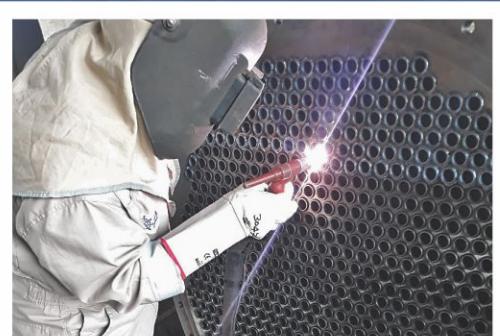
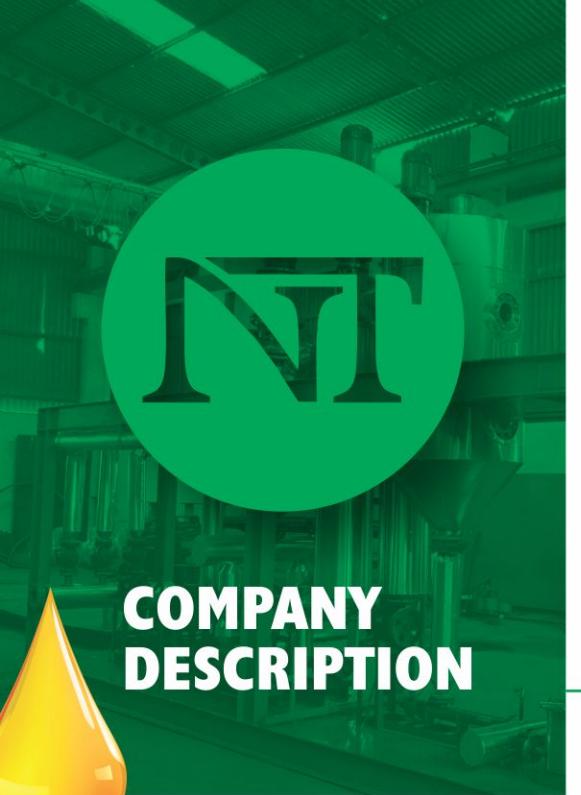


SERVING THE QUALITY WITH ENGINEERING & TECHNOLOGY



N & T ENGITECH PVT. LTD.

www.nandtengitech.com



A COMPANY THAT IS CREATING A MARK IN THE OILS & FATS INDUSTRY.

N&T Engitech Pvt. Ltd. is an ISO & CE certified organization giving creative acquisition, counseling and in addition development arrangements identified with oils & fats industry. Amongst our entire range of services, our primary focus lies in the oils & fats sector. Our interest lies in taking up projects such as Edible Oil Refinery Plant, Solvent Extraction Plant, Dry fractionation Plant, Seed Crushing Plant (Oil Mill), Soap Manufacturing Plant, Lecithin Plant, Powdered Lecithin Plant, Glycerine Distillation Plant, Margarine Plant, Bakery Shortening, Inter-Esterification Plant, Hydrogenation Plant, Wax Purification Plant, Spent Earth Extraction Plant, Castor Oil Derivatives Plant, Oleochemicals Plant, Bio Diesel Plant, Filling Packing Unit, Tank Yard, Pipe Racks, Seed Storage Silo, Warehouses, RO, MB and DM Plant, ETP (Zero discharge), Acid Oil Plant, Boiler, Power Plant etc. and delivering them on time with the utmost customer satisfaction.

N & T is specialists in doing greenfield projects on turnkey basis. Apart from manufacturing state of the art projects, we also provide services such as commissioning of plants, supply of spares and equipment post project completion, plant expansion / modification, technical consultancy etc. for the edible oil & fats industry. We have a very wide network which allows us to deliver the projects which always exceed the customer's expectations.

All of this came into existence after N&T started out as a trading company after registering in 2010 with a big plan to revolutionize this industry. Technical knowledge and skilled



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personnel, complemented this plan to enable it to become the widely renowned and trusted company it is today. Our exceptional quality of material accompanied with highly skilled workforce and deep belief in our principles enable us to grow each day and gain new customers each day. All of these enable us to take up and deliver challenging projects on time and turn first-time customers into returning projects.

We are operating underneath single purpose responsibility and is growing by leaps & bounds as a trusted company noted for its acquisition and quality of service, client satisfaction, skilled and experienced manpower, construction, ability to provide experience among a very wide range of skills and far additional. Our services are designed to adapt to the needs of the customers and are changed as we meet new customers to fit their requirements. As a result, we have been ready to produce a bright name within the ever-growing competitive market of Oils & Fats, Water, Grain/Seeds technologies & EPC Work.

We, at N&T believe that progress should be achieved harmoniously with the setting. Therefore, a commitment to community welfare associated environmental protection area unit is an integral part of the company's vision.

We are accomplishing our goals at an exceptional rate. Also, we are sure that our investors will be very much convinced and satisfied by our work and their investment.



OILSEEDS, OILS & FATS TECHNOLOGIES



Oils are triglycerides of fatty acids.
If the oils becomes solidify at ambient temperature are called fats.

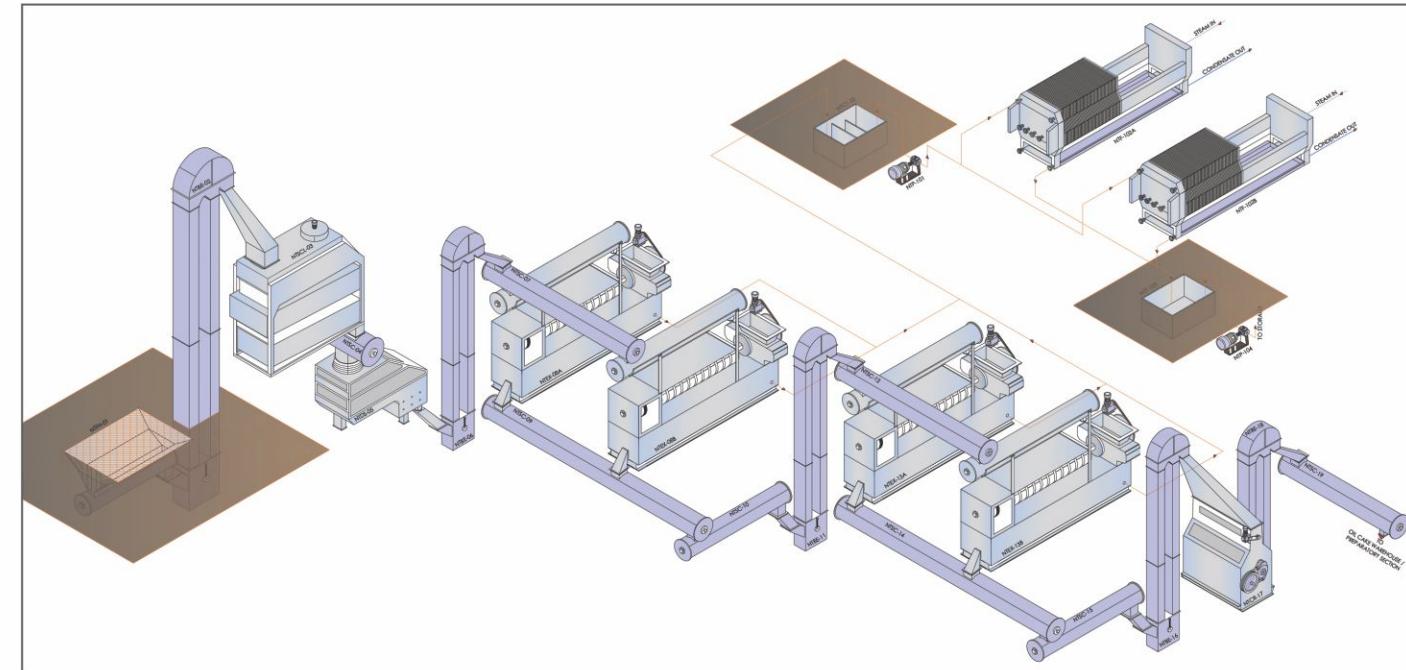


OUR PROJECTS



SEED CRUSHING PLANT (OIL MILL)

N&T seed crushing plant comes with a modern technology expeller which has longest worm life & also needs less man power. The seed is firstly cooked in cooker which makes the seed soft and helps in good crushing, The cooked seed is transfer to the expellers where the main process of crushing is done through worms.



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Finally, the crushed oil is transferred for the filtration in filter press & oil cake is transferred for further process.

FEATURES:

- Expellers with maximum worm life
- Lesser Maintenance
- Lesser manpower

SOLVENT EXTRACTION PLANT

OILSEED PREPARATION

The main part of solvent extraction plant starts from the preparation of seed. The seed is passed through various processes of preparation which are as follows:

FOR SOYBEAN SEED

1. Cleaning
2. Destoning
3. Cracking
4. Cooking
5. Flaking
6. Expanding
7. Drying and Cooling

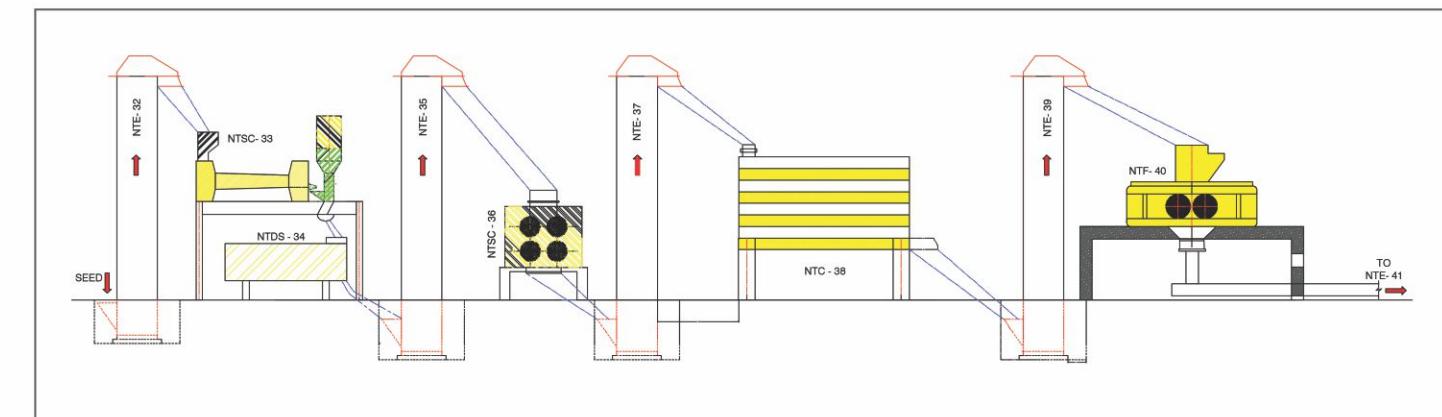
FOR OIL CAKE

1. Cleaning | 2. Breaking

FOR RICE BRAN

1. Cleaning
2. Cooking
3. Conditioning
4. Palletization
5. Drying & Cooling

The cleaning of seed is done by the seed cleaner which removes impurities like sand, stones, leaves, ropes etc., then after the cleaned seed is passed towards destoning in this process the seeds are separated from the stones through destoner & which makes the material ready for cracking, cracking is done through the seed cracker which cracks the seed into 3-4 parts which gives great efficiency in flaking the seed parts with ease in the flaking section through flaker. After making the flakes the seed flakes are ready for expanding through expander which makes the seed into chips form & which is better for the percolation. Cooling is the final stage of preparation in which the temperature & moisture is reduced.





SOLVENT EXTRACTION

N & T Solvent Extraction comes with a simple & compact design with less hexane, steam & power consumption which incorporates 3 steam Ejector & 3 pressure reducing station which plays a vital role in saving steam & power consumption.

Basic procedure of extracting Oil consists of 4 steps:

1. Main Extraction
2. Desolventizing
3. Distillation
4. Solvent Recovery

Our main extraction which is completed by bed adjustable continuous N&T extractor containing bed limiting plate to adjust the bed height, spraying is done at hood type spray which covers the maximum area of a material which is moving on a fix cadre frame with a wire mesh for a best percolation of miscella, in addition with a fix jet cleaning system as well as a scrapper plate at the end of extractor to clean the jam material.

And a latest technology desolventizing toaster with high thickness which fulfills the need of a low oil residue and hexane in the extracted meals with a less urea activities for soybean.

A hermetically plug o seal & solvent tight conveyor at the discharge of extractor deters hexane to come in contact with atmosphere.

Solvent heater a special equipment which

provides a tempered hexane for spraying it in extractor which plays a important role in an oil extraction.

N&T Distillation section with a high recovery rate of hexane and known as heart of solvent extraction plant starts from economizer which receives the miscella from the miscella tank.

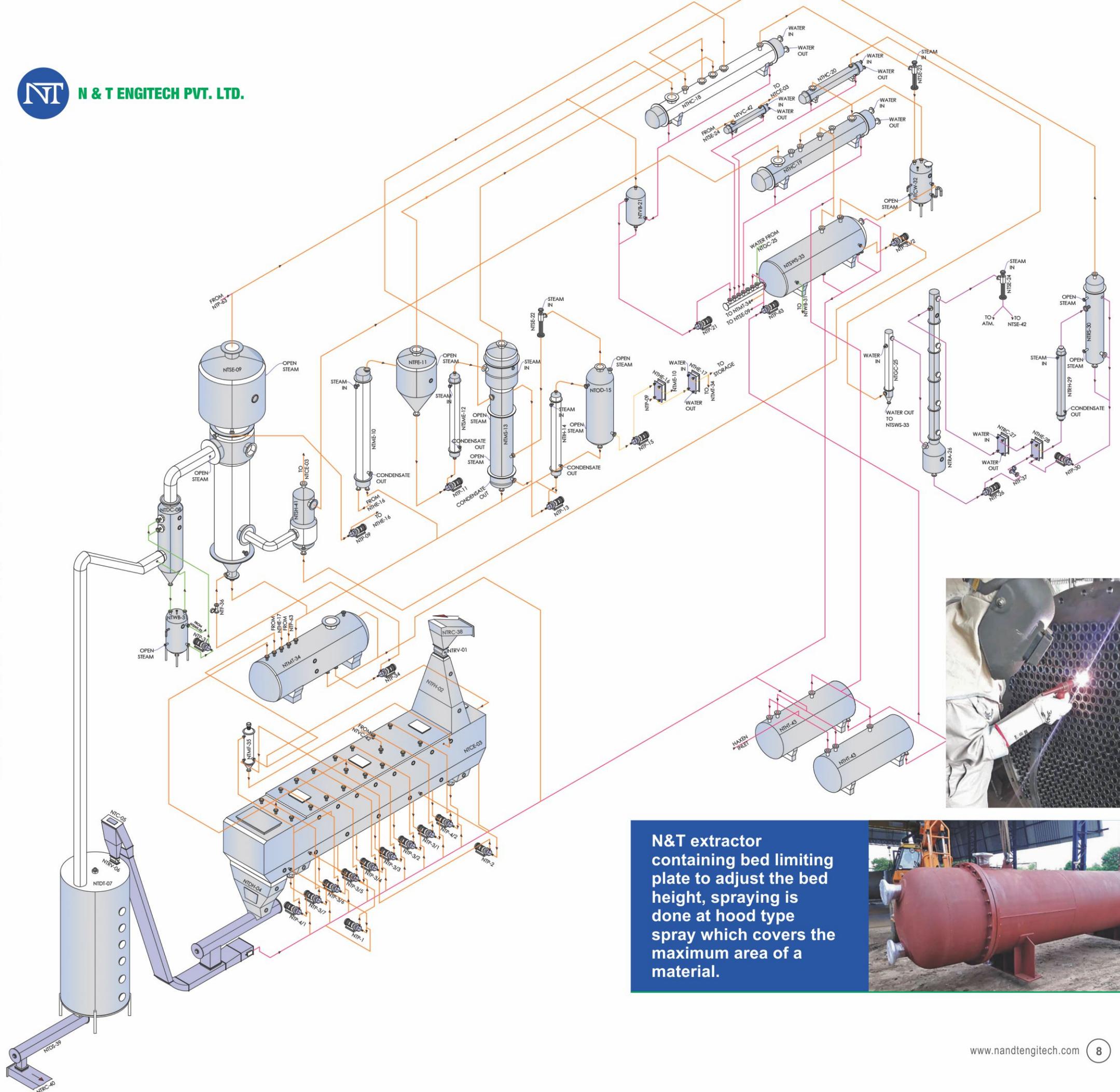
After economizer the concentrated miscella goes to the latest 3 pass first evaporator, which recovers the maximum hexane from the starting.

Passing through various stages of distillation like flasher, 2nd evaporator, miscella stripper, intermediate heater the miscella goes to the oil dryer where remaining moisture and vapour of moisture are transferred via ejector to miscella stripper.

N&T with a vast manufacturing & processing experience serves you the low maintenance & minimum UT rejection equipment's for solvent extraction plant by having the pledge on quality.

Features:

- Zero Maintenance
- Low Man Power Requirement
- Lowest Solvent Losses
- No Suspended Impurities in The Extracted Oil
- Lowest Oil Color
- Maximum Oil Recovery Due to Maximum Extraction Area.





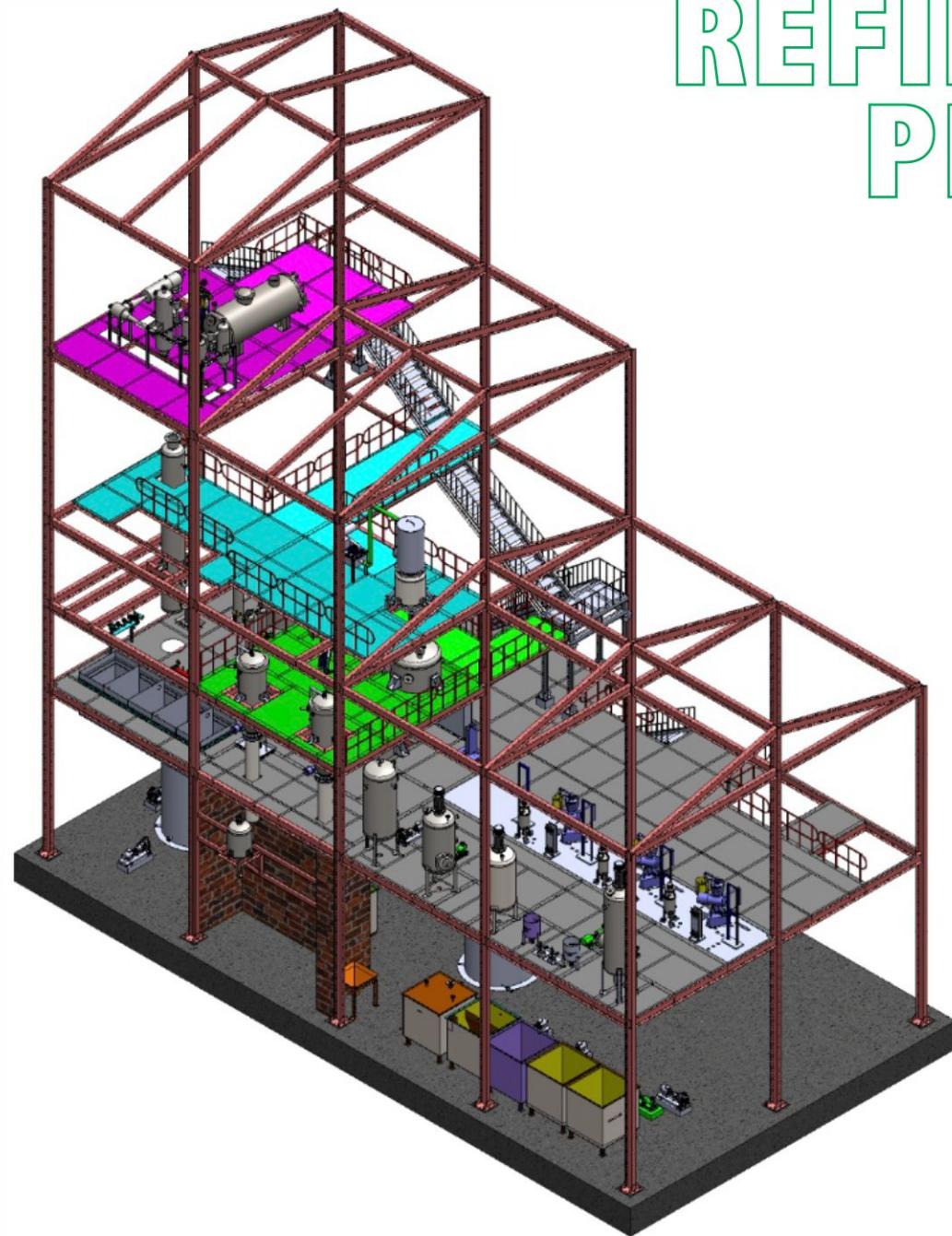
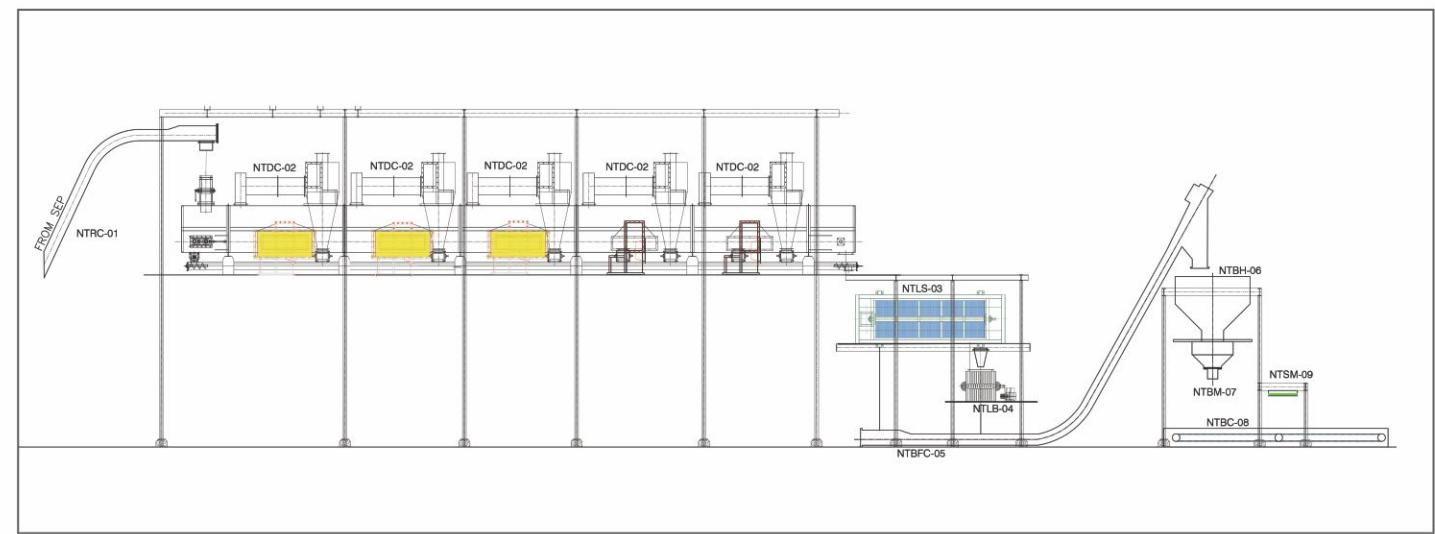
MEAL SECTION

Below sections are covered in the meal section

1. Meal Cooling | 2. Lumps Separator | 3. Lumps Breaker

4. Bagging Section

After the extraction of oil, the meals are passed towards the meal cooler for decreasing the temperature and moisture if needed, then the meals are passed through several section of separation & breaker, at the final stage the meals are gone for bagging in bagging section.



EDIBLE OIL REFINERY PLANT





Pretreatment of Oil is most important in oil refining to remove the impurities of oil.

N & T refining capabilities are in.

1. Enzymatic/Acid Degumming

2. Neutralization & Washing

3. Pre & Post Bleaching

4. Dewaxing

(only for Sunflower & Rice bran oil)

5. Deodorization.

6. Winterization (Rice bran oil)

DEGUMMING

Oil contains hydratable & non hydratable gums. Impurities such as Proteins, gums & Phospholipids are soluble in their anhydrous form while Insoluble in hydrous form. Water degumming convert these impurities in hydrous form by addition of water. After addition of water these impurities hydrated & separated by settling or centrifugation. While non-hydrated gums removed by phosphoric acid treatment.

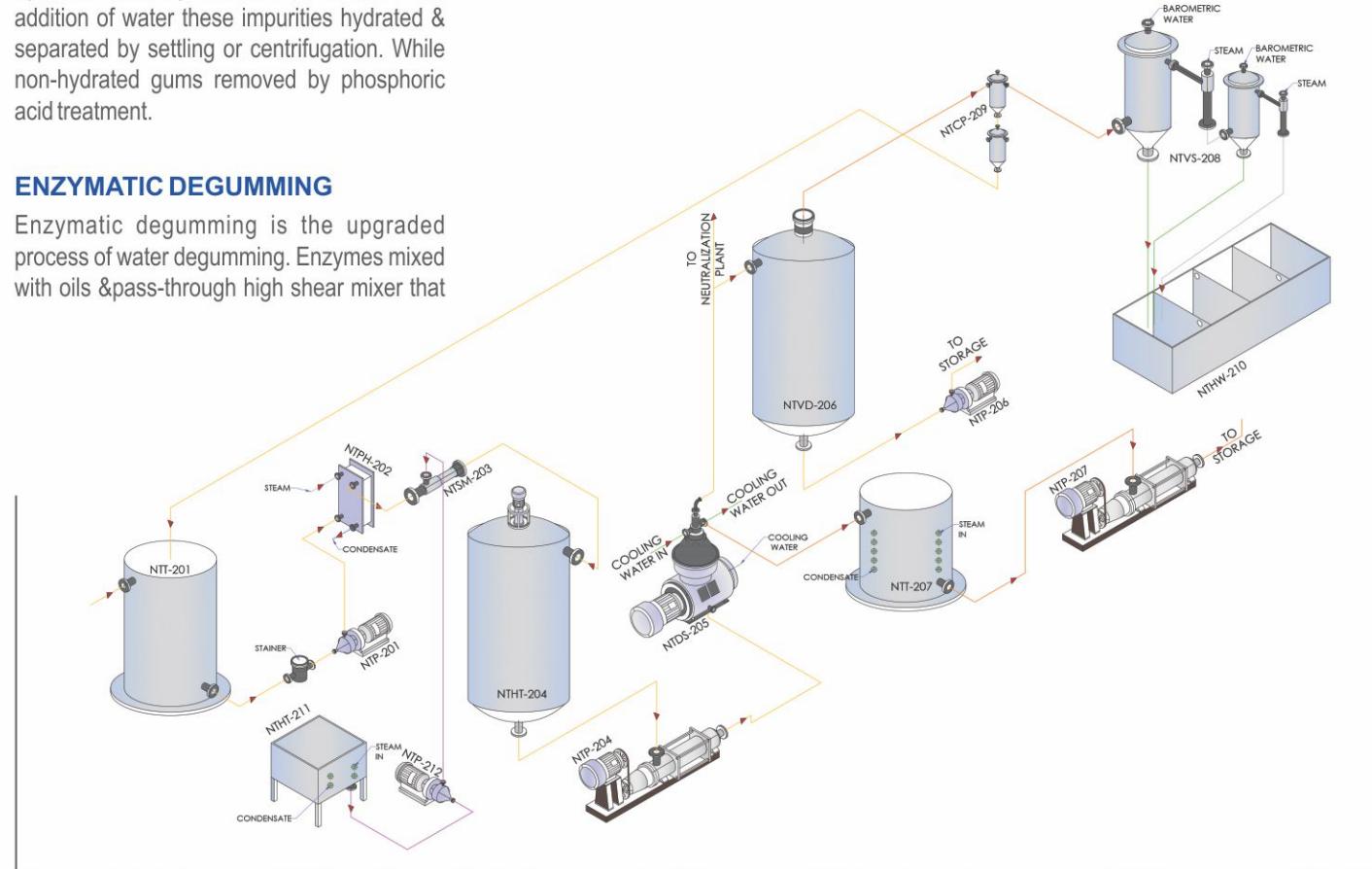
ENZYMATIC DEGUMMING

Enzymatic degumming is the upgraded process of water degumming. Enzymes mixed with oils & pass-through high shear mixer that creates interface with oil & enzymes. Then Mixer passes to high shear mixer that do the better reaction of gums with oil afterwards separate the gums through high-speed centrifuges. This is easy & accurate method & controlled by PLC so that temperature & time is well maintained.

N & T Designed the enzymatic degumming plant which is excellent for degumming of Rice bran & soybean.

Features:

- Low oil losses • Better quality of lecithin
- Lower viscosity due to formation of Lysolecithin
- Low Power & Steam Consumption
- Minimum Phosphorus PPM After Degumming
- Oil is Free from Suspended Impurities



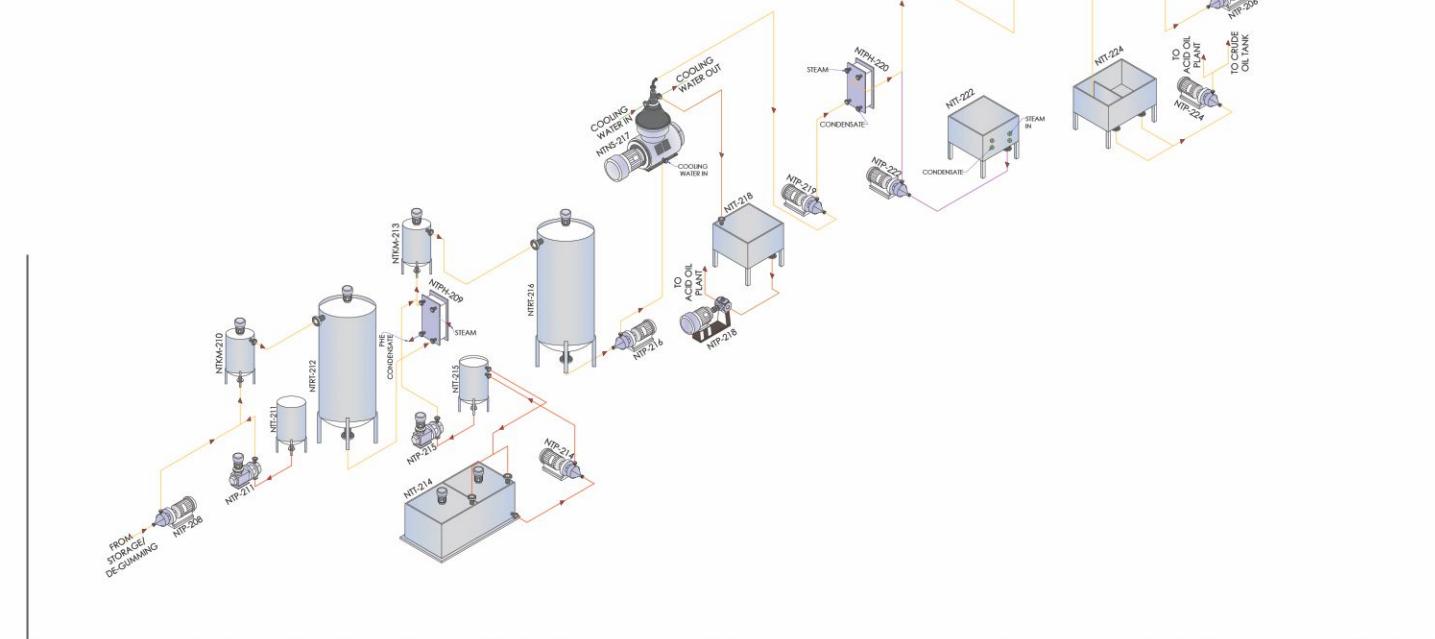
NEUTRALISATION & WASHING

Neutralization is the process of removal of free fatty acid from oil. Oils is mixed with caustic soda lye which converts FFA into soap. Due to Nature of caustic soda lye color, phosphatides & also the metal reacts with caustic soda lye and removed either by centrifugation or gravity separation. In batch system soap removed through gravity settling & separation while continuous Process removes soap by high-speed centrifuges & than washed through the centrifuge by wash water.



Features:

- N&T Has designed the cylindrical & conical bottom neutralizers in such a way so that oil losses lowest with soap.
- Chemical consumption less
- After washing oil is crystal clear.
- Continuous neutralization, soap & water separation Results in the best quality of neutralized & washed oil
- Process is economical due to controlled temperature, Pressure & chemical additions.



BLEACHING

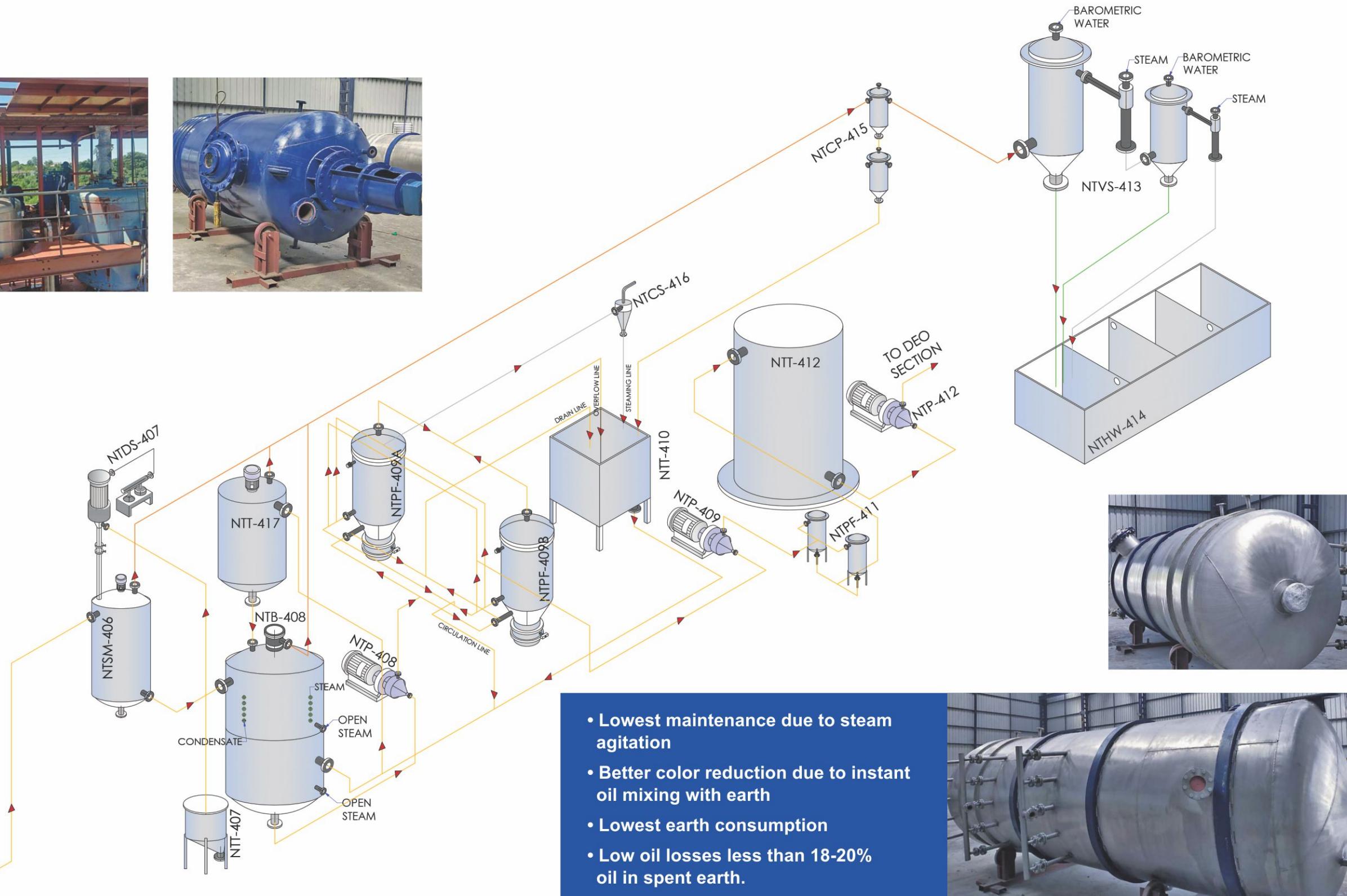
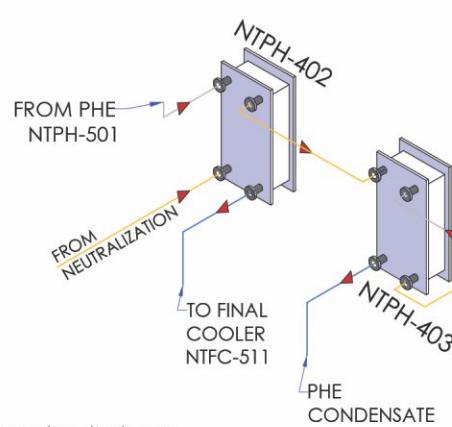
Bleaching of oil for removal of color by addition of chemicals. Bleaching section starts with heating of oil at a certain temperature in PHE, then after the second stage of N&T bleaching section consists of slurry preparation in which earth and oil is well mixed for the third stage which is the main stage of bleaching section, after the preparation of oil & earth the slurry is transferred towards the bleacher.

A multi deck N&T bleacher is specially designed for de-colorization of oil color which are difficult to reduce by conventional bleachers.

After certain retention time oil and earth mixture is filtered through filter under pressure, where most of the color of oil adsorbed by the bleaching earth. The filter oil has specified color of oil.

Bleaching of oils perform in below steps.

1. Oil is mixed with earth at certain temperature & retention time.
2. Heating the oil earth mixture with sparge steam under vacuum at certain retention time.
3. Oil earth mixer filtered through hermetic filters consisting stainless steel plates.
4. Filtered oil further filtered through micronic filters.
5. Spent earth dried in the filter with moderate steam pressure & discharge

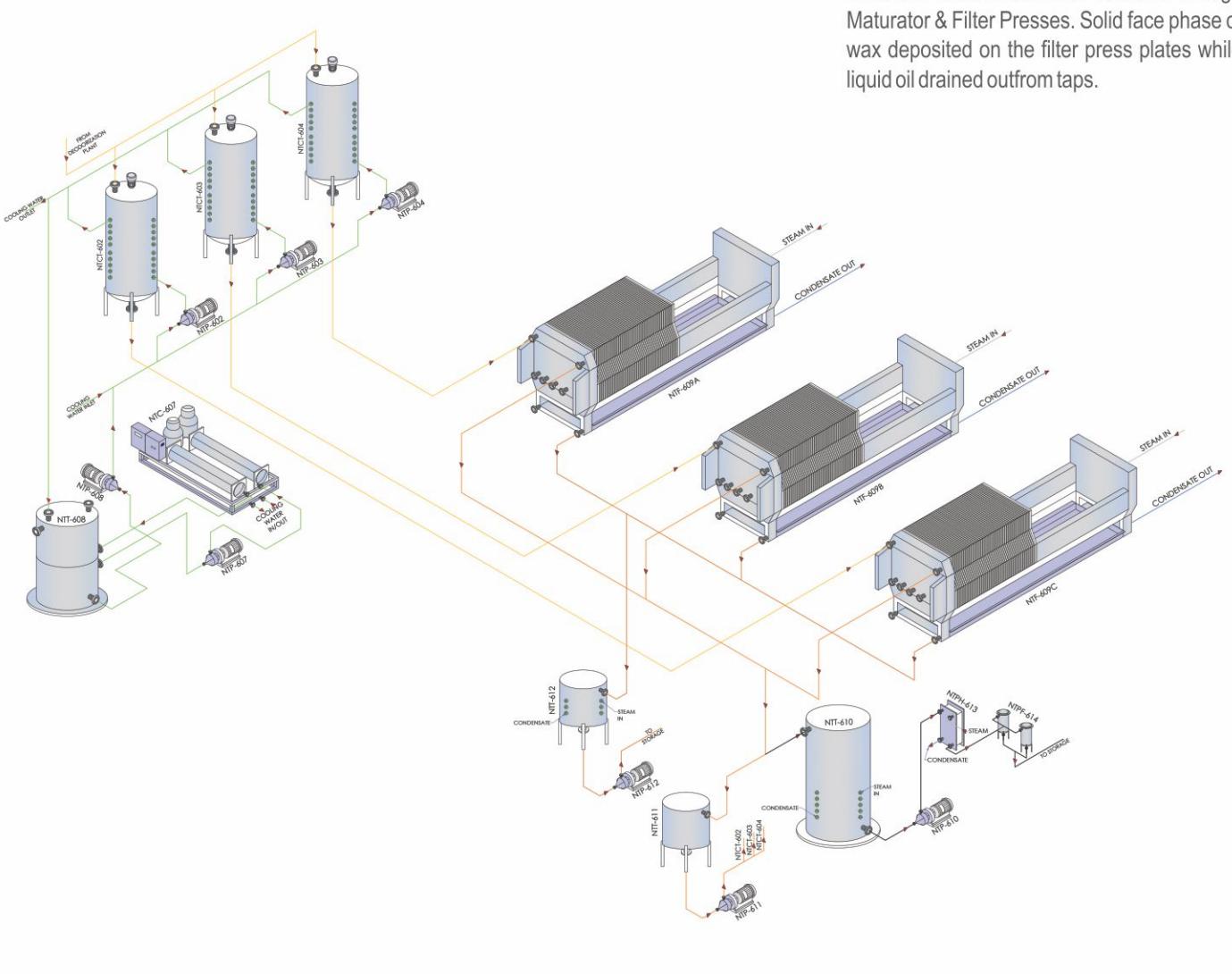


DEWAXING / WINTERIZATION

Dewaxing/Winterization is the process for separation of waxes from oil. The phenomena of DE waxing/Winterization is the separation of solid from liquid at certain temperature. N&T developed both types of crystallizers Batch & continuous for better formation of grains of waxes, these grains become bigger at certain Retention time & separated by filtration.

BATCH TYPE CRYSTALLIZERS

Hot Bleached oil taken into crystallizers consisting agitator, coils for heating & cooling. Certain temperature water circulated through the coils to reduce temperature of oil. The cooling of oil is always gradual to develop big size wax crystals. The water Temperature reduces seeing the formation of crystals. Drop cooled oil into the Holding tank & then filter oil through Plate & frame filters.



CONTINUOUS DE WAXING / WINTERIZATION

Hot Bleached or Deodorized oil taken into crystallizers where in over flow of one crystallizer forwarded to another crystallizer. Water circulation through counter current manner that means lower temperature Water circulated through the higher temperature oil. More accuracy & better control whole system may be provided with PLC. This way time of gradual cooling along with bigger grain size crystals maintained. After this oil dropped into Maturator & continue the oil Filtration through Maturator & Filter Presses. Solid face phase of wax deposited on the filter press plates while liquid oil drained out from taps.



- Low rpm of crystallizers ensures bigger size crystal formation. Causes lower oil content in wax
- Cloud point of De waxed oil is lower
- Utilities consumption lower
- Crystal clear oil
- Crystal clear oil even at lower temperature.
- Lower oil losses
- More production & lower utilities consumption.





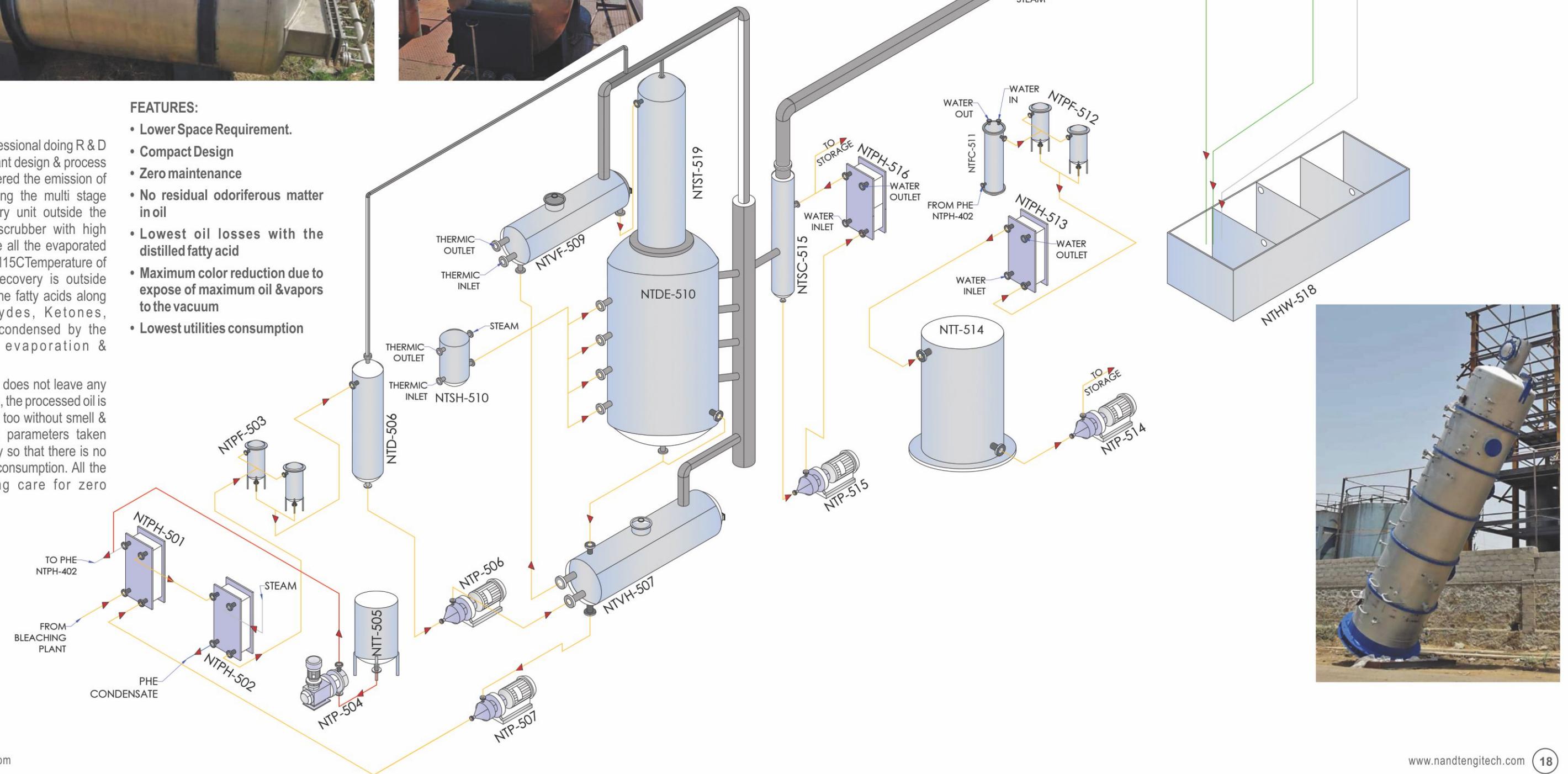
DEACIDIFICATION /DEODORISATION

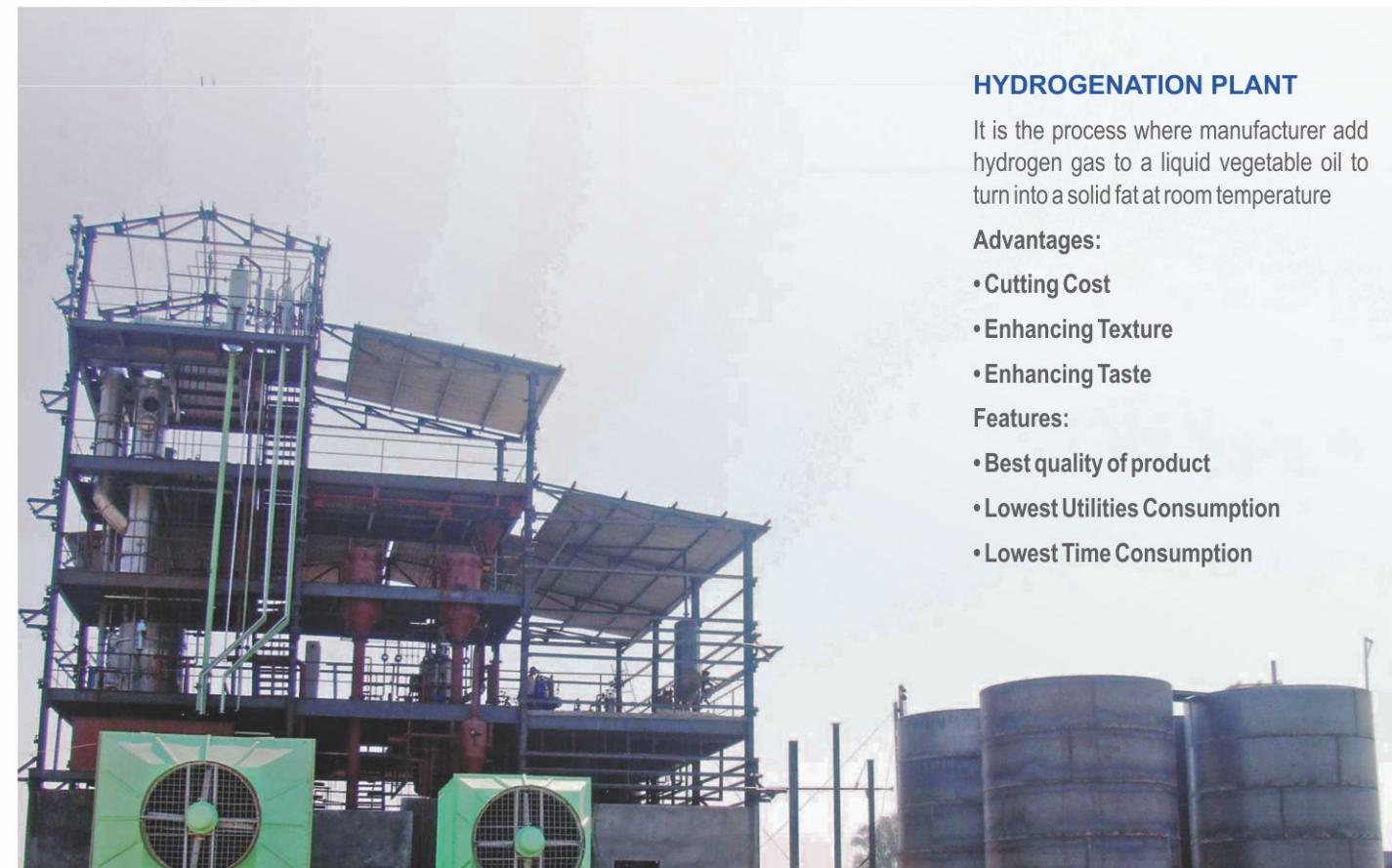
N & T has the team of professional doing R & D for the development of Plant design & process improvement. We considered the emission of Zero pollution in designing the multi stage Deodorizer, Heat recovery unit outside the Deodorizer. Fatty acid scrubber with high surface area to condense all the evaporated volatile matters. 100C to 115CTemperature of oil increases by Heat recovery is outside the deodorizer. Most of the fatty acids along with volatile aldehydes, Ketones, turpeneevaporated & condensed by the efficient system of evaporation & condensation.

Multi stage Deodorization does not leave any residual volatile matter. So, the processed oil is very sweet in taste & that too without smell & longer self-life.Designing parameters taken into account in such away so that there is no chance for extra utilities consumption. All the items designed taking care for zero maintenance.

FEATURES:

- Lower Space Requirement.
- Compact Design
- Zero maintenance
- No residual odoriferous matter in oil
- Lowest oil losses with the distilled fatty acid
- Maximum color reduction due to expose of maximum oil & vapors to the vacuum
- Lowest utilities consumption





HYDROGENATION PLANT

It is the process where manufacturer add hydrogen gas to a liquid vegetable oil to turn into a solid fat at room temperature

Advantages:

- Cutting Cost
- Enhancing Texture
- Enhancing Taste

Features:

- Best quality of product
- Lowest Utilities Consumption
- Lowest Time Consumption

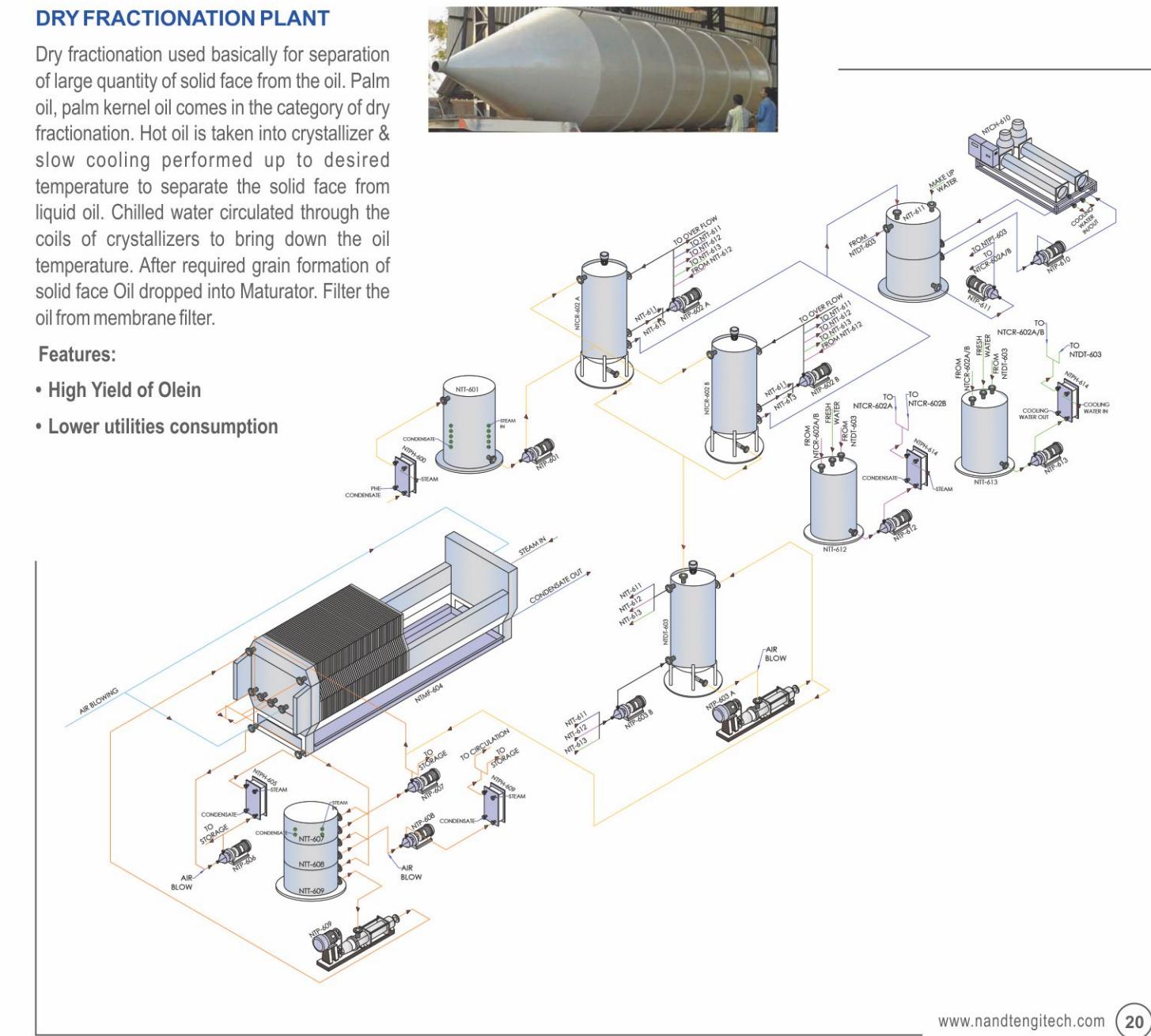


DRY FRACTIONATION PLANT

Dry fractionation used basically for separation of large quantity of solid face from the oil. Palm oil, palm kernel oil comes in the category of dry fractionation. Hot oil is taken into crystallizer & slow cooling performed up to desired temperature to separate the solid face from liquid oil. Chilled water circulated through the coils of crystallizers to bring down the oil temperature. After required grain formation of solid face Oil dropped into Maturator. Filter the oil from membrane filter.

Features:

- High Yield of Olein
- Lower utilities consumption



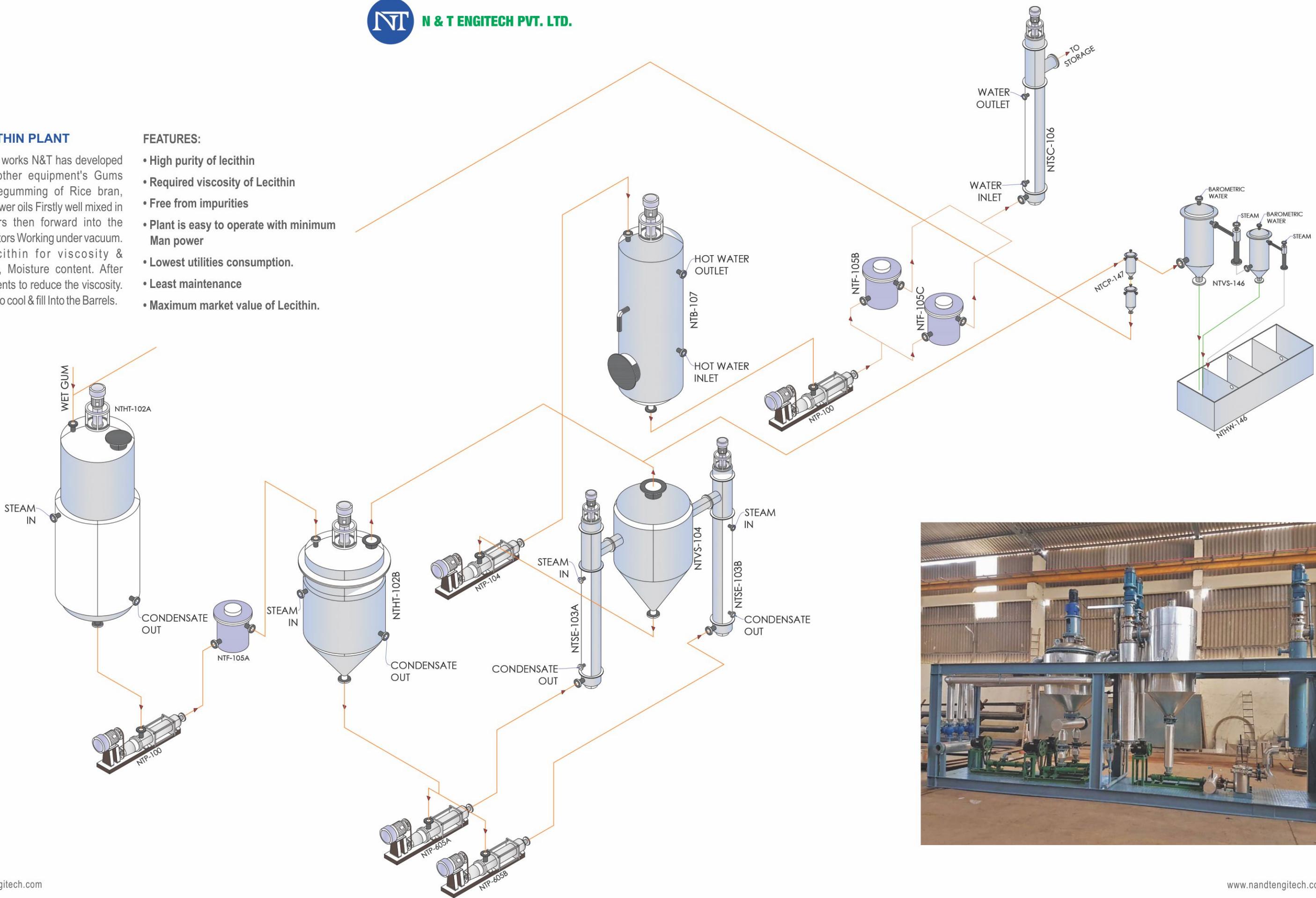


DRYING LECITHIN PLANT

After Lot of R & D works N&T has developed the reactors & other equipment's Gums received from degumming of Rice bran, Soybean or Sunflower oils Firstly well mixed in the Homogenizers then forward into the heaters & Evaporators Working under vacuum. Check the Lecithin for viscosity & Acetoneinsoluble, Moisture content. After addition of ingredients to reduce the viscosity. The Lecithin allow to cool & fill into the Barrels.

FEATURES:

- High purity of lecithin
- Required viscosity of Lecithin
- Free from impurities
- Plant is easy to operate with minimum Man power
- Lowest utilities consumption.
- Least maintenance
- Maximum market value of Lecithin.





POWDERED LECITHIN PLANT

Lecithin is a natural ingredient mainly derived from the soybean. It contains a range of emulsifiers, stabilizers. We are the LATEST TECHNOLOGY BASED manufacturer for the plants for wet gums drying & consequently remove the oil of the liquid lecithin to convert into powder lecithin. These gums are procured

by soybean & sunflower oil processing that are obtained from soybean, Sunflower oil degumming plant.

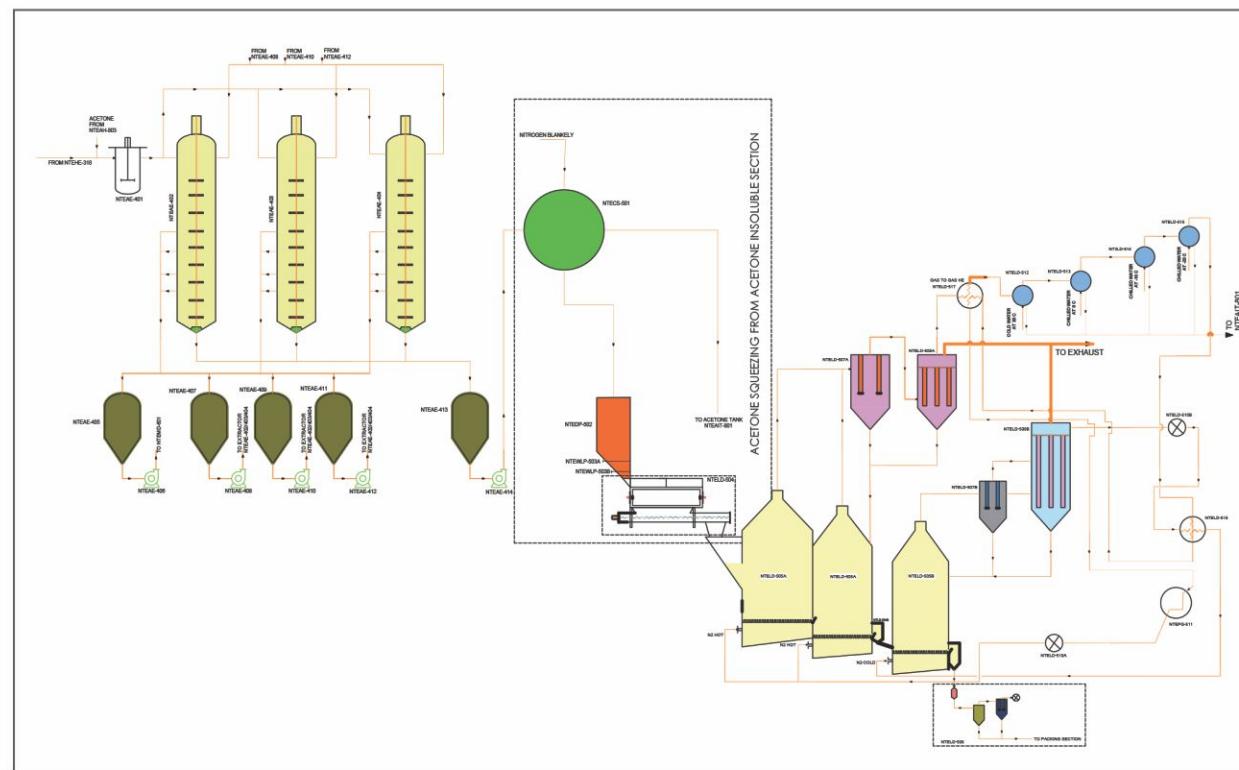
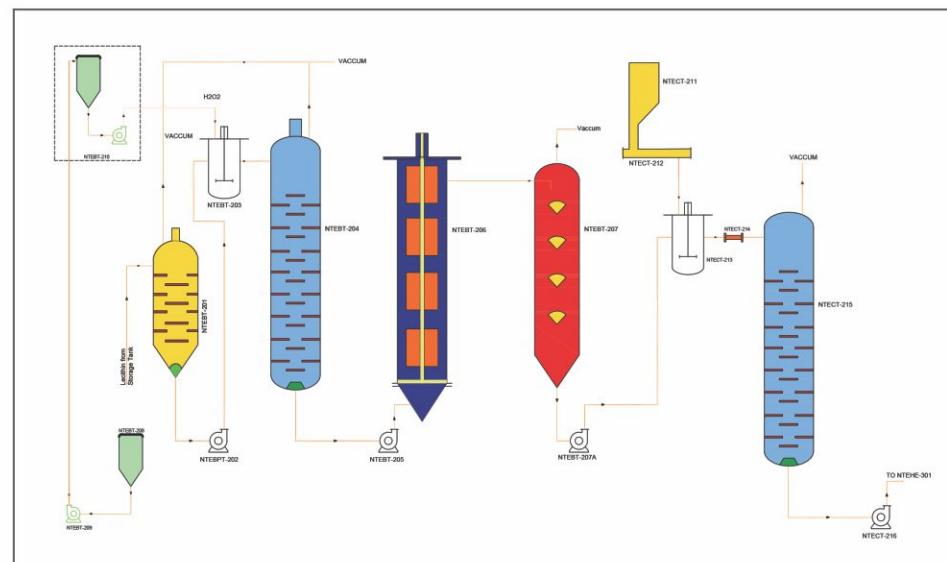
Bleaching, Dehydration, Extraction, Purification & drying processes done to manufacture powder lecithin.

The manufactured lecithin is food grade & being used in food, Pharmaceuticals

Cosmetics Industries.

FEATURES:

1. LOW SOLVENT CONSUMPTION
2. LOW STEAM & POWER CONSUMPTION
3. ZERO MAINTENANCE
4. HIGHEST PURITY WITH LIGHTEST COLOR



SOAP MANUFACTURING PLANT (TOILET & LAUNDRY)

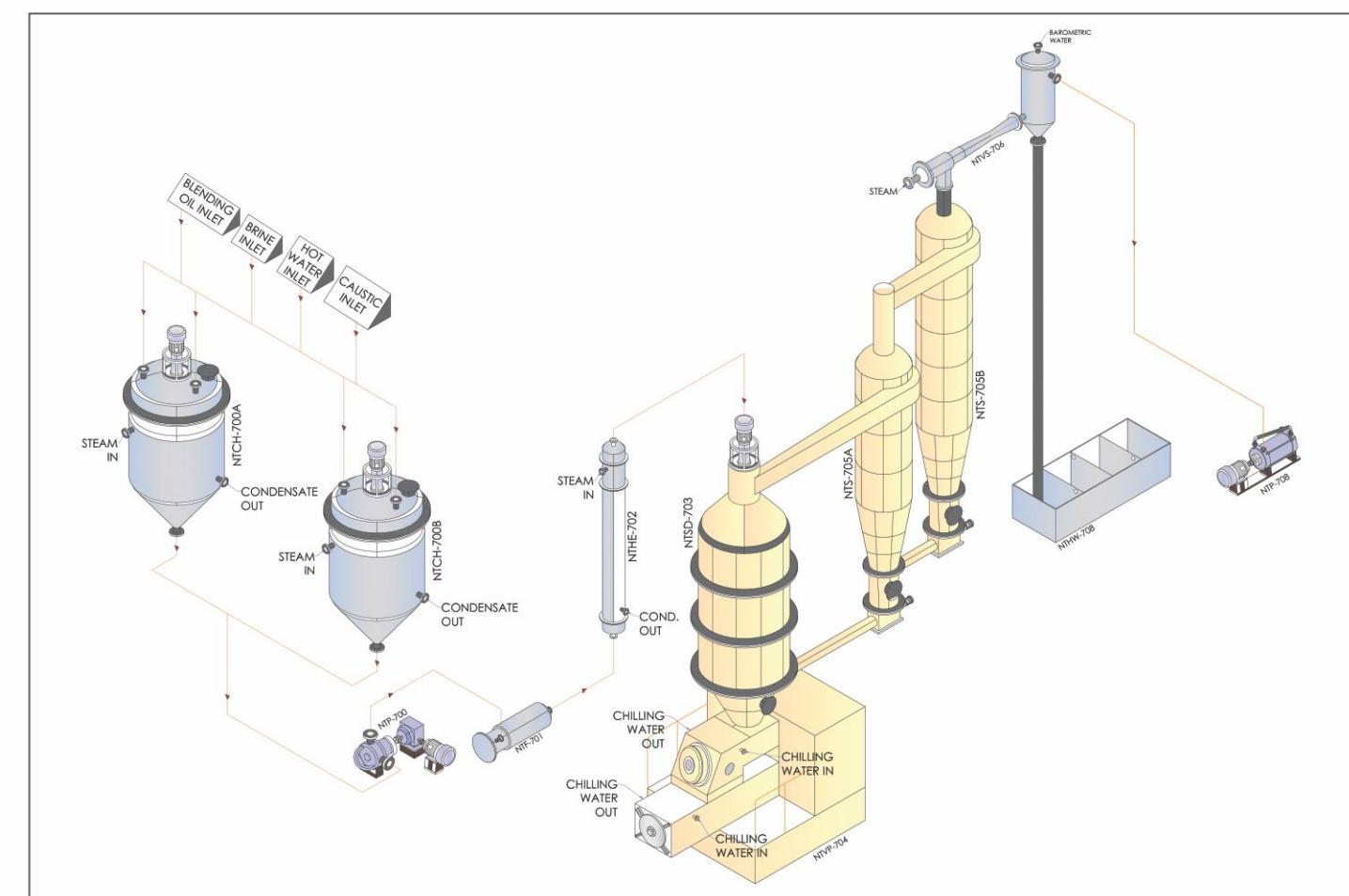
We provide Engineering, Procurement and Construction facilities for equipment related to Laundry soap plants. We are experts at performing erection and installation of equipment such as Catcher, filter, heat exchanger, spray dryer, vacuum plodder, vacuum system, chiller, separator, cutter day tank etc. We also carry out piping, instrumentation as well as accessories work according to your requirement with ease and efficiency.

Blending oil, Brine, Caustic Soda, Hot Water is well mixed in catcher for the saponification reaction at certain temperature. The well neat soap is transferred to spray dryer through filter & heat exchanger. Heat exchanger reduces moisture as per the requirement. The whole system is associated with separators which is

working under vacuum and separates all fine particles and transfer to the vacuum plodder this system save the losses in the saponification & soap manufacturing. After that vacuum plodder plays a vital role in the soap plant to convert soap into the noodles.

Features:

- Quality & Quantity Production of soap
- Proper sizes, weights of cake.
- Attractive packings
- Lowest consumption of utilities
- Least maintenance
- Long lasting perfumes.





MARGARINE PLANT

It is made from vegetable oil, water, salt, and other additives. Since there is no animal fat, Margarine is low in saturated fatty acids. On the other hand, it contains monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA), which are healthy fats. Technically, it is a water-in-oil (W/O) emulsion in which the water phase is finely dispersed as droplets in the continuous fat phase.

There are two processes interesterification & hydrogenation to bring the consistency in the Margarine.

Processing:

Manufacturing of Margarine requires high processing. Following are the processing steps-

1. Preparation of Ingredients: When the ingredients arrive at the margarine manufacturing facility, they must first undergo a series of preparatory measures. Like sunflower, corn, or soybean, the oil used, like sunflower, is treated with a caustic soda solution to remove unnecessary components known as free fatty acids. Next, the oil is bleached with a mixture of bleaching earth and charcoal. The bleaching earth and charcoal absorb any unwanted colorants and are then filtered out from the oil.
2. Hydrogenation: The oil is then hydrogenated to ensure the correct consistency for margarine production. In this process, hydrogen gas and a metal catalyst are added to the oil under pressurized conditions.

3. Melting of oils: Oils are transferred to a tank (say tank 1) to obtain a homogenous melt ensured by continuous stirring at 60°C-70°C.
4. Preparing the aqueous phase: The aqueous phase is generally water, salt and other water-soluble ingredients are dissolved and mixed in to make up the final vol. which constitutes 16% of the final wt. of Margarine.
5. Mixing: The mixture of oil, water & other ingredients sent to the emulsifying tank where they are mixed.
6. Adding Emulsifier and other fat-soluble ingredients: Emulsifier such as lecithin, mono or diglycerides are generally used. Apart from emulsifier antioxidant, color, flavor are also added at this point. At this phase, we get a semi-liquid kind of consistency.
7. Pre-crystallization: The contents are then transferred to the pre-crystallizer where the scrapper speed of 300-1000 rpm and a temp. of 10°-22°C is maintained.
8. The pre-crystallized fat is then passed through a pin worker. The rotating pin helps the pre-crystallized fat to get adequately homogenized crystallized fat.
9. Packing: Margarine is filled in containers and packed.

Tempering: done at 5°C-8°C to stabilize the texture of Margarine



BAKERY SHORTENING PLANT

Bakery shortening is manufactured by 100 percent vegetable oil or fat.

During the manufacture of shortening precautions taken to give the grain less bright soft texture.

The creation of perfectly crafted breads, cakes and pastries is often referred to as an art-form by the casual consumer. When it comes to creating beautifully golden, tasty foods, the science is supported by one simple ingredient – baking shortening. It is commonly used to replace butter within baking procedures and is dairy free. The lack of water content within shortening reduces the risk of products going soggy, ensuring they remain crunchy and sturdy for longer periods. whilst butter is solid, it cannot withstand long periods of pastry processing, such as rolling and folding.

Overall, shortening in baking provides goods with an element of formation and texture that oil

can't. The high fat content in shortening contributes to the moistness of goods providing them with a softer, fluffier texture. While ensuring the consistency of goods is up to standard, shortening also contributes to the golden colouring of baked dough, as well as the thick creaminess of fillings and ganache recipes.

As an added bonus to prolong the product's life, shortening prevents staleness of baked products as the fat content delays the process of gelatinisation of starch, as well as hard, crumbling textures.

It is being used in the manufacture of donuts, pastry, cream rolls, breads, Waffle premix, Chocolate Brownie etc.



INTER-ESTERIFICATION PLANT

Interestesterification of oil is the oil modification process.

Stearin & liquid oil blended in certain proportion in presence of catalyst in the reactor developed by N&T.

In the Reactor blended oil agitated, heated under vacuum in the presence of catalyst.

After certain time checked the oil for Melting point & other properties.

Advantages:

1. Lower time cycle.
2. Catalyst consumption low.
3. Low maintenance.
4. Lower power & steam consumption for the best quality of product.





OLEOCHEMICALS PLANT

Fat Splitting Plant | Fatty Distillation Plant
Glycerin Distillation Plant

The value addition is the key of oil industries.

N & T developed equipment's the best suitable to use bye products of Oil process industries. Firstly, the by products stearin, acid oil, low grade rice bran and used cooking oil pretreated. Splitting of the bye products done under high pressure, high temperature with required quantity of water. Crude fatty acid & sweet water collected separately. The specialty of Engineering design is such that sweet water generated has high Glycerin content while the A.V. of crude fatty acids maximum. After treatment of sweet water, it is filtered &

evaporated to get the crude Glycerin. Which is distilled & bleached through the fixed bed of carbon. The bleached Glycerin further distilled to get 99.9% purity of the Glycerin Suitable for pharmaceutical & cosmetic industry. The crude fatty acid distilled, hydrogenated & flaked to get the required quality of Flaked saturated fatty acid.

FEATURES:

- Plant is easy to operate.
- Minimum losses of material
- Recovery of finished products more than 100%.
- Lowest maintenance
- Best quality of distilled glycerin & fatty acid



GLYCERINE DISTILLATION PLANT

Distillation plant engineered for the manufacture of Pharmaceutical Grade glycerin. Firstly, we considered all the parameters required for the pre-treatment of crude glycerin received from all the sources viz, biodiesel, fat splitting, acidulation etc.

Pre-treatment section is capable for removal of fine impurities. Material purification consists all the in-built items for removal of impurities, heating system for heat recovery. The distillation tower is based on thin film design for glycerin suitable for removal of all the

Impurities. Maximum area of equipment opened for the vacuum and best recovery of purified glycerin. Series of decolorizing vessel suitable for removal of color & to increase the purity of glycerin.

FEATURES:

- Purity of Glycerin 99.9 %.
- Maximum heat recovery
- Utilities consumption lowest.
- Zero maintenance & easy to operate.



CASTOR OIL DERIVATIVES PLANT

N&T did lot of R & D for the manufacture of various types of castor oil derivatives.

N&T provides 24 derivatives which are as follow:

1. Hydrogenated Castor Oil (HCO)
2. Hydrogenated Castor Oil Fatty Acid
3. 12 HSA
4. Methyl Ricinoleic Acid
5. Ricinoleic Acid
6. Undecylenic Acid
7. Polyol Ricinoleic Acid
8. 2 Octanol
9. Sebacic Acid
10. Blown Castor Oil
11. Turkey Red Oil
12. Zinc Undecylenate
13. Methyl 12 HSA
14. Calcium Undecylenate
15. Methyl Urethane Grade
16. Castor Oil Urethane Grade
17. Ethoxylated Castor Oil
18. DCO Fatty Acid
19. Heptaldehyed
20. 12 HSA Fatty Acid
21. Zinc Ricinoleate
22. Hydrogenated Methyl Ricinoleate
23. Polymerised Ricinoleic Acid
24. Glycerine

N & T Value Addition Product castor oil derivatives plays a vital role in the field of pharma, cosmetics, greases, textile, lithium, resins, ink, paints etc





BIO DIESEL PLANT

N&T provides latest technology for Bio diesel manufacture by most inferior quality of feed stocks with inclusion of following steps:
Feedstock Pre-Treatment to remove the impurities which creates the problems.

In next processes

1. Transesterification

- Pretreated stocks come under transesterification by which Triglycerides converted into methyl ester using Sodium methoxide catalyst.

2. Glycerin Recovery

- Crude glycerin distilled to pharmaceutical grade glycerin by distillation process.

3. Methanol Recovery

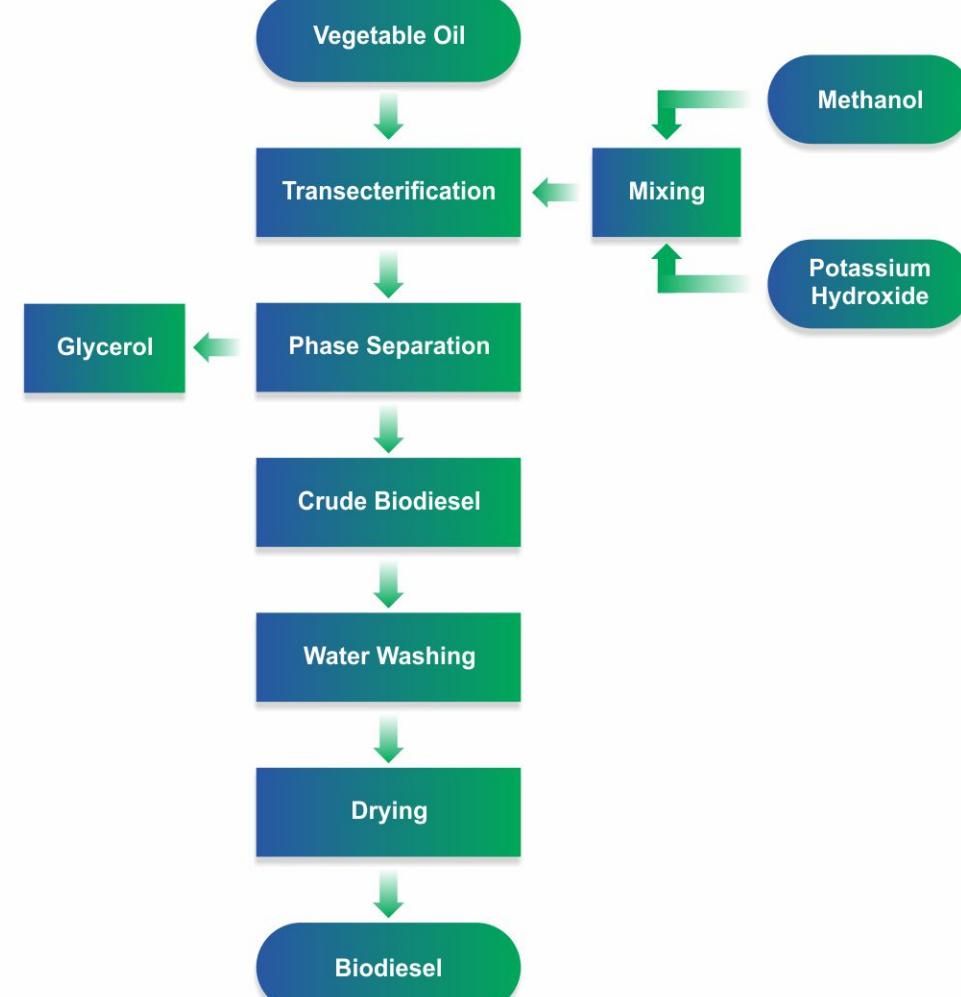
- The methyl alcohol distilled & reused in the BIODIESEL Manufacture.

4. Biodiesel Purification.

- Bio diesel manufactured further distilled to remove the Traces impurities.

FEATURES

- The Density of Biodiesel is as per The specifications
- Lowest Utilities Consumption.
- Solvent Losses are least



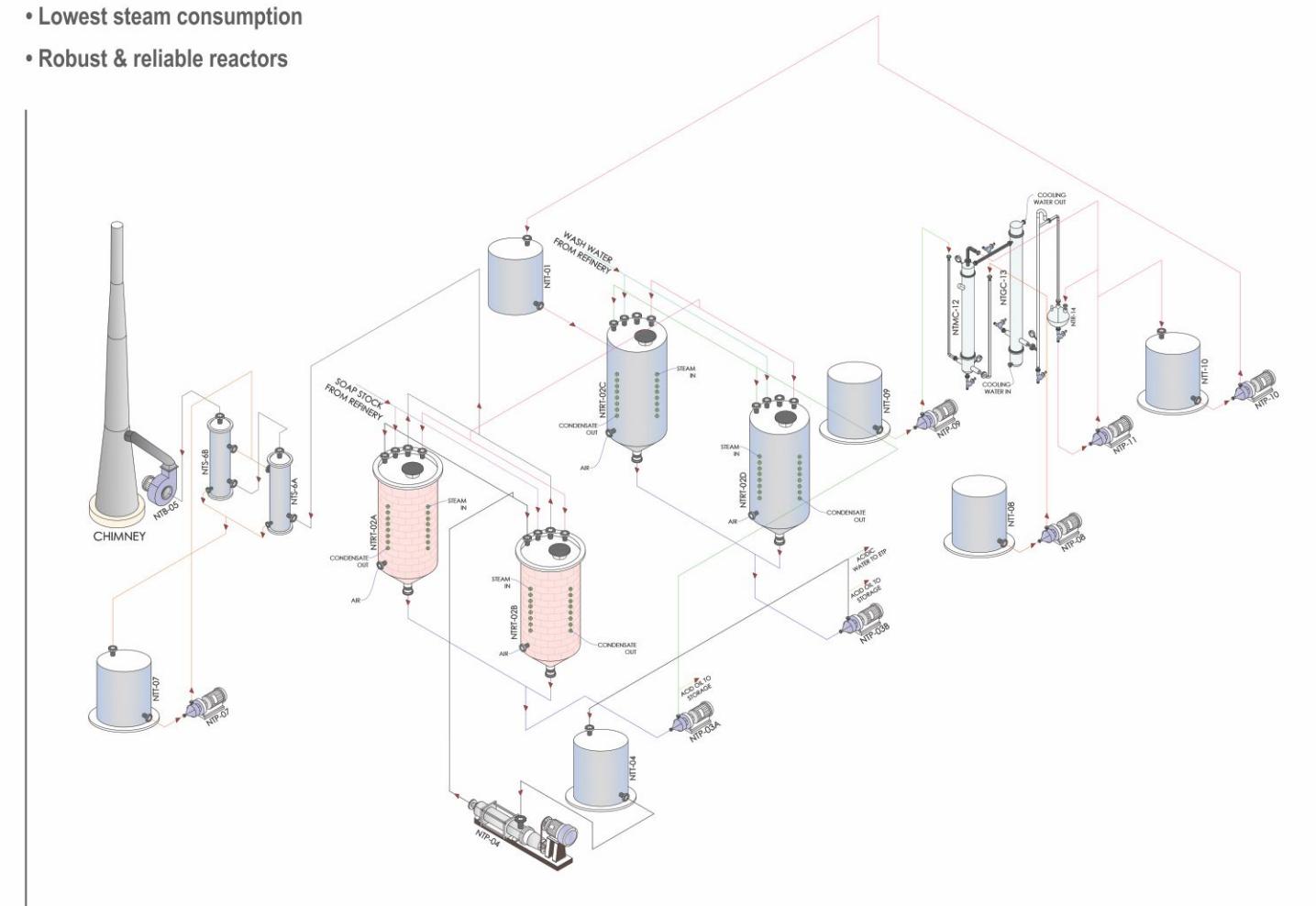
ACID OIL PLANT

The process of making acid oil by the reaction of soap stock and sulphuric acid

The soap stock generated from the refinery is collected into the acid proof reaction vessel & allowed to heat at temperature of 95°C. Sulphuric acid added gradually with continue boiling, If the splitting is completed allow to settle for 2-3 hours & drain after 3 hours. The top layer is the acid oil while the middle layer is the sludge & bottom layer is the acidic water.

Features:

- Lowest consumption of sulphuric acid
- Lowest acid content in Effluent
- Lighter & bright color of acid oil
- Lowest steam consumption
- Robust & reliable reactors





SPENT EARTH EXTRACTION PLANT

The spent earth is generated during bleaching of oils and have 18-20% oil with it. The oil of spent earth can be extracted through the solvent. The oil is soluble in Hexane and bleaching earth is not soluble, hence the extraction can be carried with n-hexane.

The spent earth from refinery has about 20-30% moisture and the spent earth is prepared and converted to Pellets and the pellets are sun dried. The pellets mechanical drying is not possible because of the high moisture. The moisture of pellets is reduced before extraction.

WAX MODIFICATION & PURIFICATION PLANT

The Rice bran oil or Sunflower oil requires dewaxing, because of high wax in the oil. The wax is crystallized in oil through proper cooling and filtered for wax crystals separation. The Recovered wax from dewaxing plant will have 65-75% oil, which is to be reduced to recover the high-quality oil and to improve or upgrade the quality of wax.

The oil will be recovered in two steps:

1. Recovery of oil by mechanical means.
2. Extraction of oil through Hexane or Acetone to upgrade the quality of wax.

RECOVERY OF OIL BY MECHANICAL SYSTEM.

The wax is heated to homogenize and the homogenized wax is crystallized in the specially designed Wax-o-crysto (N & T Developed WAX-O-CRYSTO specially for oil recovery from Wax), where the wax is cooled as per the recipe developed for the recrystallisation of wax. The crystallized wax is allowed to mature for proper crystal growth. The mass is filtered through high pressure filter presses to recover maximum oil from wax. The pressed wax will have approximately 25-30 % oil with pressed wax.

The extraction of spent earth pellets is done in batch extractors to remove the oil. The Hexane is sprayed to remove the oil, it requires about five to six washes to clear the oil. After the extraction is completed, the spent earth is heated with direct and indirect steam to remove the hexane vapours.

When the material is dried then the extractor is opened and removed the spent earth from the extractor.

The extracted spent earth will have about 2-3% oil with the spent.

The Recovered oil can be refined for non-edible uses.



The pre-modified wax with 25-30 % oil is extracted to recover oil, either through Hexane or through Acetone, both the process has their advantages and disadvantages.

A) EXTRACTION OF OIL THROUGH HEXANE AS SOLVENT:

The extraction of oil from wax is carried out in specially designed vertical long extractor, where the required quantity of hexane is introduced to get the Miscella (mixture of Hexane, wax and oil). The wax will be separated by crystallizing the wax in miscella phase. The crystallization of wax is done by slow cooling and this will form the crystals and these crystals were allowed to mature and

finally it is decanted through a centrifugal decanter and desolventised in specially designed desolventisers.



WATER TECHNOLOGY



EFFLUENT TREATMENT PLANT

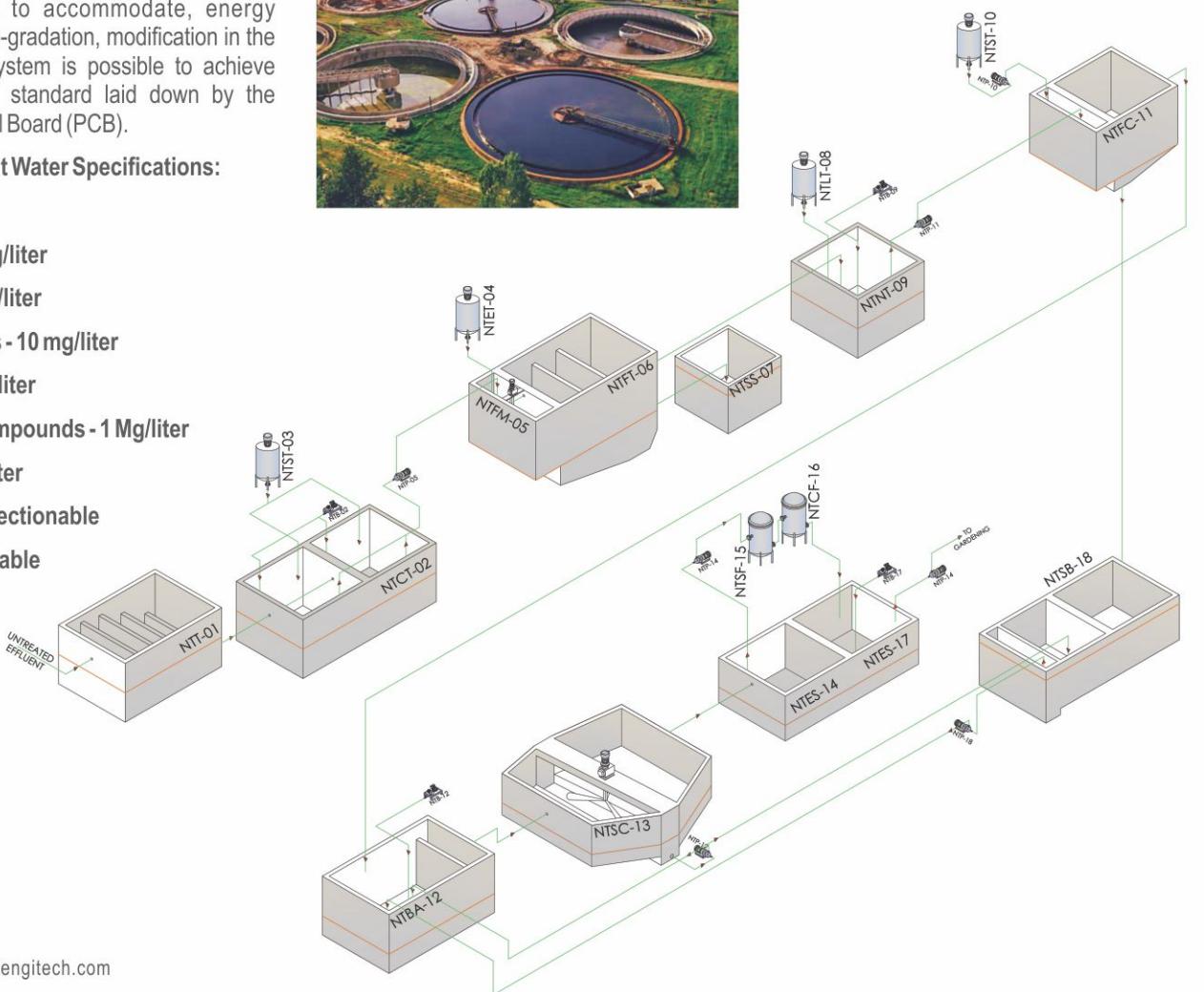
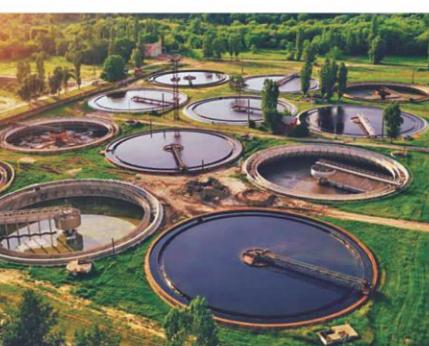
We Design, Manufacture, Supply, Erection and Commissioning Effluent Treatment Plant (ETP) on Turnkey basis for various types and natures of waste waters, effluents which combines advanced physico-chemical treatment processes with tertiary polishing system for the removal of organic, inorganic, oil and grease, heavy metals & suspended solids.

Our methodology - We analyze the effluent samples for different effluent parameters as per nature and compositions, carry out the treatability studies by using different methods checking techno-commercial Feasibility and then designed treatment schemes, processes accordingly to suit the purpose and need.

Our ETP systems are very compact, tailor-made designs, portable required very less foot-print to accommodate, energy efficient. The up-gradation, modification in the existing ETP system is possible to achieve desired limiting standard laid down by the Pollution Control Board (PCB).

Treated Effluent Water Specifications:

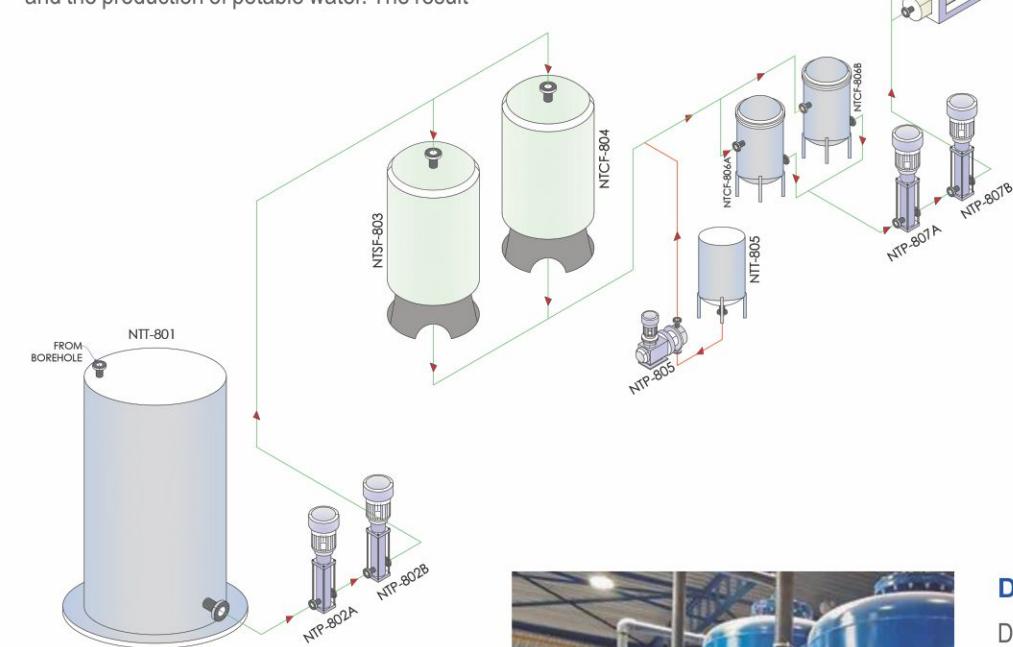
1. Ph - 5.5 - 9
 2. COD - 250 mg/liter
 3. TSS - 100 mg/liter
 4. Oil & greases - 10 mg/liter
 5. BOD - 30 mg/liter
 6. Phenolic Compounds - 1 Mg/liter
 7. Iron - 3 Mg/Liter
 8. Odor - Unobjectionable
 9. Taste - Agreeable



REVERSE OSMOSIS PLANT

N&T Reverse osmosis (RO) is a water purification process that uses a partially permeable membrane to separate ions, unwanted molecules and larger particles from drinking water. In reverse osmosis, an applied pressure is used to overcome osmotic pressure, a colligative property that is driven by chemical potential differences of the solvent, a thermodynamic parameter. Reverse osmosis can remove many types of dissolved and suspended chemical species as well as biological ones (principally bacteria) from water, and is used in both industrial processes and the production of potable water. The result

is that the solute is retained on the pressurized side of the membrane and the pure solvent is allowed to pass to the other side. To be "selective", this membrane should not allow large molecules or ions through the pores (holes), but should allow smaller components of the solution (such as solvent molecules, e.g., water, H₂O) to pass freely.



DM PLANT

Demineralization of water is the ion exchange process for water purification.

Cations are removed by hydrogen ions while anions removed by hydroxyl ion.

After this process water is free from minerals & suitable for pharmaceuticals & electronics industries.

Specs for D. M. Water.

1. Conductivity less than 30 micro siemens per cm
 2. TDS less than 5 ppm.
 3. Ph 6.5 to 8.5

GRAIN/SEED TECHNOLOGY



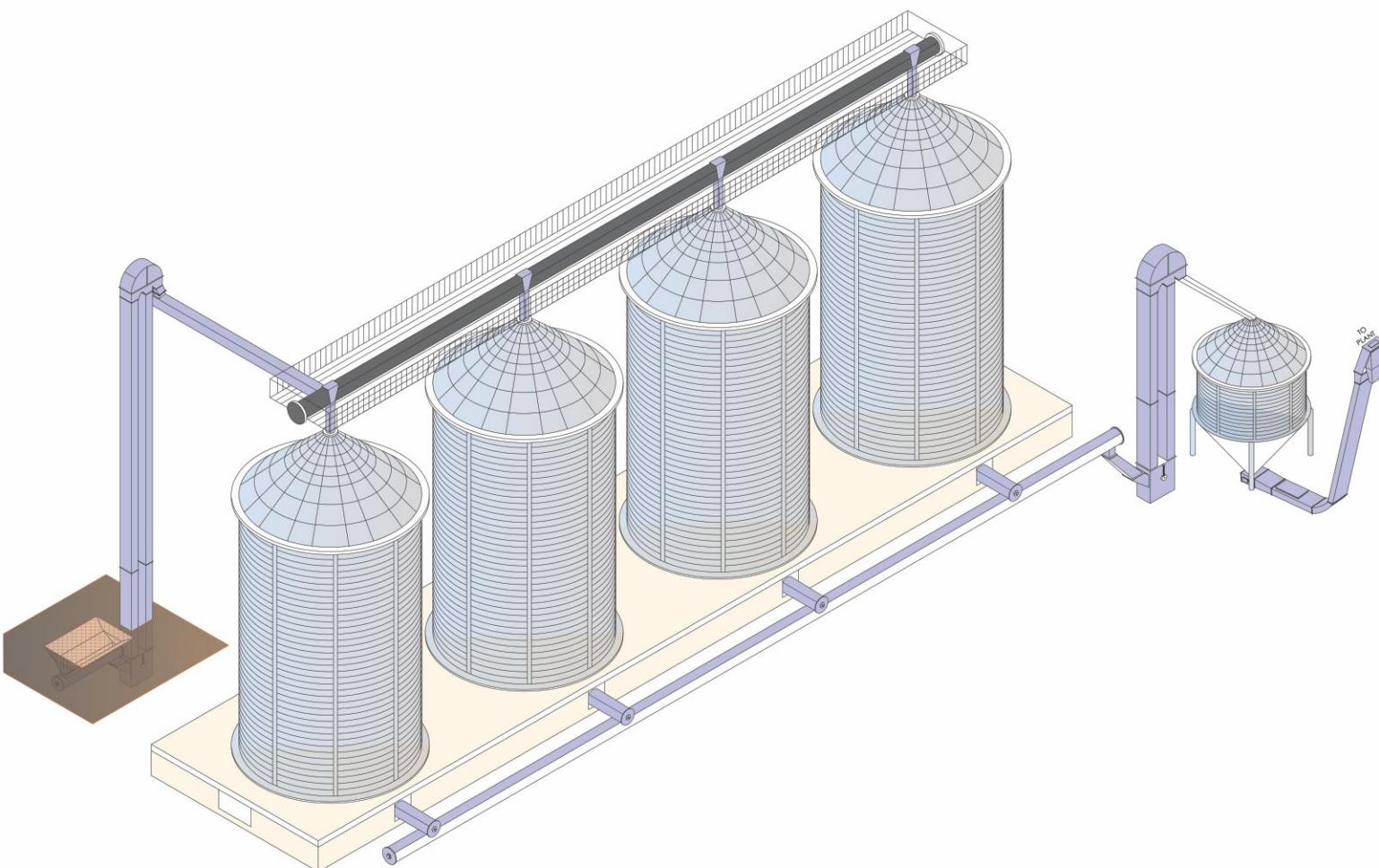
N & T ENGITECH PVT. LTD.

GRAIN STORAGE SILO

Silo is a structure for storing bulk materials, the material is entered in silo via conveyor & discharge of seed is done through sweep auger, N & T Grain storage silo is provided with sweep auger, aeration system, temperature monitoring, level indicator, ladders etc. Grain Storage silos are constructed in GI Corrugated Sheets, which are further send for profiling.

Features

- Proper Unloading & Loading System
- Proper Assembling
- Proper Air Circulation Avoids fire hazards





Material Handling Equipment's



OUR SERVICES

ENGINEERING SERVICES

We are a company that provides end to end engineering services throughout the development of project. By leveraging our domain expertise and engineering knowledge, we design all the equipment according to plant capacity using new technology while maintaining the regulatory requirements, adhering to diverse global regulatory standards.

PROJECT MANAGEMENT

We believe that a project is the most important aspect of an organization. That is the very reason that an organization exists. Our primary motto is to achieve all of the project goals and objectives while honoring the preconceived constraints like scope, time, quality and budget. The secondary - and more ambitious - motto is to optimize the allocation of necessary inputs and integrate them to meet pre-defined objectives.

Given the high unique domain knowledge, experience, and capabilities of our personnel, we are often brought in to provide end-to-end project management services across all phases of highly complex projects.

We at N & T Engitech provide project management expertise and support personnel in program/project risk management, project controls, risk-based schedule analysis, decision analysis, supplier management, technology readiness level assessment, process analysis, and cost estimating and uncertainty analysis that enables our clients to reduce their overall risk profile. We offer the unique capability of risk-based program/project management, spanning technical, schedule, and cost management to adapt a holistic view towards project success.

PROCUREMENT SERVICES

N & T Engitech India provides comprehensive procurement services using local resources

and its Global Supplier Network. We procure material according to your specification and requirements.

We understand the art of obtaining products and services. To ensure only the best quality delivery to you, our expert team researches and undertakes following tasks in a step by step manner:

- Recognition of Business Needs
- Specification of needs
- Sourcing Options
- Pricing and Terms
- Purchase Order
- Delivery • Expediting
- Receipt and Inspection of Purchases
- Invoice and Approval of Payment
- Record Maintenance

SITE SERVICES



CIVIL - ROUTE SURVEY,
SOIL INVESTIGATION



HYDROLOGICAL
STUDIES



CONSTRUCTION
MANAGEMENT



QUALITY CONTROL



QUANTITY
SURVEYING

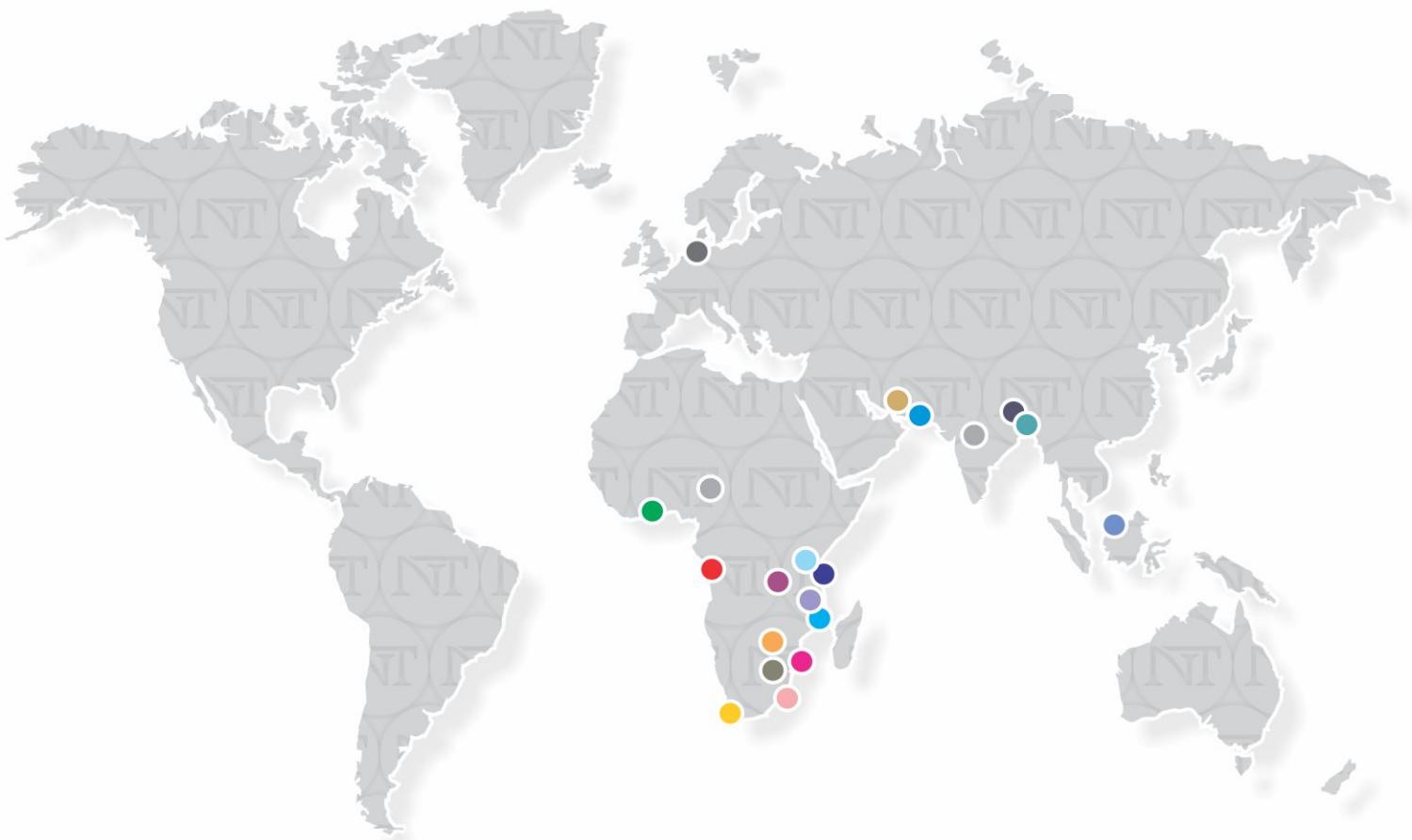


SAFETY &
TRAINING



COMMISSIONING AND
START-UP ASSISTANCE

OUR GLOBAL PRESENCE



- | | | | |
|--------------|--------------|----------------|-------------|
| ● Bangladesh | ● Kenya | ● Uganda | ● Tanzania |
| ● Burundi | ● Malawi | ● Zambia | ● UAE |
| ● DRC Congo | ● Mozambique | ● Zimbabwe | ● Indonesia |
| ● Ghana | ● Nigeria | ● South Africa | ● Poland |
| ● India | ● Rwanda | ● Swaziland | ● Nepal |



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