

The Best Choice to Produce Methyl Alcohol with Coking Gas

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To take the Shanxi Province as an example, Shanxi Province is the biggest base of coking coal with explored resource of 590,000,000 tons covered 51.86% of total national explored coking coal resource and 57.5% of the total provincial coal resource. On the basis of the above-said superiority, Shanxi has become the biggest coke production base in China. In 2003, Shanxi produced 67.47 million tons of coke which was 38% of the national yield and 1/6 of world coke yield.

In the year, 11.58 million tons of coke was exported which covered 79% of the exported coke in China and about 48% of international coke supply.

A coking gas composition is as follows:

Elements	H ₂	CO	CO ₂	CH ₄	N ₂	CmHn	O ₂	Σ
V%	58	6	2.7	26	4	2.5	0.8	100

Sulphur content in the coking gas:

H₂S 800mg/NM³

Organic 500mg/NM³ (mainlyCS₂, C₄H₄S,COS)

How to use so much remaining coking gas reasonably? To Maximize using resources, to put the environmental protection in the superiority and to seek the economic performance as three principles, the best choice is to produce methyl alcohol.

Let's take a business of production of one million tons for further analysis.

I. To effectively use the resource

A proposed coking plant with capacity of one million tons can produce 100,000 tons methyl alcohols with a surplus of more than 200,000,000 NM³ coking gas annually. The methyl alcohol is not only an important chemical raw material, but also a kind of clean fuel for automobiles.

II.The low cost to produce methyl alcohol with coking gas.

The great deal of the coking gas is burning in the air, which is not only the waste of the precious resources, but also the pollution of air. If the coking gas can be used to produce methyl alcohol, it not only reduces air pollution around the plant, but also increase income of the plant.

The coking gas of each NM³ is 0.18 yuan RMB, the proposed plant can get 40,000,000 yuan RMB annually.

As a methyl alcohol enterprise, the material cost that each ton methyl alcohol is about 380 Yuan RMB only, 40% lower than production of methyl alcohol with natural gas.

III. Low Energy Consume Cost

A coking plant of capacity of one million tons has 700,000 tons coal stones and medium coal annually, which can satisfy two sets of 2x12 MW to generate electricity and heating supply. The electricity and heat produced by the two thermal power plants

can meet a plant with annual capacity of 100,000 tons of methyl alcohol with remaining surplus as 5000 KW. The cost of the a kilowatt hour is 0.1 Yuan RMB only. Thus the each ton methyl alcohol can save 160 Yuan RMB.

IV. In the process of production of methyl alcohol can separate nitrogen spirit which can dryly extinguish coke.

A plant of 100,000 tons methyl alcohol can separate N₂ of more than 20,000 NM³ by partly oxidization, pressure and catalysis per- hour. It can satisfy a machine coking plant of capacity of one million tons to extinguish coke. It not only reduces the pollution of the solid dust grain, but also saves 3,000,000 tons of water.

V. The synthesized gas produced in the production of methyl alcohol can be used for process of coal tar or thick benzene refinement.

Annually a plant of 100,000 tons methyl alcohol can produce synthesized gas of exhausting the quantity of 88 million NM³s. Synthesized gas contain 90% of H₂ or so. Synthesized gas as raw materials can produce 50,000 tons of gasoline, diesel, heavy oil annually. The production cost of the coal tar hydrogenation is very low, and the profit is very high.

From the above-said analysis, the production of methyl alcohol with coking gas is an environmental protection project, energy recycle project and a comprehensive extension chain which completely fulfills circulating economic theories.

Does the method can go?

The manufacturing of the methyl alcohol:

To classify by pressure grade, it is high, medium, low-pressure; To classify by its materials of synthesized gas, the solid materials are coal and coke and liquid materials are coarse oil, light oil and heavy oil; The gas materials are natural gas, coal seam gas, plant gas, oil seam gas and coking oven gas. The raw material ratio of CH₃OH in our country is: coal and cokes 35%, the heavy oil 35%, light oil 12%, natural gas and acetylene gas 18%. The key technique for the production of methyl alcohol is two points:

The first point is organic desulphurization and the second point is CH₄ pure oxygen conversions. These two techniques has been finally solved successfully by many experts from the National Second Chemical Design and Plan Institute through hard research and test. The production of methyl alcohol by taking the independent intelligent property right has run normally and successfully for half a year. The fact is viable. This technology is successful and the future is bright.

The production of methyl alcohol with coking gas proves that the technique can go, and economic performance proves also very considerable. Methyl alcohol cost is less than 1000 Yuan RMB per ton. The market sale price of each ton methyl alcohol can acquire the benefit of 1300 Yuan RMB.

Generally, the project of methyl alcohol with coking gas is profitable. 10 million tons of methyl alcohol with coking gas can be produced in Shanxi annually. Methyl alcohol can replace gasoline with the fuel to alleviate China and world from petroleum problem. why not be happy to do it?