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SAŽETAK

Praćenje potpovršinske temperature za uporabu koaksijalnih geotermalnih izmjenjivača – praktični aspekti i glavni problemi u prvim godinama mjerenja

Plitka, potpovršinska, temperatura (na dubinama plićim od 50 m) nije konstatna, niti u prostoru, niti vremenu. Takve promjene posljedica su utjecaja toplinskih „pulseva” različitoga podrijetla poput Sunčeva, geotermalnoga ili ljudskoga. Točna procjena temperature ključni je čimbenik kod planiranja energetskih sustava temeljenih na plitkoj geotermalnoj energiji. U takvim projektima, temeljenim na izmjenjivačima topline u plitkim bušotinama, potpovršinska je temperatura promjenjivija, što utječe na iznos pridobivanja topline, tj. utiskivanja fluida. Praćenje takvih promjena važno je stoga kod svih projekata toplinskih izmjenjivača vezanih uz plitka geotermalna ležišta. U radu je prikazan praktičan oblik toga, ali i glavni problemi koje je moguće susresti tijekom instaliranja, testiranja ili uporabe potrebne geotermalne opreme. Dan je primjer polja u kojemu je smješteno osam koaksijalnih izmjenjivača topline, 30 metara dugačkih te povezanih s prototipom uređaja dvostruke toplinske crpke (zračne i dubinske).

Ključne riječi:

geotermalna energija, potpovršinska temperatura, bušotinski izmjenjivač topline, praćenje

Authors’ contribution

Eng. PhD **Francesco Tinti** participated in the definition of monitoring system geometry and in the installation and testing phases. He faced all issues related to the electronic problems. He is the main contributor of this paper. Eng. **Andrea Carri** realized the electronics of the monitoring system and participated in the installation and testing phases. Moreover, he faced all major issues related to the electronic problems and contributed in writing the paper. Eng. PhD **Sara Kasmae** participated in the installation phase, data analysis and paper modifications. Eng. **Alessandro Valletta** helped solve the issues related to the electronic problems and contributed in writing the paper. Eng. PhD **Andrea Segalini** supervised the electronic work and reviewed the paper. Eng. PhD **Stefano Bonduà** participated in the data analysis and reviewed the paper. Prof. **Villiam Bortolotti** is the scientist responsible for the GEOTECH Project for the University of Bologna group and reviewed the paper.