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GENERAL INFORMATION ABOUT CHEMICAL PROCESSES AND REACTORS

Najimova Nursuliw Bazarbaevna
Assistant teacher at the Nukus Mining Institute under the Navoi State University of Mining and Technologies.
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ABSTRACT

The synthesis of chemicals has a significant positive impact on the environment. Because of the effect on pollution, energy consumption, air quality and global warming, the scientific community and the chemical industry is increasingly interested in concepts such as the atomic economy, renewable energy feed stocks and stable solvents as an integral part of green synthesis. For example, the solver losses are the main source of organic pollution, and solvent cleaning consumes a lot of energy and energy more environmentally friendly or sustainable solvents have been proposed and developed the last three decades. Chemical processes chemistry for chemical synthesis solves the challenges of the chemical future synthesis by developing new synthetic schemes and tools to simplify chemical production; Minimize on products and develop new reactions to maximize desired products will consist of ecological and ecologically safe solvent reagents.

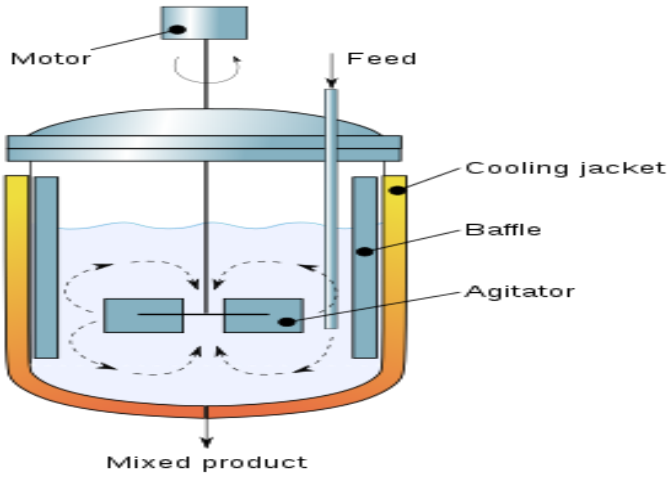
Introduction

Engaged in chemical engineering research chemicals in one form (raw materials, including renewable and non-renewable resources) to another, ie fulfills the useful and convenient needs of mankind makes life easier. Raw material conversion process the finished product always leads to production unwanted by-products (pollutants) and their reduction consists of renewable and non-renewable resources. Hence the demand useful chemical products (cement, sugar, cellulose and paper, including pharmaceuticals, petroleum and petrochemicals others) permanently the world's population and the standard of living increases as a result of economic growth. The chemical production capacity is the largest in the world only in Asia densely populated area, it is predicted to expand 6-8 times capacity in 3000, changes are planned by 2027. This leads to faster usage natural resources such as fossil fuels and clean water as well considered as a sharp increase in the level of environmental pollution. If it remains uncontrolled, long-term and short-term environment the consequences may threaten the existence of life. So it is very important to assign to each product

environmental factor or detected electronic factor as the amount of waste generated per unit mass of product produced and is therefore a measure of the environment depends on exposure to various chemicals produced in the industry. Contrary to popular belief, the chemical industry is highly productive value-added chemical products such as pharmaceuticals and chemicals contribute more to environmental degradation compared to the processing and bulk chemical industries. Economic growth and development at the expense of the environment degradation is not sustainable in the long term.

Chemical Reactor

Processes in chemical manufacturing industries, any chemical process plant can be considered as a system of units. The material is regulated by a certain sequence of processing steps, required to convert raw materials into desired products. Everything processing units in the chemical industry can be extensive grouped into three sections: pretreatment of raw materials section, the reactor section and the separation or purification section of these three sections, in which switch is the reactor section the occurrence of chemical changes is the heart of chemistry processing and any performance improvements the reactor compartment can be highly affected by contamination prevention. This is how chemical reaction engineering comes into play plays a central role in green chemical recycling. Although the principles of chemical processes provide a road map the development of chemical processes is a choice, a design and reactor performance a the process is successful or not. In many chemicals processes, reactor selection and its operation have a has a strong influence on the number and type of separation units required on the upstream and downstream sides and therefore, it has a major impact on the environment. Chemical provides reaction engineering methodology and quantitative evaluation of reactor performance as a function of design and will consist of procedures for accepting the values of operational variables. The operation of the reactor, ie is measured by the fractional conversion of the reactants and product selectivity is affected by several factors such as, feed rate, reactor volume, temperature, kinetic rate, transport consists of velocity, mixing and flow patterns.



Picture 1. Chemical Reactor

To determine the appropriate amount reactor performance requires a lot of scale and an approach that includes a broad system description scales are determined from equilibrium state equations, molecular to macroscopic, and chemically balanced. Thus preventing

contamination requires proper reactor selection and operation these are relevant issues to be addressed at all scales and helps to understand the chemical process at the molecular level. To achieve maximum atomic efficiency, understanding the complex leading to the development of reaction mechanisms and processes that need to be considered, relevant kinetic rate expressions used in reactor design and understanding the mechanism of catalytic reactions looking at the design and layout of the catalyst to achieve maximum selectivity. Understanding fluid mixing at the microscale and transport in eddies, transport in multiphase systems, transport and effect within the pores of the catalyst pellet local transport on reaction rates is critical to design reactors that achieve optimal performance. In the macro scale, understand the effects of hydrodynamics on the reactor performance is critical to the scale-up and operation of reactors. Thus, a multistate reactor modeling approach, which combines system description at these three scales (molecular, micro and macro), necessary for design it will be necessary to design the layout of the reactors to achieve optimal performance. Correct amount of reactor performance requires a proper description of how to react and species are in contact with the liquid mixture. In it multiphase reactor, should be able to describe the flow and differ in mixing patterns in each of the phases. A traditional approach to reactor design, the plug is low or a full mixed low is generally accepted in each stages. If this does not match the assumption experimental observation is the axial dispersion model, received and model parameter adjusted consistent with experimental measurements. However, this the traditional approach is not capable of describing existing systems complex fluid mixing patterns. A better description of the low, required to develop a mixing and phase contact pattern more realistic reactor models. In this sense, it is complicated Models based on computational fluid dynamics are possible capture and describe more of the complexities of fluid mixing realistically. Thus, chemical fluid dynamics is an important computational tool, useful for designing new reactors. However, it is complicated experimental measurement techniques are needed to obtain fluid velocity and turbulence data for verification consists of models based on catalyst selection and design plays a crucial role in achieving high reactor performance and making the process environmentally friendly. In selection a catalyst suitable for a specific application the catalyst can be tailored for optimal yield and selectivity. Advanced experimental and computer simulation techniques used to study surface topology, adsorption properties, pore structure and transport properties useful for the design of the required catalyst features, new catalyst design combined with advanced reactor design technology can implement any process it is considered economically useful and ecologically useful, effective.

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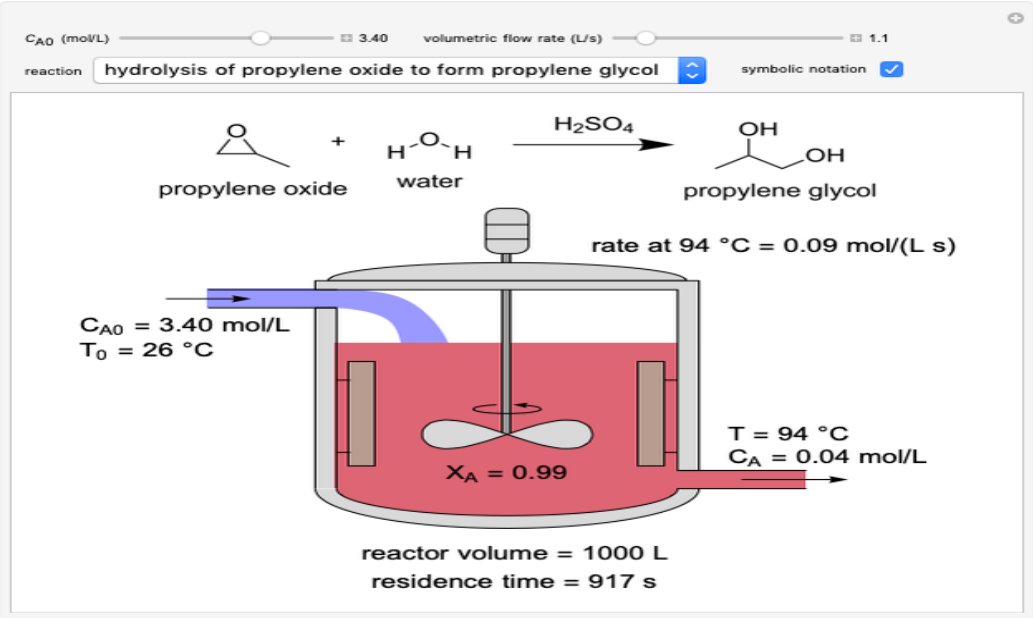

Picture2. Chemical Reactor scheme

Results

It cannot be said that all contents and parameters have an equal effect on the properties under study. Some parameters change and the presence of certain contents to these properties does not have a significant effect. Such contents and parameters is somewhat insignificant, even if uiar is not taken into account in the model will be. Accordingly, a simple model has only some contents will be. Therefore, the simple model is simple in appearance cannot be (for example, not complex in structure construction). But if you don't include all the influencer content, it is incomplete, the results of its research are an object properties may not match. The model predicts the unknown properties of the object it is important to determine whether it will give and give new information about it it will be necessary to give. First of all, the model is simple research, if possible, and secondly, only when it allows the discovery of the studied properties can increase. Modeling was originally used in aerodynamics and hydrodynamics to clarify scientific ideas. Using similarity theory, small equipment (experimental results obtained on a model scale were transferred to real objects on a large scale. Physical modeling serves as the basis for such observations, in this case, the nature of the model and the object is the same. Physical modeling and analogy theory of chemical technology heat and began to be used in diffusion processes.

Conclusion

This study helps to minimize consumption non-renewable natural resources and their maximization pollution prevention through the use of green chemicals processes in a chemical reactor. This article highlights the importance of establishing environmentally friendly processes and includes chemical and reaction engineering to their design. In recent years, corporations, governments, and researchers have shown increasing interest as the concept of "processes". sustainability has become a focal point. "chemical process" refers to concrete steps that reduce the environment is to study the effects of product manufacturing processes. Difficulty in scaling transitions in reaction processes is implemented using mathematical modeling, in which the model with different physical nature, but the same

properties. From a closed electrical circuit with a mechanical pendulum for adjustment capacitor and inductance coil consisting of different physical nature, but the mechanical vibration and electrical properties are correspondingly the same. Such parameters can be selected for these devices the frequency of oscillation is the same. In this, electric shock The contour is a pendulum model. Both device properties in this vibrations are represented by these and similar equations. This is where the name of modeling comes from - mathematical modeling. In this case, the vibration equation of the mechanical pendulum is is also a mathematical model of an electrical circuit. Mathematical models respectively, as some kind of physical object, real, mathematical are divided into those defined as equations. Otelbayev Azizbek, a student of the Nukus Mining Institute at the Navoi State University of Mining and Technologies, is conducting research on technology automation processes. Azizbek is conducting research on robotics and automation technology of modern technological processes in mining enterprises. Azizbek's articles on technologies and technological processes in mining enterprises were published in international magazines. He is very interested in technological processes, currently studying computer systems management, applications used in mining enterprises. Azizbek is a 4th year student and has been following the processes in mining enterprises for a long time. He is interested in mining and loading processes, flotation and beneficiation processes, and the structure of metal melting furnaces in mining enterprises. Chemical technologies are widely used in mining enterprises. For example, we use chemicals and chemical separators to extract ore by flotation method. Metal smelting is also an example of chemical technology.

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