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Environmental and Energy Saving Large Pressurized Steam Driers for Bulk Material

Arne Sloth Jensen*

*EnerDry A/S, Kongevejen 157, 2830 Virum, Denmark
asj@enerdry.dk. Phone +45 4526 0440

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The pioneer development of large scale pressurized drying of particulate bulk material started 35 years ago by fundamental research in the laboratory followed by construction of a three floor high pilot plant and then a prototype. The water from the product leaves the drier as an airless steam at e. g. 4 bar. Using this steam gives nearly 100% energy saving and no air pollution at all. Thirty-one plants have been built with up to 75 ton/h water evaporation in one drier. Such drier saves 200 ton/day coal and avoid emission of 600 ton CO₂ per day.

It was developed for drying of beet pulp at sugar factories to produce fodder. Some plants are drying wood chips and sludge. Other products suitable for pressurized drying are distillers grain, bagasse etc. In order to test new products samples are dried in a glass vessel under pressure in its own vapor. The energy is supplied by microwaves. This can give information about the dried product quality and the composition of the steam leaving the drier. Furthermore tests are made with fluidization by air in a 13 m high full scale model. From those 2 tests it is possible to get data to design a full scale plant.