



THE GEOTHERMAL WATER TREATMENT FOR WATER AND ENERGY RESOURCES CONSERVATION

**Ion Mirel¹, Mihaela-Ana Mitrasca^{2*}, Emilia-Valentina Pantea³,
Daniela-Mariana Abrudan⁴**

¹ „Polytechnic” University of Timisoara, Faculty of Hydrotechniques, Department of Hydraulics and Environmental Protection, 1A George Enescu Street, Timisoara, 300022, Romania

²University of Oradea, Faculty of Architecture and Constructions, 34 Lipovei Street, Oradea, 410236, Romania; ³University of Oradea, Faculty of Environmental Protection, 16 Doina Street, Oradea, Romania; ⁴University of Oradea, Faculty of Architecture and Constructions, Oradea, 46 Kogalniceanu Street, Romania

Abstract

Treatment technologies, specific for the geothermal waters, in accordance with the requirements of sustainable development concept are highlighted in the present paper.

The geothermal waters are very valuable thermo-energetic resources, especially used for spaces heating, as well as a resource for hot water, pools and fisheries etc.

The corrosive and hardness characteristics of geothermal waters determined by the presence of sedimentary salts and gases in the form of methane and carbon dioxide, also as chemical substances and dissolved gases contribute to the rapid deterioration of afferent constructions and installations.

These phenomena which have been noticed for most geothermal water wells existent in Romania so far can be eliminated by applying some specific treatment technologies according to water temperature, the chemical characteristics and the user’s requirements. For geothermal water over 100°-120°C degassing is recommended in closed spaces, while for that over 80°-100°C degassing is recommended in closed spaces, as well as chemical hardness removal, manganese and iron removal. For water with an average temperature of 50°-80°C degassing, chemical hardness and iron removal are recommended to be done in closed spaces. For water having lower low temperature (under 50°C) the classical methods used for water supply are recommended.

The technologies for thermal water treatment have been applied in the Western part of Romania and put into practice at the 4004 drilling from Bratianu Park (T = 80°C), used for heating the accommodation rooms and for hot water on tap at “Elite” Hotel from Oradea.

This example is listed on the catalog with the requirements for durable development concept in which the solution used represents the interaction between the economical, technological, human and ambient records for a long and optimal functioning.

Keywords: geothermal well, degasification, thermal softening, corrosion, encrustation

* Author to whom all correspondence should be addressed: e-mail: amitrasca@uoradea.ro