

# FOOD AND BEVERAGE APPLICATION

## WASTE WATER TREATMENT AND RECOVERY; SLUDGE TREATMENT

Esmil and EKOTON Industrial Group together with our partners have conducted much research and constructed many plants gaining vast experience in Food and Beverage application. From bench scale studies right the way through to full scale plant operations we strive to offer BAT (Best Available Technology) using state of the art membrane separation and dewatering processes.

### RANGE OF TECHNOLOGIES

Our wastewater treatment technology for Food and Beverage applications is based on combination of conventional **Physicochemical pre-treatment** methods followed by **Membrane Technologies** and **Fine Polishing** methods to meet the most challenging discharge requirements.

The degree of treatment is designed to meet client specified limits such that the treated water is suitable for re-use on site or discharge to watercourse.

We can offer a range of equipment for different stages of wastewater treatment such as **Mechanical Screens, Dissolved Air Flotation Units (DAF), Membrane Bio Reactors (MBR), Ultra Filtration (UF), Nano Filtration (NF), Reverse Osmosis (RO), VSEP systems, Activated Carbon (AC, GAC), Advanced Oxidation Processes (AOP)** and more. For sludge dewatering needs we offer **Chamber and Belt Filter Presses, compact and economical Multidisc Screw Presses (MDQ)** and other equipment.

The possibility to produce all equipment **containerised** gives a great benefit as it can considerably reduce capital costs, project implementation time and required space.

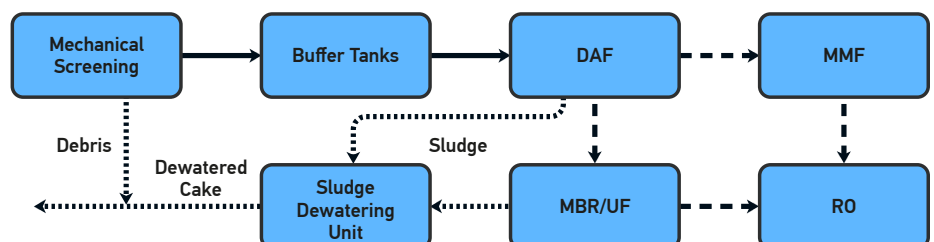
### ESMIL TECHNOLOGY APPLICATION IN FOOD AND BEVERAGE INDUSTRY

Esmil offer a range of technologies applicable for different applications:

- **Meat Processing Plants' Effluents (including Hatcheries and Slaughterhouses)**
- **Cannery Rinse Water**
- **Bottle Wash Effluent**
- **Bottled Water and Desalination Plants**
- **Distillery, Brewery, Fruit Juice Processing Plant and Winery Waste Streams**
- **Biogas Plants' Effluents and Sludges**
- **Oils Recovery and Removal**
- **Starch and Sugar Recovery and Removal**

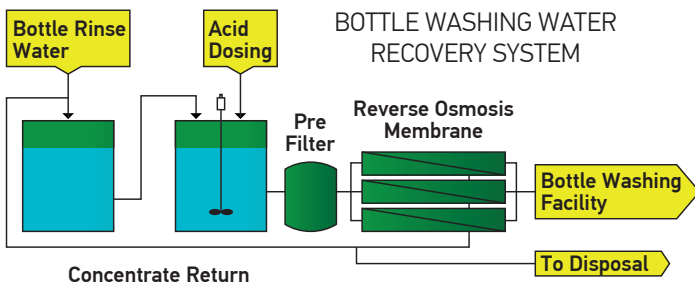
### PROCESS EXAMPLE FOR MEAT PROCESSING PLANT

For meat processing plants' effluents we can offer a whole range of equipment for different technological stages regarding the requirements to the treated water. Esmil technology covers coarse and fine mechanical pre-treatment, highly efficient Chemical and Physical-Chemical treatment, Biological or Membrane Treatment systems. Treated wastewater can be recovered for internal uses of the plant, e.g. washing or for the boiler rooms, or just simply discharged to watercourse, meeting even the most challenging requirements. Generated sludge can be dewatered with our MDQ in the easiest and most economical way ensuring considerable sludge utilization costs reduction. Implementation of technology can be done step by step; together with the splitting of the streams, it allows to invest plant funds in the most efficient way.



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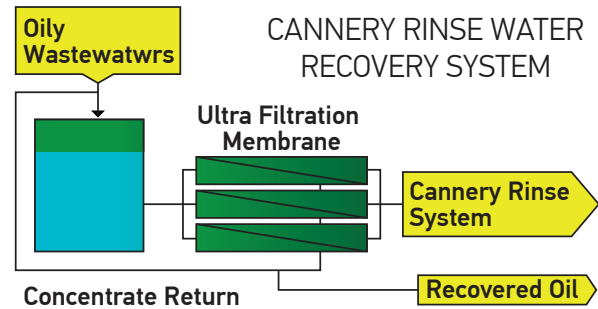
## PROCESS EXAMPLE FOR CANNERY AND BOTTLE WASHING RECOVERY



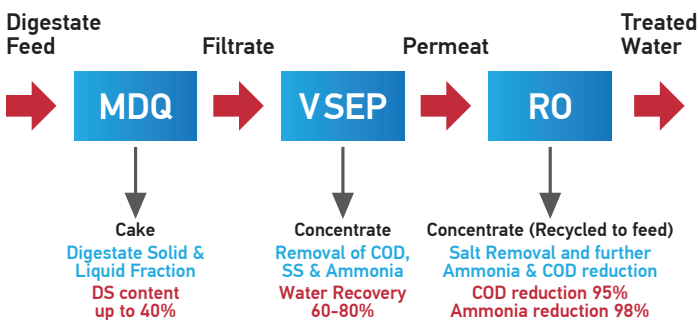
water contains high levels of soluble organics (COD), from the washing of dirty soft drink or alcoholic beverage bottles. RO membranes remove organics, hardness and bacteria from the water enabling optimum recovery to the washing facility.

Cannery rinse water contains high levels of lubricating oil and grease which can be easily removed using Esmil ultra-filtration membranes.

The Esmil Cannery and Bottle Washing Recovery Plants are proven state of the art systems for reducing water intake and effluent disposal thereby realising substantial savings. Both plants produce a high quality permeate, suitable for recovery in the rinsing/washing operations, thus reducing the volume of effluent for disposal by 75 – 90%. This is achieved by a combination of conventional treatment followed by membrane filtration. Bottle wash



## PROCESS EXAMPLE FOR DISTILLERY WASTE



Organic waste from a distillery operation can be fed to an anaerobic digestion plant, recovering a biogas used for energy production. The by-product of this is digestate which is around 90% water with the remaining contaminants such as suspended and dissolved solids, high ammonia and COD concentrations. Esmil's treatment scheme allows recovery of the solid fraction, high quality water and a concentrated stream suitable for land application or disposal.

## ESMIL DESIGN PHILOSOPHY

We strive to use the most appropriate solution to suit your treatment and/or recovery requirements. We are not limited to a single technology as we have a vast range of experience in the majority of treatment technologies. This includes membrane bio reactors, aerobic treatment, media filtration, ion exchange and other membrane technologies across a range of effluents and industries.

As no two processes are equal it is essential to follow a number of steps to ensure that your tailored metal application treatment/recovery process performs as well and economically as possible to achieve your treatment goals.

- Lab scale dewatering and membrane trial and selection to ensure process feasibility
- Long term site pilot trial to allow for feed variation and data gathering
- Extensive plant design and OPEX calculations
- Build, Installation and Commissioning
- Comprehensive service support including maintenance and system upgrades.

## REFERENCES

- Coca Cola Schweppes, UK
- Global Trade, Shchigry, Slaughterhouse, RF
- Hartridges Soft Drinks, UK
- Molprodukt Milk Processing Plant, Zarudnya, RF
- Myronivska Poultry Farm, Kaniv, Ukraine
- Palm Oil Operation, Guatemala
- Pyriatyn Cheese Plant, Ukraine
- Wine Lees, Sonoma County, USA
- Yagotynsky Butter Plant, Ukraine

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