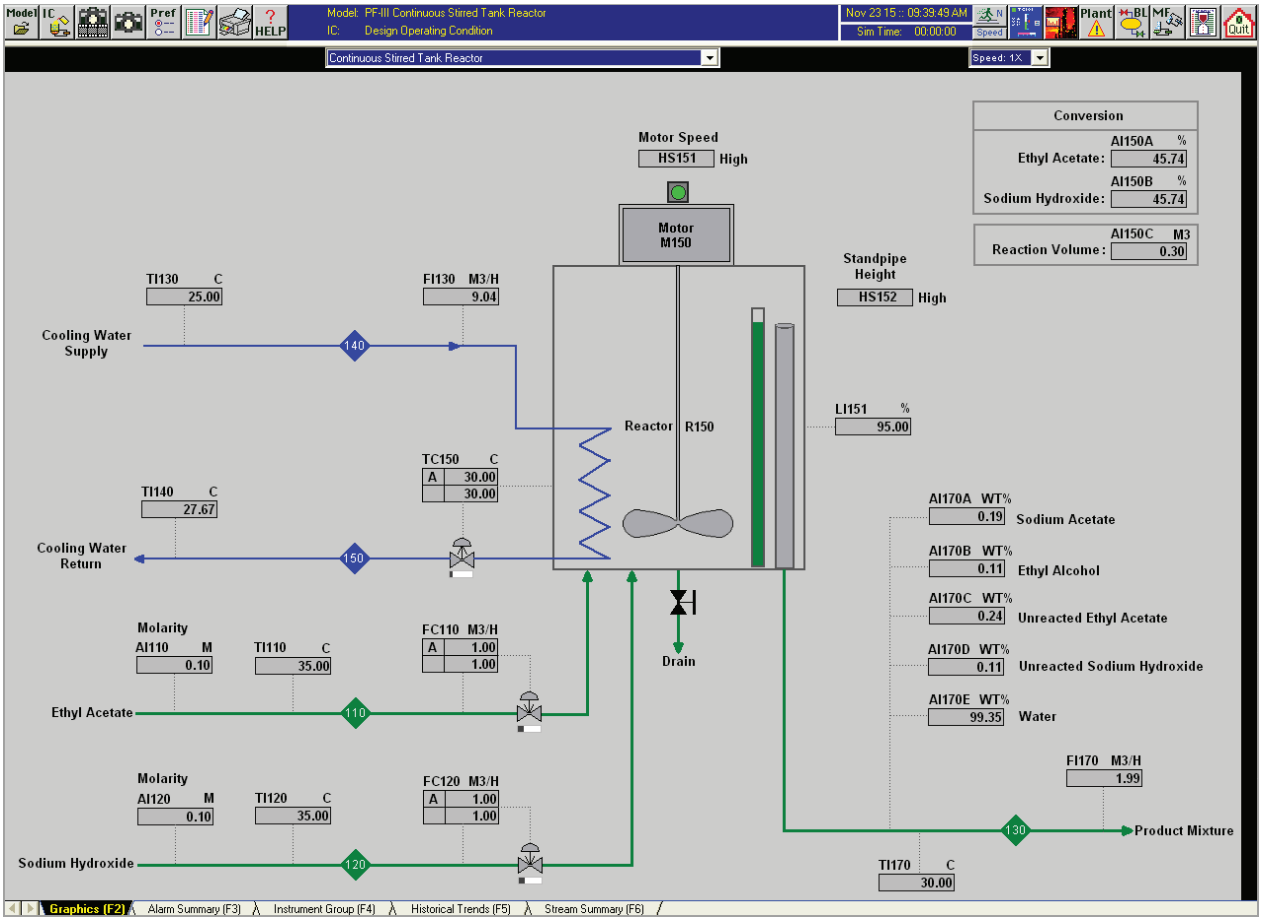
EnVision
e-Learning & Universal Simulation

Continuous Stirred Tank Reactor Simulation

GSE's Continuous Stirred Tank Reactor (CSTR) EnVision simulation is a rigorous and high-fidelity mathematical process model that provides a realistic dynamic response of a CSTR system with specific simulation exercises.



- Simulation comes with a Learning Management System (LMS) called SimAdmin that allows an instructor to register trainees and monitor their performance
- Simulation is available as Standalone (Single or Dual Monitor) and Instructor-Trainee versions

GSE Solutions
www.gses.com/EnVision

Continuous Stirred Tank Reactor Simulation

Process Overview:

This simulation model helps in understanding the principles of a Continuous Stirred Tank Reactor (CSTR). The simulation model consists of a Reactor with Stirrer. The reactants, Ethyl Acetate and Sodium Hydroxide, enter the bottom of the reactor, where residence time is provided for the reaction to reach steady state. The Saponification of Ethyl Acetate with Sodium Hydroxide is a second order exothermic reaction.

CH3COOC2H5 + NaOH ------> CH3COONa + C2H5OH (exothermic)
EthylAcetate + SodiumHydroxide ------> SodiumAcetate + EthylAlcohol

The reactants are well mixed by the stirrer. The product mixture, containing Sodium Acetate, Ethyl Alcohol and unconverted reactants, leave the reactor at the bottom after overflowing through an internal standpipe.

Experimental Set-up Features:

- Continuous Stirred Tank Reactor with Stirrer
- Two Speed Selection for Stirrer
- Reactant Feed Rate Control
- Reaction Mixture Temperature Control
- Variable Reactant Composition
- Variable Residence Time

Simulation Features:

- Calculation of Reaction Rate Constant
- Effect of change in Reaction Temperature
- Effect of change in Reaction Volume
- Effect of change in Reactant Feed Rates
- Effect of change in Reactant Concentrations
- Effect of Inadequate Mixing of Reaction Mixture

EnVision™ is a trademark of GSE Systems, Inc. All other trademarks are the property of their respective owners. The information in this literature is subject to change without notice and is not to be construed as a warranty.

DS.ENV.53.VA 07/24

info@gses.com | www.gses.com