Free report on process design distillation columns

Environment, Electricity

- What are the major hazards?

In the case, stream 1 is seen to have a pressure of 220Pa. This is the same as 2atm. In this case, then, the vessel that has been utilized should have high pressure which is the same as that of an insulator (Ludwig).

De-C5 and C6+ stream should have a temperature change to 80. 65 C.

Fuel gas stream and C2/C3 temperature is given by -55. 05℃.

Temperature in i-C4 stream is given by -33. 80℃.

Therefore, the columns are wrapped by an insulator to ensure safety

- Major uncertainties

This method makes use of enormous oil amounts. The consequence of this is that the minute changes that will be integrated in the system will bring about significant impacts on the rate of returns. The price of crude oil is seen to be volatile as it keeps on going up and down. Some of the issues that affected the prices of crude oil include war, security issues like terrorism, disputes that come from international transactions and variations due to economy. On the same note, the prices of commodities will be seen to be the same and change at the same value by having cognizant effect on the revenue. Because of the fact that it is hard to maintain constant revenue at a constant value, there is a need to have essential remedies that will help where there are rapid price changes and concerns that are related to.

- Energy interaction opportunities that are recommended

The flow of heat 1 can be utilized so that it acts as a supplement to heat 8 energy. Also, heat 7 energy flows can be supplemented instead of heat 7 energy flows and at the same time, heat 5 energy flow can be supplemented

with heat 4 energy flow.

There is a possibility and a solution that can be engaged where the use of integrated information systems can enable gathering in one place so that a total of 44, 374. 8KW. This amount is enough to undertake distillation column heating process and can also be a good source of electricity

- What are the mechanical sizes of the major pieces of engineering equipment (based on 100 MMSCFD federate)?

- What are the total installed cost of the plant Gas Plant

The computation of the total cost equals $50, 387, 802

- What is the reasonable estimate of annual Operating Expenses

In this case, the medium cost that a barrel goes is $5. 51.

This process will utilize approximately 100MMSCFD. This is the same as 5714249. 7 barrels annually . In this case, the operating expenses of the total expenses will amount to $315, 030, 116.

Taking the fact that 15MW of electricity will be utilized in this entire process, and then there will be 15000 KW/yr×$0. 12/KW=$1800/year

Further, 6 tons of catalyst is required per day thus, 2190 tons/yr×$200/ton=$438000/year

- How to compute profitability?

In the normal business scenarios, profitability is achieved and realized when the cost of expenses is higher than the cost of running operations. The operating expenses costs is obtained by taking a total of all expenses that are used in the process which will include the cost of labor, the raw materials that will be used, and the fee that are used by eth catalyst. There are also fees that are paid for electricity consumption.

- What is the source of market prices for our products?

Platts research company provide up to date information concerning past, present and future forecasts of prices. Therefore it is easy to compare past prices, the present and forecast on the future. This information is useful in the determination of prices and the control of each product.

- What is the cost of the feed?

Medium cost of barrel is $5. 51and 100MMSCFD equivalent amount will be used in the process. Thus 100MMSCFD= 57174249. 7bbl/yr which gives the sum of the annual operating expenses of the feed as $315, 030, 116.

- What is the major economic wildcards?

Spare energy is considered and economic wildcard. Through the use of Integrated Management Systems spare energy of 44, 374. 8kw is derived which can be used for heating distillation columns and generating electricity.

- What is the cost estimate for the next major engineering phase

The next major engineering phase will focus on mechanical engineering therefore it is important have about three engineers, two technicians and two accountants for the process. The process is estimated to be completed after two years and the total cost is approximated to equal $1, 750, 000. Taking a rough estimate of $125, 000/yr cost per person.

- What are the long-lead-time items?

It is advisable to consider equipments manufactured as per the engineering standards. The exception is in the distillation columns which have to be tailored for each condition thereby taking a lot of time. It is thus advisable to start ordering for the distillation columns as early as possible.

- Proceed? Place Orders?

The raw materials are relatively cheap as compared to finished products. Therefore the process is highly profitable. Thus there is need to proceed to the next phase.

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