



> HEAVY OIL, CHALLENGES TO DEFINE ITS COMMERCIAL VALUE



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The price of heavy oil depends largely on the cost associated with the quality of the crude oil and the desired quality of the upgraded product. Simply put, as the quality of crude oil decreases, more energy is needed to convert it into the same quality product in terms of the extraction process or during refining. The energy requirement is directly related to greenhouse gas emissions. Although the industry has generally discussed various alternatives involved in recovery and upgrading in economic terms, there is a relationship between energy consumption, energy efficiency and process profitability; often leaving heavy crude at a clear disadvantage versus light and medium crudes.

A barrel of heavy oil costs the value of its commercial by-product (synthetic crude). Therefore, the value of heavy oil is directly related to the world crude oil price and competes with the compatible crudes common in North America (West Texas Intermediate) and Europe (Brent). This is an unfair comparison due to the enormous volume of global heavy oil reserves and the amount of derivatives that can be obtained.

In that order of ideas, the net energy value of heavy oil takes into consideration the total energy required at each stage of the production process until its refining. In mathematical terms, the net available energy of heavy oil is equal to the gross energy of heavy oil minus the total energy required to produce it as a saleable product. In summary, the main stages involved are:

- Pumping of heavy oil/water mixture
- Fluid separation and treatment
- Production and handling of diluent to make a lower density crude blend.
- Derivation into synthetic crude (in the case of upgrading)
- Control of greenhouse gas emissions.

