ECOGATE®

extractly

WORLD PROVEN
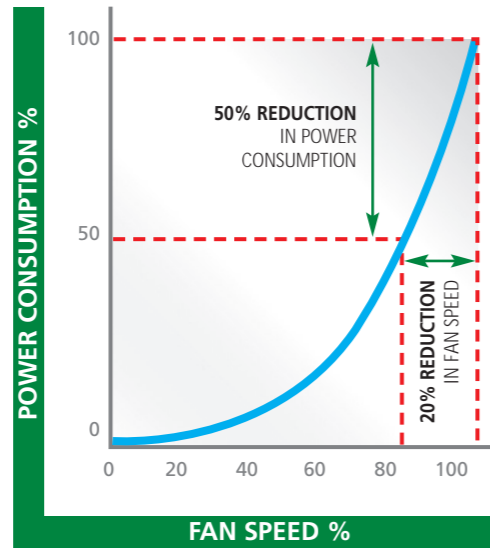HIGH PERFORMANCE
COST EFFICIENT

ENERGY-SAVING EXTRACTION-ON-DEMAND

What is **ECOGATE**®?

ECOGATE® technology will deliver optimum performance from any dust or fume extraction system.

An ECOGATE® system monitors individual production machines to determine when and where extraction is needed, and continuously regulates fan speed to exactly match demand.

The savings achieved with ECOGATE will typically cover the installation cost in just 2 years.

POWER CONSUMPTION %

100

50% REDUCTION IN POWER CONSUMPTION

50

20% REDUCTION IN FAN SPEED

0

0   20   40   60   80   100

FAN SPEED %

20% reduction in fan speed cuts power consumption by 50%

Energy Saving = **Cost** Saving

In many manufacturing facilities, extraction fans operate at full power throughout the working day. Even when some machines are not in use, and often during factory breaks, the powerful fans continue to run at full speed – wasting valuable energy and money!

With ECOGATE, an extraction system responds in real time to variations in machine use. When a production machine is switched on, the greenBOX Controller opens a motorised damper to provide extraction for that particular machine.

Simultaneously, the greenBOX determines the optimum fan speed required to meet the change in demand.

Conversely, when a machine is shut down, the Controller closes the relevant damper and adjusts fan speed accordingly.

With ECOGATE technology installed, an extraction fan will consume the minimum power required to provide optimum extraction – reducing electricity bills by 68% on average.

ECOGATE® Technology

ECOGATE
Volt Sensor

The Volt Sensor detects any change in voltage and, when a machine comes on-line or shuts down, it sends a signal to the ECOGATE greenBOX® Controller.

ECOGATE
Automatic Dampers

ECOGATE Automatic Dampers are operated by a 24V DC geared motor and fabricated to fit a wide range of ductwork sizes in zinc-plated mild steel or stainless steel, depending on application.
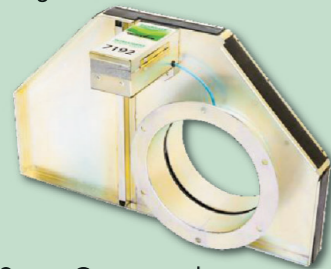
ECOGATE **Smart Gates** are the next generation of automatic dampers. When installed with a greenBOX NXT or MASTER SRL Controller, Smart Gates continually monitor airflow in the duct.

ECOGATE
greenBOX® Controller

ECOGATE greenBOX® Controllers provide the system's intelligence – monitoring extraction demand, operating automatic dampers, instructing the PowerMASTER VSD unit to optimise fan speed, and maintaining minimum transport velocities in the ductwork.

The range of ECOGATE Controllers offers a cost-effective solution whether your extraction serves just a few machines or a manufacturing facility with dozens of machines.

ECOGATE greenBOX® 12

The ECOGATE greenBOX 12 is designed for an extraction system with one main fan serving up to 12 workstations, or up to 24 workstations with two greenBOX 12 units connected in tandem.

ECOGATE greenBOX® NXT

The ECOGATE greenBOX® NXT is capable of controlling a system with one fan and up to 32 workstations.

'Smartphone' technology delivers state-of-the-art functionality and integrated Wi-Fi allows secure, remote access to Ecogate's analytics platform; with the option of system reports via email.

Extraction systems controlled by a greenBOX NXT are fitted with ECOGATE Smart Gates.

ECOGATE greenBOX® MASTER SRL

The ECOGATE greenBOX® MASTER SRL can simultaneously control up to four separate extraction fans and as many as 180 workstations. The robust unit features a heavy-duty, touchscreen monitor and a dust and waterproof keyboard.

As well as energy-saving calculations, Ecogate's Data Mining capabilities can provide information on workstation utilisation, fan power, fan pressure and main duct velocity.

Built-in internet connectivity facilitates remote configuration, monitoring, diagnostics and maintenance and, with ECOGATE Smart Gates, the MASTER SRL Controller can monitor airflow at each automatic damper.

ECOGATE
PowerMASTER

If the greenBOX is the brains of the system, then the PowerMASTER is the heart…

The ECOGATE PowerMASTER is a variable speed drive (VSD) inverter unit, specifically designed to optimise an Ecogate-controlled extraction system. VSD technology maximises energy efficiency and potential savings.

The PowerMASTER can automatically manage fan start-up and shutdown, and features an easy-to-use keypad and high-contrast screen for easy configuration.

ECOGATE®
turns your airflow into cash flow…
…it's an open and shut case!

ECOGATE®

A cost-effective, energy-saving solution that is equally-suited to installation on new or existing extraction systems

System Benefits

- Even small reductions in fan speed generate significant savings

- Typically electricity bills are at least halved with an Ecogate system

- Cost savings can return financial investment in less than 2 years

- Extraction performance is enhanced and maintenance reduced

- Noise at the fan and inside the workshop is significantly reduced

- Add new or more powerful machines without increasing fan power

- Integration with other controls allows auto-stop and start-up of fans

- Reduced wear and tear extends lifetime of fans and filter media

- Remote access to system status and statistics with Data Mining

- On-demand opening of all gates for cleaning and maintenance

ECOGATE®

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www.extractly.co.uk

Ecogate greenBOX Control Unit Comparison

All of our controllers provide these state-of-the-art benefits:

- World-leading energy efficiency by using a Variable Frequency Drive (VFD) and intelligent sensors & software
- Automatically open blast gates to machines based on machine activity
- Automatic dust collector start and stop
- Automatically maintain transport air velocities in the ducting

ECOGATE®

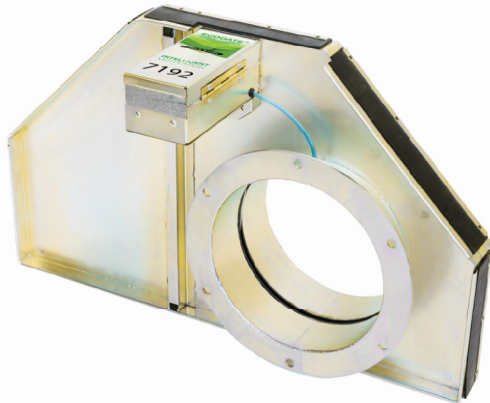|	greenBOX 12	greenBOX NXT	greenBOX MASTER
Suitable for	Small industrial facilities	Industrial facilities with up to 32 drops per system	Large industrial facilities
Max # of systems	1	1	4
Max # of gates	12	32	180
User Interface	Windows software on PC connected via cable	Wireless via any internet connected device	Touchscreen
VFDs supported	Ecogate Power Master or any analog VFD	Ecogate Power Master	Ecogate Power Master
Shows main duct pressure/ volume/velocity	Pressure only	✓	✓
Number of duct zones for minimum airflow	1	3	10
Energy savings evaluation & data analytics		✓	✓
Pressure, velocity & volume monitored at all drops		✓	✓
Remote Access	LogMeIn via connected Windows PC	Native web browser (Ecogate Account)	LogMeIn
System Calibration Wizard			✓
Support for Cascading fans, Lead & Backup fans			✓
Control via Higher Level System (SCADA)			✓
Operation without VFD (fan start/stop)	✓	✓	
Firmware updates by user	✓	✓	✓
Architecture	Embedded industrial processor	ARM	Industrial PC

Ecogate industrial automatic blast gates are more efficient than pneumatic gates, in addition to being more cost-effective to install and maintain, because they do not require compressed air. green-BOX NXT and Master controllers use our patented smart gates, which also monitor air flow at all drops in real time. This air flow information is relayed to the greenBOX and used to optimize the ventilation system.
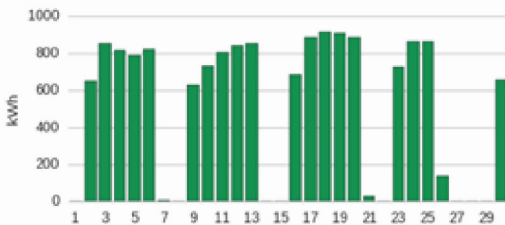
The Ecogate Power Master Variable Frequency Drive (VFD) adjusts the fan speed to match air volume demands in real-time. It also manages the collection fan and starts and stops the airlock and transfer fans. The Power Master is heavy duty, with a NEMA 12 dust-proof cabinet, exterior heatsink, and positive inside air pressure.

100 HP Plant 2 System

16,433 kWh
Electricity Use This Month

71%
Electricity Savings

Electricity Use by Day
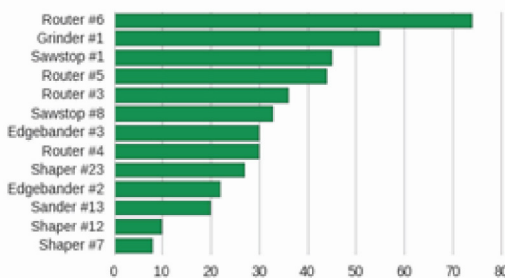
43%
workstation utilization this month

40%
workstation utilization last month

39%
workstation utilization two months ago

Workstation Utilization Details (% of shift time)

Router #6
Grinder #1
Sawstop #1
Router #5
Router #3
Sawstop #8
Edgebander #3
Router #4
Shaper #23
Edgebander #2
Sander #13
Shaper #12
Shaper #7

The greenBOX Master and greenBOX NXT control units gather detailed data about the systems under its control. Our customers can access the data through our web analytics interface to gain insight about workstation usage, fan power consumption, electricity savings, main duct air velocity and other metrics. In addition, once per month, each customer receives an email with a summary of the dust collection systems' performance for that month. This includes electricity use by day of the month, kWh savings compared to a baseline, as well as detailed workstation utilization data.

greenBOX NXT

greenBOX NXT is Ecogate's newest member of the greenBOX® control unit family for industrial ventilation systems: "Make the common dust extraction system super easy, and the uncommon possible".

Ecogate Systems are energy-efficient, cloud-connected, and remotely accessible.

The world's first dust collection controller
with wireless communication as standard

The greenBOX NXT from **ECOGATE®**

greenBOX® NXT can manage all types of industrial exhaust ventilation systems in metalworking, woodworking, welding, oil mist, fume, pharmaceutical, food processing, and other industries.

greenBOX NXT

For a system with up to 32 workstations. Includes Data Analytics, Cloud backup, Daily emails for Maintenance, Monthly emails for Management, Remote Access from your smartphone or any other device, WiFi connection, built-in Web server.

ARM processors (like the ones in your smartphone) make this device powerful & very cost effective.

Air Volume/Velocity/Pressure measurements at each smart gate & main duct

Over The Air (OTA) software updates (like Tesla cars)

Compatible with Ecogate Smart gates, Ecogate sensors, and with Power MASTER VFDs. The gates are connected by daisy-chain using Ecogate MASTER cable.

- <u>EXCELLENT USER INTERFACE.</u> greenBOX NXT has an OLED display, but you can connect your device and use a browser to access the user interface. It automatically scales optimally for smartphone, tablet, or PC (no software installation necessary). By using modern internet technologies, Web User Interface response is immediate and fluent.
- <u>REMOTE ACCESS, CLOUD CONNECTION.</u> greenBOX NXT is now using Ecogate Account & Ecogate Remote Access Server (ERAS): the benefit is super easy remote access. Users can invite/ manage other users. Also registration to collect data to the cloud server is automatic.
- <u>SIMPLE OTA UPDATES.</u> Fast, Over The Air (OTA) software update is implemented, and updates can be done by users.
- <u>BEST IN CLASS VENTILATION VALUES MEASUREMENTS.</u> Our best-in-industry pressure, air volume, and air velocity measurements are available via User Interface, DataMining, and included in daily emails.
- <u>EXTRACTION SYSTEM SETUP WIZARD.</u> Easy-to-use setup wizard will allow you to set up the entire extraction system in five minutes (for example, Modbus addresses of the gates are automatically assigned, no DIP switches meddling like in other systems).
- <u>PROGRAMMABLE DIGITAL INPUTS & OUTPUTS.</u> Users can select the desired function from listbox; about ten functions are available.

- <u>100% RELIABLE INDUSTRY STANDARD MODBUS COMMUNICATION</u>. The Modbus communication is industry "gold" standard for reliable, interference-free communication in an industrial environment that allows daisy-chaining all gates. As industry standard 24V DC power supply is carried over the same daisy-chained cable, no local power supply and workstation is necessary, making installation cost effective and safe.
- <u>HEAVY-DUTY GATES OPERATED BY 24V DC MOTOR WITH LIMIT SWITCHES</u>. Instead of pneumatically operated gates, greenBOX NXT uses heavy-duty Ecogate gates with 24V DC smart motors. The pneumatically operated gates are expensive to operate as compressed air is expensive, and they do not have limit switches, therefore the control system and users do not know whether the gate is open or closed. Pneumatically operated gates are not heavy-duty for long term industrial use.
- <u>ECOGATE USES MOST RELIABLE INDUSTRIAL VFDs</u>: we are using the most reliable industrial VFDs produced by Swedish–Swiss company ABB with custom Ecogate software to intelligently start/stop dust collector on demand, to monitor fan and filter pressure, to monitor fan consumption, to protect duct system against implosion, for customer safeties etc.
- <u>AUTO-START/ AUTO-STOP.</u> greenBOX starts/stops the extraction system on-demand based on information from workstation activity sensors. The dust collector also starts/stops on demand to save electricity, and to decrease wear & tear.
- SUPPORT & SERVICE AGREEMENT. Ecogate offers three levels of the Service Agreement. At the highest Platinum Level in addition to DataMining, Analytics, discount for Ecogate gates and parts, our service technician will visit you once per year and optimize the system for best performance, and highest electricity savings.

Standard Features That Are Included

- The gates are equipped by Open & Closed limit switches; the limit switches position is indicated to operators, transferred to greenBOX control system for safe system performance (most competing systems do not have this option)
- Minimal airflow is managed in the entire duct system, separately in three duct zones (competing systems do not have this option)
- Reading & writing all VFD parameters from User Interface (it means you can program the VFD parameters remotely)
- Data from the system are collected to Ecogate Cloud Server and reported to user
- System setup file is automatically backed up to Ecogate Cloud Server
- As an insurance policy, greenBOX can be set to use the "Cleaning" function (all gates open, fan at full speed. Cleaning options are: at regular intervals, deep cleaning one duct zone at a time, cleaning at system stop)
- Fan On delay, Fan Off delay function
- Gate On/Off delay function

- Monitoring of the Fan total static pressure, Filter differential pressure (with option to set Warning and Error pressure values both for Minimum and Maximum, both for Fan and Filter to allow practical information to be logged; at Error pressure value system will stop)
- Workstation activity sensor input can be set as Normally Open (NO) or Normally Closed (NC), and short pulse can be extended by Input Timer function
- Gate limit switches, motor current, voltage, opening/closing time, electronics temperature, drop pressure, air velocity, and air volume are monitored and reported to the system
- "Compensation" option will increase suction if particular gate is active (available per each gate, settings is percentage)
- Selectable function if gates should open or close at system stop (open gates are preferable for safety, but sometimes closing gates is preferable if moisture entering factory can create problems)
- Event Log: all important events are logged to the file and accessible via User Interface. It is easy to see what is happening.

Summary

Ecogate Systems with greenBOX NXT are energy-efficient, cloud connected, and remotely accessible

greenBOX NXT is based on modern ARM processors (one processor is handling all control tasks, a second processor is used for web server and communication tasks.
The separation of control functions and user interface increases reliability of greenBOX NXT) with simple remote access by utilizing a built-in web server. It can manage dust/fume/mist ventilation systems with up to 32 workstations/gates. Measurements & regulation of all ventilation values are included. The greenBOX fulfills NFPA 664 and NFPA 652 requirements. Ecogate Systems controlled by greenBOX have evolved, and they are now established as the lowest-cost to own and operate safely dust/fume/mist collection systems.
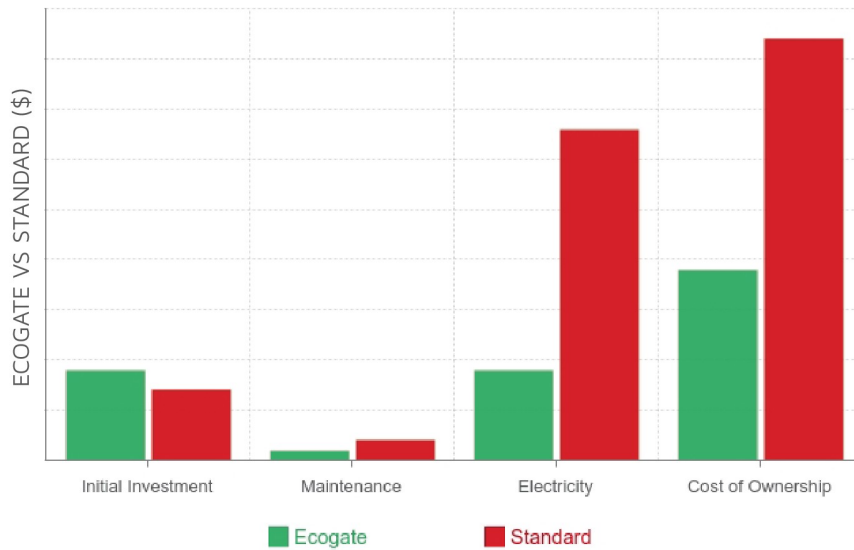
SAVE 50-75%
ON YOUR DUST COLLECTION COSTS

SAVINGS

FUTURE

RELIABILITY

INDUSTRY 4.0

SAFETY

ENVIRONMENT

TRUSTED BY INDUSTRY LEADERS

Andersen
AW
WINDOWS·DOORS

SAUDER®

TESLA

Unilever

AMERICA*S NAVY

gsk
GlaxoSmithKline

LAND-ROVER

Get started today

Join us at
ecogate.com/survey
To get your Preliminary Estimate of
savings, costs & benefits!

www.ecogate.com

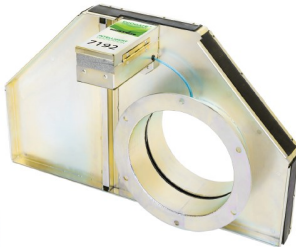info@ecogate.com

(818) 506 - 6016

OUR FULL SYSTEM & SERVICE

Sensors automatically detect when each machine needs suction.

The greenBOX controller processes signals from all sensors and controls the entire dust collection system while maintaining minimum transport air velocities.

Blast gates open automatically to direct airflow where you need and when you need it.

A variable frequency drive automatically adjusts fan air volume to match the total machine requirements in real-time while eliminating energy waste. UL & cUL rated.
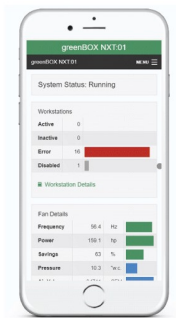
Get complete visibility into your dust collection system, including energy use, fan and filter pressure, drop & branch air velocities, machine utilization and more.

Ecogate is with you every step of the way!

1. System Assessment
2. Engineering & Duct Design
3. Installation
4. Commissioning
5. User Training
6. Service / Support
7. Facility Expansion

KEY BENEFITS

SAVINGS
Save energy, save money. Lowest lifetime system cost on the market.

INDUSTRY 4.0
Full system automation with remote access & analytics.

SAFETY
NFPA 664 compliant system, cleaner, quieter & safer for your workers.

FUTURE
Expand or improve workflow with less capital expenditure.

RELIABILITY
Tough and made to last in industrial setting.

ENVIRONMENT
Lower carbon footprint.

BUYER'S GUIDE
CONTROL UNITS

greenBOX 12 | SKU: EG.105

This inexpensive unit can manage up to 12 gates. It can be combined with the Power MASTER VFD or it can start/stop the dust collector. The greenBOX 12 is loved by our customers for its simplicity, reliability, and flexibility. No wonder that with continuous improvements this unit is in production for more than ten years!

Minimum airflow is maintained in one duct zone greenBOX 12 is not connected to the internet to collect data; for setup & remote access, a Windows notebook is necessary. Compatible with Ecogate Standard gates, Ecogate sensors, and with Power MASTER VFDs.

greenBOX NXT | SKU: EG.107

This is a true next generation of Ecogate control systems for all types of industrial ventilation systems. This unit can manage up to 32 gates. Because the web server is built-in and NXT uses WiFi, you can connect smartphones, tablets, and any PC.

Minimum airflow maintained in 3 duct zones. greenBOX NXT can be connected to the internet via WiFi to collect data and for remote access. Compatible with Ecogate Smart gates, Ecogate sensors, Power MASTER VFDs and with Ecogate Data Analytics.

greenBOX MASTER | SKU: EG.106

This is our workhorse - it can handle just about anything: up to four ventilation systems with up to 180 gates. Advanced functions are built-in: calibration wizard, air volume measurements, closed loop system regulation, automatic winter mode, and communication to Building Automation systems. Also supports cascading fans, parallel fans, and lead & backup fans.

Minimum airflow maintained in 9 duct zones. greenBOX MASTER can be connected to the internet to collect data and for remote access. Compatible with Ecogate Smart gates, Ecogate sensors, Power MASTER VFDs and with Ecogate Data Analytics.

A properly designed, installed and calibrated Ecogate system fulfills NFPA 664 and NFPA 652.

Power Master VFD

This is no ordinary naked VFD, we've put a lot of features inside the Power MASTER hardware, and we've spent a lot of time preparing Power MASTER software to make installation, setup, and operation as simple as possible for our users.

Ecogate Setup Assistant guarantees trouble free VFD startup within one minute.

The Power Master regulates speeds of 10 - 450 HP fans; available for 3-phase 230, 460, and 575V AC.

Features

- Operating modes: Automatic (controlled by greenBOX), Manual, and Stop.
- Automatic Start and Stop of your dust collector
- Built-in Fan & Filter pressure transmitters
- Protection of the duct system against collapse
- Built-in 3-phase input disconnect & fuses
- Simple one-cable connection to greenBOX
- All VFD information transferred to greenBOX via Modbus
- Backup power supply for VFD processor connected from greenBOX
- All warning & errors collected via greenBOX to Ecogate cloud server
- Monitoring life of critical VFD parts (capacitors, air cooling fans)
- Four Enable inputs allow connection of the customer safeties: for example, spark detection, fire alarm system etc.
- The Power MASTER enclosure is UL Listed out of the factory; enclosure is NEMA 12
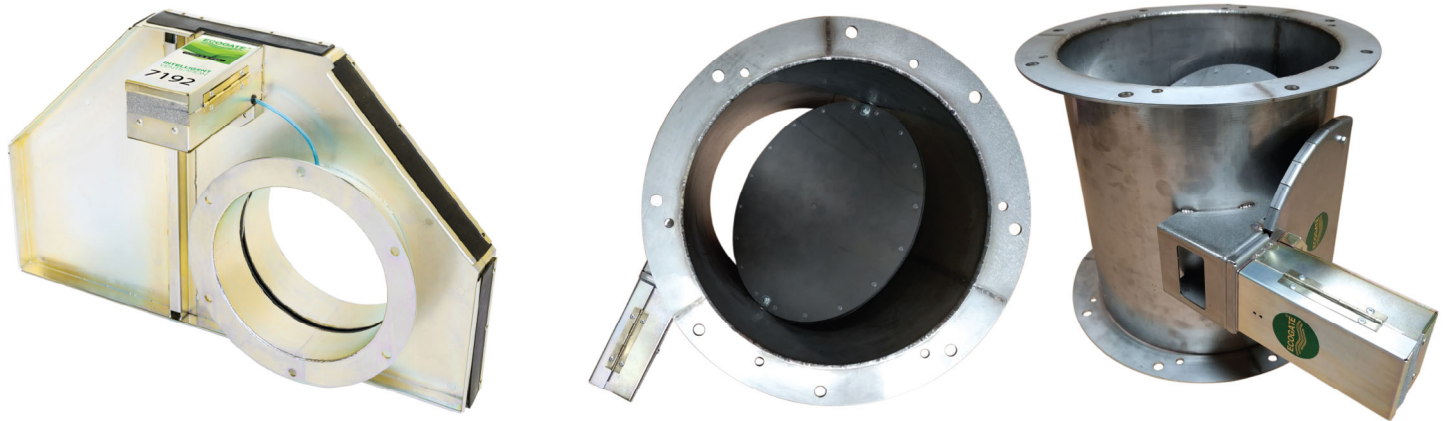- Step-by-step installation and setup guide

BUYER'S GUIDE
ROTATING BLADE VS BUTTERFLY STYLE GATES

ECOGATE®

2021-06-25

Rotating Blade Style Gates
SKU: EG.204B - EG.228B
Our heavy-duty, patented rotating blade gate should be used if dust or other material material is collected by a dust collecting system, for example for woodworking and other industrial dust applications. This gate is sealed under negative pressure, but cannot be used with positive pressure. The gate is operated by an efficient 24 V DC motor, and equipped by Open/Close limit switches.

Butterfly Style Gates
SKU: EG.204BF - EG.218BF
Butterfly Style Gates have a rotating blade with a silicone seal around it making it airtight when closed. This gate can be used in both positive and negative pressure environments. This style of gates is ideal for fume or mist applications (welding, chemical fumes, mist oil), or applications with small amounts of fine dust (pharmaceutical production, food packaging). Also usable for fine metal dust (the magnetic limit switches are outside the duct).

Both rotating blade and butterfly gates are available with zinc plated or stainless steel gate body. Both gates are available with cost effective Standard Motor for greenBOX 12 installations, and with sophisticated Smart Motor with microprocessor control. Smart Motors are for greenBOX NXT and MASTER installations - processor measures pressure, air velocity, air volume (requires calibration).

AC Volt Sensor (110-690 V AC input)
SKU: EG.314 | $75
Input should be connected in parallel to a cutting tool motor of the workstation, the voltage can be from 110 to 690 V AC. The output is connected to the Ecogate gate by using the Ecogate Sensor cable. (formerly EG.316)

AC/DC Volt Sensor (24-230 V AC or DC input)
SKU: E0G.319 | $75
Input should be connected in parallel to a cutting tool motor of the workstation or to any circuit that is energized if cutting tool is runing (switch, contactor, PLC output etc.), this is most universal sensor because it can be used both for AC or DC voltage from 24 to 230 V AC. The output is connected to the Ecogate gate by using the Ecogate Sensor cable.

Industrial Wind-Up Timer
SKU: EG.317 | $75
Commonly used for welding, floor sweep, and other cleanup applications. Best for workplaces where there is no electrical circuit where Volt or Current sensor can be installed. Can be also wired in parallel with Volt or Current sensor and used to open vacuum for machine cleaning after shift.

Hawkeye Current Sensor
SKU: EG.H608 | $75
Used on simple tools (such as a chopsaw) or on industrial machines equipped with a VFD. Advantage of the current sensor is that it is not connected to the workstation - just put a phase wire to the motor through the sensor opening (but not the whole cable). The sensor sensitivity can be adjusted for current 0.5...175 A, suitable for motors from 0.5 HP and up.

BUYER'S GUIDE

DATA ANALYTICS SUMMARY

ECOGATE®

2021-06-25

What is Ecogate Analytics?

It is a digital view of your dust collecting system(s) with detailed system status, showing measurements of air volumes, fan and filter pressures, and fan power. The energy use and savings are monitored, as is also all workstation utilizations. System messages, warnings, and errors are also included.

How does it work?

Ecogate Analytics are supported by greenBOX units that are connected to the internet (via Ethernet/LAN as greenBOX MASTER, or by WiFi as greenBOX NXT). The control unit greenBOX will collect all important data and send them to the Ecogate cloud server every ten seconds. The data is stored in a database for the operator's access and viewing.`

Why Data Analytics is important to you.

With many global installations, here are some most frequently see use cases:

• Full greenBOX backup is automatically included
• Electricity Saving Documentation as needed for incentive evaluation
• Compliance & Reporting (some counties require reports of filter pressure or air volume)
• Documented drop air velocities for compliance
• Documented machine utilization can be used for improvement of work flow or for designing new facilities
• Filter Pressure Monitoring ("You need to clean or replace your filter!")

Summary

Ecogate Analytics brings easy to access information about your factory utilization and about the performance of your dust collection systems so you can concentrate on your business and not your filtration system.
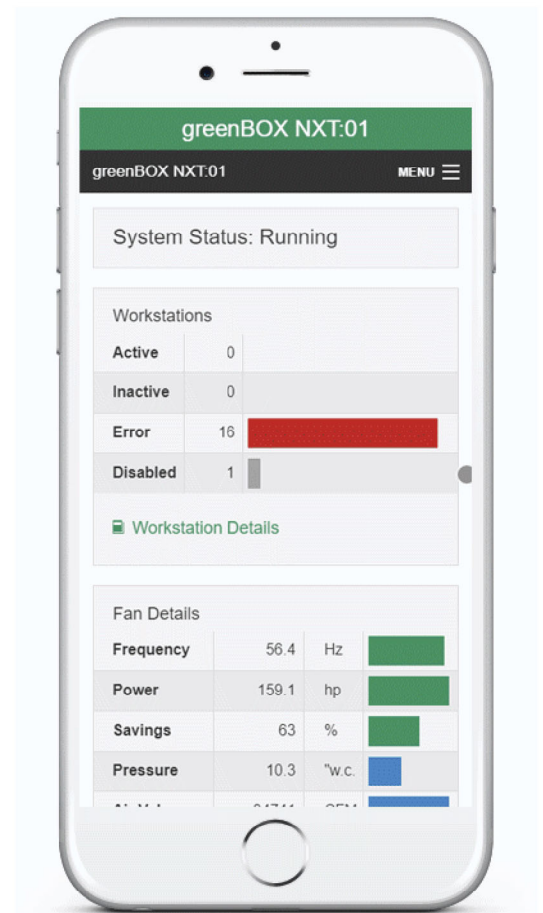
BUYER'S GUIDE
DATA ANALYTICS REPORTING

ECOGATE®

2021-06-25

How to access your data

With your subscription, you can sign into the Ecogate Analytic website and view your current and historical system data in the form of charts and tables. If you have multiple dust collecting systems, you will find it very convenient to see the status of all your systems on one webpage that you can access from anywhere.

From the same website you can also download data for import to Excel or your database which you will receive in an easily transportable "csv" format.

Daily Emails: Dust Collection Health Status

To assist with the broad range of duties owned by your maintenance department, a subscription to Ecogate Data Analytics will generate a daily email with an overview of the dust collecting system performance: fan and filter pressures, fan power, main duct air volume and air velocity, average air velocity at drops to the workstations. In the file that is attached to the email, they will see system status for every five minutes fo the previous day, including air velocities at workstations.

100 HP Plant 2 System

16,433 kWh Electricity Use This Month

71% Electricity Savings

Electricity Use by Day

43% workstation utilization this month

40% workstation utilization last month

39% workstation utilization two months ago

Workstation Utilization Details (% of shift time)

Router #6, Grinder #1, Sawstop #1, Router #5, Router #3, Sawstop #8, Edgebander #3, Router #4, Shaper #23, Edgebander #2, Sander #13, Shaper #12, Shaper #7

Monthly Emails: Business Health Status

The monthly emails for management is a big picture view of how your business is performing: you will see average workstation utilization for this month, and the two months before.

Is workstation utilization correlated with orders? Is production efficiency improving? How does this factory utilization compare to your other factories? These are key questions that Ecogate's Data Analytics can help you answer.

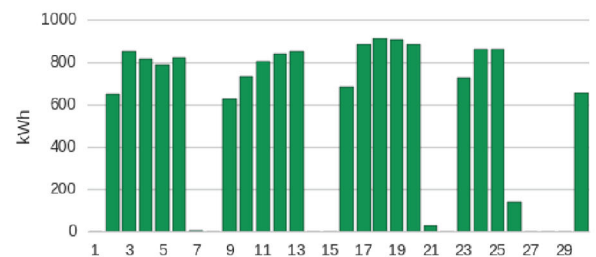Also included in the email is evaluation of the dust collecting system energy use and savings.