



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

WATER RECOVERY | INDUSTRIAL WASTEWATER TREATMENT | BIOENERGY

Warsaw 2021

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

WATER RECOVERY | INDUSTRIAL WASTEWATER TREATMENT | BIOENERGY

Warsaw 2021

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 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 Nm³/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 Nm³/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

WATER RECOVERY | INDUSTRIAL WASTEWATER TREATMENT | BIOENERGY

Warsaw 2021

Smart solutions

Prefabricated and standardised systems

AeroMem™

Packaged MBBR-MBR
wastewater treatment solutions

100 – 2000 m³/d raw municipal
sewage

Tailor made industrial plants.



ROVAPO®

Packaged water reuse and
desalination

200-4000m³/d effluent, fresh
water, brakish water or seawater

= complete water cycle management

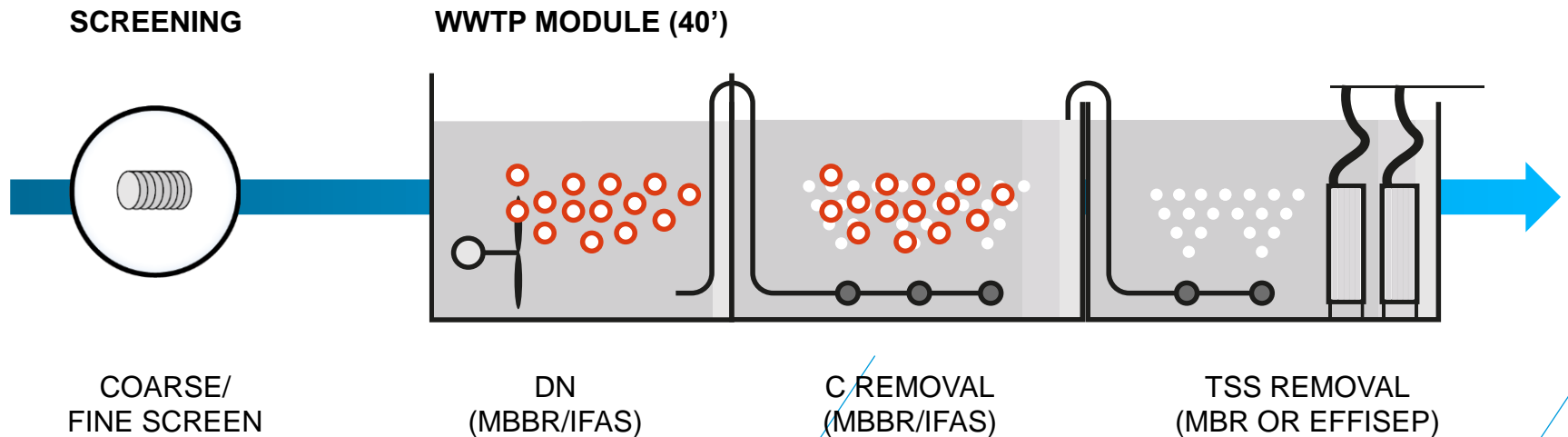
Smart solutions

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 – 4000m³/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: 1000m³/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: 200m³/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

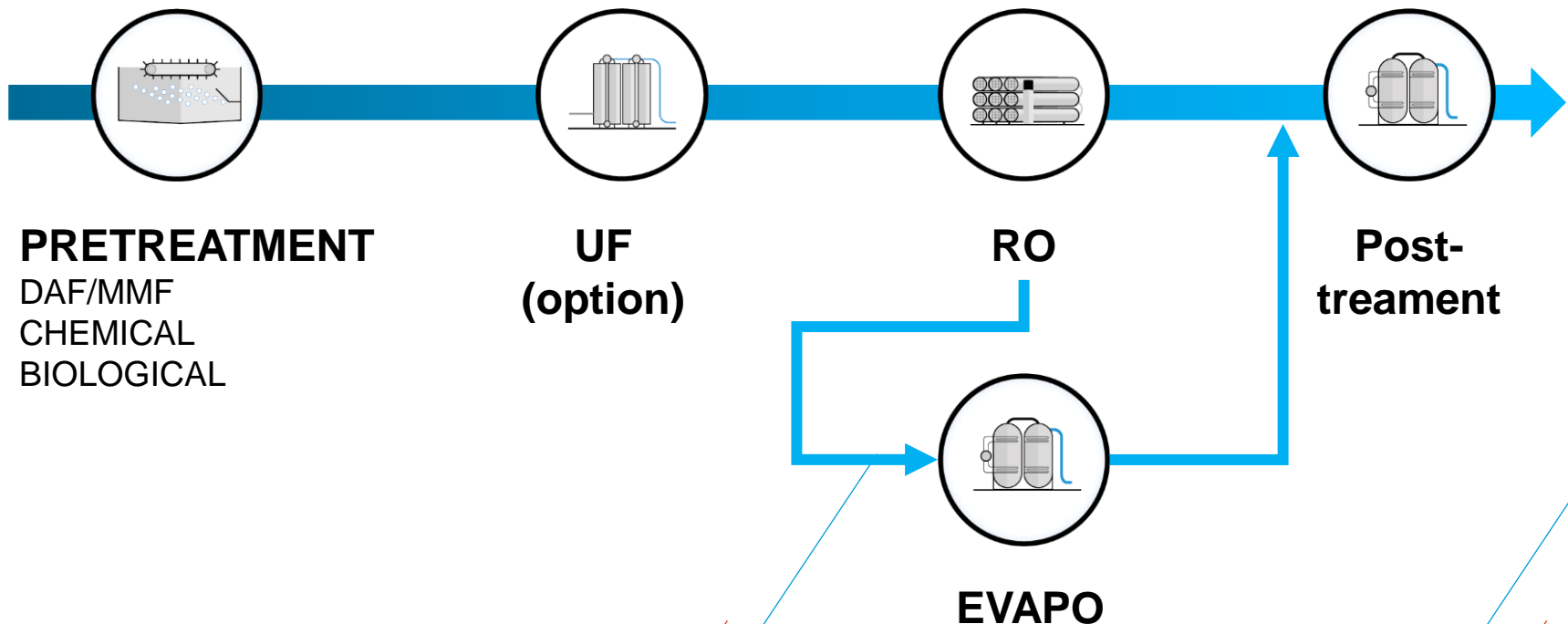
Smart solutions

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, ClO₂, Remineralization)



ROVAPO® BIOETHANOL

85%

WATER RECOVERED
DIRECTLY FROM
WASTEWATER ON RO

BIOGAS PRODUCED **>1800 Nm³/d**

CAPACITY: 1200m³/d
TYPE: EPT

DELIVERED:
Pilot plant
ROVAPO® HE RO PLANT
AnoxyBed™ anaerobic reactor
Process warranties



FINANCING

WATER RECOVERY | INDUSTRIAL WASTEWATER TREATMENT | BIOENERGY

Warsaw 2021

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



Londyn
Symbiona UK Ltd.

Warszawa
Symbiona SA

Kuala Lumpur
Symbiona APA Sdn. Bhd.

SYMBIONA S.A.
ul. Agatowa 12, 03-680 Warszawa
Tel. +48 22 535-30-75 | Fax. Fax. +48 22 535 30 76

Contact us: Wojciech Pietraszek | wp@symbiona.com