

Coursework on discipline
«Mathematical models of chemical reactors»
specialty 8.05020202
Computer-integrated technological processes and production
A. Cherniak group HA-51M

Subject: "Modeling ammonia synthesis reactor axial type"

As part of a course project described ammonia synthesis technology, its main physical - chemical characteristics, methods of extraction, types of catalysts to more output per cent ammonia reactor types, their advantages and disadvantages.

Also in this paper, a mathematical model was chosen axial type reactor ammonia and conducted calculations for this model in the environment of Visual Studio 13.0, which was implemented Runge - Kutta for solving differential equations with precision integration 0.01. This step was chosen to achieve high accuracy numerical integration.

When analyzing the results were comparable graphic interpretation of the temperature of the reaction mixture in the reactor, the initial temperature at the inlet of the reactor, the reaction rate and amount of release of ammonia from the length of the reactor, which is 1m. Comparing the profile characteristics listed above at the start of the cycle when $\beta = 1$ and thereafter the operation when $\beta = 0.8$ at the same temperature at the inlet to the reactor and no bypass ($B1 = 0$) shows a significant decrease in the rate of the process and the content of ammonia reactor reduces the productivity of 367.2 to 294 tons / day.