

**Operating Instructions and System Information** 

## WE PUT IT TO WORK

#### ABOUT YOUR NEW ECOAIR SYSTEM

Congratulations and thank you for the purchase of your new EcoAir System! We are confident you have made a wise choice, both in terms of energy efficiency and protecting your employees health through clean, clear air. In fact, we're so confident about our product we offer a lifetime warranty on your new EcoAir System.

In all buildings there is a natural temperature difference between the air at floor level and the warmer ceiling air. This becomes more pronounced as ceilings become higher – and results in temperature differences as much as 24+ degrees Farenheit between the floor and the ceiling in large, high ceiling manufacturing facilities and warehouses. Our EcoAir Systems are designed to destratify (to equalize the temperature between floor and ceiling) in openconceptbuildings. Doing soallows our EcoAir System to increase the temperature at occupant level, bringing the wasted heat that's normally trapped and lost at the ceiling back down to where it's needed.

Cold air is drawn into our EcoAir System at floor level and discharged upwards towards the ceiling. The warm upper air follows natural currents across the ceiling to an outer wall where it is drawn down to replace the cooler floor air, creating a natural convection pattern.

Your new EcoAir System saves you valuable heating energy dollars by utilizing this trapped heat and bringing it back down to the occupants, increasing worker comfort and cleaning the air at occupant level for employees all the while.

# System Information

#### EA-42-HD SYSTEM SPECIFICATIONS:

Design Manufacturer:	EcoAir	Fan Arrangement:	Vertical	
Model Number:	EA-42-HD Canada US-EA-42-HD United States	Fan Speed, RPM (Max): 1100 RPM		
Operating (Total System) Weight:	850 lbs.	Fan Motor HP:	3.1kW	
Floor Footprint:	48"x48"x94"	Electrical Service:	575V/3Ph/60HZ 208-240V/3Ph/60HZ	
Fan Type:	De-stratification/Ventilation/Air Cleaning System	Amps:	575V: 4.8Amps 208-240V: 9, 4-7, 8A	
Total Air:	15,500 CFM	Motor Starter Type:	ElectronicSoftStart/Integrated Controller	
Sound Level:	68-72 dBA	Motor Protection:	Integrated active temperature management with electronic overload protection	
Drive Type:	Direct w/integrated electronic controller	Climate Protection:	Moisture and hot/cold climate protection	
Fan Wheel Type:	Axial fan w/ Sickle blades	Construction:	Powder Coat Steel Class 2 RAL 1026/9005	
Impeller Construction:	Aluminum	Connecting Elements:	Stainless Steel	

#### SUGGESTED AIRFLOWS:

- De-stratification for energy savings: A minimum of .8 to1 full air change per hour is required.
- Ambient Air Filtration: 1 to 2 full air changes per hour during production hours is suggested.

To calculate the Full Air Changes per Hour this EcoAir System is achieving within your facility please do the following:

- 1. System CFM (15,500 @ Full Speed): (Cubic Feet per Minute) X 60 = Cubic Feet per Hour
- 2. Facility Width x Facility Length x Facility Height = Total Volume of Facility Air
- 3. Divide Cubic Feet per Hour (Step 1) by Total Volume of Facility Air (Step 2) to determine the number of Air Changes Per Hour.

The result is the number of full air changes per hour this system is achieving within your facility.

In general each EcoAir EA-42-HD System will service 40,000 square feet for Energy Savings and 20,000 square feet for filtration.

#### SYSTEM PLACEMENT:

Your new EcoAir System will operate from almost anywhere in your building. A central area is always preferred but a unit installed against an outside wall will operate almost as well. In all cases air flow into the unit must be clear with at least 6" available on at least two sides at the very minimum.

The patented EcoAir System is engineered to not only save energy through elimination of the temperature differential from floor to ceiling – it's also engineered to provide complete air distribution throughout your entire facility. This means uniform temperatures throughout, greater employee comfort, faster heat recovery in the winter from loading dock doors opening and closing, and cleaner, healthier air throughout your entire facility...

#### Quick Energy Savings Tip:

Try setting your programmable thermostats back at night when employees have finished work to the lowest temperature possible (usually this is around 7 degrees Celcius/44 degrees Farenheit). Then program the heating system to return to normal temperature one hour before employees arrive in the morning. Because your new EcoAir System helps your existing system heat uniformly due to the convection and air distributon pattern, your building will return to temperature before your team arrives.



## Eliminate Stratification and help keep your workers warm during the winter season and cool during the summer season.

#### LOADING DOCK AND SHIPPING AREAS:

Our patented EcoAir Systems are designed to be floor standing. By designing them in this fashion it allows them to pull the cool air from across the floor and then discharge this cold air up to the ceiling.

If you have a docking area and either cold air from the area is traveling throughout the facility or it is hard to keep this area to temperature, having an EcoAir System located within or adjacent to this area will greatly improve worker comfort.

As the cold air comes in the loading dock doors, it layers across the floor at occupant level and travels throughout your facility. By locating your new EcoAir System close to the incoming cold air source you allow the EcoAir System to sweep up the cold air and propel it towards the ceiling where it will simply mix with the warm air above – immediately raising the temperature at occupant level. This in turn prevents the cold air from travelling throughout your facility, while simultaneously warming your shipping and recieving area workers, and clearing the air of fumes and dust generated by trucks and forklifts.

#### HOW CEILING FANS EFFECT YOUR ECOAIR SYSTEM:

It's common to see many ceiling fans placed within loading dock areas as well as throughout large open spaced buildings. The problem with this is that ceiling fans, by their very nature and design have a problem displacing cold air on the floor and at occupant height. When they use force to try and push the warm air down there are three specific problems that arise:

- 1. The warm air does not want to go down and just rises back up without ever penetrating the cold floor air below.
- 2. It ends up just creating an uncomfortable draft during those cold winter months. So there's a common tendency to turn the ceiling fans down to a lower speed which in turn just reduces their effectiveness.
- 3. All ceiling fan manufacturers' literature clearly states in order for a 36" ceiling fan to effectively destratify the air, one ceiling fan is needed for every 1,400 square feet, and in loading dock areas it's suggested that one ceiling fan is needed every 700 square feet.

Furthermore, ceiling fan manufacturers clearly state that if it's located above 10 feet in height from the floor then the area served is reduced even further. As well, to meet this sizing chart all ceiling fans have to be running at full speed. If you turn them down, even just slightly to reduce the cold draft in the winter...they are rendered effectively useless. Then, of course, there's also the fact that ceiling fans do NOTHING for air quality...



## The problem with **ceiling fans.**





## WHYCLEAN THE AIR?



### So your lungs don't have to...

#### FILTRATION:

Your new EcoAir Rotation System has 48 square feet of filter surface area. This is a considerably larger area than most conventional systems that use high static pressure to move air through them.

The larger surface area reduces static pressure and therefore reduces motor horse power required – saving you money on your electrical energy costs on top of natural gas savings. Plus EcoAir Systems clean on average 900% more air than a single traditional ceiling mounted air cleaner – this in turn saves you money through capital costs by reducing the number of air cleaners required to address your indoor air issues.

Your new EcoAir System works by using high volume, low velocity air. This makes your new EcoAir System an excellent way to supplement your existing system or to be used as the prime means to clean the air.

If your present filtering system is a rooftop system, it's probably difficult and/or expensive to service if an outside contractor is required. Your new EcoAir Systems located at ground level make it easy to replace filters. As well, since your new EcoAir Systems do the bulk of the filtering – your rooftop filters stay cleaner longer – and this results in much higher operational efficiency, not to mention the reduction of maintenance costs associated with replacing rooftop air filters...

#### HOW OUR FILTRATION SYSTEM WORKS:

Your new EcoAir System will draw air from a large area without any ductwork at almost zero static pressure. Compared to traditional ceiling mounted air cleaners your new EcoAir System will use 88% less electricity to move and filter the same volume of air as a ducted or traditional ceiling mounted air cleaning system.

Your new EcoAir Rotation System operates at very low static pressure, moving a very high volume of air at a very slow speed. This large volume of slow moving air allows for easier capture of the particles by the filter fibers. This in turn makes the filtering system highly effective compared to traditional ceiling mounted systems.

Filters should be changed as they become dirty. The time cycle between cleaning/replacing will depend on the amount of particulate produced by your manufacturing or warehousing processes.

Once the dust has visibly penetrated through the backside of the filter media it's time to change or clean the filters.



#### FILTER CARE:

Remember: Filters become MORE efficient over time. As dust and dirt collects on the filter fibers, the airway path between the fibers narrows. This causes even more dust and dirt to be collected - especially in smaller particulate sizes. Your new EcoAir System becomes more efficient at cleaning the air over time - keeping the air at occupant level cleaner for all employees. Over-cleaning and replacing filters just adds unnesses ary costs. We suggest a simple monthly replacement/cleaning schedule. It's best to let the dust build up and change when a thick, visible layer is caked on the outside and the dust has visibly penetrated through the backside of the filter media. After all, if you can see it on the filters, then that means that it's no longer in the air you breathe...





#### FILTER WASHING:

If your new system was ordered with our MERV13 Washable/Re-useabe filters, then maintaining them is quite simple:

- 1. Remove all 4 filters and take outside to an open area.
- 2. Ideally just use compressed air to blow off the particulate from the back side. (The opposite side that faces out towards your facility when installed in your EcoAir System)
- 3. Then simply place them back in your system until your next scheduled cleaning. Please be mindful of the airflow direction sticker to ensure you cleaned them from the proper direction and replaced them with the correct side facing out. Always place the same side out after cleaning.

Washing them down with a pressure washer can be done as well - but we recomend limiting this to maybe two to four times per year. For our system in our shop we use Nature Clean Heavy Duty Cleaner Degreaser. It's 99% natural and doesn't leave behind any chemical residue. We've found it great for removing grease, oil and smoke residue from fabricating processes.



You can find it at www.naturecleanliving.com

#### FILTER MEDIA TYPES:

MERV 13 (Washable) Identifiable by aluminum frames and pleated white media

This is our washable and re-usable filtration media. Perfect for collecting fine particulate, smoke and oil mist. Our aluminum frame MERV13 Filters capture up to 75% of the particulate at .3 microns and larger.

MERV 11 (Disposble) Identifiable by yellow and white media

Packaged insets of four, this is our disposable option for high quality air filtrationing eneral manufacturing and warehouseing applications. Perfect for collecting large particulate like cement dust, box and carton dust, auto emissions etc. Our MERV 11 filters capture 65%-79% of particulate 1 micron and larger.

PARTICLE SIZES:

#### Sand, Soot and Insect Debris.

100 microns in diameter. -

Dust, pollen, mold

#### Metallurgical fumes, soot, oil smoke, viruses 2.5 microns in diameter or less.

#### UNDERSTANDING FILTER MEDIA MERV RATINGS:

MERV Value	0.3-1.0 Microns	1.0 - 3.0 Microns	3.0-10 Microns	Typical Particulate Trapped by Filters
MERV 7			50-%-69%	Mold Spores, Hair Spray, Cement Dust, Pollen, Spray Paint
MERV 8			70%-85%	
MERV 9		Less than 50%	85% or better	Lead Dust, Auto Emis- sions, Fine Box and Car- ton Dust, Fine Cement Dust
MERV 10		50%-64%	85% or better	
MERV 11		65%-79%	85% or better	
MERV 12		80%-89%	85% or better	
MERV 13	Up to 75%	90% or better	85% or better	Bacteria, Most Tobacco Smoke, Welding Fumes, Proplet Nuclei (Sneeze Droplets), Fine Oil Mist

Your new EcoAir System is different because it's specifically engineered to remove particles at occupant level.



## Additional Features



Your new EcoAir System comes standard with casters for easy installation and portability. Permanent mounting feet are available as an option. Just give us a call to order a set if you decide on a permanent location in the future... 1.877.532.6247

#### Optional Summer Hood

Keep your employees cool all summer long while still maintaining clean air throughout. Even better, it just simply hangs off the side of the system for wintertime storage. Single Direction hoods are available as well for specifically directed airflows and applications.



#### ZONING OR "STAGING" YOUR EXISTING HVAC SYTEM:

Another additonal feature of your new EcoAir System is the ability to "Stage" or "Zone" your existing heating and cooling system.

#### What is Staging?

We refer to it as the ability to turn off, or limit the running time of half your heating system throughout the majority of the heating season...

#### Can I do this and actually keep my building to the same temperature that I have it set at now?

Sure you can... Here's the thing. HVAC systems are designed and sized to keep your building to temperature on the coldest days of the year (this is known as your "design point temperature"). Let's think about that for a second... How often is it really that cold? In actuality maybe a few weeks a year... That's it! So really you need your full heating system runnning at maximum capacity maybe 10%-20% of the season. The rest of the time when temperatures are warmer you don't need the full system to turn on. This means that your HVAC system is actually oversized 80%-90% of the time! The problem with most standard heating systems like Unit Heaters or Radiant Heaters is that they can only distribute the heat they produce over a certain sized area. Therefore engineers are forced to place multiple heating systems throughout your facility to try and obtain uniform coverage and heat distribution AND to provide enough heat capacity to keep your building to temperature on the coldest of days.

#### So how do I use my new EcoAir Sytem to "Stage" my existing heaters?...

It's quite simple really. Your new EcoAir System will distribute heat from your existing HVAC equipment throughout your entire facility. And since we take care of the distribution aspect... you no longer need all of those individual systems running all of the time to provide even coverage. Here's a simple trick you can apply to save some serious energy...

Just go around and turn half of your thermostats (Or every other thermostat) down by 1 or 2 degrees! Simple really...

What this does to your overall heating system is two things; first, during the warmer days of the year it prevents half your heating system from needlessly turning on. Secondly, if we get hit by a very cold day and your newly "Staged" system can't quite keep your building to temperature - then the balance of your heating system will kick in as soon as the temperature drops below that 1 or 2 degrees that you lowered the other thermostats to. It's just that easy to save energy... Give us a call anytime at 1-877-440-7770 and we can help you set it up, keep your employees comfortable and happy and keep your heating costs low!

## COMFORT.

### SAVINGS.

## CLEAN AIR.

Should you have any technical questions, set-up questions or require further general information please give us a call at:

1-877-440-7770

We're here to solve your indoor air quality problems...

![](_page_27_Picture_3.jpeg)