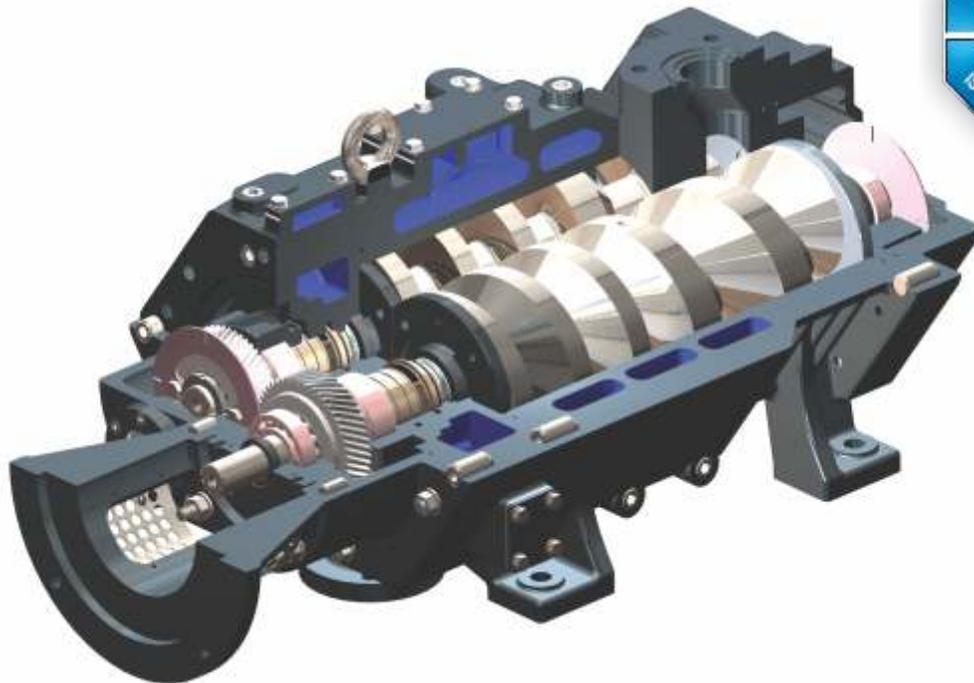


DRY SCREW VACUUM PUMPS



Solution For Waste Water Treatment,
Oil Contamination And Energy Waste Problems
Occurring Using Conventional Vacuum Systems
We Recommend For Oil / Water Free Dry Screw Vacuum System

Oleoresins & Curcumin Extraction From Turmeric Rhizome Under Vacuum

DESCRIPTION

Curcumin is extracted from the dried root of the rhizome *Curcuma Longa* (Turmeric). The process of extraction requires the raw material to be ground into powder, and washed with a suitable solvent that selectively extracts coloring matter.

This process after vacuum distillation of the solvent yields an oleoresin with coloring matter content in the region of 25-35 percent along with volatile oils and other resinous extractives.

The oleoresin so obtained is subjected to further washes using selective solvents that can extract the curcumin pigment from the oleoresin. This process yields a powdered, purified food color, known as curcumin powder, with over 90 percent coloring matter content and very little volatile oil and other dry matter of natural origin.

Especially solvent like Ethyl acetate and hexane are used in this process which is distilled under vacuum state. During distillation, oleoresin wax carry along with solvent in to vacuum pump chamber that cause contamination in vacuum pump sealing fluid, adding extra cost of oil replacement, Sometimes these crude wax deposit inside the pump casing that affects pump performance and increase maintenance work.

Dry vacuum technology work on Dry technology, Neither oil nor water used as sealing fluid, therefore no chance of water or oil contamination, hence save water/oil treatment problems.

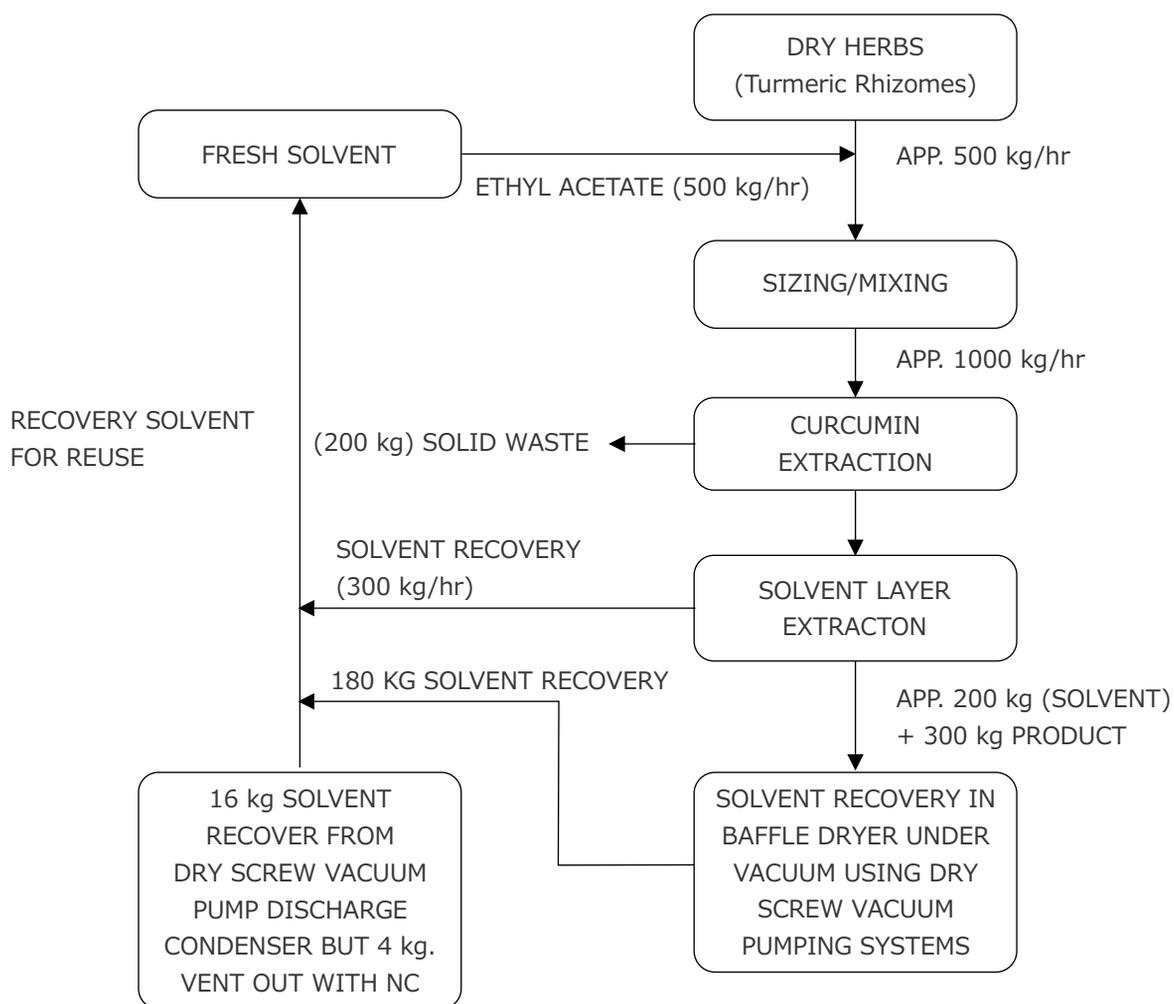
Automatic flushing with suitable solvent is done on regular interval to make the system maintenance free, hence added values into the system.

APPLICABLE SYSTEM COMPARISON

BEFORE IMPROVEMENT	AFTER IMPROVEMENT
Oil Ring Vacuum Pump	Dry Screw Vacuum Pump

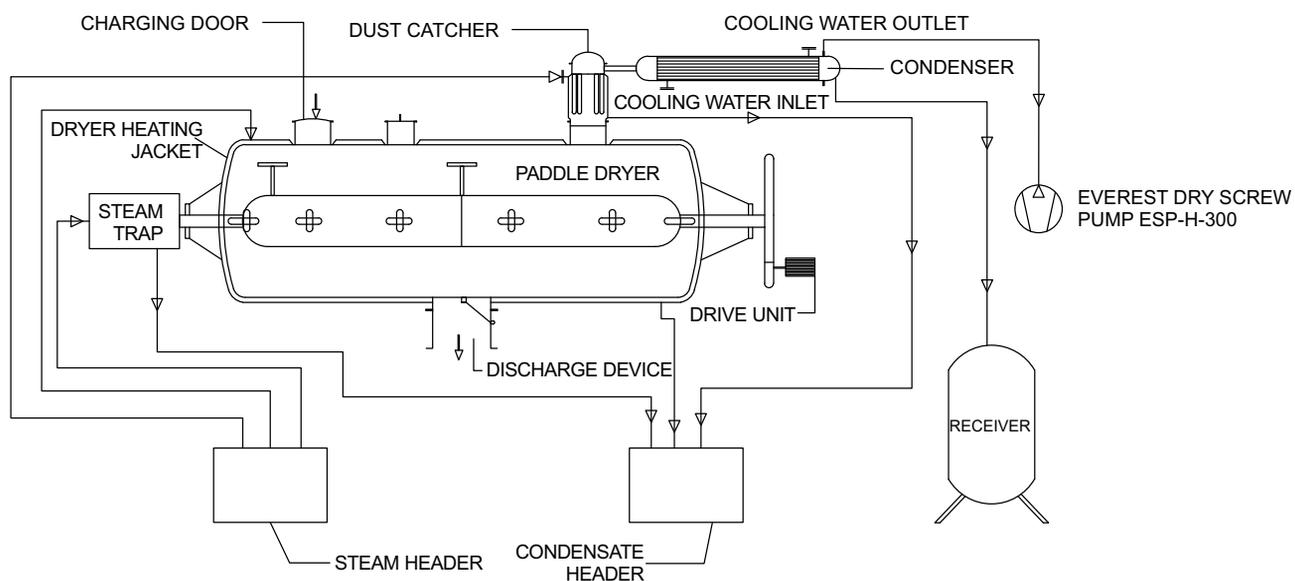


CURCUMIN EXTRACTION PROCESS



Typical curcumin Extraction Process From Turmeric Rhizomes

CURCUMIN EXTRACTION PROCESS



Rotary Baffle Dryer Used For Solvent Recovery

APPLICATION

DESCRIPTION	APPLICABLE PLANT	PROCESS	END USER
Spice extracts, essential oils and natural food colors producing ind.	Solvent Recovery Process	Oleoresin and curcumin extraction from turmeric rhizomes	Plant Lipids

RESULTS

Before Improvement (Wet Type)	After Improvement (Dry Type)
Oil waste due to contamination with process carryover	No contamination of oil as it works on dry technology.
Operation cost is very high	Saves consumables cost that result in lower operational cost.
Unstable vacuum due to contamination of Pump sealing fluid.	Constant vacuum level as no sealing fluid is required.
Vacuum fluctuation increases process operation cycle	Shorten process cycle due to constant vacuum level through out the process.
Mean time between failure (MTBF) is less	MTBF is very much high.
Solvent can't be recovered at the discharge of pump as it mixes with pump sealing fluid.	Solvent recovery can be done at the discharge of pump
	Disired vacuum can be achieved by regulating RPM through VFD
Environment contamination due to oil disposal frequently.	Saves environment as no need to replace oil frequently



OPERATION COST COMPARISON

Description		Before Improvement (Rotary vane vacuum pump)	After Improvement (Everest Dry Vacuum Pump)
Basic Specification		Process Cycle : Continuous (100-500kg/hr) Vacuum : 2-3 torr Vacuum Pump : Oil ring Pump	Process Cycle : Continuous (100-500kg/hr) Vacuum : 1 torr Vacuum Pump : Dry Screw vacuum Pump
Consumables	Consumption	Oil replacement required in 10 days due to contamination of oil with process carryover, Oil Cost - INR 15600 /month, Oil Filter - INR 1500 /month Exhaust Filter - INR 55000 /yr	Gear oil replacement after 1000 hrs. Cost - INR 1500 /month
	Yearly	INR 260200	INR 18000
Cooling Water	Consumption	None	Flow rate : 1 m ³ /hr
	Yearly		NO COST RECYCLE
Power	Consumption	6.7 KW * 20(hr/day) * 250 Days : 33500 KW	6 KW * 20(hr/day) * 250 Days : 30000 KW
	Yearly	INR 167500.	INR 150000
Nitrogen	Consumption	None	Flow Rate : 0.3 m ³ /hr Per day cost (20 hrs) : INR 240 N ₂ Cost : INR 40 /m ³
	Yearly		INR 60000
Solvent Recovery	Recovery	None	Ethyl acetate : 0.5 liter/hr Per day : 10 liter/day 250 Days : 2500 liter Ethyl acetate Cost : INR 50 /liter
	Yearly		INR 125000
Service and Maintenance	Yearly	INR 20000	INR 40000
Total Cost	Yearly	INR 447700	INR 143000
Direct Cost Saving	Yearly	INR 304700	
Indirect Cost Saving		Pollution and Water Control	



Everest Blower Systems Pvt. Ltd. is an ISO 9001:2015 certified manufacturer of Mechanical Vacuum Boosters, Dry Screw Vacuum Pumps, Industrial Vacuum Systems & Roots Type Mechanical Vapour Recompressors. Everest Group was established in 1980 & is a pioneer in design and manufacturing of Positive Displacement Blowers with over 1,50,000 installation till date. Blowers are manufactured under name and style of Everest Blowers Pvt. Ltd. - Pressure Division of Everest Group. Everest Blower Systems Pvt. Ltd. is a sister concern of Everest Blowers Pvt. Ltd. and designated as Vacuum Division of Everest Group. EBSPL was established in 2007 and is your one stop shop of all solutions related to vacuum.

EBSPL is established in HSIIDC Industrial Area at Bahadurgarh, Haryana, India spread over 40,000 Sq. Ft. and employees over 140 people including 40 graduate engineers. Facilities include in-house design & development, manufacturing, assembly & testing of high end vacuum pumps and systems. This facility also houses a DSIR approved R&D center which has won national award for energy efficient vacuum pumps.



For Energy Efficient Pumps and Research & Development



We don't just offer Blowers, Boosters and Systems we offer SOLUTIONS !!

Our technology is so flexible, we can custom manufacture **Special Blowers, Vacuum Pumps & Systems** by alloying and cross linking diverse designs to suit individual requirements and import substitutes.

