



TECHNOLOGY WITH INNOVATION



## PREPERATION AND EXTRACTION

**DVC PROCESS TECHNOLOGISTS**

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**CONSERVE ENERGY, SAVE ENVIRONMENT**

### ABOUT Us..

- **DVC Process Technologists** headquartered at Pune is a Technology & Innovation driven company that offers comprehensive processing solution for Edible Oil and Fats, Oleo Chemicals & Biodiesel industries.
- Serving the industry with dedicated team of technocrats and engineers with vast experience in Oils & Fats and allied industries
- Own **ISO Certified manufacturing facilities** near Pune at Supe & Jejuri with total work area of 40,000 Sqft & 22,000 Sqft respectively.



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## Technology Offered

DVC is a **single point solution** provider for design, supply, installation & commissioning of **process plant & equipment for :**

- **Vegetable Oil Refineries**
- **Fat Modification**
- By-Product processing like **Gums (Lecithin) Drying & Acid Oil.**
- Integrated **Biodiesel Production Plants** for multiple feedstocks
- **Solvent Extraction Plants & Flash Desolventization Plant**
- **Oleochemical Plants**
- **Process & Tank Farm Automation**
- Skid mounted plants

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## Achievements

- Over **180 references** including **Europe, USA, Australia, Middle East, South East Asia & Africa.**
- **47+ Lecithin Plants** including **Medical Grade.**
- **> 52 Green Field Projects**
- Introduced **Gums (Lecithin) Drying Plants for Rice Bran & Mustard Gums.**
- Introduced **Thermosiphon heating systems and automation in small capacity plants.**
- Successful Supply & Commissioning of **Flash Desolventising Plant.**
- Upgradation of existing plants from other suppliers - to minimize **OPEX**, increase **capacity** and to improve **product quality.**

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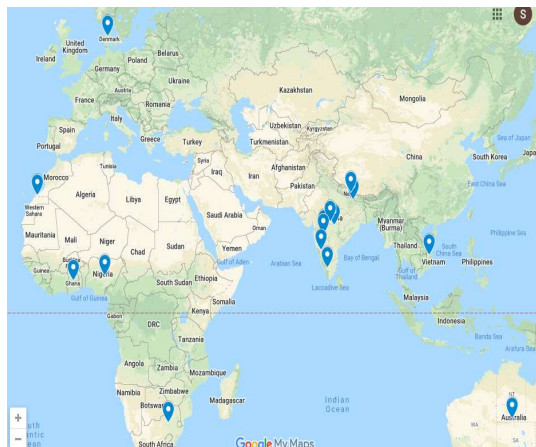
## Strengths

- In-house designing, automation and manufacturing giving streamlined operation for fast delivery and stringent quality management.
- One Point Turnkey Solution provider including Tank Farm Automation, Optimum Sizing of Utilities and Minimum Energy losses.
- Dedicated customer support team for spares and after sales services.

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## Ongoing Projects



• 500 TPD Soybean Oil Refinery in India

• 200 TPD Sunflower Oil Refinery in Morocco

• 100 TPD Fish Oil Refinery in Vietnam

• 150 & 30 TPD Biodiesel Plants In India

• 200 TPD Palm Oil Refinery in Nigeria

• 200 TPD Sunflower Oil Refinery in South Africa

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# SOYA /RB PREPARATION

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## Soya Preparation

- **FEED SPECIFICATIONS OF SOYABEEN SEEDS FOR PREPARATORY**
  - Oil content : 18-20%
  - Impurities: <3 %
  - Moisture content: <12 %
  - Bulk Density: 710 Kg/M3
  - Cooking time in conditioner: 30 min

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## RB Preparation

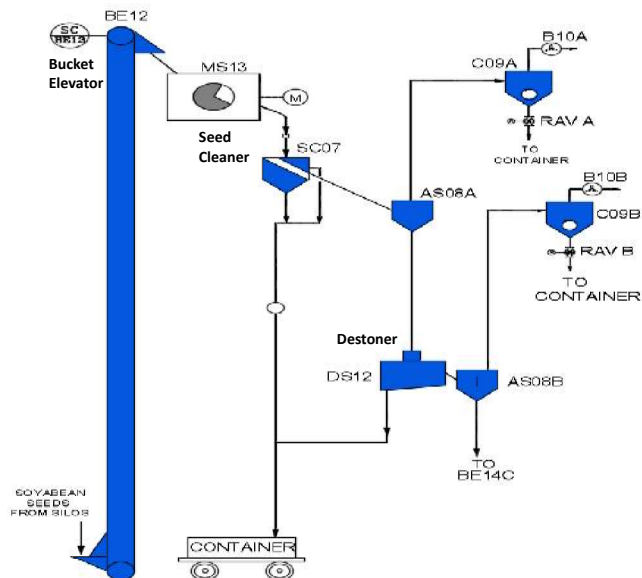
- **FEED SPECIFICATIONS OF RICE BRAN F FOR PREPARATORY**

- Oil content : 18-25%
- Impurities: <1 %
- Moisture content: < 8-10 %
- Bulk Density: ---- 390 Kg/M3
- Fibre content: 12 %

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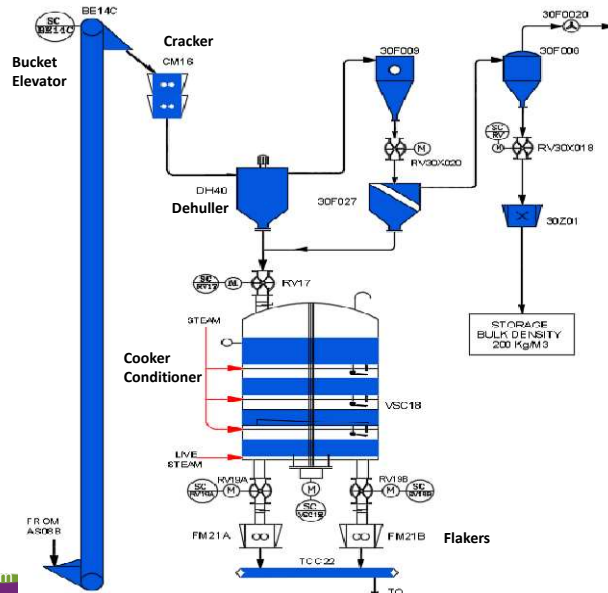
## Soya Preparation



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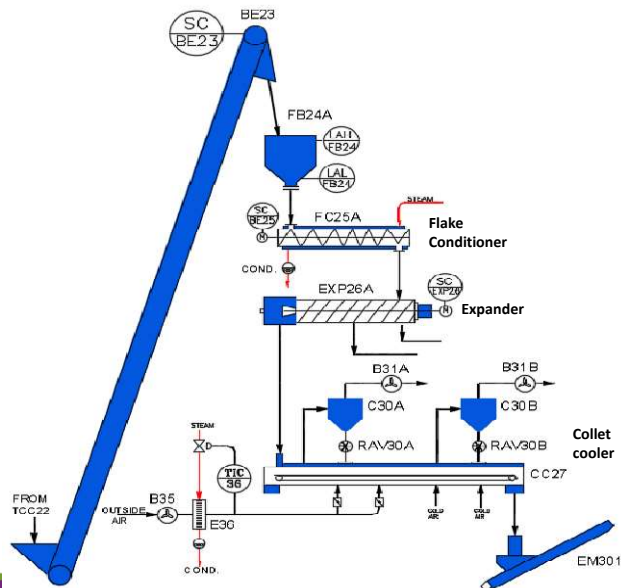
## Cracking, Cooking & Flaking



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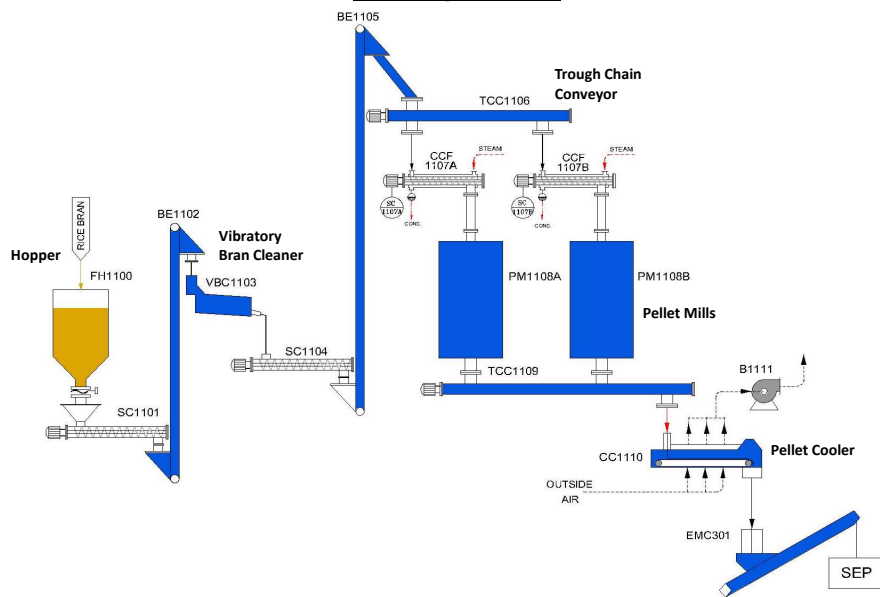
## Flake conditioning and Expanding and collet cooling



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## RB Preparation



## Outlet Specification of Soya Preparation

### • OUTLET SPECIFICATIONS OF SOYABEEN COLLETS FOR PREPARATORY

- Oil content : 18 % to 20 %
- Moisture : 10-12 %
- Flake thickness prior to expanding: 0.3 – 0.38 mm
- Physical shape of collets: Dia.: ~ 10 mm  
Width: 10-20 mm
- Temperature: 55-60 °C
- Bulk Density: 0.5-0.6

## Soya Preparation and Extraction

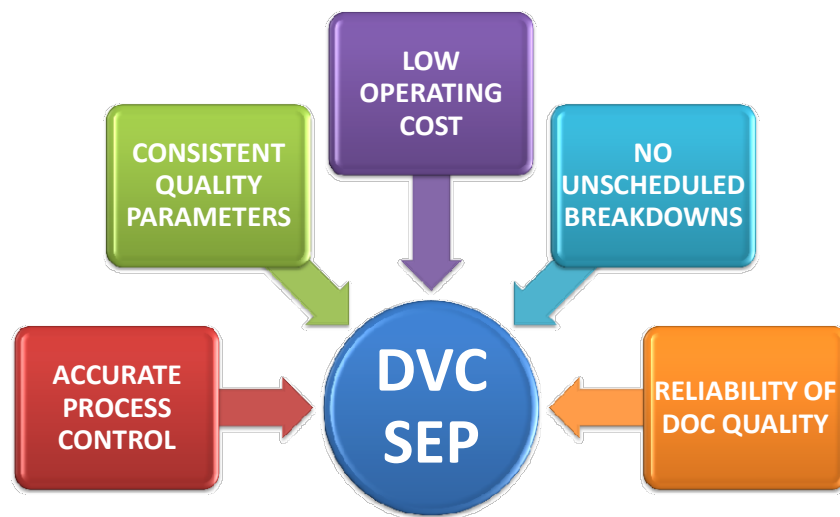
- **INCOMING FEED SOYA FLAKES/COLLETS TO THE EXTRACTOR**

- Oil content : 18 % to 22 %
- Moisture : 10-12 %
- Milling Defect : 0.2%
- Extraction time : 50 -60 minutes
- De-solventising time : 25-30 minutes
- Miscella Concentration : 30 - 35%
- DTDC outlet meal moisture : 12-12.5%
- DTDC outlet meal temperature : 45 – 50 deg.C

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## Modern Soya Expander Processing Plant



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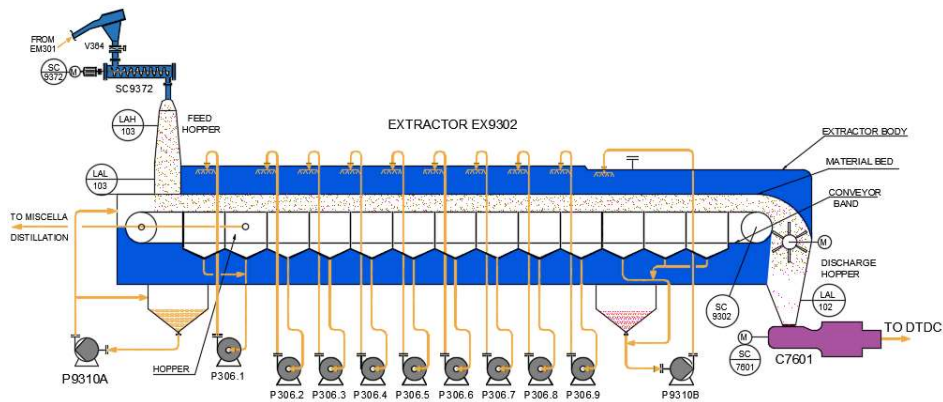
## KEY FEATURES OF DVC SEP

- Negligible Maintenance Extractor
- DTDC
- Fine Tuned Distillation
- Instrumentation
- Safety
- Guaranteed Performance
- DVC Quality Assurance

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## Negligible Maintenance Extractor Block diagram



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## Evolution of Negligible Maintenance Extractor

- Miscella hoppers are below the return path of the belt, which helps to maintain wedge bar screen always clean, which gives consistent miscella percolation efficiency that results in efficient extraction. Hopper capacity is enhanced.  
The belt is made up of wedge bar/screens.
- Sealing between the wedge bar/screen is by SS Nose plate
- Sprockets of larger size: Low RPM
- Belt tension adjustment is external
- Use of Planetary Gear Box
- Belt cleaning by high pressure hexane sprayers on return path
- One set of miscella sprayer on inlet side

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## Negligible Maintenance Extractor Highlights

### **1. EFFICIENT**

- a) Systematic counter-current extraction
- b) Generously sized for maximum extraction
- c) Long dripping time 15-20 min
- d) Continuous meal discharge
- e) Produces clear miscella
- f) Low power consumption: chain rolls, not pulled
- g) Deep bed : less energy in preparation

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## Negligible Maintenance Extractor Highlights

### 2. USER FRIENDLY, FORGIVING AND FLEXIBLE

- a) Easy to install
- b) Easy to understand
- c) Excellent vision of internal parts
- d) Excellent access to mechanical parts
- e) Barely affected by upset conditions
- f) Self tensioning belt, maintained clean
- g) Adjustable to changing conditions

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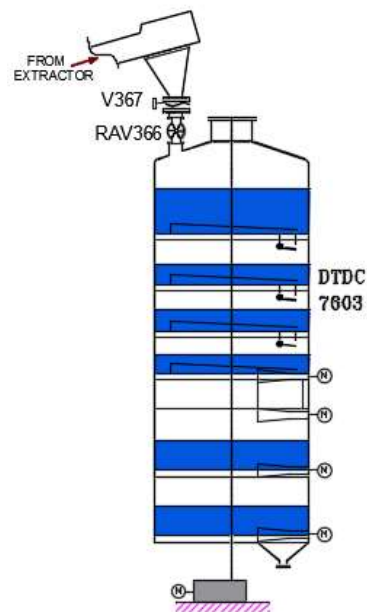


## DTDC FUNCTION

DESOLVENTIZING

TOASTING

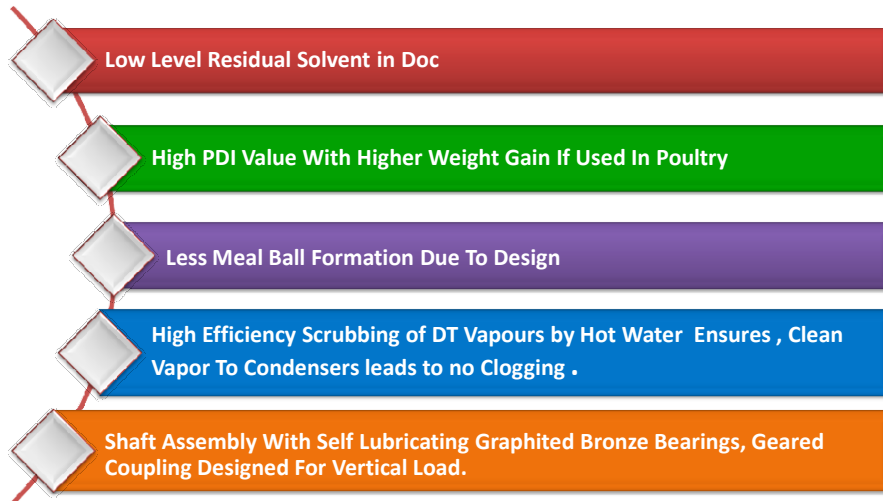
DRYING & COOLING



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## DVC DTDC PRINCIPAL FEATURES



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## DVC DTDC ADVANTAGES

- Efficient countercurrent contact of steam and meal in all the DT stages.
- Good steam distribution due to optimized open area.
- Good level control
- Optimum steam consumption.
- Superior De-solventization : 400 ppm hexane in meal.
- No breakdown in machine.
- Reliable shaft assembly.

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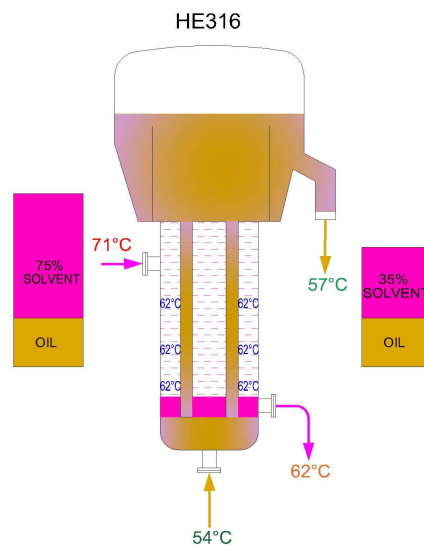
## DVC DTDC ADVANTAGES

- Alignment done in workshop. No site alignment.
- No mechanical problems in meal discharge or level control systems.
- Conventional mechanical gates are high wear systems.  
Meal discharged at ambient temperature. No corrosion of meal conveyor

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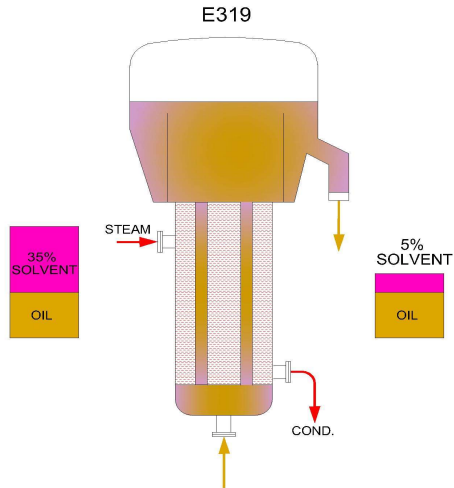
## First Stage Evaporation / Economizer



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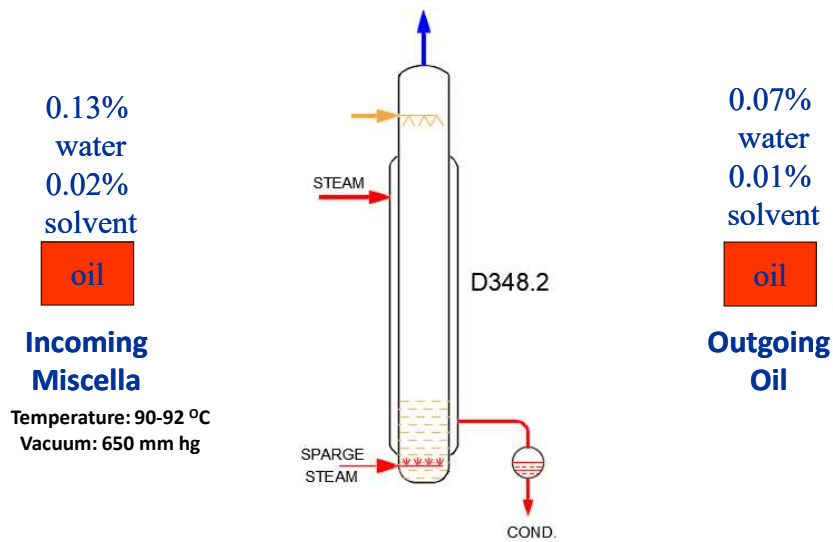
## Second Stage Solvent Evaporation



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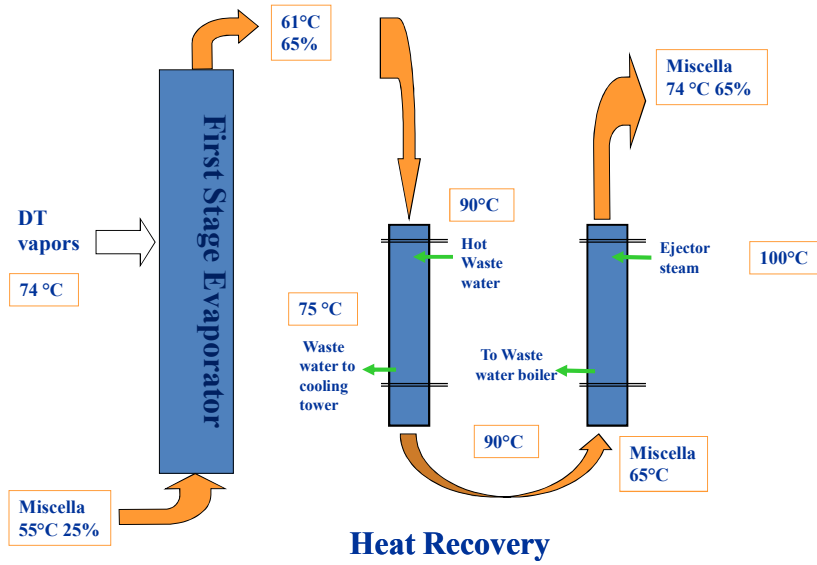
## High Vacuum Finishing: item



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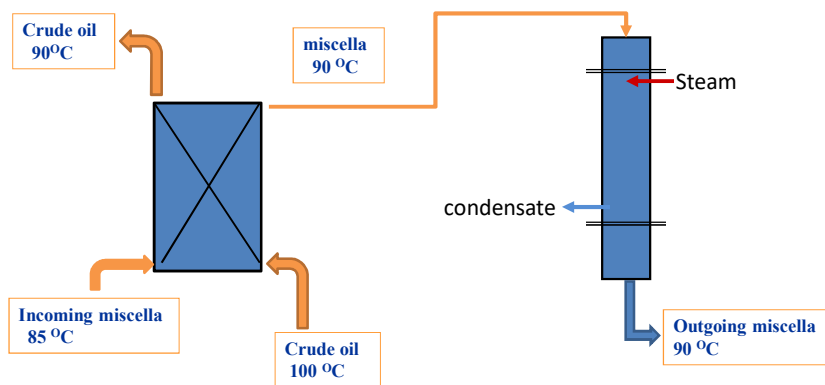
## DVC Distillation



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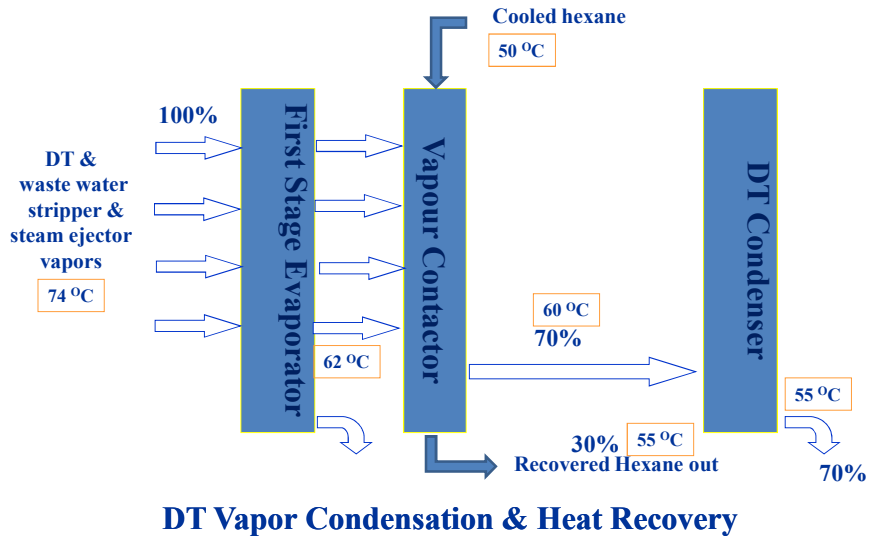
## DVC Distillation



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## Distillation



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## Process Sources of Air

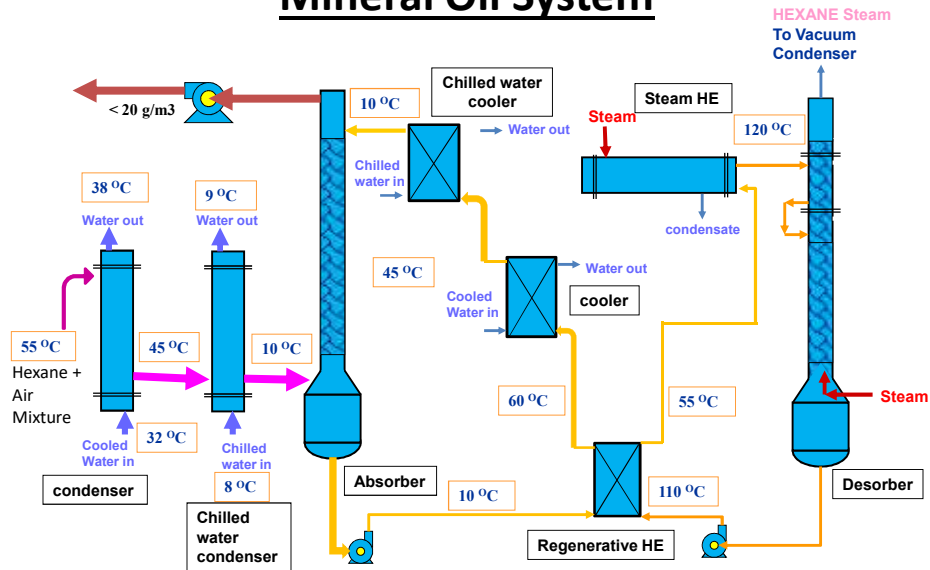
- Most process air enters with the extractor feed.  
For every cubic meter of material entering the extractor, about 60% of that volume is air.
- It is important to maintain a good extractor seal and to limit extractor vacuum to 5-7 mm H<sub>2</sub>O.
- Additional air enters through leaks in the miscella evaporation & oil stripping system which are operated under high vacuum.

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## Mineral Oil System



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## DVC Distillation

Solvent Content in Product and Effluents:

Description	Solvent content	
EDIBLE OIL TO STORAGE TANK	< 60 PPM	0.017 Lt./T
MEAL	400 ppm	0.47lt/T
AIR VENTED	< 20 g/m <sup>3</sup>	0.062 lt./T
WASTE WATER:	< 20 ppm	0.003 lt/T

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## GUARANTEED PERFORMANCE

- Capacity guaranteed for 24 hours/330 days.
- Consumptions.
  - Hexane : 1 .5kg/ton
  - Steam : 190-200 kg/ton
  - AIR : 7 nm3 / hr .
  - Oil Content in Doc : 0.8%
- DVC guarantees are honestly committed .

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## FDS AND SEP

- Selection of FDS plant capacity in reference to uninterrupted running for better operational ease and cost , so as the SEP facility should be exclusively design in reference to FDS capacity .



## Moral we have adopted in DVC

- Change is need of the hour , So need to keep pace with the time in changing technological environment to remain competitive .
- So in DVC we have decided to change , and geared up for the changes , so the launch of Preparation and extraction for Indian Market .



***Thank You for your  
attention***

