



# SOLVENT DEASPHALTING (SDA)

Solvent Deasphalting (SDA) is one of the most interesting "bottom-to-barrel" technologies for the processing of heavy residues at modern refineries.

The technology "SDA PLUS" captivates by its low investment costs as against other residue technologies such as hydrocracker, coker, visbreaker or gasification.

Own pilot plants and long years' research and development activities for various process applications enable us to ensure an optimum technological and cost-efficient plant design.

## TECHNICAL FEATURES

In Solvent Deasphalting asphaltenes are removed from the feedstock in an extraction column. The resulting deasphalted oil (DAO) undergoes further processing to become base oils or fuels. The produced high-asphalt pitch can be processed to bitumen by the Biturox® process or blending, depending on the residue used and bitumen quality needed.



Fig. 1: Propane deasphalting plant (PDA), H&R Ölwerke Schindler GmbH, Hamburg, Germany

We offer the "SDA PLUS" technology both for sub-critical and super-critical operation. The latter requires less operating costs but higher investments (Fig. 2).

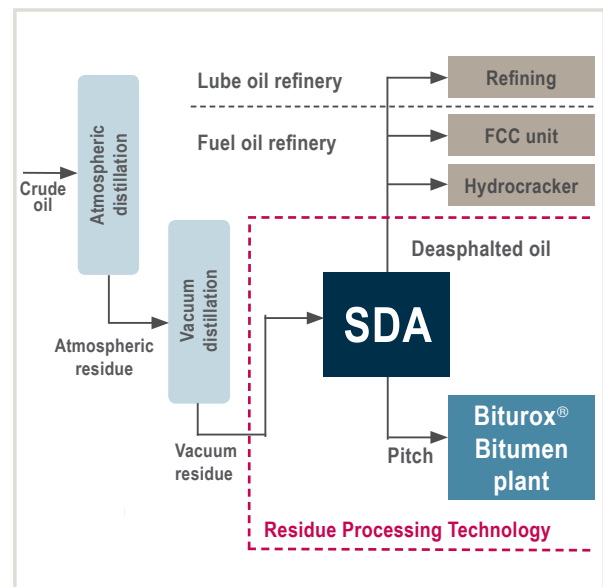


Fig. 2: SDA plant as integral part of a state-of-the-art residue technology

Other specific process applications are:

- Two-stage extraction for extra separation of DAO, resin and pitch.
- Optimization of DAO yield by resin and pitch mixing to bitumen.
- Further processing of DAO to aromatic oils (tender oils - TRAE)

At a proprietary pilot plant the necessary process parameters and optimal process conditions are determined based on the customer's, process and product requirements. It allows us to validate the entire solvent chain from C<sub>3</sub> to C<sub>6</sub> for the process selection.

The pilot tests are the foundation for an optimal solution based on the quality requirements and enable our customers to secure their competitive edge (Fig. 3).

Results obtained from the pilot tests are in particular:

- Determination of equilibrium data
- Optimization and determination of process parameters
- Optimization of solvent rate used for feedstock
- Analysis of product qualities of DAO, resin and pitch
- Determination of DAO, resin and pitch yields



Fig. 3: Pilot plant of EDL based in Leipzig, Germany

## FEEDSTOCK

- Vacuum residue
- Atmospheric residue
- Heavy residues
- Hydrogenation residues
- Used oil

## PRODUCTS

- Deasphalted oil (DAO)
- Resins
- Pitch for bitumen processing
- Pitch for use as energy source
- DAO for production of Treated Residual Aromatic Extract (TRAE)

## ECONOMIC EFFICIENCY

To increase efficiency and obtain optimal product qualities, we use state-of-the-art column internals. The optimization of processes and application of an advanced technology ensures a yield increase of up to 10 % in existing plants. Efficient technologies can reduce the operating costs by up to 25 % as against conventional technologies.

## BENEFITS FOR CUSTOMERS

We offer a comprehensive range of pilot tests from special analyses through to thermodynamic and hydraulic design of SDA extractors and the entire process unit.

Thanks to the consistent development we can provide our customers with various process applications and the entire range of solvents. So, we combine our many years of experience in plant engineering with most advanced process solutions.

## REFERENCES

H&R Ölwerke Schindler GmbH, Hamburg: new PDA plant and extension



Fig. 4: OAO Naftan, Novopolozk, Belarus: Engineering and delivery of two extractors for conversion of PDA plant

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