

INDIRECT THERMAL DESORPTION PLANT



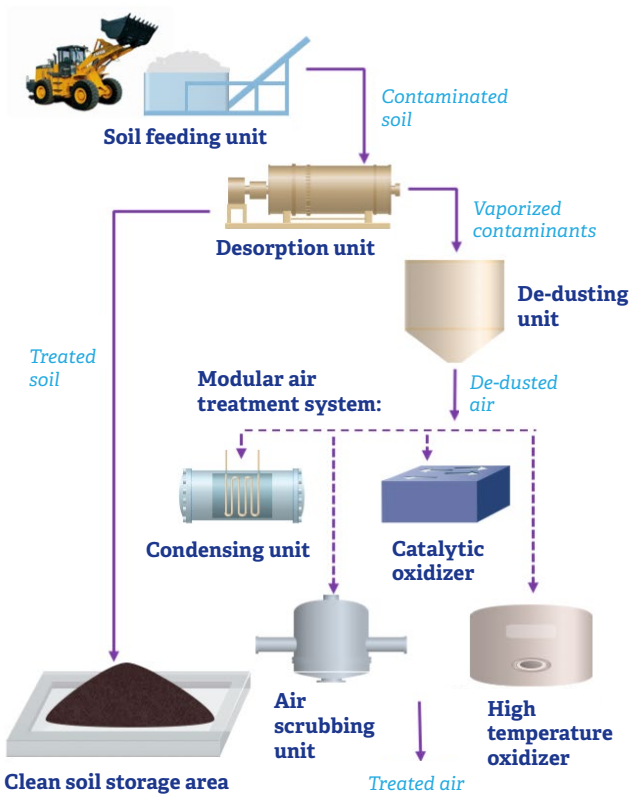
CONVERTING

**HAZARDOUS WASTE TO
NON-HAZARDOUS / INERT
MATERIAL**

**INDUSTRIAL WASTE TO
VALUABLE MATERIAL**

*/ Contaminated soil
/ Sludge / Sediment
/ Hazardous waste*

PROCESS FLOW DIAGRAM



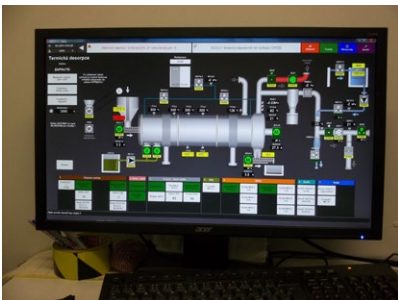
THERMAL DESORPTION PROCESS

Thermal desorption (TD) is a remediation and waste treatment technology based on heating treated material up to the temperature exceeding boiling point of contaminants present in the material (typically 150 - 650 °C). Vaporized contaminants are separated from solid matrix and subsequently treated. Generally the TD systems can be classified according to the following main criteria:

- Process continuity: Batch / Continuous
- Way of heating: Directly / Indirectly heated
- Treatment temperature: Low (150 - 320 °C) / High (320 - 650 °C) temperature
- Pressure in a desorption chamber: Vacuum / Under-pressure

In indirectly heated systems, treated material is heated up without getting in contact with combustion gases. These systems come in many types of designs. Treated soil is typically placed inside a desorption chamber separated from a heat source by an airtight wall (e.g. a double-shell rotary dryer).

Vaporized contaminants (together with dust and generated water steam) are exhausted from the desorption chamber, de-dusted and finally condensed, thermally destructed (high-temperature combustion or catalytic oxidation) or removed in another way (e.g. by wet scrubbing).



PLANT DESCRIPTION

DEKONTA's ITD-2 indirect thermal desorption plant is designed as a modular equipment which can be easily modified for any specific application. The main components of the plant are:

- **Soil feeding unit** comprising a soil feeder bin (2 m³), a scalping vibrating screen, a screw conveyor and a screw feeder
- **Thermal desorption unit** comprising a double-shell rotary dryer (inner diameter 1,6 m, length 8,0 m), two oil / gas burners, flue gas exhaust system and treated solids cooling and discharging system
- **Air de-dusting unit** comprising dust cyclones, a dust filter, quenching system (for cooling air steam down) and a radial fan
- **Control room** with electric switchboard
- **Backup electric power unit** (diesel generator)
- **Nitrogen generator**
- **Modular air treatment system** comprising one or more of the following units (according to the project-specific needs): (i) condensing unit, (ii) catalytic oxidizer, (iii) high-temperature oxidizer, (iv) air scrubber, (v) dioxin control unit



TECHNICAL PARAMETERS

- Capacity: up to 2 tons of treated soil per hour
- Dimensions:
 - ♦ ITD-20 thermal desorption plant can be mobilized in one 40" container and eight 20" containers
 - ♦ minimum area necessary for the plant installation is 30 x 30 m
- Total electrical input power: 85 - 110 kW (depending on designed air treatment system)
- Heat power of burners: max. 2 x 775 kW
- Soil treatment temperature: max. 550 °C
- Size of treated material: max. 50 mm

Client support services

- Laboratory testing (chemical analyses, thermal desorption tests)
- Pilot-scale verification testing
- Designing and permitting
- Erection and start-up operation of thermal desorption plants
- Staff training
- Maintenance



Services and equipment for a better environment

SERVICES

- # Site investigation & monitoring
- # Drilling
- # Soil & groundwater remediation
- # Waste treatment & disposal
- # Environmental emergency response
- # Technological cleaning
- # Demolition & decommissioning
- # Environmental laboratory
- # Air emission monitoring
- # Research & development
- # Pilot scale testing
- # Environmental consulting

EQUIPMENT

- # Thermal desorption plants
- # Stabilization / solidification plants
- # Soil washing plants
- # Oil sludge extraction & processing equipment
- # Bioremediation plants
- # Soil vapor extraction plants
- # Pelletizers
- # Homogenizers
- # Air scrubbers
- # Biofilters
- # Catalytic oxidizers
- # Groundwater and wastewater treatment plants
- # Constructed wetlands



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