

Chemical Industry

COUNTRY: USA

PRODUCT: LCI Vertical Thin-Film Evaporator

KEY BENEFIT: Tars / Resins Devolatilization



PPM Residual Solvent Content

LCI agitated thin-film evaporator devolatilized tar from 20% to <500 ppm residual solvent content in a single pass. Low solvent content achieved resulted in a 100% increase in product value.

Problem:

Client was working to develop a novel process for recycling a tar feedstock. Product needed to meet ppm residual solvent content requirements and maintain performance characteristics. Increased viscosity of final product presented handling challenges for other evaporator types.

LCI Solution:

Testing: Client tested at LCI's Charlotte, NC pilot facility. From test data, LCI was able to prove concentration of the product, generate qualification samples for investors, and scale up to a production size evaporator.

Process Design: Counter-current evaporators effectively complete a multi-stage flash evaporation in a single unit. For low residual, difficult separations, nitrogen sparging within the evaporator was used to lower the partial pressure of the volatile component allowing for enhanced stripping.

Fixed clearance thin-film rotors are capable of processing applications with viscosities < 50,000 cP. High viscosity rotors provide positive transport for viscous materials which do not flow by gravity— 50,000 to 10 million cP.

Results and Comments:

Qualification trials were successful. The LCI evaporator exceeded expectations and removed solvent content well below the required ppm threshold allowing for a robust process and additional product value. Customer is looking at duplicating the entire process at other locations.



12m² LCI Vertical Thin-Film Evaporator Skid System – Evaporator Model LVSI-1200