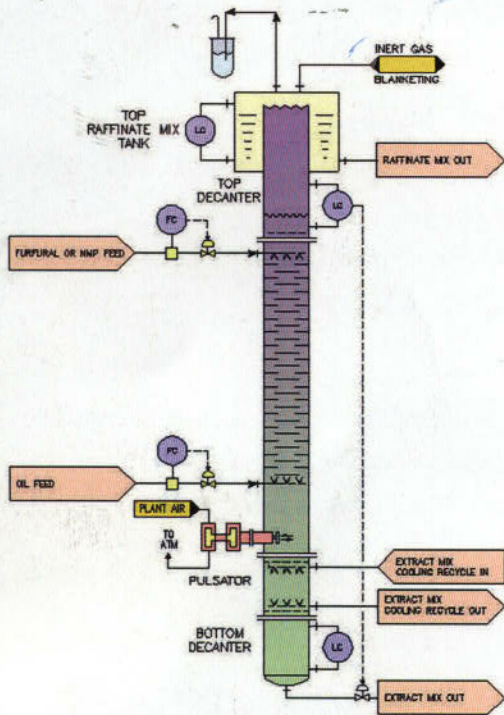


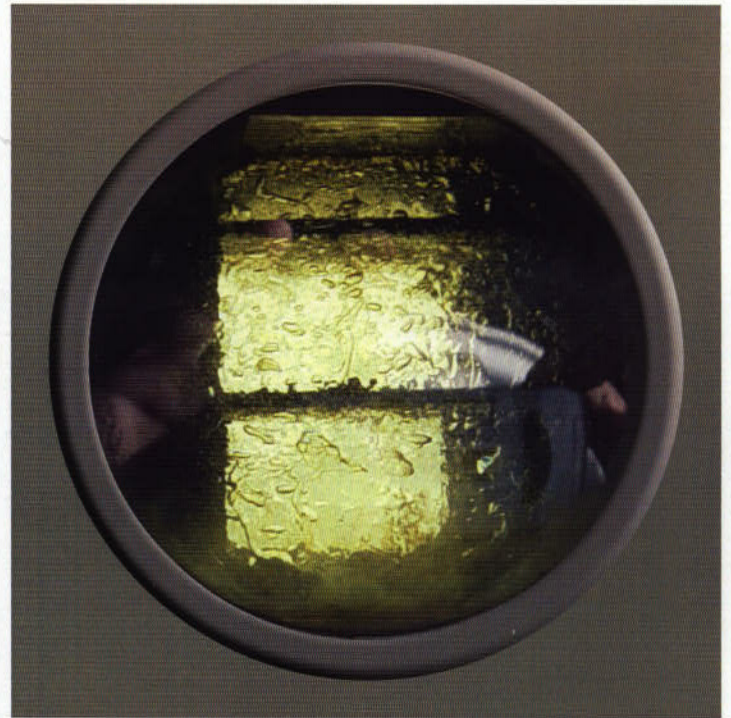
# BATEMAN

## Bateman Pulsed Column for Aromatics Solvent Extraction of Mineral Oils

Successful pilot tests demonstrate BPC advantages and prove its profitability.



Mineral Oil SX by Furfural - BATEMAN  
Pulsed Column pilot scheme (BSX-HBO, 2004)



Mineral Oil SX by Furfural - BPC inside view - Pilot of BSX-HBO, 2004

BATEMAN Solvent Extraction (BSX), a division of the Bateman International Group, is a leading provider of technology and process design in the field of solvent extraction (SX).

BSX proprietary technologies include the BATEMAN Pulsed Column (BPC) and BATEMAN Settler. BSX also represents worldwide the IMI solvent extraction equipment, Turbine Pump Mixer (TPM) and Compact Settler (with IMI proprietary internals).

Most BSX activities are in the mineral industry (Uranium, Nickel, Cobalt, Zinc and more) and inorganic chemical industry (Phosphoric acid purification, recovery of Hydrochloric acid, Sulfuric acid, Nitric acid and more). In recent years BSX has also focused on the organic industry, mainly Mineral Oils SX and Caprolactam SX.

Over the last few years BSX conducted several successful BPC pilot site tests for Caprolactam solvent extraction and re-extraction at European Caprolactam production sites. The tests involved various solvents such as Tri Chloro Ethylene (TCE) - the site's current solvent, and Toluene - a suggested replacement for Benzene. BSX was also involved in academic BPC pilot lab tests for Caprolactam solvent extraction and re-extraction using Benzene and Toluene.

During 2003-2004, BSX conducted a successful BPC pilot test campaign for aromatics removal from Mineral Oil feeds, using furfural as the solvent. The test was performed in collaboration with Haifa Base Oils (HBO), a mineral oils producer.

In these tests the performance of a BPC pilot unit of 200 mm diameter was simultaneously compared with the performance of the industrial unit, a Rotating Disc Contactor (RDC). Both units were fed with the same oil feeds (SN500 and SN150) during the test campaign.

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