight types of electrical components exist within an electrical panel enclosure which define and organize the several different functions carried out by the panel. These components include:

- **Main circuit breaker.** This is like the disconnect of the main electrical panel leading into a home or office. Main circuit breakers handle between 120V–480V in most industrial applications.
- **Surge arresters.** This component prevents lightning strikes or utility power surges from damaging the electrical components inside the panel due to overvoltage.



- **Transformers.** Depending on the incoming voltage, transformers may reduce voltage to 120V for various components or step-down voltage to 24V in instances where incoming power is 120V.
- **Terminal blocks.** These blocks help to organize and distribute the array of wires coming from various sources to different electrical devices.
- **Programmable Logic Controller (PLC).** This is essentially a CPU contained inside the control panel. This unit is the brains of the control panel, providing monitoring and control of the various mechanical processes. It will include various inputs and outputs to and from mechanized functions of the production equipment.
- **Relays and contactors.** These on/off switches control mechanized functions based on commands from the PLC. Smaller relays control functions like lights and fans. Larger relays, called contactors, control more advanced functions like motors.
- **Network switches.** The communication hub of the control panel, network switches facilitate communication between the PLC and the various network compatible devices on the production line.
- **Human Machine Interface (HMI).** These components allow an operator to monitor or control certain functions of the machinery. Common HMIs include video monitors, buttons, switches, and keyboards.



SEED PROCESSING



PREPARATORY



SOLVENT EXTRACTION



REFINERY



Ferro Oiltek Pvt. Ltd.

Centrifuge Separator
Sales Partner

Macfuge

Since 2011 Ferro Oiltek is collaborated with Servizi Industriali srl, Bologna, Italy for sales and service of centrifuge separators in India & Africa. All departments are involved to improve each step of the production chain: from the idea to the final product.

ASSISTANCE & MAINTENANCE

We never leave alone our Clients because their success is our success.

Our specialized technicians assist our Customers Worldwide providing expertise, quick and reliable services.

COMPETITIVENESS

We are always updated on the market news in order to give our products and customers the maximum of innovation. Reliable Solutions! Inspired Results!

ABOUT THE BRAND : MACFUGE

We invest day by day in the separation technology to carry out progress, transformation and realization of high quality engineering products. We believe in the strong partnership with our customers to reach their success, dedicating expertise, proposing creative solutions to match complex problems with reliable market-ready results.

VEGETABLE OIL REFINING APPLICATION

Oils and Fats Processing: Neutralization, De-gumming, Washing
Vegetable oil is one of the most important primary foods for humans, and therefore requires the best quality.

MACFUGE separators offer a wide range of solutions designed to boost value in this respect, ranging from a separator with a daily capacity of 50 tons for operators of small oil mills, right through to separators with capacities of more than 500 tons per day for large refineries.

MACFUGE separators are designed to ensure maximum flexibility in fats and oils processing and refining operations. A high-efficiency disc stack centrifuges, available either as stand-alone items, as modular installations or as part of a complete processing system, minimizing processing loss and maximizing quality.

The MACFUGE separators, represents a well-proven and straight forward solution to this impossible equation. problems with reliable market-ready results.





Ferro Oiltek Pvt. Ltd.

"We, at Ferro Oiltek Pvt. Ltd., strive to thoroughly understand our customer processes. This is essential for developing tailored solutions that meet specific customer challenges and that truly add sustainable value for customers."





Ferro Oiltek Pvt. Ltd.



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CERTIFICATION & RECOGNITION

