Big Dutchman

# TAKING ACTION FOR FUTURE GENERATIONS

## Air Cleaning System for CompoTower

# Process of an Air Scrubber

## 1. AIR INTAKE & DILUTION:

The scrubber draws in exhaust air from the CompoTower systems along with some surrounding air through ducts. The introduction of surrounding air helps dilute the exhaust air, which lowers the temperature and reduces the concentration of pollutants that need to be filtered, making the process more efficient.

## 2. INITIAL DUST SEPARATION:

The first step involves a filter package made of hexagonal plastic cells. As the air flows through this, it is sprayed with water from above to remove dust particles. This pre-cleaning stage helps reduce particulate matter in the air before it moves to the ammonia filtering process.

## 3. AMMONIA & ODOR SEPARATION:

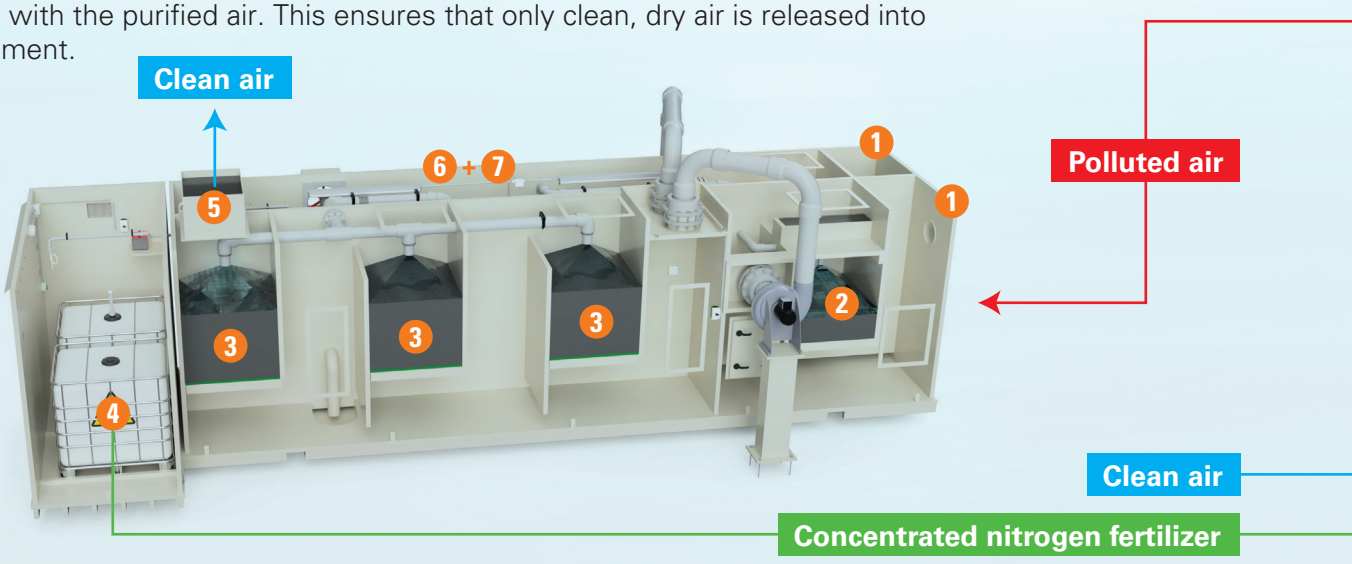
The air then passes through additional filter packages designed to capture ammonia. These filters are sprayed with a solution containing sulfuric acid, which binds to ammonia and odorous substances, neutralizing them. This step is crucial because ammonia, a key pollutant in livestock farming, can contribute to air pollution and environmental degradation if not properly treated.

## 4. PH CONTROL:

The pH level of the process water is monitored and automatically adjusted. Since sulfuric acid is used in the filtration, maintaining the proper pH ensures that the filtration process remains effective and that the water doesn't become too acidic.

## 5. DROPLET SEPARATOR & FINAL STAGE:

A droplet separator is placed at the top of the scrubber to prevent any excess liquid droplets from exiting the system with the purified air. This ensures that only clean, dry air is released into the environment.




## 6. WATER RECIRCULATION & MONITORING:

The water used in this filtration process is recirculated to reduce waste. A sensor constantly checks the conductivity of the process water, which indicates the nitrogen content (mainly ammonia). If the contamination reaches a certain threshold, the water is drained and replaced with fresh water. This ensures that the system continues to function efficiently without accumulating harmful chemicals.

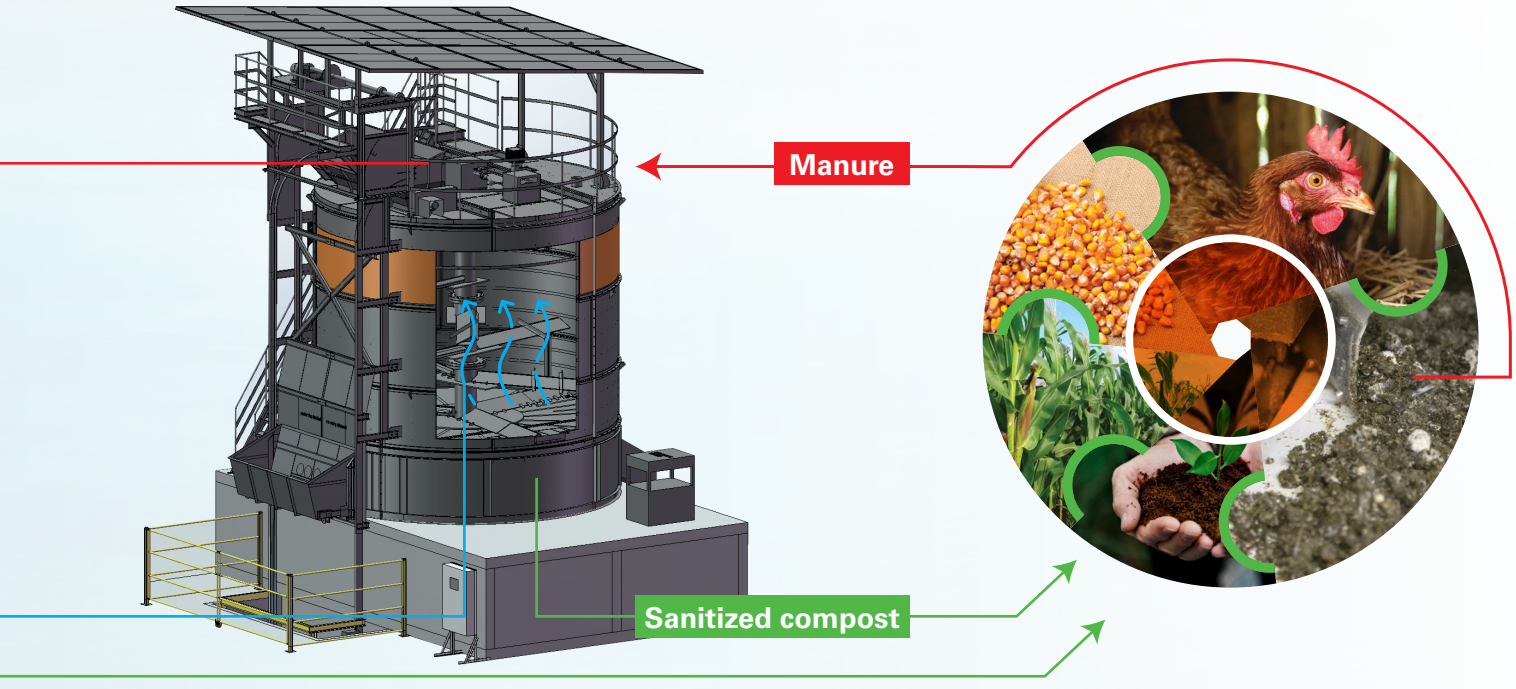
# Sustainable, Environmentally Friendly

## EMBRACE SUSTAINABLE FARMING WITH OUR COMPOSTING SOLUTIONS

As global agriculture shifts towards eco-friendly practices, managing livestock waste is crucial for sustainable farming. From this perspective, composting solutions are getting more and more popular. A CompoTower is an innovative, vertical composting system that required very little space and has a very short process time. It reduces waste volumes and prevents pollution in a very effective way and at the same time it creates a pathogen free, high value organic compost to enrich the soil.

## ADVANTAGES

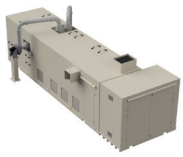
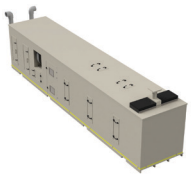
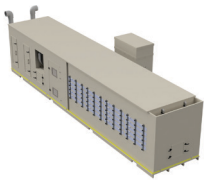
- High separation rates: more than 99% of ammonia and more than 90% of dust
- One scrubber for two CompoTower systems
- Complete system that is ready to be connected: low installation requirements and costs
- Fully automatic control of the scrubber
- Delivery in a 40-foot container
- Individual placement: connection through ducts of the correct size




## 7. CENTRALIZED CONTROL SYSTEM:

The entire process is controlled by a centralized system housed in a technical room, which includes automated monitoring and control of the scrubber's various functions. This reduces the need for manual intervention and makes it easier for farm operators to manage the system. Additionally, a designated room for the acid container is provided, so all components are integrated into one compact and easily accessible unit.

# Dimensioning

| Size of CompoTower in m³ | Maximum number of CompoTowers per airscrubber | | |
|---|---|---|---|
| | Standard | XL | Organic |
| **8** | 2 | - | - |
| **40** | 2 | - | - |
| **60** | 1 | 2 | 2 |
| **90** | 1 | 2 | 2 |
| **100** | 1 | 2 | 2 |
| **140** | - | 1 | 1 |
| **200** | - | 1 | 1 |
| **Footprint / Dimensions** | **Standard** | **XL** | **Organic** |
| |  |  |  |
| **L x W x H (mm)** | 10.500 x 2.300 x 3.000 | 11.900 x 2.300 x 3.250 | 11.900 x 4.700 x 3.250 |

Note: All variants are 40ft high cube container transportable.

| Size of Compotower in m³ | 8 m³ | 40 m³ | 60 m³ | 90 m³ | 100 m³ | 140 m³ | 200 m³ |
|---|---|---|---|---|---|---|---|
| **Air flow from compotower (m³/h)** | 330 | 960 | 1.440 | 2.550 | 2.550 | 3.330 | 4.440 |
| **Air flow through scrubber (m³/h)** | 990 | 2.880 | 4.320 | 7.650 – 11.000* | 7.650 – 11.000* | 9.990 | 11.000 |
| **Electrical consumption (kWh / year)** | 37.180 – 39.360* | 41.330 – 47.660* | 44.500 – 54.000* | 54.000 – 110.380* | 54.000 – 110.380* | 105.560 | 110.380 |
| **Sulfuric acid usage (kg/year)** | 4.226 | 12.679 | 19.254 | 34.282 | 34.282 | 45.083 | 60.110 |
| **Citric acid usage (organic, kg/year)** | 7.043 | 21.132 | 32.090 | 57.137 | 57.137 | 75.138 | 100.183 |
| **Waste water (m³/year)** | 24 | 73 | 111 | 198 | 198 | 261 | 347 |

Note: 1. Figures are mentioned per compotower per size. *for 2 compotowers per scrubber.
2. Max. ammonia concentration: 3000 ppm
3. Average ammonia concentration: 836 ppm
4. Minimum ammonia reduction: 95%
5. Waste water: Max N-concentration = 50 kg N/ton

Big Dutchman North America
3900 John F. Donnelly Dr. | Holland, MI 49424
Tel. +1-616-582-4000 | Fax +1-616-392-6188
info@bigdutchmanusa.com | **WWW.BIGDUTCHMANUSA.COM**

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Technical details subject to change. 05-2025