This thesis is concerned on the simulation of wet steam flow using discontinuous Galerkin method. Wet steam flow equations consist of Naviere-Stokes equations for compressible flow and Hill's equations for condensation of water vapor. The first part of this thesis describes the mathematical formulation of wet steam model and the derivation of Hill's equations. The model equations are discretized with the aid of discontinuous Galerkin method and backward difference formula which leads to implicit scheme represented by nonlinear algebraic system. This system is solved using Newton-like method. The derived scheme was implemented in program ADGFEM which is used for solving non-stationary convective-diffusive problems. The numerical results are presented in the last part of this thesis.