SELEX-Asp

Selective Extraction of Asphaltenes

SELEX-Asp is uniquely capable of cleanly removing asphaltenes from heavy oil fractions as solid granules.

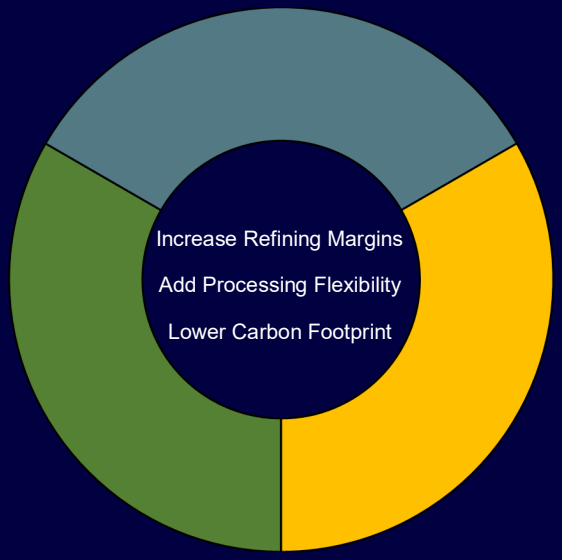
Well

REDEFINE CONVENTIONAL REFINING

SELEX-Asp is the only viable process that addresses the current business drivers: low oil prices, low sulfur IMO fuel oil, low carbon emissions, low cost of investment, attractive rate of return, and diminishing market demand for petcoke.

Without sacrificing utility, SELEX-Asp replaces capital intensive processing units such as cokers and ebullated bed hydrocrackers that are inefficient, expensive to operate, technically complex, unsafe, and often lead to substantial refinery downtime.

SELEX-Asp allows a refiner to respond to environmental regulations that are a risk to its business. For example, SELEX-Asp can be used to produce IMO 2020 compliant low sulfur bunker fuels from high sulfur feedstocks.



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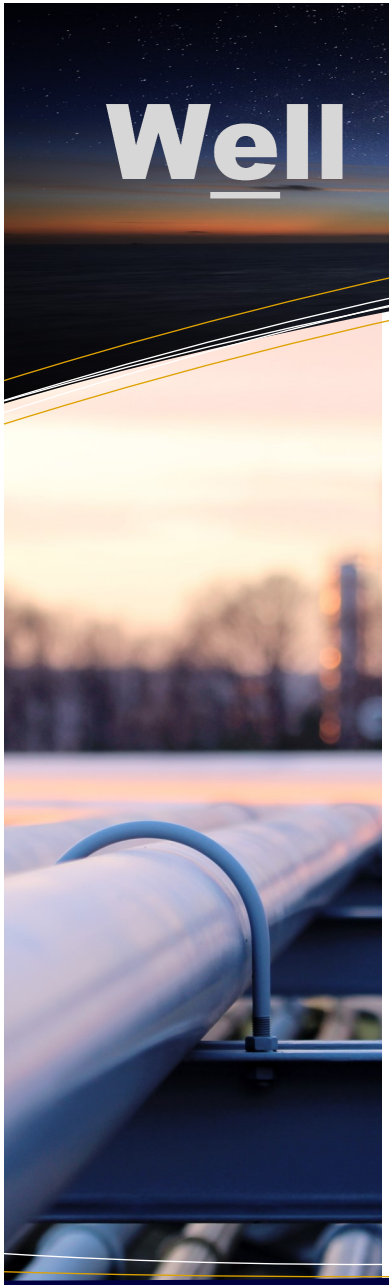


INCREASE REFINING MARGINS

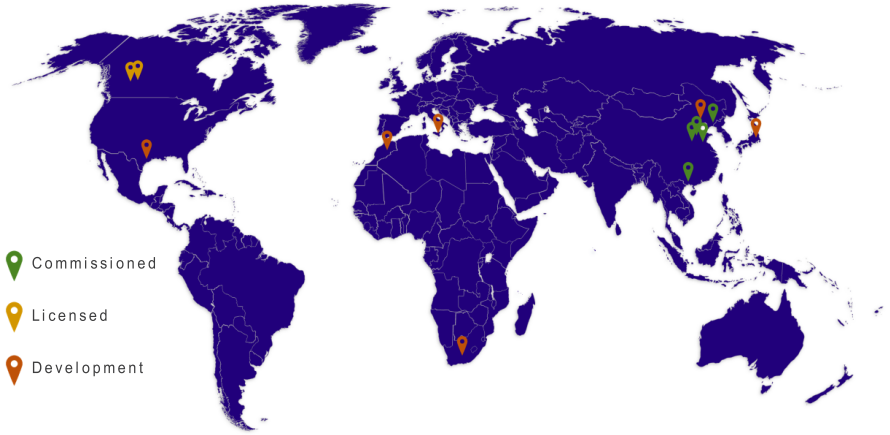
Obtain maximum value from your refinery feedstocks. SELEX-Asp turns low value feedstocks into high value product streams.

Vacuum residues processed through SELEX -Asp can result in quality pricing uplifts of up to $20/bbl; FCC slurry oils processed through SELEX-Asp can result in quality pricing uplifts of up to $30/bbl.

LOWER CARBON FOOTPRINT

SELEX-Asp is a low carbon intensity process that has better performance than high carbon emitting alternatives.

Refiners that implement SELEX-Asp will reduce the environmental footprints of their operations and gain social license within their local communities.



ADD PROCESSING FLEXIBILITY

SELEX-Asp pre-treated residues can be processed in conventional refining processes without negatively impacting operations.

Refiners no longer need cokers and ebullated bed hydrocrackers to manage heavy crudes residues. This allows SELEX-Asp-equipped refiners to take advantage of price advantaged crudes that other refiners cannot handle.

INTEGRITY. INNOVATION. IMPACT.

At Well, we are passionate about developing meaningful solutions to major issues in the oil and gas industry.
We develop and license cost effective and commercially proven technologies based on 30+ years of research and development.

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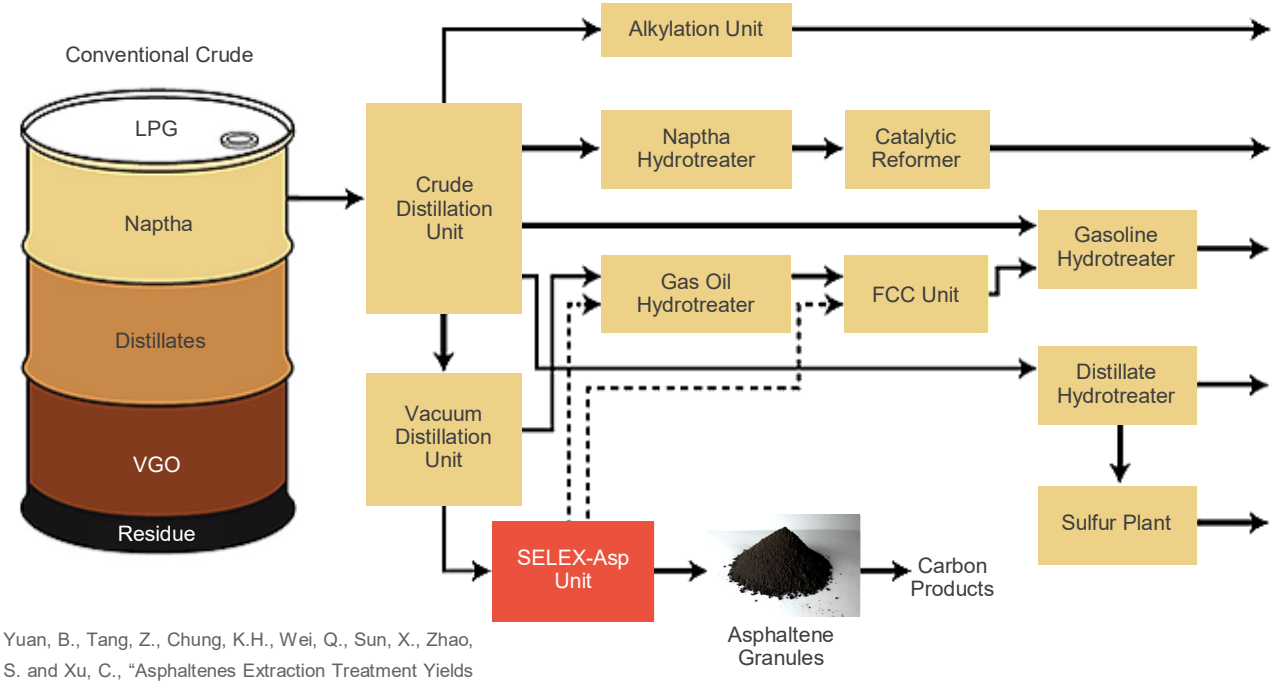
SELEX-ASP IN A REFINERY



Yuan, B., Tang, Z., Chung, K.H., Wei, Q., Sun, X., Zhao, S. and Xu, C., "Asphaltenes Extraction Treatment Yields Advantaged Hydroprocessing Feedstock", Oil & Gas J., June 6, 2016, 70-77.

COMPLIANCE WITH IMO 2020

In January 2020, the International Maritime Organization (IMO) will enforce a new 0.5% global sulphur cap on fuel content, lowering it from the present 3.5% limit.

This will pressure refiners to reconfigure their operations or implement novel technologies in order to satisfy IMO requirements.

SELEX-Asp is a commercially proven low-cost refinery add-on for producing IMO low sulfur fuels.

It increases processing flexibility for refiners as it maximizes the yield and economics of producing deasphalted oil, which can then be sent to conventional refining processes to produce low sulfur consumer grade fuels.

Implementing SELEX-Asp in jurisdictions that produce large quantities of heavy sour crude will allow those jurisdictions to remain competitive in 2020 onwards.

LICENSING SELEX-ASP

Well is actively engaged in bringing the SELEX-Asp process to the greater market. Commercially operating and licensed SELEX-Asp units currently exist in Asia and North America. To explore licensing opportunities, contact us at info@wellresources.ca

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COMMERCIAL SELEX-ASP UNITS

Globally, there is 36,500 bpd of installed, operating SELEX-Asp processing capacity. The largest single unit has a capacity of 20,000 bpd. An additional 35,000 bpd of SELEX-Asp processing capacity has been licensed in North America.




INNOVATIVE BY-PRODUCT UTILIZATION

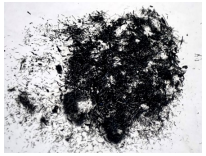
Traditional low-value petroleum residue by-products are turned into environmentally friendly and high value-added materials, which can dually serve as carbon capture mediums for the energy sector.

Virgin Asphaltene Granules

Planting Soil Matrix

Carbon Mat

Carbon Fibre



Carbon Filler

NON-COMBUSTION USES FOR PETROLEUM ASPHALTENES

Granular asphaltenes are easy to handle and transport, are an effective adsorption material and method for treating pollutants, and can also be used as feedstock for producing various carbon materials. Learn more at www.wellresources.ca