econ INDUSTRIES

Case Study

Remediation of mercury-contaminated soil





econ industries

Schiffbauerweg 1 • 82319 Starnberg • Germany

Tel.: +49 8151 446377 - 0
Fax: +49 8151 446377 - 99
E-Mail: info@econindustries.com
Web: www.econindustries.com

Zero industrial waste … !

Remediation of mercury-contaminated soil

econ industries VacuDry® indirect heated vacuum distillation

In order to treat mercury contaminated soil derived from a former thermometer factory in India, our customer decided to hire econ industries to design and build a soil recycling facility. It was necessary to implement a technology that would allow for on-site, ex-situ remediation rather than transporting contaminated material over long distances. Due to further local transport restrictions that neither allowed skids to be larger than 20 ft. nor heavier than 20 tons, the solution was econ's semi-mobile VacuDry® 3 000 unit, manufactured in Germany. In 2020, the completed plant was delivered to India. econ's engineers managed to monitor the complete assembly, commissioning, and training of the local personnel in early 2021, despite a global pandemic and tight health and security procedures.

The VacuDry® vacuum distillation process for separating mercury from soil is divided into two stages: in the first one, the water is evaporated at a pressure of 800 mbar (abs) between 95 °C and 150 °C. In a second stage the pressure is gradually reduced to less than 50 mbar (abs) and the temperature inside the evaporation unit is adjusted to the maximum of 370 °C. During this process elemental mercury is evaporated and then stored in UN certified containers, > 99% high purity mercury is recovered. The remaining soil is no longer considered hazardous.

The average throughput of the plant varies between 0.5 and 1.0 t/h, depending on the moisture content of the contaminants (20 % - 50 %). Thanks to the unique vacuum operating atmosphere, little energy is needed to treat the material and to evaporate the water and mercury. To power the VacuDry®, econ provides its customers with a choice of different energy sources including natural gas, biomass or electricity.

Performance data

Vacuum dryer type:	VacuDry® 3 000
Batch size:	2,800 litres
Throughput capacity:	0.5 – 1.0 t/h
Heating system:	Energy efficient thermal oil unit - heated by electric power
Operating pressure:	< 50 mbar (abs)

Input material: mercury-contaminated soils

Mercury container

Recovered resources: soil / water / mercury

Greatest benefits

- Modular design — reduced transport costs, fast and efficient installation
- Working in batch-mode — highest flexibility to treat every mercury waste stream
- Vacuum operating pressure < 50mbar(abs) — safe and energy-efficient
- High availability > 90 %