AROMEX
EDL•TECHNOLOGY

BTX EXTRACTION TECHNOLOGY

Effective technologies to produce BTX aromatics (Benzene, Toluene, Xylenes) result in high product purities and yields and reduce the energy consumption.

PROCESS DESCRIPTION

The purpose of a BTX extraction unit is to produce high purity aromatics from a feed stream of aromatic and non-aromatic components. For most BTX extraction units, the recovery of aromatics occurs in a liquid-liquid extractor column while the purification takes place in an extractive distillation column. Steam stripping is used to remove the aromatics from the solvent.

BTX extraction units use solvents of different polarity, such as sulfolane (high polarity) and diethylene glycol (DEG)/triethylene glycol (TEG) (low polarity).

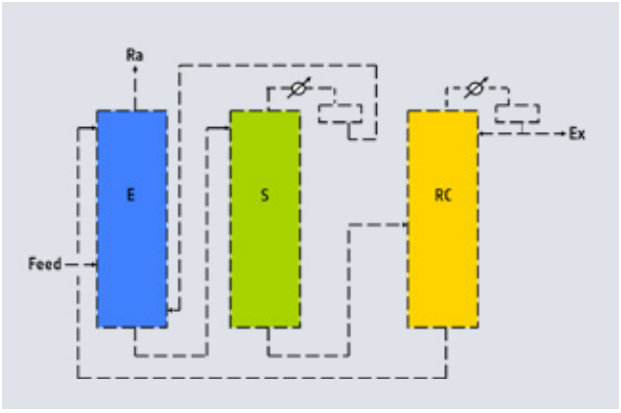

Fig. 1: Flow scheme for more polar solvents

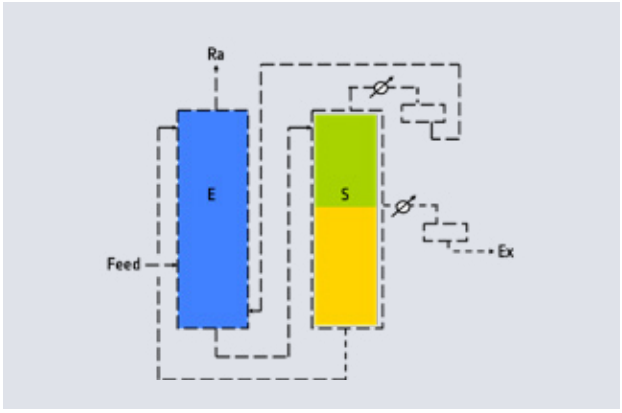

Fig. 2: Flow scheme for less polar solvents

PRODUCT PURITIES AND YIELDS

BTX extraction technologies can produce CH-grade benzene and TDI-grade toluene. Typical recovery of benzene, toluene and xylenes is at least 99%, 97% and 91%, respectively. Higher recoveries require slightly more energy.

SOLVENT SELECTION

The selection of the solvent is often based on some fundamental property such as solvency and selectivity. The more polar solvents have the highest solvency at a given selectivity. A solvent

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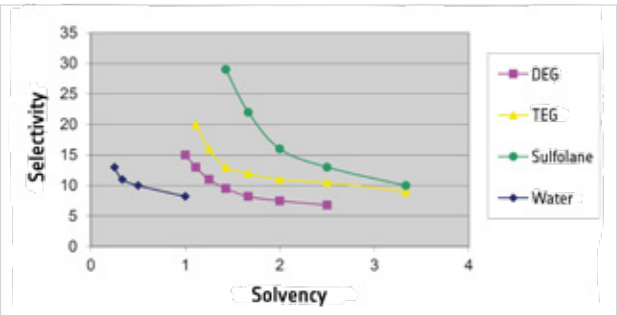
with high solvency would require a lower solvent circulation rate and, therefore, need a lower capital budget for extractor and extractive distillation columns.

However, the solvent recovery would require additional equipment, since solvents with high solvency are more difficult to remove from the products.



ECONOMIC EFFICIENCY

Energy consumption & heat integration

The optimization of a BTX extraction unit in terms of energy consumption and the heat integration in conjunction with the separation of the BTX aromatics bydistillation is integral part of the EDL/TTC design process.

ISBL Cost estimate

Indicative ISBL costs of a BTX extraction unit for the production of high purity aromatic products with an assumed capacity of 10,000 BPD of reformate feed (Table)

Technology	Cost (USD million)
UDEX	7.5
Sulfolane	10.0
Extractive distillation	8.5

SERVICES

EDL together with TTC offer the following scope of services:

- Process simulation for individual columns of the BTX process as well as the entire BTX extraction unit
- Analysis of current operation and determination of bottlenecks
- Recommendations for process modifications (e.g. modification of flow rate, change of solvent, modification of internals)
- Process studies
- Basic and detail engineering, procurement and construction services for BTX extraction units

BENEFITS FOR CUSTOMERS

Our customers experience the following benefits:

- 20–30% increased capacity
- 10–50% decreased energy consumption
- More robust operations
- Fewer problems with corrosion
- Inexpensive advanced process control
- Utilization of existing equipment as much as possible
- Become cash neutral within 3 to 6 months

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