Animal welfare, slaughter & picking

Animal welfare solutions for stunning and slaughtering
Carcass care throughout scalding and picking
Animal welfare is good business

Protecting the live bird investment
Good plant yield starts with high-quality live bird intake. From farm to processing, our main task is to protect this quality. Slaughtering and picking processes are critical when it comes to achieving uniform, high-quality birds. Each step from live bird handling, stunning, slaughtering, scalding and picking must be carefully controlled to avoid damaging carcasses and causing expensive downgrades.

Our poultry vision
To be the first choice of poultry customers wanting intelligent, sustainable, biosecure and leading animal welfare solutions for safe food processing factories
Animal welfare
In BAADER LINCO, we are proud to integrate animal welfare into our live bird handling solutions. We design our processing solutions to reduce pain, distress and other suffering because it is inhumane, but also because it affects meat quality negatively and increases downgrades. In other words, animal welfare is good business.

Yield and meat quality
After slaughtering, processors need the ability to adjust equipment to the flock size being processed. Equipment adjustability allows for flexibility and ensures quality. Carcass care means less trimming and higher margins.

Food safety
The scalding and picking processes are, together with evisceration, where most bacterial cross contamination occurs. Therefore, we design biosecurity and hygiene into our processes and equipment.

Intelligent processing
B'Logic® is our production management software. It captures real-time processing data and allows for real-time upstream corrections of slaughtering, stunning, scalding or picking.

This brochure includes:
- Shackling
- Bird comforting
- Stunning
- Slaughtering
- Head removal
- Electrical muscle stimulation
- Bird counting
- Pre-washing and scalding
- Picking
- Feet cutting and unloading
Improved animal welfare
Shackling is potentially painful to the birds and hanging upside down is stressful in itself. By inducing a loss of consciousness before shackling, animal welfare is considerably improved.

Our CAS Pit System can be installed together with a UniLoad live bird handling system. The birds stay in the drawers from loading at the farm, throughout CO₂ stunning and to the point of shackling. In our CAS Pit System, the full drawers are gradually lowered into the pit, and for each step down, the CO₂ concentration progressively increases, creating a controlled stunning process. After exiting the CAS, the birds remain unconscious during shackling and slaughtering.

Besides improved animal welfare, CAS also brings increased operators’ welfare: bothersome wing flapping and dust are avoided and shackling can be performed in a fully lit room.

Key benefits CAS Pit System
- Reduced bird stress and injuries
- Consistent meat colour and quality due to efficient bleed-out
- Low CO₂ consumption (less than 3g/kg live bird)
- Improved shacklers’ welfare
- Conforms with The European Council Regulation No. 1099/2009
Monitoring animal welfare

Our CAS Pit System is equipped with a patented Camera Monitoring Solution. One camera with one sensor and four gas sensors capture a real-time overview of the stunning process, the gas gradient and bird behaviour - that means that animal welfare can be evaluated by observing welfare indicators throughout the stunning phases. It can be observed if head shaking, deep breathing and gasping is at a normal level, or if unacceptable escape behaviours or conscious wing flapping could indicate poor welfare conditions.

Real-time monitoring of the stunning process

Comfortable shackling of unconscious birds
Shackling

The shackle
The size and the shape of the slaughtering shackle should be appropriate to the size of the legs of the birds being slaughtered. An adequate shackle size will limit leg compression and ensure correct electrical contact during water stunning.

Broiler welfare and labour comfort
Shackling comfort allows workers to handle the birds more carefully, which again improves meat quality.

We design the live bird transport equipment and the shackling area so it becomes easier for the shacklers to reach into the drawers, retrieve the birds and shackle them.

When shackling unconscious birds (after CAS), a foot-pushing device can be installed to push the chickens’ feet into the shackles ensuring correct shackling before slaughtering and avoiding workers performing this pull-down movement.

If CAS is not used as a stunning method, we recommend that birds are kept as calm as possible from point of shackling to stunning. Less light intensity (lux) in the shackling area helps keep birds calm and minimises wing flapping, dust and noise.

Different shackle sizes are offered to ensure the most appropriate fit to bird sizes. A correct fit will prevent birds from escaping the shackle and ensure good electrical contact during water stunning. Shackling has direct impact on animal welfare.

Shacklers are placed on both sides of the full drawers to access the birds easily, and bird activity is reduced by applying blue light in the shackling area.
Comforting birds before water stunning

**Calm, conscious birds**
To calm the birds after shackling, a Breast Comforter is installed from the point of shackling to the stunner entrance - preferably on a straight line to minimise disturbances of the suspended birds. The physical contact between the Breast Comforter and the chicken’s breast, which contains many nerve endings, contributes to relaxation.

Comforted and relaxed birds entering a correctly adjusted water stunner will instantly and effectively induce unconsciousness. Correct stunning is a precondition for obtaining high-quality meat and optimised yield performance.

**Key benefits Breast Comforter**
- Reduced bird stress
- Fewer broken wings caused by excessive wing flapping

Birds are kept calm using a Breast Comforter from point of shackling to the entry of the Water Stunner.
Adjustable to control stunning
Our Water Stunner is designed to best ensure high stunning efficiency and animal welfare at all line speeds. The birds’ heads will drop into the electrified water bath where they are stunned when current passes through their brains. The electrical power is connected between the earth rail and the electrical rail inside the tub. By achieving an optimal relationship between current, voltage and resistance, the system induces immediate unconsciousness.

The Water Stunner is applied for stunning chickens and turkeys in a live weight range from 300 grams to 25 kilos. The stunning system is available in different lengths to suit different line speeds.

Key benefits Water Stunner

- Complies with EU Council Regulation No. 1099/2009
- Inlet ramp ensures instant stunning
- Wide stunner tank prevents injuries to wings
- Multiple adjustment features of voltage and frequency to best control stunning
- Height adjustment to accommodate variations in flock sizes
- Data logging for reporting purposes

Data logging
The stunning system is equipped with data logging. Selected parameters are logged onto a USB memory storage: date, time, voltage setting, frequency setting, actual voltage, actual frequency and actual current. The CSV files can be imported into a worksheet if needed. Compliant with EU reg. 1099/2009.
Water bath electrode can easily be lifted for easy cleaning.

Easily adjustable machine height to ensure correct immersion of birds and easy cleaning.

Height adjustable inlet ramp allows birds to swing into the water bath in one smooth movement avoiding pre-stun shocks.

Good tub depth and width to ensure effective stunning of varying flock sizes and correct immersion of birds.

“See through” safety fence to best evaluate birds exiting stunning.

Easily adjustable machine height to ensure correct immersion of birds and easy cleaning.

Automatic water level control ensures a constant and correct water level.

Water bath electrode can easily be lifted for easy cleaning.
Neck cutting
After efficient stunning, the bird is conveyed to a killing machine where automatic cutting of jugular veins and carotid arteries on one or both sides of the neck of the bird is performed.

When the cut is only performed on one side of the neck, time to death can be expected to be approximately 30 seconds. When performing a double-sided cut, time to death will typically be 15 seconds.

The slaughtering and bleed-out process significantly affects the end product quality. Both too deep and too shallow a cut will cause downgrades.

Too deep a cut will cut the spinal nerve cord and complicate picking as a nervous stimulation will increase the feather retention force. Furthermore, cutting into the spinal nerve and the cervical vertebra will cause downstream evisceration problems as the vent could pucker down, not allowing the venter probe to enter properly. Lungs become embedded in the ribcage and hard to pull and the necks will curl before the bird enters the Cropper. This will cause missed product performance and neck skin damages.

Too shallow a cut will cause insufficient bleed-out or even red birds.

Key benefits Killing Machines
- Specialised cuts to meet specific market demands
- Adjustable to fit varying flock sizes
- Precise bird positioning and cutting
- Improved downstream processing performance
- Easy to clean, operate and service
**Killing Machine 052**

The Killing Machine 052 is offered with one or two circular blades to automatically cut veins and arteries on one or both sides of the neck while trachea and oesophagus remain intact. The infeed guide rail slightly turns each head and positions the neck correctly before cutting in order to achieve optimum cutting performance.

The machine can easily be height adjusted on a hand-operated shaft according to the processed flock size.

**Killing Machine BA 1377 (suitable for halal)**

On the Killing Machine BA 1377, birds are conveyed by means of guidance assemblies to the rotary circular blade. During conveyance, the head is placed in cutting position so that a rotary cutter can perform the lateral cut with utmost precision.

This killing machine is able to perform both side cuts (on one of the sides of the neck) and throat cuts for halal slaughtering.

The machine is highly adjustable to fit the flock size being processed: blade height, blade alignment and infeed guidance.

**Removing heads**

After neck cutting, heads need to be removed. Head removal can be carried out before the Typhoon Shower and scalding or after picking according to processing preferences.

**Head Puller 1701**

This simple and durable head puller removes the head by fixing the head between two static guide plates removing the head as the bird is being pulled away by the overhead conveyor. Depending on the type of neck cut, it is possible to remove tracheas.
Speeding up maturation

For economic and hygiene reasons, the poultry processor needs to reduce the time from killing to deboning. If the breast meat is separated too early from the carcass, the muscles will still contract compromising meat tenderness.

Electrical muscle stimulation (EMS) activates generalised muscle contractions throughout the carcass, which accelerates the maturation process. The overhead conveyor guides the bird through the stimulation process and voltage is applied between the earth-connected guide rail and the adjustable plate touching the bird’s breast.

EMS works by prompting the muscle to sustain heavy contractions, thereby using up the glycogen faster.

We recommend stimulation of the carcasses as early as possible in the process to ensure a high level of available glycogen. The last part of the bleeding area is optimal so the procedure does not add extra time to overall processing.

Some customers have experienced improved bleed-out and faecal evacuation when applying EMS.

Key benefits EMS

- Tender meat in less time
- Fast, in-line maturation minimises extra handling
Counting shackled birds

Keep track of live bird intake

Counting the shackled birds on the slaughtering line allows you to compare the actual live bird intake with the expected and check if the slaughtering line is fully utilised. Empty shackles are lost production opportunities.

Furthermore, the bird counting data can be combined with data from our intake weighing system in the reception area, allowing for early insight into average live bird weight and average drawer density. An early indication of weight distribution of the birds to be processed during the next hours is helpful for adjusting equipment accordingly and align production planning.

Bird Detection

The Bird Detection Unit 102 is mounted on the slaughtering overhead line at the end of the bleeding trough, before the birds enter the scalding process, or after picking. Counting is carried out mechanically when a bird’s leg activates a mechanical arm, which in turn activates a sensor.

The Bird Detector 100-200 is mounted on a straight overhead conveyor after picking and used to count defeathered birds. The device uses optical sensors to register the number of birds passing the unit. When a bird on the line activates the sensors, a signal is sent to a control unit that accumulates the counting and displays the total number of birds during a specific load shift.

Key benefits Bird Detection

- Control intake quantity and average bird weight
- Monitor slaughter line utilisation
- Check birds lost during slaughtering or transfer
Bird showering

Typhoon Shower
In the Typhoon Shower, the birds are showered with water just warm enough to maintain bird temperature. The warm water is sprayed from the bird’s backside by three spray nozzle bars: the top spray hits the hock, the middle spray hits the tail and the bottom spray hits the shoulder/wings.

The showering lifts and makes the feathers wet, making the subsequent immersion into the scalder tank faster and thus scalding more effective.

An additional benefit is that some of the material matter is removed during the showering process, reducing the level of organic material on the bird before scalding. The water is circulated through a rotary separator, which filters dirt and feathers.

Key benefits Typhoon Shower
- More efficient immersion into the scalding tank
- Cleaner water in the scalding process
- Gentle to breast meat

During the showering process, the warm water is directed at the hock, tail and shoulders - not at the breast.
Scalding

Air Scalder
In our Air Scalders, birds are immersed in hot water while they are hanging in the overhead conveyor to loosen the feathers before picking. Air is used to agitate the water in the scalding tank in order to create a downward turbulence and keep birds immersed, and to facilitate the heat transfer to feather follicles.

The Air Scalers can be delivered in single or multi-pass units and in various lengths to best fit the plant layout and the processing requirements. Various immersion tanks on the slaughtering line allow for increasingly cleaner water.

Water agitation as well as correct and uniform water temperature are prerequisites for effective feather removal in the picking process.

Key benefits Air Scalder
- Air agitation to ensure effective heat transfer
- Multi-stage, counterflow principle to progressively dilute microbial load in the water
- Modular design to fit space and processing requirements

Monitoring water temperatures
The water temperature can be captured in the Air Scalders and monitored in real time on the B’Logic® dashboard.
Tunnel Picker 284
Efficient picking is a prerequisite for processing high-quality birds, and our Tunnel Pickers are an obvious choice for poultry processors that place great emphasis on final bird presentation. The birds pass through the Tunnel Picker equipped with rotating finger disks. The fingers efficiently remove the feathers and water sprays ensure a fast evacuation of the feathers into the offal channel.

The Tunnel Picker 284 is offered in various configurations:
- Two basic picking bank lengths that can be combined to reach the optimal picking configuration.
- As a standard, side rows are offered in 2x2 or 2x3 rows (for big birds 2x4 rows are an option).
- A bottom centre row can be added to better reach feathers on the back and neck.

Adjustability is a key factor for effective picking. Our Tunnel Picker 284 offers multiple adjustment features for the best possible performance (see illustrations below). Furthermore, the configuration of various picking machines on the line allows for targeting the picking differently from machine to machine as picking progresses. This high degree of targeted picking also allows for dry picking.

Key benefits Tunnel Picker 284
- Small picking discs allow for more picking rows and thereby more adjustment possibilities and targeted picking.
- Available in various configurations to meet specific picking requirements
- Maximum adjustability in three dimensions for best picking setup

Rubber Finger WAVE
Rubber Finger WAVE mounted in our stainless steel finger disc (optionally aluminium).

When the discs are rotating, the rubber fingers are subjected to centrifugal forces and impact the surface of the suspended bird. The wavy ridges on the Rubber Finger WAVE will ensure a multi-directional feather contact during picking.

Monitoring water consumption
The water consumption in the Tunnel Pickers can be captured and presented on the B’Logic® dashboard.
**Tail Picker 292**
The Tail Picker 292 is applied to obtain a high-quality picking finish after the tunnel picking. The machine is designed to accurately target the picking to the tail area by using two hydraulically driven rollers that gently but effectively remove tail feathers and stubbles.

**Key benefits Tail Picker 292**
- Accurate targeting of tail feathers
- Simple construction for easy maintenance
- Open design to prevent feather accumulation

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**Rotorpick 300**
The Rotorpick 300 can be placed before the Tunnel Pickers to perform an initial picking of hard-to-pick areas.

The long picking fingers are rotated on drums alternating in up and down striking directions towards the birds. This rotation allows the picking fingers to reach feathers between the birds’ legs and under the wings.

Hydraulically powered vertical and horizontal settings of the Rotorpick 300 allow for adjustments according to the flock size being processed.

**Key benefits Rotorpick 300**
- Picking of hard-to-pick areas
- Adjustable to varying flock sizes
- Heavy-duty construction for reliable production
Automatic transfer and feet cutting
The Transfer Machine 102 automatically transfers the chickens from the slaughtering line to the evisceration line. The chickens are released from the slaughtering line by cutting off the feet with the built-in cutting unit and rehung in the hock joint on the evisceration line.

The Weigh Transfer 520 also transfers between slaughtering and evisceration and cuts off feet. Furthermore, the machine captures the weight of each bird. Early weight capture enables the processor to plan production to best meet sales orders and ensures best yield performance.

Leg cutting and manual rehanging
If a transfer machine with feet cutting is not installed between slaughtering and evisceration, a simple leg cutter can be applied.

The Leg Cutter 353 is mounted on the overhead conveyor and releases the bird from the slaughtering line by cutting off the feet, either in the hock joint or at a preset distance from the joint.

1. Hock joint cut: Performed on Transfer Machine 102, Weigh Transfer 520 or Leg Cutter 353
2. Long hock cut: Performed on Transfer Machine 102, Weigh Transfer 520 or Leg Cutter 353
3. Paw cut: Performed on Paw Cutter 359
Feet Unloading

The Foot Unloader 360 is driven by the overhead conveyor and unloads the feet hanging in the shackles on the slaughtering line. Two belts on each side of the shackles hold the shackles in a fixed position while an inclining stainless steel plate lifts the feet out of the shackles. As an option and typically for processing big birds, the Foot Unloader 360 can be delivered with two rotating brushes to assist the release of the feet.

On the Foot Unloader 361, guide rails hold the shackles in a sideway position. The shaft with rubber fingers turns from below and up thereby releasing the feet from the shackles.

Foot Unloader 360 for shackles with loose suspension. Mounted with rotating brush and chute to guide the feet into a tub. Suitable for anatomically cut feet with small variation range in live bird weight.

Paw cutting

The Paw Cutter 359 cuts the shank with an electrically driven rotating blade. The machine is positioned after the Leg Cutter where the feet are left suspended in the shackles.

Paw Unloading

The Paw Unloader 3591 unloades the paws from the shackles after the shanks have been cut from the feet by the Paw Cutter 359.

Foot Unloader 361 for shackles with fixed suspension. Mounted with rotating rubber fingers to release the feet. Suitable for long hocks and large live bird weight ranges.
This brochure is current as from the publication date and supersedes all previous versions. The English version is perceived as the master document and all other versions are subject to incorrect translation. The indicated limits of the working ranges and performances may vary as a function of the proportion, quality and nutritional conditions of the birds. In order to achieve an optimal result, it is recommended to adjust the machine within the working ranges of the bird sizes mainly to be processed. Illustrations and dimensions are approximate and not binding. Subject to design changes in the interest of technical progress. Actual scope of supply is specified in our quotations and order confirmations and may differ from descriptions and photos of this brochure.

Attention! For the illustration of the technical details the safety devices and protection mechanisms are partly not shown in operative condition. When operating the machine, all corresponding devices and instructions referring to the safety of the machine are to be utilised and/or observed.