About Allentown
Corporate Headquarters

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- 10 hectacre campus
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- 18,500 square meters of manufacturing
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- On site simulation animal holding room
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Manufacturing Automation

- 2D and 3D CAD Design
- CNC punch presses
- Carbon Dioxide Lasers
- 6-axis weld robots
- CNC grid welding stations
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- 500 metric tons thermoplastic /year
- 2,500 IVCs produced/year
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- Manufacturers of
  - IVCs
  - Biological Work Stations
  - Plastic Caging
  - Kennels
  - Primate Caging
  - Rabbit Caging
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Experience

- 46 years in the field
- 26 years manufacturing IVC systems
- 20,000+ IVC systems world-wide
- Leading supplier of Auto-water IVCs
- Leading supplier of HVAC-integrated IVCs
- Extensive experience with robotic cage handling
Leadership

- Innovation
  - Joint Development of Automatic Watering with Edstrom
  - Pioneered use of Udel plastic
  - Pioneered “Smart” Blower Technology
  - Pioneered ECOFLOW Blower
  - Wi-Communication
  - Sensus – Vantage - Wivarium
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Services

- Facility Planning
Services

- Facility Planning
- Installation
Services

- Facility Planning
- Installation
- Training
Services

- Facility Planning
- Installation
- Training
- Preventative Maintenance
  - Certification
  - HEPA Replacement
Services

- Facility Planning
- Installation
- Training
- Preventative Maintenance
- HVAC Integration
Staff

- 300 Employees
- 25 Engineers
- Global Sales Force
With Subsidiaries and
Distributor
Subsidiaries Locations

- Allentown, New Jersey, USA
  - Corporate Headquarters
  - Manufacturing
- Reading, UK
  - Sales & Service
  - Distribution Center
- LePortel, France
  - Sales & Service
  - Distribution Center
- Milan, Italy
  - Sales & Service
- Frankfurt Germany
  - Sales & Service
World Wide Distribution

- Japan
- Taiwan
- China
- Singapore
- Thailand
- Korea
- Netherlands
- Australia
- Israel
- Spain
- Brazil
- India
Clientele

- Pharmaceuticals
  - Astra-Zeneca
  - Glaxo-Smith Klein
  - Merck
  - Novartis
  - Pfizer
  - Sanofi
  - Schering-Plough

- Biotechnology
  - Amgen
  - Clintrials
  - DNAX
  - Genentech
  - Therrimune
Clientele

- University
  - Karolinska
  - Univ. Zurich
  - Imperial College
  - Cornell
  - Columbia
  - Johns Hopkins
  - Harvard
  - Yale

- Government
  - NIH
  - CDC
  - USAMRIID
  - NCI
  - USDA
  - Riken (Japan)
  - Veterans Administration
Environmental and microbiological aspects of animal housing from the beginning to the IVCs
Animal Research Concerns
Pioneers

- **Dr. Nathan Brewer**
  
  Introduction to Lab Science in the mid-20’s at Michigan State
  
  “Guinea pigs kept in abandon horse stalls or on the floor. Rats and mice were kept on homemade wire cages or in glass jars”...

- **Dr. Henry Foster** – addresses facilities up to the late 1940’s
  
  “The common denominators the were most frequently seen in the majority of early facilities were wooden structures with wood and sometimes concrete floors, screened windows, doors for ventilation and wooden cages and racks to house animals.”
Pioneers

- W.T.S Thorp NIH Facility 1954
  Advent of contemporary research.
  “Significant design features include the clean and dirty corridor concept, indoor-outdoor dog runs, modern facilities devoted to aspetic animal surgery and year-round air conditioning and ventilation of 10-12 air changes per hour with no recirculation”
The Laboratory Animal Facility

• Animal Care Panel (AALAS) founded 1950

• 14 years after AALAS

• Facilities Standards Committee
THE GUIDE

- *Guide for Laboratory Animal Facilities and Care*
- First published in 1963
- Revised 1965, 1968

- 1972 – *Guide For the Care and Use of Laboratory Animals*
Basic Cage Guidelines 1963

- Adequate Space
- Easy Access to Food and Water
- Meeting the Biological Need
Cage Materials

- Wood
- Galvanized
- Chrome Plated, Nickel Plated
- Aluminum
- Stainless Steel
- Plastics
Cage Design

- 1941-John Bittner - Duplex plywood mouse cage
Shoe Box Cage
Cage Types

Sanitary Animal Cages

Norwich RK

A low cost sanitary cage for small animals. Unmatched for Vitamin work at low maintenance cost. The frame is welded to the cage. There are no crevices or pockets where vermin and dirt can gather. NORWICH hot dip galvanizing of all parts after fabrication means smooth, sanitary surfaces. Top is hinged and has a spring catch. Easily attended, solidly constructed, adaptable to many uses in the modern laboratory.

DIMENSIONS: Diameter, 9½” — Height, 9”

Norwich RK-T

Holds 30 NORWICH RK Cages. Designed to give the modern laboratory years of efficient sanitary service. Simple to clean. Removable pans under the wire mesh trays assure exceptional sanitation. Trays are made rust-resistant by NORWICH hot dip galvanizing process. Paper roll brackets on one end. Solid, all-welded angle and channel iron frame which will not warp out of shape. Truck is mounted on ball-bearing swivel casters with noiseless rubber tread wheels.

DIMENSIONS: 62” x 21” x 51” High

Small Animal Cage

CAGE TRUCK

RK-T — 60” Overall Height
Suspended Cage Systems
Pens and Colony Cages

Aluminum
Stainless Steel
Squeeze Cage

- Primate
- Socialization
CAGE DIMENSIONS (inside)
33" wide x 60" high x 36" deep
Height of bench above false floor - 20"
NOTE: Cage body is available in opaque green interior or may be translucent to admit additional light. There is a slight additional cost for translucent cages.
Metabolism Cage

- Collection of Urine and Feces
Introduction to Plastics

- 1953 first plastic cage
- Thoren Caging
- Maryland Plastics
Shoe Box Cage
Suspended Cage Systems
Plastics, Plastics, Plastics

- Polystyrene - 1953
- Polypropylene - 1960
- Polycarbonate - 1962
- High Temp Polycarbonate - 1968
- Polyetherimide - 1988
- Polysulfone - 1994
- Polyphenylsulfone - 1995
Specific Housing for Containment /Isolation

- Dr. Liz Craft – 1958 introduced the Filter at the cage level
Containment/Isolation
SMALL ANIMAL ISOLATION CAGE

Model I-100
Static Isolation-Advantages

- Isolate at Cage Level
- Reduce Cross Contamination
- Nudes, SCID, Transgenic, Knockout, etc.
- Reduce Allergens, Bedding, Debris
Static Isolation - Disadvantages

- Inadequate Cage Ventilation
- Poor Micro Environment
- Vapor Barrier
- Ammonia & CO₂ Levels
- Husbandry Cost
Individually Ventilated Micro-Isolation

To eliminate this disadvantages, in Mid 1960’s Edwin P. Les Developed the Hollow Shelf Design.

First company that produced the ventilate cage was Thoren Caging 1978 for Jackson Labs
Air Delivery

PIV TYPE IIA
Air Delivery
Air Delivery
EcoFlow blower
Platform Design
Construction
Various cage designs, rack configurations
Hand Free "Flex Lock"
Sealed Air Flow
Plenums
Air Delivery

- Supply Module
- Sealed Plenum System
- Cage Air Delivery
- Airflow at Bedding Level
- Exhaust with Convection
Benefits of Individually Ventilated Cages

Improved Welfare

- Reducing the levels of CO$_2$ and NH$_3$ build up in the cage and protecting the animals from particulate and micro-organism contact.
- Extended Cage Change Periods; reduces impact and stress on animals and micro environment
- Better management of Microbiological Health Status
- Proven Improved breeding performance observed with various colonies including Transgenic Lines
- Reduced allergens in the room, good for the technicians that work in the facility
Benefits of Individually Ventilated Cages

IVC Rack Systems

- IVC’s offer improved protection by delivering air by means of fans/blowers through HEPA filters and into the base of the cage (Allentown) thus delivering a much more “Controlled” Environment within the cage.

- IVC Units can be operated in either positive pressure to protect the animals in the cage or negative to protect external environment from animals and airborne allergies.

- Ability to control the environment at the cage level instead of the room, keeping the temperature and humidity in the cage balanced
Benefits of Individually Ventilated Cages

Resource saving

- Energy Saving;
- *Allentown racks are usually set to operate at 50ACH*
- Low Energy Consumption Blowers
- Increased stocking density in rooms
- Extended Cage Change Periods;
  - Reduced Staff Costs
  - Reduced bedding costs
  - Reduced Energy Costs – Cage Wash/Sterilisation Process
Biocontainment
Cage Fittings For Connecting to Air Plenum Apertures
Airflow Design Path
Detail Of Air Plenum Apertures
Thank You!

Q&A

Allentown

ITALIA