



TOUGH2 grid generator for simulations of geothermal heat pump systems

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We present a method to generate an unstructured Voronoi grid for its use in TOUGH2 simulations of geothermal heat pump systems. A series of codes is developed to create Voronoi cell center points that are placed at specific positions for well- or pipe-shaped Voronoi grids, to generate a three-dimensional grid and TOUGH2 input files from generated Voronoi cell vertices, and to visualize the generated grid and simulation results by ParaView. AMESH program is used to calculate the x - and y -coordinates of the Voronoi cell vertices from the Voronoi cell center points. We show the desired form of grid from the developed series of codes and test with confidence the presented method through simulations of water production/injection from/to the various kinds of the geothermal wells.