



TECHNOLOGY WITH INNOVATION

**SOYBEAN PROCESSING:
TRENDS & EMERGING TECHNOLOGIES**

SOPA 2018

DVC PROCESS TECHNOLOGISTS
www.dvcprocesstech.com

CONSERVE ENERGY, SAVE ENVIRONMENT

ABOUT US..

- **DVC Process Technologists** is an **Original Equipment Manufacturer** with strong presence in **Oils & Fats Processing** and related industries since 2001.
- DVC is a **one point solution** in design of **process plant & equipment** and in supply, installation & commissioning of **Refineries**, with by-product processing like **Lecithin Drying**, Acid Oil Plants.
- DVC has expertise in **Soybean Processing**, including **Flash Desolventization**
- DVC has it's own **ISO Certified manufacturing facility** near Pune.
- DVC has dedicated **Customer Service Team** to conduct **technical audits** and provide solutions to upgrade the existing plants to improve quality, yield, capacity & automation.
- Other verticals include food processing projects and cold storage.



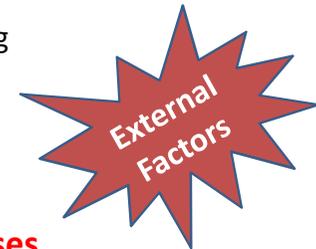
ABOUT US..



TODAY'S SCENARIO

Challenges

- Speculative trading
 - Domestic & Global Volatility
 - Fluctuation in Currency Rates & Forex Reserves
- Crop Uncertainty
 - Rainfall & climatic conditions
 - Scattered & Heterogeneous farming
- Other Factors
 - Government Policies
 - Competition



Exit of Established Industry Houses



INTERNAL FACTORS

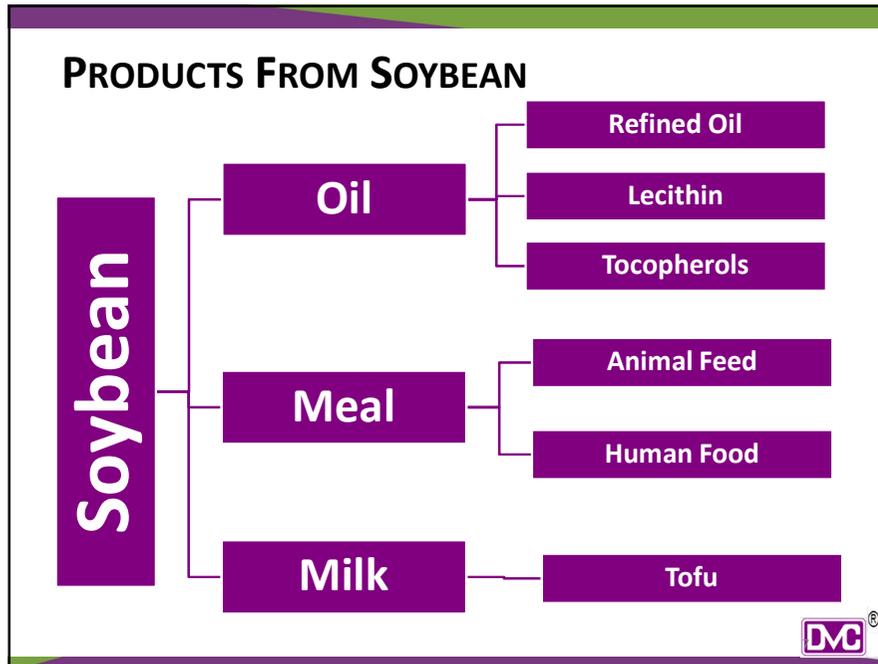
- **Processing Efficiency**
 - Unbalanced installations
 - Asynchronous operations
- **Value Added Products**
- **Planning**
 - Procurement & Storage
 - Financial Planning



PROCESSING EFFICIENCY

- **Selection of Plant & Machinery**
 - Capacity
 - Utilities
(Steam Boiler, Cooling Tower, Water Treatment)
 - Layout, Structure & Building
- **Plant Operations**
 - Efficient Processing
 - Control on Losses





FLASH DESOLVENTISING

- Production of White Flakes with NSI 90 units
- Provision for PDI adjustment
- Used in products for human consumption e.g. soy flour, nuggets, etc.



SOY PROTEIN CONCENTRATES (SPC)

- Protein Content > 70%
- Produced from White Flakes by Alcohol Extraction Process
- Used in Specialities like Infant formulae and food supplements



IMPROVING EFFICIENCY IN SEP

- **Low Temperature Distillation** to improve the quality of extracted oil
- Optimum **Heat Regeneration**
- Minimizing Material Handling Equipment
- Use of VFD at Critical Load Points



ORGANIC REFINING

- Sourcing: Organic Farms
- Soybean crushing: with expellers
- Degumming using Water & Organic Reagent
- Bleaching with Neutral Earth
- FFA removal using Steam Distillation



MEDICINAL GRADE LECITHIN

Parameter	Unit	Values
Acetone Insoluble	%	60 – 62
Acid Value		< 30
Color	Gardner	10 – 11
Total Plate Count		< 250
Viscosity	cP	94
Coliform	cfu/g	< 10
Yeast & Mould	cfu/g	< 10
Salmonella		Absent

Temperature of heating media < 90°C
Hygienic process conditions



LOWTRANS™ DEODORIZATION

Dual Temperature Deodorization
(High and Low)

- Ideal for High FFA Feedstocks (like RBO)
- Trans fatty acid isomer content < 0.5%
- Operating Pressure : 1.0 Torr
- Optimum Deodorization temperature and retention time combination
- Efficient stripping in Dual temperature zones
- **Keeps a check on 3 MCPD and GE too**

Stripping in
packed column @
high temp
230 - 245°C

Regenerative
cooling to
210 - 230°C

Retention at
210 - 230°C



TWO STAGE SCRUBBING

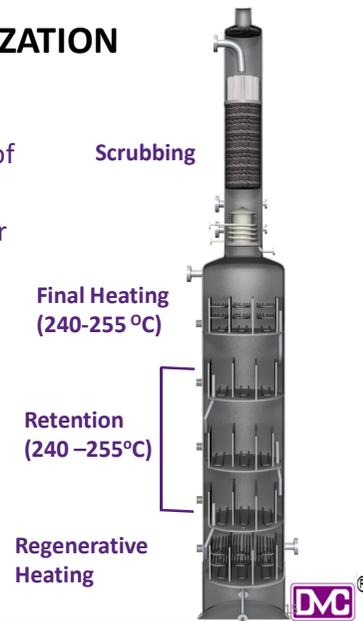
- Maximum separation between FFA and tocopherols streams.
- No extra processing cost
- **Higher Tocopherol yield in alkali refined soybean oil (about 11%)**
- Adds premium value to both the products yielded from the two stages of scrubbing.

DUALSCRUB™ can be installed in existing systems too



KOMPOSITE™ DEODORIZATION

- Regenerative heating, Final heating, Deodorization of oil and Scrubbing of distillates – in one single vessel.
- Minimal space and time required for installation
- User-friendly in operations and maintenance
- Lower Consumption of steam for stripping FFA & Odoriferous matter
- No splash oil generation
- Highest FFA recovery
- Highly energy efficient



THERMOSYPHON (HP STEAM) HEATING

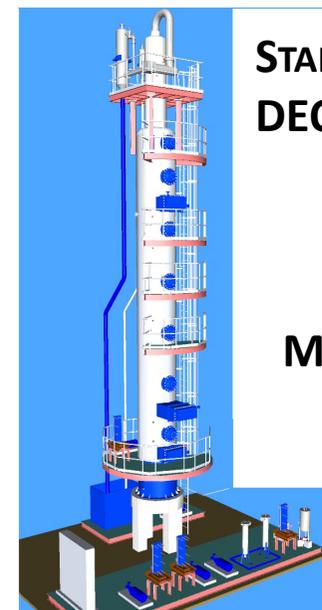
- No Recurring Cost: Thermic Fluid Make Up
- Food Safety – No Contamination
- Power Saving
- Ease Of Operation



SECONDARY STEAM GENERATION

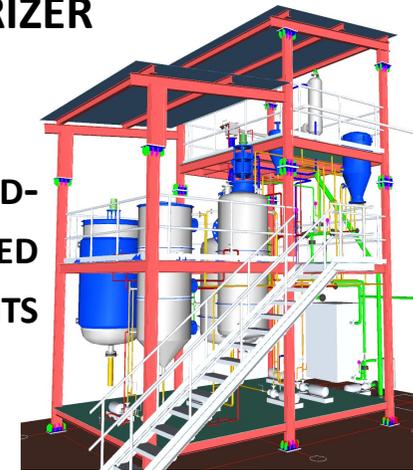
Steam Generation for Low capacity plants
Saving on Capital Investment on Steam Boiler
Low Pressure Steam For Vacuum

- Avoid fluctuations in steam pressure
- Unseen losses through leakages due to high pressure.



STAND-ALONE DEODORIZER

SKID-
MOUNTED
PLANTS



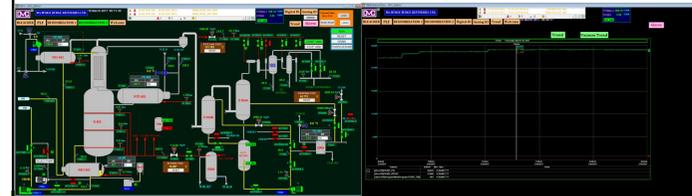
AUTOMATION

1. **Mechanical Control**
For Eg. For Level Control – Float Valves
2. **Electro-Mechanical Control**
Level Switches & Solenoid Valves
3. **Electro-Pneumatic Control**
Level Switches & Actuators
4. **PID Control**
5. **Microprocessor based control:**
 - i. **HMI** – Human Machine Interface
 - ii. **PLC** – Programmable Logic Controllers – Medium level control – Individual process
 - iii. **DCS** – Distributed Control System – Multiple operations control – Solvent Extraction, Oil Refining, Fat modification, Fatty Acid Plant etc. by one control system



AUTOMATION - LEVELS

- **Level I** – Process parameter control
- **Level II** - Process parameter control and Data Logging
- **Level III** - Logical Control of operations – Process and utilities flow mass control and data logging, material balancing for evaluating the online manufacturing cost.



THANK YOU!

Contact:

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