

High-pressure pump skids for supercritical CO₂ applications

The process of high pressure extraction using fluid solvents offers wide-ranging benefits over conventional methods of separation.

It allows the gentle treatment of temperature-sensitive natural substances and selective separation by varying temperature and pressure. Fragrances and aromas are retained unchanged. The result are dry products, concentrates and substances with no trace of any solvent residue.

**Increasingly significant:
Supercritical carbon dioxide (CO₂)**

Ever more stringent environmental requirements are making the compression of carbon dioxide an increasingly attractive option, leading to the continuous development of new applications and processes in this field. The use of carbon dioxide represents a low-cost, reliable and environmentally friendly alternative to organic solvents. Due to the high efficiency of the process and

the quality of the extracts, products extracted using carbon dioxide are used predominantly by the food, cosmetic and pharmaceutical industries.

Selected references

- Pharmalink Extracts
- Novo Agritech
- Superwood
- Synthite Industries

- Volume flow rates of up to 1150 l/min (app. 55.000 kg/h mass flow)
- Pressures of up to 1000 bar
- Drive output of up to 750 kW
- High volumetric efficiency



Pump skid DP 212 for extraction applications using supercritical carbon dioxide.

Application examples



Food industry

Using supercritical carbon dioxide, extracts are harvested from foodstuffs or unwanted substances are extracted, for instance: Caffeine from coffee beans, hop resin from hops, nicotine from tobacco, flavourings and colourings from a wide range of spices, aromatic plants and natural substances.

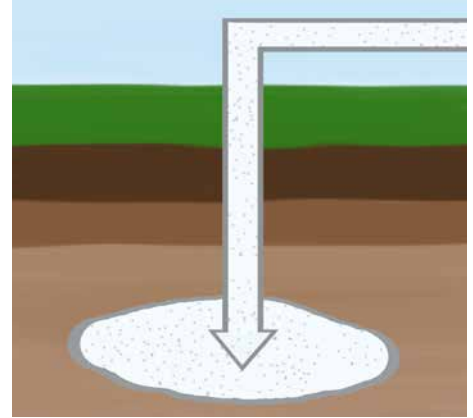
The most frequent application in terms of volume in this field is the extraction of edible oils from oilseeds. Other applications include cleaning rice or filter cake degreasing.



Cosmetic and pharmaceutical industry

A central application here is the preparation of extracts from pharmaceutical drugs for use in medicines and cosmetics by extracting substances from medicinal plants.

High-pressure extraction removes unwanted substances and enriches the targeted active ingredients, allowing the concentration of active agent in the extract to be increased. This means that lower quantities of a substance are required to achieve the same effect. The composition and quantity of ingredients are standardized, guaranteeing a consistent level of quality.



Carbon capture and storage

Carbon dioxide acts as a greenhouse gas when released into the atmosphere, exacerbating the process of global warming.

Carbon capture and storage (CSS for short) is a process used to reduce carbon dioxide emissions in the atmosphere by technically separating and compressing carbon dioxide emitted by sources such as power plants and storing it permanently in underground storage sites. Geological storage is intended to prevent the carbon dioxide being released into the atmosphere and accelerating the process of climate change.



Impregnation

Impregnating with supercritical carbon entails bringing a solid raw material (such as wood) into contact with substances dissolved in supercritical carbon, causing the impregnating substances to penetrate every pore of the solid material. Slow relaxation causes the supercritical carbon dioxide to lose its solubility, leaving an even distribution of the impregnating substances in the solid material.

Is your application not mentioned here?

Please give us a call. We'll be pleased to advise you.



Wepuko PAHNKE GmbH
Max-Planck-Str. 10
72555 Metzingen
Germany

Tel.: +49 7123 1805-0
Fax: +49 7123 41231
wepuko@wepuko.de
www.wepuko.com

