

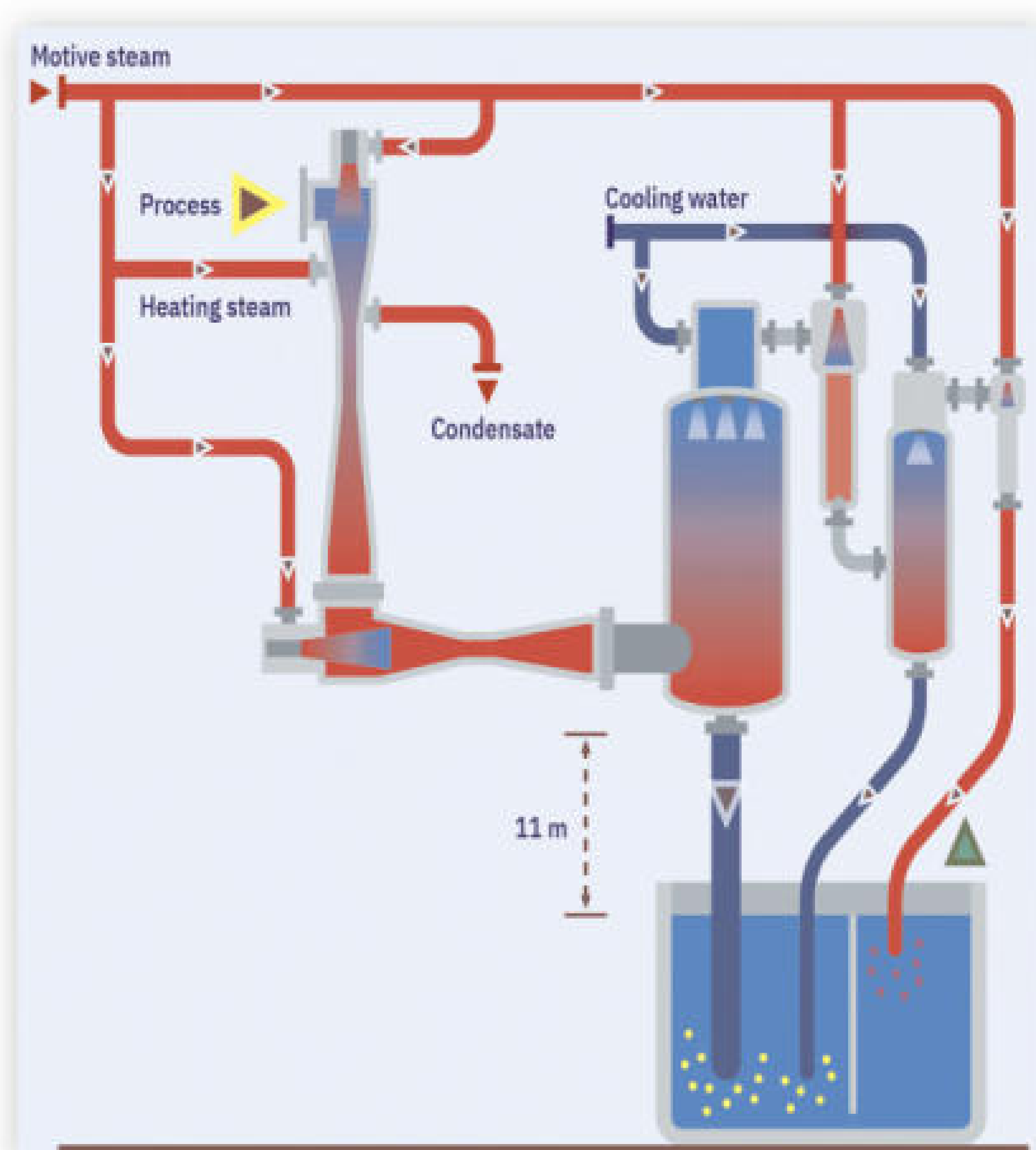
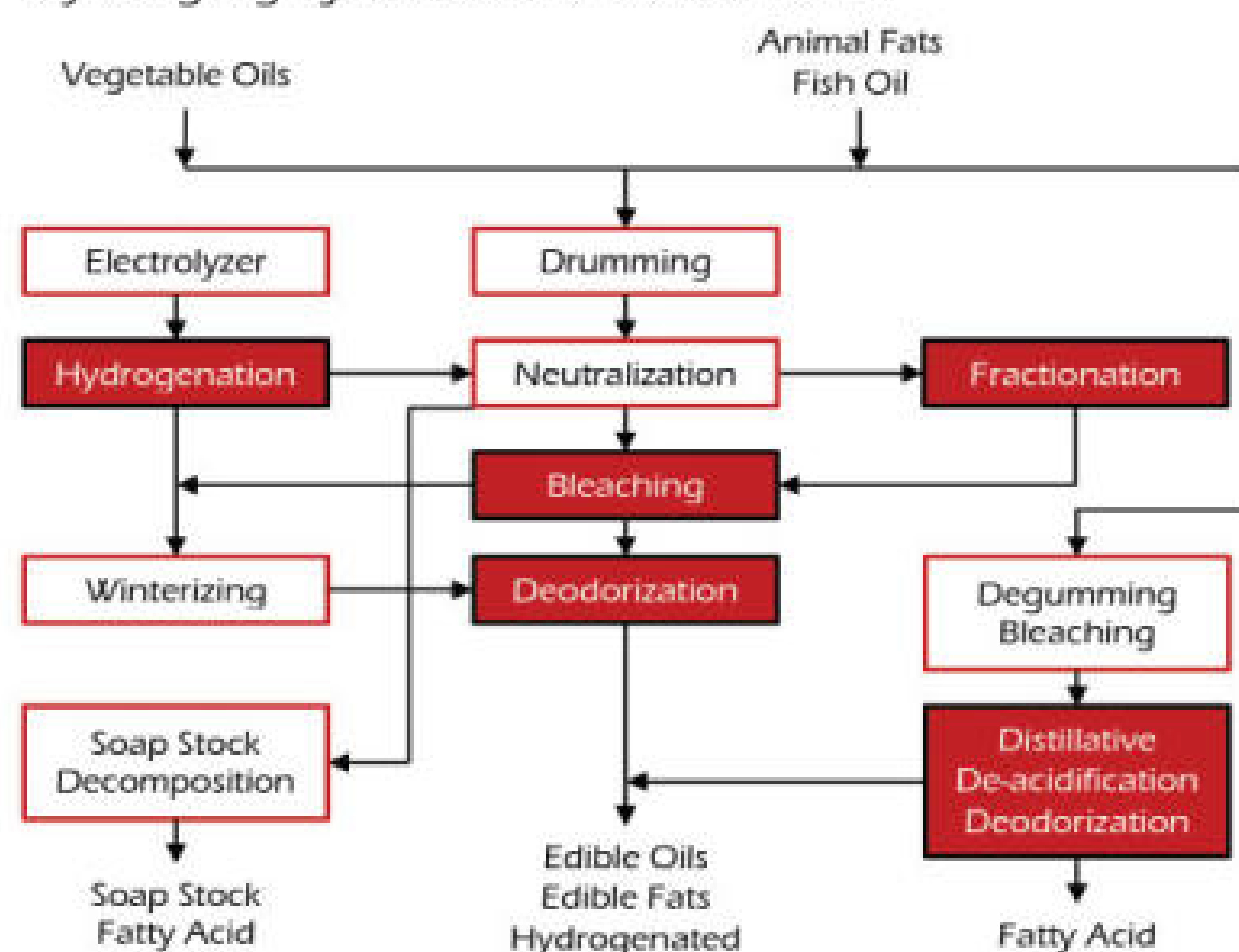
Vacuum Systems for Edible Oil Plants



Vacuum is necessary during various steps of vegetable oil processing. Out of all vacuum equipment, ejector vacuum system has established the superiority and versatility of their use as compared to the mechanical vacuum pump. The most outstanding advantage of the steam jet ejector is the total absence of moving parts, eliminating mechanical breakdown or the need for adjustment or lubrication. In addition, steam jet vacuum systems are high velocity meaning they are capable of handling large volumes under vacuum.

Vegetable Oil Processing

The picture below shows various process stages in the processing of edible oil. The red fields show the stages of the process which are carried out under vacuum. These stages require different levels of vacuum. Lower vacuum pressures can be obtained by staging ejectors and condensers.



Vacuum Systems Pressure Range

Model	Steam	Suction gas			Cooling Water			Dimension	
	Pressure (barg)	Consumption (kg/hr)	Sparging steam (kg/hr)	Pressure (mbar)	Vol. Flow (m3/hr)	T _{in} (°C)	T _{out} (°C)	L × W × H (m)	Weight (ton)
DVP-15	7	246	15	2.6	13.1	30	38	2.7 × 1.4 × 1.5	0.3
DVP-30	7	492	30	2.6	26.2	30	38	3.8 × 2 × 2.1	0.7
DVP-50	7	820	50	2.6	43.7	30	38	4.9 × 2.6 × 2.7	1.1
DVP-70	7	1148	70	2.6	61.2	30	38	5.8 × 3 × 3.1	1.6
DVP-100	7	1639	100	2.6	87.4	30	38	7 × 3.6 × 3.7	2.3
DVP-150	7	2459	150	2.6	131.1	30	38	8.5 × 4.4 × 4.6	3.4
DVP-200	7	3279	200	2.6	174.9	30	38	11.2 × 5.8 × 6	6.0
DVP-250	7	4098	250	2.6	218.6	30	38	12.5 × 6.5 × 6.7	7.5
DVP-300	7	4918	300	2.6	262.3	30	38	13.7 × 7.1 × 7.4	8.9
DVP-350	7	5738	350	2.6	306.0	30	38	14.8 × 7.7 × 8	10.4

Vacuum Package for Deodorization

A general schematic of a 4-stage ejector vacuum system can be seen in the picture above. This vacuum system is usually recommended for continuous deodorizers where a suction pressure of up to 2 mbara is required. However, nowadays physical refining of beans like Soya needs an even lower vacuum.

Lower suction pressure can be obtained by staging the ejectors. The number of stages of ejectors is depended on the required suction pressure. As ejector stages increase in number in a vacuum system, the amount of steam in the intake of the next stage will increase. Therefore, a combination of condenser and ejectors is used to reach optimal steam consumption and achieve lower vacuum.

