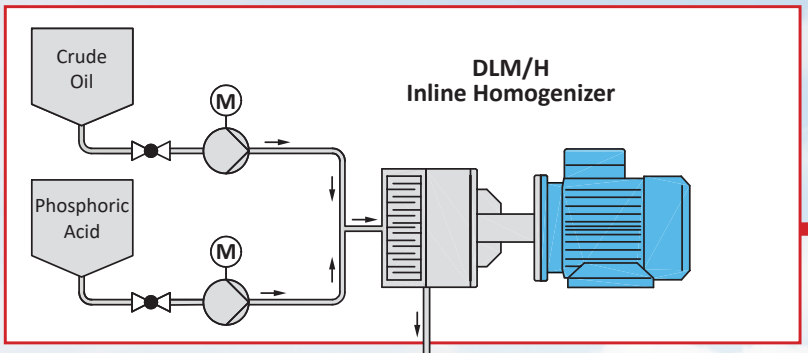
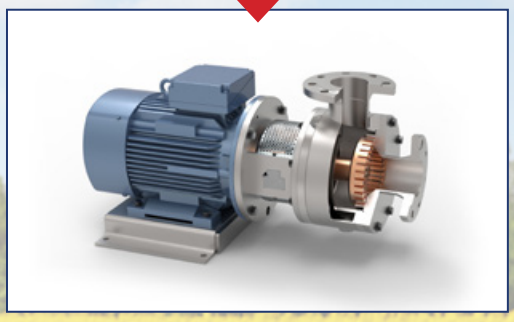
Case No. 508A
Crude vegetable oil degumming



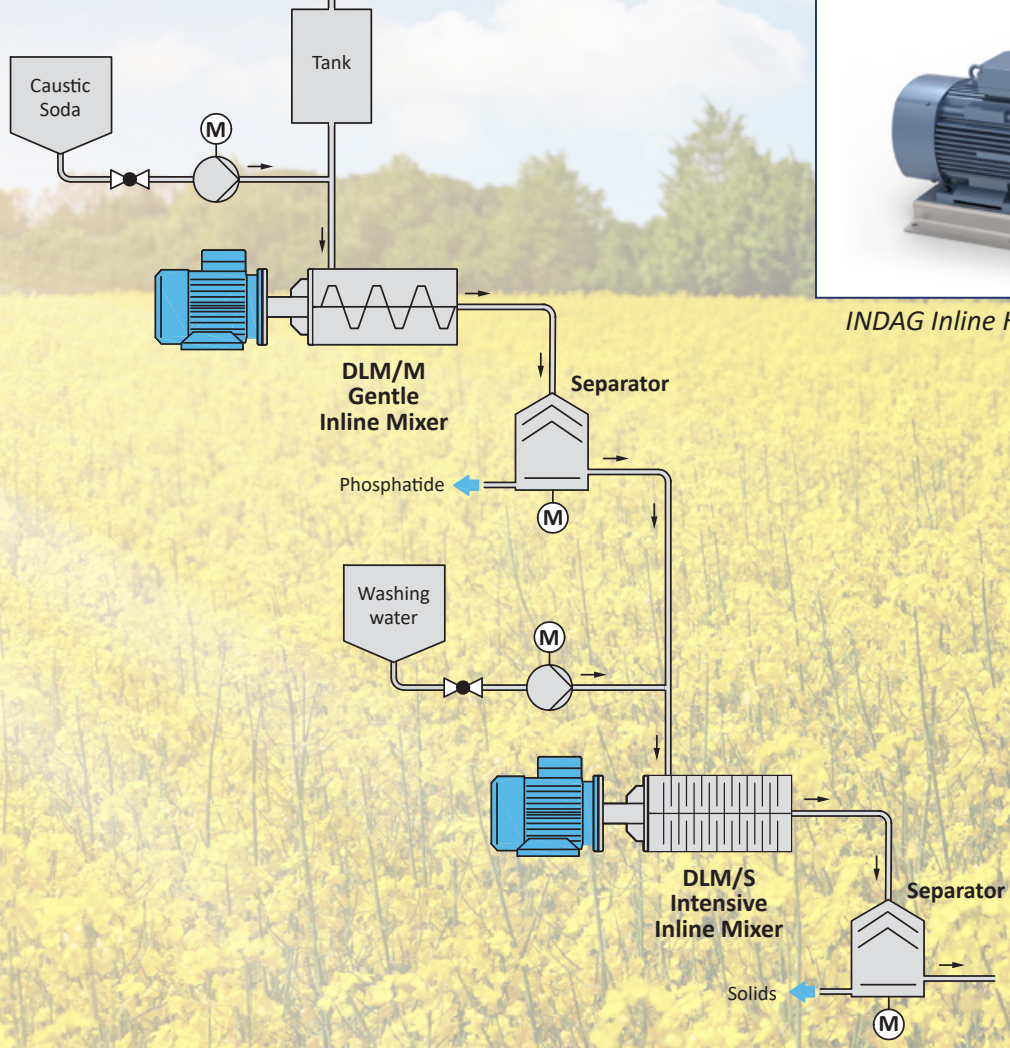


Vegetable oil refining
Step 1





INDAG Inline Homogenizer, type DLM/H



Case No. 508A
Crude vegetable oil degumming





Process description

The crude vegetable oil must be separated from the phosphatides in the **first step** of the vegetable oil refining process. These adhere to phosphoric acid or citric acid, which is added to the crude oil in this process step.

The phosphoric acid usually has a concentration of 75 - 85 %. Citric acid has a concentration of 40 - 50 %. The quantities of these are usually less than 0.1 % of the crude oil. The aim is to get by with the minimum amount of acid, as this is a major cost factor in this process step.

In order to utilise the acid as efficiently as possible, the droplet size must be as small and fine as possible. In this case, the smaller the droplets, the larger the total surface area of the droplets and the larger the surface area to which the phosphatides can adhere.

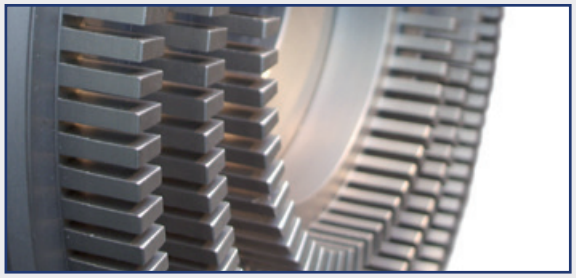
The INDAG Inline Homogenizer applies maximum shear rates into the product to achieve precisely this effect.

In a subsequent process step, the phosphatides bound to the acid are separated in a centrifuge.

INDAG offers the homogenizers in hygienic or in an industrial design, just as the process requires.
The subsequent process step of 'neutralisation' is described in a separate INDAG case study.

Advantages

- **Reduce acid consumption**
- **Improve oil quality**
- **Special single acting or double acting mechanical seal arrangement to avoid polymerization at the dynamic seal and maximize lifetime of the seal.**
- **Over years developed geometry of the shear elements, to maximize shear and minimize sound level power < 80 dB(A).**
- **Same spare parts for the INDAG mixers in all vegetable oil refining process steps.**
- **More than 70 year of experience in manufacturing dynamic inline mixers.**



View of the stator mixing elements of the INDAG Inline Homogenizer, type DLM/H

Comparable applications with a similar process and the same mixer

- Vegetable oil neutralization by NaOH
- Vegetable oil washing by water
- Biodiesel production: Glycerin separation by adding methanol and catalyst
- Biodiesel production: Stop transsaponification by HCL adding

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