The Airocide Spec Process

Assessment of Given Space:

1. What is the space used for?
2. What issue or issues is the client experiencing that Airocide can help solve? (i.e mold, yeast, bacteria, etc)
3. Are there any photos and/or diagrams available that detail specifics about the space under consideration?
4. Where is power available in the space under consideration?
5. Is there any other information about the space under consideration that we should be made aware of? (i.e a forklift that comes in and out of it)
6. If an HVAC system is present; provide details about how many other spaces are on the HVAC system, what the fresh air replacement rate is, and dimensions of ducts if possible.
7. What is the total volume from the unit mix formula:

Total Volume = Initial Volume + (Initial Volume) (Air Exchange) + 200 cubic feet for every door and window

Initial Volume = Cubic Dimensions of Space (Length x Width x Height) in feet or meters.

Air Exchange = If the space has an HVAC system. How many times per hour is the total volume of air exchanged.

Note: In some circumstances HVAC systems have very high exchange rates in individual rooms, which would lead to an unnecessarily large number of Airocide units in a single room. In this case; we calculate the dimensions of all rooms on the HVAC system, and the duct work to come up with a total volume and deploy Airocide across the system (in all rooms where the HVAC has a return). Of course, taking into account the fresh air replacement rate, which is the rate at which the HVAC system inputs air from outside.

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Air Processing Time Calculations for Airocide Industrial Units:

GCS-25: 1,200 cubic feet per hour (34 cubic meters per hour)
GCS-50: 2,000 cubic feet per hour (57 cubic meters per hour)
GCS-100: 1,500 cubic feet per hour (43 cubic meters per hour)

Recommended Airocide Deployment for A Given Space:

Airocide has three official designations for determining unit mix. This is why it is so important to get clear and accurate answers to questions one and two from above. However, it is understandable that this is not always possible. So, the following descriptions are clear enough to allow a client to make a determination for themselves based on their local conditions. Please feel free to copy and paste these descriptions, translate as needed, and fill in local information for highlighted areas. Airocide strongly encourages you to present all options to the client to best fulfill what their unique situation demands.

Full Spec:

In this circumstance; the entire volume of air in a given space is cycled through our Airocide NASA PCO reaction chamber at least one time per hour. This is our most rigorous spec which eliminates 99.9% of bacterial and fungal colonies and over 80% of Ethylene. This full spec is recommended for spaces where significant problems have been reported in the past and dramatic action is required; this may include, but is not limited to, complete product loss or impending regulatory action. The GCS-50 has an air flow rate of 2,000 CF/h (57 CM/h), and the GCS-100 has an air flow rate of 1,500 CF/h (43 CM/h). The GCS-100 has a lower flow rate due to a more dense catalyst chamber. The GCS-100 helps mitigate premature maturation due to the presence of Ethylene, and certain fungal strains. It's presence in the unit mix provides more catalyst density to mitigate air quality issues.

Using Cubic Feet:
Total Volume ÷ 2.0 ÷ 2,000 CF/h = Number of GCS-50
Total Volume ÷ 2.0 ÷ 1,500 CF/h = Number of GCS-100

Using Cubic Meters:
Total Volume ÷ 2.0 ÷ 57 CM/h = Number of GCS-50
Total Volume ÷ 2.0 ÷ 43 CM/h = Number of GCS-100

Note: Always round up if decimal portion is .5 or greater.

Intermediate Spec:

In this circumstance; the entire volume of air in the given space is cycled through our Airocide NASA PCO reaction chamber four times per day or once every six hours. This metric has been demonstrated to have success in such conditions. This spec is for those who have experienced moderate issues in the past, where air quality is perceived as a problem but loss is a relatively low proportion of overall output. Circumstances may include, but not be limited to, appearance of mold on fruits (or flowers) or cases or premature maturation. The GCS-50 has an air flow rate of 2,000 CF/h (57 CM/h), and the GCS-100 has an air flow rate of 1,500 CF/h (43 CM/h). The GCS-100 has a lower flow rate due to a more dense catalyst chamber. The GCS-100 helps mitigate premature maturation due to the presence of Ethylene, and certain fungal strains. It's presence in the unit mix provides more catalyst density to mitigate air quality issues.

Using Cubic Feet:
(Total Volume ÷ 6.0) ÷ 2.0 ÷ 2,000 CF/h = Number of GCS-50s
(Total Volume ÷ 6.0) ÷ 2.0 ÷ 1,500 CF/h = Number of GCS-100s

Using Cubic Meters:
(Total Volume ÷ 6.0) ÷ 2.0 ÷ 57 CM/h = Number of GCS-50s
(Total Volume ÷ 6.0) ÷ 2.0 ÷ 43 CM/h = Number of GCS-100s

Note: Always round up if decimal portion is .5 or greater.

Basic Spec:

In this circumstance; the entire volume of air in the given space is cycled through our Airocide NASA PCO reaction chamber about one time per day. This spec is for spaces with very few issues and extremely rigorous cleaning protocols. Generally those who adopt the basic spec have not had indoor air quality issues, but perceive it to be a potential problem. This would be considered general insurance against future problems. The GCS-50 has an air flow rate of 2,000 CF/h (57 CM/h), and the GCS-100 has an air flow rate of 1,500 CF/h (43 CF/h). The GCS-100 has a lower flow rate due to a more dense catalyst chamber. The GCS-100 helps mitigate premature maturation due to the presence of Ethylene, and certain fungal strains. It's presence in the unit mix provides more catalyst density to mitigate air quality issues.

Using Cubic Feet:
(Total Volume ÷ 24.0) ÷ 2.0 ÷ 2,000 CF/h = Number of GCS-50s
(Total Volume ÷ 24.0) ÷ 2.0 ÷ 1,500 CF/h = Number of GCS-100s

Using Cubic Meters:
(Total Volume ÷ 24.0) ÷ 2.0 ÷ 57 CM/h = Number of GCS-50s
(Total Volume ÷ 24.0) ÷ 2.0 ÷ 43 CM/h = Number of GCS-100s

Note: Always round up if decimal portion is .5 or greater.

The GCS-25

The GCS-25 is absent from the calculations listed above. The reason for this is that it has a significantly smaller catalyst chamber, and is only appropriate for specific circumstances. These circumstances have, in the past, included Call Centers, ICU rooms, Chemotherapy Areas, Dialysis Rooms, Washrooms, Elder Care facilities, and Prisons. Primarily spaces where noise has to be taken into consideration. Obviously it is a quieter unit, and appropriate given that parameter. It circulates air at 1,200 CF/h (34 CM/h), and calculations can be made accordingly. It is never appropriate for Food Storage or Operating Rooms.

Note: This is an attempt to provide a framework for our global partners to provide meaningful unit mix recommendations to their clients based on existing information. We come up with new and exciting applications for the Airocide NASA PCO technology all of the time, and this may require amending what is provided above. Should you have questions about a unique circumstance; Airocide is happy to work with you in creating a custom spec.

Airocide is always happy to help you in using this methodology for coming up with recommendations for your clients. Please direct all questions/inquiries to Airocide's Science and Technology Division:

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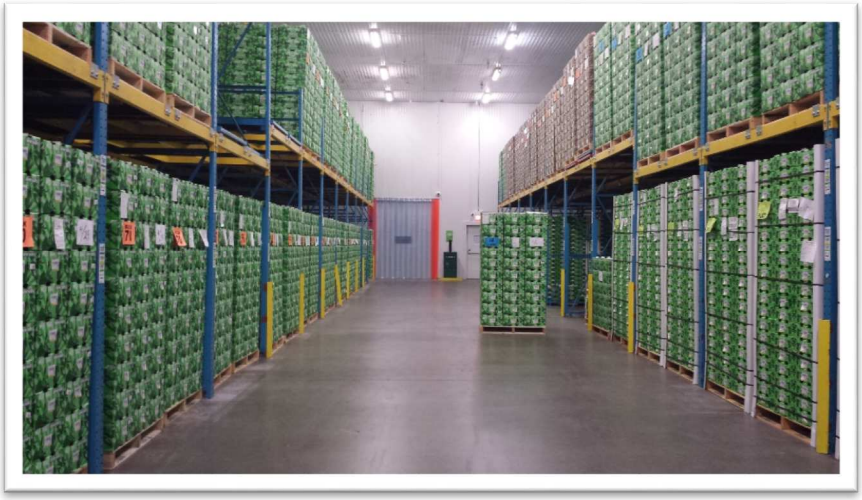
Also Available on What's App

Example of Using The Airocide Spec Process:

Let's imagine a scenario in which an Avocado packing house has requested that the local Airocide distributor provide a recommendation for one of their cold storage rooms. Below is exactly how Airocide recommends going about this

Assessment (From Questions on Page 1):

1. The Space is used to store Avocados for a period of seven days.
2. The client has seen premature ripening due to Ethylene exposure, and mold appear on the fruit continuously for the past six months. They routinely have to dispose of 10% or more of their product.
3. Clear photos were provided detailing exactly where pallets are stacked.



4. Power is available along all four walls of the cold room.
5. There is one door to the cold room, and it is opened for forklift access approximately five times per day.
6. There is no HVAC sytem, and, thus no mechanical movement of air between the cold room and the outside environment
7. Initial Volume = (65 ft (L) x 65 ft (W) x 20 ft (H)) = 84,500 ft^3 (2,393 m^3)
   Total Volume = Initial Volume + Air Exchange + 200 ft^3 for each door or window = 84,500 + 0 + 200 = 84,700 ft^3 (2,398 m^3)

Recommended Airocide Deployment for Avocado Room:

Note: Notice how we take the description of the each spec listed in the previous pages and amend it to the specific circumstance. Also, how the math is clearly laid out and descriptions of why a conclusion was reached. This is important in building credibility.

Full Spec:

In this circumstance; the entire volume of air in the Avocado Room is cycled through our Airocide NASA PCO reaction chamber at least one time per hour. This is our most rigorous spec which eliminates 99.9% of bacterial and fungal colonies and over 80% of Ethylene. This full spec is recommended for spaces where significant problems have been reported in the past and dramatic action is required; this may include, but is not limited to, complete product loss or impending regulatory action. The GCS-50 has an air flow rate of 2,000 CF/h (57 CM/h), and the GCS-100 has an air flow rate of 1,500 CF/h (43 CM/h). The GCS-100 has a lower flow rate due to a more dense catalyst chamber. The GCS-100 helps mitigate premature maturation due to the presence of Ethylene, and certain fungal strains. It's presence in the unit mix provides more catalyst density to mitigate air quality issues. Given the relatively high level of product loss (greater than 10%) this may be the most appropriate approach for this Avocado Room.

84,700 ÷ 2.0 ÷ 2,000 CF/h = 21 GCS-50s
84,700 ÷ 2.0 ÷ 1,500 CF/h = 28 GCS-100s

These units should be installed along the perimeter of the room where space is available, and there is no possibility of collision with either equipment or workers.

Intermediate Spec:

In this circumstance; the entire volume of air in the Avocado Room is cycled through our Airocide NASA PCO reaction chamber four times per day or once every six hours. This metric has been demonstrated to have success in such conditions. This spec is for those who have experienced moderate issues in the past, where air quality is perceived as a problem but loss is a relatively low proportion of overall output. Circumstances may include, but not be limited to, appearance of mold on fruits (or flowers) or cases or premature maturation. The GCS-50 has an air flow rate of 2,000 CF/h (57 CM/h), and the GCS-100 has an air flow rate of 1,500 CF/h (43 CM/h). The GCS-100 has a lower flow rate due to a more dense catalyst chamber. The GCS-100 helps mitigate premature maturation due to the presence of Ethylene, and certain fungal strains. It's presence in the unit mix provides more catalyst density to mitigate air quality issues. This spec should be considered given the information provided, but unit numbers may require revision at a later date because of large product loss quotient.

(84,700 ÷ 6.0) ÷ 2.0 ÷ 2,000 CF/h = 4 GCS-50s
(84,700 ÷ 6.0) ÷ 2.0 ÷ 1,500 CF/h = 5 GCS-100s

These units should be installed along the perimeter of the room where space is available, and there is no possibility of collision with either equipment or workers.

Basic Spec:

In this circumstance; the entire volume of air in the Avocado Room is cycled through our Airocide NASA PCO reaction chamber about one time per day. This spec is for spaces with very few issues and extremely rigorous cleaning protocols. Generally those who adopt the basic spec have not had indoor air quality issues, but perceive it to be a potential problem. This would be considered general insurance against future problems. The GCS-50 has an air flow rate of 2,000 CF/h (57 CM/h), and the GCS-100 has an air flow rate of 1,500 CF/h (43 CF/h). The GCS-100 has a lower flow rate due to a more dense catalyst chamber. The GCS-100 helps mitigate premature maturation due to the presence of Ethylene, and certain fungal strains. It's presence in the unit mix provides more catalyst density to mitigate air quality issues. Given the high degree of product loss; this spec would only be appropriate as a phased implementation of Airocide to take place over several months, quarters, or years to reach an Intermediate or Full Spec.

(84,700 ÷ 24) ÷ 2.0 ÷ 2,000 CF/h = 1 GCS-50
(84,700 ÷ 24) ÷ 2.0 ÷ 1,500 CF/h = 1 GCS-100

These units should be installed along the perimeter of the room where space is available, and there is no possibility of collision with either equipment or workers.