

Adding New Value: Processing of Lipids, Oils and Fats with CO₂

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Carbon Dioxide is a clean solvent. It is natural and will leave no traces in the product or in the remaining materials. Advantages for foods processing are obvious. In industry Carbon Dioxide is used mainly for the extraction from natural materials and fractionation. FeyeCon has developed new businesses with Carbon Dioxide for dyeing and washing of textile, histological coupes in pathology, efficient (spray-) drying and micronisation of vegetable fats.

Processing in Carbon Dioxide requires heavy high-pressure equipment. We have reduced investment cost choosing standardized components. Operating cost were reduced by heat integration and optimisation of process conditions. Carbon Dioxide processes require no solvent removal. This saves on clean-up equipment and operating cost. Value is retained in all remaining materials, for example proteins in bio-meal. The mild operating temperature associated with Carbon Dioxide processing is advantageous when processing thermolabile compounds like antioxidants and fish oils.

Adding value with Carbon Dioxide in lipids processing follows from high-pressure phase behavior. Carbon Dioxide dissolves in liquids and lipids dissolve in Carbon Dioxide. Today solvent-based processing is under serious pressure.

FeyeCon CO₂ Technologies sees the change to clean processing is an unavoidable opportunity. This change will be enabled by cost reduction and additional value e.g. from valorization of by-products. Gas Assisted Mechanical Expression of oil seeds, oleo-chemistry in Carbon Dioxide, oil fractionation and chromatography for ultra-purification, inactivation of enzymes and microbes, extraction from new sources like algae and fermentation biomass, melt micronisation to produce sub-micron fat powders as advanced functional ingredients will all generate new margin.