



# Fast to deploy, smart municipal wastewater treatment, desalination, industrial (waste)water reuse

WATER RECOVERY | INDUSTRIAL WASTEWATER TREATMENT | BIOENERGY

Warsaw 2021

SYMBIONA is a **supplier of wastewater, water reuse and waste to biogas technologies** that minimize operating costs and ensure the technical safety of leading industrial plants and municipalities.

SYMBIONA is a source of proprietary, patented & awarded technologies:

- ROVAPO** - water reuse/ZLD technologies family backed up with aerobi technologies (MBBR/MBR/CAS)
- DIGETHERM** - low temperature hydrolysis of Sludge
- AEROMEM** - MBR plants in containers

Multiple references in the **municipal, food, beverage, dairy**, electrotechnical, chemical, paper, pharmaceutical and many other industries **s as well as in medium size cities in EPT and EPC formula.**



# OFFER SUMMARY

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# Flexible partner

Waste and (wastewater)management

## Custom engineered solutions

Pumping stations

Wastewater treatment  
(MBR/MBBR/activated sludge)

Sludge digestion

MSW sorting + **wet digestion**

Waste to biogas

## Smart products for decentralised projects

AeroMem™ containerised plants

ROVAPO desalination & ZLD

Evaporation products



# CUSTOM SOLUTIONS

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# Custom engineered solutions

Tailored for specific needs to close the loop for medium and large municipalities and industry

## Biogas

**Waste digestion, wastewater treatment and biomethane**

Anaerobic digestion of sludge

DIGETHERM thermal Sludge hydrolysis

Wet digestion of municipal waste

Biomethane membrane solutions

## Wastewater

**Custom solutions for industrial and municipal wastewater treatment to close the water loop.**

Aerobic (post)treatment – MBR/MBBR/classical activated sludge

Physico-chemical treatment (water/wastewater)

Nutrients recovery

Pumping stations and more...

## MSW Sorting

**Municipal solid waste sorting and preparation,**

Complete lines for MSW processing with our partners and wet digestion in own technology.





# AnoxyMem® short HRT organic waste digestion and high rate WWTP

**>85%**

**DRY SOLIDS  
REDUCTION**

**>99,7%**

**Max. COD reduction in  
AnMBR**

**BIOGAS PRODUCED >6300 Nm<sup>3</sup>/d**

**WASTE REDUCTION >130T to <2T**

**Part of bigger D&B project delivered by Symbiona for industrial customer – leading European Dairy.**

Organic waste (flotation Sludge, WAS, is introduced to our proprietary AnaerobicMBR which works with performance higher by ca 30% in comparison to classical AD. Plant generates 600kW electrical energy and 50% less final Sludge.

Permeate from AnoxyMem is being treated on deamonicifation and aerobic part (MBBR) to achieve CLASS A effluent.



# MUNICIPAL/INDUSTRIAL WWTP + ORGANIC WASTE

**>72%**

**DRY SOLIDS  
REDUCTION**

**BIOGAS PRODUCED >3000 Nm<sup>3</sup>/d**

**D&B project delivered by Symbiona for municipality - 45000PE.**

Located in heart of Poland this project aims to treat municipal wastewater (and industrial wastewater treated on separate line).

Waste Sludge, and flotation sludges/waste from industries are directed to our AnoxyMix reactor for biogas generation.

Aerobic part of WWTP is providing full treatment (CLASS A) with additional automated – AI steered - biological denitrification and phosphorous removal.



# MUNICIPAL WWTP SLUDGE THERMAL HYDROLISYS

WAS REDUCTION

**>65%**

THP PROCESS  
TEMPERATURE

**80°C**

BIOSOLID

**CLASS A**

**Project delivered by Symbiona for municipality in Morag (Poland) – 65000PE [for general Contractor]**

Symbiona supplied full WWTP design and delivered own low temperature thermal hydrolysis system. It assures to minimise retention time with more biogas and pathogen free biosolids.

Aerobic part of WWTP is providing full treatment to environment with denitrification and phosphorous removal.



# SMART SOLUTIONS FOR DECENTRALIZED PROJECTS

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# Smart solutions

## Prefabricated and standardised systems

### AeroMem™

Packaged MBBR-MBR  
wastewater treatment solutions

100 – 2000 m<sup>3</sup>/d raw municipal  
sewage

Tailor made industrial plants.



### ROVAPO®

Packaged water reuse and  
desalination

200-4000m<sup>3</sup>/d effluent, fresh  
water, brakish water or seawater

= complete water cycle management

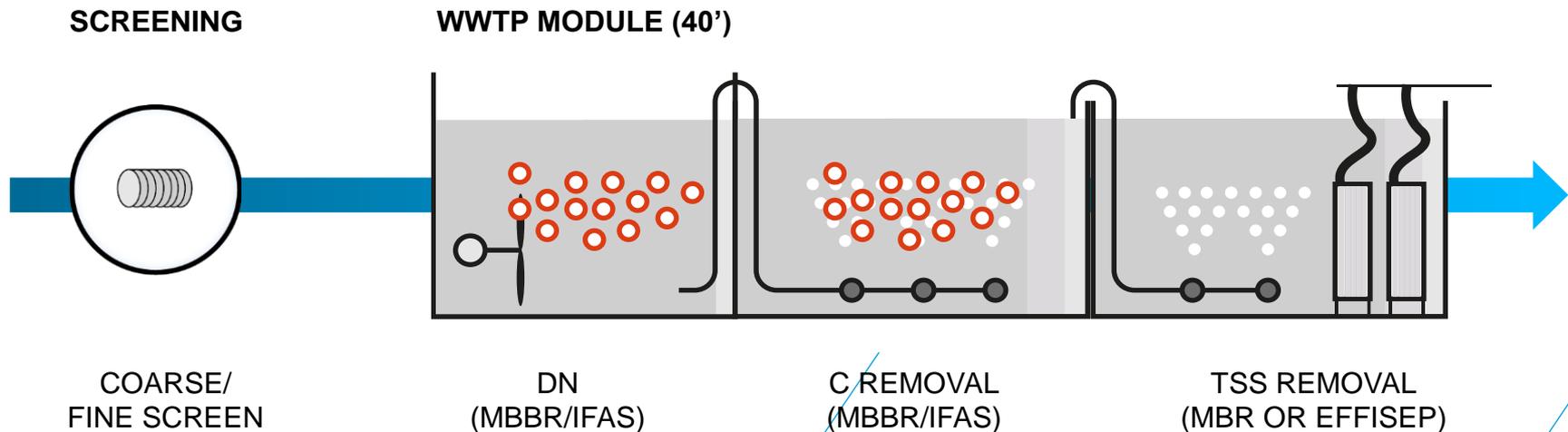
# Smart solutions

Prefabricated and standardised systems

# AeroMem

Three processes integrated in 20'/40' modules:

- Optional denitrification
- MBBR/IFAS/MBBR-BNR
- Third step with MBR or **patented** EFFISEP settler for MBBR/MBBR BNR
- Designed for flows from 200 – 4000m<sup>3</sup>/d



# Smart solutions

Prefabricated and standardised systems

# AeroMem

## Minimal footprint

- Combines aerobic and membrane solution in one integrated system
- Delivered in standardised ISO container modules

## Flexible

- Can be delivered as standalone system or upgrade
- Denitrification on carriers or activated Sludge

## Modular

- Can be upgraded in future by adding „building blocks”
  - C reduction to C/N/P reduction



## AeroMem™ drinks

COD mg/l  
3500

<40

BOD5 mg/l  
2500

<19

TSS mg/l  
200

0

**CAPACITY:** 1000m<sup>3</sup>/d  
**TYPE:** EPT

**DELIVERED:**  
Prefabricated MBR plant  
Process warranties



## FloatChip + AeroMem™

COD mg/l  
>7000

<100

BOD5 mg/l  
>4000

<15

TSS mg/l  
>500

0

**CAPACITY:** 200m<sup>3</sup>/d

**TYPE:** EPT

**DELIVERED:**

Prefabricated MBBR+MBR plant

Process warranties

Single container 40"

# Smart solutions

## Prefabricated and standardised systems

# ROVAPO®

Efficient water reuse solutions family which started with our experience in aircraft parts manufacturing and automotive

- Highest possible water recovery rate
- Designed with energy recovery (ERD, piston pumps)
- Low maintenance

## Smart automation

- ROVAPO membrane system PLC adapts to wastewater parameters
- ROVAPO automation keeps efficiency and quality of effluent by changing flows/pressures

## Custom solutions or „plug and play”

- Fast delivery and start-up
- Plant can be scaled-up when needed

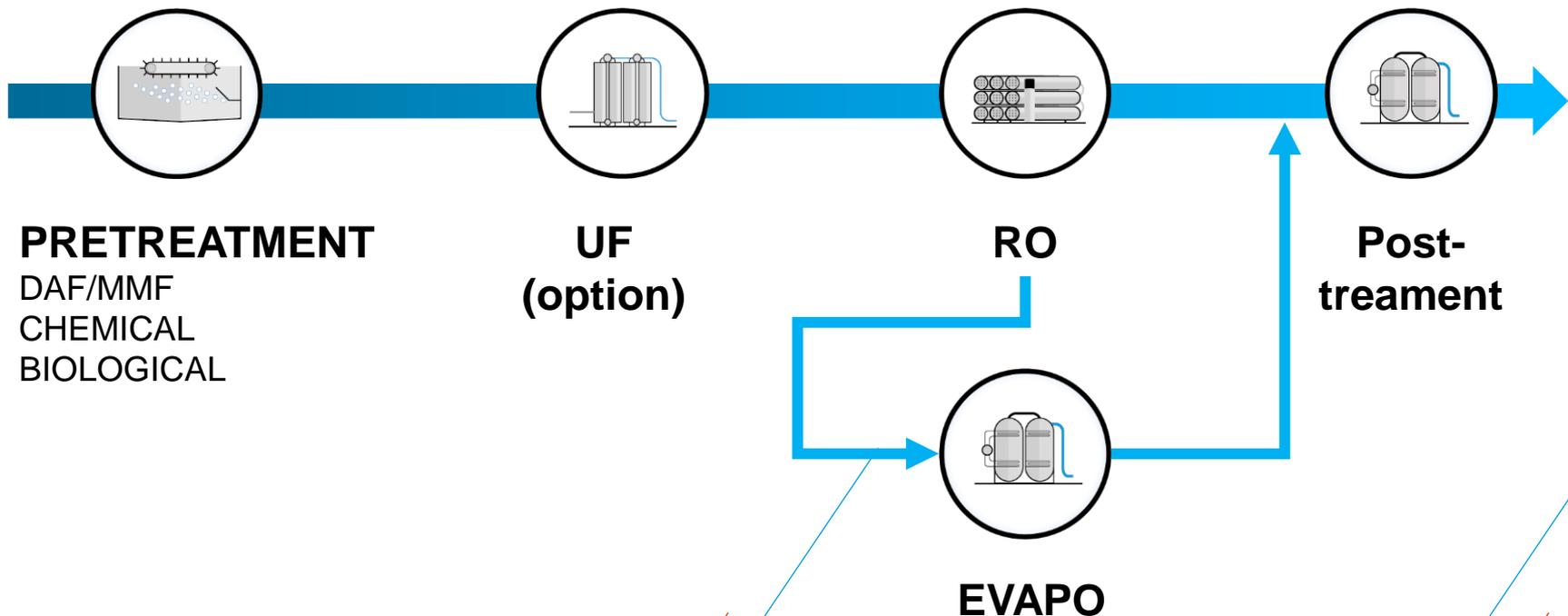
# Smart solutions

## Building blocks

# ROVAPO®

Pre-engineered building blocks for the design of seawater desalination systems & water reuse

- Modular, Scalable, Customized
- Fitting



# Smart solutions

## Standardised water desalination

# ROVAPO®

Standardised sea water desalination products:

Permate	500m3/d	1000m3/d	1500m3/d
Population	2500	5000	7500
Recovery	50%	50%	50%
TDS	15000 – 45000mg/l		
Turbidity limit	20 NTU		
Energy consumption	2,5kWh/m3		
Number of containers	1 x 40'	1 x 40'	2 x 40''

### Options:

Pretreatment: Dissolved Air Flotation, Multimedia filtration, Carbon filters

Post-treatment: pH adjustment, Disinfection (UV, ClO<sub>2</sub>, Remineralization)



## ROVAPO® BIOETHANOL

**85%**

WATER RECOVERED  
DIRECTLY FROM  
WASTEWATER ON RO

BIOGAS PRODUCED **>1800 Nm<sup>3</sup>/d**

**CAPACITY:** 1200m<sup>3</sup>/d

**TYPE:** EPT

**DELIVERED:**

Pilot plant

ROVAPO® HE RO PLANT

AnoxyBed™ anaerobic reactor

Process warranties



# FINANCING

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# Financing

## Short term financing of project liquidity

- Buyers bank credit – up to 85% of contract
- Purchase of receivables

## Long term financing

- Buyers credit
  - > 10mln EUR project
  - Max 85% contract Value
  - Up to 15 years (according to OECD rules)

**ASK FOR OTHER FINANCING OPTIONS**



A light gray world map is centered on the page. Three orange location pins are placed on the map: one in London, one in Warsaw, and one in Kuala Lumpur. Each pin is accompanied by a white text box containing the city name and the local company name.

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