

regryd high temperature packed bed heat accumulator

Patented storage system (WO 2013/167158, 11.05.2012 EPA)

Key advantages of regryd

- Can be placed above and below the ground
- Low space requirement
- Natural solid stone filling
- Heat capacity up to 1000 °C
- Heat storage up to two months
- Almost unlimited lifetime
- High storage efficiency
- Modular integrated system
- Fulfills SDG targets 7 (affordable and clean energy), 9 (resilient infrastructure and sustainable industry), 11 (sustainable cities and municipalities), & 12 (responsible and sustainable consumption and production)

Key features

Longevity

A recyclable, recycled and replaceable solid storage fill, insulation and storage wall enables a nearly unlimited service life.

Storage characteristics per module

$$T_{range} = 500, \dots, 1000 \text{ K}$$

$$T_{Loss} [T_{range} = 500, \dots, 1000 \text{ K}; \lambda_{Isolierung} \leq 0.05 \frac{\text{W}}{\text{mK}}] =$$

$$T_{Loss} = 0,61 \frac{\text{K}}{\text{d}}, \dots, 1,61 \frac{\text{K}}{\text{d}}$$

Q _{range} [MWh]	H = B [m]		E _{regryd} [$\frac{\text{MWh}}{\text{m}^3}$]	
	1	25		
T _{range} [K]	500	0,2	2610	0,21
	1000	0,4	5875	0,48

Application examples

Waste heat utilisation

- Energy supply companies
- Municipalities and their affiliates
- Residential building co-operative
- public utility company
- Interconnected sites of the chemical industry

Power-to-Heat

- public utility company
- solar park operators

Accumulator discharge

Basalt, $\phi \approx 30 - 40 \text{ mm}$ grain size,

$$\rho_{\text{Basalt}} \approx 2900 \frac{\text{kg}}{\text{m}^3}, C_{\text{Basalt}} = 1,1 \frac{\text{kJ}}{\text{kgK}}$$

Wall construction

Combination of high temperature insulation and high temperature resistant inner wall, recycled ash (insulation), combination of steel and concrete (outer wall)

Energy transfer medium

Air loading and unloading takes place unpressurised

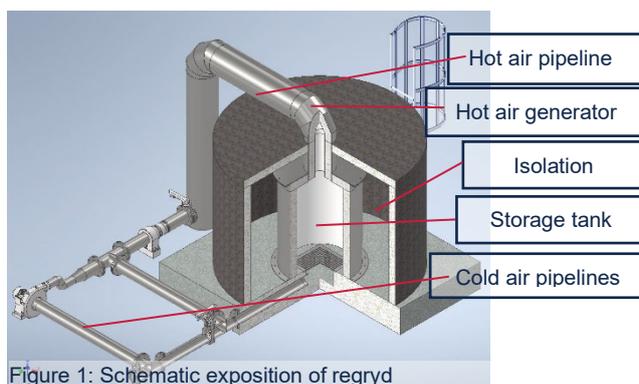


Figure 1: Schematic exposition of regryd

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