
MAXITECH
LIVE BIRD HANDLING SYSTEMS

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TRUE ANIMAL WELFARE


SCANIA
Agile

The Future of Live Bird Handling

The theme of Animal Welfare is a challenge for the industry, because it is as a necessary behavior, which does not have a clear and accountable payback.

Any damage, which occurs to the birds in the early stages, like farming, catching, transporting, plant handling and stunning, **becomes permanent**.

Top Productivity and Top Quality meet are the results of a constant care for our birds, in order to avoid they get injured or they suffer.

Our system is taking care of **Birds Welfare**, Operator Welfare, Ergonomics, **Hygiene**, Information, Flexibility, **Total Cost of Ownership** and Yield.

Our promise is to transform True Animal Welfare in a regular daily practice which will help our customers increase Productivity and Quality of the final product.

Demand for high productivity comes from the need to supply increasing amounts of meat to further processing facilities.
Bigger birds, processed through high speed lines, provide important savings in processing costs. This has a significant impact on the methods and the equipment used for handling live birds.

High speed is a common keyword in our industry, and the challenge is to achieve it, while maintaining or exceeding a high standard of product care and respecting present and future regulations.

This is the base for **our newly developed and already running** Live Bird Handling System: Maxiload® Twin.

Maxiload® Twin: The new Module

At the heart of the System is a new module (patent filed) that **can be loaded** at the farm **from four positions** at the same time.

Moreover, unlike other drawer systems, the birds are loaded into the drawers **from the bottom to the top of the module** . Once the first level is completed, the operator pulls the empty drawer above in order to protect the birds underneath and he starts the loading of the next level: in that way, **the operator always moves empty drawers**.

The drawer big size, the possibility to place the module close to the gathering point and the fact that only empty drawers are moved, **minimize the bird damages** that usually happen at the barn.
Maxiload® Twin frame is made of several parts bolted together.

That allows a low cost maintenance since: in case of a damaged frame part, you may simply order the replacement piece and easily exchange it with the damaged one. Therefore, with the use of a spanner, you get a frame like a new one again.

Maxiload® Twin: the Range of Modules

Maxiload Twin module is available in three versions: suitable for the transport of

· **Chickens,**

· **Turkeys (2 different sizes)**

· **Ducks and Geese**

Module for Turkeys

Module for Chickens

Module for Ducks and Geese

Modules for Chickens

The module for Chickens is available in:

- **Single Stack**

- **Double Stack**

It each configuration, it is available in Four and Five Tiers, for an optimal Truck loading. Moreover, the frame can be built in either Galvanised Steel or Stainless Steel.

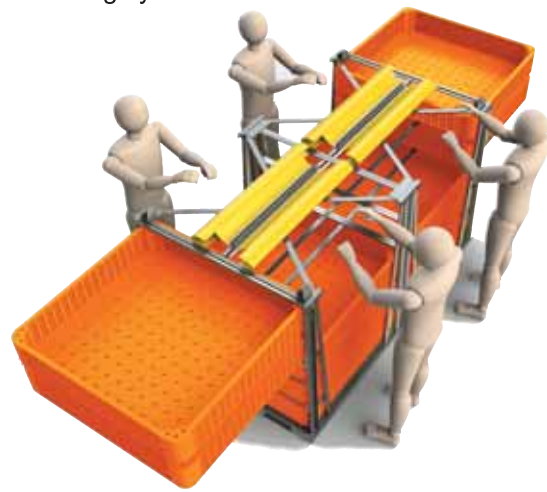
The drawers are well kept within the structure, thanks to a door, available on the open sides.

With one gesture, the operator can easily lift the door and pull out the drawers.

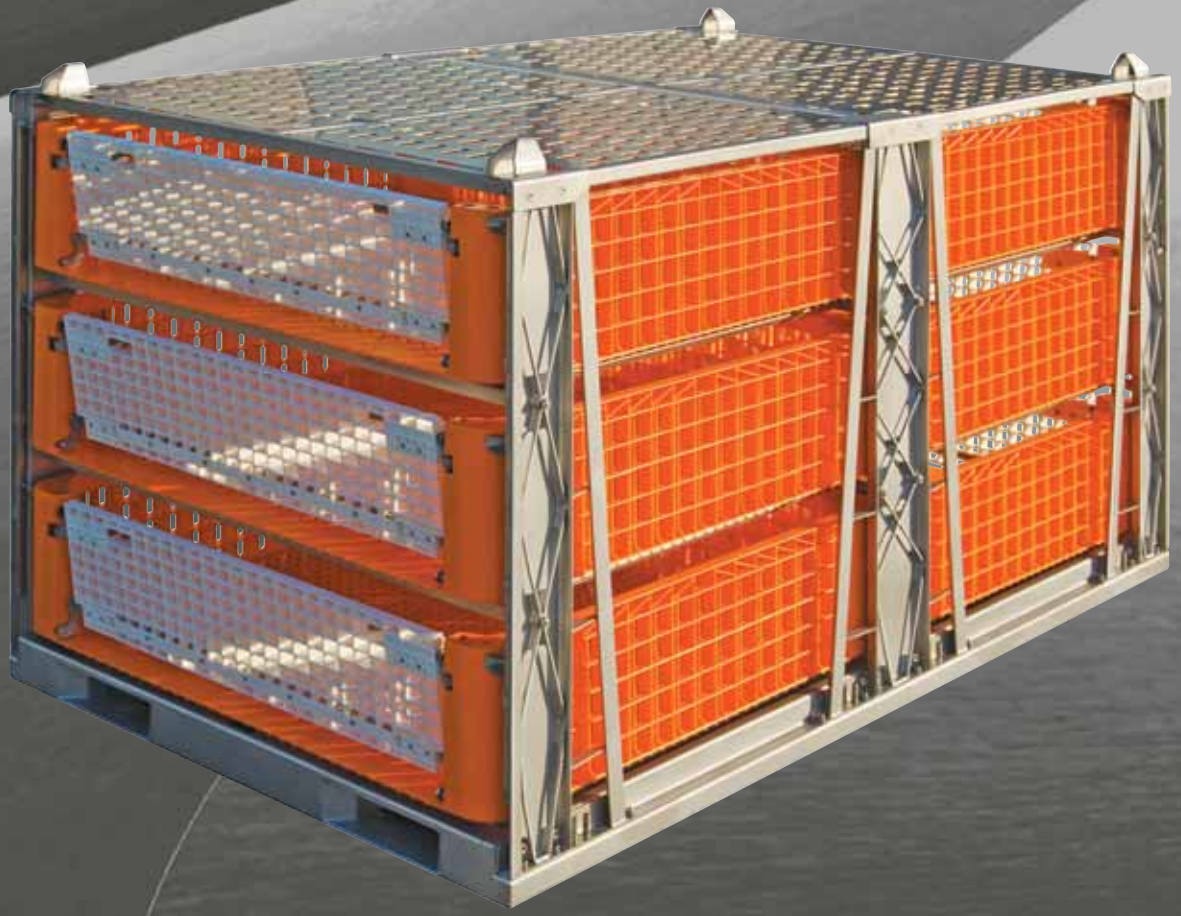
Maxiload Twin increases the efficiency during the transport from the farm to the slaughter house, since it allows the transport of more birds per truck.

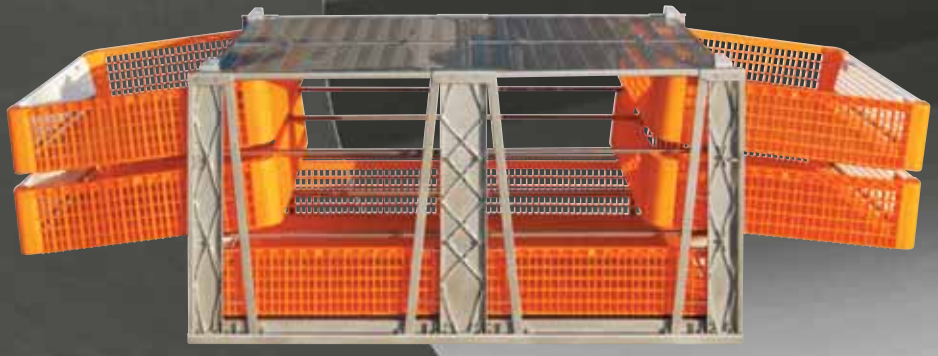
That means less trucks for the same amount of birds. The birds' ventilation during the transport was engineered in order to give less Dead birds on Arrival compared with other handling systems.

Single Stack Module



Double Stack Module





Modules for Turkeys, Ducks and Geese

The modules for Turkeys, Ducks and Geese are available in

- **Single Stack**
- **Double Stack**

It each configuration, they are available in three and four Tiers, for an optimal Truck loading.

Moreover, the frame can be built in either Galvanised Steel or Stainless Steel.

No drawer is moved during the loading: they remain always inside the module.

Single Stack Module

Double Stack Module

The biggest Drawers in the World

Maxiload Twin Drawers are suitable to transport:

• **Chickens**
available without a door and in 220mm height and 240mm head space

• **Ducks and Geese**
available with a door and in 260 mm height that allows 270mm head space

• **Turkeys**
available in two sizes, 327mm and 380mm and both with a door for birds' loading.

Drawer for Ducks and Geese (260mm height)

Drawer Turkeys (327mm height)

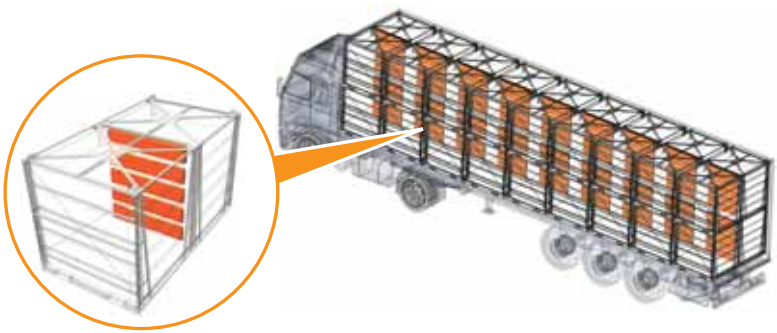
Drawer for Chicken (220mm height)

Drawer Turkeys (380mm height)

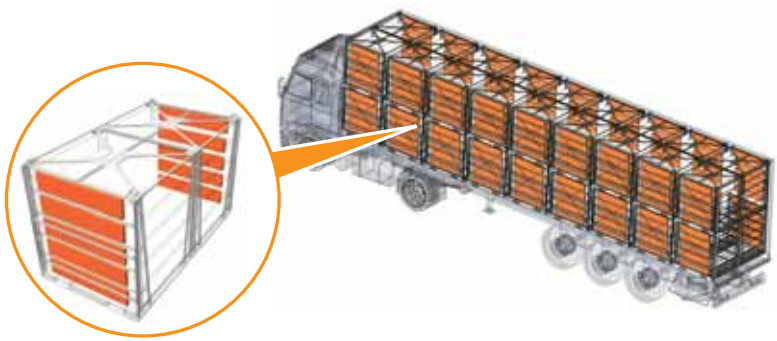

MAN

Summer and Winter Drawer Configuration

Protection of birds during transport is a known problem. In 2009 Maxitech designed an easy drawer solution, later patented (EP 2 456 299 B1). Each drawer has one solid, or closed side.



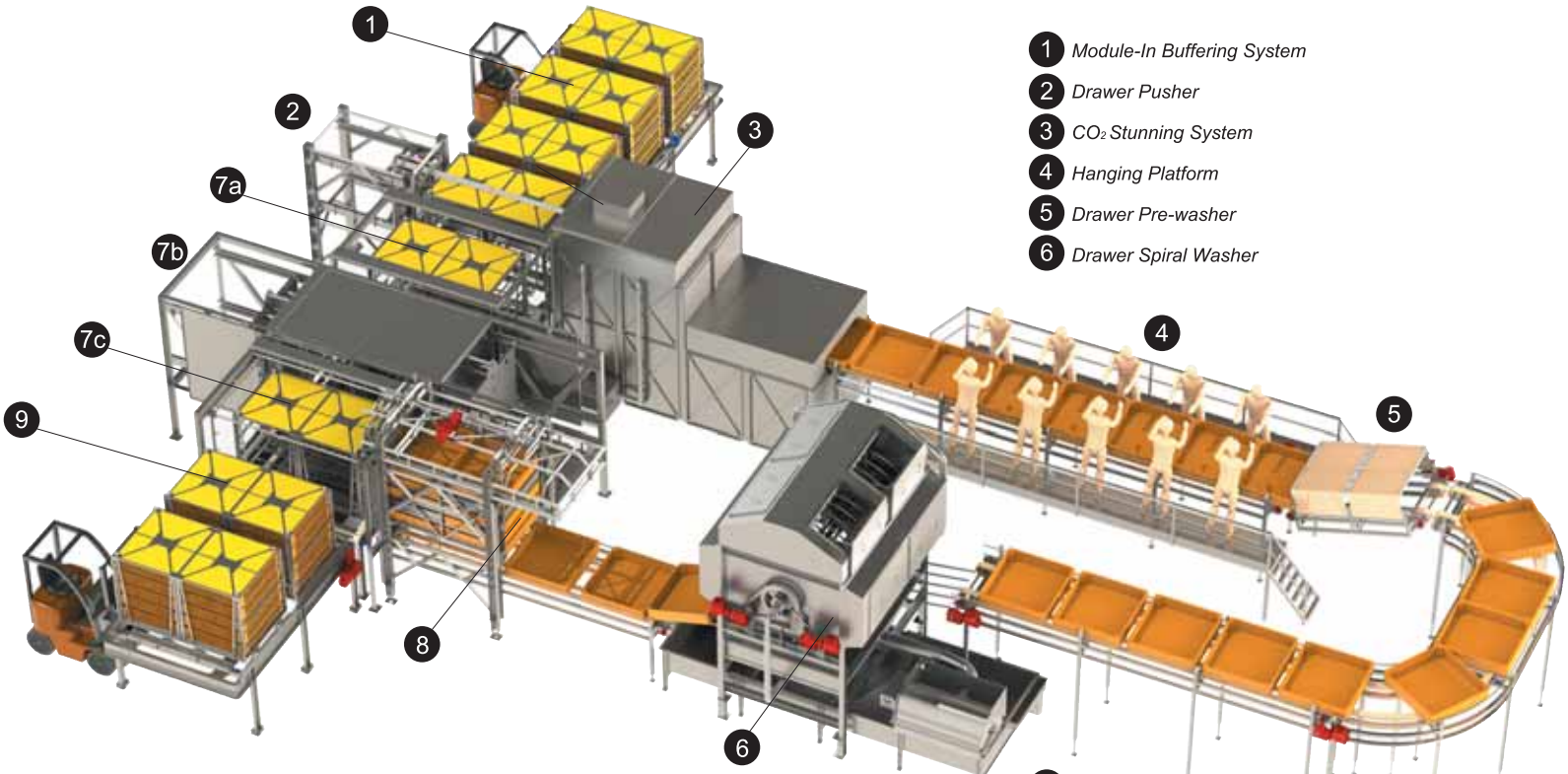
In summer, the same drawers are rotated by 180°: the closed side is now placed inside the truck and the birds can have maximum ventilation.



In winter, or **when a cold temperature is expected**, each drawer is placed in the module in order to have its closed side on the outside of the truck. In this way, birds are protected from the bad weather or the low temperatures, while still having a correct ventilation guaranteed by the vertical gaps between two drawers.

The main advantage of this system is in Spring and Autumn. In these seasons, early in the day, the “winter” configuration may be needed, while the “summer” configuration may be required during the day central hours. Depending upon the weather situation at the moment the empty modules are preparared on the line, it can be decided wheather to set the closed side on the outside or on the inside of the module.

The Live Bird Handling System



1 *Module-In Buffering System*
2 *Drawer Pusher*
3 *CO_2 Stunning System*
4 *Hanging Platform*
5 *Drawer Pre-washer*
6 *Drawer Spiral Washer*

7a Frame Pre-Washer
7b Frame Washer
7c Module Disinfection
8 Drawer Stacker
9 Module-Out Buffering System

The Live Bird Handling System

Once at the production plant, Maxiload® Twin modules are placed on the Receiving System: a newly **high tech and robust** live bird handling system.

Thanks to a complete new design Maxiload Twin is the most compact receiving system on the market today: the **reduced footprint** is one of its major achievements.

Maxiload twin allows different ways of arranging the line. Moreover, for a **high efficiency**, the modules can also be handled as superposed, again in order to reach high speeds.

Maxiload® Twin can reach a speed of **12 drawers per minute**. Supposing an average bird live weight of 1,6 kg, that means about 38.000 birds per hours.

It is the fastest system on the market for the next few years, without compromises on any of the important aspects of Live Bird Handling, like **Birds Welfare**, Operator Ergonomics, **Hygiene**, and especially Yield and **Total Cost of Ownership**.

In essence, Maxiload® Twin allows **Top speed** with **full control of** all key variables associated with the Live Bird Handling process.

The Spiral Drawer Washer

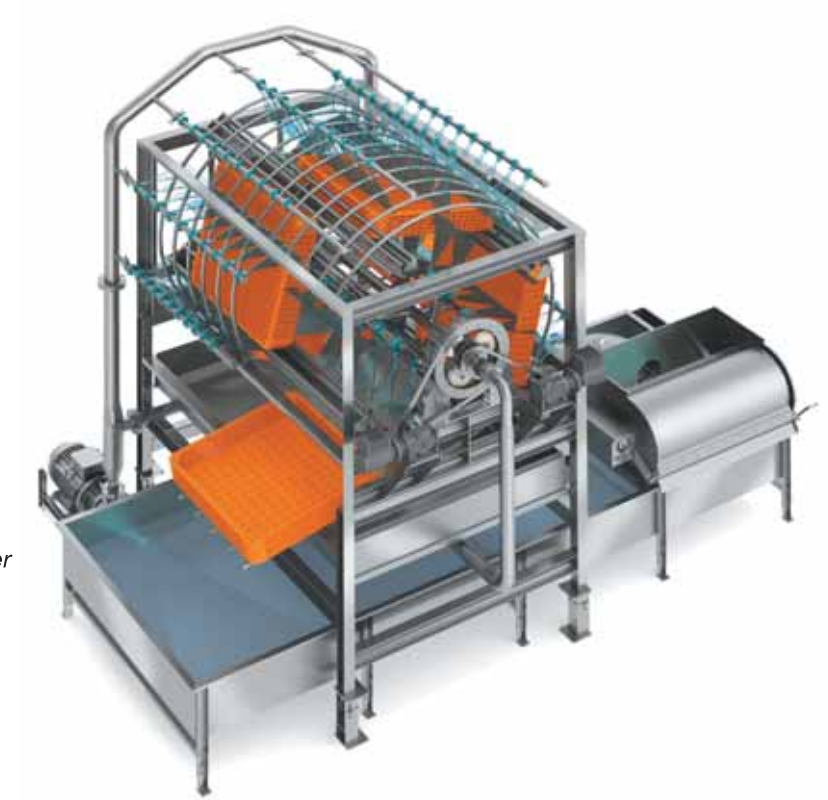
The Spiral Drawer Washer features a very compact design, resulting in a small footprint and in the positive effect of a repeated wash at very high volumes of water of all the surfaces of the drawers.

A separated prewashing section, at high pressure and low volume of water, removes the biggest part of dirt from the drawers.

An external rotor, which is in continuous rotation at variable speed, is transporting the drawers through the washing section, exposing the internal surface of the drawers to a set of washing nozzles.

An outer set of fixed nozzles washes the external surfaces while the drawers change positions continuously.

An advanced filtering system with rotary strainer, combined with a sand and mud decanting system, completes the process.



The spiral drawer washer

The Module Washer

As soon as the drawers are separated from the frame, the latter enters the prewashing machine. Here the bottom part of the frame is washed with high pressure jets to remove to biggest part of dirt.

After Prewashing, the frame enters the **Washer**, which is equipped with horizontally moving set of nozzles that reach all the internal surfaces of the frame. The module washing machine has an advanced nozzling system that works very close to the frame, achieving excellent hygiene and minimizing the water waste.

The last step in the cleaning of the module is the **Disinfection**. The frame alone is disinfected first while the drawers are not inserted yet.

Once the drawers are pushed into the frame, they are sprayed both at the top and at the bottom while entering the frame.

Prewasher and Washer

Disinfection

The CO_2 Stunning

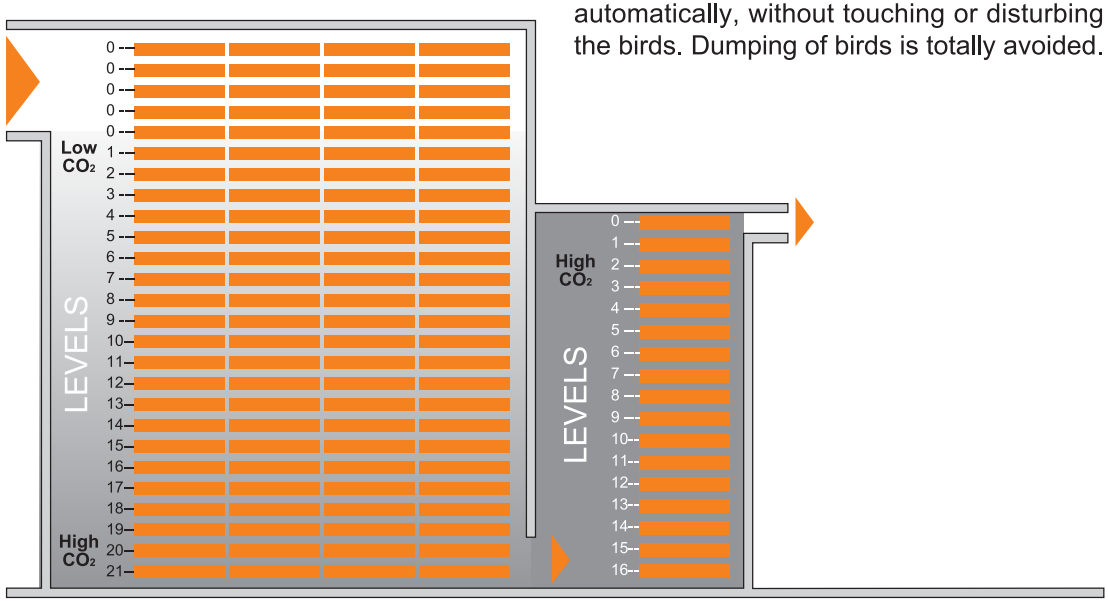
Maxitech Stunning System uses a mixture of atmospheric air and CO_2, a gas that occurs naturally in the atmosphere.

At the opening of the door, the drawers of the whole frame are pushed into the first chamber. While the birds are lowered into the chamber, the amount of CO_2 gradually increases, ensuring a very progressive induction time.

When the drawers reach the bottom, they are pushed into a second chamber having a high concentration of CO_2. At the exit, the birds remain fully unconscious until when they pass through the killing machine.

Birds are placed in the drawers at the farm and they will not suffer any further handling, while being conscious.

At the plant, the drawers are handled automatically, without touching or disturbing the birds. Dumping of birds is totally avoided.



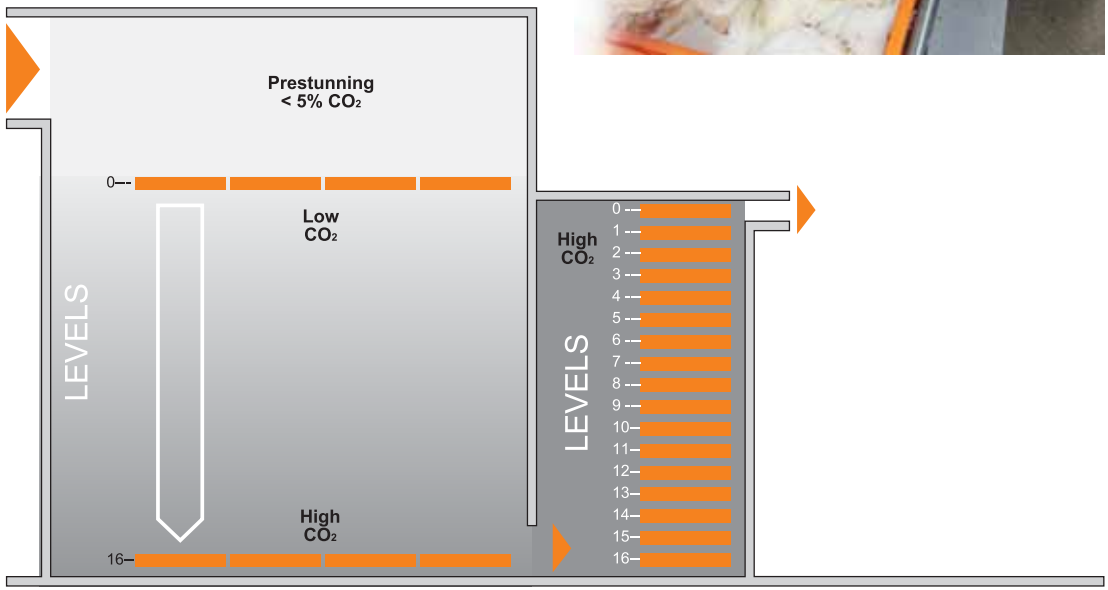
The CO_2 Stunning

At the top of the chamber a pre-stunning athmosphere is present. Here the very low concentration of CO_2 improves the birds adaptation and significantly reduces the number of broken wings.

The patented stunning system can be adjusted to meet the required rate of drawers per minute simply by increasing the prestunning volume.

High-precision gas sensors are placed in various positions, inside the tunnel.

Fixed cameras, placed at different CO_2 concentration level, monitor the correct stunning of the birds.




SIMATIC MOBILE PANEL

Technology and Automation

Maxiload Twin Receiving system uses the latest and well proved automation technologies available on the market.

One type only of permanent magnets motor with built in encoder is used, with the exception of the Water pumps. Only two sizes of gearboxes are used in the whole system.

A Portable Wireless touch screen with safety features can be used to oerate the system. It can be used to visualise part of the receiving system and to start or stop each individual motor.
It shows the alarms and it can be used for a full diagnosis of the system.

An RFID (radio frequency identification) can be added in order to track & trace the modules & each individual drawer. That allows a precise detection in case of bio security concerns. It also allows a performance check of catchers & farmers and a monitoring of effective use of equipment.

Maxitech can prepare a dynamic model of your LBH System, using a Discrete Event Simulation Software

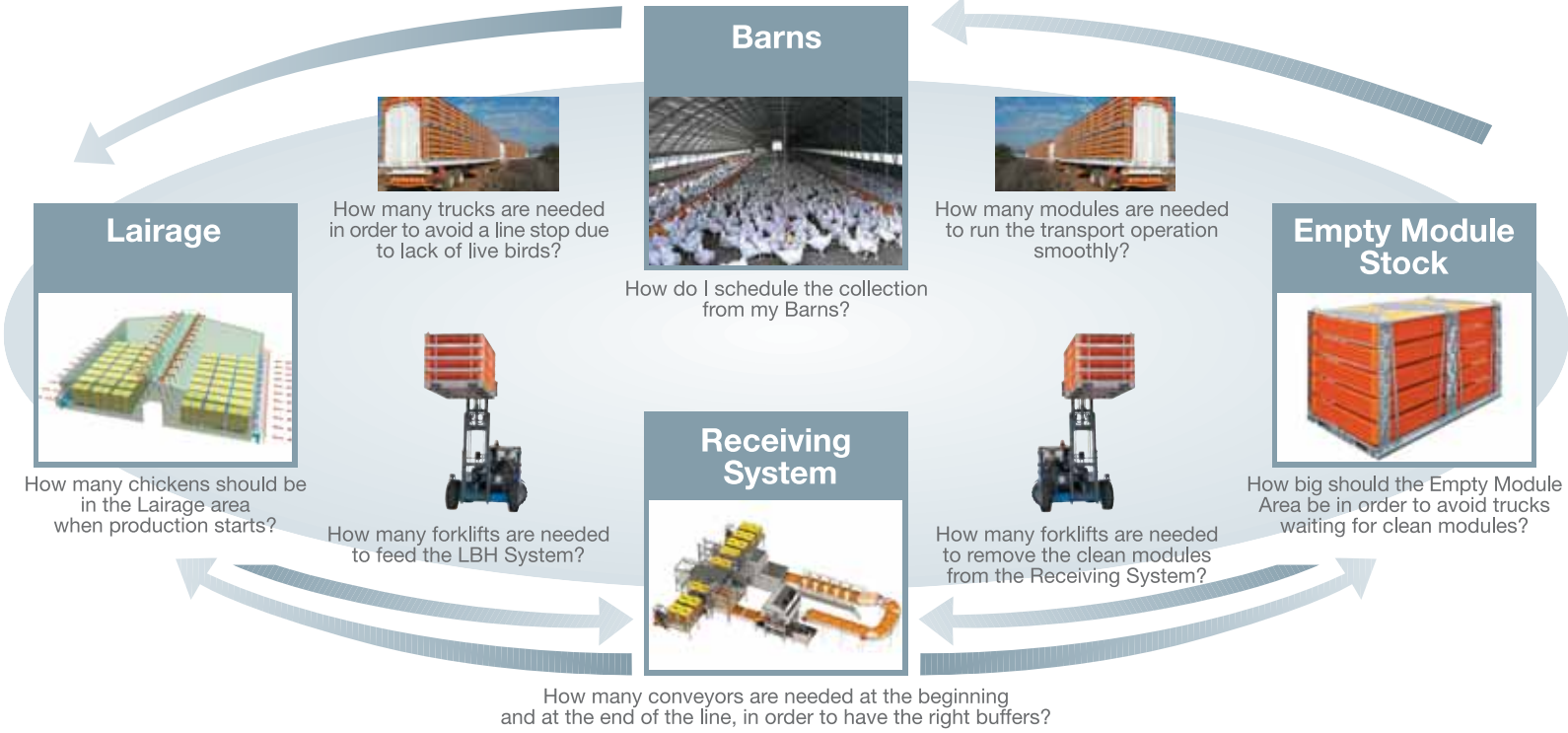
We can run the simulation based upon different scenarios of resource allocation. The result is:

- ✔ Right amount of trucks and modules to run your operations
- ✔ Correct number of forklift operators
- ✔ Optimized Lairage area
- ✔ Knowledge of machine usability and bottlenecks
- ✔ Right frequency of trucks at the production plant

The Simulation Tool

A Live Bird Handling System needs several resources to run smoothly. The risk is to have too much or not enough of a resource: in both cases there are **inefficient costs**.

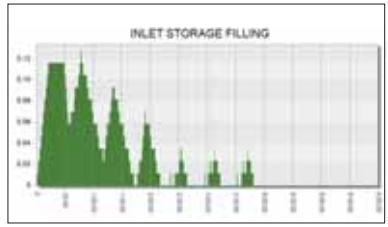
A simulation of your Live Bird Handling operation gives you the possibility **to optimise the resources** involved and therefore **minimise the investment**.



The graphs describe a four hours simulation of a Lairage area:

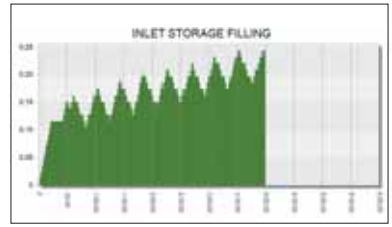
The objective is to know the truck frequency that keeps constant the number of birds waiting in the area (the green graph represents the occupancy of the Lairage area).

One truck every 35 minutes



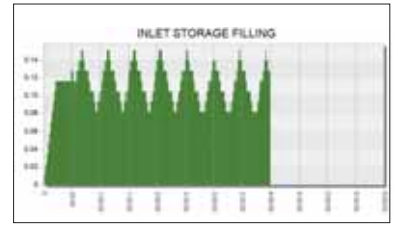
The Result: After 2 hours, there is a shortage of modules in the Lairage area.

One truck every 25 minutes



The Result: the truck frequency is too high compared with the line speed.
The stock of modules will increases and there will be an issue of overstock in the Lairage area.

One truck every 28 minutes



The Result: 28 minutes is the right truck frequency to keep a correct buffer in the Lairage area.