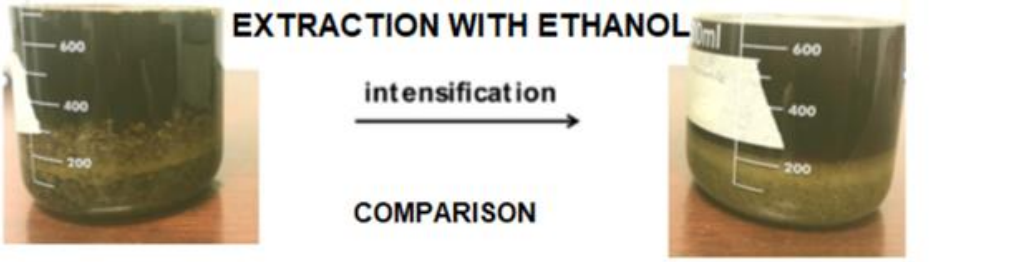
LeMar INDUSTRIES, Inc.

ULTRASONIC EXTRACTION PRESENTATION

Ultrasonic-assisted extraction is an effective and rapid technique for extracting cannabis concentrates. A vibrating ultrasonic probe immersed in a liquid will transmit alternating high- and low-pressure waves. By disrupting the cell in this manner, solvent penetration is enhanced, accelerating the release of bioactive compounds and other components from the biological matrix into the extraction medium.

The ultrasound intensity is crucial when it comes to the extraction of botanical compounds such as high-quality CBD oil from cannabis. For example, if ethanol is used in chilled conditions, all the extracted products safe the original highest quality.



TRADITIONAL	ULTRASONIC
Low Extraction Yield	20% Higher Extraction Yield
Heavy Wax	Broken Wax Easy to Separate
High Ethanol to Biomass Ratio	Low Energy
High Energy	2° Reduction of Ethanol Used
High Capital Cost	Reduction in Energy used
High OPEX	Higher Safety
	Lower Capital Cost
	Lower OPEX

LeMar Offers Ultrasonic extractors can be precisely tuned to optimal extraction conditions – extracting the highest amount and quality from your raw material (cannabis leaves, buds, stems etc.). The ultrasound intensity is crucial when it comes to the extraction of botanical compounds such as high-quality CBD oil from cannabis. If ethanol is used in chilled conditions, all the extracted products safe the original highest quality.

BENEFITS OF ULTRASOUND-ASSISTED EXTRACTION

> Low cost

> High yields

> Wide range of solvent

> Rapid, safe and efficient

> Low energy consumption

> Neutralize bacteria, mold and fungi from extracted material

> Non-thermal - terpenes and cannabinoids are not denatured

> Increase solute extraction in a shorter time and at lower temperature

> Reduce thermal degradation of sensitive aromas and flavors.

EQUIPMENT FOR ULTRASOUND-ASSISTED EXTRACTION

LeMar offer equipment for any size of production: from laboratory units to industrial large-scale production.

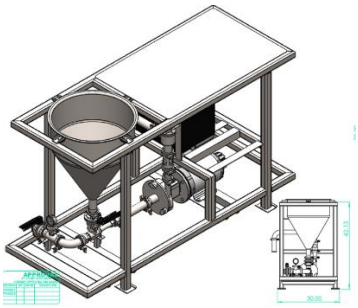
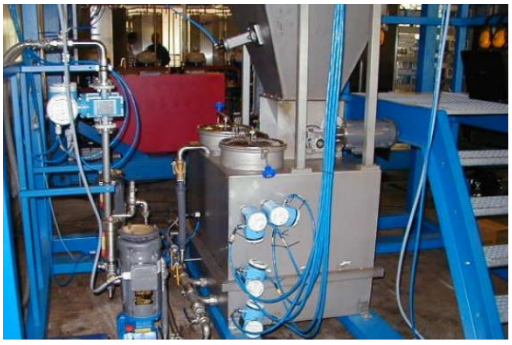
A.  B.  C. 

Fig.1. A – Laboratory Unit, B. – Small Production, C – Large-Scale Production Complex.

The volume of material that can be processed effectively with an ultrasonic processor is dependent on the power rating of the ultrasonic generator (power supply), and the diameter of the probe used with that power supply – the higher the rating of the power supply and the larger the diameter of the probe, the larger the volume of material which can be processed.

For batches between 10ml and 4 liters, LeMar offer 500-watt Model ISP1200 with a solid probe.

For larger volumes – up to 100 liters/hour on in-flow process, LeMar offers 1500-watt flow-through system Model ISP1300.