



CHEMICAL ENGINEERING, CHEMICAL PROCESSES FOR PRODUCTION

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ABSTRACT

Advances in any field are made possible by ongoing processes in the study of chemical engineering, such as the rational use of energy associated with the gradual abandonment of fossil fuels and the transition to chemical processes that can be replaced. The demand for new chemical reaction technologies and related engineering aspects is increasing. This paper focuses on two main aspects: (1) Development and processing of alternative carbon sources and processing technologies in chemical engineering, (2) Integration. improving the system of using renewable energy in chemical production. It has been shown that the correct treatment of these aspects is important for the results obtained. It is also necessary to develop new tools and methods for chemical engineering evaluation. A system for the development of innovative methodologies in the development of chemical engineering materials, reactors and processes has been established. This paper demonstrates the need to facilitate and accelerate learning and is a critical element in catalyzing the transition to sustainable energy use along these lines, and we can turn chemical engineering into more advanced fields.

Introduction

Chemical engineering, chemical processes, chemical reactions, in general, chemical terms are widespread in our life. many aspects of our lives, many professional disciplines and, of course, the profession of chemistry we have information about engineering fields. The reason for this is of course the increasing availability of information brought by and due to the proliferation of inexpensive sensors and instruments, new measurement possibilities. The development of the Internet of Things and smart sensors, increasing the storage capacity of data such as the cloud calculation results. To take advantage of the information that is available, chemical engineers must use the data science methods will consist of process control in chemical engineering. The questions are, what are these methods and what role can

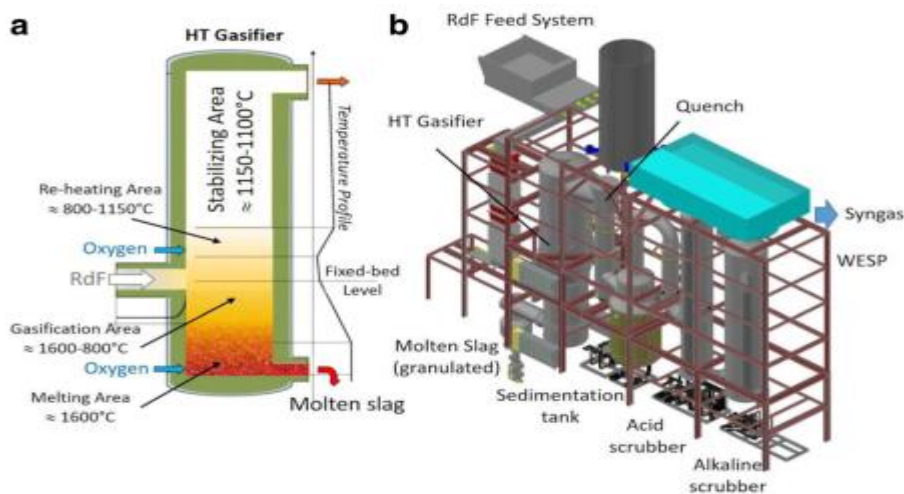


curriculum play, they will also be able to use it to prepare graduates to use it. This article examines some of the trends and developments related to chemical processes, explores the relationship between Data Science and Statistics, discusses some of the limitations, and a list of failures in data chemistry projects and some applications and methodologies in Data Science. Let's see how it relates to chemical engineering. Based on this discussion, for the chemical engineering curriculum is discussed. Multiple Approaches to Teaching Data Science various institutes are considered and finally there is a desire to include Data Science in the curriculum, we cite chemical approaches and research in relation to many other areas available for a modern engineering program. In the Republic of Uzbekistan, the rapid transition of energy and chemical technologies, characterized by the gradual replacement and introduction of renewable energy sources, there is increasing evidence that chemical processes are irreversible, examples are the correct use of energy sources and Alternative carbon feed processing includes. While several scientists and professors debate when this transition might occur, we believe that new investments in chemistry are already underway. Many developments are being made in the field of chemistry. In addition, it is possible to estimate very high costs due to negative feedback on growth rates than in the last decade, the chemical engineering industry is one of the most prevalent industries. and information that we can review has recently been denied. There are complex economic aspects that will determine the transition to new energy and chemical production systems, but technological aspects will also dominate. In fact, this transition does not only involve the use of current. Existing technologies in chemical engineering involve chemical processes with only minor adaptations, and many advances in manufacturing methods are possible. The use of chemicals in the chemical engineering of technology or the preparation of fuels of this technology using chemical methods has been based on clear results. So, the technology of the chemical industry is finding its place in all areas, and we will not be mistaken. The direct use of renewable energy sources in chemical production, i.e. the electrification of chemicals, is another big challenge for industrial, chemical and mechanical industries and enterprises that may take a long time to solve. Instead of using heat (an amount of energy derived from fossil fuels), electricity (based on energy from renewable sources) will be used to run operations. It defines not only engineering technological changes in the supply of energy for chemical transformation, but also complete changes, and chemical analysis is carried out based on these processes. In chemical process design engineering, heat recovery and transfer are considered key design elements and are one of the key determinants of need. We believe that moving in this direction will enable the transition to system-based technologies optimized for small-medium (distributed and mass) production. Most importantly, in contrast to the traditional approach, scale-up studies have been conducted in electrocatalysis processes in parallel units.

Chemical technology research

Thus, it can be concluded that the lack of knowledge in chemical engineering and deficiencies in the relevant multi-criteria evaluation tools can create problems for the study of processes. It is a very good way to identify the aspects of chemical engineering that limit overall performance and the facts based on various solutions and technologies to problems in the chemical industry. Stability, minimization of downstream operations, flexibility, safety

when handling feed with variable compositional aspects are just some of the key words to consider for selection. Presented in a high-temperature power converter, based on these aspects, we can see that Figure 1 is preferred. It is based on a temperature gradient heating system with two oxygen injections located along the base of the vertical axis (900-1000 ° C) and melting (1000-1200 C). Biological waste is heated from the side at a high temperature. We can observe the process by which partial oxidation leads to the formation of syngas. It passes to the upper part of the chemical reactor (the boundary of the stabilization area), where the tars and potentially toxic molecules, as well as dioxins and furans, with temperatures above 1000 °C for cracking, must also be destroyed. In chemical melting, a bottom (melting zone) is removed from it, with a temperature of approx. At 1500 °C, molten liquid and slag are observed, which should be easily vitrified inert for rapid cooling and safe disposal. A related advantage is that the reactor allows relatively large particles to be fed, thereby eliminating grinding costs. The typical composition of syngas produced by chemical technologies is as follows (expressed in volume %): CO₂ 6-15, CO 35-45, H₂ 35-40, H₂O 5-8, N₂, low percentage of O₂ and methane(CH₄) will be Synthesis and other biological waste can be used, which is considered by its effect on the syngas composition. Transient changes in syngas flow and composition due to non-uniformity of the reactor bed due to the use of large volumes and non-uniform dimensions ensure process stability. However, operations with a scaled downstream gasometer and several parallel units can be avoided.



Picture 1. HT converter for a waste treatment chemical plant showing different chemical reaction zones and temperature regime control.

In the chemical engineering industry, the modeling of this type of gasifier can cause several problems, and therefore the process of its optimization is a complex and time-consuming process. Regarding the third issue, we need to reduce the possibility of using catalysts to increase conversion and constant temperature. Catalytic gasification is cost-effective and increases energy efficiency, but has only been used to improve gasification in a few cases. In the chemical engineering industry, we can use Ni-based catalysts, but they cannot be used without ensuring the safety of the processes. affordable catalysts will have to be used continuously for special and catalytic feeding, then we observe that it remains in the molten slag. Olivine or similar natural materials, in which there are many processes of separation of matter. Alternatively, it can be used to improve the fraction in the upper part of



the catalytic gasifier, to polish the syngas, but the catalysts have a high stable temperature and the presence of dust, ash, tar, metals, metal alloys and salt oxides will need to be worked out. . Among other aspects, these three directions confirm the prevention of problems of new chemical reaction technologies, for which the processes of using biological waste as a source of carbon are envisaged from the development of new technologies.

Conclusions

There are many aspects that lead to great changes in the processes and reactions in the chemical technologies of the Republic of Uzbekistan, as well as in the social and political spheres. is used in many fields. This creates an impetus for new chemical reaction technologies and ensures the development of related chemical engineering technologies. We identified two main points discussed in this article: 1]. development of alternative carbon sources and study of technologies based on processing. 2]. The integration of renewable energy into chemical production based on chemical industrial enterprises is based on technological chemical processes. In chemical engineering, evaluations must be performed in parallel with innovative methodologies for developing data, reactors, and processes. Effective from a fundamental and practical/engineering perspective, integrating the chemical technological side to realize the desired goals we can achieve results. Often these cases are still underestimated. Several points have been made to emphasize that their presence is an important element in accelerating the transition to more sustainable use of energy and chemical industries. When moving in the established directions, great changes occur, and the technology-based method of chemical production requires new foundations and practical engineering approaches. In conclusion, we hope to have demonstrated the potential for new chemical reaction technologies emerging from the emerging energy and chemical industries. However, this will be the switch-on rate and also depends on the ability to take a broader and more integrated view of problems. I teach chemistry at school 47 of the Kungrad district of the Republic of Karakalpakstan. I try to explain chemistry to students using different methods. Chemistry is a complex subject, and explaining it to students requires pedagogical skills. Currently, I am preparing a modern method of teaching using computer system technologies. In this way, they will learn about chemistry terms, chemical reactions, chemical bonds and will be able to observe the process in 3D. Only then we can increase students' interest in chemistry. As we live in the age of advanced technology, we need to connect education and training with technology.

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