

# Control System for 12 Workstations

**NEW**



Ultimate in Dust Collecting

## Cost Effective greenBOX 12 for Industrial Shop

<p><b>“It’s like having a new dust collecting system”</b></p>	<p>The greenBOX 12 unit automatically closes Ecogates at machinery which isn’t working, and it continually optimizes the amount of power supplied to your dust collector via an inverter (optional; up to 70% electricity savings).</p>
<p><b>UPGRADE AN EXISTING OVERCROWDED DUST COLLECTING SYSTEM</b></p>	<p>If your plant has expanded and you are left with an undersized dust collector, the greenBOX12 will greatly improve system performance without the expense of making your system bigger (and you will save on electricity cost).</p>
<p><b>NEW SYSTEM</b></p>	<p>Your new dust collector can be designed 40% smaller than the standard design, or you can use a conventional design size and this allows for a possible 40% expansion later.</p>



Control unit greenBOX 12, EG105



Ecogate Setup and Monitoring PC software

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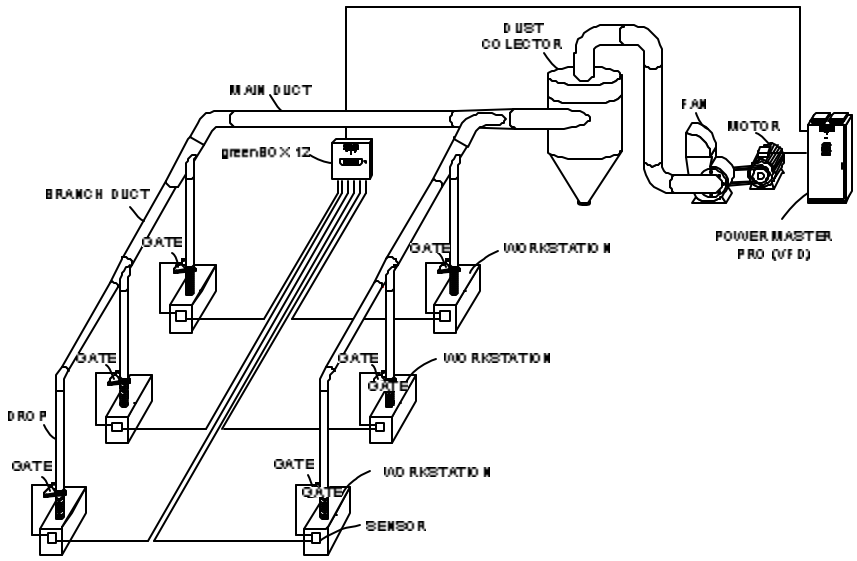
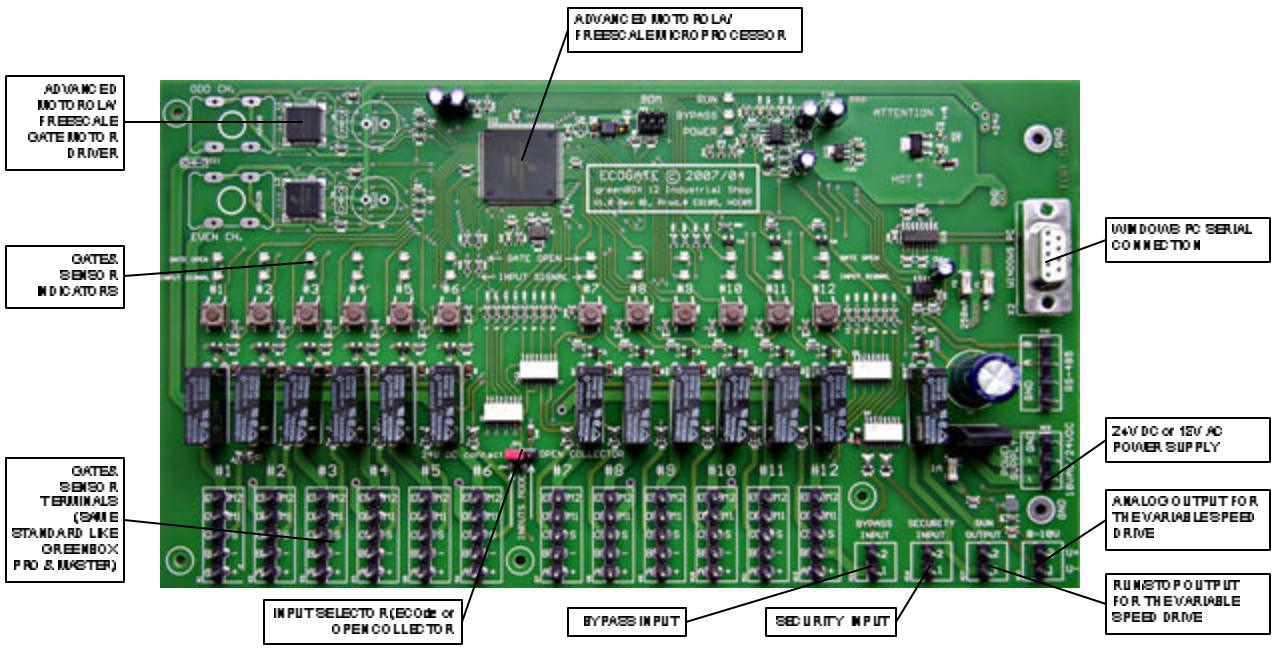
<b>ADVANCED FUNCTIONS</b>	<p><b>Fan Auto-Start</b> (when operator starts any workstation, dust collecting will start automatically), <b>Fan Auto-Stop</b> (when all workstation are OFF, fan will stop automatically), <b>Fan On-Delay</b> (to not start the fan if you would like to cut a single piece of wood), <b>Fan OFF-Delay</b> (to avoid the fan starting too often; for example if delay is set at 15 minutes, then the fan will start a maximum of 4 x per hour), <b>Maintaining Minimal Air Flow</b> (to avoid sawdust settling), <b>Negative Pressure Compensation</b> (for workstation at end of ducting with higher losses), <b>TEST Mode</b> for system setup and testing.</p>
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## Specifications

<b>MODEL</b>	<b>greenBOX 12</b> , product number EG 105
<b>SIZE</b>	Approx. 8 ½" x 11 ¼" x 2 ¼" (216 mm x 286 mm x 56 mm), green painted metal enclosure.
<b>WEIGHT</b>	Approx. 3.65 Lb (1.55 kg) without transformer, max. 5.25 Lb (2.4 kg) with external power supply adapter
<b>POWER SUPPLY</b>	<b>External power supply adapter 115V AC, 50-60 Hz, 40VA max.</b>
<b>ECOGATES compatibility</b>	<b>ECOGATE motorized gates 4" to 18"</b> total 12 channels for gates/sensors (power supply 24 V DC for gates, max. current 0,8A is included), <b>compatible with pneumatically operated gates</b> (with two 24V DC coils, one for opening, one for closing); up to the three gates operated at a same time can be connected to one output, i.e. up to 12x3= 36 gates can be connected
<b>INDICATION &amp; MONITORING</b>	<b>INPUT</b> (signal from sensor) LED indicators (12x), <b>GATE</b> status LED indicators (12x), <b>POWER</b> supply indicator, <b>FAN ON</b> indicator, <b>BYPASS</b> indicator, all indicators are on board (inside greenBOX 12 enclosure), status can also be monitored via Windows PC connected via serial channel (up to 30 ft cable, longer cable with optional RS232/485 adapters). Use USB to serial adapter for computers without serial connector.
<b>ACCESSORIES (optional)</b>	Motorized Ecogates 4" to 18" (EG204 -EG218), ECode /i sensor (EG309), Power MASTER PRO units with variable speed drive for 5 to 500 HP motors.
<b>INPUT, OUTPUTS</b>	<b>Input for the each gate channel</b> (if input is active, gate will be open; input are selectable as a contact input or input for sensor with open collector), Input for <b>"BYPASS"</b> switch to open all gates and start dust collector (switch can be also used for each channel 1 ...12), <b>"SECURITY"</b> input for connecting any customer securities, Outputs : free (dry) <b>RUN</b> contact to start/stop variable speed drive (or fan via optional contactor if VSD is not used), analog output ( <b>0-10V</b> ) to adjust fan RPM via variable speed drive (if VSD is used), output for the twelve motorized gates (+24V DC for gate opening, -24V DC for the gate closing, max. current 0.8 Amps).
<b>SETTINGS (Windows software and cable is delivered with system)</b>	Settings by using Windows PC with serial channel: <b>gate timings</b> (on delay, off delay, opening/closing time), <b>gate diameters</b> , <b>percentage of required initially open gates</b> (to maintain minimum transport air-velocity), <b>negative pressure compensation</b> (for the workstations at end of ducting) as a percent of the fan RPM, <b>dust collector on delay</b> (0-99 sec) and <b>dust collector shut-off delay</b> (0 to 99 minutes), <b>variable speed drive minimal and maximum RPM</b> , <b>security functions</b> (configurable in setup: all gates can be open or closed in stop mode, fan can stop or start if security input is open).

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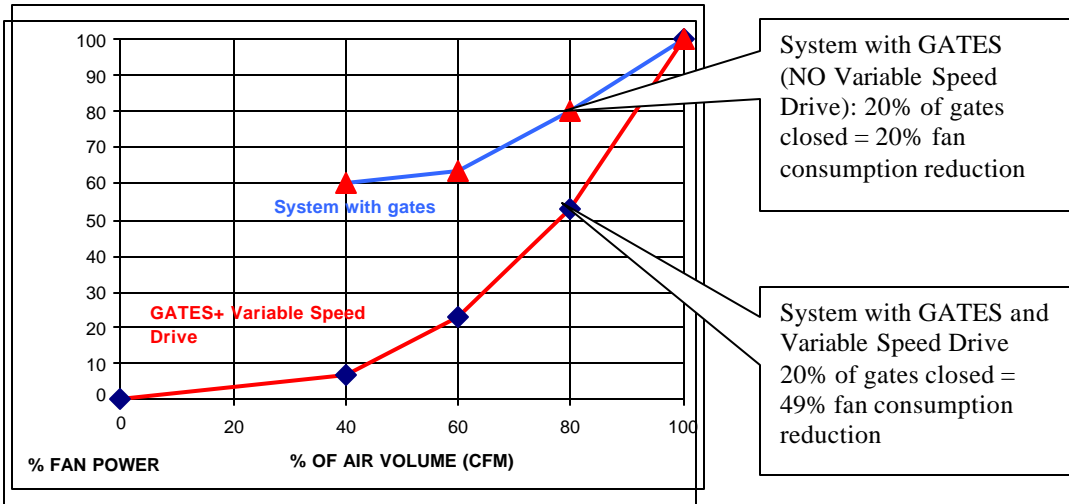
*The greenBOX 12 block diagram connection*

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# How can the greenBOX 12 System save Electricity?

The following chart explains how fan motor consumption will drop if the system reduces airflow through the fan by using gates:



Adapted from book Clarence A. Phipps, *Variable Speed Drives Fundamentals*, The Fairmont Press, Inc.

## greenBOX 12 Status Page

The screenshot shows the main page of the greenBOX 12 Windows PC control screen. Callouts point to various elements:

- PRESS THIS BUTTON TO SELECT TEST MODE:** Points to the 'Test Mode On' button.
- GATE #1 IS OPENING:** Points to the 'Open All Gates' button.
- GATE #1 IS CLOSED:** Points to the 'Close All Gates' button.
- SENSOR #5 IS ACTIVE:** Points to the active sensor indicator for sensor 5.
- NUMBER OF ACTIVE SENSORS & OPEN GATES:** Points to the 'Active Sensors' and 'Open Gates' indicators, both showing '2'.
- FAN RPM SET VIA VARIABLE SPEED DRIVE:** Points to the 'FAN RPM' indicator showing '63% RPM'.
- FAN IS ON:** Points to the 'FAN' indicator.
- LEGEND:** Points to the legend at the bottom of the screen.

Main page of the greenBOX 12 Windows PC control screen

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# GATES and DUST COLLECTOR SETUP

CHANGE DEFAULT NAMES TO REAL WS NAMES

GATE DIAMETER (")

SELECTABLE GATE OPEN and CLOSE DELAYS

UNUSED CHANNELS ARE DISPLAYED IN GREY

WHEN YOU FINISH SETTINGS, PRESS SAVE SETTINGS

SELECT # OF OPEN GATES UNTIL PERCENTAGE IS BETWEEN 15-30%

SET DUST COLLECTOR (FAN) ON & OFF DELAY

VARIABLE SPEED DRIVE: SET MINIMUM & MAXIMUM RPM FOR FAN

*Setup page of the greenBOX 12 Windows PC control screen*

TEST MODE

INDICATORS

Active Sensors: 2, Open Gates: 2

Legend

- Sensor not Active
- Sensor Active
- Gate Opening
- Gate Open
- Gate Closing
- Gate Closed
- Initially Open Gate
- Gate is not used or greenBOX is not connected

*Main page of the greenBOX 12 Windows PC control screen, normal operation (Test mode is OFF)*

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All the specifications above are based on Ecogate's testing standards.

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