

ClearFox®
L. in a cone

PPU
Purification
Units

person

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CEO of PPU-Umwelttechnik GmbH
shareholder and owner of brands

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PPU
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company

PPU-Umwelttechnik GmbH:

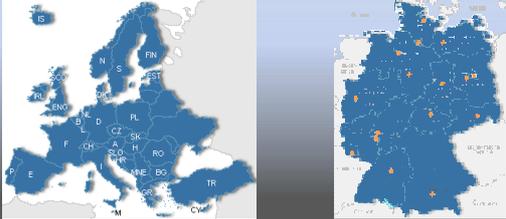
- manufacturing
- labeling **ClearFox®** brand
- head office and production in Bayreuth

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location

Europe **Germany**



Bayreuth

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facility

production office



facility

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PRU
water systems

facility

disposition of orders projecting of orders



office

Detailed description: This slide shows the office environment. It features two photographs: one of a woman working at a desk with multiple monitors, and another of a man working at a desk with a laptop. The slide is titled 'facility' and lists 'disposition of orders' and 'projecting of orders' as key activities. An orange box at the bottom right is labeled 'office'.

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PRU
water systems

facility

storage laboraty



facilities

Detailed description: This slide shows industrial and laboratory facilities. It includes two photographs: a warehouse with high shelving and a yellow pallet jack, and a laboratory with a person in a white lab coat working at a bench. The slide is titled 'facility' and lists 'storage' and 'laboraty' as key areas. An orange box at the bottom right is labeled 'facilities'.

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PRU
water systems

skills & local fabrication

- TÜV-certified
- PE, PP- welding by extruders
- SS welding
- VDE conform elektromechanical installations
- PLC-programs , software development



facilities

Detailed description: This slide highlights technical skills and local fabrication capabilities. It lists several certifications and services: TÜV-certified, PE and PP welding by extruders, SS welding, VDE conform elektromechanical installations, and PLC-programs and software development. Two photographs are included: one showing a person working on a complex electrical control panel with many components, and another showing a large industrial machine, possibly a welding or extrusion unit, in a factory setting. The slide is titled 'skills & local fabrication' and has an orange box at the bottom right labeled 'facilities'.

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PRU
water systems

company-services

- waste water treatment
- industrial, municipal and domestic



Detailed description: This slide lists the company's services. It features the PRU water systems logo and two bullet points: 'waste water treatment' and 'industrial, municipal and domestic'. The slide is titled 'company-services'.

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PPU®
water systems

network

ClearFox® solutions

www.WATERPLAN.DE

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PPU®
water systems

organisation

distribution of ClearFox® - products
in MENA region

by

ClearFox® - MENA FZC
Wastewater & Environmental Technologies
represented by eng. **Raed Atari**
[General Manager]

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water systems

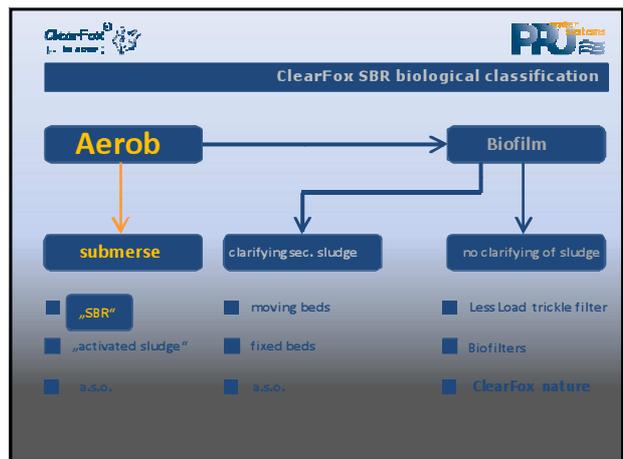
standardized products

ClearFox® nature

ClearFox® Fixed Bed Reactor

ClearFox® Container treatment systems

ClearFox® Sequencing Batch Reactor KIT



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PRU®
Pump & Reactor Units

the basic ClearFox SBR steps

- filling
- aeration
- clearwater removal
- secondary sludge removal
- mixing
- energysaving

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Pump & Reactor Units

simple definition „KIT”

Clearfox® KIT
+ client tank
= waste water treatment

pretreatment biological treatment

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picture of „KIT”

inside the tank, plastic, concrete

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picture of „KIT”

free design for a bigger project

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Water Systems

picture of „KIT“



pre-engineered
mass production of small KIT's

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Water Systems

definition of „KIT“

- equipment for an SBR-treatment system
- any tank material, any capacity
- customized operation strategies
- pre-engineered or in free design

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Water Systems

different ClearFox SBR strategies for operation

- filling out of a buffer
- filling continously
- splitting into more reactor streets
- filling and mixing phases (DENI)
- clearwater into tertiary treatment or just removal
- flocculation, settling time

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Water Systems

designing aspects for the reactor volume

- daily load in regard to BOD or p.e. and hydraulics
 - specific water consumption: 250 l/p.e. ?
 - specific BOD load : 60 gramm/p.e. ?
- pretreatment of the water
 - screen ?
 - settling ?




designing aspects for the reactor volume

- pretreatment of the water
 - screen ?
 - settling ?




designing aspects for the reactor volume

- nitrogen load, N:BOD:P ratio
COD:BOD ratio in general
 - any tankers or just sewer ?
 - any industrial part ?
 - biological part in load (Inert-COD)




designing aspects for the reactor volume

- totally sewage effluent requirement
 - COD, BOD – carbon elimination % ?
 - nitri/denitrification – N- totally?
 - other nutrients




designing aspects for reactor volume

- difference between
 - biological volume
 - hydraulic volume

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[... be clever]

PRU

volume demand

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settling buffer
 sludge storage

screen buffer

buffervolume before

sludge storage external

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price, size and classification depends on:

- daily quantity
- preengineered-mass production
- effluent requirements
- sludge treatment

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example sludge amount, drain water volume

3.000 p.e = 180 kg BOD per day

Waste Sludge	
real total surplus sludge production:	1,10 kgTS/kg/BSB5 (...0.95 - 1.15...)
BOD5-Load after the primary settling:	180,00 kg/d
Waste Sludge:	210, kg/d
Dry substance-concentration in waste sludge:	10,00 kg/m3
waste sludge volume:	21,00 m3/d
mixed sludge	
SS0-load:	210,68 kg/d
sludge volume:	21,07 m3/d
MLSS concentration:	10,00 kg/m3
gravity thickening	
dry substance-concentration after thickening:	50,00 kg/m3 = 5% DS
sludge volume after thickening:	4,20 m3/d
supernatant out of thickening:	17,00 m3/d
sludge volume after dewatering:	2,10 m3/d = 10% DS
sludge volume after high pressure	1,10 m3/d = 20%DS

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PRU

classification :

- settling tank, integrated sludge storage : < 200 p.e / 50 m3/day
- screening, extended sludge storage : >200 p.e / 50 m3/day
- effluent requirements

