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# Oil and gas treatment technology after exploitation

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***Abstract:*** Recent years, the global energy landscape is becoming more and more nervous , China's oil demand will continue to grow, China's oil refining industry is facing enormous challenges, Through extensive literature research, analysis of China's oil refining industry at present situation,elaborated the main oil refining technology, points out the main problems of China's refining at present, and proposed the conclusions.

**Key words**: Oil refining; Process and technology; Refining capacity; Environmental problems

## I. INTRODUCTION

Since man began to use oil, oil has played an irreplaceable role in the process of social development, and has promoted the development of world industrialization. So far, the oil has been still the world's economic development and human life level to improve one of the most important energy. Table 1 is 1950. 1971 and 2000 world energy consumption structure[1]. And refining process in the petroleum industry is a very important process, refining of crude oil products mainly of gasoline, diesel, kerosene, oil refining industry in the occupied the very important position. Through scientific and technological innovation, China independently developed the a number of new refining technology, such as heavy oil catalytic cracking, distillate oil and hydrocracking, residue (atmospheric residue, vacuum residue hydrogenation treatment and catalytic cracking (DCC) and large delayed coking as well as a number of clean fuel production technology of new technology, new technology.

Table 1

| Energy\Years | 1950 | 1971 | 2000 |
|---|---|---|---|
| Coal | 50.9 | 29.0 | 25.6 |
| Oil | 32.9 | 48.0 | 39.3 |
| Natural gas | 10.8 | 17.9 | 22.7 |
| Nuclear energy | 6.2 | 0.6 | 7.3 |
| Other | | 1.5 | 2.5 |

## II. PROCESSING TECHNOLOGY OPTIMIZATION

Oil processing technology in the process of roughly divided into three processes, that is, a crude oil processing, two processing, fine processing. The first processing unit has an atmospheric distillation or atmospheric pressure distillation, which is carried out under the condition of atmospheric pressure or vacuum distillation. The second processing unit has delayed coking, hydrogenation refining, catalytic reforming, catalytic cracking, mainly to the crude oil dehydration. Sophisticated processing is in a secondary processing based on the for subsequent processing, which has a higher oil properties and the processing equipment is cracking process for preparing ethylene and aromatic hydrocarbons and other chemical raw materials.

A Constant vacuum distillation process

Atmospheric pressure distillation is the first process that the crude oil enters the oil refinery, and it is also the most important one. Distillation is the first step in the process of crude oil entering the oil refinery. The technology development is mainly in the large scale of the device and the combination and optimization of

various technologies[2]. Under atmospheric and vacuum conditions, according to the different boiling points of the components of the oil, in the tray steam liquid two phase of reverse contact, heat and mass transfer, after repeated vaporization and condensation, the crude oil in gasoline, kerosene and diesel distillate cutting out to produce qualified gasoline, kerosene, diesel oil and so on. Often by the electric desalination, distillation, atmospheric distillation, vacuum distillation[3]. Its key equipment are: distillation column, tube type heating furnace, cold for equipment and motor, gear pump, reciprocating pump, vortex pump, centrifugal pump and other machine pump products.

**B Catalytic cracking technology**

Catalytic cracking technology has three forms of fixed bed, moving bed and fluidized bed. The use of the catalyst in the catalytic cracking process is very important. Catalytic cracking catalyst from shaped aluminum silicate to the development of rare earth hydrogen Y molecular sieve, rare-earth ultrastable Y zeolite, rare earth Y molecular sieve of several different types[4,5]. Gasoline in the vast majority of olefin and sulfur from FCC gasoline, how to reduce the olefin and sulfur contents in FCC gasoline is a hot topic of the catalytic cracking catalyst, reduce the olefin content in FCC gasoline catalyst GOR-Q China RIPP, Akzo Nobel company of Tom, and cobra, grace RFG etc., Luoyang Petrochemical Engineering Corporation of lap series reducing olefin content also made good results for industrialization.

**C Post processing technology**

Recent these years, gasoline in catalytic divided into sulfur after processing technology development has become the technological innovation focus, the present technology of forming abroad CDHydro, PRIM-G, Scanfining etc.. In addition, Phillips s-zorb Pro hydrogen adsorption desulfurization technology compelling and industrial facilities have been established, the desulfurization rate of 99%. Our country basically maintained in selectivity and non selective hydrogenation desulfurization technology with foreign technology synchronization, Sinopec Research Institute of selecting hydrogenation desulfurization technology has realized the industrialization, the sulfur content in gasoline can be reduced to below 300μg/g, but there is still a gap between the Euro III standard gasoline[6].

**D Optimizing refining process furnace**

In industrial production, the furnace process is essential for the oil refining equipment, by improving the process of heating furnace structure, type and improve the heat transfer efficiency measures in a certain extent reduce the environmental pollution. Processing furnace mainly by burning device, convection space, waste heat recovery and ventilation device, can through the removal of dirt to improve heat transfer efficiency, high temperature infrared car finance inch painted heating radiant chamber of a furnace wall on, not only to increase carrier amount of radiation, enhancement of the radiation heat transfer effect can reduce the role of furnace wall heat loss, heat insulation, moisture[7].

## III. THE MAIN PROBLEMS

**A OIL REFINING CAPACITY DISTRIBUTION**

Now oil external dependence is increasing year by year, the supply of resources tends to be short, and our production gasoline and diesel ratio is 1.28: 1 ~ 1.65: 1, less than market consumption of diesel to gasoline than 1.65: 1 ~ 181: 1, can not meet the market demand. In addition, China's refining capacity distribution is not reasonable, in the northwest region refining capacity 6086 * 104t/a, accounting for a proportion of the country's was 14.28%; East China refining capacity en13725 * 104t/a accounted for a proportion of the country's for 32.20%; Northeast for 10447 * 104t/a accounted for a proportion of the country's for 24.51%; China north area refining capacity of 5861 * 104t/a accounted for a proportion of the country's 13.75%; South China refining capacity of the X 104t/a accounted for a proportion of the country's to 13.99%; Southwest refining capacity

541*104t/ aaccounted for a proportion of the country's 1.27%[8].

**B Environmental problem**

In the refining process of waste water treatment has been the problem plagued the oil refining enterprises, then this is a problem that we have to face, only the optimization of refining process, equipment modification, increase the cost of technology and in the cost control within the scope of the maximum drop low pollution to the environment.

## IV. CONCLUSION

1) In the production practice, pay attention to scientific and technological innovation, strengthen the upgrading of equipment, and constantly optimize the refining process technology.The crack's evaluation criteria is mainly reflected in the Porosity and permeability characteristic of the crack.
2) In the oil refining process to attach great importance to the environment pollution, the optimization of refining process, increase the cost of technology, to the maximum extent control the pollution of the environment.

## REFERENCES

[1] Liu Haiyan, in Jianning, Xiao Jun Bao. And the future development trends of world petroleum refining technology status. Journal of process engineering.2007.2 (7):176-185.

[2] Bai Yi. Refinery and ethylene industry development analysis (J). The chemical industry, 2009, 27 (6): 1-8.

[3] Liu Yang. Development of China's oil refining industry and its production process. Mechanical engineer, 2014 (5):59-62.

[4] Zhang Shirui, et al. Conventional refining process technology progress -- oil refining technology progress of (a). Petroleum Planning & Engineering 2009.9 (14): 6-10.

[5] Chen Huimin. Review and Prospect of world petroleum refining technology (1) in NPRA, 2001,, 8:1 ~ 7

[6] Hou Fusheng. Optimize the process of oil refining and development of China's oil refining industry. Oil Journal (petroleum processing).2005.6 (21): 7-15.

[7] Liang Xiaodong. Technical measures to improve the thermal efficiency of oil refining process. Technology Forum.1998.06:114.

[8] Sun Renjin, Qiu Kun, Shan Ligang, Niu Bo. Reflections on the development of petroleum refining and chemical industry chain in China. Chinese and foreign energy, 2009.10 (14): 1-5.