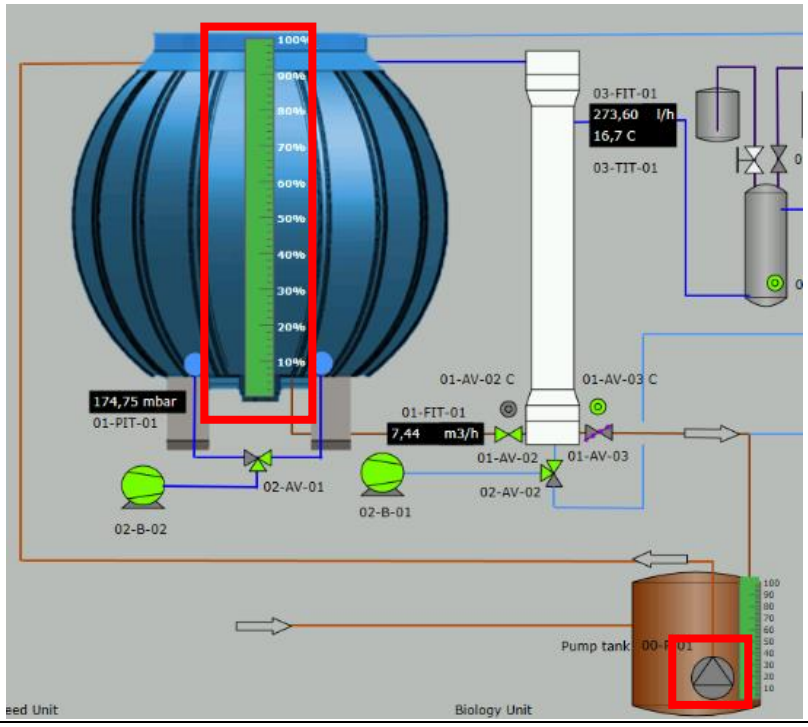
Start-up procedure BluElephant

Version 5

Welcome to BluElephant

In this guide, you will find step-by-step instructions on how to start up the BluElephant system. Whether you are using it for the first time or need a quick refresher, this manual will help you get everything up and running smoothly and safely.

! Before starting up the BluElephant make sure you use the following safety measures:

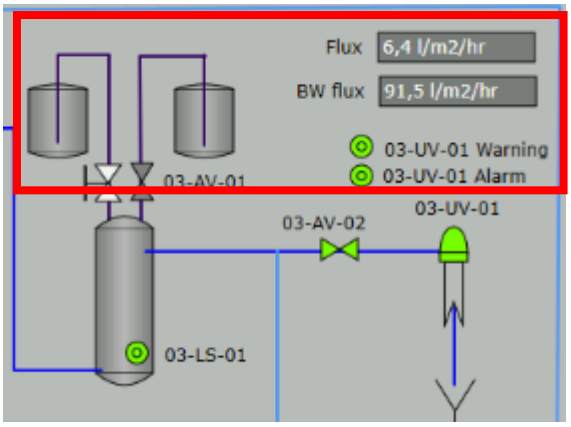
1. Fill the BluElephant manually, halfway is sufficient. To fill up the BluElephant press the  and select manually. Stop filling the BluElephant manually once it's around halfway full. If you happen to overfill it, don't worry, the system has an automatic shut-off to prevent overflow. *Part nr. 01-PIT-01/ 01-FIT-01*	

2. **Check if the chemical tanks are filled.**

   Ensure that all chemical tanks are adequately filled before starting the system. Refill them if necessary. You can find the tanks on the other side of the BluElephant. (See 2A)

   If not filled please fill them, see 2A.

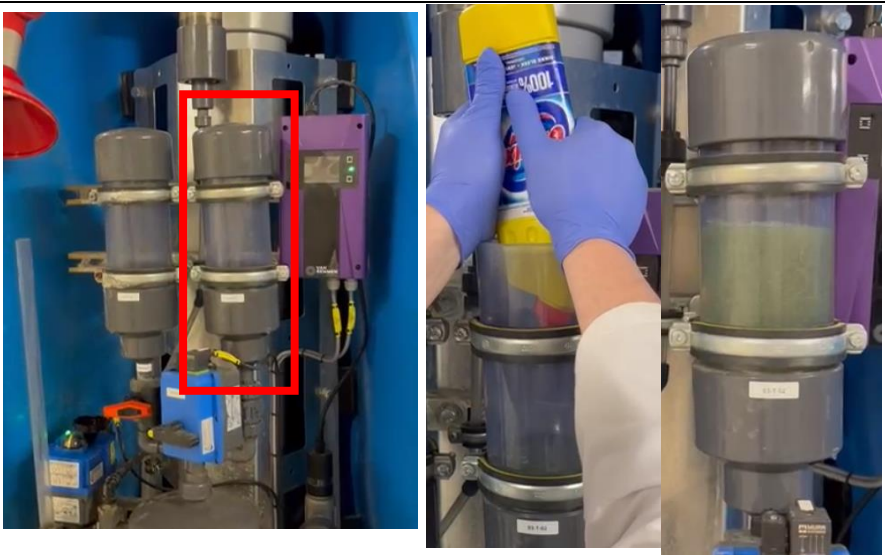
   Part nr. 03-AV-01



2A. **Fill the tank on the RIGHT with chlorine**

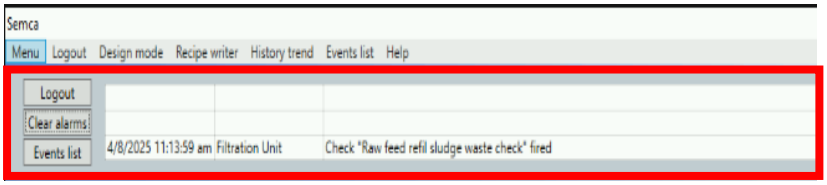
   Take off the lid of the tank and carefully put in the chlorine. Don't forget to **put on the lid afterwards**.

! DO NOT MIX THE CHEMICALS



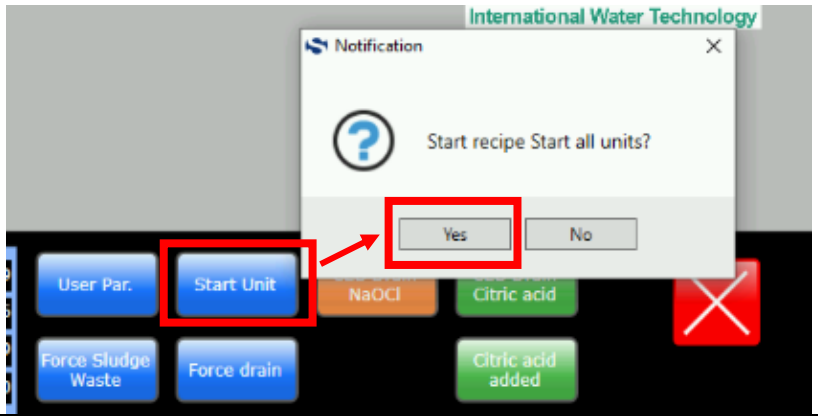
3. **Check the screen (box) for errors.**

   Make sure there are no error messages or warnings displayed on the screen above. If any appear, resolve them before proceeding.



4. **No errors? Then you're good to go!**

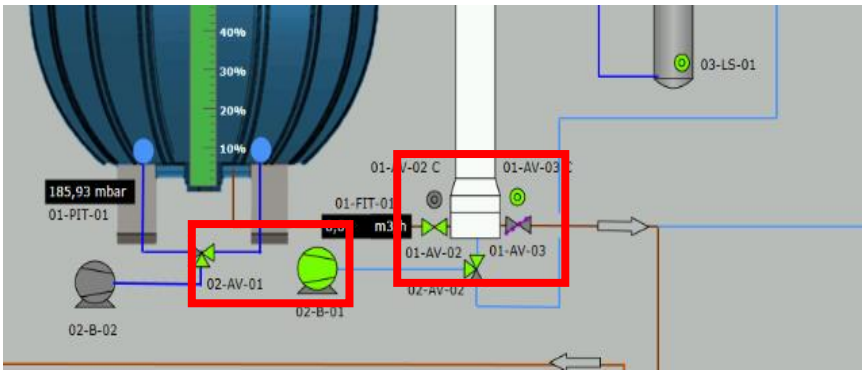
   Press **"Start Unit"**, then confirm by selecting **"Yes"**.

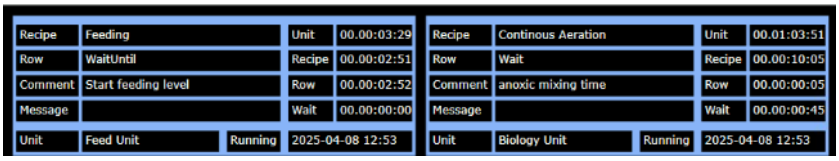


5. **System status check.**

You can tell the pump and aeration are working by the green dots displayed on the screen.

Part nr. 02-B-01/01-AV-02/ 01-AV- 03



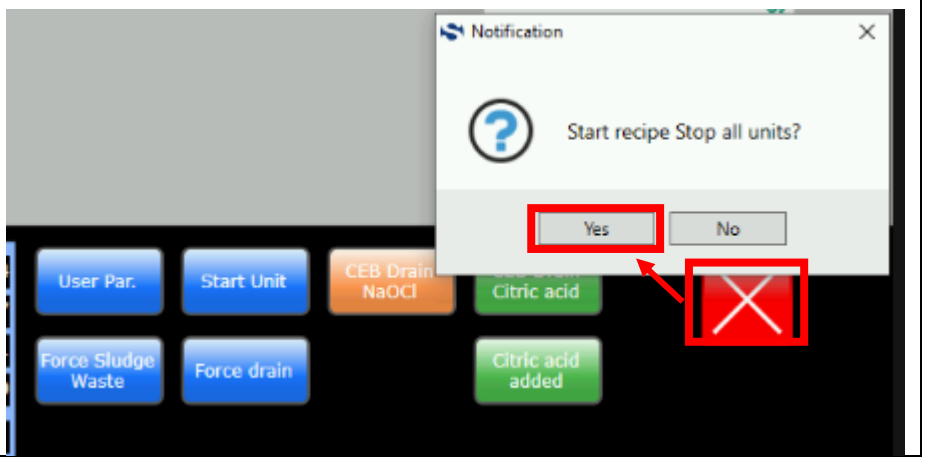


Recipe	Feeding	Unit	00.00:03:29	Recipe	Continous Aeration	Unit	00.01:03:51
Row	WaitUntil	Recipe	00.00:02:51	Row	Wait	Recipe	00.00:10:05
Comment	Start feeding level	Row	00.00:02:52	Comment	anoxic mixing time	Row	00.00:00:05
Message		Wait	00.00:00:00	Message		Wait	00.00:00:45
Unit	Feed Unit	Running	2025-04-08 12:53	Unit	Biology Unit	Running	2025-04-08 12:53

Additional system information is shown at the bottom of the tables for further monitoring.

6. **Stopping the machine.**

To stop the system, **press the red cross** located at the bottom right of the screen, then confirm by selecting **“Yes”**.



Introduction

The BluElephant water treatment system is an innovative and compact solution for treating domestic wastewater. Unlike traditional large-scale sewage treatment plants, the BluElephant operates on a small scale and can be deployed locally such as at homes, businesses, or agricultural sites. The system combines multiple treatment technologies, including biological processing, membrane filtration, and UV disinfection, to efficiently and sustainably convert wastewater into clean water. This chapter provides a step-by-step explanation of the treatment process. In the interface you can find different parts with numbers:

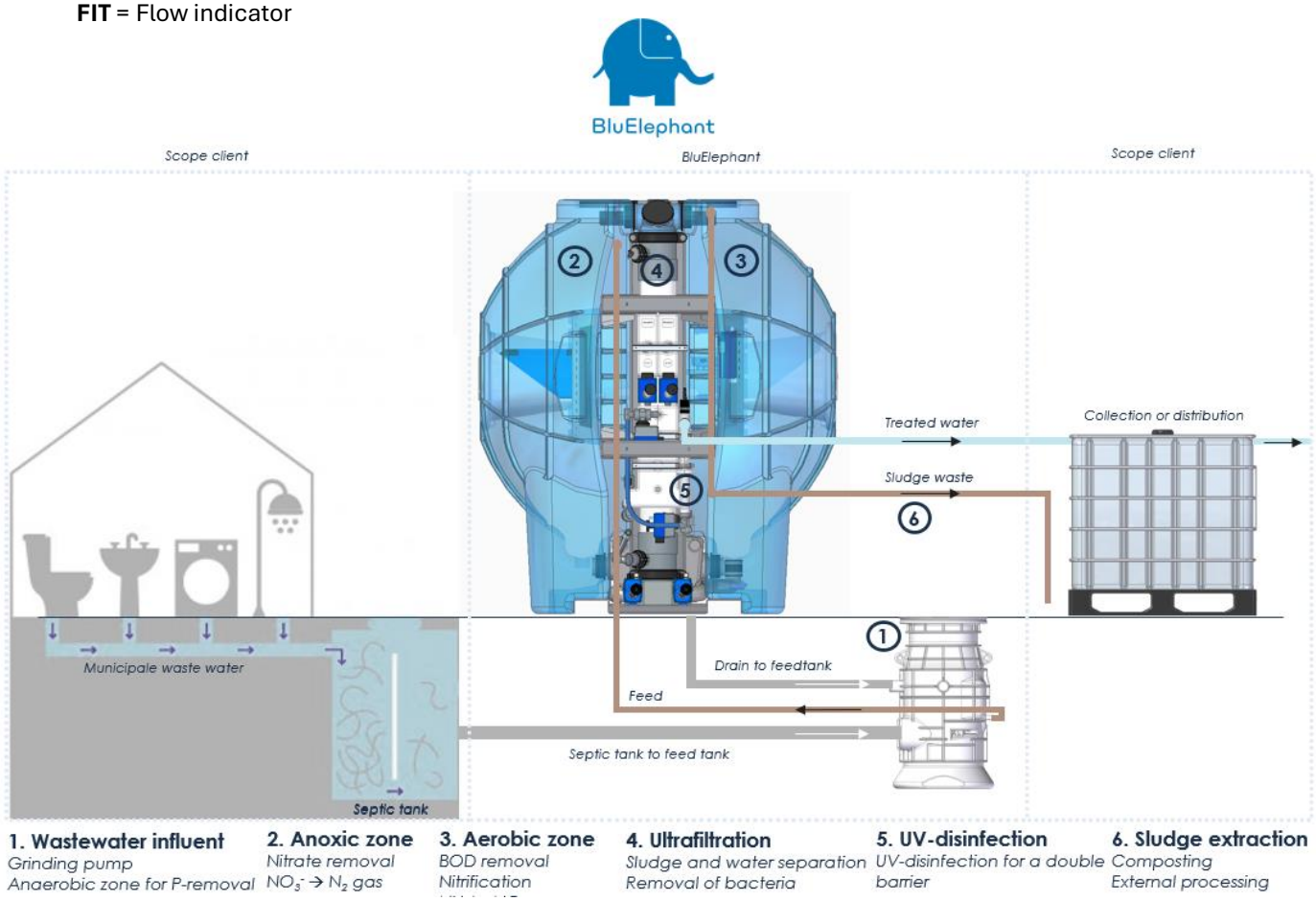
B = Blower

AV = Automatic valve

LS = Level sensor

PIT = Pressure indicator

FIT = Flow indicator



Water Treatment with BluElephant, explained step-by-step

1. Wastewater Influent

What happens here? Domestic wastewater (from toilets, washing machines, showers, etc.) flows into the septic tank. This pre-treatment occurs: larger particles settle to the bottom.

There is also an **anaerobic zone** for **phosphorus removal (P-removal)**. A **grinding pump** breaks down solid waste to prevent clogging in later stages, this happens in the feed tank.

2. Anoxic Zone

This is where denitrification takes place. What does that mean?

Nitrates (NO_3) are converted into harmless **nitrogen gas (N_2)**, which escapes into the air. This process occurs without oxygen, using specialized bacteria.

3. Aerobic Zone

Oxygen is added in this stage. In this zone: The biological oxygen demand **(BOD)** is significantly reduced. **Nitrification** occours: ammonium (NH_4^+) is converted into nitrate (NO_3^-).

This mimics the aeration tanks in large-scale treatment plants, but in a compact form. This happens inside the BluElephant and it switches between in which side is aerobic and anoxic

4. Ultrafiltration

What happens here? Membranes are used to separate water from sludge. These membranes block solids. Only highly purified water passes through, reaching clear- water quality.

5. UV Disinfection

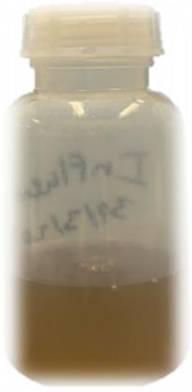
Double safety barrier. The UV light kills any remaining microorganisms. The result is water that is safe for reuse or discharge into the environment. UV is an eco-friendly method of disinfection without the use of chemicals.

6. Sludge Extraction

The remaining sludge is discharged to a separate container. It can be processed through composting, or external treatment by certified waste processors.

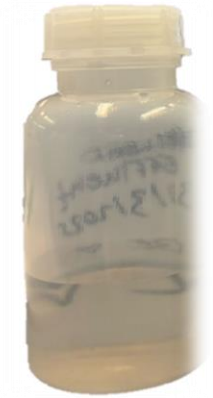
The end results are:

- **Treated water:** clean, clear, and safe for reuse or environmental discharge.
- **Sludge waste:** concentrated residue responsibly processed.



Influent

Sludge



Effluent

Technical specifications	
Dimensions	2200 x 2200 x 2465 mm
Floor load	5000 kg @ 1650 x 1650 mm (3000 x 3000 mm for maintenance purposes)
Installed power	3 kW, 1 phase / N / PE~ 230 V 50Hz. EU power plug
Consumed power (average)	< 500 Watt, depending on water quality
Transport weight	Approx. 600 kg (empty)
Tank capacity	2 x 1,7 m^3 & 800 litre sub surface tank including feed pump
Sound pressure	53 dB
Environmental requirements	Non freezing temperatures (tracing required)

Process specifications	
Type of influent	Municipal wastewater
Technology	Smart Membrane bioreactor (MBR)
Processing capacity	5 – 6 m^3/day (40 – 100 persons, depending on local water consumption)
Sludge waste	50 - 100 litres/day
BOD removal	≥ 98%
Kjeldahl-N removal	≥ 90%
Total-P removal	≥ 90% (Bio-P process)
Microplastics removal	≥ 99,9%
Additional treatment	UV-disinfection (60 watt) & Activated Carbon (micropollutants removal)