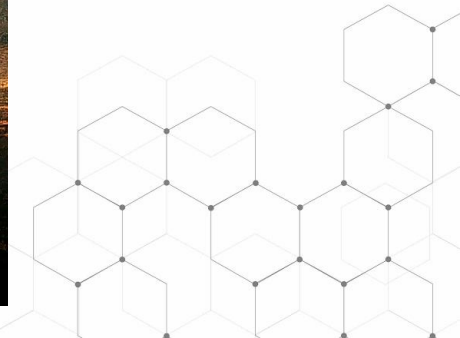
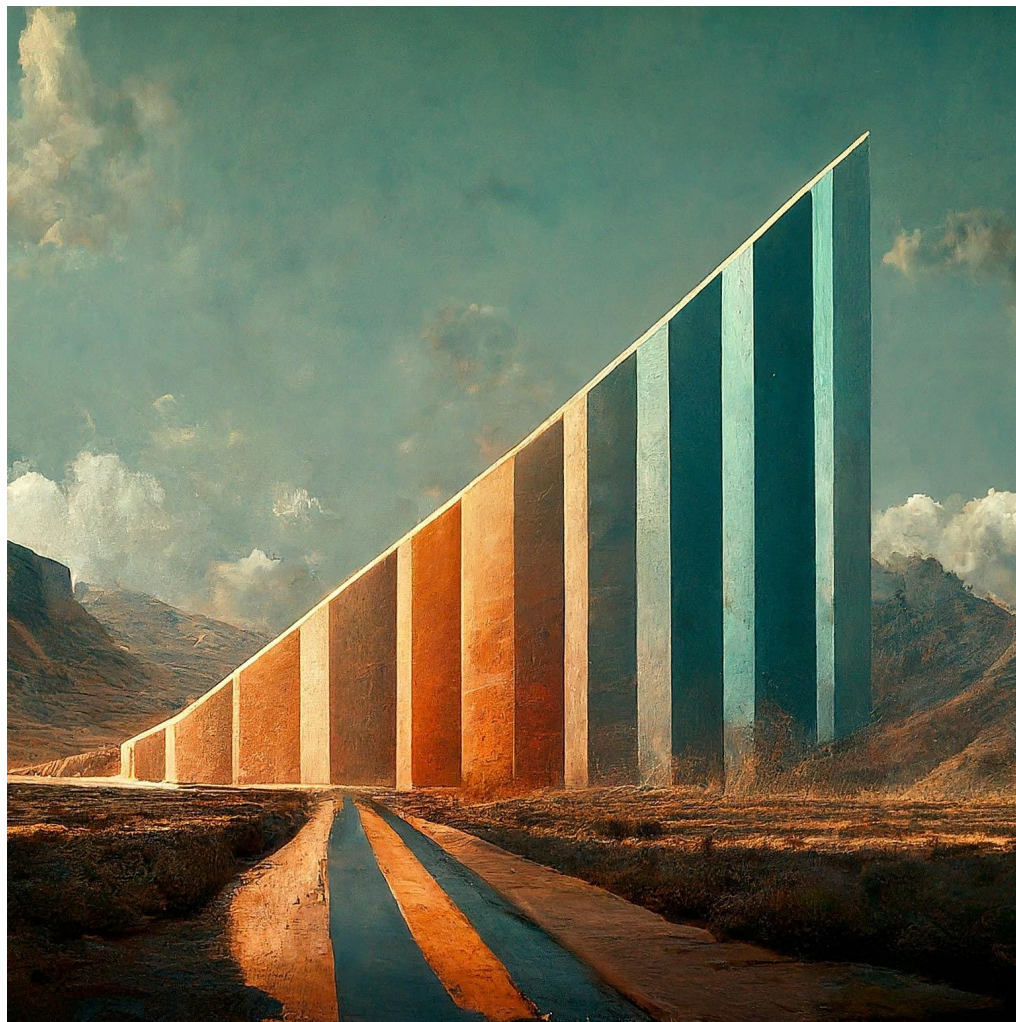
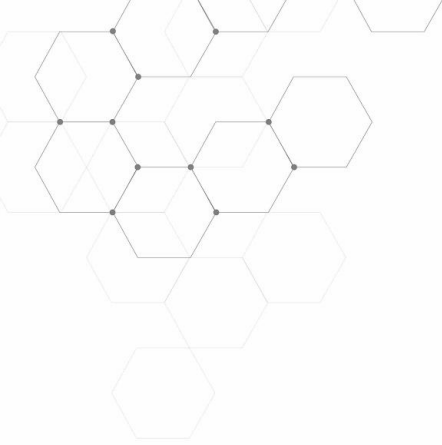




Maximizing ROI

The Energy-Saving Dust Collection System





Purpose of the Session

Define it

Show me the money

Who uses it?

What will it cost?

How can I pay for it?





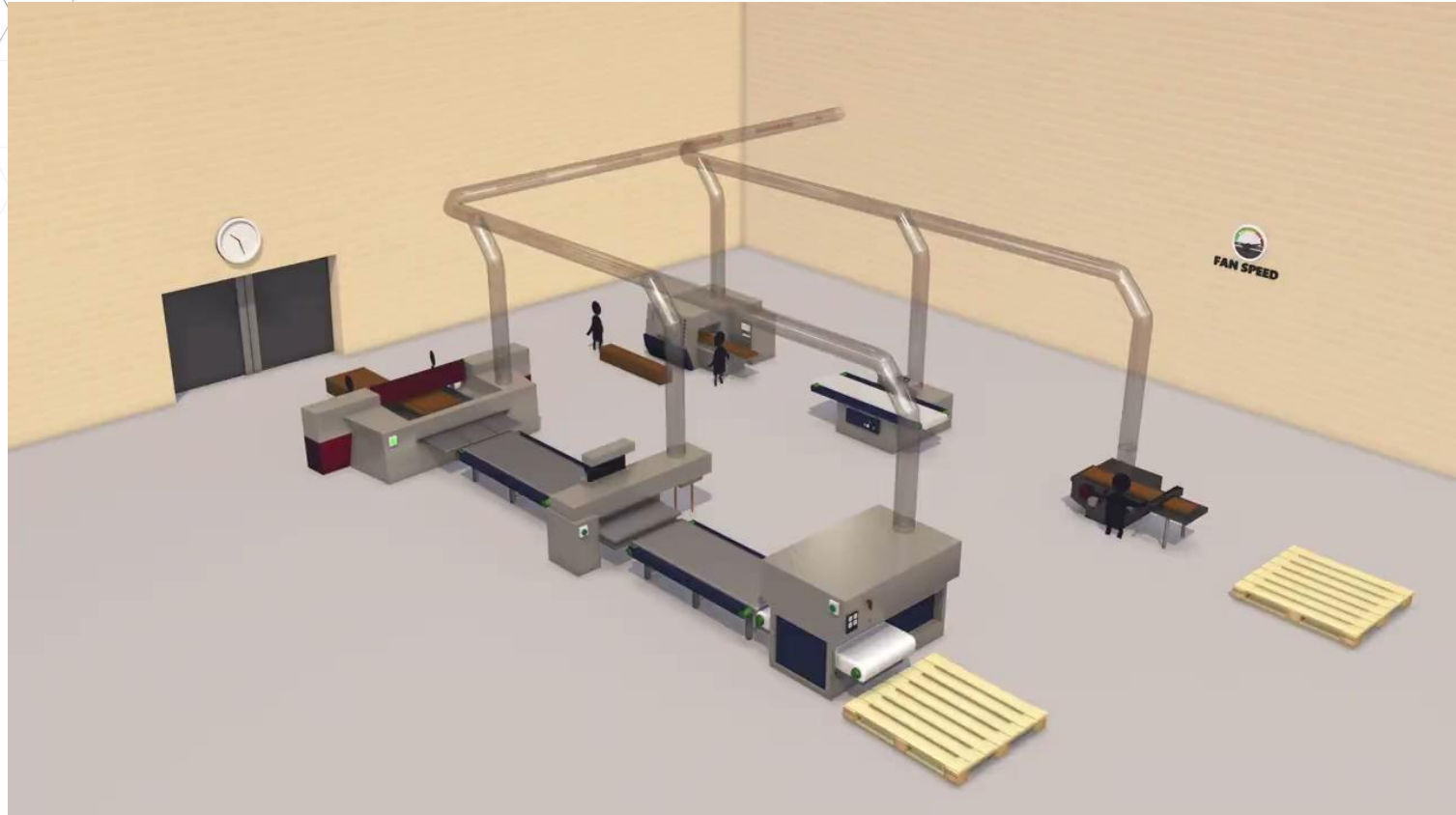
Who is **Ecogate**?

Est. 1997

Manufactures the world's best-selling **On-Demand Control**
System for Industrial Ventilation



Introductory **Video**

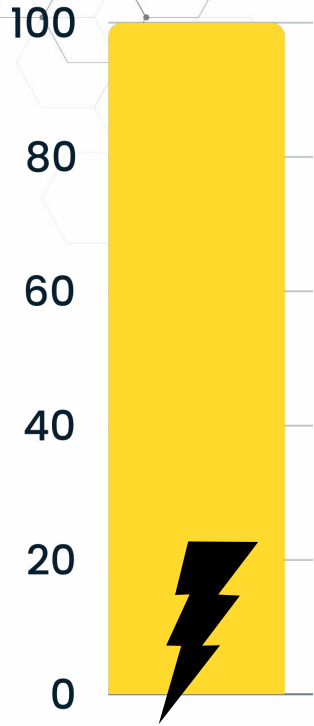




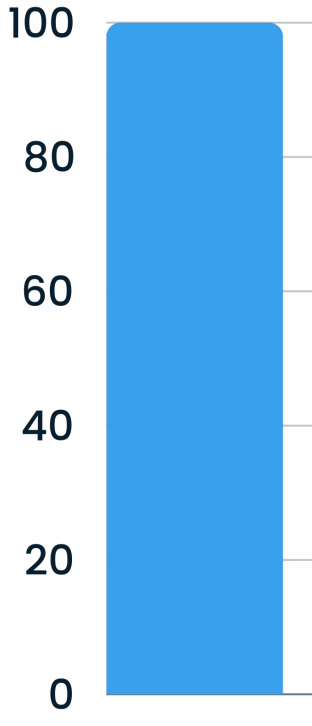
Lets **Begin**



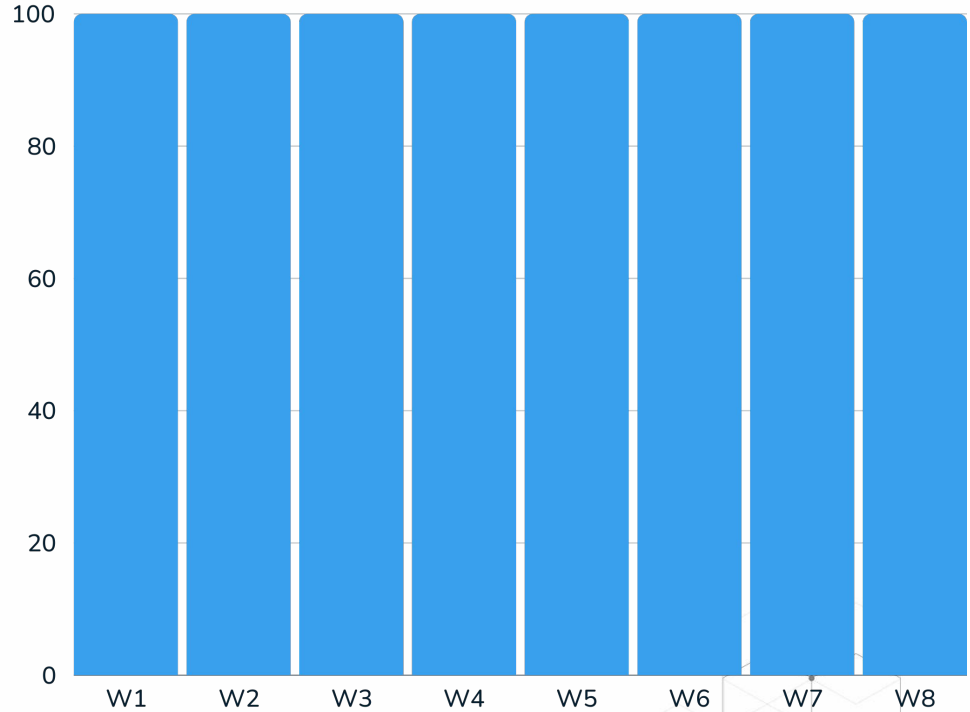
Dust Collection System - Initial Setup



Fan Power



Main Duct

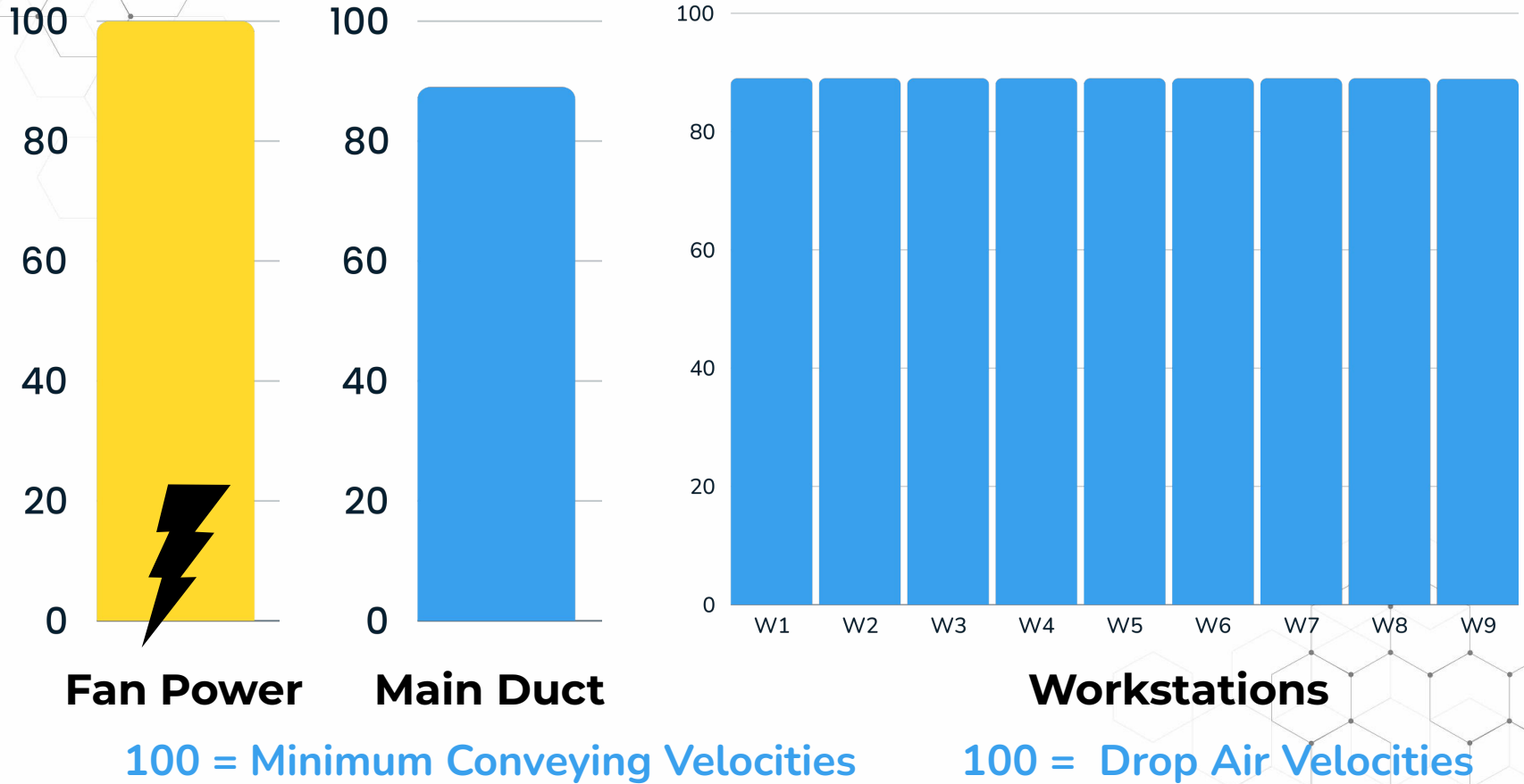


Workstations

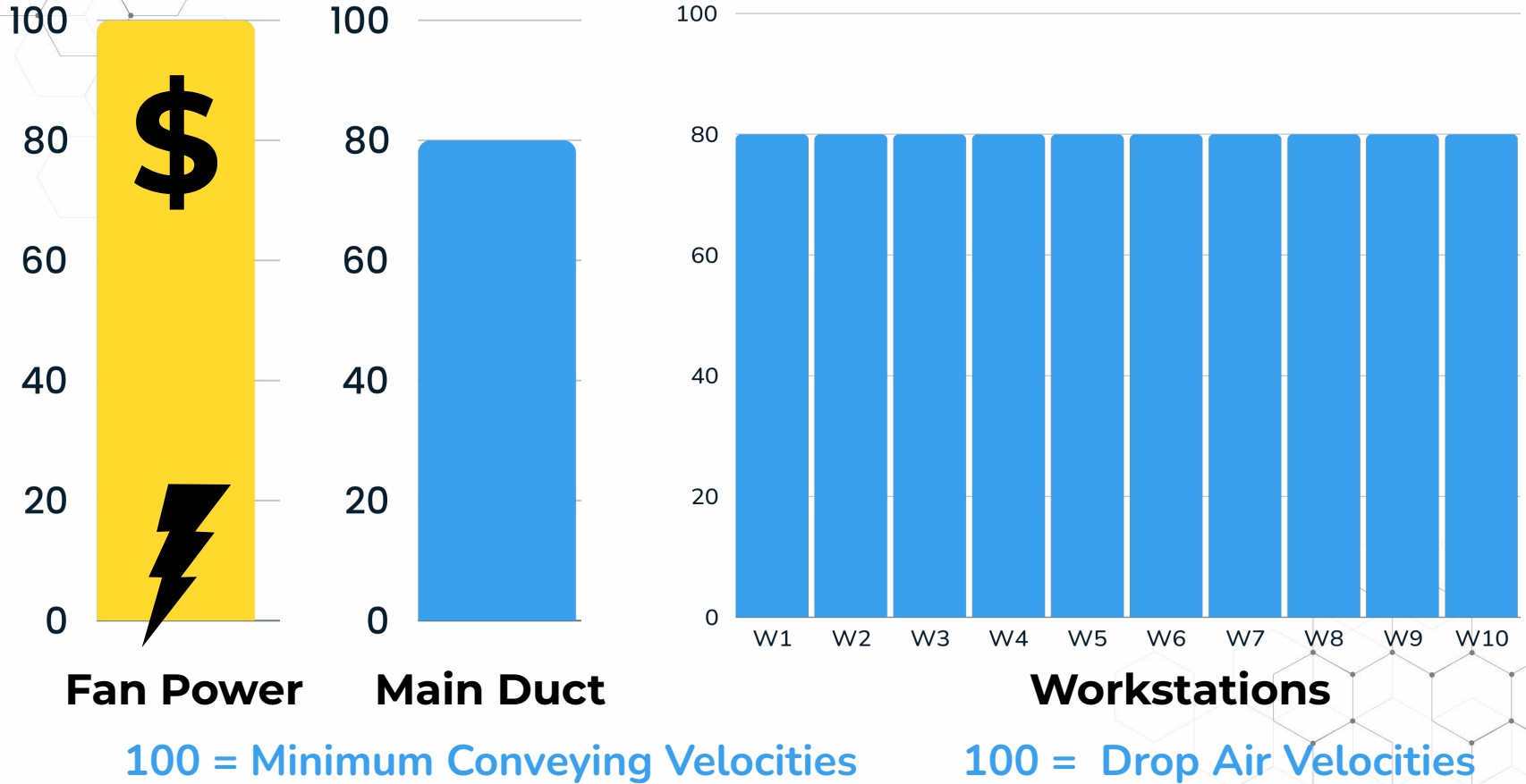
100 = Minimum Conveying Velocities

100 = Drop Air Velocities

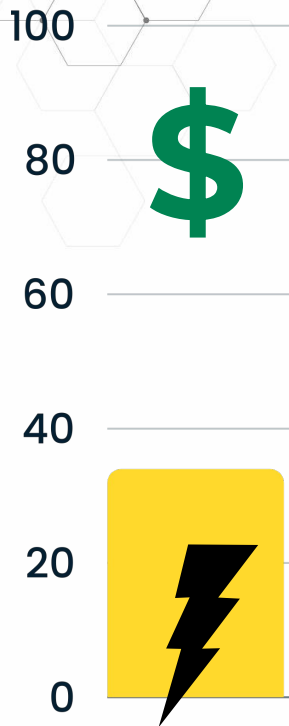
Dust Collection System - Inevitable Add Ons



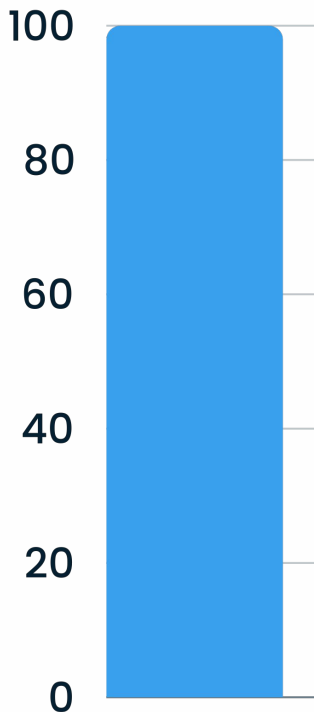
Dust Collection System - Today



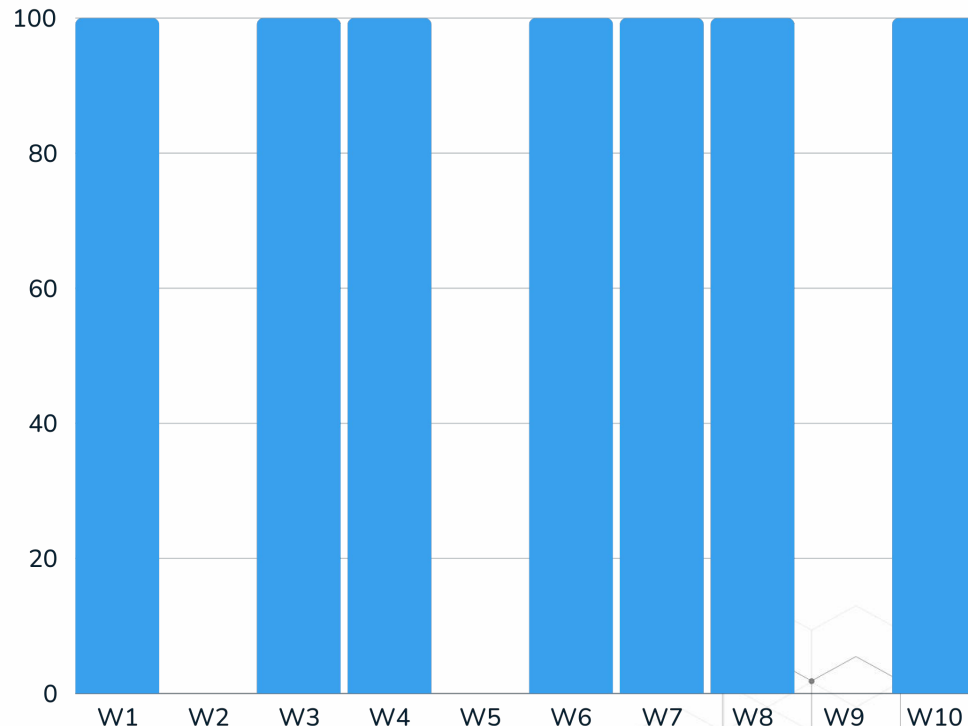
On-Demand Dust Collection System



Fan Power



Main Duct



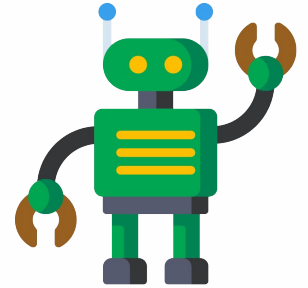
Workstations

100 = Minimum Conveying Velocities

100 = Drop Air Velocities

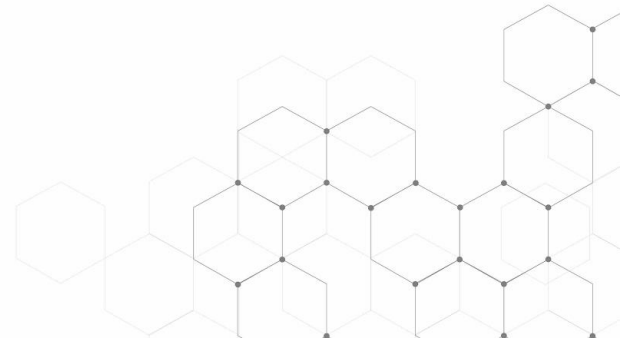
Electricity Reduction, Minimum Airflow + **Other Benefits**

Automation
Minimum Conveying Velocities
Increased Capacity
Noise Reduction
Insightful Analytics
Lower Carbon Footprint
Improved Safety





What is **On-Demand** Dust Collection?

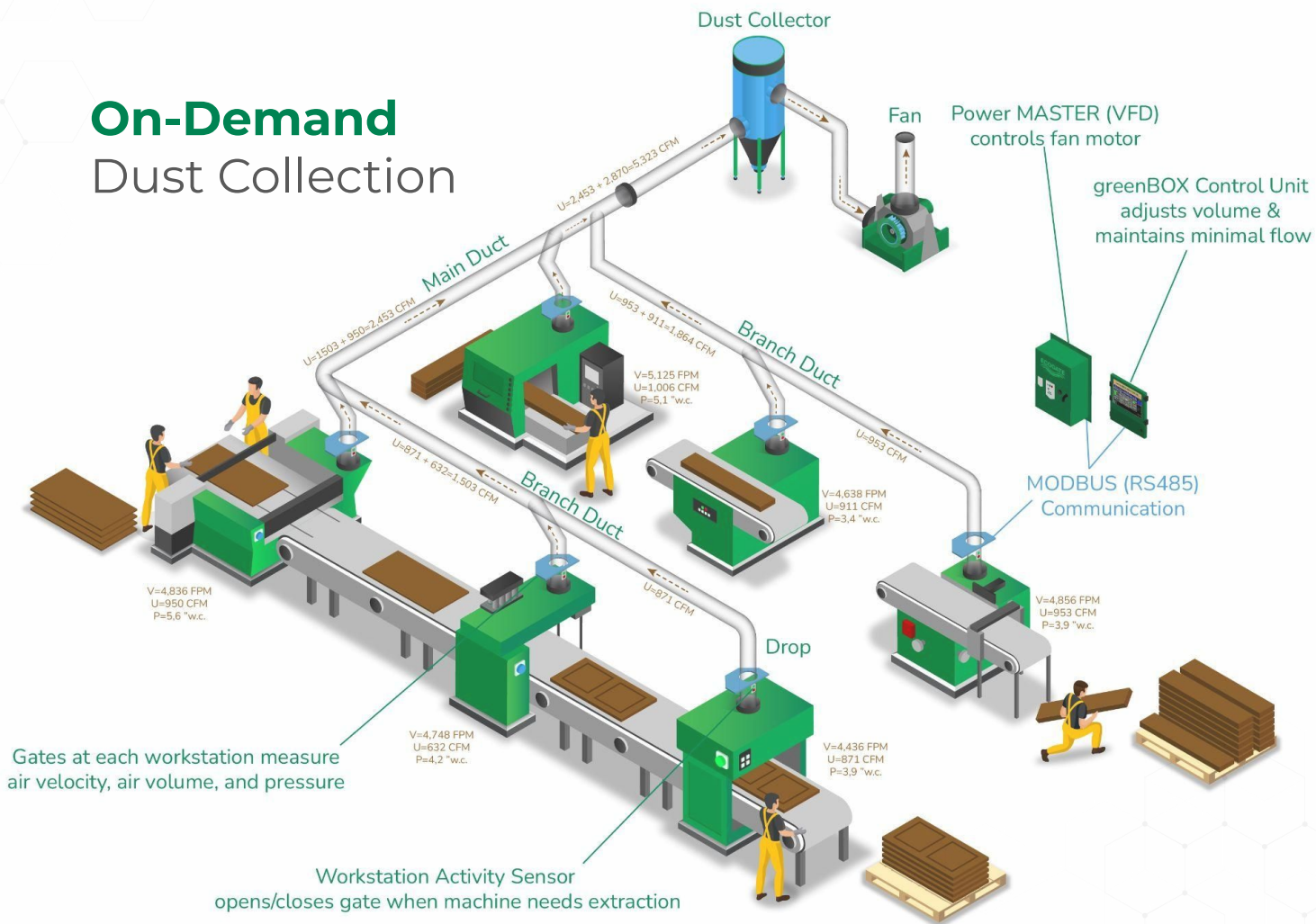


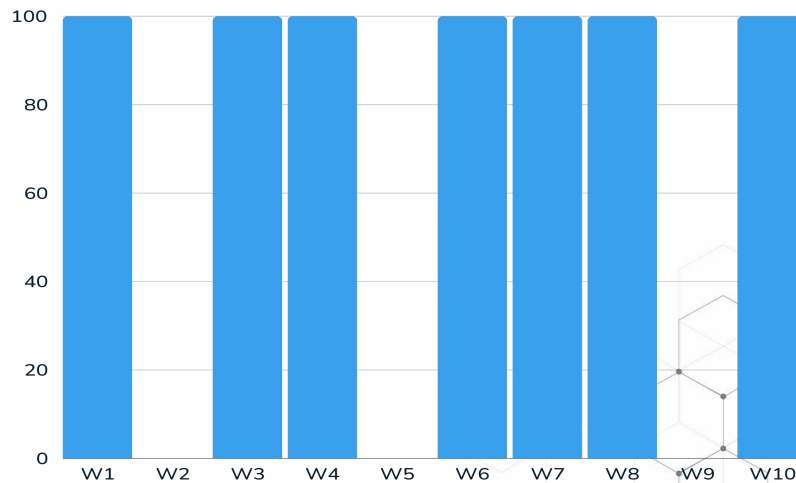
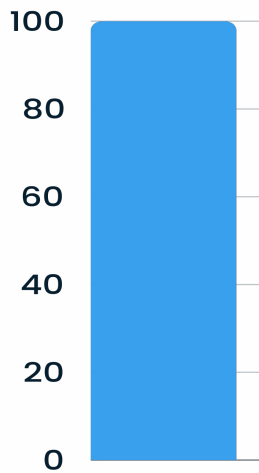
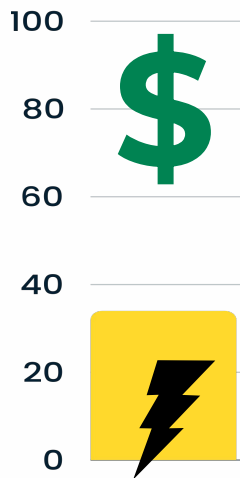
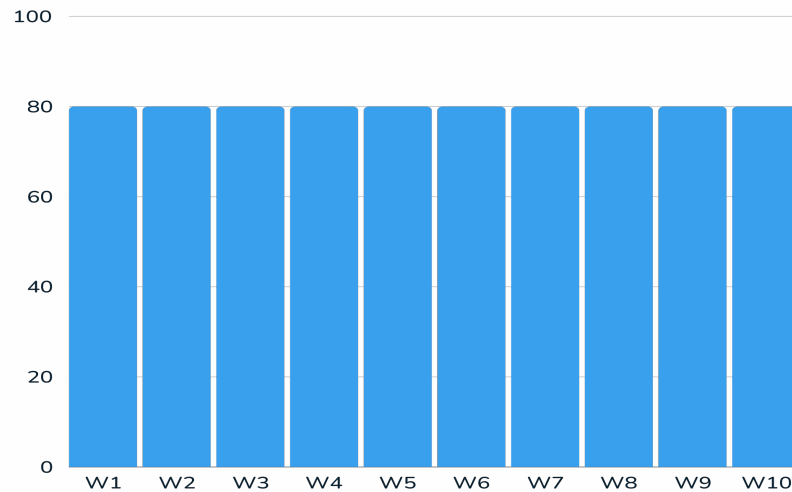
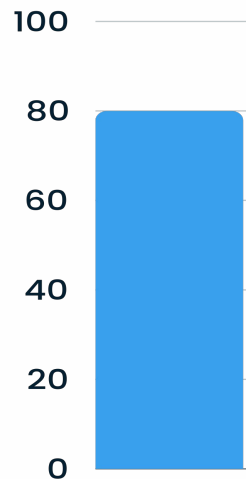
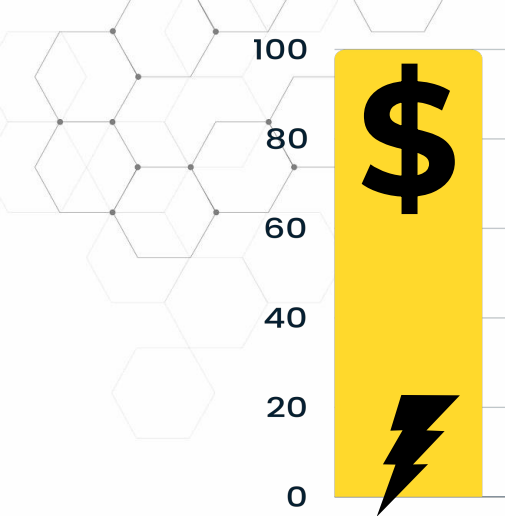


Traditional Dust Collection



On-Demand Dust Collection







Active Workstation **Utilization**



Active Workstation Utilization



The amount of time a machine is producing dust requiring dust collection.

NOT when the machine is turned on.

Measured in % of shift.

Dry Contact or PLC Programming



Workstation **Activity** Sensors



Volt Sensors

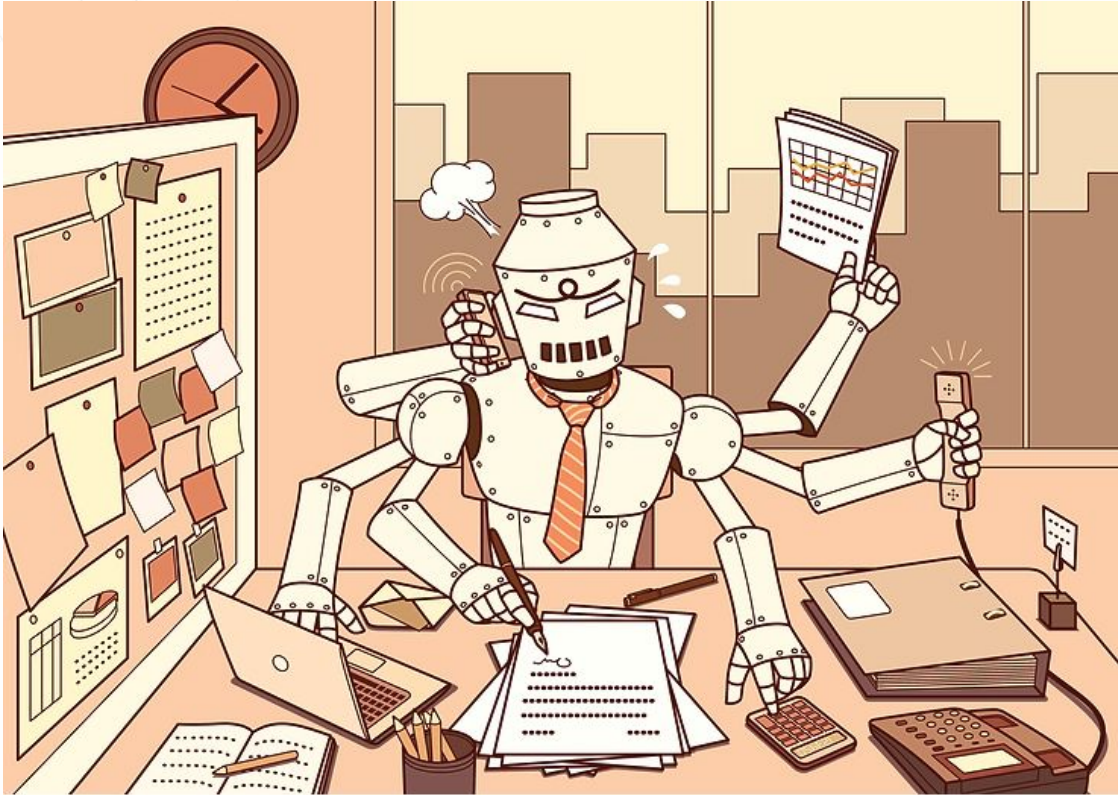


Current Sensor



Laser Sensor

Active Workstation Utilization

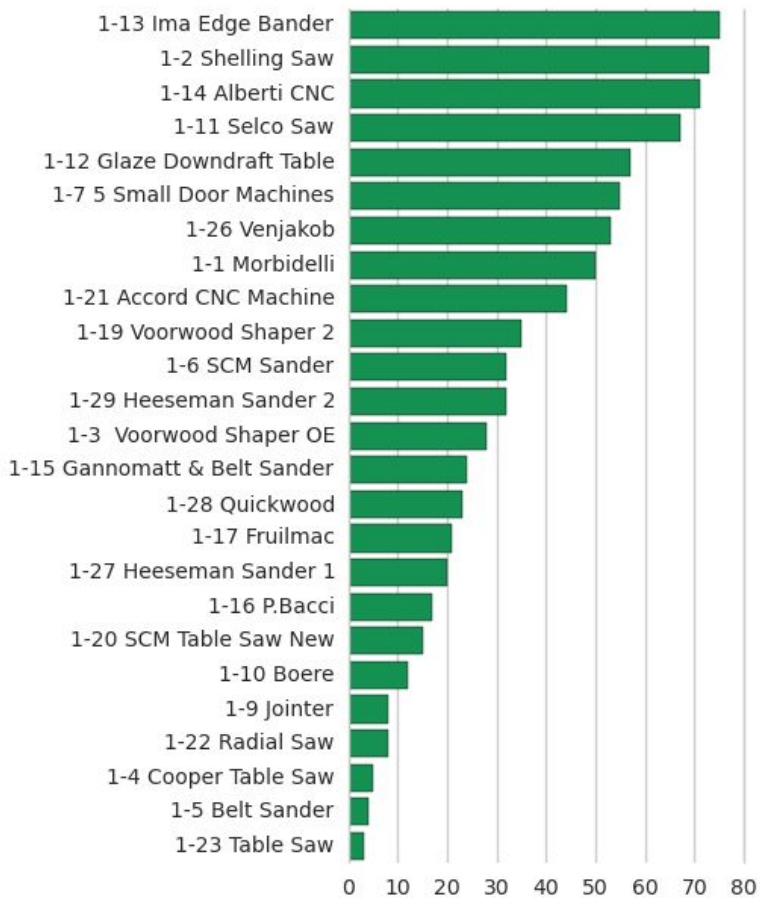


+80%
Average

Measuring **Active** Workstation **Utilization**

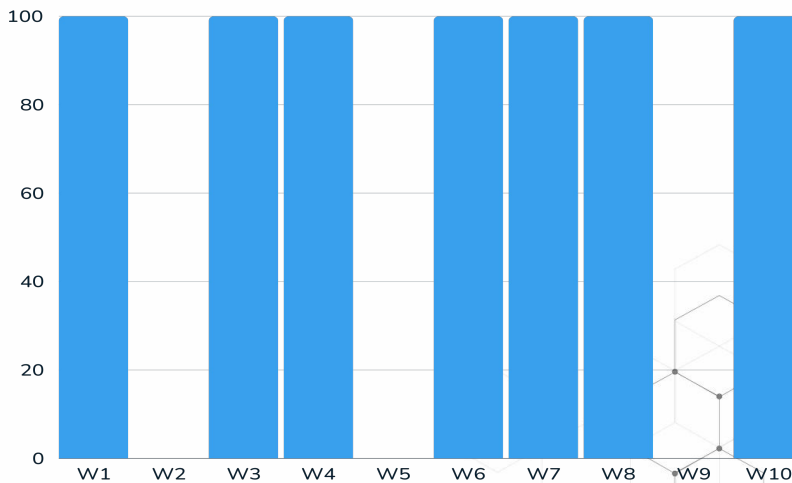
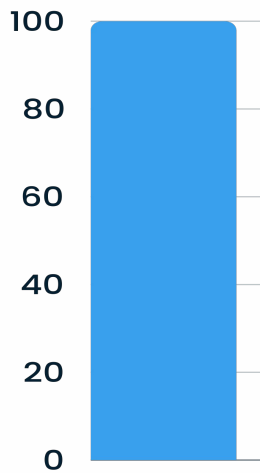
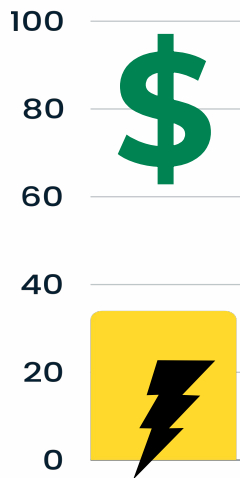
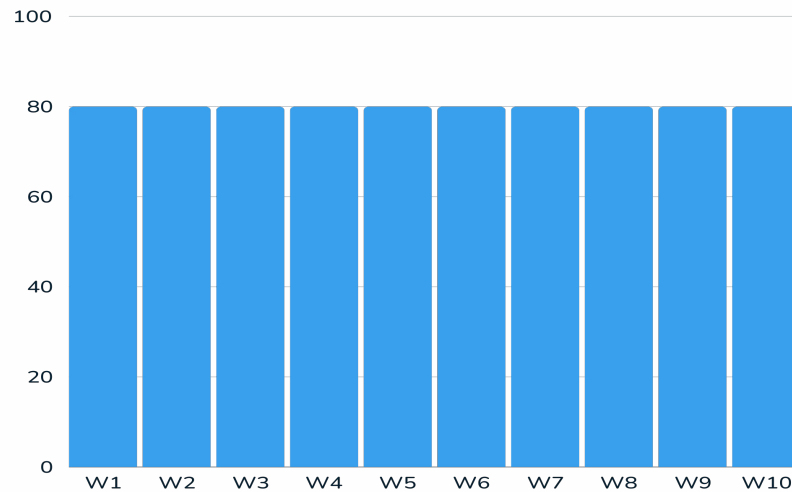
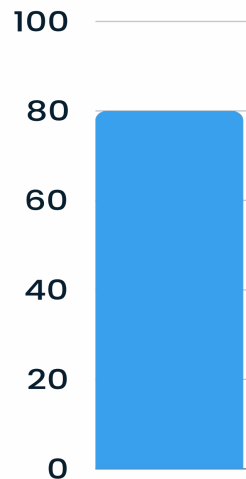
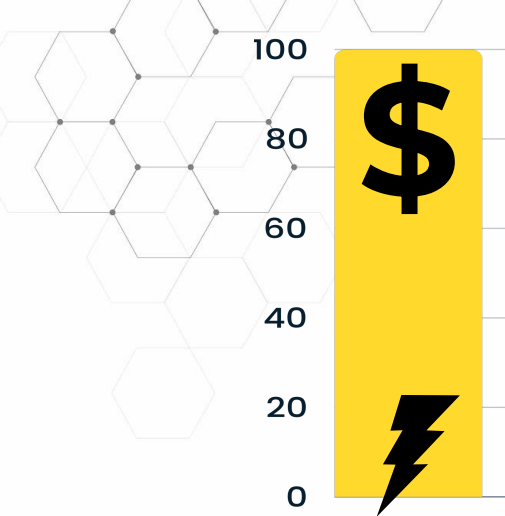


Workstation Utilization Details (% of shift time²)



Workstation **Active**
Utilization

50%
Average

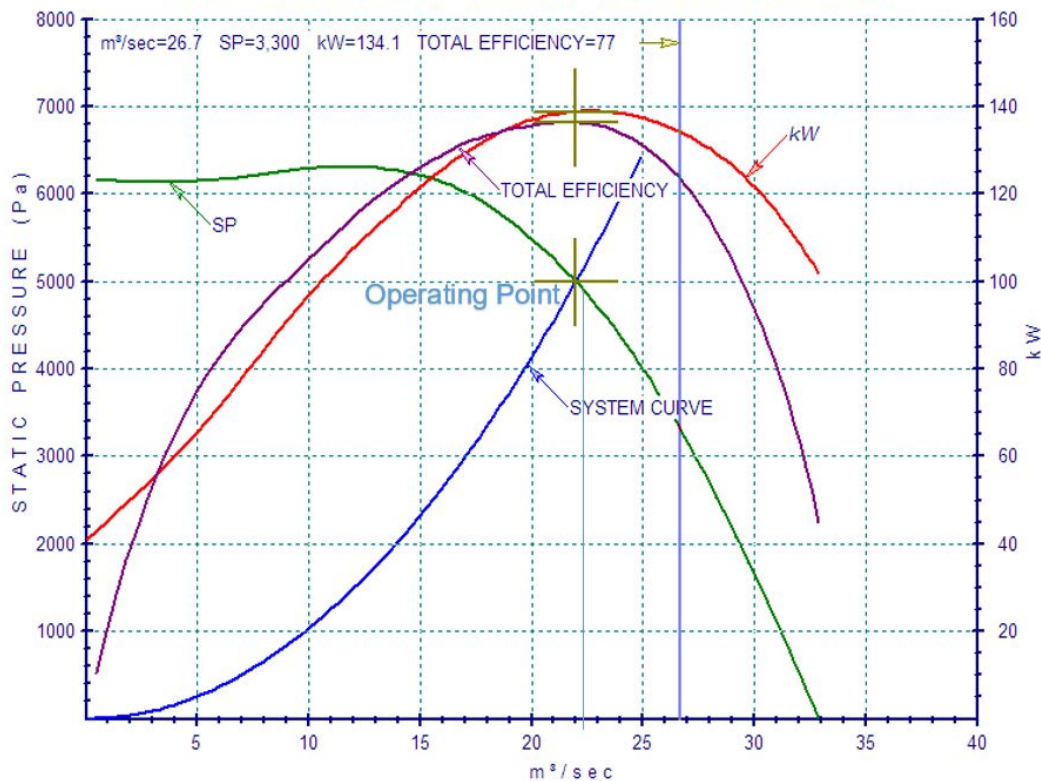




113

Customer:	Fan Tag:	m ³ /sec 22
Job ID:	Model: 402 BCS	SP: 5,000 Pa
STANDARD, no modifications of WITH, no modification of DIAMETER		RPM: 1961
		kW: 138.84

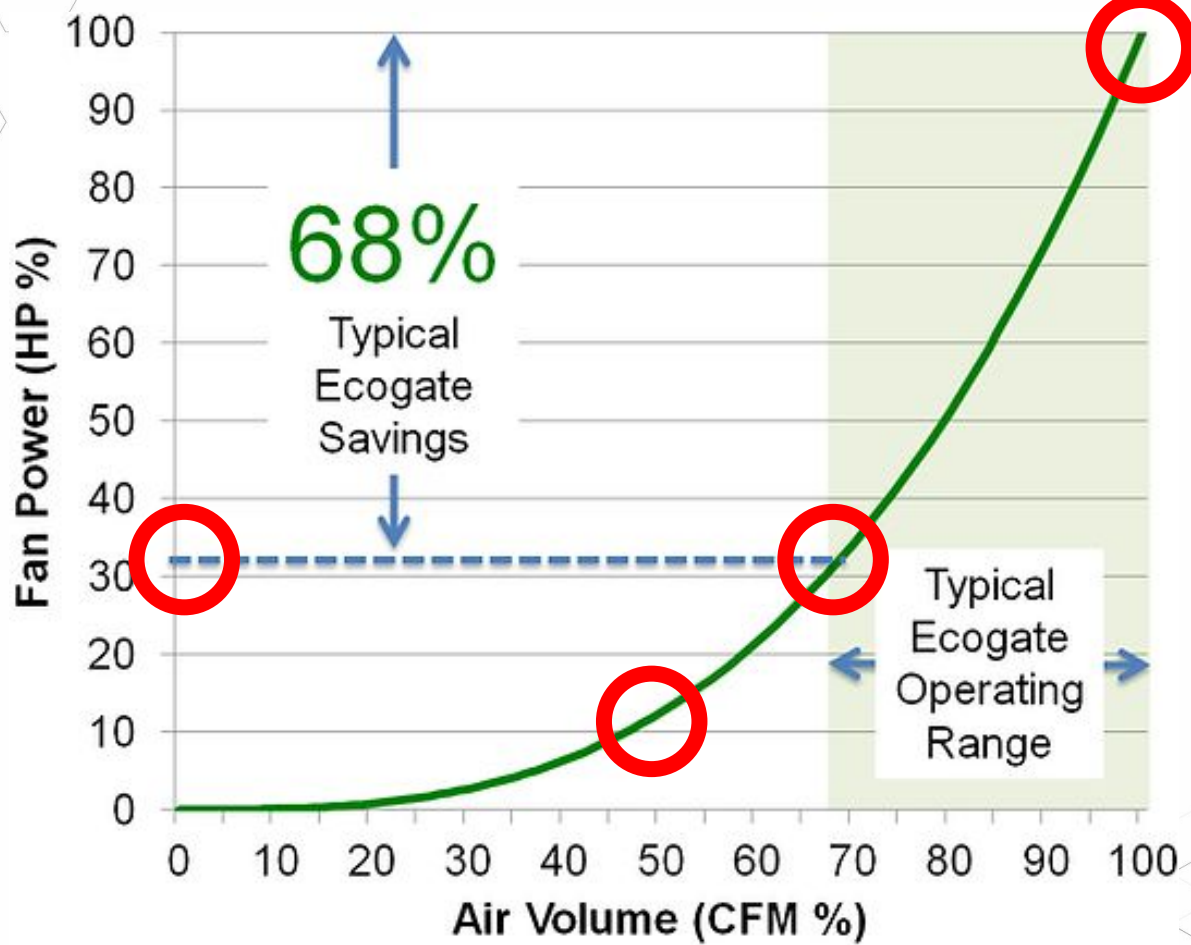
TWIN CITY FAN AND BLOWER PERFORMANCE CURVE



Outlet Velocity: .25.4 m/sec
Density: .1.201 kg/m ³
Corrected for: Compressibility

Inlet Sound Power	
Octave	Level
1	118
2	112
3	107
4	108
5	108
6	107
7	103
8	95
in db re 10 ⁻¹² watts	

24.11.2013
Page: 1 of 1



Power Consumption \propto (Air Volume)³



Power Consumption \propto (Air Volume)³

$$0.343 \approx (0.7)^3$$

(at 70% Air Volume)





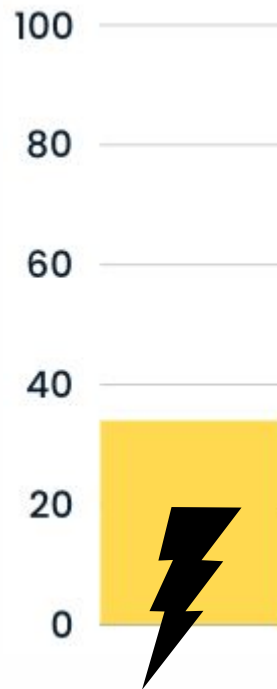
Affinity Fan Law Says..

Reduce CFM by 10% = 27% SAVINGS

Reduce CFM by 25% = 68% SAVINGS

Reduce CFM by 50% = 87.5% SAVINGS





34.3%

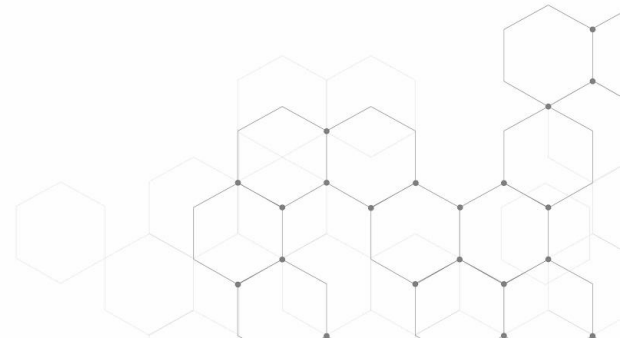
Fan Power Usage





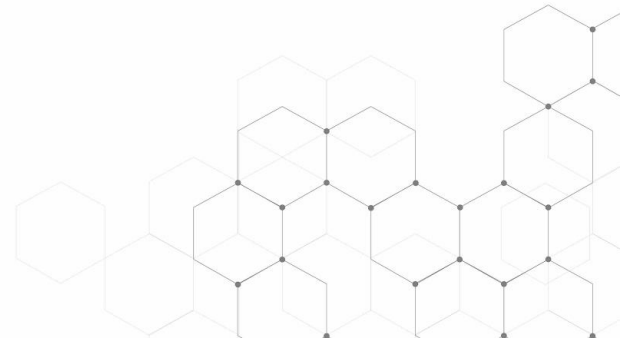


Questions Thus Far?



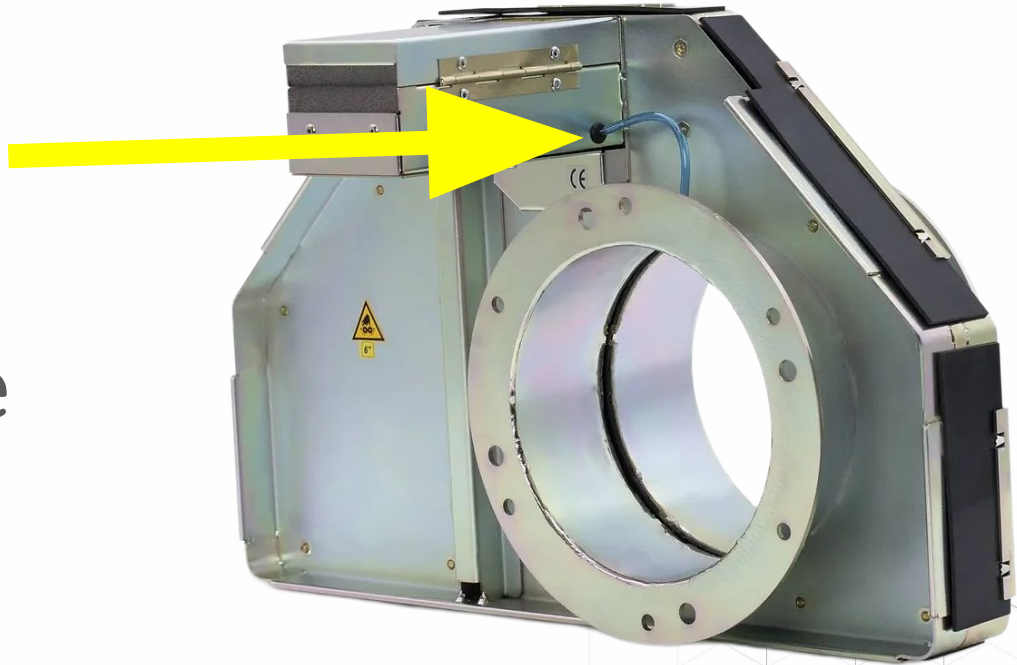


Dynamic Capacity

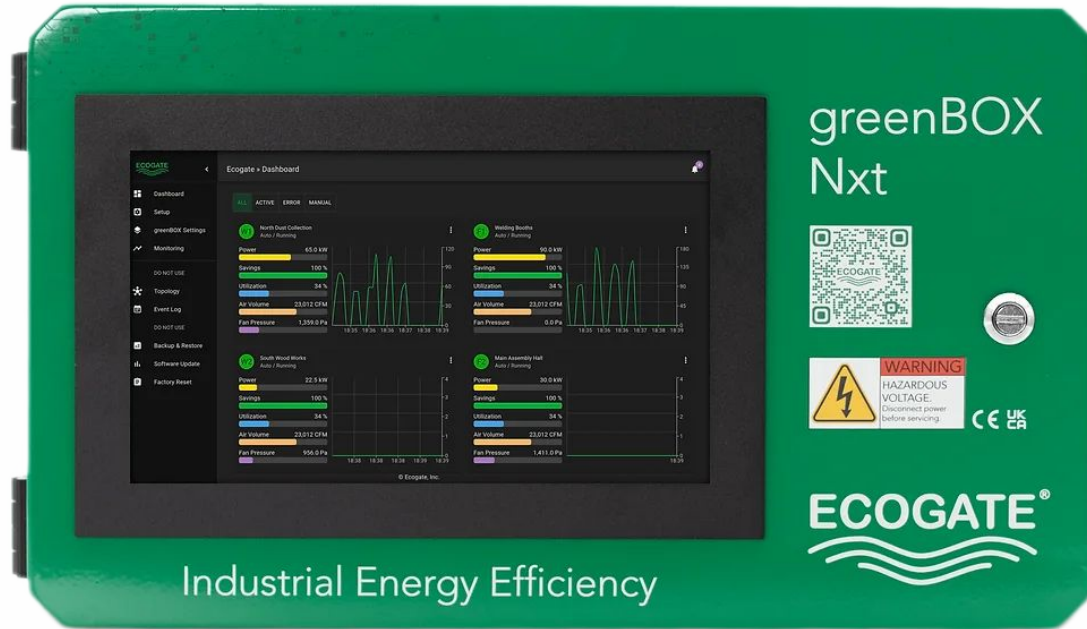


Smart Gates

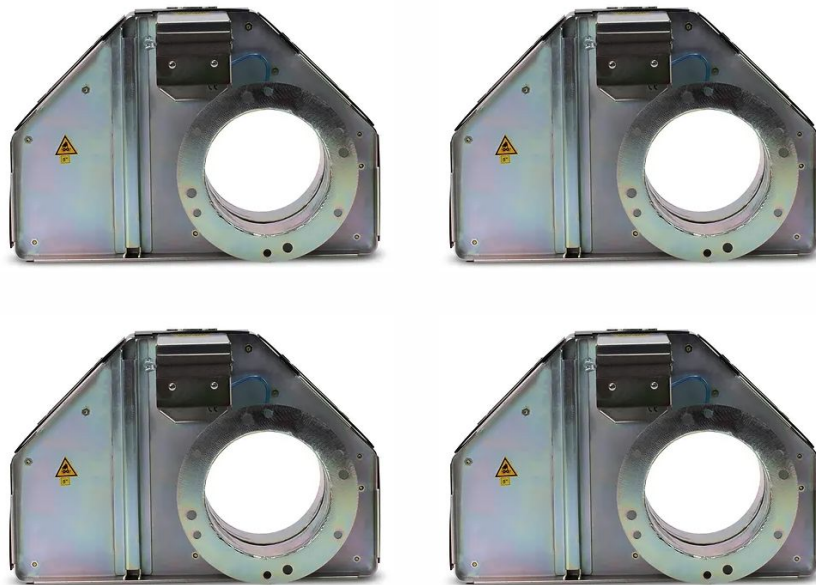
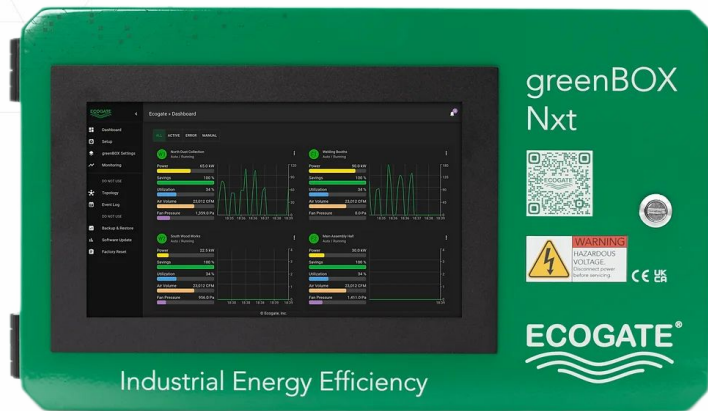
Monitors:
Air Volume
Air Pressure
Air Velocity



Intelligent Controller



Maintaining **Minimum Conveying** Velocities



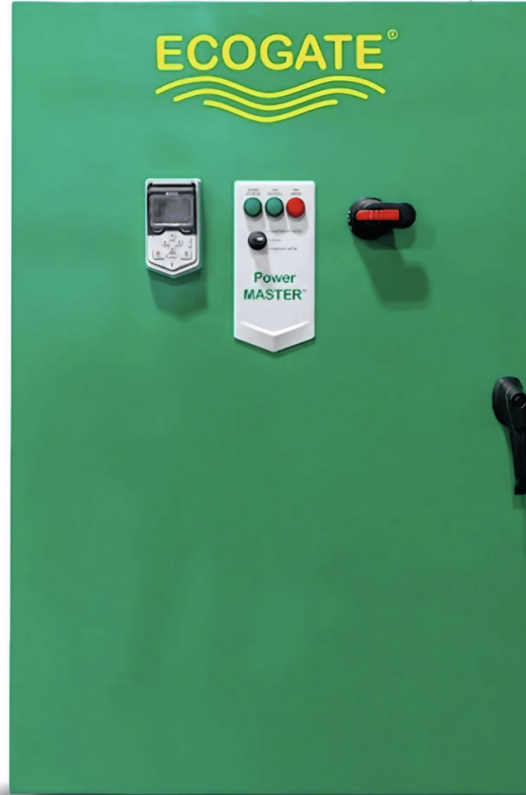
Sum of Gate Air Volumes

Averaging **Air Velocity** Sensor

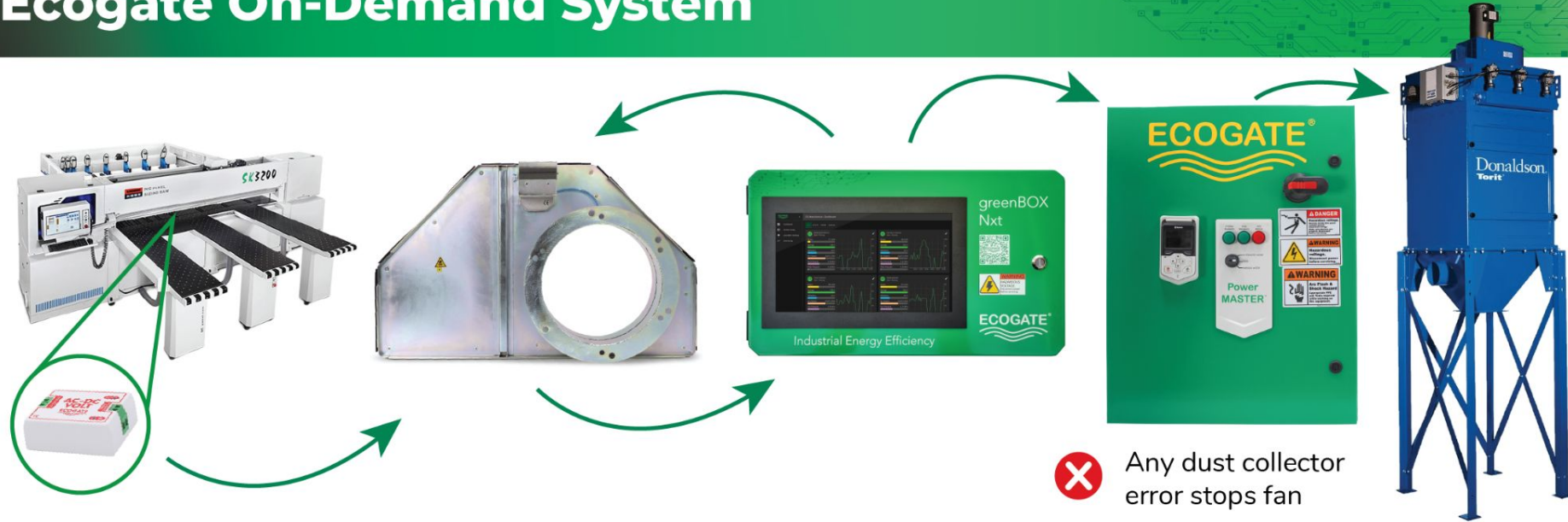


There's **Always** a Way

- Fan Power
- Fan Total Static Pressure
- Fan Efficiency



Ecogate On-Demand System



1. Operator starts cutting

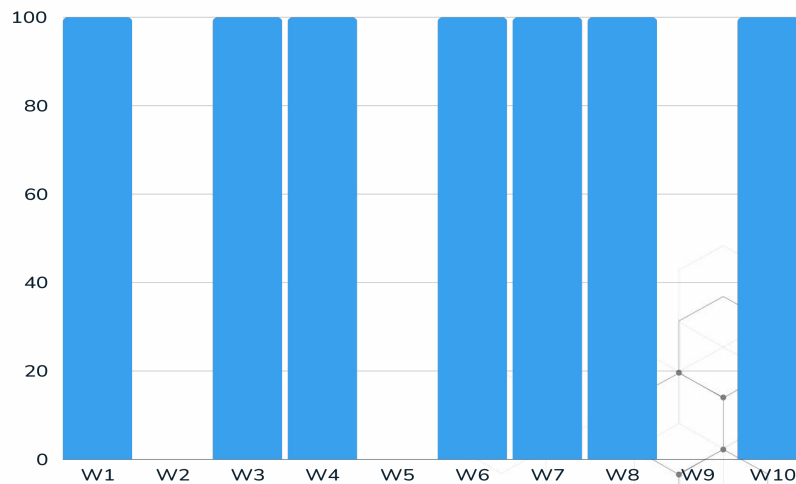
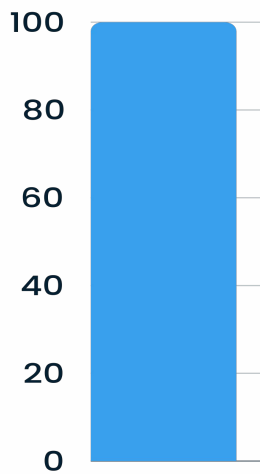
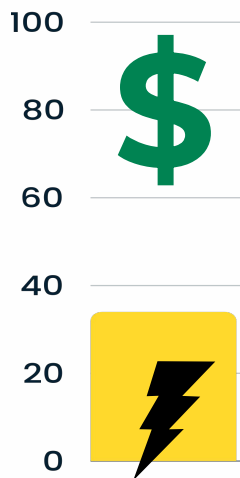
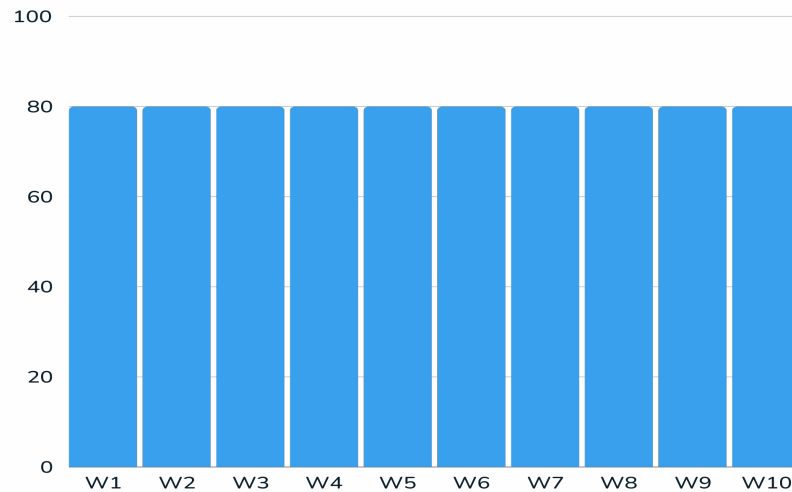
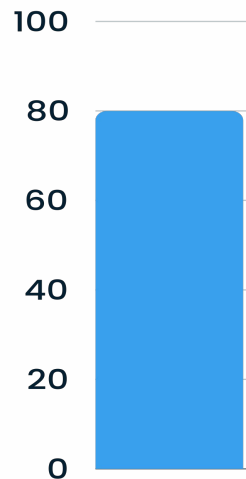
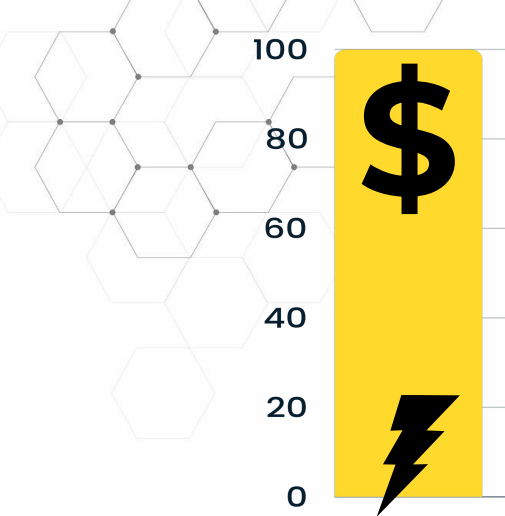
2. Sensor becomes active

3. Gate processor transmits sensor info

4. greenBOX opens gates, calculates fan speed

5. VFD starts fan and dust collector

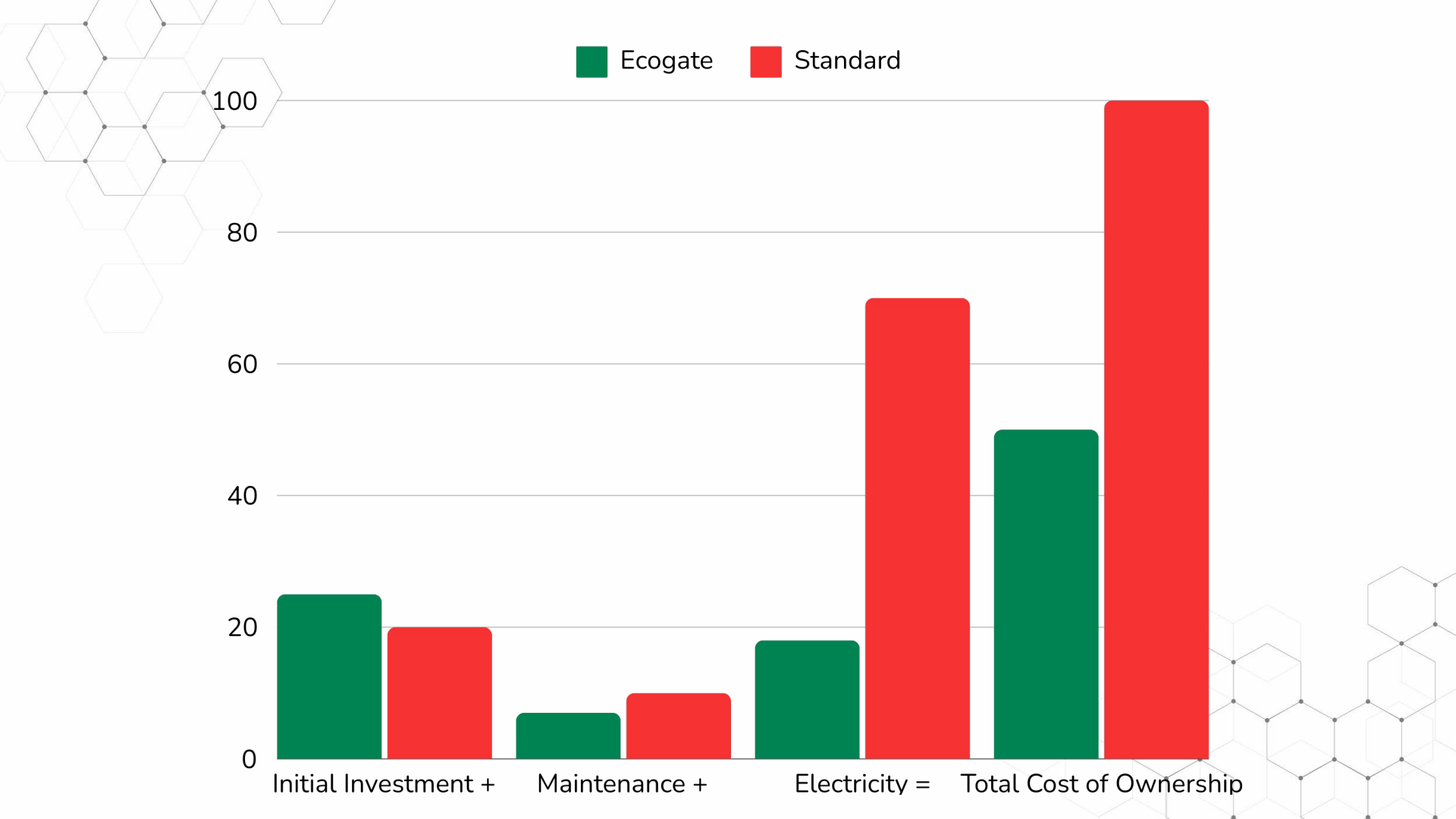
❌ Any dust collector error stops fan





Fan Power Usage

**Saving
65.7%
/month
= ROI**



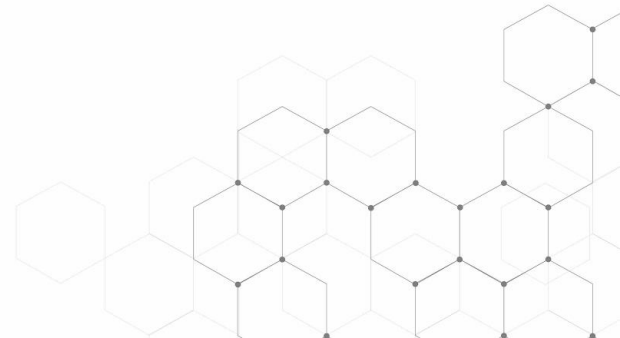


Questions Thus Far?

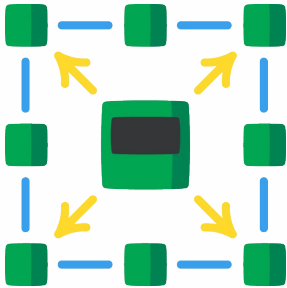
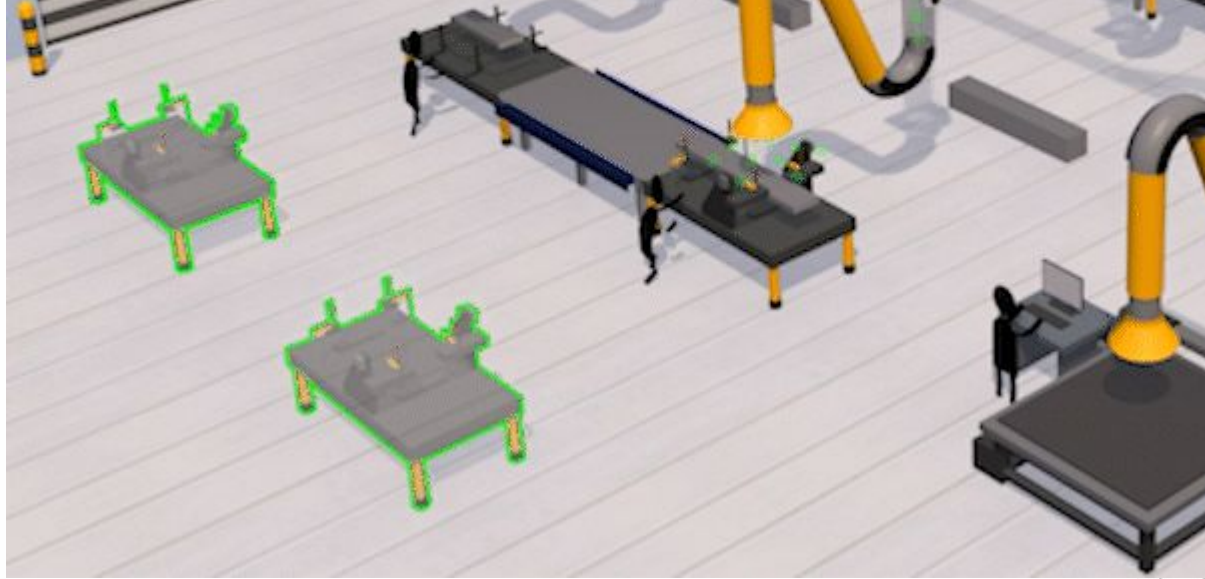




The Other **Benefits**



The **Other Benefits** - Increased Capacity

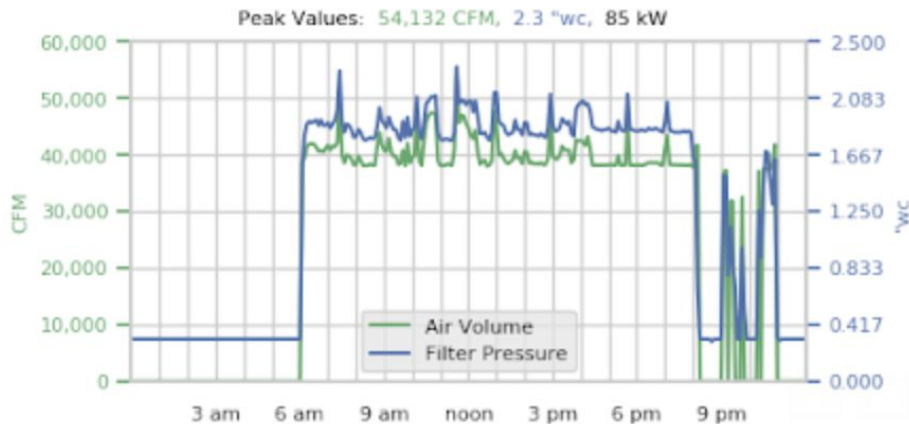
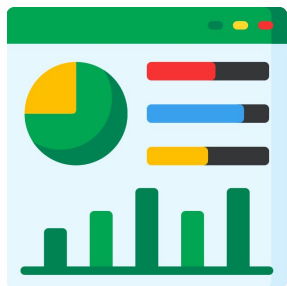


The **Other Benefits** - Noise Reduction



Data Analytics

Daily Reports



64 kW

Avg. Fan Motor Load

976 kWh

Total Energy Used

42%

Energy Savings

35,963,026

Total Air Volume (in cubic feet)

3,194 FPM

Avg. Main Duct Air Velocity

40,140 CFM

Avg. Main Duct Air Volume

10%

Avg. Workstation Utilization

4,841 FPM

Avg. Drop Air Velocity

15:11:40

Fan Run Time

12.2 \"w.c.

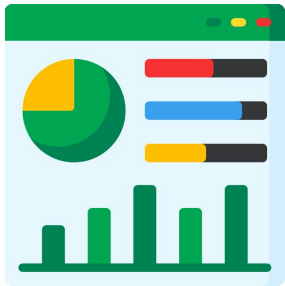
Avg. Fan Total Pressure

1.8 \"w.c.

Avg. Filter Pressure

Data Analytics

Monthly Reports



100 HP Plant 2 System

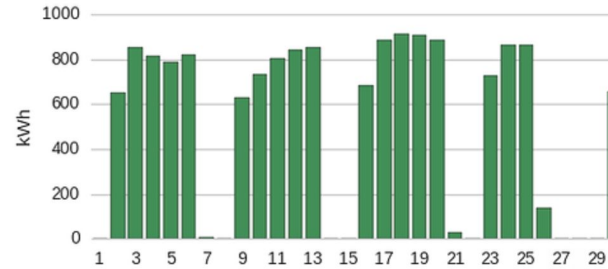
16,433 kWh

Electricity Use This Month

71%

Electricity Savings

Electricity Use by Day



43%

workstation utilization
this month

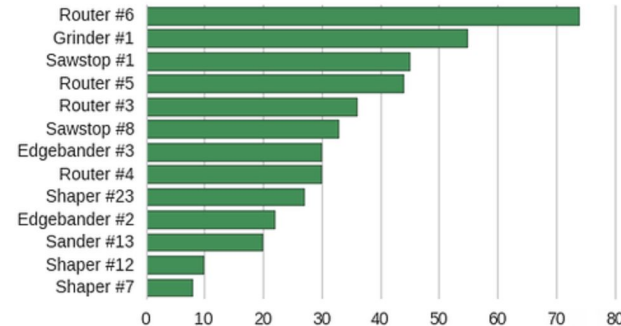
40%

workstation utilization
last month

39%

workstation utilization
two months ago

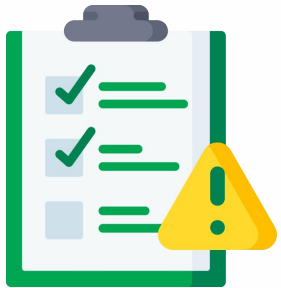
Workstation Utilization Details (% of shift time)



Lower **Carbon Footprint**

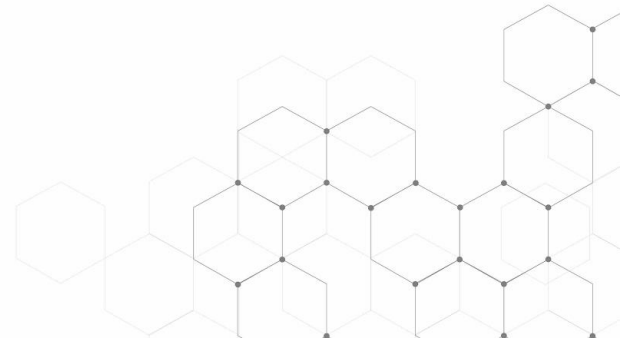


Improved **Safety**





On-Demand Dust Collection is **Good**



Purpose of the Session



✓ Define it

✓ Show me the money

Who uses it?

What will it cost?

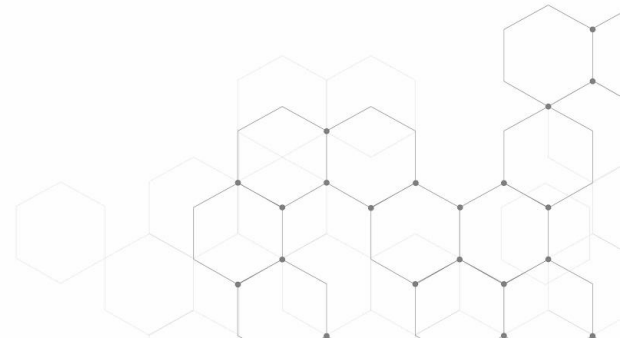
How can I pay for it?



Shutler Cabinets

Moundsville, WV

On the road to \$1M in savings





Shutler Cabinets

Moundsville, WV

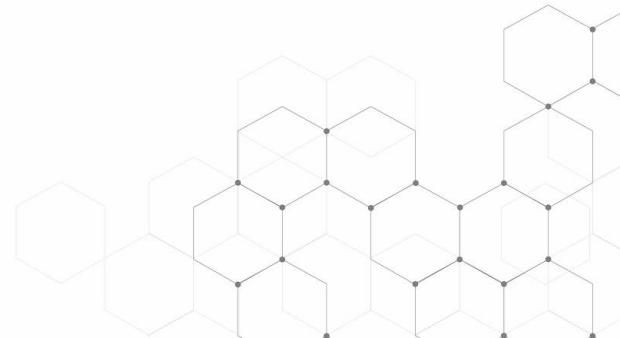
“You don’t really have to do anything. It just runs, it’s just there everyday saving you money. I wish everything ran as smooth as that [Ecogate System] does” - Chris Williams, Shop Foreman





Andersen Door Factory, Bayport, MN

Over \$1M saved each year



Andersen Windows, Bayport, Minnesota

Door Factory Filter Systems FS29, FS30, FS31, FS42, FS32

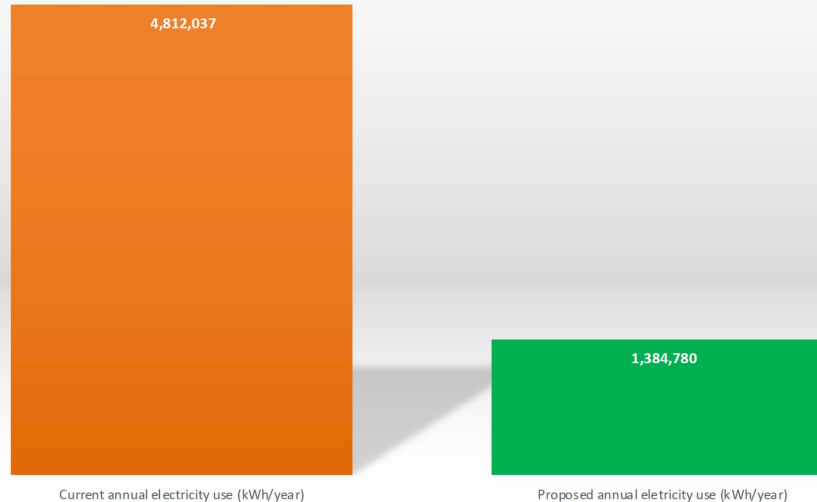


- 200+ drops
- 2 factory levels
- Winter Mode Kit

Electricity Savings for **Andersen Windows**

Savings = 3,5
mil. kWh per
year in one
factory

Door Factory Electricity Use for Dust Collection as Today and
Proposed Electricity use (kWh/year) without FS31



Purpose of the Session



✓ Define it

✓ Show me the money

✓ Who uses it?

What will it cost?

How can I pay for it?



Calculating the Cost of an **On-Demand Control System**



Electricity **Savings** Calculator

A screenshot of the Ecogate website's "Electricity Savings Calculator" page, displayed on a computer monitor. The website has a green header with the Ecogate logo and navigation links: "ON-DEMAND DUST COLLECTION", "WHY ON-DEMAND?", "PRODUCTS/STORE", "MEDIA", "CONTACT", "Log in", and a search bar. The main heading is "ELECTRICITY SAVINGS CALCULATOR". Below this, the text says "See **Your** Savings" and "Customize your savings estimate by entering a few details below. See how much you can save by installing the Ecogate On-Demand solution." A "Reach Out" button is visible. The form section is titled "FACTORY OPERATION" and includes three input fields: "What is the size of your ventilation fan motor in HP?" (with "400" entered), "How many hours is the fan in operation each day?" (with "17" entered), and "How many days per week?". A handwritten note "Start here" with an arrow points to the first input field.

ECOGATE ON-DEMAND DUST COLLECTION WHY ON-DEMAND? PRODUCTS/STORE MEDIA CONTACT Log in Search

ELECTRICITY SAVINGS CALCULATOR

See **Your** Savings

Customize your savings estimate by entering a few details below. See how much you can save by installing the Ecogate On-Demand solution.

Reach Out

Start here

FACTORY OPERATION

What is the size of your ventilation fan motor in HP?

400 HP

How many hours is the fan in operation each day?

17 hours

How many days per week?

ecogate.com/electricity-savings-calculator

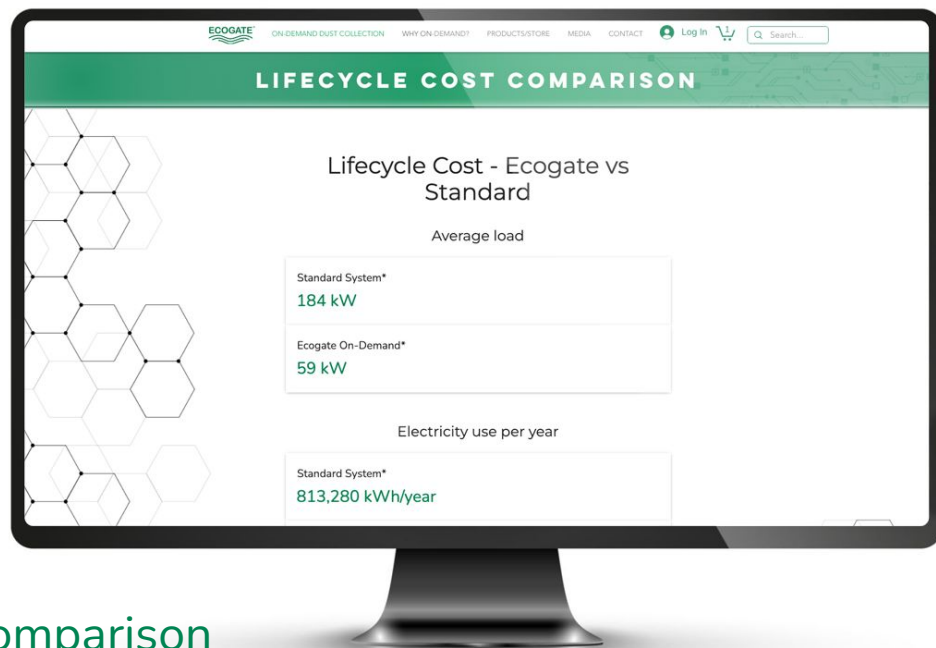
Return on **Investment** Estimator

A computer monitor displays the "RETURN ON INVESTMENT ESTIMATOR" web form. The form is titled "Factory Operation" and contains several input fields with pre-filled values. The background of the form has a light green hexagonal pattern on the right side. The monitor is a black desktop model with a stand.

RETURN ON INVESTMENT ESTIMATOR	
Factory Operation	
HP What is the size of your ventilation fan motor in HP?*	How many hours is the fan in operation each day?*
200	17
How many days per week?*	How many weeks per year?*
5.5	50
Any additional weekend hours per year?*	Your average electricity cost per kWh?*
250	\$0.10
Cost to operate fan motor per year*	

ecogate.com/roi-estimator

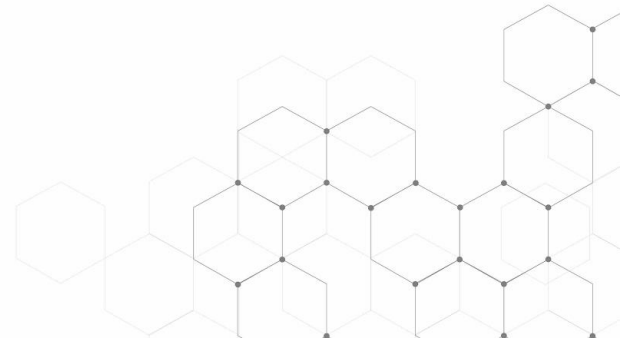
Lifecycle **Cost** Comparison



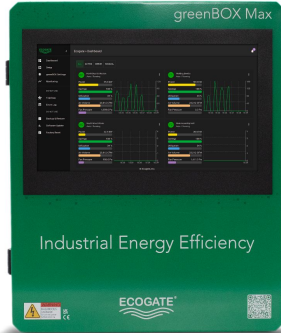
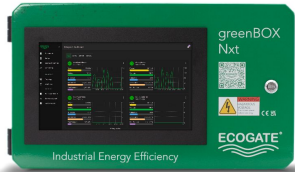
ecogate.com/lifecycle-cost-comparison



How much does an **On-Demand Control System** Cost?



System **Core Components**



Workstation
Activity
Sensors

greenBOX Control Units - 72, 144 & 288 gates



Smart Gates - 2" - 26"



Power
Master
VFD

Installation **Components**



Ecogate Sensor Cable



Ecogate Master Cable



Standard Angle Flanges

QuickFit Options



Standard Angle Flanges



Flange-to-**QF** Adapters



Questions Thus Far?





Installation of an **On-Demand Control System**



Installation of a **Power Master VFD**



Ecogate's Variable Frequency Drive

- **Ecogate** Setup Assistant
- Programs hundreds of parameters within seconds.
- Reduces downtime and human error.

Mechanical Installation

Mechanical Installation of Ecogate Gates






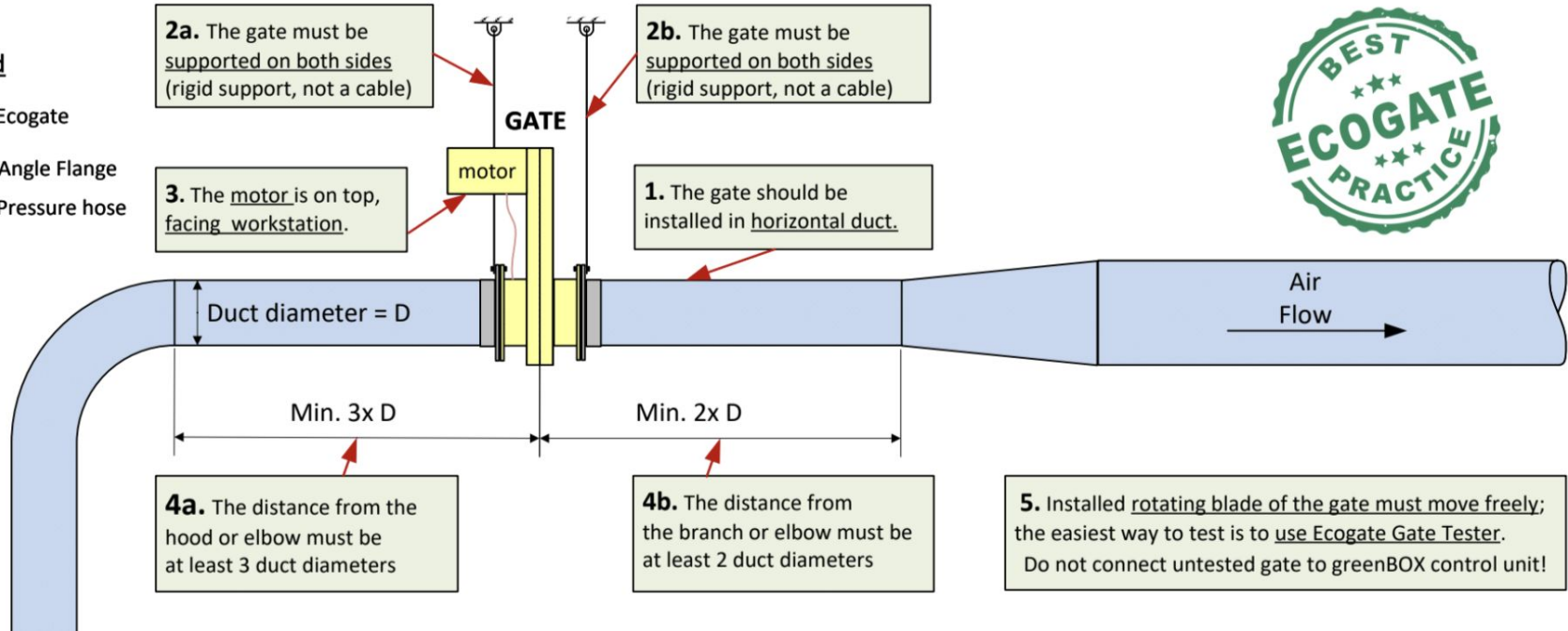
CONTENT

2. How to Install Ecogate Gates
3. Testing gates using the Ecogate Tester
4. Testing gates without the Ecogate Tester
5. Gate maintenance & troubleshooting
6. Best practices - detailed explanations
7. Notes about gate installation

Mechanical Installation Best Practice

Legend

-  Ecogate
-  Angle Flange
-  Pressure hose



Electrical Installation



- Power Master = high voltage
- Gates/sensors = low voltage

Rule of Thumb

If fully outsourced ..

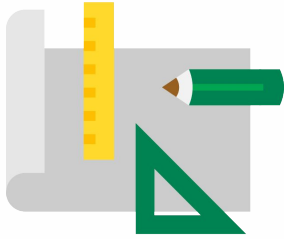
Installation cost = product cost

Many opportunities for DIY

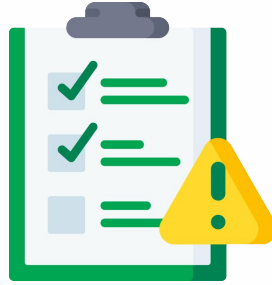
Every job is different



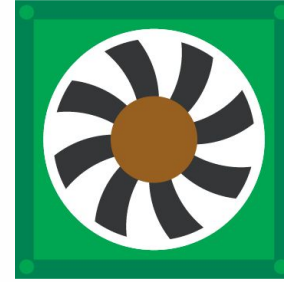
Ecogate **Services**



Design of New
System



Review of
Existing System



Fan Sizing

Purpose of the Session



✓ Define it

✓ Show me the money

✓ Who uses it?

✓ What will it cost?

How can I pay for it?



Paid by **Savings**





Paid by **Savings** Program

A deferred payment offering

Project must meet specific requirements (engineered solution, size, & ROI)

30% due upon PO, 30% due upon shipping of hardware

Customer keeps 60% of the (documented) electricity savings.

Customer pays 40% of the electricity savings to Ecogate



Paid by **Savings** Program

Example from 2024

Quote # 2023084-02-RM			
USA Location			
	Standard Quote		Pay by Savings
Ecogate Hardware	\$65,007		\$39,004
Installation	\$68,138		\$40,883
TOTAL	\$133,145		\$79,887
Toal Savings per Year	\$57,182		
Customer keeps			\$34,309
Ecogate earns			\$22,873

Purpose of the Session



- ✓ Define it
- ✓ Show me the money
 - ✓ Who uses it?
 - ✓ What will it cost?
 - ✓ How can I pay for it?



818-506-6016

Richard Melrose
richard@ecogate.com

David Vera
david@ecogate.com

Craig Benning
craig@ecogate.com

