

# Residuum Oil Supercritical Extraction (ROSE™)

Driving refinery capacity and  
accelerating greater returns



**KBR**

# KBR provides testing, training and process controls to help meet refinery objectives

## Upgrading to Compete

The high cost of light sweet crudes is forcing refiners to upgrade processing and conversion capabilities to compete. Yet, most are unaware that a substantial amount of beneficial oil remains in residue streams when using conventional separation processes. Our ROSE™ process provides a cost-effective method for handling resids.

## Maximizing ROI

With ROSE, refiners benefit from a high-efficiency, low cost solution that maximizes yields at lower operating costs. Our ROSE technology is the premier deasphalting solution available today. Our state-of-the-art process extracts high-quality deasphalted oil (DAO) from atmospheric and vacuum residues and other feedstocks. DAO is an excellent feedstock for catalytic cracking, hydroprocessing and lube oil production. With ROSE, refineries achieve several operational and economic advantages including:

- High quality deasphalted oil (DAO) with minimum possible metals, carbon and asphaltene content
- Longer catalyst life in downstream hydrotreating and hydrocracking units
- Increased liquid yields by extracting virtually every drop of beneficial oil from residues, maximizing yields of high value products
- Potential of handling low cost high acid (TAN) crude oils without the use of exotic, expensive, stainless steel metallurgy required for vacuum distillation
- Lower capital cost compared with other residue processing technologies such as delayed coking



Navajo Refinery Company, L.P., Inc., a subsidiary of Holly Corporation selected this ROSE unit for their Artesia, New Mexico refinery.

## KBR technology can help refiners who:

- Need to design, engineer, construct or maintain a ROSE unit
- Find it difficult to speed up project implementation to keep up with industry demand
- Could use more time to devote to core competencies to stay competitive
- Want to bring performance in line with other industry pacesetters
- Realize that keeping up with safety and environment is a job in itself
- Need to optimize operations to avoid costly equipment failure or shut down

# Our ROSE technology is the premier deasphalting solution available today

## Superior Performance and Reliability

ROSE technology is ideal for producing high quality DAO for maximizing liquid yields. Likewise, asphaltenes from the ROSE process are suitable for making first-rate road asphalt, conversion unit feed, gasifier feed and production of fuel oils. DAO from our units contain the lowest possible quantities of asphaltenes, which boost catalyst performance and life in downstream hydroprocessing and cracking units. Simply put, our state-of-the-art asphaltene and DAO separator internals, ROSEMAX™, helps ROSE achieve superior performance every time.

## Designs that Deliver

KBR ROSE technology experts employ state of the art pilot plants, proprietary simulation tools, and engineering analysis and testing facilities to improve our designs. Our KBR Technology Center has two ROSE pilot plants that process a barrel per day and 200 – 500 gram / hr feed to evaluate and select the optimal design for clients' feed and operating objectives.

## Low-Cost, High-Benefit

ROSE enables refiners to drive down utility costs associated with steam, power, fuel and cooling water. Our clients save about 50 percent of the energy costs when compared to conventional solvent deasphalting process. This is achieved by recovering over 90 percent of the extraction solvent as a supercritical fluid. ROSE is cost effective regardless if clients are converting an existing unit or planning an installation.



KBR's Technology Center (KBRTC) contains numerous pilot plants, analytical laboratories and pilot plant fabrication facilities and a talented staff of engineers, chemists, specialists and craftsmen who develop and commercialize new and improved process technologies.

## Act Now

Optimize processes. Maximize yields. Accelerate returns. KBR boosts refinery performance to new heights with our high-efficiency, low-cost ROSE solution.



To learn more, visit: [www.kbr.com/rose](http://www.kbr.com/rose)  
or e-mail [refining@kbr.com](mailto:refining@kbr.com).

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