

Seasonal storage of heat and cold in the bedrock

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Storage is a critical issue when discussing the possibility to use heat and cold produced intermittently. For example in temperate climate zones the sun produces heat enough during summer to cover the demand for a year but it needs to be stored to next winter. In a similar way the cold during winter is needed to cool buildings during summer time.

We use the rock mass itself as a storage /e.g. Hellström & Larson 2001/, the HYDROCK concept. Existing fractures or new fractures artificially created are used in the bedrock as flow-paths for the heat and cold carrier (water). The fracture surfaces serve as heat exchangers and the bedrock is loaded and unloaded to suite the energy needs. The way to do this is discussed.

References:

Hellström, G., Larson, S.Å., 2001: Seasonal thermal energy storage – the HYDROCK concept. Bull. Eng. Geol. Env., 60:145-156.