

# **Efficient Energy Architectures**

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## **Abstract**

The use of renewables in the energy mix as a contribution against global warming requires efficient solutions to mitigate the intermittency of renewable energy sources. In building applications, this includes to be able to store thermal energy, and to use it through effective systems. In this talk we will cover the case of thermochemical storage as an example of thermal energy storage, and will show how the storage reactors can be designed to increase the heat exchanges while maintaining their compactness. Next, we will show that the same methodology can be applied to systems for indoor thermal comfort, and will take the example of radiant systems for cooling and maintaining indoor thermal comfort. The work will highlight the superiority of designs based on tree-shaped configurations for improving the heat transfer while decreasing the friction losses of the heat transfer fluid.

In both examples, the theoretical framework relies on the search for maximum flow access by evolving the shape and morphology of the flow networks