

## Ugrading Cracking Technology



The Upgrading Technology entrance to oilfield projects provides strategic environmental solutions, as this technology is a very vital industrial requirement for the next 20 years. After analyzing the feed (Heavy Crude Oil, Waste Hydrocarbons, Slope Oil, Sludge, Residues, Pit oil, Petcock or any and all type of waste oil and hydrocarbon feed) and studying the relative proportions of the original composition of the feed (PONA+S) which are the main components that make up the hydrocarbon (Paraffin, Olefin, Aromatics, Naphthene, Asphaltene, Waxes, Sulfur).

The technology unit associated equipment are designed such as pre-heating, filtering, scraping or separating devices, a boiler unit and heat calibrators. Operating pressure, chemical additives and catalysts injection devices, automation and control system, as well as filtration units. Which are designed according to the results of the analysis and provide specialized solutions for each project according to the nature of the project.

### Videos



cracking technology 2.mp4



cracking technology.mp4

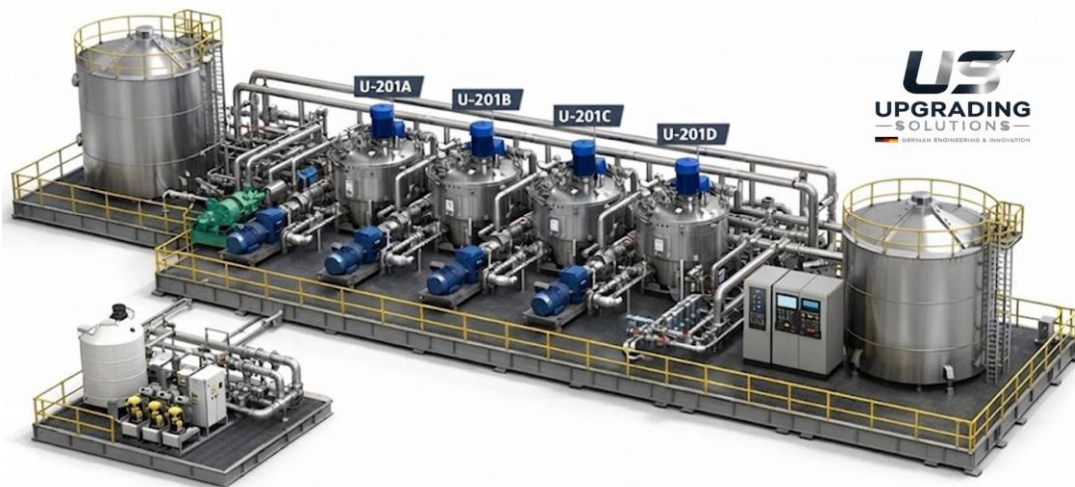
# Pilot Unit



## 25m<sup>3</sup>/h upgrading unit



## INDUSTRIAL UPGRADING PLANT - 14000 BPD



Feed Tank TK-101

Feed Pumps

4 x Upgrading Units U-201A | U-201B | U-201C | U-201D

Product Tank TK-202

## **Product Description**

**This compact industrial unit has been designed to deliver precise fluid processing, efficient filtration, and full process control across a wide range of industrial applications.**

**The system combines a high-performance pump with a variable frequency drive, enabling accurate adjustment of flow rate and operating parameters. Its stainless-steel construction ensures outstanding durability, corrosion resistance, and reliable operation in harsh environments.**

**The unit is equipped with an integrated filtration vessel that provides highly efficient liquid separation and purification. In addition, the pressure monitoring system and safety valve ensure reliable and safe performance under various operating conditions.**

**Its flexible piping system, fitted with high-quality valves and connections, allows for easy installation, maintenance, and operational flexibility.**

### **Key Features**

- **Precise flow control**
- **Integrated filtration and separation system**
- **Stainless steel construction for extended service life**
- **Built-in safety valve for overpressure protection**
- **User-friendly operation via digital control panel**
- **Suitable for continuous industrial operation**

### **Applications**

- **Chemical industries**
- **Seawater, wastewater, and well water treatment systems**
- **Hydrocarbon oil processing**
- **Industrial filtration processes**
- **Laboratories and pilot systems**

## HEAVY OIL TO LIGHT OIL INCREASING API



The upgrading of heavy oil to lighter oil is a crucial process in modern petroleum refining, aimed at improving crude oil quality and increasing its economic value. One of the key indicators of oil quality is API gravity, which measures how light or heavy a petroleum liquid is compared to water. Higher API gravity values indicate lighter, more valuable crude oil.

Heavy oil is characterized by high viscosity, high density, and the presence of large, complex hydrocarbon molecules, along with significant amounts of sulfur, metals, and other impurities. These properties make it difficult to transport, process, and refine into valuable products.

To address these challenges, several upgrading technologies are employed, including thermal cracking, catalytic cracking, and hydrocracking. Thermal cracking uses high temperatures to break down large hydrocarbon molecules into smaller ones. Catalytic cracking enhances this process using catalysts to improve efficiency and selectivity. Hydrocracking, which involves hydrogen under high pressure, not only breaks down heavy molecules but also removes sulfur and improves product quality.

As a result of these processes, the molecular structure of heavy oil is transformed into lighter fractions such as gasoline, diesel, and jet fuel. This leads to a decrease in density and viscosity, and a significant increase in API gravity. Consequently, the upgraded oil becomes easier to transport, more efficient to refine, and more valuable in the global market.