

# Macfuge



MACFUGE SEPARATORS  
EDIBLE OIL INDUSTRY

# Macfuge



## OILS AND FATS PROCESSING

Edible oil is one of the most important primary foods for humans, and therefore requires maximum quality.

Oils and fats are used also in a variety of other applications since prehistoric times.

The quality of the final product depends on the refining method and the nature of the crude oil.

Macfuge separators offer a wide range of solutions designed to boost value in this respect, ranging from a separator with a daily capacity of 50 tons for small oil mills to separators with capacities of more than 500 tons per day for large refineries.

The production processes and technologies are as varied as the different types of oil.

The centrifuge is always to be found at the heart of the installation. Whether a self-cleaning separator with a maximum level of automation or a manual operating for high efficiency and batch processing, every customer is able to find the best solution in economic and technological terms for his specific production tasks



## MACFUGE SEPARATORS FOR EDIBLE OIL AND FAT

Crude fats and oils always contain impurities that have to be removed – and there is a growing focus on the environmental parameters for how you do it. Crude fats and oils contain substances that must be removed during the various steps of the processing:

- Solid particles (metal)
- Gums
- Free fatty acids
- Waxes, soap, water, moisture.

The one single technology that plays the most important role in removing such impurities from both animal and vegetable fats and oils is Centrifugal Separation.

Separation is crucial in ensuring the desired product quality, while comply with increasingly stringent environmental regulations throughout the world.

Macfuge separators are designed to ensure maximum flexibility in fats and oils processing and refining operations. An extensive range of high-efficiency disc stack centrifuges, specially developed for use in refining fats and oils, available either as stand-alone items, as modular installations or as part of a complete processing system.

Macfuge Separators are designed to work with different types of fats and oils, being an efficient and flexible solution to purify them, minimizing process loss and maximizing quality.

A highly competitive market in combination with rising energy and feedstock costs, require refineries to increase production while decreasing operating costs. The Macfuge separator, represents a well-proven and straightforward solution to this seemingly impossible equation.

Macfuge delivers a high technology equipment in all the applications requiring separation

MACFUGE 450



MACFUGE 590



MACFUGE 710



DYNAMIC MIXER

# VARIOUS PROCESSES WITH VARIOUS RAW MATERIALS - ONE SOLUTION

The two major refining processing methods are:

- Chemical refining
- Physical refining

Each approach has its own specific advantages, and choice depends heavily on the oil quality and type.

Today they are finalized not only for food industry but also for other important applications such as Oleo-chemical and Biodiesel.

## Refining of various oil as follows

- Soybean oil
- Rapeseed oil
- Sunflower oil
- Cottonseed oil
- Corn oil
- Fish oil
- Animal fat



## Core application in vegetable oil refining

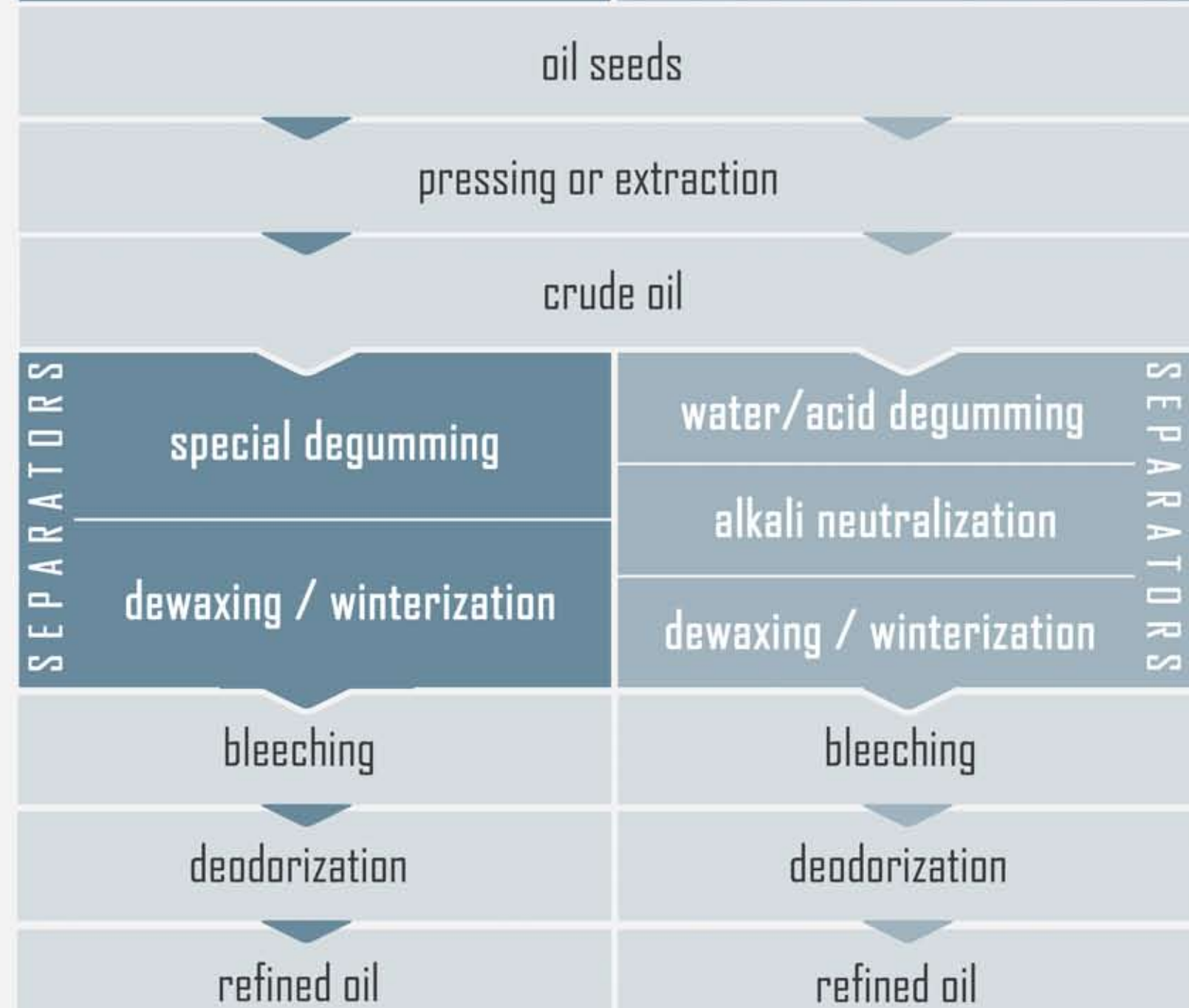
- Degumming
- Neutralization
- Dewaxing/Winterization
- Washing
- 3-MCPD esters and glycidyl esters removal

## Application in Oleo-Chemical applications

- Esterification
- Trans-Esterification
- Biodiesel
- Used oil conditioning
- Fatty acids processing
- Glycerin purification
- Soap making

## PHYSICAL REFINING PROCESS

## CHEMICAL REFINING PROCESS



## MAKE THE RIGHT CONNECTIONS – MACFUGE SEPARATORS

Macfuge separators have been developed for the vegetable oil industry with capacity from 50 Ton/day to 500 Ton/day.

They are suitable for Degumming, Neutralization, Washing and Winterization phases in both Chemical and Physical Refining processes.

Are available both Solid Bowl Separator (Manual Cleaning) and Self Cleaning Discharge Separator (Automatic De-sludging).

The separator is used to clean Oil from liquid heavy phase produced during the various steps:

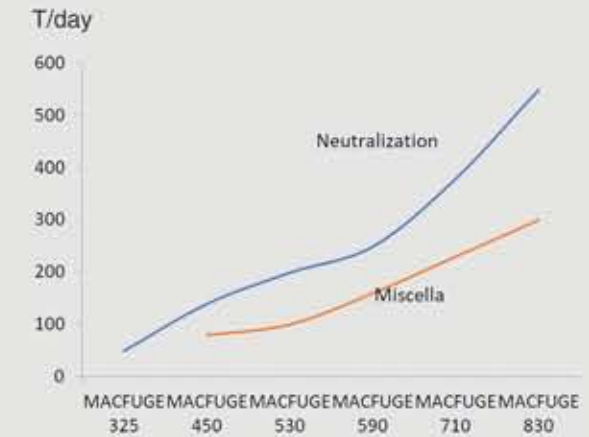
- Water or acid containing precipitated gums in the **Degumming**.
- Soap stock created by water plus caustic/phosphoric acid in the **Neutralization**.
- Remaining soap stock diluted in washing water in the **Washing** stage.
- Waxes or triglycerides diluted in water in **De-waxing** and **Winterization**.

During centrifugation, the Macfuge Separator removes the solid particles which can either be automatically discharged or accumulated in the bowl periphery to be manually expelled.

The Macfuge range of centrifuges for vegetable oil and animal fat refining, benefits from the continuous research in materials, mechanical design and fluid dynamics.

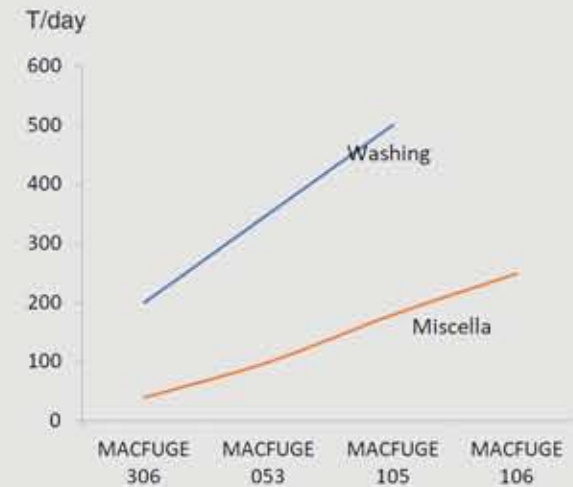


MACFUGE 325  
MACFUGE 450  
MACFUGE 530  
MACFUGE 590  
MACFUGE 710  
MACFUGE 830



SOLID  
EJECTING

MACFUGE 306  
MACFUGE 053  
MACFUGE 105  
MACFUGE 106



SOLID  
RETAINING

MX 5  
MX 15  
MX 30



DYNAMIC  
MIXER

## DESIGN FEATURES

### High quality material construction:

Basin in "heavy" cast iron to absorb vibrations  
Upper parts in contact with the product in high grade stainless steel  
Bowl shell in duplex, high resistant stainless steel

### High efficiency driving:

Motor directly assembled on the basin  
Motor attached to the gear without use of clutch  
Motor driven by frequency converter  
Fine mechanical tolerance  
Less power loss

### Less number of spare parts:

No use of clutch  
Compact discharging system with electronic management

### High efficiency:

Special design of separation discs  
Special design of product acceleration  
Bowl shaped for easy soapstock discharge

### Other peculiarities:

Regulation of separation interface while operating  
Flushing of soap paste  
Water cooling and cleaning injection points  
PLC for parameters regulation  
Motor driven and controlled by frequency converter  
Water flushing to clean solid collector

## ADVANTAGES

### Performance

Reliable discharge system  
Lower power consumptions  
High speed drive

### Separation efficiency

Lower oil losses  
Low soap content in oil  
Ability to discharge viscous gums and soaps

### Quality

High quality manufacturing  
Reduced maintenance  
Continuous material research

### Flexibility

Easier handling during start up  
High throughput capacities  
Adjustable process parameters settings  
System for fine adjustment of the separation at full speed

## KEY BENEFITS

Customized solution  
Quick return of investment  
Prompt service assistance  
Value along the time

## MACFUGE CAPITAL CARE

WE BELIEVE, LIVE AND PURSUE OUR VALUES

EXCELLENCE • PASSION • INTEGRITY • RESPONSIBILITY • EXPERTISE  
RESEARCH AND HIGH TECHNOLOGY • SAFETY • TRAINING • FLEXIBILITY  
EFFICIENCY • PERFORMANCE • RELIABILITY



AN ANSWER TO ANY CUSTOMER'S SEPARATION PROBLEM



# Macfuge

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