

Donnerstag, 24. Juni 2021  
Kongress 1 - Tiefe Geothermie  
16.20-16.50 Uhr

## **Geothermal Energy projects in Serbia: Outcomes from GOSPEL study, a French-Serbian academic and industrial partnership** **Justine Mouchot, ARVERNE Geothermal**

GOSPEL, Geothermal Serbian Pilot projects for Heat and Electricity, is a two years project, aiming to identify geothermal projects opportunity in Serbia. The Program is coordinated by ES-Géothermie in partnership with IEL Balkans. Helped by French public fund, the GOSPEL program gathers French industrial expertise and Serbian local knowledges to realize pre-feasibility studies and enhance geothermal industrial projects development. Main achievements of this program are to present three tangible projects to use geothermal energy in Serbia. Four zones have been identified as areas of interest: Subotica, Sremska Mitrovica-Ruma, Kikinda and Vranje. Based on this hypothesis, technic and economical prefeasibility of four projects have been assessed. Industrial development can be considered for (i) heat supply for District Heating System in order to diversify the energetic mix; (ii) for heat production for industrial processes, then lowering the environmental impact of and (iii) for electricity generation. Geothermal energy concept applied in the frame of GOSPEL for Serbia is well-doublet based.

Geothermal resources can be found at 650m depth in a sandy aquifer at Subotica. Geothermal fluid can be produced with a temperature of about 65°C, to provide heat for District Heating System which has been recently refurbished. A doublet with Heat Pumps, from 13MWth installed capacity could cover 34% of DH heat needs. Within the area of Sremska Mitrovica-Ruma, a Triassic limestone has good potential to provide geothermal fluid at 65°C, from 1200 m depth. Heat could be used for industrial purposes in the new industrial zone of Ruma. A plant of 11 MWth installed capacity made of a geothermal doublet and Heat Pumps could produce heat 24/7. Such geothermal projects for heat required investments of about 8M€. Thanks to these prefeasibility studies, geothermal energy is competitive regarding to gas in the selected areas. Since decades, Vranjska Banja is known for their warm waters naturally coming out from 1500 m depth. Geothermal energy could contribute to limit air pollution, by reducing the current use of heavy oils and woods for heat production. Exploitation of Tertiary fractured granite could be of 16.8 MWth installed capacity. Electricity is an option there due to high temperature of fluid (125°C) but requires a feed in tariff of 150 €/MWh to produce a competitive energy. Kikinda area is well-known thanks to the hydrocarbon exploration. Fluid at a temperature higher than 150°C is found at 3000m depth, around Kikinda. This area has been selected for electricity purpose and potentially for both geothermal and hydrocarbon coproduction. A geothermal plant of 2.5 MWe installed capacity could be developed for an investment of ca. 16.5 M€. This project federated a geothermal French-Serbian consortium and identified promising perspectives for boosting geothermal energy in this part of Balkans and could serve as first study for industrial projects development in Serbia.