**Natural Gas in Talara Refinery**

We are going to evaluate and optimize the use of this feedstock in the cogeneration unit of Talara Refinery. Hence, we can make big money savings for the benefit of the company. The following data is important for the project:

1. Very high-pressure demand of Talara Refinery at normal operation: 598,300 kg/h or 598.3 Ton/h.
2. High-pressure steam demand of Talara Refinery at normal operation: 90,000 kg/h or 90 Ton/h.
3. Medium-pressure steam demand of Talara Refinery at normal operation: 284,400 kg/h or 284.4 Ton/h.
4. Production of electric power at normal operation: 100 MW.

According to design, how many standard cubit feet of fuel gas can we obtain at normal operation in Talara Refinery?

We consider normal operation when all processing units are operating at their design capacity. From this point, we can get the amount of fuel gas produced. Once we have the fuel gas production in standard cubit feed, we should see if all this gas is enough to produce all the energy required to produce steam and electricity as a by-product. If we don't have enough fuel gas, we should consume flexigas and if that's not even enough we should consume hydrotreated light naphtha.

This project consists of replacing any, hydrotreated light naphtha of preference, of these products with natural gas, hence we produce the same amount of steam and electricity. However, as natural gas is mainly methane, we could reduce the production of Carbon Dioxide that is eventually vented to the atmosphere, causing the increase of greenhouse gas emissions and the eventual intensification of global warming.

According with the mass balance of SCR, the total production of fuel gas in Talara Refinery at normal operations of all refining units is 31’067,047.884 scf per day.

According with the mass balance of CGE, the total input of fuel gas to the boilers are 4,535.8 Am3/h or 3’844,329.990 Acf/d (not scf but actual).

According with the mass balance of CGE, the total input of natural gas to the boilers are 161.0 Am3/h or 136,456.000 Acf/d (not scf but actual).

According with the mass balance of CGE, the total input of flexigas to the boilers are 171,580.7 Am3/h or 145’423,702.711 Acf/d (not scf but actual).

Then the total energy as input to the boilers are:

Fuel Gas = 3’844,329.990 Acf/d x 793.634 BTU/scf = 3,050’990,987.284 BTU or 504.296 BFOE

Natural Gas = 136,456.000 Acf/d x 954.963 BTU/scf = 130’310,431.128 BTU or 21.539 BFOE.

Flexigas = 145’423,702.711 Acf/d x 130.376 BTU/scf = 18,959’760,664.649 BTU or 3,133.845 BFOE.

Total Energy = 22,141’062,083.061 BTU or 3,659.68 BFOE.