

Mobile and Stationary Pyrolysis Systems

Many chemical industries have wastewater treatment processes that produce quantities of organic sludge. Handling of these often hazardous sludges is expensive, storage facilities are limited and the treatment does not always comply with the requirements of the local communities and governments.

Pyrolysis treatment of chemical sludge reduces the volume in storage facilities, and reduces the environmental and financial burden on the various industries.

Reduced transportation and storage, and recovery of the resources from the sludge is a win-win solution for the entire society.

Our Pyrolysis systems are in operation in several sites treating large volumes of contaminated soil. Abandoned industrial sites characterized by large areas of heavy pollution are in need of cleaning up. Mobile processing equipment is required avoiding unnecessary transportation of the contaminated soil. Our flexible Pyrolysis system developed over several years is a two-step indirect heat desorption system. The patented double-decker thermal treatment system is effectively treating the contaminated soil saving operating costs every year.

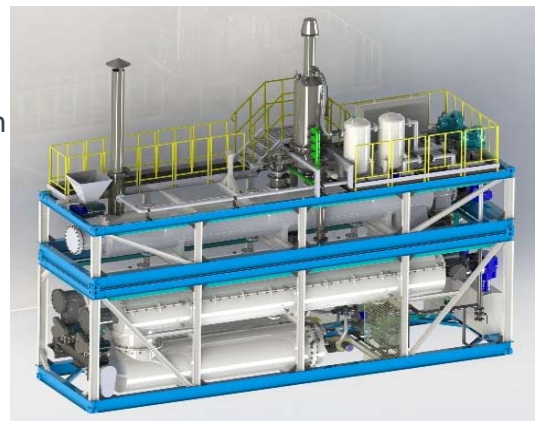
The patented two-step process:

1. Thermal desorption: The contaminated soil or sludge is pre-treated by crushing and screening to achieve uniform particle size and moisture content as low as possible. Impurities are removed before the soil or sludge passes through the weighing scale, feeding conveyor to the double indirect heating thermal desorption device. The solid phase material is heated and dried in the upper preheating and drying chamber to evaporate water. The dried solid phase enters into the lower thermal desorption chamber and is further indirectly heated to 400-650 °C. The organic pollutants in the solid phase are broken into smaller molecules, evaporated from solid phase, and desorbed.

2. Condensation separation: Steam and organic vapor that are vaporized from the solid phase are introduced into the scrubber unit and re-condensed to a liquid by quenching. The condensed liquid enters the water treatment unit for oil-water separation, filtration and purification. Treated water is re-used for cooling and humidification of dry materials after treatment.

The non-condensable part of the Syngas is cooled and cleaned and then fed into the combustion chamber to recover energy. The condensed part of the Syngas is collected in a tank and can be fed back (after cleaning) to the combustion chamber as a heat source together with the non-condensable gas.

The dewatered sludge produced by the oil-water separation are sent to third parties for further processing.



Two-step indirect desorption system for treatment of soil and sludge.

Pyrolysis process advantages:

- Indirect heating without secondary pollution and no formation of dioxins etc.
- High energy recovery with liquid fuel and gaseous fuel
- High degree of volume reduction with biochar as end product
- Mobile plant for easy transport are quicker start up (1-2 Days)
- Module-based design, easy to expand the capacity
- PLC system requires only one operator of the Pyrolysis system
- High level of security with:
 - ✓ Safety valve (PSV) that opens automatically at overpressure
 - ✓ Sensors in the Pyrolysis chamber ensure negative pressure is maintained
 - ✓ UPS system ensure the gas is evacuated if loss of electric power
 - ✓ Supply of nitrogen helps adjust oxygen level in the Pyrolysis process
- Remote monitoring of the gas production and oxygen level etc. is optional



Pyrolysis chamber in production.



2 t/h Oily sludge thermal desorption



1.5 t/h Drill cuttings thermal desorption



4 t/h Oil contaminated soil thermal desorption



1.5 t/h Oily sludge thermal desorption



0.5 t/h Oily sludge



6 t/h double installation thermal desorption



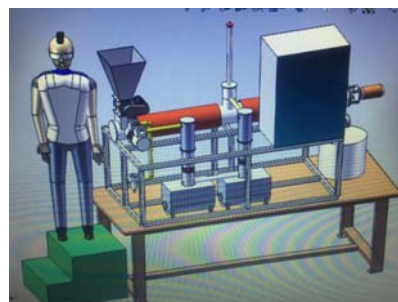
6 t/h Soil thermal desorption



3 t/h Dual plant thermal desorption

Pilot Size Pyrolysis System developed for performing tests and variation of sludge and contaminated soil from various industries.

Please contact us for testing in Europe and China.



We offer:

- Treatment of sludge and contaminated soil
- Pyrolysis-systems based on operational experience
- Process design according to customer requirements
- Designed to suit specific heat sources
- Systems for dewatering, transportation and silos
- Development- and pilot-projects with customers
- References from small and large systems from various industries and products