

Process description of the stabilisation facility at the REMONDIS QR site in Dorsten

On customer request mercury – either recovered from the internal treatment processes (e.g. rotary kiln) or metallic mercury - can be stabilized to mercury sulphide, in order to ensure safe disposal of liquid mercury. Afterwards the generated mercury sulphide is disposed of in German salt mines.

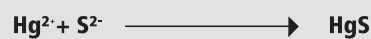


Process description:

The stabilisation process takes place in a vacuum mixer. This is a proven technology for treatment of mercury waste which has been adapted to the stabilisation of metallic mercury. The process includes the following steps:

- Filling receiver tanks with mercury
- Create inert atmosphere in the system by nitrogen inflow
- Setting up a vacuum atmosphere
- Feeding of sulphur
- Adding of metallic mercury to the sulphur
- Mixing

The following reaction between mercury and sulphur takes place in the vacuum mixer:

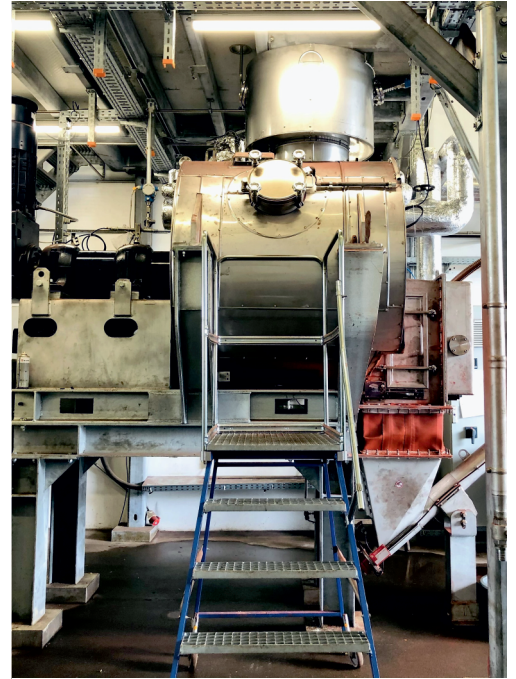
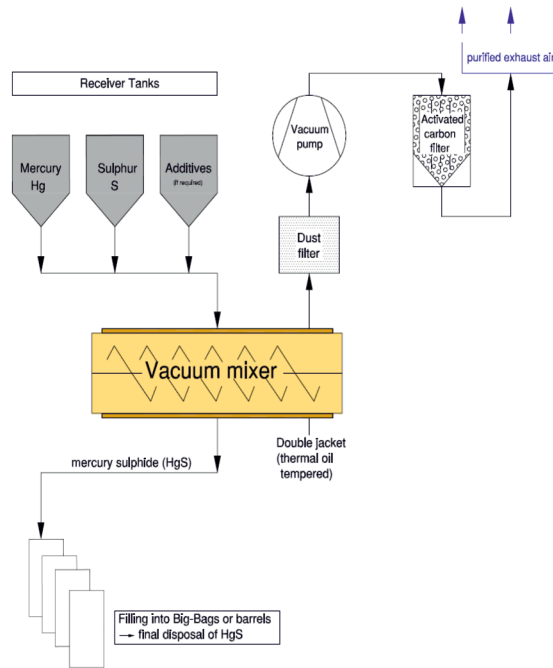


This is a spontaneous and exothermic reaction and four parameters are identified as the most important influence parameters on the process:

- Mixing time [min]
- Mercury feeding time [kg/min]
- Temperature [C°]
- Engine speed [rpm]

> PROCESS DESCRIPTION OF THE STABILISATION FACILITY (HgS)

The inert atmosphere, the vacuum atmosphere and the feeding rate of mercury ensure that the reaction process can be controlled for safe operation. The end product mercury sulphide is filled into packaging fulfilling both the requirement for the transport and for the final disposal in a salt mine. The stabilisation process has been patented.



Stabilisation unit (HgS)

End product

The end product from the process is mercury sulphide: HgS. Red HgS is the most stable form of mercury sulphide and is the dominating naturally occurring mercury mineral in form of cinnabar. Red HgS is also defined as the most insoluble metallic sulphide compound of all. Since the reaction between mercury and sulphur takes place at a stoichiometric ratio, there is no excess mercury or excess sulphur in the end product; this means that a total conversion into mercury sulphide takes place. The end product will be filled in drums and disposed of in German salt mines.