

Case Study

Mercury recovery from industrial waste and toxic residues of natural gas drilling



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Imagine – Zero industrial waste ... !

Mercury recovery

by econ industries VacuDry® indirect heated thermal desorption

econ industries' client in the east of Germany is one of the few specialised companies in Europe for the treatment of mercury contaminated waste. Typical input material for this type of treatment is sludge from the natural gas industry or other residues from chemical processes, i.e. contaminated filter cake from waste water treatment.

Since 2002 the client has been operating an econ industries thermal desorption plant, specially designed for the treatment of mercury contaminated sludge with including NORM radioactive natural gas. The plant is designed as a skid-mounted execution for on-site treatment. To double their capacity a second econ industries plant was ordered and commissioned in 2009. This plant is a custom-made design, built on 6 years of successful operational experience. The plant is supplied with a thermal oil heating unit, which has the in-built option for future expansion.

The prime aim of the thermal processing plant - besides the removal of water and typical rinsing agents such as benzene, toluene or lube oil - is to recover the mercury content for further recycling. In a separate dust-free process the remaining cleaned solids are cooled and re-moistened. Due to some occurring heavy metal content and some natural occurring radioactivity the treated solid residue is immobilised with chemical polymers before final disposal.

Performance data

| | |
|---------------------------|--|
| ■ Vacuum dryer type: | VacuDry® 1,000 |
| ■ Batch size: | 700 litres |
| ■ Heating system: | 180 kW / 350 °C thermal oil unit - heated by natural gas |
| ■ Operating pressure: | 50 - 800 mbar(abs) |
| ■ Mercury content output: | 1 - 10 ppm |



Detail of plant „MSA-II“, vacuum system



Plant „MSA-II“, commissioning in 2009



Immobilisation plant, commissioning in 2009

Design characteristics

- Optimal accessibility for maintenance and repair work
- Additional flushing device for cleaning of piping system
- Due to natural occurring radioactivity inside the product, best possible dust lining necessary
- Special vacuum tight discharge system for separation of liquefied lead contents during process
- Separately recovered contaminants by fractional condensation
- Two condensate lines for contaminants, stand-by solution for highest plant availability