



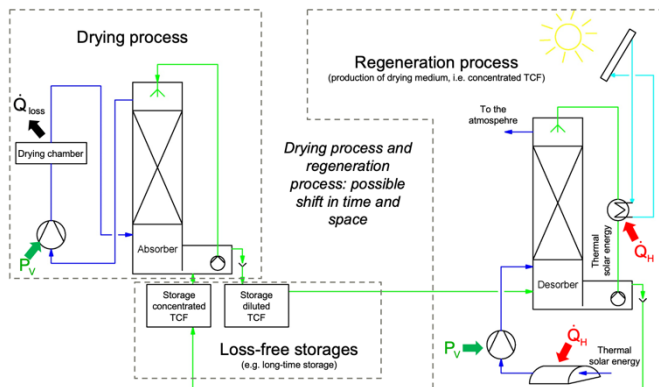
Thermochemical Fluids in Greenhouse Farming

Absorption-based drying systems for food and other goods

High product quality is one of the key issues in food drying industries. During the process, food structure, appearance and aroma can change through the modification of important bioactive constituents and the nutrients can deteriorate.

The selection of parameters, as temperature and duration, influences the quality of dried food. Some agricultural goods like herbs and fruits must be dried immediately after harvesting, in order to avoid their deterioration and rotting. To guarantee the quality, many agricultural drying processes are preferably operated at low temperatures (e.g. max 35°C).

The used of hygroscopic fluid salt solutions (called thermo-chemical fluid, TCF) allows to reduce the absolute air humidity of the drying air, without direct use of thermal energy, but by adsorption of water vapour of the air. The temperature of the drying air is not so increased and the drying process occurs at low temperature.



During this process the TCF becomes diluted and when its water content is too high, it loses its hygroscopic properties. To be reused, the TCF shall be regenerated evaporating part of its water content. This regeneration process needs heat, temperatures around 40°C-70°C are enough: solar heat or waste heat, otherwise not used, fulfil this purpose. The regenerated TCF can be then store without any energy losses, and without

time limitation. In this way, the drying process can be driven by renewable energy stored in form of regenerated TCF, independently from fluctuation or periodically availability of the renewable energy source. The quote of usage of renewable energy can be increased in an economically way. The absorption-based drying systems are investigated in TheGreeFa and in SONITRO (Swiss Federal Office for Energy).



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