



greenBOX Nxt: **Quick Software Setup Guide**

Updated: November 14, 2024; 888-ECOGATE; support@ecogate.com

This is a short software setup guide. To fully understand system safety and functionality please read the full user guide of greenBOX Nxt, Power MASTER VFD. Do not use the Ecogate system until you have thoroughly read and understand the safety instructions completely (including the separate safety instructions for dust collector, fan, transport, gates, greenBOX and all other parts of the ventilation system). Failure to comply can result in an accident or personal injury.

About This Guide

This document provides a quick software setup guide for the greenBOX Nxt, an on-demand ventilation system for dust, mist, and fume collection. It includes an overview of the setup process, access to instructional videos, and detailed steps for tasks like adding a ventilation system, workstations, gates, and the Power MASTER VFD. The guide also covers setting minimal airflow, duct cleaning, tracking electricity savings, and refers to calibrating the system for optimal performance. By following this guide, users can efficiently configure their greenBOX Nxt software and enjoy the benefits of a fully automated ventilation system.

One Minute greenBOX Software Videos are Available at Youtube

To help you quickly understand the greenBOX setup process, we've created a series of short, step-by-step instructional videos on YouTube. For those who want to dive deeper, we've also included links to detailed online documentation for each step in the table below. Happy watching!

#	Ecogate greenBOX Software Setup Step-by-step	YouTube video	Detailed online document
1	greenBOX Remote Access via LAN or internet	greenBOX Unboxed - Access on LAN Using Browser	greenBOX Unboxed i4: Accessing greenBOX Interface on Desktop or Tablet
2	Adding Ventilation System (dust, mist, fume)	 greenBOX Unboxed - Adding Systems	https://www.ecogate.com/post/greenbox-unboxed-adding-ventilation-system
3	Adding Workstations and Gates to the System	 greenBOX Unboxed - Workstations in greenBOX  greenBOX Unboxed - Adding Gate to System	greenBOX Unboxed i5: Workstations in greenBOX Software
4	Adding Power MASTER VFD to the System	 Ecogate Setup Assistant - Power Master  greenBOX Unboxed - Adding ABB VFD	https://www.ecogate.com/post/greenbox-unboxed-adding-power-master-vfd
5	Setting Minimal Airflow	 Maintaining Minimum Transport Air Velocity in Main Duct  Maintaining Minimum Transport Air Velocities in Branch Ducts	https://www.ecogate.com/post/greenbox-unboxed-how-the-greenbox-maintains-minimum-transport-air-velocities-in-the-main-duct-and-branch-ducts
6	Setting of Duct Cleaning	 Duct System Cleaning Mode	https://www.ecogate.com/post/greenbox-unboxed-2-duct-system-cleaning-mode
7	Setting of Electricity Cost to see Electricity Savings	greenBOX Unboxed - Monitor Electricity Savings	greenBOX Unboxed i2: Electricity Savings Dashboard
8	Enjoy a fully automated ventilation system!	 greenBOX Unboxed Customizable Dashboard  greenBOX Unboxed - Desktop User Interface UI	greenBOX Unboxed i9: Customizable Dashboard Advanced Dust Collection Management

For those who want to dive even deeper, we've also included links to more detailed YouTube videos and online documentation for topics in the table below.

#	Deep Dive	YouTube video	Detailed online document
10	Using greenBOX Remote Access on PC, Tablet, Smartphone	 greenBOX Unboxed - Scalable User Interface	greenBOX Unboxed i4: Accessing greenBOX User Interface on Desktop Tablet
11	How to monitor greenBOX NUC PC and Interface Board	 greenBOX Unboxed - Interface and PC monitor...	https://www.ecogate.com/post/greenboxed-i1
12	Overview of greenBOX smart gate software interface	 greenBOX Unboxed - Smart Gate User Interface	https://www.ecogate.com/post/advanced-functionality-in-ecogate-s-smart-gates
13	How Ecogate Smart Gates Measure Pressure, Air Velocity, and Air Volume	 Ecogate Smart Gates - Gate Pressure, Air Velo...	What Is Not Measured Cannot Be Controlled: How Ecogate greenBOX Measures Air Velocity and Air Volume
14	greenBOX gates advanced discovery options	 greenBOX Unboxed - Automatic Gate Discovery	greenBOX Unboxed i3: Streamlined Installation with Automatic Modbus Address Assignment
15	How to Set Software Zero Pressure for Fan and Filter Transmitters	 greenBOX Unboxed - Zero Pressure	greenBOX Unboxed i6: Zero Pressure Calibration
16	greenBOX Event Log to monitor Warnings and Errors	 greenBOX Unboxed - Warnings and Errors	https://www.ecogate.com/post/greenboxed-i1
17	How to Setup greenBOX Four Relay Contacts	 greenBOX Unboxed - Programmable Relays	greenBOX Unboxed i8: Programmable Relays
18	How greenBOX Software is Updated	 greenBOX Unboxed - Fast & Easy Software Up...	greenBOX Unboxed i7: Fast & Easy Software Updates

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Introduction: Setting Up Your greenBOX System Software

Now that you've successfully wired your Ecogate system by following our Quick Installation Guide, it's time to configure the greenBOX software. Just like the wiring process, we've designed the software setup to be straightforward and user-friendly. The interface is intuitive, similar to what you're used to on your smartphone. The best part? The greenBOX software is standardized for all systems, regardless of your shop or factory size. This means it's been rigorously tested in numerous real-world environments, so you can trust its reliability.

To get started, you'll simply need to input some basic information about your setup:

- A list of your workstations with the diameter of gates (drops), and their ID number (printed on the gate motor enclosure)
- Design drop air velocity
- The diameter main duct (for larger system also diameter of branch ducts)
- Your minimum required transport air velocity

The final step is calibration, where the system will optimize its performance to match your fan curve and fine-tune the air velocity and volume readings, it is described in Step-by-step process in “**greenBOX Nxt Quick Calibration Guide**”. This guide will break down the entire setup process into easy-to-follow steps. Let's get started!

Here is link to online article with embedded videos covering:

- a. Software user interface
- b. Adding Gate
- c. Adding VFD
- d. Warnings & Errors
- e. PC and Interface board monitoring
- f. Electricity Savings Monitoring

[Introduction to greenBOX Software User Interface](#)

Step 1: greenBOX Remote Access via LAN or Internet

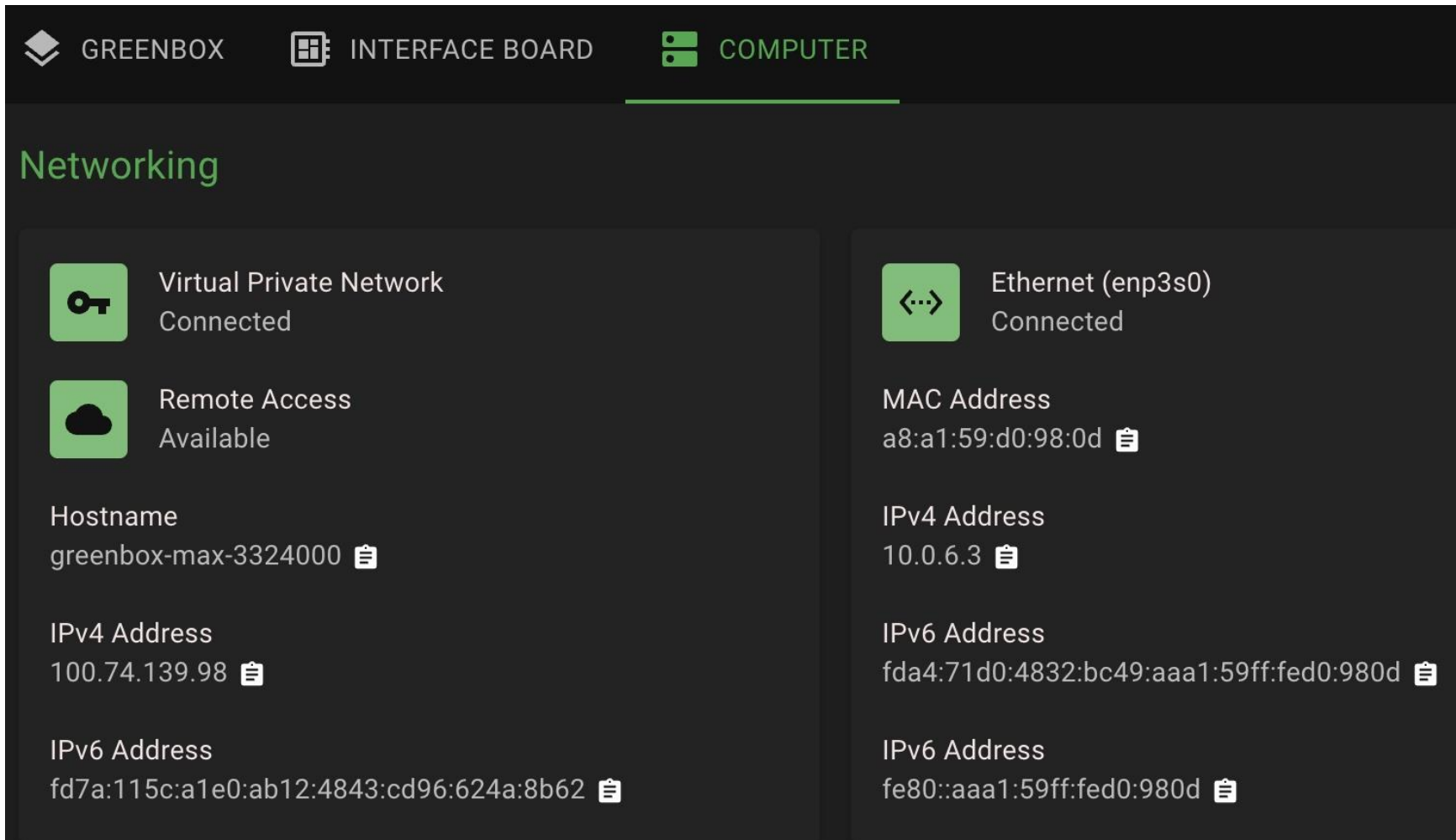
Accessing greenBOX on LAN is covered in this video: [greenBOX Unboxed - Access on LAN Using Browser](#)

For the initial setup, entering workstation names and other system data is much more efficient on your computer than using the greenBOX touchscreen. While the touchscreen is convenient for making quick adjustments during fine-tuning, we recommend using your computer for the bulk of data entry.

Here's how to access your greenBOX

- **Local Network (LAN):** If your greenBOX is connected to your local network via an Ethernet cable, and your computer is on the same network, simply enter the greenBOX's IP address into your web browser. This will provide access to the greenBOX user interface. You can find greenBOX IP address at menu **Monitoring** → **Computer** → **Networking** → **Right** → **Local IPv4 Address**.
- **Remote Access (via LAN):** If your greenBOX is connected to the internet through your LAN, you can access it remotely using the Tailscale VPN. Contact Ecogate for assistance with installing Tailscale on your computer, and request an invitation to securely access your greenBOX from [support@ecogate.com].
- **Direct Connection:** If neither of the above options is available, you can connect a wireless keyboard and mouse directly to the greenBOX. Plug the keyboard's USB receiver into the USB port on the black NUC computer located inside the greenBOX enclosure.

Once you've established a connection, you'll be ready to input your system data and proceed with the setup.



The screenshot displays the greenBOX interface with three tabs: GREENBOX, INTERFACE BOARD, and COMPUTER. The COMPUTER tab is selected and highlighted with a green underline. Below the tabs, the 'Networking' section is visible. It is divided into two columns. The left column contains status indicators for 'Virtual Private Network' (Connected) and 'Remote Access' (Available), followed by network details: 'Hostname' (greenbox-max-3324000), 'IPv4 Address' (100.74.139.98), and 'IPv6 Address' (fd7a:115c:a1e0:ab12:4843:cd96:624a:8b62). The right column shows 'Ethernet (enp3s0)' (Connected), followed by 'MAC Address' (a8:a1:59:d0:98:0d), 'IPv4 Address' (10.0.6.3), 'IPv6 Address' (fda4:71d0:4832:bc49:aaa1:59ff:fed0:980d), and another 'IPv6 Address' (fe80::aaa1:59ff:fed0:980d). Each address is accompanied by a clipboard icon for copying.

GREENBOX INTERFACE BOARD **COMPUTER**

Networking

 Virtual Private Network
Connected

 Remote Access
Available

Hostname
greenbox-max-3324000

IPv4 Address
100.74.139.98

IPv6 Address
fd7a:115c:a1e0:ab12:4843:cd96:624a:8b62

 Ethernet (enp3s0)
Connected

MAC Address
a8:a1:59:d0:98:0d

IPv4 Address
10.0.6.3

IPv6 Address
fda4:71d0:4832:bc49:aaa1:59ff:fed0:980d

IPv6 Address
fe80::aaa1:59ff:fed0:980d

Fig 01: You can find greenBOX IP address on the local network at menu **Monitoring** → **Computer** → **Networking** → right column **IPv4 Address** (10.0.6.3 in this case). The VPN internet address is alt left column **IPv4 Address** (100.74.139.98 in this case).

Giving your greenBOX a Recognisable Name

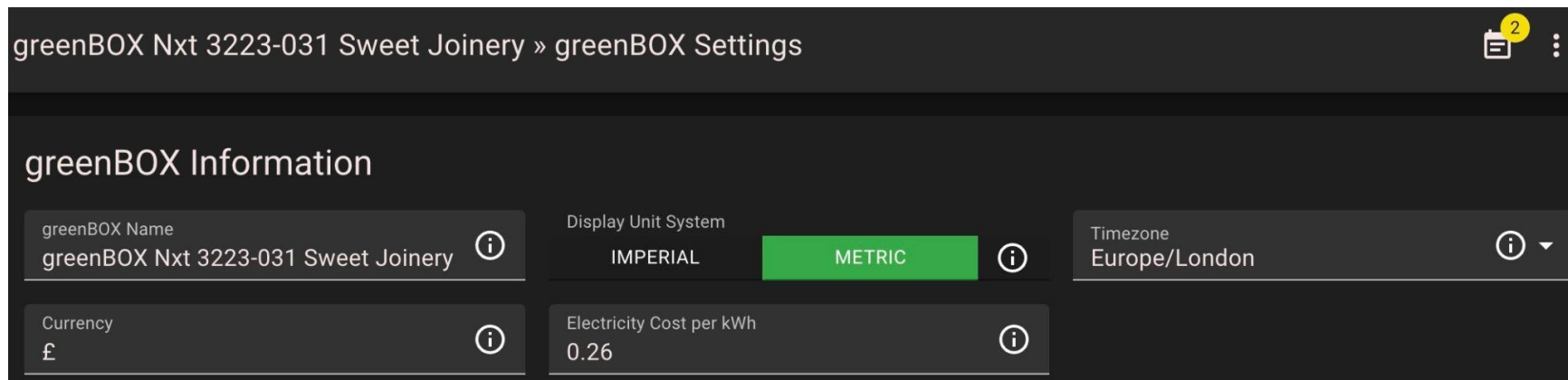
Now, let's give your greenBOX a clear and descriptive name. This will help users easily identify the correct greenBOX, especially in facilities with multiple units or locations. It also aids in troubleshooting with technical support.

Recommended Naming Format:

We suggest using this format: **"greenBOX Model SerialNumber FactoryName"**

- **Model:** Indicates the greenBOX model (e.g., Nxt, Max).
- **SerialNumber:** The unique serial number found on the greenBOX label.
- **FactoryName:** The name of your factory or facility.

Example: "greenBOX Nxt 3223-031 Sweet Joinery"



The screenshot shows the 'greenBOX Settings' interface. At the top, the breadcrumb 'greenBOX Nxt 3223-031 Sweet Joinery » greenBOX Settings' is visible. Below this is the 'greenBOX Information' section. It contains five settings, each with an information icon (i):

- greenBOX Name:** The value is 'greenBOX Nxt 3223-031 Sweet Joinery'.
- Display Unit System:** Two buttons are shown: 'IMPERIAL' and 'METRIC'. The 'METRIC' button is highlighted in green.
- Timezone:** The value is 'Europe/London'.
- Currency:** The value is '£'.
- Electricity Cost per kWh:** The value is '0.26'.

Fig 02: give greenBOX helpful name, select Display Unit, select Timezone, enter Currency, and average electricity cost per kWh.

While naming your greenBOX, also take a moment to configure the following settings:

- **Units:** Choose between IMPERIAL (for the USA) or METRIC (for most other regions) for the displayed units.
- **Timezone:** Select your local timezone. This ensures accurate timestamps in the event log.
- **Currency:** Enter your local currency for electricity cost savings tracking (more details in Step 7).
- **Average Electricity Cost per kWh:** Enter your average electricity cost to track savings (more details in Step 7).

Step 2: Adding a Ventilation System (Dust, Mist or Fume Collecting)

This video provides a walkthrough how to add ventilation system: [greenBOX Unboxed - Adding Systems](#)

Now, let's add a ventilation system to your greenBOX configuration. You have the flexibility to add multiple systems, each with its own VFD (Variable Frequency Drive) for independent control of the ventilation fan. Keep in mind that the main constraint isn't the number of systems you can add, but rather the number of gates that can be connected to the greenBOX.

- **Gate Limit:** For the greenBOX Nxt, each of the three Modbus ports has a maximum capacity of 24 gates. This limit is due to the power supply capacity.
- **Power Supply:** Each Modbus port's 24V DC output is "LPS" (Limited Power Source) compliant, with a maximum of 100VA (Volt-Amperes), which translates to 4A (Amps) at 24V DC.
- **Safety:** Each output is equipped with a fast-acting electronic fuse for protection.

To add a ventilation system:

1. Navigate to the greenBOX Menu.
2. Select "**Systems Setup.**"
3. Click on "**Add System.**"
4. Enter **user recognisable system name** in addition to **one letter system name**.

You'll then be able to configure the settings for your new ventilation system, including adding workstations and gates, and Variable frequency Drive.

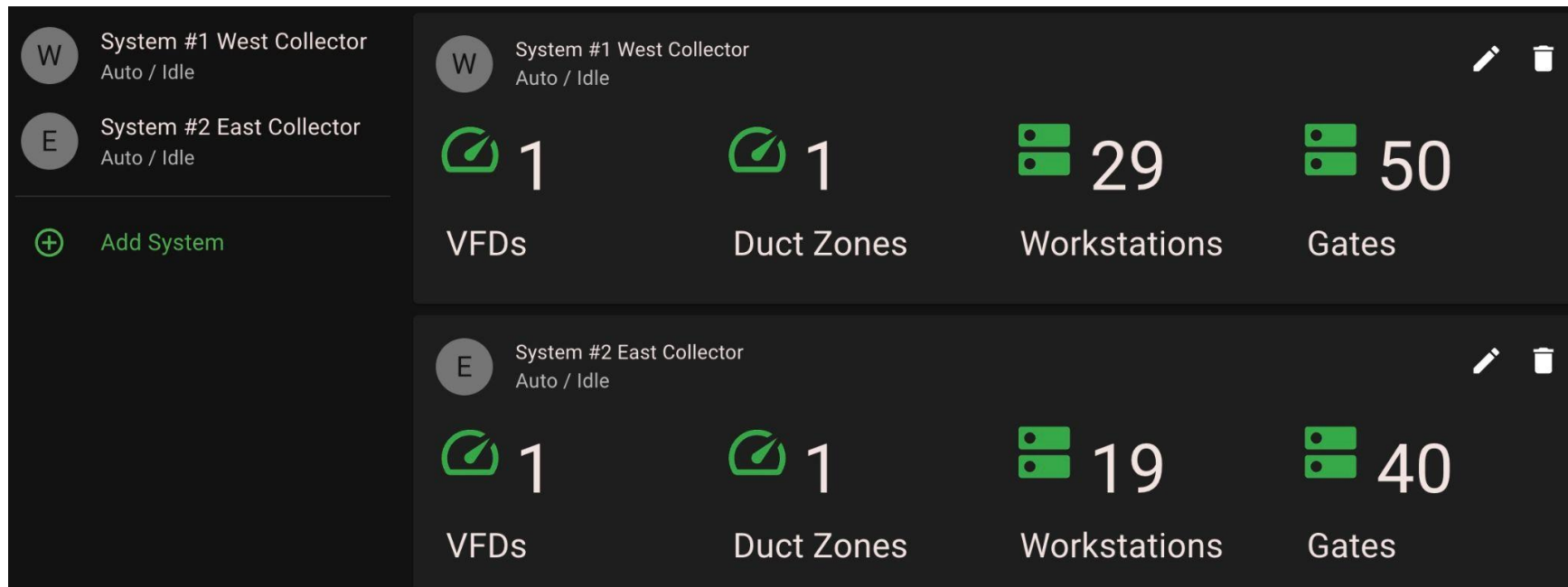


Fig 03: to Add ventilation system navigate to the greenBOX Menu → **"Systems Setup"** and click on **"Add System"**.

Step 3: Adding Workstations and Gates to Ventilation System

To understand how workstations and gates function within the Ecogate system, check out this video: [greenBOX Unboxed - Workstations in greenBOX](#)

For a demonstration of adding a gate, watch this video: [greenBOX Unboxed - Adding Gate to System](#)

And to learn about the gate's user interface, see this video: [greenBOX Unboxed - Smart Gate User Interface](#)

Workstations and Gates in the Ecogate System

In the Ecogate system, a "workstation" can have one or more gates. This offers a couple of key advantages:

- **Simplified Status Display:** The greenBOX interface can display a single workstation icon that shows the overall status of all its gates, making it easier to monitor your system at a glance.
- **Reduced Sensor and Labor Costs:** Multiple gates within a workstation can share a single sensor, saving on equipment and installation costs. (However, each gate can also have its own dedicated sensor if needed for independent operation.)

Automatic Modbus Addressing

Traditional HVAC and ventilation systems require manually setting a unique Modbus address for each gate using DIP switches.

Ecogate simplifies this process:

- **Easy Gate Identification:** Each gate motor has a clearly printed five-digit Gate ID number.
- **Automatic Address Assignment:** Simply enter the Gate ID into the greenBOX, and the system will automatically detect the gate's Modbus port and assign the appropriate address. This saves time and eliminates potential configuration errors, especially in larger systems or when adding gates later.

Adding Workstations and Gates:

1. **Access System Settings:** Click on the system name under "**Systems Overview**" on the left side of the screen (or click the pencil icon on the dashboard) to open the system edit screen.
2. **Navigate to Workstations:** Select the "**WORKSTATIONS**" tab.
3. **Create a New Workstation:** Press "**ADD WORKSTATION**", click the three dots menu on right, select "**Edit workstation**", enter a workstation name that users will recognise.

4. **Add a Gate:** Click on the **gate icon**.
5. **Enter Gate Details:** Fill in the **Gate Driver ID number**, **Gate Diameter**, and **Design Drop Air Velocity**.
6. **Activate the Gate:** Click "**ENABLE**." The greenBOX will discover the gate and assign its Modbus address.
7. **Continue Adding Gates:** Repeat for additional gates within the same workstation or create new workstations as needed.

Important Tip: Start by adding workstations and gates closest to the fan and work your way towards the farthest points in the duct system. This configuration helps the greenBOX optimize gate openings for maintaining minimum transport air velocities and efficient cleaning when the user selects the "**FROM END**" duct option.

1. DESKTOP FACTORY 6863 (152 MM) X

1. Desktop Factory + ADD GATE

Workstation Name 1. Desktop Factory i

One-To-One Sensor Mode ENABLED DISABLED i

Workstation Notes Desktop Factory workstation #1, installed May 16 2024. Uses Volt sensor. i

Fig 04: Enter a workstation name that users will recognise, and then click on the gate icon

1. DESKTOP FACTORY  6863 (152 MM) ✕

 6863
152 mm ↑ OPEN ↓ CLOSE

Connection Quality 100%	Temperature 40 °C	Supply Voltage 23.5 V	
Pressure 60 Pa	Air Velocity 0.0 m/s	Air Volume 0 m³/h	
Motor Current 0 mA	Move Energy 0 Ws	Move Duration 0.5 s	
Hardware Version 5010	Firmware Version 5007	Modbus Port 3	Modbus Address 101

Enabled
ENABLED DISABLED ⓘ

Gate Driver ID
6863 ⓘ

Off Delay
3 s ⓘ

Gate Diameter
152 mm ⓘ

Design Drop Air Velocity
25.87 m/s ⓘ

Calculated Design Air Volume
1,690 m³/h

ADVANCED GATE CONFIGURATION ◀

Fig 05: Fill in the Gate Driver ID number, Gate Diameter, and Design Drop Air Velocity, and then click "ENABLE".

Step 4: Adding Ecogate Power MASTER VFD to Ventilation System

Before adding the VFD to the greenBOX system, you'll need to run the "Ecogate Setup Assistant" on the Power MASTER VFD's control panel. This video demonstrates the process: [Ecogate Setup Assistant - Power Master](#)

Completing the setup assistant will configure the VFD's parameters for seamless Modbus communication with the greenBOX. Once that's done, you can proceed with adding the VFD to the system, as shown in this video: [greenBOX Unboxed - Adding ABB VFD](#)

Important Note: During the initial "**Ecogate Setup Assistant**" run (which starts automatically when the VFD is powered on for the first time), be sure to select the "**greenBOX NXT or 12**" model. This will set the VFD's **Modbus address to 2** (If you have multiple VFDs on same daisy-chained Ecogate MASTER cable select "greenBOX MASTER," you'll have the option to manually set Modbus addresses 1, 2, 3, or 4).

Now, let's add the VFD to the greenBOX system:

1. **Access VFD Settings:** In the greenBOX interface, click on the system name under "**Systems Overview**" on the left (or click the pencil icon on the dashboard) to open the system edit screen.
2. **Go to VFDs Tab:** Select the "VFDs" tab.
3. **Add VFD:** Click "ADD VFD."
4. **Enter VFD Details:**
 - Provide a **user recognizable name for the VFD**.
 - Select the **VFD Ecogate Power MASTER (ABB ACS580/ACS880) model from the list**.
 - Enter the **baseline power** (start with the motor's size in kW that you enter at "Ecogate Setup Assistant" to VFD).
 - Select the **maximum frequency** (60 Hz in North America).
 - Enter the **greenBOX Modbus port number where the Ecogate MASTER cable from the VFD is connected**.
 - Enter the **VFD's Modbus address (usually 2, as set by the "Ecogate Setup Assistant")**.
5. **Enable VFD:** Click "**Enabled**." Within a few seconds, you should see real-time data from the VFD, including frequency (Hz), power (kW), voltage (V), and current (A). The Power MASTER VFD is now ready to be used with your ventilation system.

The screenshot displays the Ecogate VFD configuration interface. At the top, there are buttons for 'ENABLED' (green), 'DISABLED', 'RESET ERROR', and 'EMERGENCY STOP'. Below these, the 'VFD Name' is set to 'ACS880'. The 'Model' is selected as 'Ecogate Power MASTER (ABB ACS580 / ACS880)'. The 'Baseline Power' is set to '200 kW'. The 'Maximum Frequency' is set to '60 Hz'. The 'Modbus Port' is set to '2'. The 'Modbus Address' is set to '2'. The 'VFD Manual Mode' section shows 'Communication Quality 100%' and a list of modes: 'Enable', 'Ready', 'Running', 'Automatic Mode', 'Manual Mode', and 'Immediate Stop'. On the right, a list of real-time data is shown with corresponding progress bars: 'greenBOX Speed' (0 %), 'VFD Requested Speed' (0 %), 'Fan Speed' (97 %), 'Fan Frequency' (58.0 Hz), 'Power' (111.0 kW), 'Voltage' (216 V), and 'Current' (0.8 A).

Fig 06: enter user recognizable VFD name, select the Ecogate Power MASTER (ABB ACS580/ACS880) VFD model from the list, enter the baseline power, select the maximum frequency (60 Hz in North America), enter the greenBOX Modbus port number where the Ecogate MASTER cable from the VFD is connected, enter the VFD's Modbus address (usually 2), and click "Enabled".

Configuring Fan and Filter Pressure Transmitters

The Ecogate Power MASTER VFD comes equipped with high-quality Ashcroft pressure transmitters (4-20 mA output) pre-installed, wired, and configured for seamless integration with the VFD's analog inputs. This minimizes setup errors and saves installation time. Users only need to set the pressure range: **10" wc for the Filter and 20" wc for the Fan (VFDs up to 200 HP) or 50" wc for the Fan (VFDs over 200 HP)**. Use a descriptive **"Peripheral Name,"** select **"Pressure"** as the Sensor Type, and with the system OFF, set the zero display value by pressing the CLEAR button followed by the SET button.

Analog Input 1

Peripheral Name Filter Differential Pressure ⓘ	Sensor Type Pressure ▼	Pressure 1.29 "w.c.
Sensor Range 10 "w.c. ⓘ	Zero Offset -0.04 "w.c. SET CLEAR	

Analog Input 2

Peripheral Name Fan Total Static Pressure ⓘ	Sensor Type Pressure ▼	Pressure 17.16 "w.c.
Sensor Range 25 "w.c. ⓘ	Zero Offset 0.44 "w.c. SET CLEAR	

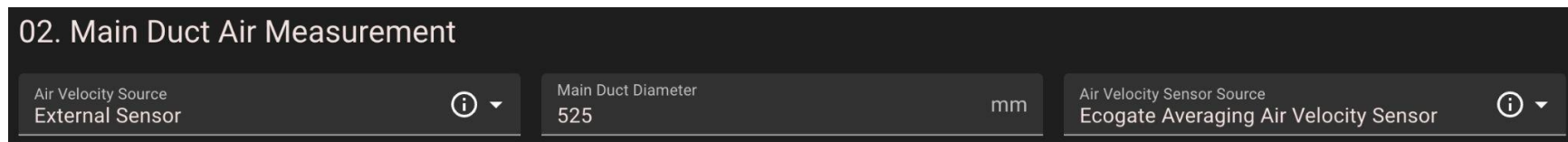
Fig 07: set the pressure range: **10" wc for the Filter and 20" wc for the Fan (VFDs up to 200 HP) or 50" wc for the Fan (VFDs over 200 HP)**. Use a descriptive "**Peripheral Name**," select "**Pressure**" as the Sensor Type, and with the system OFF, set the zero display value **by pressing the CLEAR button followed by the SET button**.

Step 5: Setting System Minimal Airflow

Maintaining Airflow and Preventing Material Settling in the Duct System: The greenBOX actively manages your system's airflow. It does this by strategically opening and closing gates as needed and adjusting the fan speed. This ensures the minimum required airflow is met, which helps prevent material from settling and accumulating inside your ductwork.

Setting Minimum Transport Air Velocity: In Step 3, you entered the "Design Drop Air Velocity" for each gate. The greenBOX uses this value, along with the gate's diameter, to calculate the Design Air Volume for each gate, workstation, and the overall system.

- **Minimum Transport Air Velocity:** The minimum transport air velocity you set is vital and depends on the type of material in your system. For sawdust, a common range is 3,000-4,500 feet per minute (FPM). For specific recommendations, refer to "Industrial Ventilation, A Manual of Recommended Practice" or consult your local Authority Having Jurisdiction (AHJ).
- **For Longer, Larger Duct Systems Use Duct Zones:** For longer and larger duct systems, it's often necessary to divide the system as set in greenBOX into zones (branches) and set minimum airflow levels for each zone individually. This guide focuses on setting the minimum airflow for the main duct only. For instructions on setting up multiple duct zones, please refer to the provided YouTube video and online article.



02. Main Duct Air Measurement

Air Velocity Source External Sensor	Main Duct Diameter 525 mm	Air Velocity Sensor Source Ecogate Averaging Air Velocity Sensor
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Fig 08: At “02. Main Duct Air Measurement” set the “Main Duct Diameter” for proper calculation of Minimal Airflow Air volume

Setup Minimum Airflow in the greenBOX Software

1. **Access System Settings:** In the greenBOX interface, click on the system name under "**Systems Overview**" on the left (or click the pencil icon on the dashboard) to open the system edit screen, scroll down to "**02. Main duct Air Measurement**" and enter here main duct diameter.
2. Scroll down to **03. Minimum and Maximum Airflow**" and use the slider in the software to set the minimum ratio of open gate area. For most efficient operation choose the displayed "**Minimum Air Volume**" (in CFM or m³/h). This value represents the minimum air volume needed to maintain adequate airflow.
3. Move Minimum slider to minimum value of "**Recommended Min. Value**" (it is adequate to **Minimum Air Volume** value as explained in previous point).
4. **Select Minimum Airflow Mode** (description is below, **LAST USED** is recommended).
5. **Select Enabled.**

Minimum Airflow Mode

- **LAST USED (Recommended):** This mode prioritizes opening gates that were recently used. It's a good option for most systems as it improves operator convenience by keeping frequently used gates ready.
- **FROM END:** This mode prioritizes opening gates furthest from the fan. It's often better for long or less efficient duct systems, as it helps maximize airflow throughout the entire system.
- **NONE:** Choose this mode if your application doesn't require maintaining minimum transport air velocities (e.g., most fume collection systems).

03. Minimum and Maximum Airflow

Minimum Airflow Mode

NONE **LAST USED** FROM END ⓘ

Minimum Transport Velocity 17 m/s ⓘ

Main Duct

Maintain Minimum Airflow in Main Duct

ENABLED DISABLED ⓘ

Minimum Air Volume ⓘ 13,248 m³/h

Design Air Volume ⓘ 23,778 m³/h

Full Utilization Air Velocity ⓘ 31 m/s

Minimum and Maximum Airflow Ratio ⓘ

0% 57% 100%

Recommended Min. Range

Fig 09: After entering Main duct diameter and Minimum Transport Velocity move Minimum slider to minimum value of **"Recommended Min. Range"**. It is highlighted by an orange slider background. Select **Minimum Airflow Mode - LAST USED** is recommended, and click **ENABLED**.

Note: If you are curious about Maximal Airflow settings, it is covered by another deep dive document.

Step 6: Setting Duct System Cleaning Mode

This video provides a walkthrough [How To Setup greenBOX Cleaning mode](#)

To ensure your duct system remains clear and free of accumulated material (like sawdust in a woodworking shop), greenBOX includes a Cleaning Mode. Think of it as an extra layer of protection. While greenBOX prioritizes maintaining minimum transport air velocity to prevent material buildup, it's possible to underestimate the required airflow or the complexity of your duct system (e.g., elevation changes or frequent elbows).

We recommend: During the initial days of system operation, inspect your main duct daily to verify the minimum transport air velocity is set correctly. Also, enable and configure the duct system Cleaning Mode.

04. Cleaning

Cleaning Mode Regularly	Cleaning Run At Stop ENABLED	Clean By Zone ENABLED
Cleaning Interval 3600	Cleaning Duration 120	Cleaning Minimum Run Duration 600

Fig 10: To set Cleaning select "**Regularly**" from the listbox, Enable "**Cleaning Run At Stop**" (recommended), set **Cleaning Interval**, **Cleaning Duration**, and **Cleaning Minimum Run Duration**.

Configuring Cleaning Mode Settings

1. **Access Cleaning Settings:** In the greenBOX interface, click the system name under "**Systems Overview**" on the left (or the pencil icon on the dashboard). Scroll down to "**04. Cleaning**" in the system edit screen.
2. **Cleaning Mode:** Select "**Regularly**" to initiate cleaning at regular intervals after the system starts.
3. **Cleaning Run At Stop:** Enable this function to run a cleaning cycle before the system shuts down, ensuring the ducts are clear when not in use.

4. **Cleaning by Duct Zone (optional):** For systems with gates assigned to specific duct zones, enable this option to increase cleaning efficiency by targeting individual zones.
5. **Cleaning Interval:** Set the time between cleaning sessions. The default is 60 minutes (3600 seconds), but you can adjust this for systems requiring more frequent cleaning.
6. **Cleaning Duration:** Set the cleaning cycle length. It should be long enough for all gates to open and the system to run at full fan speed for a set time. Observe the system and gate status during cleaning to fine-tune the duration.
7. **Cleaning Minimum Run Duration:** For systems that frequently start and stop, enable this setting to prevent cleaning from running at every stop. Set the minimum system runtime required to trigger a cleaning cycle at shutdown.
8. **Fan Speed (optional):** Navigate to "**01. Fan Settings**" and open "**Advanced Fan Settings**". Here, you can adjust the fan speed specifically for Cleaning Mode and Clean Up (Cleaning at Stop). Typically, 100% fan speed is used.

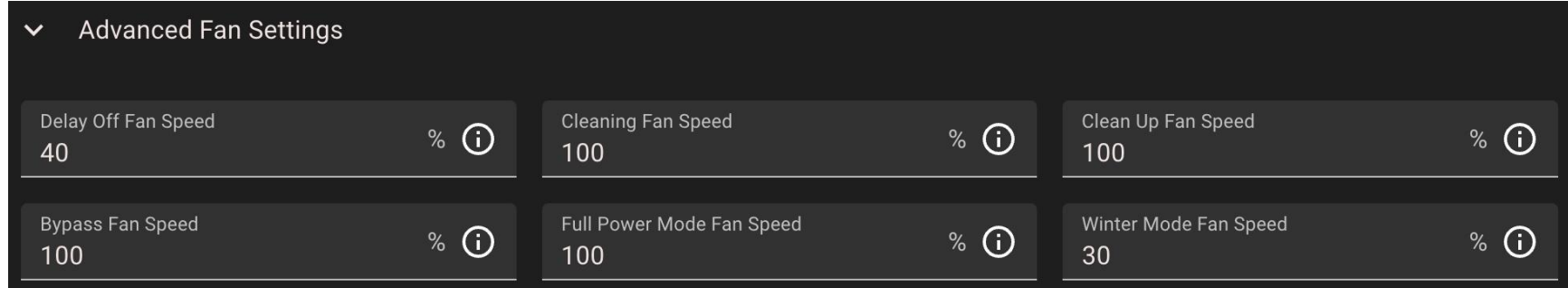


Fig 11: At **Advanced Fan Settings** you can adjust the fan speed specifically for **Cleaning Mode** and **Clean Up** (Cleaning at Stop). Typically, 100% fan speed is used.

Step 7: Tracking Your Electricity Savings

The greenBOX doesn't just control your system—it also helps you track your electricity savings. It monitors your fan's power usage and shows you how much electricity (in kWh) and money you're saving.

Setting Up Cost and Currency:

1. Go to the greenBOX menu and click on "**greenBOX Settings**"
2. Enter your local "**Currency**."
3. Calculate your average "**Electricity Cost per kWh**" (divide your total electricity bill amount by the total kWh used). This includes any additional utility charges, giving you a true cost. For seasonal variations, use an average from your yearly bills.
4. **Setting Baseline Power:**
 - **Understanding Baseline Power:** This is the power your system would use *without* Ecogate, running at full speed all the time while providing correct Design Air Volume to all drops.
 - **Systems designed for 100% Total Design Air Volume:** If your system is designed to provide proper Design Air Volume at each drop at 100% fan speed, enter the fan motor's power usage with all gates open. You can find this on the VFD display (select the Manual Mode using the Power MASTER VFD door selector).
 - **Systems that cannot provide 100% Total Design Air Volume:** If your system can't deliver the Design Air Volume at 100% fan speed to every drop, the baseline power will be higher than the fan's motor size (kW). In this case, contact Ecogate for help with calculating the correct baseline power based on fan laws.
5. **Enter Baseline Power:** Once calculated, enter the baseline power in the VFD tab under "**Baseline Power**"

Viewing Your Electricity Savings in your currency and kWh

1. Go to the greenBOX menu and select "**Monitoring**."
2. Click on the "**GREENBOX**" tab.
3. Run your system for a few days to accumulate measurable savings data. Now you're all set to monitor how much energy and money Ecogate is saving you!

greenBOX Information

greenBOX Name Pine Cone Factory	Display Unit System IMPERIAL METRIC	Timezone America/Los_Angeles
Currency USD	Electricity Cost per kWh 0.25	

Fig 12: At menu "**greenBOX Settings**" Enter your local "**Currency**", and average "**Electricity Cost per kWh**".

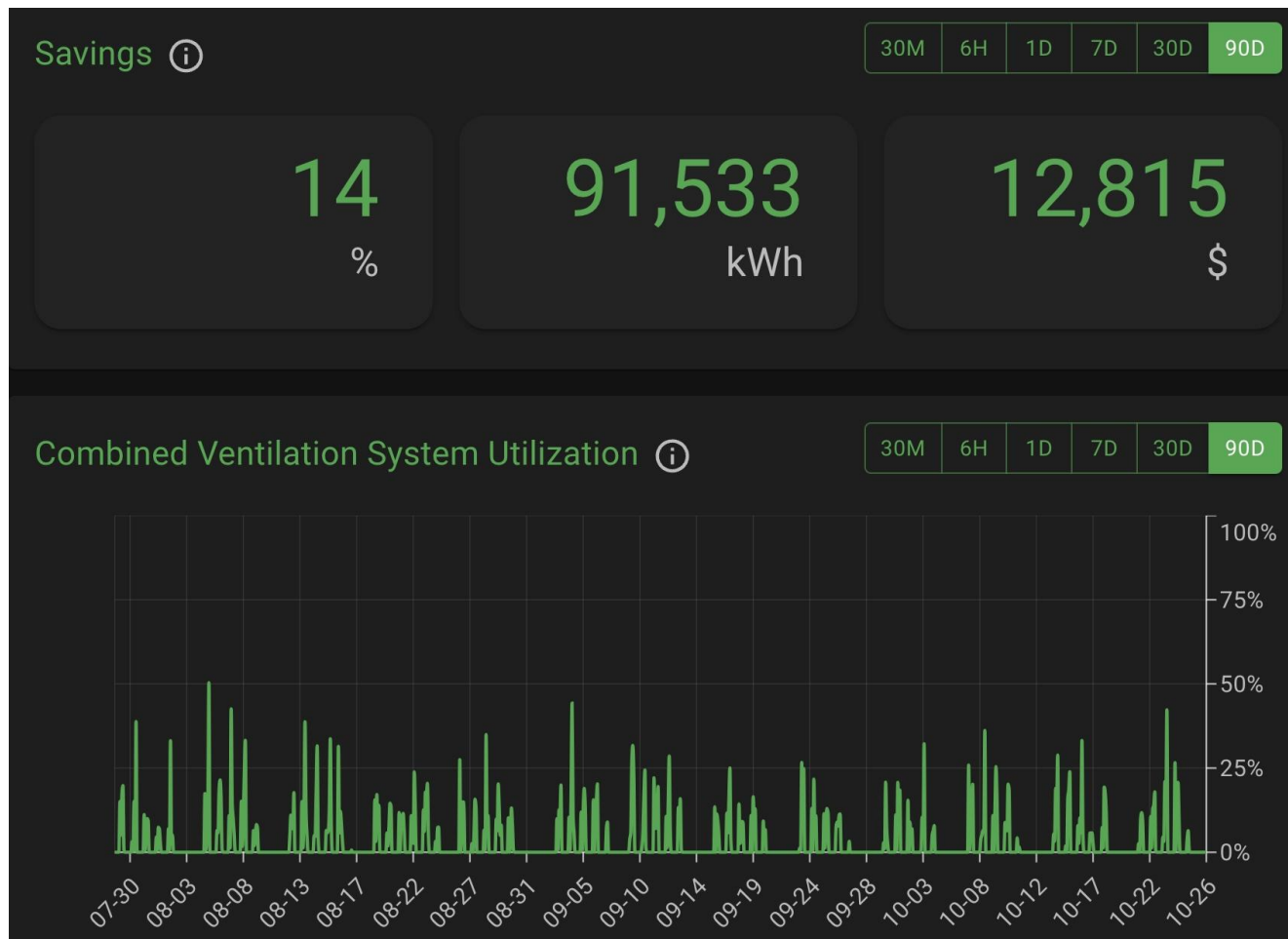


Fig 13: View your electricity savings in your currency and kWh at the **"Monitoring"** menu, the **"GREENBOX"** tab.

Step 8: Calibrate Air Velocity/Air Volume Readings, and Enjoy Fully Automated Ventilation System

Fine-Tuning and Enjoying Your Ecogate System

Now that your system is set up, it's time to calibrate the air velocity/air volume readings at the gates and main duct. This process, which we call "**ventilation system mapping to fan curves**" fine-tunes your system for optimal performance. Detailed instructions for calibration and system mapping are available in the "**greenBOX Nxt Quick Calibration Guide**".

Once calibrated, your Ecogate system is fully automated and ready to go! Simply use your workstations as you normally would. The system's activity sensors will detect when a workstation is in use, automatically starting the fan and dust collector. It will also close unused gates while intelligently managing airflow to meet minimum requirements.

Benefits of Ecogate:

- **Energy Savings:** The fan operates at lower speeds, significantly reducing electricity consumption.
- **Quieter Operation:** Lower fan speeds mean a quieter working environment.
- **Longer Filter Life:** Optimized airflow reduces wear and tear on filter bags, extending their lifespan.
- **Scalability:** The system's adjustability and increased dynamic capacity allow you to easily add more workstations in the future.

Welcome to the world of Ecogate—where efficiency, savings, and a cleaner, quieter workspace come together!