

MACFUGE[®] by
SERVIZI INDUSTRIALI
SEPARATION TECHNOLOGY



MACFUGE SEPARATORS
FOR BIODIESEL INDUSTRY



MACFUGE the brand of discs centrifuges made by Servizi Industriali has been successfully supporting the production of high-quality biodiesel with its discs centrifuges.

Thanks to the cooperation with engineering groups, leaders in the biodiesel making technology, we have developed an high efficiency and high performance portfolio of separators.

They are designed and configured specially for the treatment of FAME from vegetable oil, esterified oil, animal fat and used cooked oil and for the final purification into high quality Biodiesel as requested by the more and more stringent rules.

MACFUGE separators are also for the pre-treatment of oil, whether for neutralization or esterification of FFA.

Our MACFUGE separators, ATEX certified, installed world-wide, have captured the Biodiesel Market.



GLOBAL WARMING

The global warming is one of the main and most urgent challenges humanity and life on earth are facing today. The main cause is the enormous amount of greenhouse gas carbon dioxide (CO₂) released into the atmosphere by the burning of fossil fuels. Burning fossil fuels releases more than 6 billion tons of CO₂ per year, twice as much as the biosphere can absorb. The excess CO₂ is clogging the atmosphere, so that less solar heat is reflected away, more heat reaches the earth's surface and global temperatures rise.

Using vegetable oils and animal fats as fuel directly from refinery or from recycling circuits as source of fuel can positively affect this problems. All biofuels depend on the conversion of sunlight to energy that takes place in the green leaves of plants. Plants use water and CO₂ from the atmosphere as the raw materials for making energy. Burning plant or animal products in an engine, releases the CO₂ back into the atmosphere, to be taken up again by other plants. The CO₂ is recycled.

ALTERNATIVE FUELS

- Biodiesel represents an important market that is expected to continue its rapid growth because of the many environmental and economic advantages.
- Biodiesel is plant-based
- No extra CO₂ greenhouse gas to the atmosphere.
- Favorable “net” CO₂ balance
- Reduction of the “greenhouse effect”
- Reduction of ozone-forming (smog) from biodiesel emissions
- Grow your own
- Energy independence based on a sufficient raw material
- Reduces crude oil and diesel imports



BIODIESEL SEPARATORS



MACFUGE Separators are the best solution in the Biodiesel process application.

MACFUGE separators for biodiesel are specially designed to obtain the higher values from both the biodiesel and the by-products "generated by its making", speeding up the return of the investment. They are innovative and continuously following and adapting to the new requirements of the market.

MACFUGE products are the result of a long experience in this application, a major asset which allows the best and fastest answer to the demand of our customers.



TRANSESTERIFICATION

Biodiesel is a methyl ester from vegetable and/or animal oils. It is a biofuel coming from the trans-esterification reaction, a process where the vegetable oil reacts with the methyl alcohol, in presence of a catalyst.

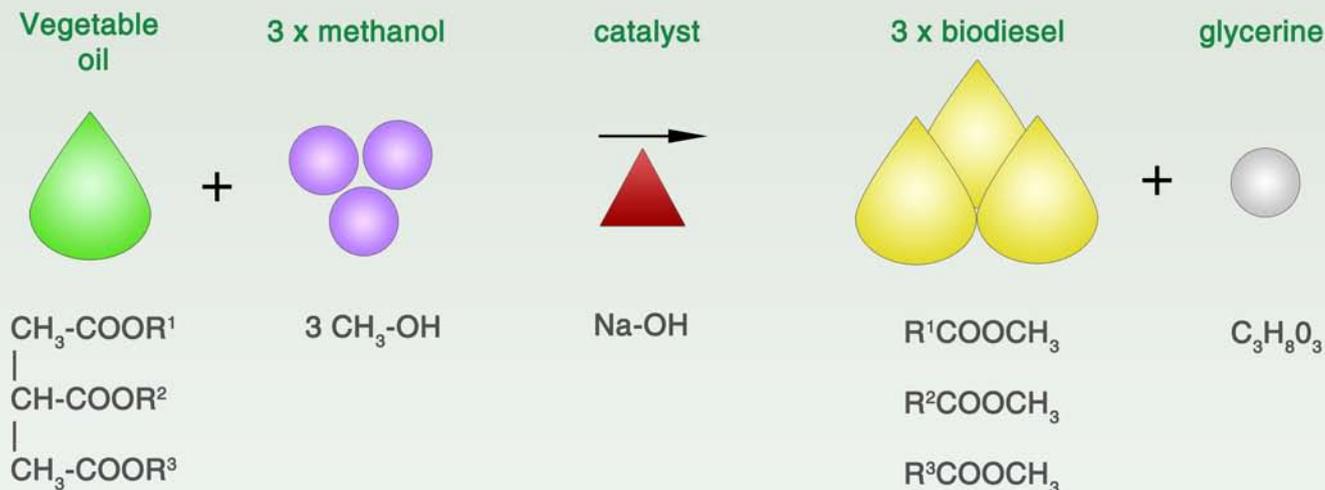
The final product Biodiesel is usually used and commercialized as fuel for road-traction and heating, either mixed with gasoline or not.

The by-product obtained is glycerol, commonly known as glycerine, used and sold mainly in the pharmaceutical and cosmetic industries after being refined.

Our MACFUGE DISCS CENTRIFUGES play an important role in the purification of FAME from glycerol and other contaminants like soap, catalyst and metals.

They are also usefully applied for the final stage of biodiesel clarification, necessary for the biodiesel to comply with the more stringent market requirements, norms and for the glycerine purification.

BIODIESEL CHEMISTRY



BIODIESEL PRODUCTION

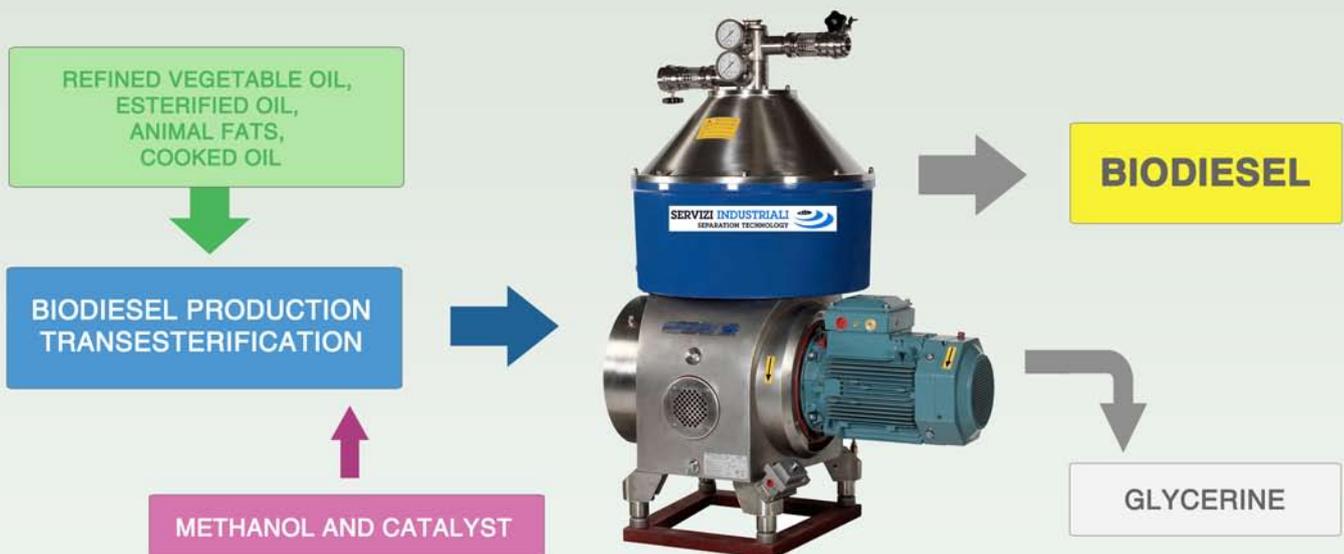


Vegetable oil, animal fat, cooked oil, high FFA oils can undergo several chemical processes, which modify their properties to become an efficient fuel for the modern engines.

Neutralization, Esterification, Trans-esterification, by-product treatment (glycerin purification) all of these require an efficient separation step to produce high quality Biodiesel and recover valuable by-products.

During the process the methyl ester (Biodiesel) has to be washed through a water solution in order to remove the residual of glycerin. The MACFUGE separators may be configured fully ATEX certified, engineered to operate in explosion proof atmosphere.

BIODIESEL / GLYCERINE SEPARATION



THE BIODIESEL MAKING CHALLENGE

Today the biodiesel should face the challenge to be cost effective and to satisfy quality standards, in order to be a realistic alternative to fossil fuel in any condition of use.

Thanks to the use of more efficient separators and advanced techniques, it is possible to process even low quality oils (high FFA, recycled oils) to obtain high quality fuel.

TOTAL CONTAMINATION

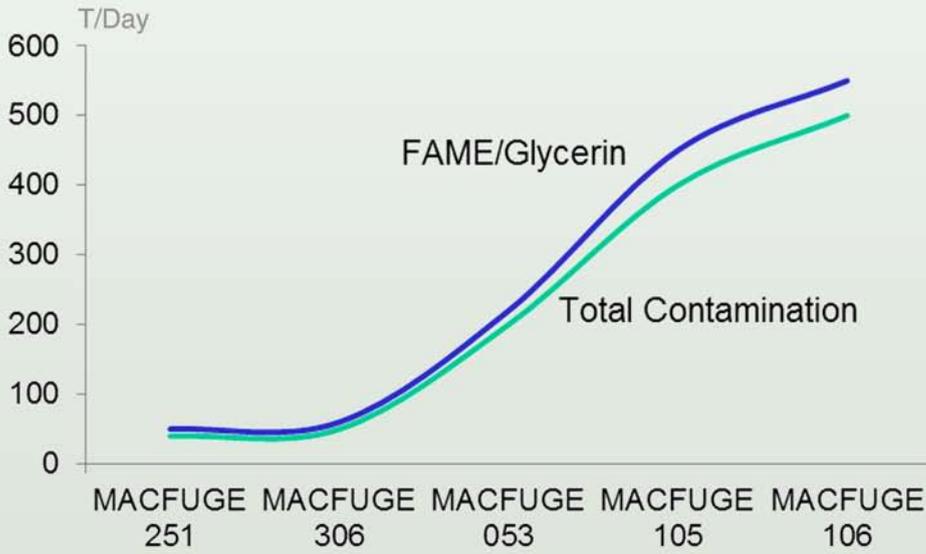
A critical aspect for the acceptance of the biodiesel as high grade B100, is the matching of total contamination parameters i.e the removal of solid (SG) that may appear during the storage or at colder temperature.

MACFUGE separator may play a definitive role to solve this problem thanks to its specific configuration

- Special material
- High speed
- Ability to separate so fine particles



SOLID RETAINING



MACFUGE 251

MACFUGE 306

MACFUGE 053

MACFUGE 105

MACFUGE 106

MACFUGE 325

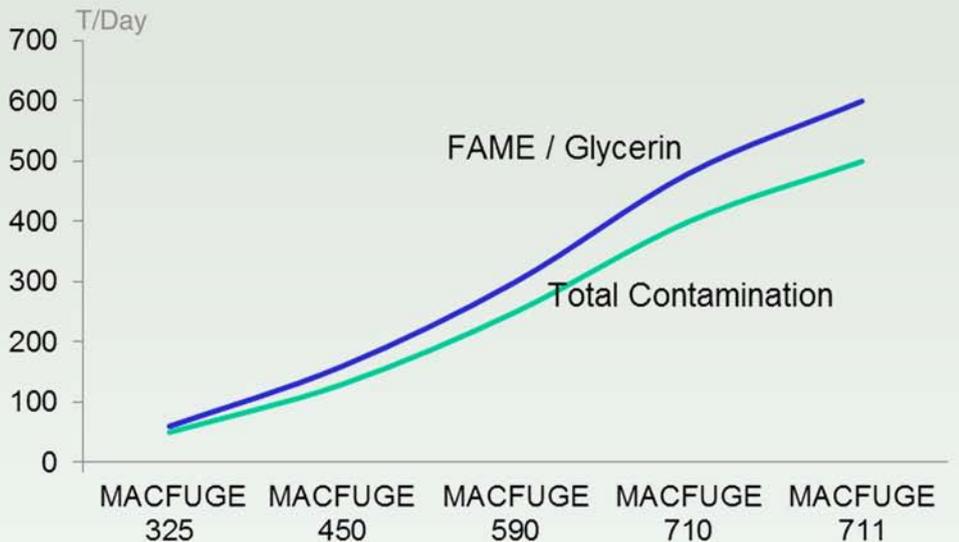
MACFUGE 450

MACFUGE 590

MACFUGE 710

MACFUGE 711

SOLID EJECTING



MACFUGE 325

MACFUGE 450

MACFUGE 590

MACFUGE 710

MACFUGE 711

MACFUGE'S AID IN BIODIESEL PRODUCTION

The Macfuge biodiesel separators range is adapted to the demands of biodiesel production. All biodiesel centrifuges are ATEX approved for use in explosion hazardous areas. Standard systems for inert gas blanketing are also available. Ease of installation and maintenance is always a main requirement of MACFUGE designs.

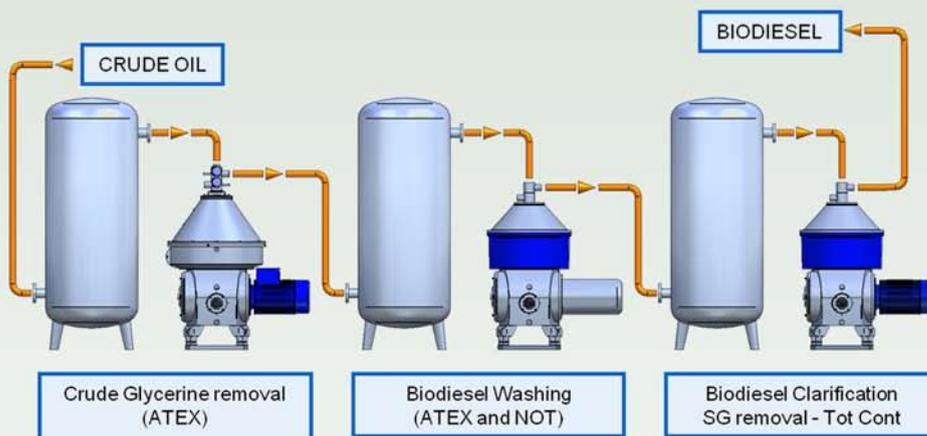
Points that make Macfuge different

Efficient Transesterification – separation finalized with minimum product loss, along with low energy and utility consumption.

High efficiency – less water for washing, less water left in biodiesel and less power for drying.

Enhanced clarification – to meet the strict requirements from fuel quality norms, improving the biofuel value with competitive solution.

OPTIMIZED EQUIPMENT



BENEFITS

MAXIMUM YIELD WITH EXCELLENT PRODUCT QUALITY

QUIET MODE OF OPERATION

INTEGRATION IN AUTOMATIC PROCESSES THANKS TO FREELY PROGRAMMABLE CONTROL SYSTEM

FAST PAY BACK

LOW-COST OPERATION, SERVICE AND MAINTENANCE

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

A high-speed photograph of a water splash, with numerous droplets suspended in the air. The splash is centered in the lower half of the frame. Overlaid on the splash is a stylized logo consisting of three curved, overlapping shapes that resemble a 'W' or a series of arcs. The background is a gradient of blue, with a darker blue at the bottom and a lighter blue at the top. The overall aesthetic is clean, modern, and professional.

AN ANSWER TO ANY CUSTOMER'S SEPARATION PROBLEM

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