

## Investigation about Mechanical Equipment Needed to Break the Molecular Bonds of Heavy Oil by Using Hydrodynamic Cavitation

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**Abstract :** The cavitation phenomenon is the formation and production of micro-bubbles and eventually the bursting of the micro-bubbles inside the liquid fluid, which results in localized high pressure and temperature, causing physical and chemical fluid changes. This pressure and temperature are predicted to be 2000 atmospheres and 5000 °C, respectively. As a result of small bubbles bursting from this process, temperature and pressure increase momentarily and locally, so that the intensity and magnitude of these temperatures and pressures provide the energy needed to break the molecular bonds of heavy compounds such as fuel oil. In this paper, we study the theory of cavitation and the methods of cavitation production by acoustic and hydrodynamic methods and the necessary mechanical equipment and reactors for industrial application of the hydrodynamic cavitation method to break down the molecular bonds of the fuel oil and convert it into useful and economical products.

**Keywords :** Cavitation, Hydrodynamic Cavitation, Cavitation Reactor, Fuel Oil

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