# $CO_2$ を用いる高効率地中熱回収システム

## －第 2 報：水熱源による冷暖房運転－

## Geothermal Recovery System Using Natural $CO_2$ as A Heat Transfer Fluid

## －2nd Report: Water Thermal Recovery－


相　馬　啓[*†]　　岩　澤　賢　治[**]　　福　宮　健　司[***]

Hiroshi SOMA　　Kenji IWASAWA　　Kenji FUKUMIYA

*　ケミカルグラウト株式会社技術本部技術開発部（105-0001 東京都港区虎ノ門 2-2-5）

Department of Engineering Development, Chemical Grouting Co., Ltd.

(2-2-5, Toranomon, Minato-ku, Tokyo, 105-0001)

**　MDI 株式会社（210-0014 神奈川県川崎市川崎区貝塚 1-4-13-503）

MDI Co., Ltd. (503-1-4-13 Kaizuka, Kawasaki-ku, Kawasaki, Kanagawa, 210-0014)

***　株式会社アグリクラスター（338-0001 さいたま市中央区上落合 2-3-2）

Agri Cluster Co., Ltd. (2-3-2 Kamiochiai, Chuo-ku, Saitama, 338-0001)



**Summary**

Our previous report showed that the geothermal recovery system utilizing $CO_2$ latent heat has higher ability per unit length of geothermal piping than conventional system utilizing liquid anti-freezer sensible heat. And for the same heat exchange performance, it enables to promote downsize of the diameter or the length of heat recovery piping and reduction of the electric consumption. In this study, a water storage tank was used as a heat source. Cold and hot water was made utilizing $CO_2$ latent heat from water thermal in a water storage tank. As a result, the water thermal system utilizing only 2 m thermal piping exerted the same ability with the geothermal system utilizing 50 – 100 m geothermal piping.



**Key words:** Heat pump, Saving of energy, Thermal recovery system, Heat transfer fluid, $CO_2$, Latent heat, Flow pattern, Downsizing



[†]Fax:+81 3-5575-0574　E-mail:h-souma@chemicalgrout.co.jp