



Supercritical CO2 Extraction Machines: From Botanical Oils to Urban Gold Mining

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<https://www.infinityturbine.com/sco2-for-botanical-extraction-to-gold-mining-by-infinity-turbine.html>

Discover how supercritical CO2 extraction machines can produce high purity botanical oils and recover precious metals like gold from electronic waste. Learn key applications, benefits, and new markets you can target in your marketing.



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PDF Version of the webpage (maximum 10 pages)

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1. Introduction: One machine, many revenue streams

A supercritical CO2 extraction machine is far more than a hops oil extractor or a flavor extractor. At its core, it is a precision solvent system that uses CO2 above its critical point (around 31 degrees Celsius and 73 bar) to behave like a gas and a liquid at the same time.

This gives you:

- 1. Tunable solvency by adjusting pressure and temperature.
- 2. Clean, residue free extraction with no flammable organic solvents.
- 3. Reusable CO2, reducing operating costs and environmental impact.

For marketing, this means you can present your machine not as a one trick tool, but as a platform that:

- Produces high value botanical oils and extracts.
- Recovers gold and other metals from electronic waste as urban mining.
- Handles specialty extractions for food, cosmetics, pharmaceuticals, and materials labs.

Below we break down key uses and how to position them.

2. Core application 1: Botanical oils and plant extracts

Supercritical CO2 is widely used for extracting compounds from plants because it can be tuned to behave like a solvent for:

- Essential oils
- Lipids and waxes
- Flavors and fragrances
- Terpenes

2.1 Marketing for botanical extraction

Clean solvents

CO2 is non flammable, non toxic, and leaves no solvent residue in the final oil. It simply evaporates when pressure is released.

Gentle on botanicals

Low temperature operation preserves delicate aromas, flavors, and bioactive compounds better than high temperature steam or aggressive solvents.

Customizable extracts

By adjusting pressure and temperature, you can target different fractions: light aroma compounds, heavier waxes, or full spectrum extracts.

Applications:

- 1. Essential oils for aromatherapy and wellness products.
- 2. Natural flavor extracts for beverages and foods.
- 3. Botanical ingredients for cosmetics and skincare (lavender, chamomile, calendula, etc.).
- 4. Hemp and terpenes.

Clean label extraction solution for brands that want solvent free, premium grade natural ingredients.

3. Core application 2: Gold and metal recovery from e-waste

At the other end of the spectrum, supercritical CO2 can be combined with suitable ligands or co solutes to help extract or concentrate metals from shredded electronics. While traditional gold recovery uses cyanide or strong acids, an sCO2 platform can be positioned as part of a cleaner, more controllable urban mining workflow.

3.1 How it fits the e-waste process

Supercritical CO2 can be used to:

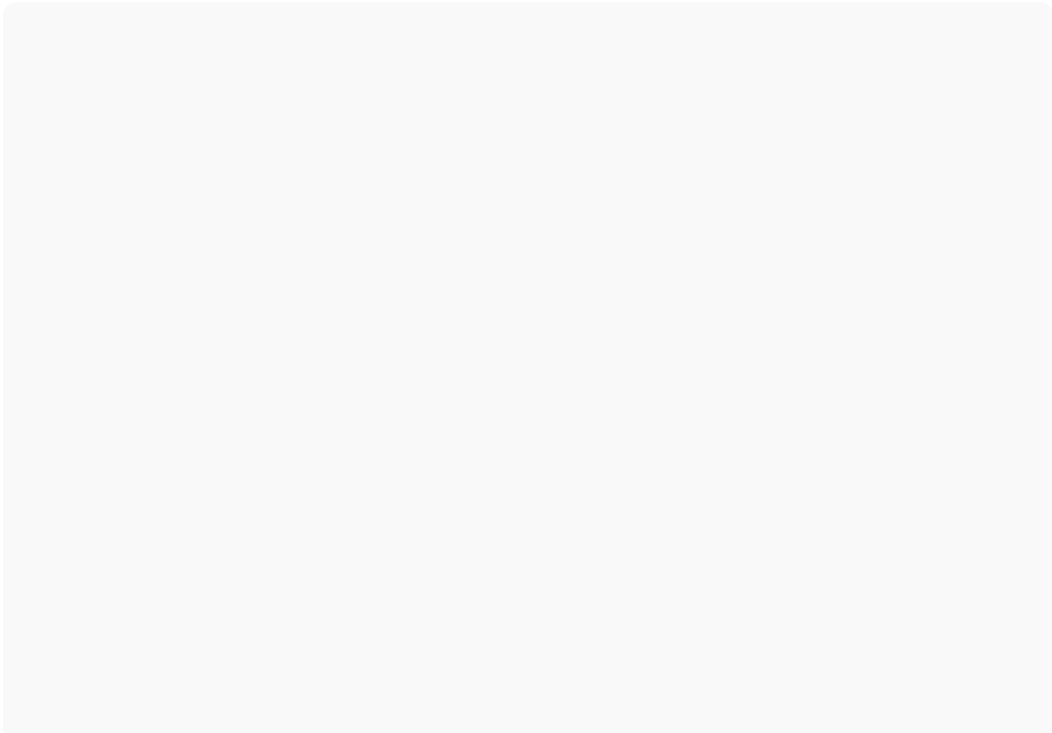
- 1. Remove organic materials
- Dissolve and extract residual oils, plasticizers, some polymers, and organics from shredded printed circuit boards.

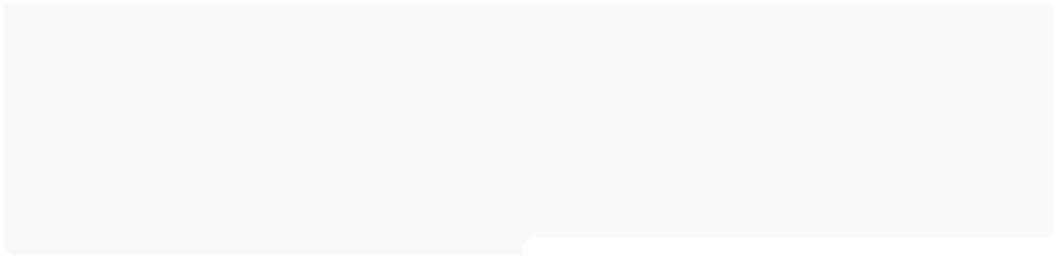
Supercritical CO2 Extraction Machines Uses

One machine, two seemingly different worlds: delicate lavender oil and reclaimed gold from discarded electronics. Supercritical CO2 extraction technology is uniquely positioned to serve both. This article explores how a single sCO2 platform can handle plant-based oils, e-waste metal recovery, and a growing list of high-value industrial and research applications you can leverage for marketing.

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