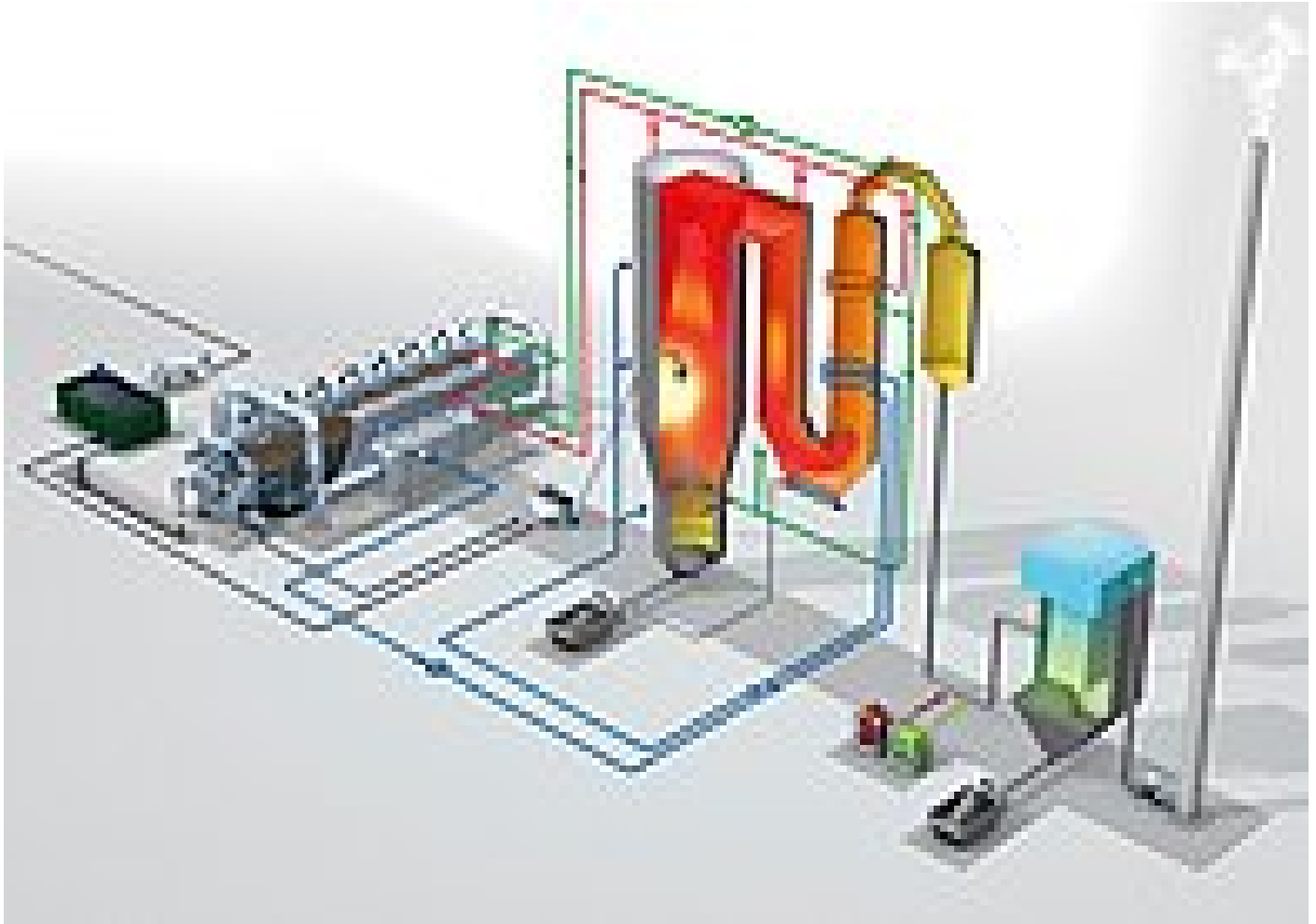


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## Thermal sewage sludge utilisation



*A possible combination of a HUBER Belt Dryer and a fluidised bed furnace*

Thermal sewage sludge utilisation has been gaining in importance recently in Germany and other countries. The latest statistics show that more than fifty percent of the produced sewage sludge go to thermal utilisation. Not least because of rising disposal and transportation costs, the necessity of an economic use of resources, and the recovery of phosphorus from sewage sludge ash, this sort of utilisation is becoming more and more important.

### A) Thermal disposal – the present situation in general

Thermal utilisation of sewage sludge is gaining in importance due to several factors:

- Due to the contamination with heavy metals and pharmaceutical residues which may contaminate the groundwater it is not allowed any more in some European regions to spread the sludge on agricultural land.
- The costs for traditional disposal ways (composting, co-incineration or landscape restoration) are increasing.
- The sludge should be removed where it is produced. This is the only way to avoid environmental pollution through unnecessary transports.
- Phosphorus, the basic component of fertilisers, is a limited resource. It is therefore reasonable to recover this mineral from the sludge. A possible source is the ash from mono-incineration plants.

### B) Drying and incineration – a self-sustaining way of sludge disposal

The combination of drying and mono-incineration offers several advantages:

- Space-saving process
- Significant mass reduction (to 1/7 to 1/8) and volume reduction (to 1/4 to 1/5) of the dewatered sludge with residual contents of 25 to 30%, resulting in reduced material costs, storage costs and transport costs
- The energy contained within the sludge is used for further drying so that auto-thermal operation is possible.
- As the ash can be used for agricultural purposes, drying and incineration are important steps if you want to reduce soil and groundwater contamination.
- Phosphorus can be recovered from the ash.
- If the annual amount of sludge and the amount of organics contained are high enough, even electricity can be produced and used to operate the plant.
- The s2e process is based on a tested technology consisting of well-proven components.

### C) Future development – chances and requirements of thermal disposal

- Due to limited capacities the co-incineration of sludge will not be expanded any more in the future. Especially if sludge is co-incinerated in coal-burning and waste-fired power plants, recovery of phosphorus from the ash is not possible. Switzerland therefore plans to prohibit the co-incineration of sewage sludge in the next 3 to 5 years.
- Due to the frequently high content of heavy metals and pharmaceutical residues the use of dewatered sludge as fertiliser will be limited in the future.
- Self-sustaining disposal processes, such as drying combined with mono-incineration, are supported as the costs involved can exactly be calculated.
- As phosphate ores from North Africa which are still used as basic material for mineral fertilisers contain uranium it is essential to develop very soon processes for the recovery of phosphorus which are economically viable. Some bigger cities in Europe already started to store the ash from mono-incineration at special storage sites until suitable processes of phosphorus recovery will be available.

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