

**Professionals in water!**

Solutions and systems within the potable water, waste water and process water industry.

RWB differentiates itself by supplying standard systems on the one hand and by developing custom made solutions on the other hand. By keeping all disciplines, like engineering, process management,

assembly, commissioning and maintenance in-house and also because of a 24/7 service, RWB can offer a complete package in water treatment. That is our added value!

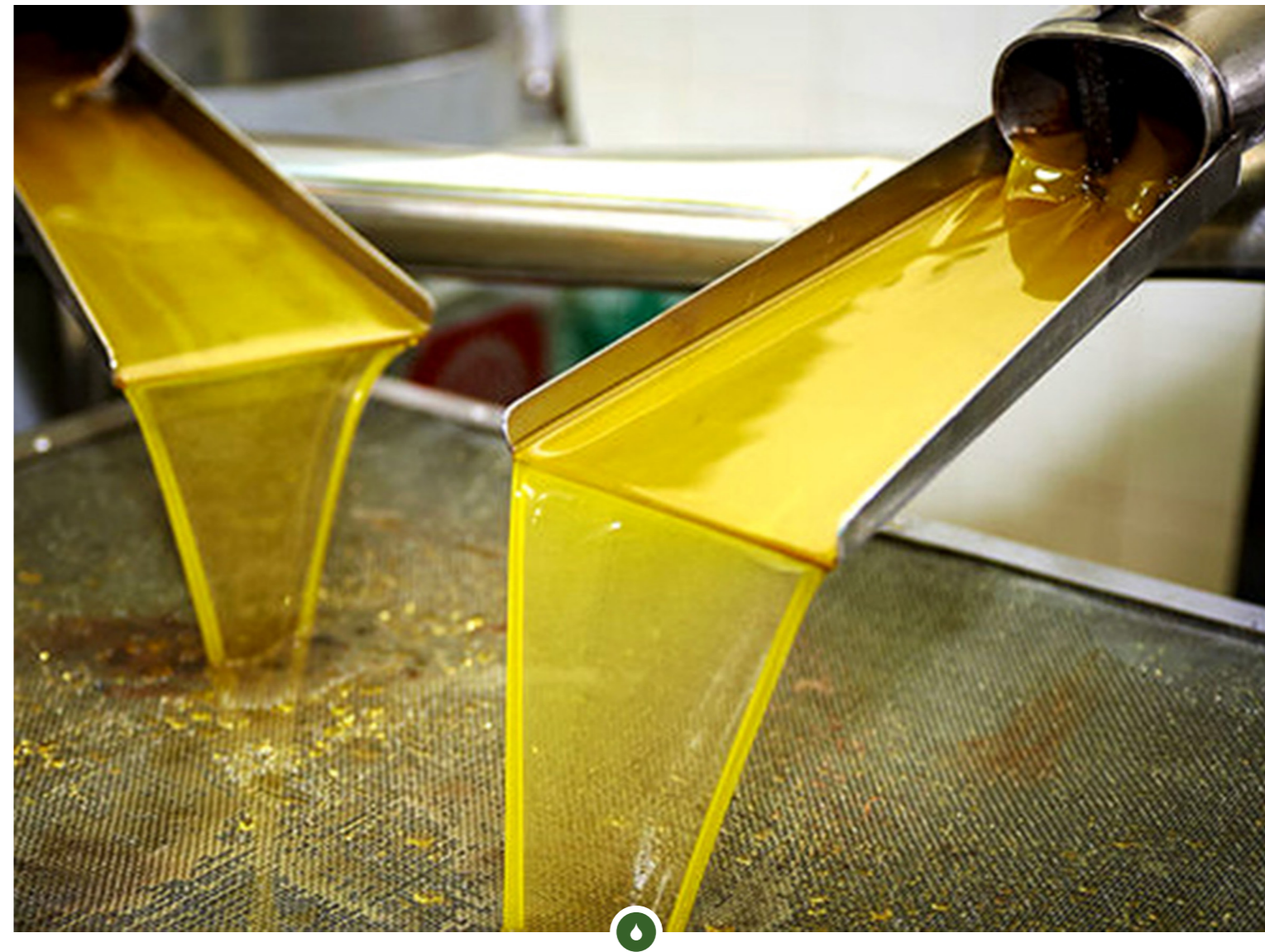
**RWB's services**

- Process technology
- Engineering
- System realization
- Service



# PURIFICATION OF OLIVE MILL WASTEWATER

## Valorization of polluting wastewater



# VALORISATION OF OLIVE MILL WASTEWATER

## Olive mil wastewater

Olive mill wastewater (OMW) is the by-product of olive oil industrial production. It is characterized by a dark brownish colour and a strong odour and is considered one of the most polluted agricultural wastes due to its high phenol, lipid and organic acid concentrations.

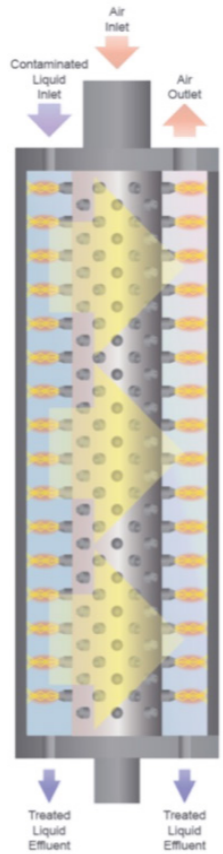
But OMW also contains valuable resources that could be recycled such as a large proportion of organic matter and a wide range of nutrients. Also OMW contains a large amount of polyphenols that have antioxidant properties. A treatment that will allow for phenols collection may therefore lead to economic benefits (used in the food, cosmetics, pharmaceuticals and chemical industries).

## Valorisation with proven technology

In recent years many management options have been proposed for the treatment and valorisation of OMW. Most of these methods aim to reduce the phytotoxicity in order to reuse it for agricultural purposes.

One of the most promising methods for the treatment of OMW, considering effectiveness, environmental impact and cost, is centrifugation – microfiltration – plasma oxidation. Instead of plasma oxidation the microfiltration permeate can be treated with polyphenol adsorbing resins to extract the polyphenols.

RWB has elaborated a robust and reliable process with proven technology to materialise this method.



Plasma Reactor

tenance. Flowrates are tuned to centrifuge capacity. The filtrate is free of suspended solids and is suitable for further treatment by plasma oxidation or recovery of valuable products by applying adsorbing resins.

## Plasma oxidation

Plasma oxidation combines a continuous mixing mechanism with air-enhanced plasma discharge system. The treated OMW will exit without pathogens and (poly)phenols and can be reused for agricultural purposes.

## Adsorbing resins

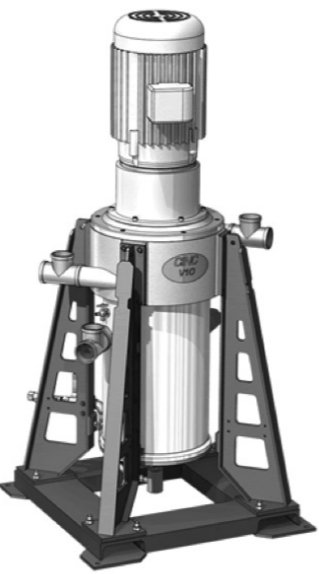
Polyphenols in the filtrate of the microfiltration can be concentrated by application of reversed osmosis (RO). The RO concentrate can be processed

## Centrifugation

CINC's compact, powerful centrifuges are used. These machines are designed to effectively operate at lower RPM, last longer and require less maintenance and accommodate flow rates up to 750 liters per minute.

## Microfiltration

Metawater's compact and high strength ceramic microfiltration membranes are used. The microfiltration units are designed for clogging free operation and also require less main-



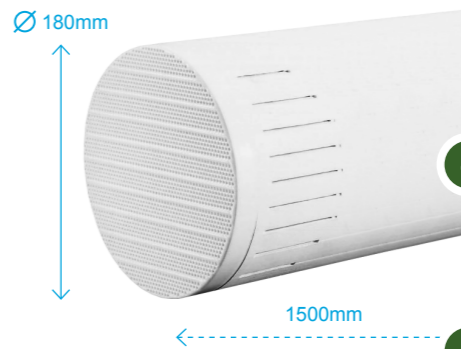
CINC Centrifuge



by regenerable adsorbant resin like the XAD-7. The regenerant is refined to obtain relatively pure polyphenols, which have a market value.

## Additional Service

We can handle your pomace by drying. The dried product can be pelletized and used as biofuel. We use a steam dryer in combination with a belt dryer in order to optimize the energy efficiency of the drying process.



## Advantages

- Compact (can be containerized)
- Valorisation of the waste stream
- Anti-oxidant recovery
- Biofuel production

