CAGE EQUIPMENT

# LAYING HEN MANAGEMENT

TEXHA®

# Cage equipment for laying hen farming

**Cage equipment for laying hen farming is currently considered to be the most efficient industrial chicken egg production technology. This solution allows housing of the large poultry flock at the limited area and supports production of the consistent and predictable high-quality egg quantities..**

**Advantages of laying hen management cage system:**

- Full automation of drinking, feeding, litter removal and egg collection process
- Optimal microclimate conditions at the poultry facility – ventilation, hearing, air cooling managament
- Energy efficient lighting system
- Minimal service personnel number required
- Computerized feed consumption and water consumption control
- Veterinary supervision over the flock health status

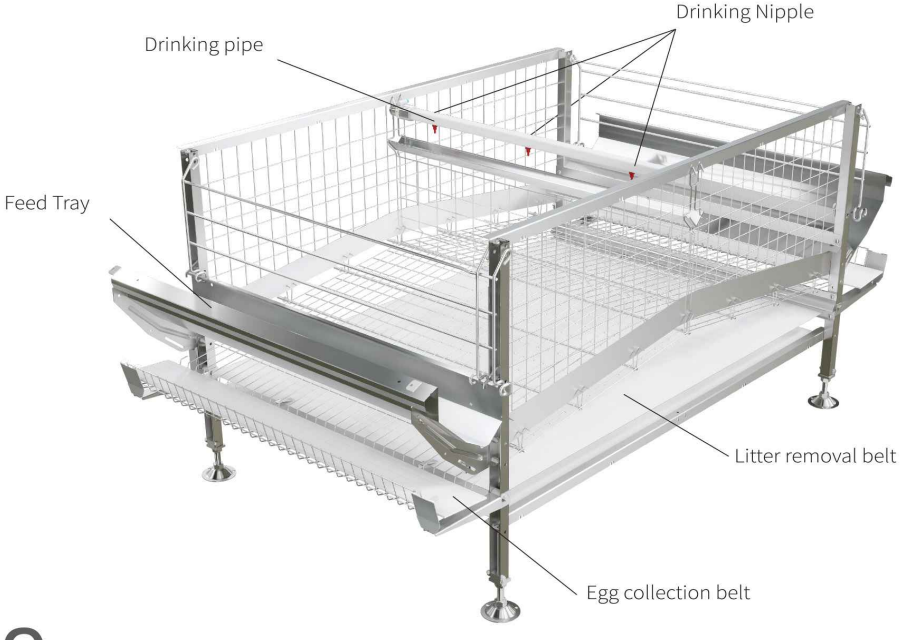
The chicken egg production and sale industry is consistently growing and developing from year to year. The demand for eggs keeps increasing, so the competition in the industry is on the rise. Therefore, the use of the new state-of-art equipment and upgrading of the existing facilities is the only way to maintain the competitive edge and become a successful player on the market.

# Multi-Tier Battery Cages

TEXHA is focused on design, development, manufacturing and installation of the multi-tier battery cages for laying hen. We offer various battery cage configurations between 3 and 12 tiers high. The solution comes with the in-built feeding, drinking, egg collection and litter removal systems integrated into every tier. All systems are fully automated and can be operated from a single control center.

The battery cage structures are manufactured from high-quality stainless steel with corrosion-resistant coating. The parts and mechanisms under load are made of hardened steel. Wear-resistant plastic elements are used only, where use of steel is unfeasible. The equipment is designed for a long service life even in aggressive environments. It is capable of withstanding the hot washing and exposure to detergent and disinfectant agents.

Mesh partitions provide free circulation of air in the cage modules, which positively affects the microclimate at the poultry facility and the health status of the flock. The special door geometry increases the cage module space and facilitates bird access to the feed.




| Characteristics | Standard | Premium | Universal | Universal+ |
|---|---|---|---|---|
| Tier number | 3–12 | 3–12 | 3–12 | 3–12 |
| Number of birds per cage* | 11 | 9 | 10 | 11 |
| Cage width, mm | 770 | 735 | 735 | 770 |
| Cage depth, mm | 575 | 525 | 625 | 625 |
| Inter-tier distance, mm | 518 | 518 | 518 | 568 |
| Feeding frontline, mm/bird. | 70 | 81,7 | 73,5 | 70 |
| Cage area, sq.m | 0,443 | 0,386 | 0,459 | 0,482 |
| Area per bird at the door line, sq. cm | 413 | 441 | 470 | 448 |
| Area per bird at the floor line, sq. cm | 403 | 429 | 459 | 438 |
| Floor mesh wire diameter, mm | 2 | 2 | 2 | 2 |
| Floor mesh incline angle | 7° | 7° | 7° | 7° |

*May be adjusted depending on the poultry cross breed.

# Battery Cage for Laying Hens with Mobile Feed Distribution Hopper and Lift-Based Egg Collection System



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# EggStream Egg Collection System

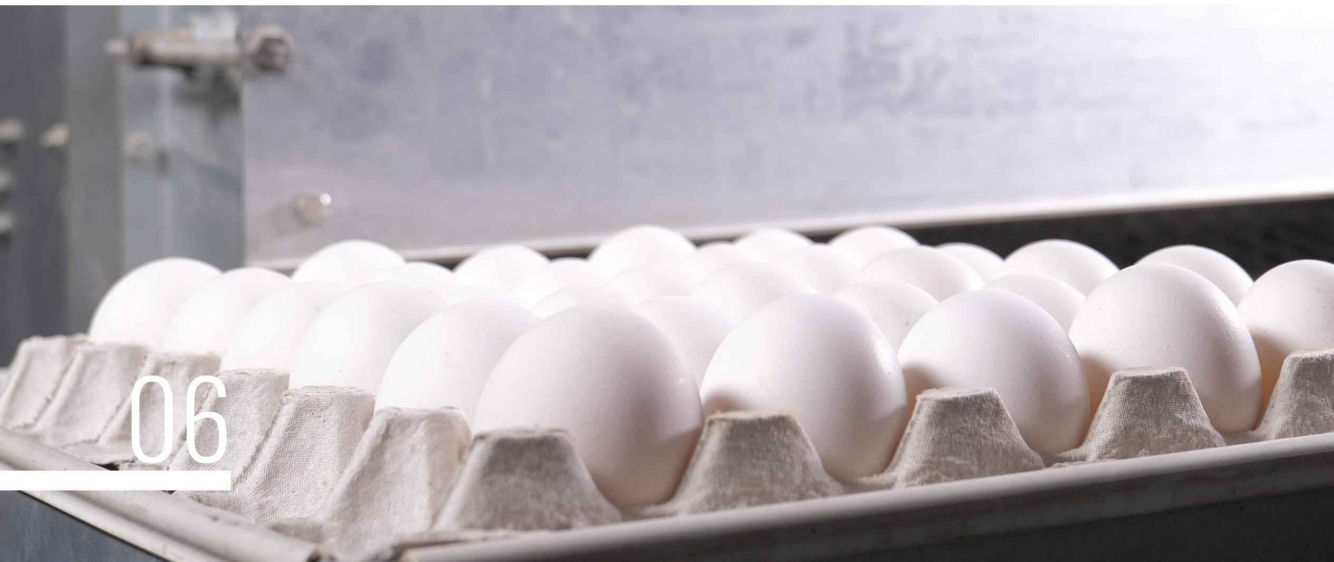
Egg collection system consists of a lengthwise egg collection belt, a lift or an elevator and a rod conveyor. A range of corners, hinges and rod conveyor intermediate drive stations enables assembly of the longer egg handling lines to collect the eggs from several aviaries and carry them to the egg warehouse or to the grading shop. The quality control inspections are performed using the electronic egg systems and computerized egg integrity detectors.

## Lift

The lift-based egg collection systems can be activated simultaneously for all batteries and operate from the top tier downwards. The lengthwise egg collection belt carries the eggs to the inclined conveyor, which further handles the product to the accumulation or grading table. Then the system descends to the next tier, and the process is repeated in a similar manner. The lift-based egg collection system are perfectly suitable for the poultry plants with the relatively small flock size, although its unfeasible to use this solution at the larger facilities

## Elevator

In this solution, an elevator is installed at each battery cage to collect the eggs simultaneously from all tiers. The elevator carries the eggs from the egg collection belt to the rod conveyor, which collects the eggs from all batteries and handles them to the egg warehouse or the grading table. The system may operate in a continuous mode and handle the consistent flow of eggs or may switch on and off according to the preset schedule. This solution is perfectly suitable for poultry facilities with larger flock and battery cages between 5 and 12 tiers high, also it is also compatible with smaller facilities and 3-5-tier-high batteries.



## Egg collection system benefits:

- High egg collection speed
- Low egg damage rate
- Egg intactness during all collection and handling stages
- Egg cleanness
- No stress for poultry
- Fully automated egg collection process
- Adjustable system operation speed rate
- Compatibility with grading, packing and other equipment
- Use of smart eggs for system testing

# Feeding and Drinking Systems

The feeding system is intended to supply each bird in the aviary with sufficient quantities of feed. There are two types of the feeding systems: hopper-based feed distribution systems and chain-based feed distribution systems. The hopper-based system consists of a lengthwise feed tray and mobile feed distribution gutter with a dispenser. The hopper filled with feed moves along the battery row and evenly distributes the feed over the gutter length. For longer battery rows, the feeding lines may also include intermediate hoppers to refill the empty moving unit.

Chain-based systems use the chain conveyor inside the closed-circuit lengthwise gutter to distribute the feed over the entire battery tier. The key advantage of the chain-based system is the higher gutter filling rate, since the chain conveyor may move with the speed of up to 32 m/min. Also, unlike the hopper-based systems, the chain mechanism may be activated separately for each individual tier.

The drinking system consists of a filter, a medicator, the water consumption sensors and the water supply lines running through to the cages. Each row has a single drinking line with the nipple drinkers and the lengthwise plastic drop catchers. In every cage, there are 3 vertical-action nipple drinkers, which are used to consistently supply the poultry with clean potable water.

Where applicable, the medicator unit can be used to supplement the water with medicines, vaccines, nutrients and other necessary water-soluble additives.

# Litter Removal System

BThe cages are connected to the litter removal system, which regularly and efficiently remove litter from the aviary. The polypropylene litter removal belt produced at our own manufacturing site runs at each tier beneath the mesh cage floor. The drive stations actuate the belt movement, while the plastic scrapers clean its surface from litter and dust. Then, the crosswise conveyor carries the litter away from the aviary, where it can be loaded into a vehicle for further disposal.

The process is fully automated and does not require any staff participation. The control computer activates the litter removal process according to the pre-set schedule, or the system may be programmed to operate in a continuous mode. Regular litter removal reduces the ammonia concentration in the aviary, helps to maintain high hygienic standards and prevents spread of diseases, infections and parasites.

The polypropylene belt is manufactured by TEXHA using only high-quality virgin raw-materials. The product has low adhesion, high wear-resistance and durability properties.

TEXHA also offers a flame-retardant belt option.

## Belt specifications

| | |
|---|---|
| Belt thickness | 1 – 1,2 mm |
| Belt width | 500 – 2400 mm |
| Roll length | up to 800 m |

## Litter removal belt characteristics:

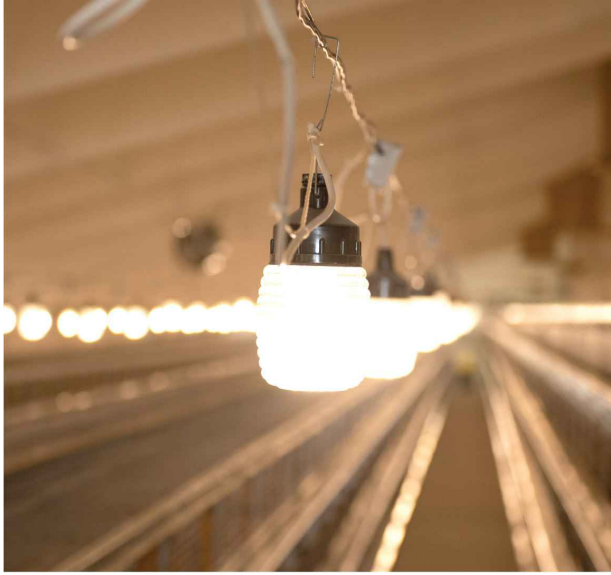
- Resistant to aggressive environments, chemical compounds, washing and disinfection agents
- Capable of withstanding high tensile stress
- Recommended temperature conditions: between 10 and 60°C
- Smooth surface with low adhesion properties
- Easy-to-clean, suitable for hot washing and disinfection

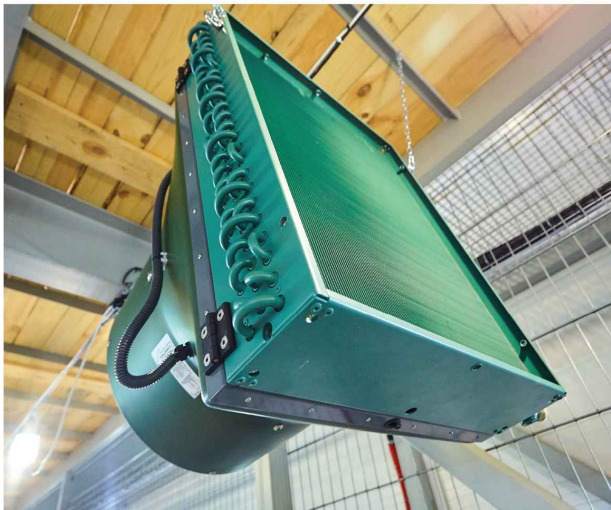
# Microclimate and Lighting System

Health and productivity of the flock depend significantly on the temperature, humidity and lighting conditions at the aviary. The optimal microclimate conditions are essential to achieve the maximum egg laying rate and high egg quality, which affects the business performance and profitability in general.

## The microclimate control system configuration depends on the several factors:

- Climatic zone, where the facility is located
- Building characteristics
- Specific facility needs and poultry cross breed
- Equipment quantity and flock size





In the first instance, the microclimate control system should provide a good air exchange at the facility without stagnant zones and unventilated areas. Therefore, a ventilation system for continuous air circulation is installed at the poultry facility. Powerful exhaust fans remove the spent air, while the even fresh air inflow is provided by the fresh air inlet valve system. Where applicable, additional acceleration fans for air flow diversion can be installed to achieve the even air circulation between battery cage rows and tiers.

The excess heat is removed from the facility together with the spent air. For cooling purposes, evaporative coolers may be used to humidify and cool the air to optimal values. For heating during the cold season, heat generators or heating fans may be installed.

The temperature and air composition sensors are installed at the aviary. The data from sensors are used as an input for the climate control system, which automatically controls the fans and adjusts the microclimate conditions according to the preset program.

Daily lighting cycle and daylight period duration are controlled by the Sunrise-Sunset system. Lighting parameters are set programmatically and controlled automatically. The lighting parameters can be programmed and controlled automatically. Furthermore, the lighting system enables smooth switching over the duration of several minutes to simulate the natural daily cycle. The microclimate and lighting systems create similar comfortable housing conditions for the birds all year round.

YouTube video

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