

## Title (en)

CO<sub>2</sub> CAPTURE AND USE IN ORGANIC MATTER DIGESTION FOR METHANE PRODUCTION

## Title (de)

ABFANGUNG VON CO<sub>2</sub> UND VERWENDUNG BEIM ABBAU VON ORGANISCHEM MATERIAL FÜR DIE PRODUKTION VON METHAN

## Title (fr)

CAPTURE DE CO<sub>2</sub> ET UTILISATION DANS LA DIGESTION DE MATIERE ORGANIQUE EN VUE DE LA PRODUCTION DE METHANE

## Publication

**EP 1984098 A1 20081029 (EN)**

## Application

**EP 06723998 A 20060404**

## Priority

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- IT BO20050217 A 20050408

## Abstract (en)

[origin: WO2006108532A1] A process to provide an alternative to CO<sub>2</sub> sequestration in depleted gas or oil fields is presented. An integrated process combining a first module, for capturing and separating CO<sub>2</sub> from exhaust gases, with a second module, for exploiting the captured CO<sub>2</sub> in the anaerobic digestion of organic matter to produce methane, is provided. In the first module CO<sub>2</sub> is removed from the exhaust gas by contact and mass transfer to an alkaline metal solution and more particularly of sodium. The CO<sub>2</sub> dissolved in the solution is rapidly hydrated into carbonic acid by means of carbonic anhydrase which is immobilized onto an inert support. Finally, the hydrated CO<sub>2</sub> is then reacted with alkaline metal and upon adding alkaline metal carbonate to the solution, a precipitate of alkaline bicarbonate is obtained, which is then calcinated to produce a concentrated flow of CO<sub>2</sub>. In the second module such concentrated flow of CO<sub>2</sub> is used to provide a perfectly suitable environment for the hydrolysis of organic matter and for hydrogen production in distinct and specialized sections aimed at acidification and fermentation respectively; at the same time mixed and high density microbial populations, already there or selectively added to the fermentation process, are being conditioned to utilize CO<sub>2</sub> and hydrogen to increase the production of acetates and consequently of methane. The outlined process may be used e.g. by greenhouse gas emitting firms as well as by those involved in organic waste management.

## IPC 8 full level

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