

CMBITALY



TECHNOLOGY

The tradition of designing the future

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**UCO
TREATMENT**



CLASSIFICATION OF BIOFUELS

The idea behind biofuels is to replace traditional fuels (fossil fuels) with fuels made from plant material (renewable feedstocks), inedible feedstock or waste oils and fats. Over the year, Biofuels have been classified as follows:

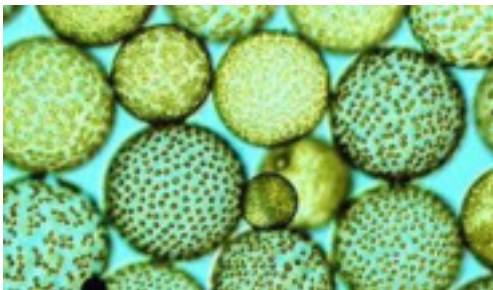
1st generation biofuels when produced directly from edible feedstock such as crops, animal fats, vegetable oil



2nd generation biofuels when produced from inedible feedstock such as tallow, Jatropha UCO, (Used Cooking Oil), waste oils and fats



3rd generation biofuels when coming from algae



4th generation biofuels when not requiring the destruction of any biomass for their production

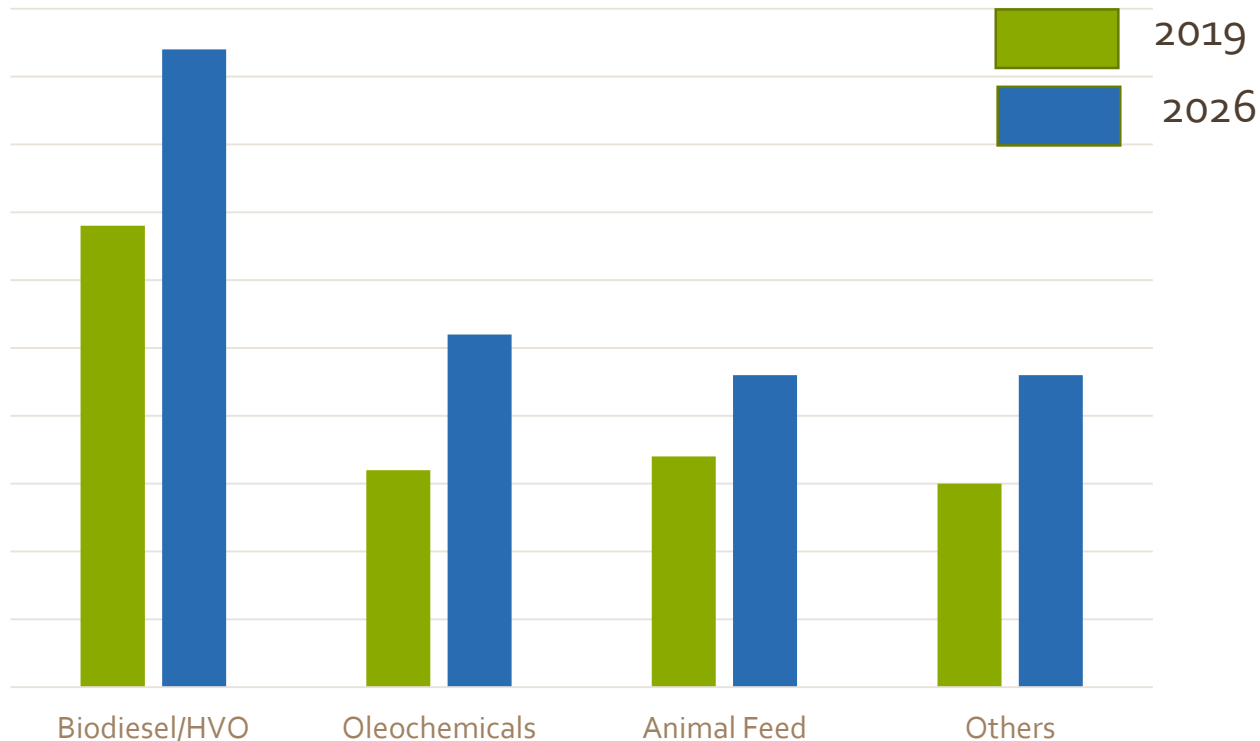


UCO MARKET

Used Cooking Oil (UCO) or waste vegetable oil, is an inedible feedstock which is commonly use to produce biofuels such as Biodiesel and HVO.

Moreover, wide application of used cooking in the production of hydrogen gas, bio lubricants, grease, oleo chemicals, animal feed, and others, has also increased the demand for UCO in these industries.

UCO APPLICATIONS



UCO MARKET IN EUROPE

Increase in the use of used cooking oil as a feedstock for the production of biodiesel drives the growth of UCO market.

In Europe, UCO is mainly imported from China, Indonesia and Malaysia and in 2018 these 3 countries exported more than 500.000 tons of UCO to the EU.

Main users of UCO in Europe are Germany, Italy, the Netherlands, Spain and the UK.



UCO QUALITY

UCO can be derived from a range of vegetable oils including sunflower, palm, rape, soya, and others and generally comes in mixed composition.

Currently, UCO suppliers are only requested to meet the operator's specifications as there are no globally agreed standards. The result is a wide variety of UCO quality and chemical composition. Usually, operators' desired specifications are < 1 % of contaminants and < 4% FFAs.

IODINE VALUE VEGETABLE AND ANIMAL FEEDSTOCK BEFORE FRYING

RAPESEED OIL	PALM OIL	SOYA OIL	SUNFLOWER OIL	CORN - TCO	TALLOW (ANIMAL)
95 - 105	45 - 60	125 - 143	120 - 136	110 - 130	38 - 48

UCO QUALITY

UCO quality is affected by several factors: initial composition of the edible oil (before frying), number of times – meaning how long – UCO has been used for frying, time and conditions of UCO storage, food types that have been fried, and others.

A crucial factor is FFA content - which is higher in UCO than in refined vegetable oil – as it is a parameter that shows how deteriorated is the type of UCO. As an example, UCO with FFA above 3wt% will cause processing problems.

Consequently, before being used as a feedstock for Biodiesel or HVO Production, UCO needs to be pre-treated in order to remove contaminants.



UCO TREATMENT

In Biodiesel Production, UCO treatment is not so stringent. It is sufficient to install a Degumming and Physical Refining unit in order to obtain:

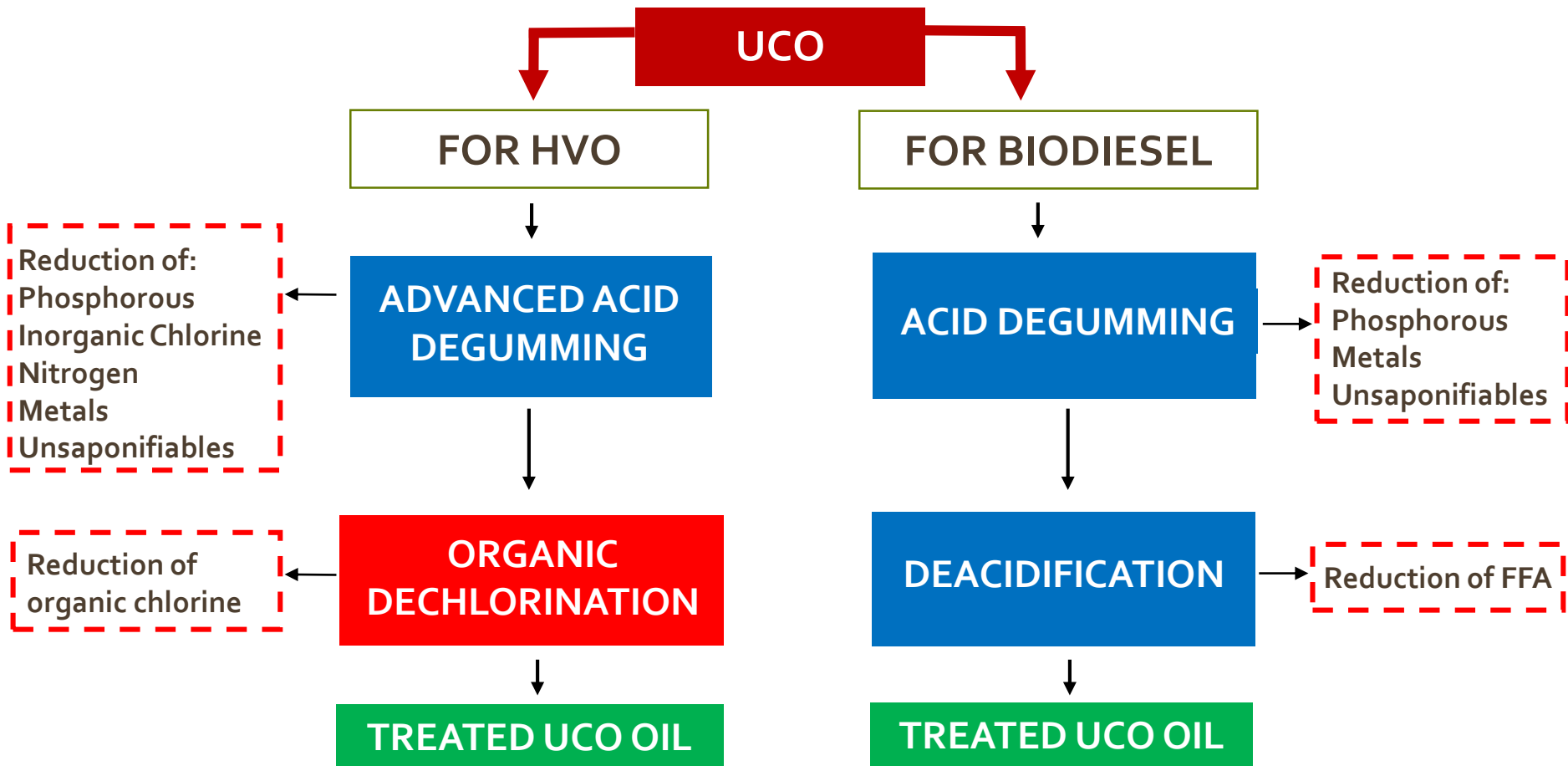
- FFA < 0.1 %
- Phosphorous < 10 ppm
- Water < 0.05 %

Content of metals, chlorine, nitrogen and unsaponifiables has very **low impact** on Biodiesel

In HVO Production, the treatment is stronger as it needs to be more effective to reach much more stringent specifications:

- Phosphorous < 3 ppm
- Metals < 10,
- Free water Absent
- Chlorine between 1 – 10 ppm

IMPORTANCE OF UCO PRE-TREATMENT

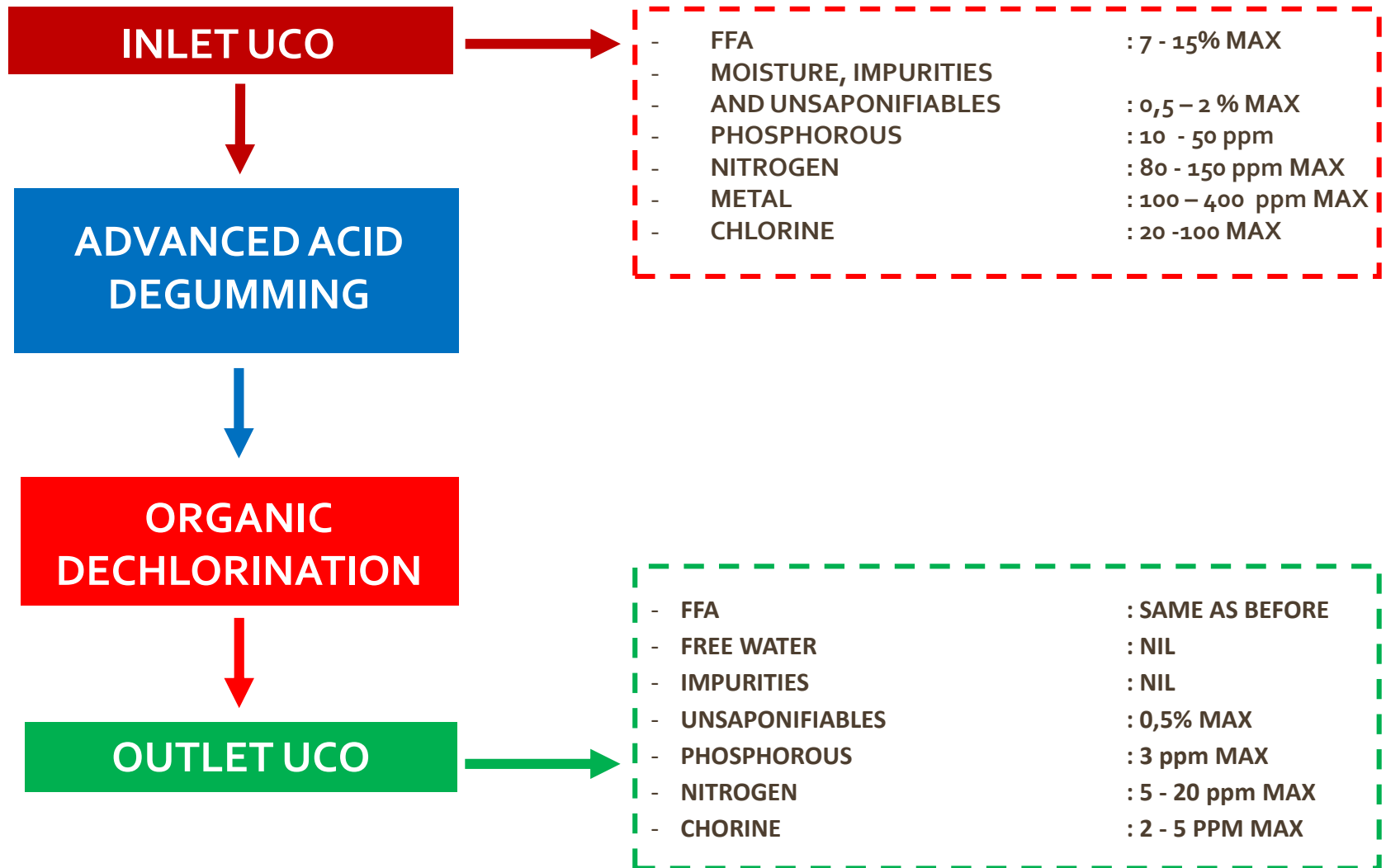


A deacidification step could be needed in HVO production depending on the chemical resistance of the construction material of HVO plant.

CMBITALY-TECHNOIOLOGY offers a new technology of UCO Treatment aimed at removing organic and inorganic chlorides and therefore facilitate the operations of the Hydrotreatment unit and avoid problems of fouling, corrosion and quick catalyst poisoning.



IMPORTANCE OF UCO PRE-TREATMENT FOR HVO PRODUCTION





**FROM SEEDS TO BIOFUELS,
YOUR IDEAL PARTNER.**

BECAUSE WE CARE ABOUT ENVIRONMENT.

