

Title (en)

Method and system for energy storing and short-term power generation

Title (de)

Verfahren und System zum Energiespeichern und Kurzzeitstromerzeugung

Title (fr)

Procédé et système de stockage d'énergie et génération de puissance à court terme

Publication

EP 2703610 B1 20150617 (EN)

Application

EP 12182561 A 20120831

Priority

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Abstract (en)

[origin: EP2703610A1] In a method for energy storing and short-term power generation, an intermediate storage of a CCS system is used to store the working fluid of a CO₂ based Rankine process. Liquid CO₂ is stored in an underground reservoir (10) arranged to continually receive liquid CO₂ at a first temperature from one or more CO₂ capture sites and to discharge liquid CO₂ to be transported to a final storage. The underground reservoir (10) is kept at a pressure of 8 - 10 bar. When short-term power generation is needed, liquid CO₂ is withdrawn from the underground reservoir (10), pressurized to about 40 - 50 bar, evaporated with the help of a low value heat source, and expanded in an expander turbine (13), which is connected to a generator (14). The expanded CO₂ is then condensed and returned to the underground reservoir (10) at a second temperature which is higher than the first temperature. When short-term power generation is no more needed, liquid CO₂ from the underground reservoir (10) is circulated through a heat pump (23) to cool the CO₂ until its temperature reaches the first temperature.

IPC 8 full level

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CPC (source: EP)

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Cited by

CN104454054A; NL1043180B1; CN106968737A; CN114320504A; DE102020000131A1; WO2016144197A1; WO2021139846A1; DE102020000131B4; WO2022010344A1

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