Technological Developments for Production of Alternative Proteins from Oilseeds

October 2025

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CPM at a Glance

Business Overview

- #1 market position in oilseed and animal feed equipment and aftermarket parts with exposure to attractive global megatrends
  - Global installed base of ~60,000 machines across 5,000+ customers
  - Strong global brands known for uptime, throughput and energy efficiency
  - Driver of “market-defining” innovation with long term customers and disruptors across the food, ag and industrial complex
  - Top 3 market position in thermal processing equipment
- Global footprint with 36 facilities across 4 continents and a sales presence in 100 countries
- Asset-light business model focused on engineering, design, innovation and assembly
  - Minimal capital expenditure requirements (<1% revenue)
- Founded in 1883 with approximately 1,700 employees

Select Products


Roller Mill


Flaking Mill


Pellet Mill


Extruder


Model III Extractor


Torrent Can Washer

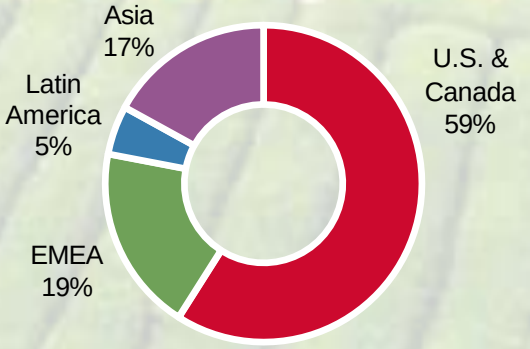

Heavy-Dryer

Select Brands

WOLVERINE PROCTOR

CENTURY EXTRUSION

Revenue Mix by Region



Feeding, Fueling & Building a Better World

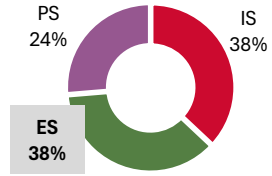
At CPM, we have One Mission: to sustainably **Feed**, **Fuel**, and **Build** a better world.

Our innovative solutions enable companies within a wide range of industries to create the things that improve everyday life for people across the globe.

From the food you eat to the fuels you require, CPM plays an important role in making the world more efficient and more sustainable.

We are One CPM, a family made up of trusted brands working together to make our planet a better place to live.

Crown | Overview



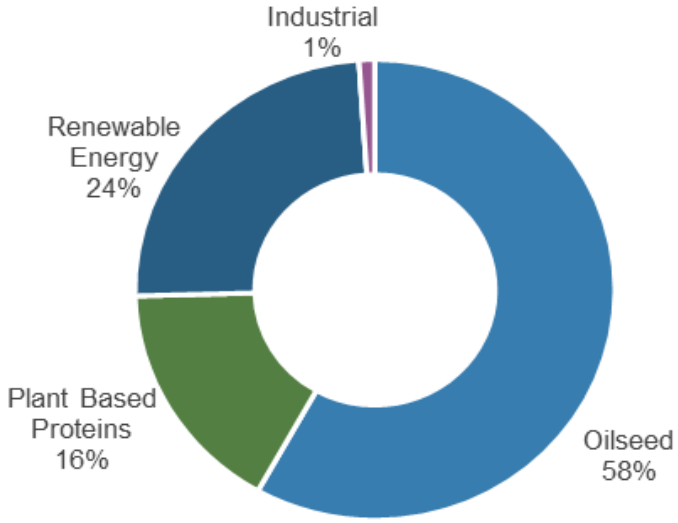
Overview

- Global leader in Oilseed process designs, equipment, & services for preparation, extraction, refining, renewable fuels, oleochemical, and other specialty applications
- Crown innovation center and pilot plant supports joint development with customers as well as internal innovation
- Market acceleration driven by significant demand growth for Renewable Diesel (RD), Sustainable Aviation Fuel (SAF) and Plant-Based Protein (PBP), an innovation partner, and full service solutions provider
- Products include cookers, conditioners, coolers, extractors, desolventizers, dryers, distillation systems, bleachers, deodorizers, and decanters all integrated into a process
- Global footprint with six offices and ~ 280 teammates

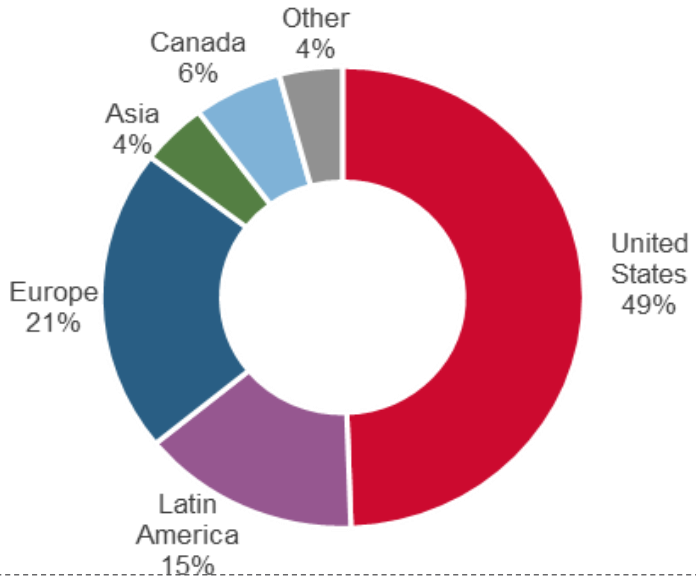
Key Brands

FY24 Revenue Composition

By End Market



By Geography



SPC Product Overview

What is it?

- Defatted Soy Meal or Whiteflake with soluble carbohydrates as well as some flavor compounds removed
- Typically, 65-70% protein on Moisture-Free Basis
- Very different than Soy Protein Isolate (SPI)

Used In	Used To
▪ Lunchmeat ▪ Meat alternatives ▪ Ice cream novelties ▪ Dairy replacements ▪ Nutritional beverages ▪ Soups & sauces ▪ Nutrition bars & cereal ▪ Pet and Animal food	▪ Improve texture ▪ Increase water retention & juiciness ▪ Improve emulsification ▪ Maintain or improve nutritional values ▪ Cost reductions ▪ Enhance viscosity

SPC Product Overview

Can be divided into two types:

Food Grade

- For Human Consumption
- Lighter in color
- Lighter in flavor
- Starting material “white flake”
- Model IV preferred due to poor percolation
- Gentle desolventizing processes required to maintain properties

Aqua/Feed Grade

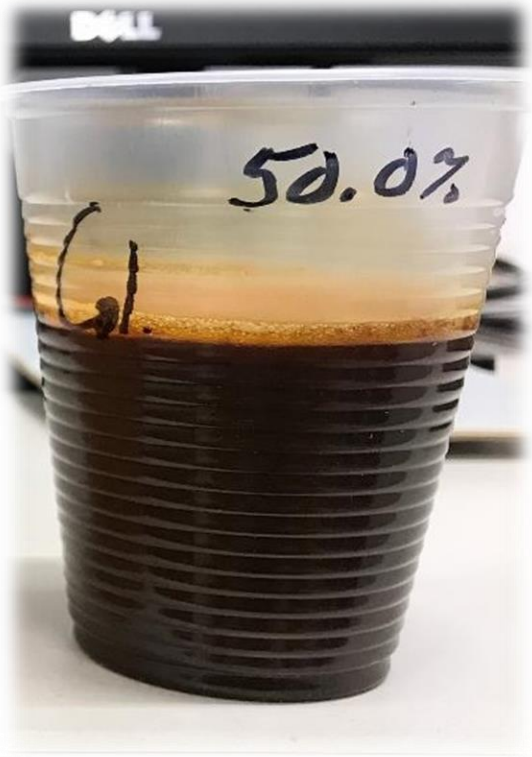
- For Animal Consumption (typically fish food)
- Darker color
- More toasted flavor
- Starting material “DT meal” or expanded flake
- Less complex desolventizing used

SPC Product Overview

Byproduct – Soy Molasses

No SPC plant should start without a plan for the Molasses!

- Contains water and ethanol soluble compounds, mostly sugars
- Typically concentrated to 50%-75% solids, the balance being water

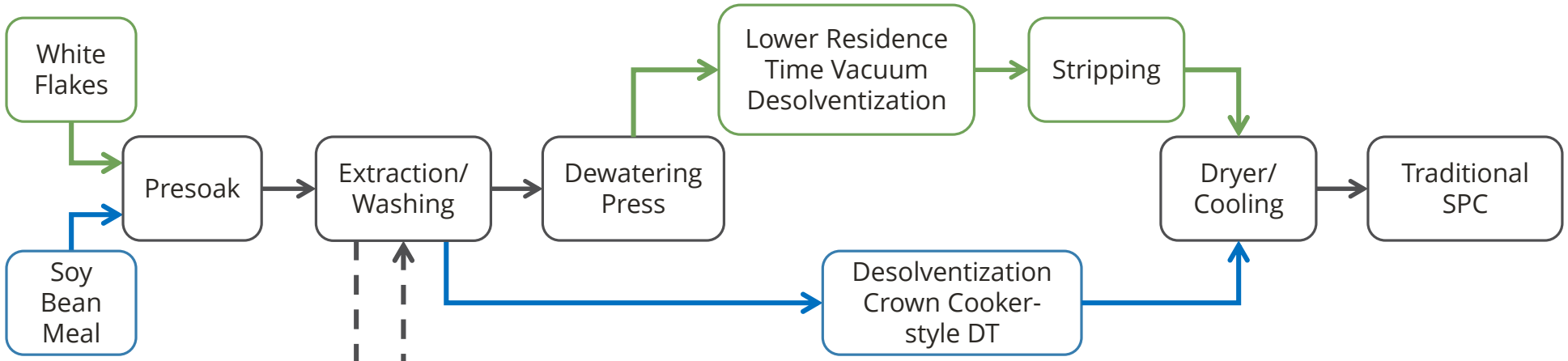


Potential Uses

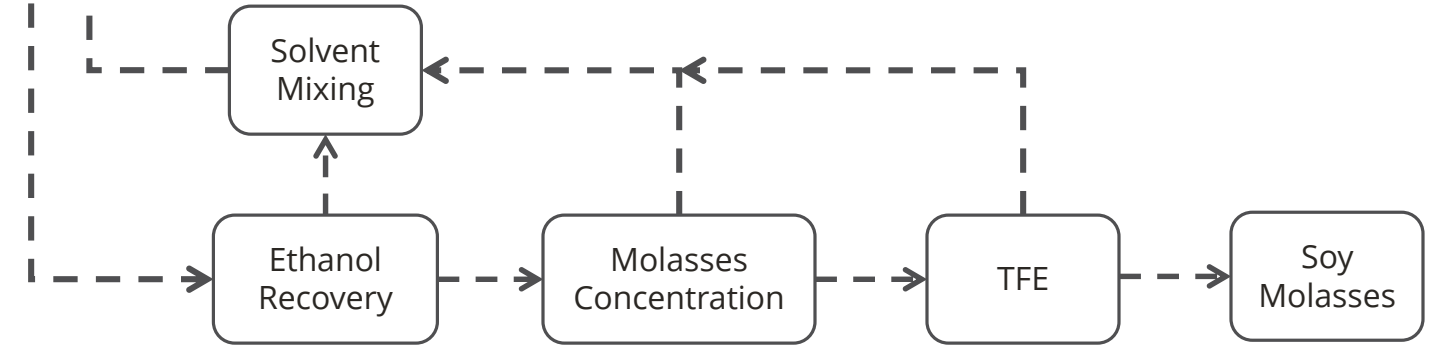
- Liquid Feed for Ruminant Cattle
- Mix with Hulls
- Food Additives
- Source of Sugars for Fermentation
- Add back to rations for Piglets
- Boiler Feed for Heat Recovery (High Calorific Value!)

Basic SPC Flow Diagram

FOOD GRADE - HUMAN CONSUMPTION



AQUA / FEED GRADE



Hayes Hydrous Ethanol Process

Crown SPC Plant

Key Developments

- **Model IV Immersion Extractors** operating on SPC. No Screens, No Pre-Screening or Pumps; designed and commissioned for up to 500 MTPD.
- Model IV Extractors can be **retro-fit into older SPC Plants to maximize yields (run fines)** or reduce Solvent Inventory requirements for Environmentally restricted sites.
- **Latest Vacuum Desolventizing Technologies** to maximize Protein Quality and Color
- **Distillation** designed to maximize uptime with plants exceeding **345 days run-time** per year including time for cleaning
- Expanding to **other oilseeds**

OPEX & Quality - SPC

Key Considerations

- Crown Extraction Plants require no more than **two people per shift** to monitor and control the entire plant
- Zero effluent during production. '**ALL WATER' in the process is reused** without affecting product quality.
- **Minimal ethanol loss** – essentially **all** ethanol is recovered in the process. Recovered ethanol is **clean** and continuously re-used in the process.
- Steam efficiency – Crown's fully integrated plant with numerous steam recovery and economization features provides the highest steam efficiency on the market.

Safe. Scalable. Sustainable

Revolutionary.

With Monarc™, hexane free extraction, the Impossible is now Possible.

Monarc™ Oilseed Processing

Monarc™ Oilseed Processing Technology is a proven, patented alcohol-based process that enables companies to derisk and replace hexane in their current solvent extraction supply chains with ethanol as the solvent, deliver high-value, clean-label ingredients and products (including organic), create an overall safer working environment and meet sustainability goals—all at the scale and economics of current solvent technology.

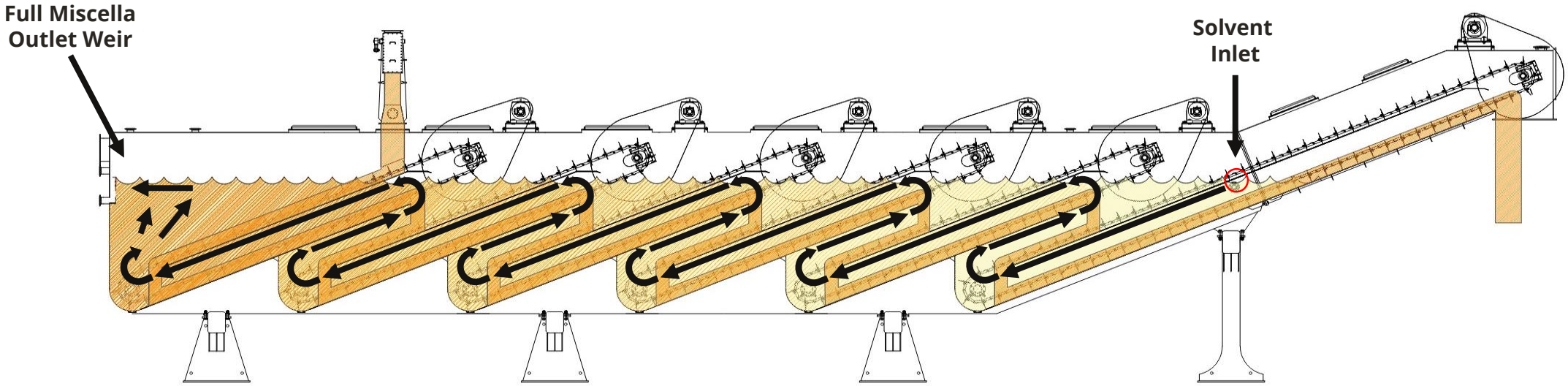



Value Proposition - What are the Features and Benefits?

- **Clean Label**
  - With Ethanol you can could go all the way to **Organic** labelling if set up properly.
    - ➢ Opportunity for customers to margin up, move into new value-added categories.
  - Consumers seeking **transparency in supply chains** gravitate easier to Alcohol…
    - ➢ Opportunity for customers to clean up their supply chains/derisk and strengthen their brands.
- **Safety**
  - Significant Flammability and Explosion limits between the two solvents
    - ➢ Opportunity for increased employe engagement, work environment, and lower safety costs.
- **Environment**
  - Not a Hazardous Air Pollutant
    - ➢ Opportunity for easier permitting, achieving tightening air emissions targets.
- **Product Quality**
  - In most cases, higher protein levels in the product compared to when extracted with hexane (2-10% protein increase)
  - Typically Lighter Color and Blander taste

Crown Model IV Extractor

A well-proven Immersion Extractor utilizing the latest technology

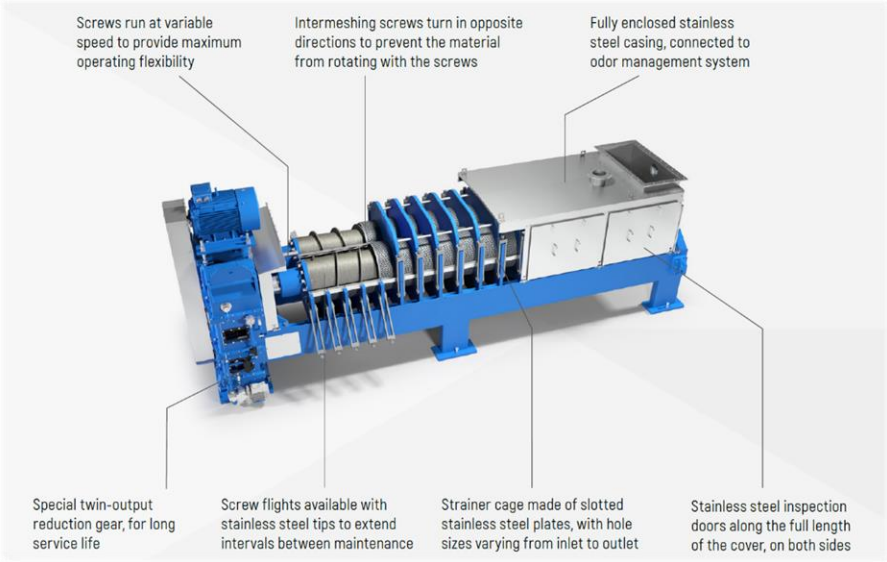


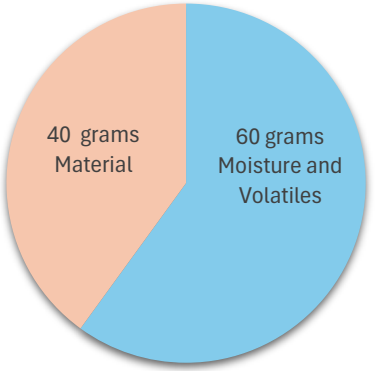
- Counter-current washing solvent “snakes” through the stages
- Low velocity at full miscella outlet reduces fines carryover into distillation
- Solvent flows by gravity without pumps. Significantly lower OPEX than Percolation Extractors

Dewatering Press (Food Grade Only)

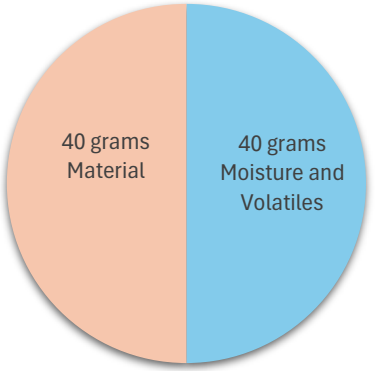
Mechanically removes solvent from the extracted SPC without using heat

- Removes a large portion of solvent from the SPC without using heat, which would degrade the final product
- Reduces SPC moisture and volatiles from ~60% to ~50% (approximately 1/3)
- Reduces load on Vacuum Dryer:
  - Smaller equipment
  - Less steam (€€€, £££, $$$)





60% M&V



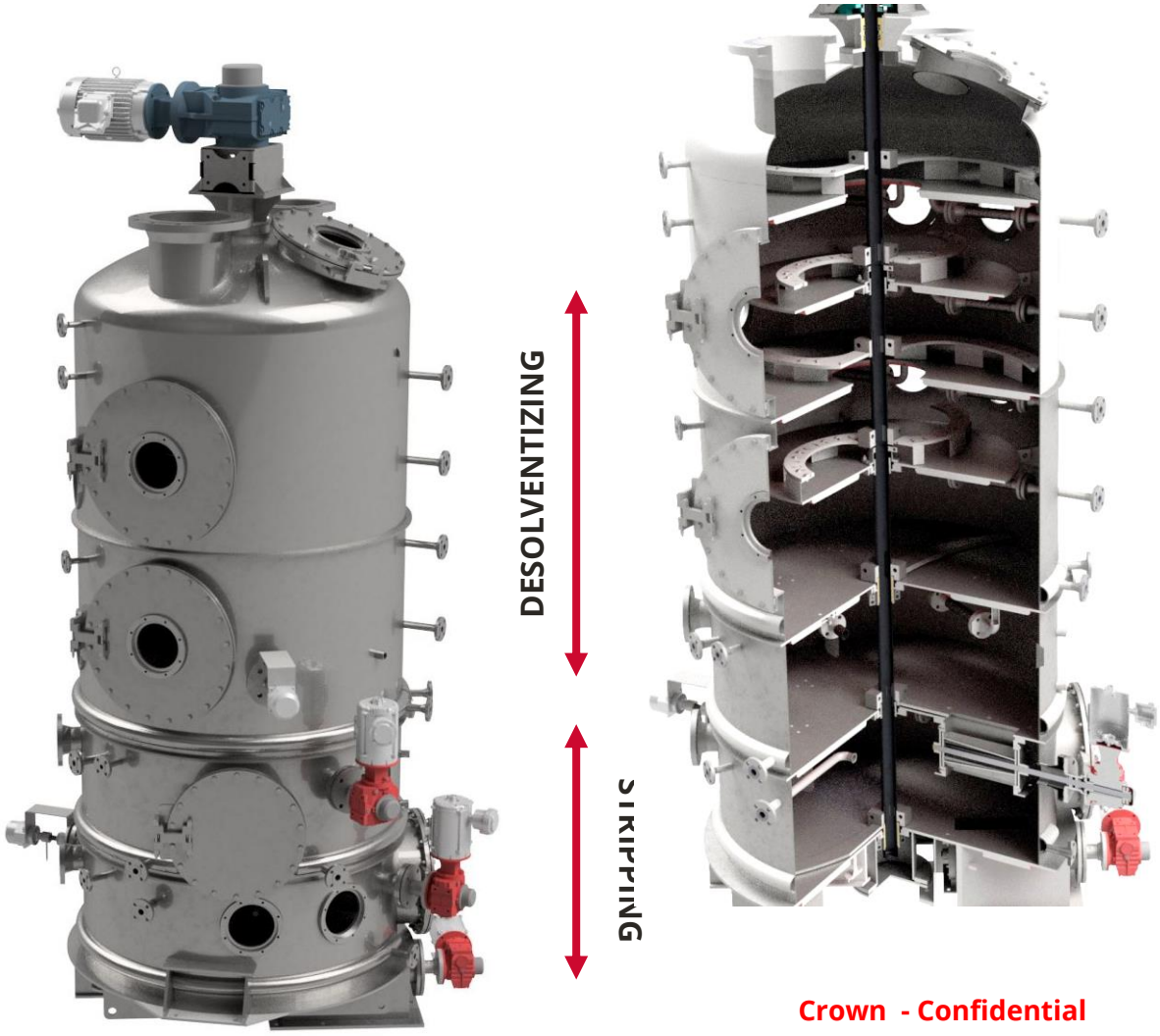
50% M&V

NEW INNOVATION - Crown VDS Technology

(Vacuum Desolventizer Stripper)

ABILITY FOR BOTH MAXIMUM TEMPERATURE / PRESSURE CONTROL

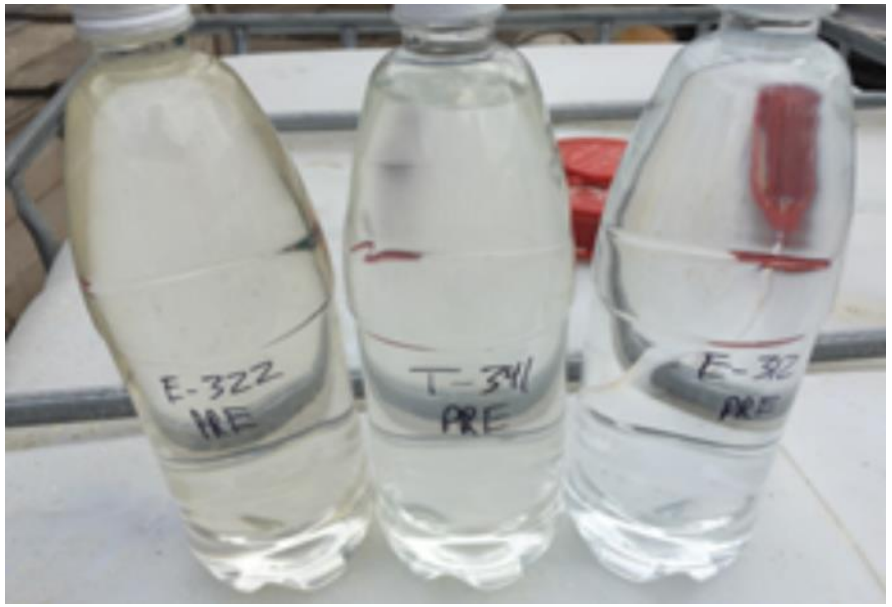
- Operates continuously under **High Vacuum**
- **Precise Control of Residence time** in the Desolventizer (First-in-First-Out)
- **Accurate Temperature Control** to maximize product quality
- Technology used to enhance and improve **Low Temperature White flake Desolventising** Process for Food Grade SPC Plants replacing Downdraft and Flash Stages for improved Efficiency.
- In **Food Grade SPC Applications** VDS can replace Vacuum Dryer Equipment reducing CAPEX\OPEX Costs, Footprint & Maintaining Produce Quality



Distillation

- Primary Objectives are:
  - ✓ Recover Ethanol
  - ✓ Concentrate Molasses
  - ✓ Mix Solvent
- Robust Design – minimize down time for cleaning
- Efficient – multi-effect evaporation, steam economization
- Zero Waste Water during operation

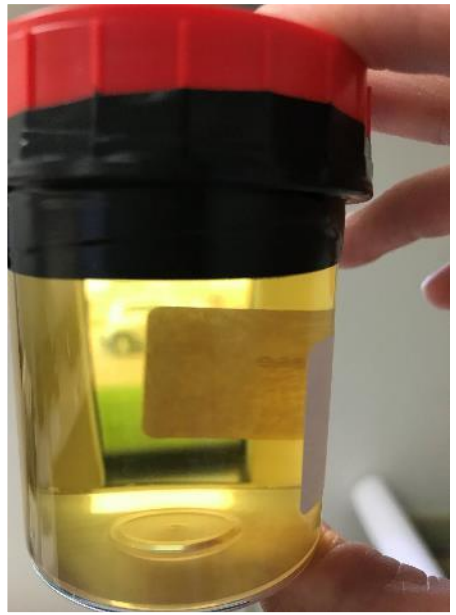
- Minimize ethanol losses
- Clean Recovered Solvent – better taste / blander product
- 24/7 Operation



2010 ---------- 2025

DEVELOPMENT TIMELINE

BEFORE
(Soya)



AFTER
(Soya)

Alternative Proteins Investigated

- Alternative proteins investigated
  - Rapeseed/canola (Seeds similar to canola)
  - Sunflower
  - Whey
  - Hemp
  - Sesame
  - Pongamia
  - Macauba
  - And Many More

Crown Global Headquarters & Innovation Center

Thank You!

Maximize profits.

Minimize downtime.

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