



EXTRACTION LABS

A MODULAR APPROACH

NOVEMBER 2020



WHO IS LINKED EQUIPMENT?

Whether or not you have heard of extraction labs, Linked Equipment is here to bring you up to date on just what it entails. We will walk you through who, what, how, how much, and why you should get involved in the creation and use of an extraction lab through Linked Equipment.

Most importantly, we will explain the expertise behind all Linked Equipment labs and why we are your one-stop shop to simplify and streamline the process of extracting hemp as a part of your business. Linked Equipment is a reconstructed containers company dedicated to the design, engineering, and manufacturing of Intermodal Steel Building Units (ISBUs).

When we began as a company over 10 years ago, we specialized on creating buildings out of used shipping containers. We believe in the reuse of materials and sustainability is at the core of our cause. Shipping containers provide an excellent resource for manufacturing new structures, whether building an office, a storage facility, a bathroom, or homeless shelter.

Our experience increased and our versatility broadened as our business expanded. Four years ago, we stepped into the world of hemp production and have not looked back since.

REAL-WORLD EXPERIENCE

Designing hemp extraction labs entirely from shipping containers has provided a world of opportunity for us and for our customers. We are now well-versed in the unique needs and problems of creating an extraction lab, and have a team of experts who design, create, and manufacture state-of-the-art hemp extraction labs that are regulation compliant and industry focused.

The Linked Equipment team works with multiple equipment manufacturers in order to recommend the best equipment based on the product you are trying to extract. With this information, we design the best configuration possible for your required throughput, all built into our final product. We build your extraction lab based on the determined specifications and deliver to you a ready-to-go turnkey solution. Simply tell us what product you are creating, and we will work with our expert engineers to deliver you a complete lab that is ready to use.



THERE'S A BIG DIFFERENCE BETWEEN ASSEMBLYING OTHER PEOPLES WORK, AND BUILDING IT FROM SCRATCH YOURSELF.

The Linked Equipment team works with multiple equipment manufacturers in order to recommend the best equipment based on the product you are trying to extract. With this information, we design the best configuration possible for your required throughput, all built into our final product.

We build your extraction lab based on the determined specifications and deliver to you a ready-to-go turnkey solution. Simply tell us what product you are creating, and we will work with our expert engineers to deliver you a complete lab that is ready to use.

Our specialty is the personalized creation of well-designed ISBUs that you can use for a hemp extraction lab. Each type of extraction lab comes with its own specifications, capabilities, and costs.

Understanding the differences between labs and what goes into the various extraction process capabilities is the first step to assessing your needs.



EXTRACTION LAB TYPES

Ethanol Extraction Labs

Using ethanol in the process of hemp extraction requires a specific set of precautions. Each of our ethanol extraction labs is built to house the best available equipment to create a high-quality product using approved and safe procedures. The interlocking electrical and emergency systems, ignition source controls, gas detection systems, and ventilation for dilution as well as extraction fan systems will give you the perfect environment for proper ethanol extraction.

Hydrocarbon Extraction Labs

Hydrocarbon is one potential method used to extract cannabinoids from the cannabis plant. While a highly effective method, hydrocarbon extraction can be dangerous when not done properly with adequate equipment. Our hydrocarbon labs are designed with state-of-the-art tools using the best quality technology. These customizable and portable lab designs have all undergone engineering review to help you ensure that your hydrocarbon extraction lab is safe and up to code.

Hemp Extraction Labs

Linked Equipment hemp extraction labs are economical, safe, and secure. Each ISBU is specially designed to be used right away and comes with all the necessary features for proper hemp extraction.

These modules come with man access doors, static-free internal flooring, flame-resistance walls, safety-checked electrical components, custom heating and cooling systems, evacuation van systems, eye wash stations, alarms triggered during emergency situations, security doors, automatic transfer switch, and more.

Industrial Strength Extraction Labs

Each of our extraction lab set ups are designed to meet all industry standards and requirements. Our portable modules are capable of processing up to 3000lbs of biomass in a 10-hour shift using only a 1500 sq. ft. footprint.

You cannot find a more complete and efficient extraction lab available. Our expert team has worked to perfect the way our lab can handle important chemical processes meeting all industry standards and state regulations, making safety the top priority.

Mobile Hemp Extraction Labs

All mobile hemp extraction labs are equipped with Capna Systems ethanol extraction system creating a fully turnkey modular extraction lab.

Fitting easily into two modules, the Capna Design Process is specifically created to be efficient and scalable. You can begin extracting the day your module is delivered, safely and securely.











A BEST EXTRACTION PROCESS FOR EVERY PRODUCT

WE BUILD THEM ALL

There is an optimal extraction process for whatever product you are planning to produce. Linked Equipment will provide a turnkey solution by working with the right manufacturer for your success! We put everything where it goes and deliver your lab ready to start producing.

We build custom labs and pods according to your unique requirements that are cost-effective, mobile, custom, and turnkey.

	Products Described & Cost-effective Extraction Processes							
								
	Live Resin	Canna Oil	Extracts	Edible Oils	Distillate	Infused Products	Terpenes	Bulk Hemp Extract
Process	Live resin is a cannabis concentrate that gets its name from the freshness of the cannabis plant from which it's made.	Oil based vape pens: THC/CBD	Concentrate Vape Pens: Shatter, Crumble, Budder, Wax	Cannabis cooking oil is NOT the same thing as cannabis or hash oil. In its simplest form, it's made by combining marijuana flower or cannabis oil with a cooking oil.	Distillates are cannabis extracts that have been purified and processed to separate the cannabinoids into precise amounts made from winterized, decarboxylated, and then distilled cannabis extracts.	A cannabis infusion is the end result of the process of infusing another substance, usually an oil, with the flavor and aroma of cannabis.	Terpenes are aromatic molecules responsible for the unique aroma of each cannabis cultivar.	Hemp is a term for the overall non-psychoactive parts of the Cannabis Plant and any products produced from those parts of the plant as long as that material tests out to be below .03% THC, it is considered industrial hemp.
Co2	Poor	Good	Okay		Good	Okay	Okay	
Ethanol	Okay	Good	Poor	Okay	Okay	Good	Good	Good
Hydrocarbon (Butane / Propane)		Good	Good	Poor	Okay	Poor	Good	Poor
R143A	?	Good	?	?	?	?	?	
Cold Press	Good			Good?				

Regardless of which process you decide to use, Linked Equipment works with premier equipment providers for each type of process. We work with them to design and prepare the best possible extraction labs based on your requirements...not thiers.

Capna Systems for Ethanol extraction solutions: <https://capnasystems.com>

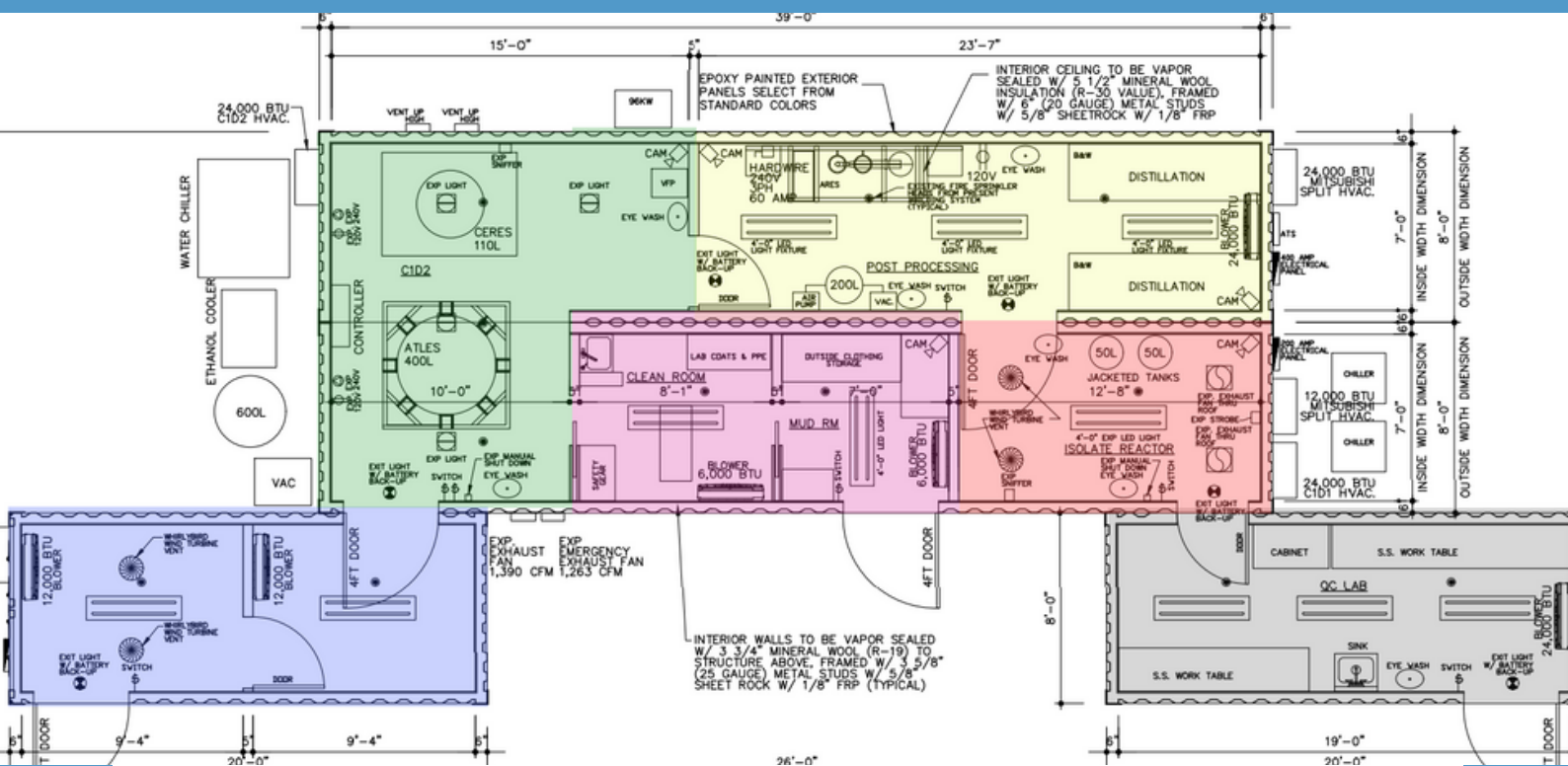
Extraktlab for CO2 systems: <https://extraktlab.com>

Precision for Hydrocarbon: <https://precisionextraction.com>

Go Pure Pressure for Cold Water Extraction: <https://gopurepressure.com>

PURE5 TM with their superior Liquefied Gas Extraction: <http://thepure5.com>

LINKED METHODOLOGY



HOW WE DO

Just as you take your car to a mechanic when you have an oil leak, defer to an accountant to make financial decisions, or follow the guidance of the professor in school, working with hemp extraction labs is best done when you work with someone who has expertise in the field. Having Linked Equipment by your side means having someone who knows what they are doing throughout the lab building process.

When building a hemp extraction lab, you must keep safety, efficiency, and compliance as priorities. With the growing popularity of hemp supply as cannabis is legalized around the country,

Linked Equipment makes sure to stay up to date on state and local regulations regarding extraction kitchens, grow pods, vaults, clean rooms, and kitchens.

A number of solvents are used in the process of extraction, creating a potentially dangerous environment without proper equipment and care. Linked Equipment designs each hemp extraction lab to code and uses builds aimed at optimizing safety.

Our extraction labs are able to be mass produced, increase speed to market, are customizable and integrated, portable, and created with expert engineering.

MODULAR DESIGN

The shipping containers we use can be connected or stacked in order to optimize available space. Once we have a sense of your needs, we can create multiple design options for you to choose from based on your preferences. Our automation systems allow for complete integration between containers and offsite access.

Each hemp extraction lab we create is customizable by size, quantity, layout, electrical design, storage, and more. Our container labs allow you to get going with extraction and manufacturing much faster than your competitors, getting your product on the market without the normal delay caused by standard lab construction.

Our team is made up of a range of experts who work together to create the ideal extraction lab set up. Engineers, farmers, chefs, and extraction experts collaborate to design automated, safe turnkey facilities. Every system we use is professionally engineered and approved by a 3rd party engineering review, stamped as accepted for legal regulations regarding mechanical, structural, electrical, and fire standards.

Finally, every one of our hemp extraction lab container designs are fully portable. Should you need to relocate or just reorganize your business space, you can easily unbolt and move your container lab.





WHY MODULAR?

- Start growing in weeks vs. months
- Less expensive (lower TCO)
- Rugged right off the line
- Tax Advantage
 - Amortized over 7 yrs. vs. 30
- Durable, Rugged and Weatherproof
- Safe and Certified
- Controlled environment
- More Secure
- Environmentally Sustainable
- Enhanced security and access
- Fully equipped turnkey solutions



WHY LINKED?

- Architected, Engineered, & Built by Linked Equipment in the US
- Field Tested and Approved Prepackaged Solutions
- Individual Systems & Component Sourcing

Turnkey portable production facilities for your entire operation

- Modular Grow Pods (ready to go)
- Mother / Clone Rooms
- Drying Rooms
- Extraction Labs (C1D1 & C1 D2)
- Commercial Kitchens (on grid or off)
- Secure Vaults
- Restrooms, Showers, Offices
- Cold Rooms and Freezers
- Storage

**HAVING LINKED
EQUIPMENT BY YOUR
SIDE MEANS HAVING
SOMEONE WHO KNOWS
WHAT THEY ARE DOING
THROUGHOUT THE
ENTIRE LAB BUILDING
PROCESS**

HOW MUCH?

When it comes to how much it will cost for your extraction lab, the simple answer is that it depends on what you want to produce. We will help you decide which equipment to use and install it.

There are a number of factors that go into the final price including the specific extraction procedures you plan to use, the required equipment, the expected safety measures, and local regulations. However, when you work with Linked Equipment,

It is important to us to speak with you about costs up front so that you know what you are paying for, what you will get, and how much it will take to invest.

Linked Equipment will never hit you with surprise charges, ensuring that our team and your company are all in agreement. Pricing will vary over quite a range because of how much the final fees depend on what equipment you want and need inside your hemp extraction lab.



Costs will depend on whether you are looking for a startup extraction lab, a scalable extraction lab, or a more customized extraction lab.

Included in our costs are the benefits of having a team of experts design and build your lab for you. The Linked Equipment team knows precisely what goes into the creation of an extraction lab including safety equipment, code requirements, and top of the line extraction technology. We source any necessary equipment, design each lab aspect, and build you a turnkey, ready-to-use hemp extraction lab.

The two major factors to consider are what extraction processes you plan to use and what your final extracted products will be in terms of type and volume. In general, the higher the output you desire, and the more equipment you plan to have, the higher the costs will be for your hemp extraction lab. The whole scalable, modular, and integrated nature of your desired lab will alter your up-front costs.

EXTRACTION TYPES AND COSTS

CO2 Extraction

In the process of CO2 extraction, carbon dioxide is pressurized in metal tanks until it becomes a supercritical fluid. The fluid is used to pull out the desirable compounds from the cannabis plant and then separated out, leaving only the desired concentrates. The cost when using CO2 is initially high. However, the output eventually offsets those initial costs, especially for larger operations. In general, CO2 extraction will have the lowest potential daily operating costs. Additionally, when using CO2 for extraction you can vary factors such as time, temperature, and pressure to create different products. Initial costs may be around or above \$100,000.

Hydrocarbon Extraction

In the process of hydrocarbon extraction, butane or propane is used as a solvent that passes through the raw cannabis plant. This process collects the cannabinoids and terpenes. Finally, the solvent with the essential oils is then heated up in order to evaporate off the butane or propane, leaving behind the extract. Hydrocarbon extraction is generally less expensive initially when buying equipment. However, due to the highly combustible nature of the chemicals used, costs get much higher when setting up the facilities properly. If planning to extract using hydrocarbon extraction, necessary equipment for proper setup can be anywhere from \$500,000 to \$5 million factoring in desired output.

Ethanol Extraction

In the process of ethanol extraction, raw cannabis is soaked in ethanol, which pulls trichomes into the solvent. The resulting liquid is then filtered, and the alcohol purged from the extracted material. There will be a large range in initial and ongoing costs when using ethanol extraction depending on how big your operation is and what capabilities you are looking to have. The cannabis products you are able to produce using the ethanol extraction method are a bit more limited than CO2 extraction. If planning to distill with ethanol, the needed equipment can be anywhere from \$500,000 to \$5 million depending on the required output and your desired equipment.

Cold Press

In the process of cold press hemp extraction, no additional solvents are used to extract CBD or THC from the cannabis plant. Instead, the cannabis plant matter is put through a high-tech cold press, resulting in pure output. The extremely low temperature combined with the high level of pressure makes a reliable and chemical-free way to extract. This extraction will contain more actual elements from the original plant than compared to other extraction methods and so looks and tastes a bit different. A cold press typically runs from \$30,000 to \$75,000 for the needed equipment. Generally, a cold press hemp extraction lab can be built for under \$100,000 after accounting for other requirements.

EXTRACTION TYPES

R143A

In the process of using R143A as a solvent for hemp extraction, this solution is passed through the cannabis matter and eventually removed leaving one of the purest extractions possible. R143A extraction is possibly the safest and most effective method of hemp extraction. The cost of the R143A system is comparable to hydrocarbon extraction. However, the solvent used is fully recyclable and the system uses an extremely low amount of energy making the cost of extraction with R134 much lower.

R143A is nonflammable and nonexplosive, therefore completing this process of extraction will come with fewer costs associated with higher level safety measures.

Chromo and FFE

Chromatography is a purification and analytical technique used in laboratories around the world for a myriad of applications. Chromatography is a means of separating and purifying all chemical compounds and utilizing their variance in properties.

Liquid, column, or flash chromatography is an effective and efficient method to purify a substance from a complex mixture (a natural extract or chemical reaction) by passing it through silicon dioxide (silica), which is an inert solid. Because of different degrees of attraction or stickiness to the silica, the individual compounds in the mixture will pass through it at independent rates.

Fully equipped chromatography labs feature ignitions controls, gas detection systems, ventilation for both dilution and extraction fan systems, and interlocked electrical and emergency systems..

Regardless of which process you decide to use, Linked Equipment works with premier equipment providers for each type of process. We work with them to design and prepare the best possible extraction labs based on your requirements.

Capna Systems for Ethanol extraction solutions: <https://capnasystems.com>

Extraktlab for CO2 systems: <https://extraktlab.com>

Precision for Hydrocarbon: <https://precisionextraction.com>

Go Pure Pressure for Cold Water Extraction: <https://gopurepressure.com>

PURE5 for Liquefied Gas Extraction: <http://thepure5.com>

GETTING STARTED

By choosing Linked Equipment, you are choosing our complete team make up of industrial engineers, support representative, electricians, mechanics, and others. We have built up incredibly specific and flexible understanding of the business of hemp & canna extraction. Our professionally engineered containers are fully customizable. Additionally, they are built to be portable and integrated. As your business grows, so can your facilities with minimal adjustment from you.

We provide you with the perfect set up for increased speed to market, room to grow for mass production, and incredible engineering capabilities. We worry about all mechanical, structural, electrical, and fire standards.

Having Linked Equipment by your side means having someone who knows what they are doing throughout the lab building process. The burdens associated with traditional extraction sites like construction costs, improper regulation codes, and inflexibility in design are a problem of the past when you work with us at Linked Equipment. **Call us today for a free quote: (602) 314-6020**

FULL-SERVICE PROCESS

At Linked Enterprises, we specialize in providing all-in-one solutions to build your external facilities and expand your business. Our team is ready to help with a full custom design and implementation of your specific building needs.

01.

GET IN TOUCH

Contact the Linked team. You'll receive a free consultation to assess your equipment needs. From there, we will identify your specific requirements and advise how best to build your custom unit. Our team will provide a quote with drawings to map out.

02.

DELIVERY

Your dedicated Linked service team will deliver your custom unit, equipped with all of the requested specs and technology from your on-site visit. Our team will walk you through the mechanics of the unit and address any questions.

03.

SUPPORT

Our team is available and ready to address any service needs as you get started with your building. We Aim to please!

LET'S TALK!



Phone: 602.314.6020 || **Email:** info@linkedequipment.com

Address: 3454 E Illini Street, Phoenix AZ 85040

Online: www.linkedequipment.com