CLEARBOX®

SBR Flex Series

JÄGER EnviroTech

BROCHURE

BE MOBILE AND STAY FLEXIBLE

CLEARBOX®
SBR Flex Series

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CLEARBOX® is a compact and customizable wastewater treatment plant, which is incorporated into an ISO container. The **CLEARBOX®** Flex Series can treat both municipal and biodegradable industrial wastewater for discharge or reuse purposes such as irrigation or process water.

APPLICATIONS

- Rural Housing
- Remote Factories
- Working Camps
- Hotels and Resorts
- Temporary Response
- Navy, Yacht, and Cruise
- Pilot Plant and Research Facilities
- Refugee and Peacekeeping Camps

KEY BENEFITS

- Flexibility and Scalability
- Low Maintenance
- High Degree of Customization
- Low Operational and Energy Costs
- Durable Material
- High Effluent Quality
- Small Footprint
- Excellent Settling Properties

Typical Range of Effluent Quality

Capacity*	SVI	NH_4-N	NO_3-N	$COD_{Filtered}$	P
m^3/d	mL/g	mg/L	mg/L	mg/L	mg/L
40 - 70	65 - 85	< 1	< 5	< 70	< 1

*Treatment capacity depends on influent quality, wastewater temperature, target of treatment (biological C, N, and P removal) and reaction time

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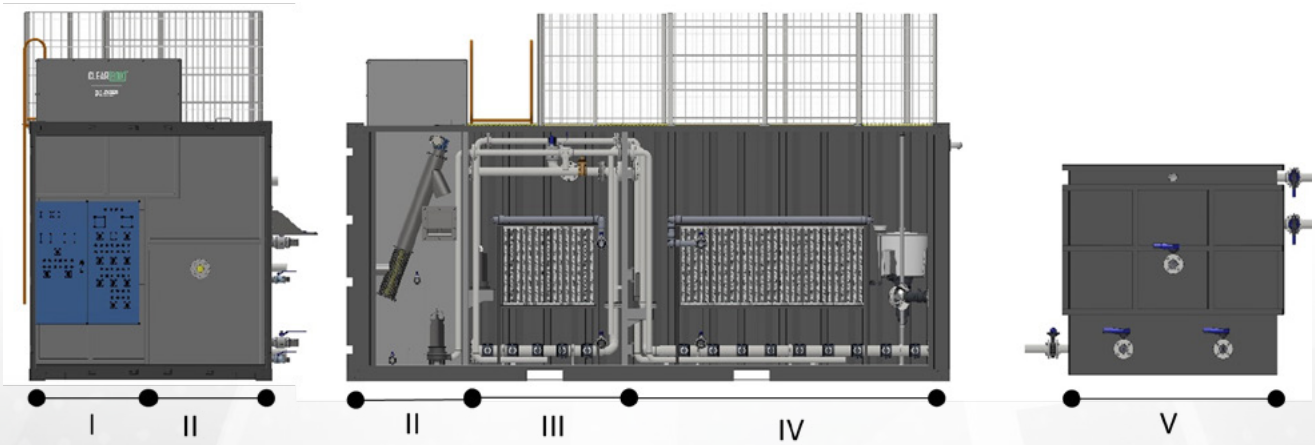
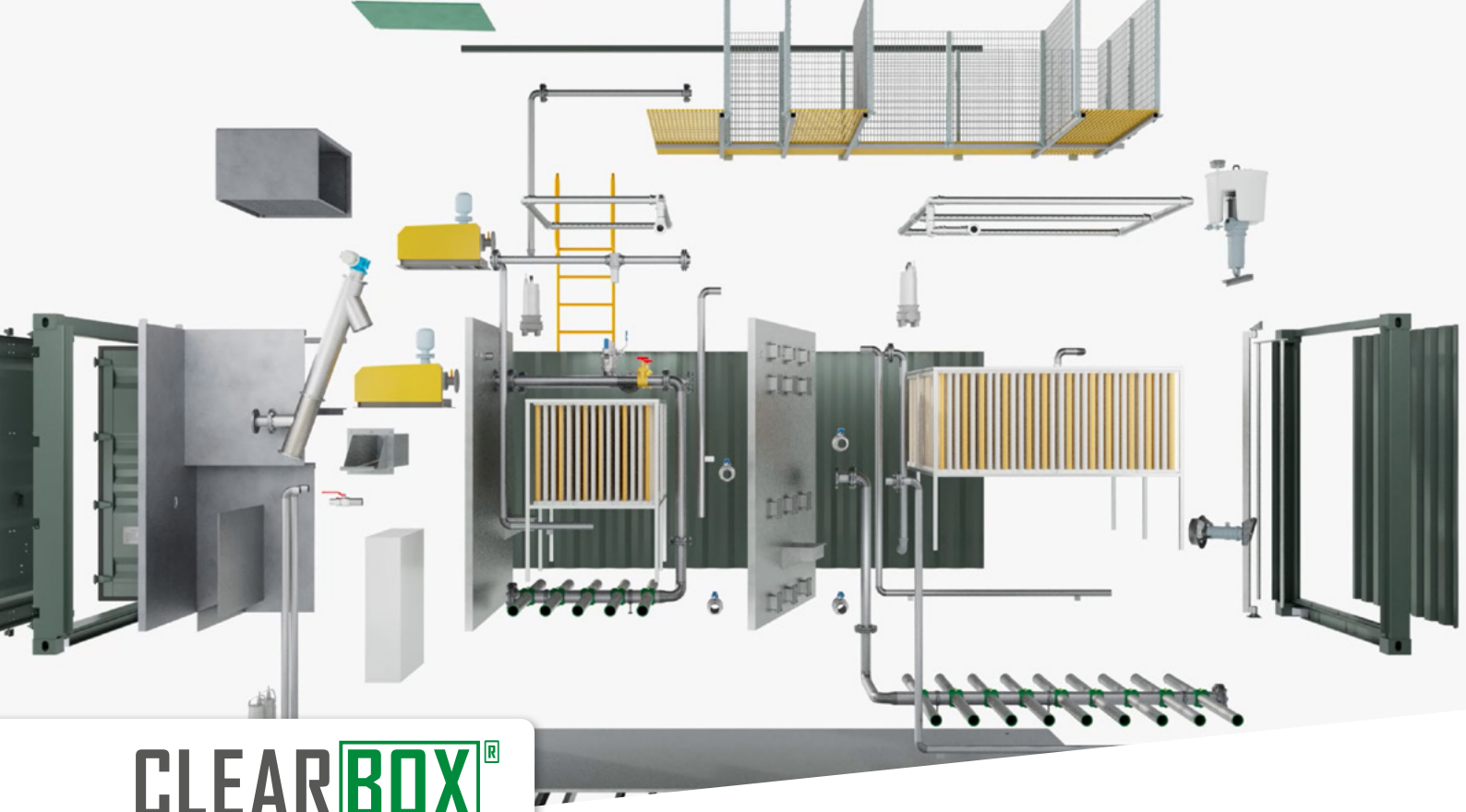
SBR FLEX SERIES CONSISTS OF FIVE ZONES:

I. Control and equipment room
II. Automatic screening chamber and fats, oil and grease (FOG) separation
III. Flexible zone with CLEARTEC®
IV. Sequencing Batch Reactor (SBR) CLEARTEC®
V. Multi-functional with tank





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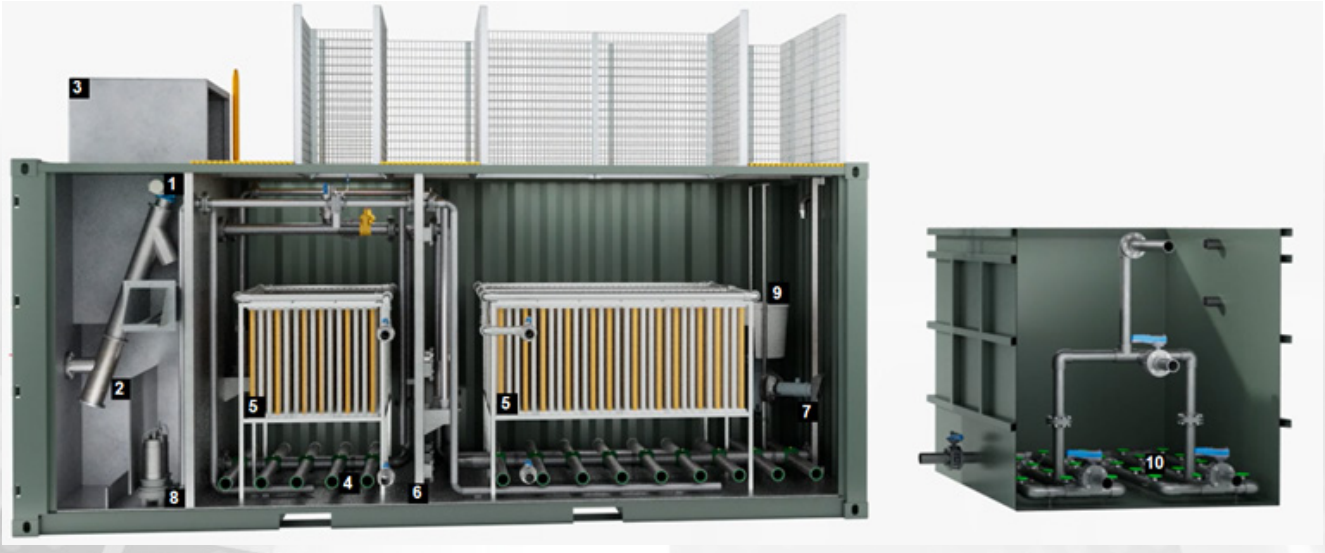
COMPONENTS:

1 Vertical Screw Screen
2 FOG Separation
3 Blowers House
4 JetFlex® Tube Diffuser
5 CLEARTEC® System with Integrated Sludge Separation
6 Multi-functional Wall
7 Submersible Mixer
8 Submersible Pumps
9 Decanter and TS Sensor
10 Coarse / Fine Bubble Disc Diffusers (JetFlex®CBD105/JetFlex®HD270)



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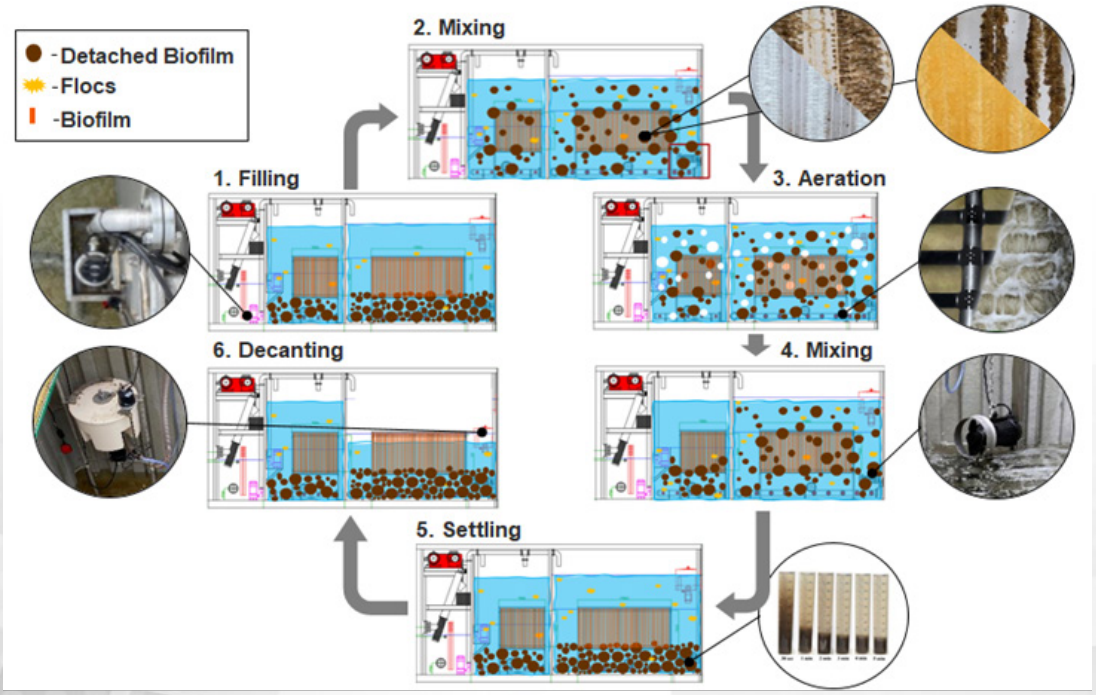
PROCESS:

CLEARBOX® is based on a Sequencing Batch Reactor (SBR) process; it consists of six phases, where existence and duration of reaction phases is very much dependet on wastewater characteristics and target of treatment (i.e. organic reduction, nitrification, nitrification-denitrification, or biological nutrients removal (BNR).

Step 1: Mechanical pretreatment and filling phase
Step 2 to 4: Reaction phases
Step 5: Settling phase
Step 6: Discharge phase



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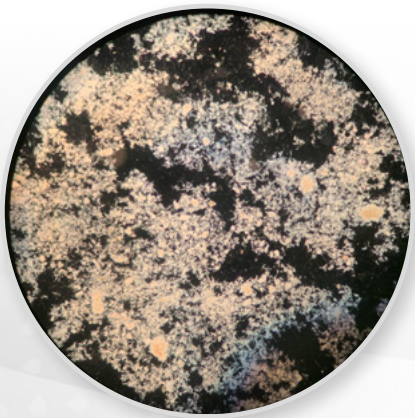
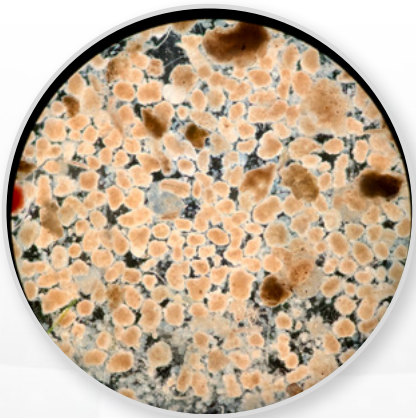
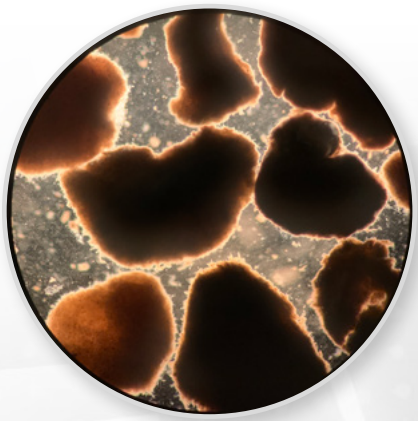
COMPONENTS:

As shown above, raw wastewater will initially flow into a screening chamber, where filterable materials are screened. This is an essential step to avoid clogging of the pumps and the biocarrier textile media. Then, depending on pollution load, the reaction phase can start immediately in the flexible zone (e.g. for biological pretreatment of organic rich wastewater) and/or in the SBR zone. The reaction phases consist of an anaerobic mixing phase, followed by aerobic and/or anoxic phases to achieve phosphorous elimination, nitrification, and nitrification-denitrification, respectively. The final steps are settling and decanting phases where biomass separation and discharge of the treated wastewater takes place, consecutively.

One of the main advantages of **CLEARBOX®** is incorporating **CLEARTEC®** and a multi-purpose tank, which improve sludge settleabiliy (a patented solution) and facilitates generation of granular and granular-like biomass (a patent pending process), respectively. This third fraction of sludge has excellent settling properties (typically stated as SVI) and higher nitrification rate compared to the conventional biomass. The low SVI value from the sludge of CLEARBOX®, allows for a higher exchange volume, while reducing the required settling and reaction time.







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FLEXIBILITY OF CLEARBOX:

The basic principle behind the design of the CLEARBOX® is to keep it as simple as possible while maintaining a high degree of flexibility and mobility for the end user to be able to cope with new requirements.

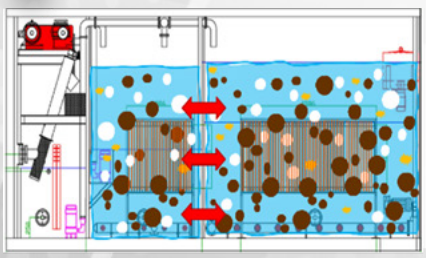
Flexibility Provided by Integrated Multi-purpose Tank

- To Extend Biology / Connected to SBR
- To Stabilize Excess Sludge
- To Overcome Peak Flow / as a Buffer Tank
- To Store and Disinfect Treated Water
- To Generate Granular Biomass

Flexibility Provided by the Introduction of Flexible Zone

- To Further Expand the SBR Chamber [1]
- To Adjust C:N ratio and achieving a stable and high nitrification rate in SBR Chamber [2]
- To Achieve Higher Denitrification Rate [3]

1



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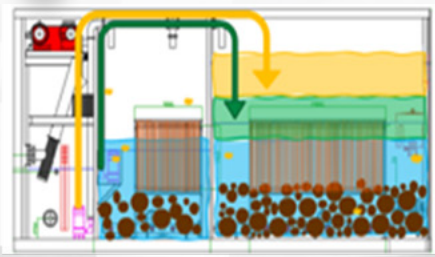

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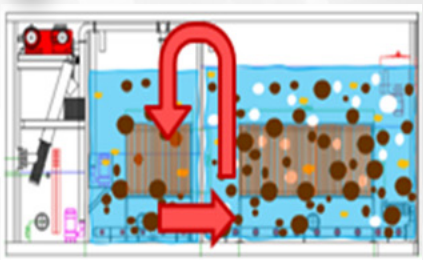

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