

# Custom Insectary Room



Filtration testing with laser aerosol particle size spectrometer

## Specifications

<b>Temperature Range</b>	16-32°C lights ON/OFF
<b>Humidity Range</b>	40-80% RH lights ON/OFF
<b>Electrical Service</b>	120/208-3-60Hz-4 wire, plus ground
<b>Room Dimension</b>	6' 10"W x 7' 1"D x 7' 6"H (2080mmW x 2160mmD x 2285mmH)
<b>Filtration</b>	3 stages circulating filtration: pre-filters, pleated filters, HEPA filters, plus fresh-air & exhaust filters
<b>Lighting</b>	Visibility lighting by fluorescent lamps

## Overview

Adult Lepidoptera - commonly known as moths, butterflies, or simply "leps" - are important pollinators of major food crops. Many types of lep larva or caterpillars, however, injure valuable plants, including grains, sugar beets and sugarcane, cotton, tobacco, some root crops and leaf crops, many fruits, as well as timber and shade trees. To rear leps for research, our client required a custom engineered room that could provide extremely stable, healthy conditions in a controlled environment.

## Collaboration

Convion worked closely with the client to understand the intricacies of rearing leps indoors. For example, the scales that produce the extraordinary range of colors and patterns of the lep's wings are corrosive and constantly shed into the surrounding environment. This presents unique challenges for a tightly controlled, highly contained insectary. Uncontrolled accumulation of the scales would make the rearing space uninhabitable for leps. Prevention tactics include the use of stainless steel screens and coated evaporator coils.

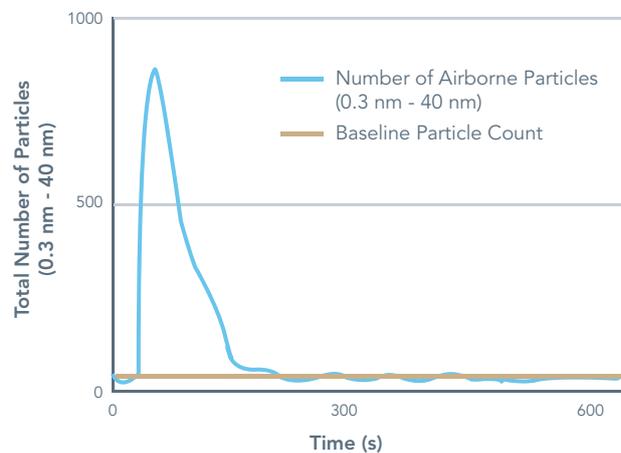
Working with the client, Convion designed a unique filtration system that was easy to clean and allowed researchers to focus their efforts on their experiments without interference from frequent maintenance and costly downtime.

## Solution

The customized chamber featured horizontal airflow at uniform temperature and humidity to provide a healthy,

stable environment for the insects. The design incorporated a robust three-stage filtration system to remove the scales shed by the leps from the rearing area. The first stage incorporated an easy-to-remove woven filter on the back plenum to catch larger particles. Snap locks granted quick access and convenient replacing of this filter. The latter two stages eliminated the smallest particles from the air before recirculation with a bank of pleated and true HEPA filters.

Convion developed a novel testing methodology to validate the environmental stability of the chamber and, more importantly, the filtration system's ability to remove the scales from the room. A laser spectrometer was used to measure the rate at which scale-sized particles could be removed from the environment by the filtration system. The testing validated that the chamber returned to the required baseline level for airborne particles within minutes of introducing sample particles into the rearing area.





## About Conviron

Established in 1964, Conviron is the world's leading supplier of controlled environment systems for plant science and agricultural biotechnology research. From small reach-in chambers to full-scale growth houses, and custom solutions – Conviron systems can be found in small start-up facilities to many of the world's largest and most prestigious research institutions in over 90 countries.

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