

# Customer Connection for **BUSINESS**



Energy information to help you manage your operation

April 2021

## Air purification: Healthy air, healthy buildings, healthy people

Clean air is always important, but especially now with heightened awareness and concern about air quality as the pandemic continues. Interest in air purification technologies is surging as we make plans to move ahead with business and work activities. Let's look at two of today's most popular options: germicidal ultraviolet light and bipolar ionization.

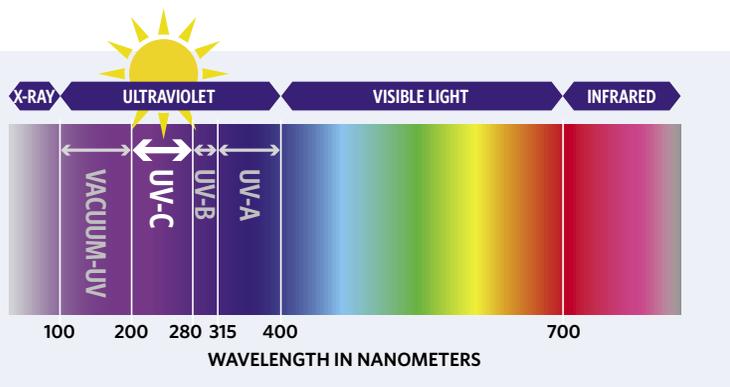
### Germicidal ultraviolet light

Ultraviolet light (UV) used as a germicide has been around since the late 1800s and was first incorporated into central heating, ventilation, and air conditioning (HVAC) systems for air purification in 1940. Fast forward to the 21st century, and it's still a popular option to disinfect surfaces and air.

#### How it works

If you've heard that leaving an item in the sunlight will help to clean it of germs, then you'll have an idea of how germicidal ultraviolet light works to purify the air.

Ultraviolet light is the portion of the light spectrum that falls between 100 and 400 nanometers. Germicidal UV uses the UV-C band of waves in between 200-280 nanometers to disable microbes by breaking apart the DNA or RNA and leaving the microbe unable to function or reproduce. UV-C light must directly hit the microbe to be effective. The longer the exposure the more effective it is at killing them. While successful on molds, bacteria, viruses, and volatile organic compounds (VOCs), UV light cannot inactivate odor molecules.



Germicidal UV systems consist of several UV lamps sealed within a building's air handling system. This protection is critical because UV light exposure is hazardous to human skin and vision.

#### Energy savings

Germicidal UV makes an HVAC system more energy efficient by keeping coils cleaner and allowing them to operate more efficiently. One study showed savings of about 4.5 percent.

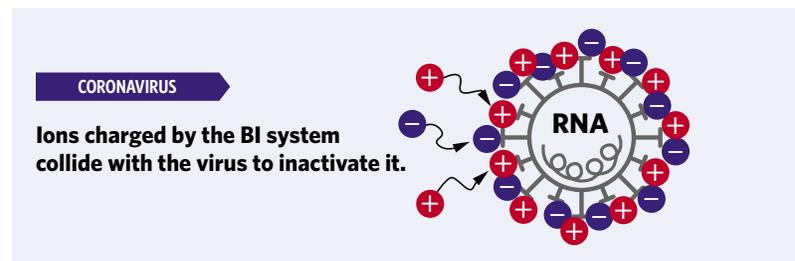
### Bipolar ionization

Bipolar ionization (BI) was first used in Europe and arrived in the United States in the 1970s to control harmful microbes in the food manufacturing industry. Over the past two decades its use expanded as a tool against the 2004 SARS illness and recent outbreaks of noroviruses and influenza strains.

#### How it works

Similarly to how we compared germicidal UV to sunshine, we can compare BI to the effect of lightning. Just as lightning produces a high concentration of negative ions and leaves the air clean and refreshed, BI uses electric voltage to generate ions from oxygen molecules to clean the air.

The positive and negative ions generated by a BI system attract and attach to mold, odor, bacteria, VOCs, and virus contaminants. Once connected, it produces a chemical reaction that inactivates airborne contaminants.



A coronavirus surface protein that's damaged at the molecular level can't infect cells—even if introduced into the body.

Additionally, charged ions bond the inactivated pathogens into larger masses that are easier to catch in filters.

Experiments done by Innovative Bioanalysis show that BI was 99.8 percent effective in reducing the SARS-CoV-2 virus (the cause of COVID-19). Other studies have shown similar results.

BI systems are typically installed in the air handlers within HVAC systems and distribute ions through the ductwork and occupied spaces. To boost local air purification, mount smaller self-contained units in high-traffic areas. Some BI products generate ozone, so when purchasing specify an ozone-free UL-listed product.

#### Energy savings

BI systems can reduce the amount of make-up air that's needed in a building by up to 50 percent, allowing HVAC systems to operate less. Energy savings range from 4 to 8 percent.

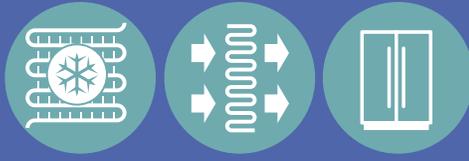
#### Conclusion

Germicidal UV and bipolar ionization technologies are successfully used in large and public facilities including airports, hospitals, and government centers worldwide to protect the public. Both offer energy savings when integrated with an HVAC system.

Manufacturers offer a range of unit sizes at a reasonable cost making it a possible application for small and midsize businesses.

To learn more, contact your HVAC contractor or visit [otpc.com/AirPurification](https://otpc.com/AirPurification).

# Commercial refrigeration



## Three ways to keep cool and save money

Cooling costs can account for up to 60 percent of total electricity consumption in grocery stores and other facilities that rely on commercial refrigeration.

\* But you can control cooling costs by controlling airflow. Here's how.

### 1. Keep air moving through the evaporator coils.

Remove items that block airflow to the evaporator, clean coils quarterly, and, if you notice ice covering the coils, call a refrigeration professional.

### 2. Keep air moving through the condenser coils.

Clean and maintain the coils quarterly. Dirty coils may lead to early equipment failure and increased energy consumption.

### 3. Keep doors closed.

Tight seals mean less heat entering the refrigerator. Repair or replace damaged or missing gaskets and damaged strip curtains, adjust door hinges for a tight fit, and make sure automatic door closers work correctly. The compressor will run less often, and you'll save energy.

\*According to the U.S. Small Business Association



Dirty coils can **DOUBLE** the cost to operate a refrigerator.

## A team of energy experts is available to help you



**Roger Garton**  
Bemidji, MN area



**Jeff Hoff**  
Jamestown and  
Oakes, ND areas



**Brandon Johnson**  
Fergus Falls, MN area



**Lori Moxness**  
Morris, MN area



**Brad Nelson**  
Milbank, SD and  
Wahpeton, ND areas



**Aaron Sigette**  
Crookston and  
Hallock, MN areas



**Scott Sigette**  
Rugby, Langdon, and  
Devils Lake, ND areas

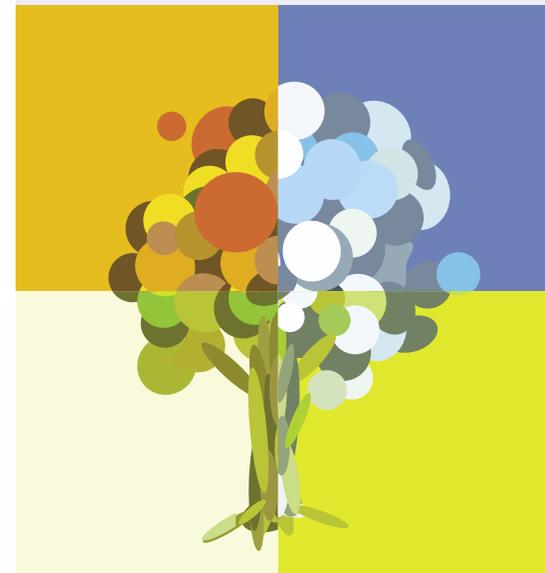
## Easy energy savings!



- During the summer months, adjusting your HVAC thermostat setting up one degree typically can save 2-3 percent on cooling costs.
- Consider installing locking devices on heating and cooling thermostats to manage energy costs.

## Even Monthly Payment

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