Application Portrait

Purification of Fatty Acid Alkyl Ester

Fraunhofer IUSE Institut Umwelt-, Sicherheits-, Energietechnik UMSICHT

Fraunhofer UMSICHT is one of 58 Fraunhofer Institutes in Germany. The technical and personnel development at the institute focuses on process technology, with bio-refining is one of four main strategic subjects at Fraunhofer UMSICHT. Bio-refining is an integrative and economical concept for the bio-chemical and thermo-chemical conversion of renewable raw materials (i.e. an intensive use of biomass) into chemicals, materials and fuels.

Problems of recycling raw materials and products are solved in connection with process design and process integration. Various laboratory and pilot plants are available for research activities; the existing laboratory equipment was complemented by a KDL 5 Short Path Distillation plant in Spring 2007.

This KDL 5 is equipped with a heated feed system and a totally heatable Short Path Distillator with a roller wiper system. The discharge of residue and distillate is done by means of heatable gear pumps. The vacuum pump set with oil diffusion and rotary vane pump allows pressures down to <0.001 mbar. The plant – including all peripheral devices (heating and cooling units) – is installed in a mobile rack.

In connection with our present research project, initial studies with the KDL 5 plant purified various fatty acid alkyl esters obtained from different production processes. Our goal was complete separation of the esters from the other components of the mixture, especially mono-, di- and triglycerides. The first results are very promising; we achieved purities of >99 % with a product loss of <1 %.

Short Path Distillation plant series KDL 5 at Fraunhofer Institute

Thus Short Path Distillation is a very attractive technology for various tasks in downstream processing. The quality and efficiency of the plant were topped off by the technical support from UIC GmbH.

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