

Per Cederberg, ReTec, Miljø Aps

Danish producer increases use of recycled gypsum

A shortage of synthetic gypsum in some jurisdictions means that wallboard manufacturers are looking to recycled gypsum as an alternative. Here Per Cederberg from ReTec outlines the benefits of equipment supplied to a Danish wallboard plant.

In Denmark there is a long tradition of collecting and recycling gypsum wallboard from construction and demolition waste. Hence it was a natural decision for a Danish wallboard plant to look for new recycled gypsum processing equipment, when it wanted to be able to significantly increase its recycled gypsum substitution rate.

The choice of supplier was ReTec Miljø Aps, based in Haderslev. ReTec has previously delivered equipment, including the essential roller mill to other Denmark-based gypsum recyclers.

ReTec is among the pioneers in development and manufacture of gypsum recycling equipment. It built and co-developed the world's first mobile gypsum recycling plant in 2005. In the following years equipment has been delivered to a further three mobile plant as well as two stationary plants in Denmark. It is currently involved in gypsum recycling projects in Sweden, Norway, UK, Germany, France and Spain. Demand is coming from recyclers, waste management companies and gypsum wallboard manufacturers.

The problem of separation

The challenges of recycling gypsum are, in theory, quite simple: Efficiently separate the paper from the gypsum so that you end up with two clean fractions. These are: 1. Paper that can be recycled, and; 2. Gypsum that can be 'upcycled' and used directly as a substitute for natural or synthetic gypsum.

To achieve this, it is crucial that the processing equipment doesn't destroy the paper into fine paper fibres that find their way into the raw gypsum material. Likewise, processors need a thorough process that doesn't leave too much gypsum in the waste fraction, which would leave costly landfilling as the only disposal option.

The ReTec Gypsum Rollermill has been developed and refined over several installations so that we achieve exactly that hard-to-reach crossover point. This gives operators a 'triple bottom line,' as it achieves:

1. Reduced paper content in the recycled gypsum raw material, hence able to increase the substitution rate significantly and save on costlier natural or synthetic gypsum.

2. Significantly improve the recycling rate of the production waste, particularly problematic wet waste. The wallboard plant supplied now has a *de-facto* and possibly the world's first zero waste wallboard production process.

3. Reduced gypsum content in the waste fraction, leading to disposal methods other than landfilling or incineration.

According to operational cost analysis, a 15-20t/hr recycling plant for construction and demolition gypsum waste can produce recycled gypsum at a total cost of around Euro20/t. This competes strongly with landfilling costs in most European countries. In Germany alone it is expected that the substitution by recycled gypsum will reach 20% in 2020, representing the production of approximately 0.5Mt/yr of recycled gypsum. 

Right: The ReTec Gypsum Rollermill has been used in mobile and static plants throughout Europe.

