

# BAADER Group and LINCO Food Systems join forces

BAADER Group and LINCO Food Systems have joined forces in a friendly merger with the overriding aim of providing our customers with a total solution in food processing equipment. Together, the two concerns constitute one of the strongest and most innovative business partner in the global poultry processing market.

As a result of the merger we are now able to provide a full range of technically advanced poultry processing machinery to our customers in more than 100 countries throughout the world. We are dedicated to develop state-of-the-art equipment for more efficient, safer and financially viable poultry processing with line speeds up to 12,000 birds per hour.

#### BAADER GROUP







#### BAADER Group

BAADER was founded in 1919 by Mr. Rudolph M. J. Baader. It is a family-owned business, now under the leadership of third generation, Mrs. Petra Baader. Some 10 years ago BAADER successfully acquired the American manufacturer of poultry processing machinery, Johnson Food Equipment, now operating as BAADER-JOHNSON.

BAADER Group is a world-renowned manufacturer of high-tech food processing equipment. Having produced fish processing machinery for nearly 90 years, and poultry, red meat and fruit processing and packaging machinery for over 40 years, research and development remains a cornerstone in the company's activities. This is one of the reasons why the BAADER Group is rated as one of the world's leading manufacturers of quality processing equipment.

#### **LINCO Food Systems**

LINCO Food Systems was founded in 1944 by Mr. Knud Lindholst. Based in central Denmark, the company has experienced a continuous growth over the past several decades to become one of the world's leading manufacturers of poultry processing equipment. In recent years, LINCO has focused intensively on developing highly advanced, electronically controlled weighing, portioning, and batching machinery to acquire a leading position in the world in this specialised field of business.

# Quality in all phases

#### Our mission is to assist our customers worldwide in providing safe food to all consumers in an efficient and responsible way.

Jointly, BAADER Group and LINCO Food Systems form a global organisation committed to quality in all phases of the process – from the farm right through to the consumer's dinner plate. We have made it our goal to create long-term competitive advantages for our customers by providing the highest performing, most cost-efficient food processing equipment on the market.

#### **Total solution**

BAADER Group and LINCO Food Systems support a system approach to meeting all our customers' needs. Rather than installing one machine in isolation, we work with our customers to thoroughly evaluate their processing needs in order to provide the most efficient and financially viable solution for the job at hand.

By committing ourselves to provide quality in all phases, we help our customers to a more profitable business while ensuring that all environmental issues are addressed with dedication from every individual in our global organisation.

#### Safe food solutions

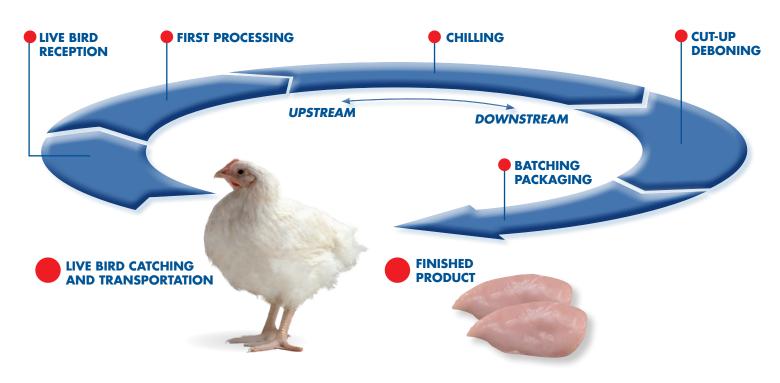
In our world, Safe Food means: Animal welfare, traceability, workers welfare and safety, hygiene, meat quality, and environmentally responsible production.

#### Carcass care

Carcass care means careful and responsible processing of every single bird, making sure that no flaws occur, which could influence subsequent

processing. This is achieved by optimising the process flow upstream as well as downstream. Any sign of problems with meat quality or yield anywhere in the process downstream is an indication of problems earlier in the process, upstream. The aim is to achieve the "sweet spot", the optimum point of adjustment of the processing machines that ensures maximum yield and maximum exploitation of every carcass.

In every thing we do, and in every product or process solution we create, carcass care and food safety are primary concerns to us. That is why we make a point of always being present when our equipment is being installed, and no job is ever done before a comprehensive test programme has been completed and everything runs to perfection.





#### **Designed to eliminate problems**

BAADER Group and LINCO Food Systems provide a variety of solutions for live bird handling – from the simplest to the most advanced and most efficient solution on the market today. The LINCO Maxiload and LINCOload systems eliminate problems normally associated with live bird handling – from the time the birds are collected at the farms through to the stunning process at the processing plant.

The Maxiload system is developed in close cooperation with our customers with focus on three main areas of concern: cost efficiency in catching and transport, quality of live birds and high capacity.

### Animal welfare ensures quality birds

At the farm, the LINCO systems are easy to operate by manual as well as automatic catching. This substantially reduces bird injuries and subsequent downgrading. During transportation and waiting time, air flow through the loaded modules is optimized to reduce birds dead on arrival (DOA) to a minimum.

The LINCO systems also provide substantial benefits at the slaughter-house such as easy shackling. The transportation crates and steel modules can be washed individually in order to reduce risk of cross contamination.

#### Also for turkeys

The Maxiload system is also available for large birds such as turkeys up to 25 kg live weight. As the weight of the turkeys increases, the birds become increasingly harder to shackle. A Maxiload solution in combination with a CAS (Controlled Atmosphere Stunning) system offers significant improvements to this problem. See opposite page.

### LIVE BIRD HANDLING SYSTEMS

- Reduced bird injury during catching
- · Increased catching efficiency
- Suited for automatic or manual catching
- · Reduced DOA (birds dead on arrival)
- · Improved overall meat quality
- · Low cost of ownership





# Improving meat quality

# High meat quality and improved welfare for birds and workers

Controlled Atmosphere Stunning (CAS) is ideal for use with the LINCO Maxiload and LINCOload systems. The patented LINCO CAS system allows for gentler and more efficient stunning and trouble-free shackling with less dust, less noise, and easy handling of stunned birds. CAS furthermore greatly reduces bird stress while substantially improving meat quality.

The LINCO CAS system operates with a tunnel containing a mixture of atmospheric air and CO<sub>2</sub>. As birds are lowered into the tunnel, the CO<sub>2</sub> content gradually increases creating a gentle stunning process. The birds remain fully stunned through the bleeding process. This avoids any handling by humans from the time the birds are loaded into the crates at the farm until they arrive stunned at the shackling platform.

#### Complete process control

The LINCO CAS system can be adjusted to meet any required rate of birds per hour. High-precision gas sensors are placed throughout the stunning tunnel, transmitting data to a computer, which controls the entire system. All stunning parameters can be adjusted to suit variations at the reception point such as changes in line speed or bird sizes.



#### Studies confirm rise in quality

With the LINCO CAS system blood spots and other meat damage is substantially reduced. Independent studies confirm that with CAS, more than 80% of the meat has no defects whatsoever, a vast improvement compared to meat from electrically stunned birds. With CAS, damaged wing veins, thigh veins, and blood spots in breast meat are virtually eliminated.



- Less bird damage, improved meat quality
- · Safe and efficient stunning
- · Easy and stress-free shackling
- · Better working environment
- · Better yield
- · Low gas consumption





# Creating bench-marking standards

### Efficient defeathering and evisceration

First processing – slaughtering, defeathering and eviscerating – has always been a focus point in our company. With our well-known scalding equipment and series of Rotor Picker and disc pickers, we are able to offer our customers first class solutions for soft and hard scalded products.

### Real-time production information

Automatic transferring of birds from the slaughtering line to the eviscerating line e.g. with bird-by-bird weighing and vision quality classification options provide real-time production information to the management for each flock through the entire plant. The precise weight and quality information from each bird can be used "upstream" in the production line to warn management to improve adjustment of equipment from pickers back to scalders, killing machines and stunners in order to eliminate downgrades.

Information can also be sent "downstream" to secondary processing stations in order to optimize the production mix of whole birds, portioning and deboning by getting the best out of the individual flocks.

### Carcass care ensures quality birds

BAADER Group and LINCO Food Systems have always strived to develop the best eviscerating equipment for the poultry industry. Reducing cross contamination has been one of the main goals in our R & D. The result is bench-marking standards for the industry. Quality in all phases of the first processing stages will produce A-grade quality birds for chilling, portioning and deboning.

Additional options are electric muscle stimulation for quick maturation of breast fillet meat, and typhoon showers and scalders to improve the efficiency in the scalding and picking processes, resulting in less damage and downgrades in first processing.



- · Reduction of cross contamination
- Carcass care no meat damage
- Bird-by-bird weighing and vision quality classification
- Product optimization via upstream and downstream information
- · Capacity up to 12,000 bph











### Increasing meat quality and shelf life

In order to reduce meat damage during processing to a minimum, it is important to optimize every step of the process. The BAADER and LINCO processing equipment is designed with this principle in mind.

The chilling process greatly affects the overall quality, including the shelf life and the visual appearance of poultry meat. The chilling process also has considerable influence on the weight of the finished product, the tenderness

of the meat, and the ability of the meat to absorb and bind water – properties, which greatly affect subsequent processing of the birds such as cut-up, skinning and filleting.

#### Innovative approach

BAADER Group and LINCO Food Systems manufacture different types of chilling systems; Water Chilling, Downstream Air Chilling, and the highly advanced LINCO Clean Air Chilling System, which represents an innovative approach to this very important aspect of poultry processing.





Our air chilling systems meet the most ambitious standards for efficiency and reliability. They offer superior hygiene where the risk of cross contamination from dripping or passing contact is virtually eliminated. Coupled with LINCO Automatic Transfer machines at entry and exit points, the LINCO Air Chillers provide flawless non-stop operation on a 'first in – first out' principle.

#### Main principles of chilling

Natural processes in poultry meat – such as micro-biological, enzymatic, chemical, or physical changes – diminish at decreasing temperatures. Because of a high level of water activity, a high pH value, and a high content of vitamins and minerals, poultry meat is an ideal substrate for the growth of micro-organisms. Micro-biological changes at the surface of poultry carcasses have great impact on the enzymatic, chemical, and physical catabolism of the meat. Consequently, the best way to control the bacteriological



quality of poultry meat is through an optimized chilling process.

In order to maximize the shelf life of finished products, it is important to optimize the chilling process while keeping the carcasses dry inside and outside. It is the temperature of the carcass, not of the surrounding air, that determines the shelf life of the products. Carcass damage sustained prior to, during, or after the slaughtering process will lead to an increase in the activity of micro-organisms and enzymes, which can cause a reduction in the shelf life of the products.

### AIR CHILLING SYSTEMS

- Improved meat quality and shelf life
- · Eliminated cross contamination
- · Faster, uniform, and frost-free chilling
- · In-line maturation
- Bird by bird weighing to and from the air chiller

# The key to competitive advantage

#### Three important factors

Controlling the cut-up process is the key to a competitive advantage in the poultry processing industry. At BAADER Group and LINCO Food Systems we believe that the real challenge is to design a perfect workflow, which optimizes three important factors – precision, speed and flexibility.

**Precision** means clean anatomical A-grade cuts, increasing meat yield and product value while minimizing costly trimmings.

**Speed** means being able to design an optimized high-speed workflow – up to 7,000 bph – without compromising quality.

**Flexibility** means customizing an intelligent system that supports by-pass and automatic rehanging regardless of production layout and the type of bird to be processed, for instance chickens, hens, or free-range chickens.

#### Precision above all

The ProFlex Cut-up system is probably the most flexible and efficient cut-up system available on the market today. The system automatically picks up whole birds from the chilling line and subsequently drops off the chicken parts exactly where required for the next process.

The system can be fitted with over 30 different units to weigh/grade, prepare and cut the chicken into anatomical cut tray-packs, 19-piece "paella cut-up", or food-service cut-up. This means that the system can provide any type of specialized cut requested by retailers, commercial outlets, or fast food chains, e.g. KFC.

The built-in intelligence, which the ProFlex system offers, enables full control of the complex cut selection. It also provides invaluable production data to the plant management for better planning and yield control.

### In-line weighing system for cut-up portions

Our range comprises an advanced in-line weighing system for cut-up processes, the ProFlex Weighing System 530.

It offers state-of-the-art weighing technology, capable of weighing drumsticks and whole legs with the same extreme accuracy as the Weigh/Transfer 520 system (see page 15) at line speeds limited only by the capacity of the cut-up system.

### Efficient visual quality classification

Modern processing lines often operate at line speeds of up to 12,000 bph. This means that an average of more than three chickens pass any given point on the processing line every second – for instance the manual quality control of different skin defects on the birds.

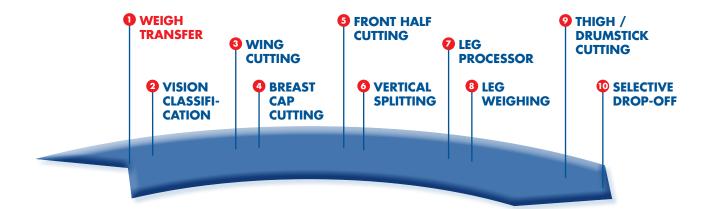
Regardless of how skilled the quality controllers may be, no human eye can detect a wide range of possible flaws at a speed of three birds per second. This is why we developed the Vision Quality System 7030. The system is available in two configurations: A one-camera system for the grading of either the breast side or the back side of the bird; or a two-camera system for quality classification of both sides of the bird.





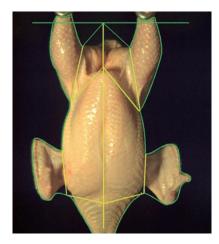
#### LINCO PROFLEX CUT-UP AND VISION CONTROL

- Increased yield through precise cuts
- · Anatomical cuts, KFC and 19-piece "paella cuts"
- Flexibility of layout and drop-off
- Automatic transfer systems with bird-by-bird weighing
- In-line weighing and classification with Automatic Vision quality classification



### Quality information for upstream use

The Vision System operates with up to twenty different quality grades relating to defects such as blood spots, bruises, damaged skin, gall discoloring, broken or missing wings, etc. In addition to providing a greater consistency in quality grading with correct allocation bird by bird, the Vision System can be used to indicate possible problems with machines upstream in the processing line.







# Advanced processing technology

### Cutting edge front half filleting system

Efficient and flawless deboning of front halves has long been at the top of the wish list at processing plants all over the world. With the development of the revolutionary BAADER Breast Filleting 656 machine, we are now able to offer a total deboning solution that meets all the customer requirements

From automated bird-by-bird measuring of front-halves for better performance to remote diagnostics and real-time production data, the 656 is superior and the machine perfectly fits the description of 'Advanced Technology'.



#### Superior product mix flexibility

The 656 breast filleting machine is capable of producing single or butterfly breast fillets of an exceptionally high quality. Additional cuts available include whole wings or

any segmented variation, tender in or tender out, and back meat attached to the frame or fillet. The 656 offers a capacity of up to 50 front halves per minute, wing on/wing off.

Outstanding yield results

With its state-of-the-art controls and user friendly format, the 656 offers superior product mix flexibility

combined with excellent yield results and unmatched uptime performance. The open design allows for easy performance evaluation during production and easy cleaning and maintenance.

The computer-controlled deboning process allows maximum performance within two front half size ranges: 600-1100 g and 800-1500 g.

Production data accumulated by the 656 can be viewed real-time on LCD screen or remotely via our Management Information System. The system offers password-access for different levels of control for different authorizations.



#### Value adding Soft Separator

One of the innovative milestones in BAADER's range of food processing equipment is the 'Baadering technology'. It is a process that involves clean separation of pre-ground meat from sinews and cartilage by means of the



BAADER Soft Separators. The process entails a flexible squeezing belt taking the raw material towards a perforated drum where the soft parts are pressed through the drum. The method guarantees consistent product quality and defined production parameters.

## Superior embedded bone detection

#### **Downstream improvement**

For the perfect total deboning solution, we offer a new highly advanced fillet inspection machine, the BAADER InspeXtor 886. It combines X-ray technology with color image inspection to detect bone remnants in the fillets and non-bone defects immediately after the deboning process.

Modern processing plants demand low level of bones, close to zero tolerance. The 886 InspeXtor is capable of meeting this demand. Automatic inspection of the fillets allows staff to concentrate on removing fillets with embedded bones or non-bone flaws. This means a significant, downstream improvement of the final product quality for consumers.

#### **Upstream troubleshooting**

The 886 InspeXtor can also be seen as an 'online trouble shooter'. If the 886 InspeXtor detects a continuous. recurrent presence of for instance the wishbone, a rib bone or a fanbone in the breast fillets, this could indicate a need for adjustment in the evisceration process or in the breast filleting machine. For the management, this means a continuous opportunity to evaluate upstream processes in order to make the necessary adjustments and thus find the 'sweet spot' of the line's settings, where optimum yield and low bone counts meet.



#### Your benefits

- Superior product mix flexibility with excellent yield results
- · Real-time production data
- Superior embedded bone and non-bone defects detection



#### Unique bone detection system

X-ray inspection alone is not enough to detect low calcified bones such as keel bone remnants, blood spots and other non-bone defects. The answer is "data fusion" where X-ray inspection is combined with color imaging to provide maximum detection reliability. The machine provides 'real time' information to the operator to enable optimization of the filleting process.

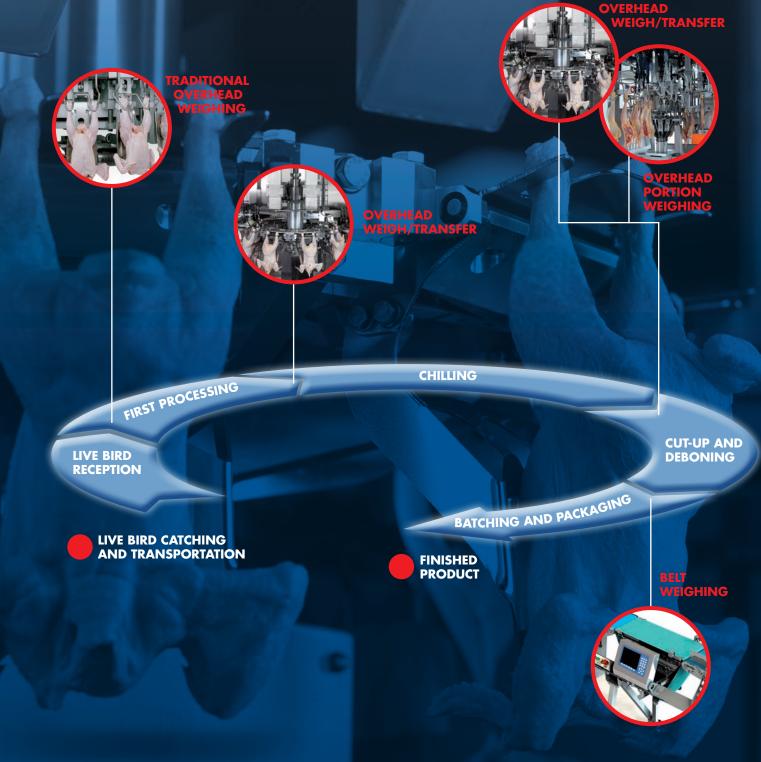
The 886 InspeXtor handles chicken breast singles, butterflies and tenders at up to 200 pieces per minute. It is equipped with user-friendly touch-screen control interface for production, service and quality standard adjustments.







# Unique accuracy and high flexibility

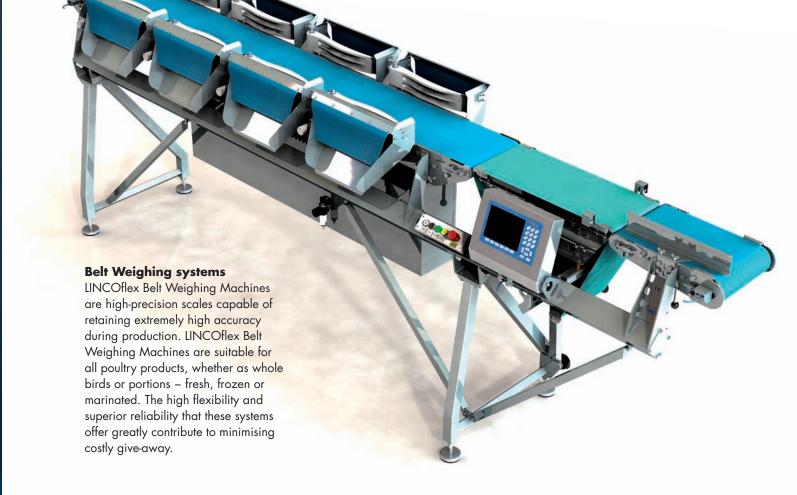


### Innovative weighing technology

BAADER Group and LINCO Food Systems offer a wide range of advanced weighing systems for the poultry processing industry. The range comprises various systems such as static scales, belt weighing systems, overhead weighing systems, including weigh/transfer systems for bird-by-bird weighing.

The weighing systems can be supplied as individual units or they can be incorporated into complete processing plants in almost any conceivable configuration according to specific requirements.

Our advanced weighing systems have all been designed for high-speed processing lines – up to 12,000 bph without compromising accuracy.







# WEIGHING SYSTEMS

#### Your benefits

- Weigh/Transfer 520 offers weighing accuracy better than ± 0.25% at high line speeds
- · Better than 99% efficiency in re-hanging birds at high line speeds
- · Enable tracking flocks all through the processes
- · Reduced give-away

#### Overhead weighing systems

The range of overhead weighing equipment includes the advanced 520 Weigh/Transfer System as well as standard overhead weighing bridges. Both types of systems are suitable for simple registration, sizing and grading operations, as well as constant flow and advanced batching processes.

#### Unique accuracy at 12,000 bhp

The 520 operates with a static weighing principle. A wide weighing 'window', combined with the fact that the birds are weighed bird-by-bird while in a static position in relation to the load cell, ensures the unique accuracy that this machine offers – even at line speeds up to 12,000 bph.

After the weighing process, the birds are automatically transferred onto the next line, allowing the weighing wheel sufficient time for the crucial resetting and zeroing in preparation for the next bird.

#### Anywhere in the process line

The 520 can be incorporated anywhere in the process line. It can be equipped with an integrated leg cutter or a buffer. The LincoFlex 2000 Production Control System enables tracking the birds, weighs and grades by flocks all through the entire process, from the killing/evisceration line through the chilling process to the drop-off stations taking the birds to further processing or packaging.

# Intelligent production control



#### **Managing production**

Modern poultry processing plants are required to offer an ever more diversified output of finished products of high quality at low prices. In order to be able meet the customers' demands, it is imperative for processors to make use of an intelligent production control system to manage the production.

#### **Optimizing the process**

Ideally, the control system must be capable of gathering production data from each step of the process and subsequently pass on the information downstream to the next processing step. This will enable the production management to optimize the production flow according to pre-determined weight and quality parameters.

In case of processing defects, the system must enable upstream tracing of the source of the defects to allow the management to initiate the necessary corrections or adjustments.

#### **Ensuring traceability**

As a full-line supplier of processing equipment, we have a thorough knowledge of the entire processing flow, from catching live birds at the farm through to the point where the finished product leaves the processing plant. We offer a control system that can collect data from every step of the process (as illustrated on next page) where the birds are being defeathered, eviscerated, chilled, weighed, measured, or quality inspected. The collected data can be used to optimizing yield while ensuring traceability all through the process.

#### **Efficient production control**

LINCOflex 2000 is a unique production control, monitoring and report software system suitable for all our weighing and visual inspection equipment. The system puts the control of all the weighing equipment and processes directly into the hands of the production managers.

With the LINCOflex 2000 software it is possible to collect and process a wide range of production data such as arrival and finish time, DOA, under-sized birds, birds per crate, health status, number of shackled birds, bird age, production number, projected and realized number of birds, etc., as well as all weighing data collected during the processing of the birds.

### Upstream and downstream information flow

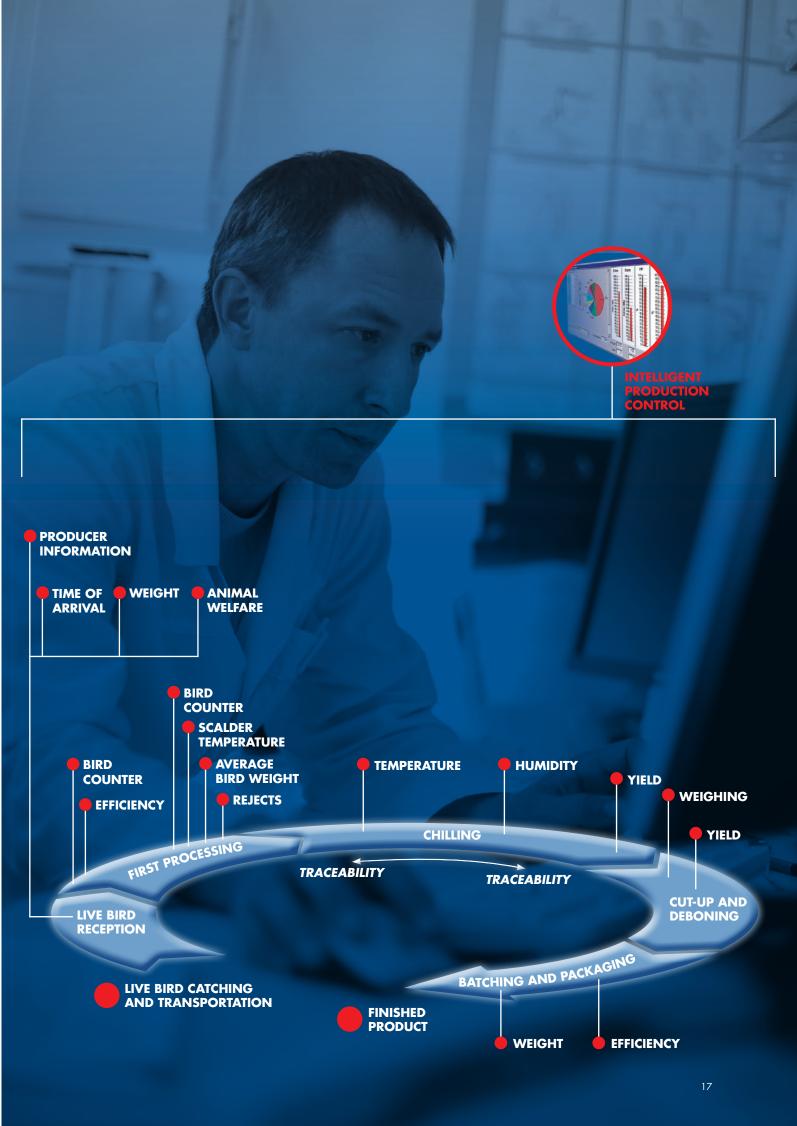
The LINCOflex 2000 production control system makes it possible to optimize each step of the downstream process flow while enabling quick and efficient detection and elimination of upstream processing defects.

We call it intelligent production control.



- Optimized downstream and upstream processing
- Compatibility with all weighing, vision quality classification and bird-counting equipment supplied by us, regardless of location in the plant
- · Complete traceability from finished products back to the farm





# Ensuring long-term trouble-free operation





#### Reliability is crucial

Reliable machinery and equipment is crucial for any poultry processing plant in order to secure a continuous supply of high quality end-products. Any plant stoppage or machinery breakdown will influence both yield and profit and may jeopardize animal welfare as well as overall product quality.

This is why we offer an extensive service and spare parts package with every piece of equipment we supply, a package that includes plans for maintenance and training of staff as well as emergency service.

#### **Training program**

Thorough training of a plant staff is a vital element in assuring that every piece of equipment we supply operates optimally at all times. That is why we offer full training programs for plant managers, machine operators, and maintenance

people within each field of a plant process. Our training programs are always fully customized to suit individual circumstances or customer requirements in each case.

Training programs can be carried out locally on-site or at our head office service centre. In both cases, experienced specialists in each field will conduct the training.

#### **Service agreements**

Through service agreements with our customers we can make sure that equipment supplied by us is maintained in a cost-effective manner. Service agreements also ensure that spare parts are readily available in order to minimize downtime and maximize the life time of the plant.

Service agreements can be tailored to the specific needs of the individual customer. It may include, for instance:

- · On-line technical support, by telephone and/or via the Internet
- On-line software, database and system checks via the Internet
- · Regular inspection checks
- · Regular, scheduled service calls
- 24-hour stand-by emergency servicing facilities

A service agreement with us ensures long-term trouble-free operation of the processing plant, regardless of where in the world the plant is located.

#### **Preventive maintenance**

In order to extend the lifetime of the equipment, preventive maintenance is of the highest importance.

Breakdowns can cause extensive and costly downtime. We will work with you to identify the critical parts of a solution supplied by us in order to establish an emergency stock of vital spare part at the site. This way, unscheduled and prolonged downtime can be avoided.

# A global organization

#### **Committed to quality**

Together, BAADER Group and LINCO Food Systems are a global organization committed to quality and partnership at all levels of our business. A dedicated staff of more than 1000 people invest all their energy and professional skills in providing state-of-the-art equipment for customers in the food processing industry around the globe.

#### Part of the poultry industry

BAADER Group and LINCO Food Systems have been part of the dynamic poultry processing industry with rapidly changing market demands for more than half a century. This has called upon us to constantly improve, invent and refine the equipment that we sell. Being part of the industry means daily contact with customers all over the world.

New demands generate new ideas, which in turn create practical solutions, but the final test goes beyond mere practicality. Our way of creating solutions satisfies all demands – from animal welfare to profit for our customers.

#### **Research and Development**

As approx 10% of our staff devote their time to R&D, the close cooperation we enjoy with our customers is a constant inspiration to them.

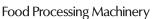
Research and Development has a particular rank at all levels of our organization. In close liaison with university scientists and independent food processing specialists, our own highly experienced engineers, computer scientists, and precision mechanics constantly strive to develop innovative solutions for safer and more efficient food processing for the benefit of our customers and consumers around the globe.

#### **One-stop-shopping**

In order to provide total solutions at all levels to our customers – one-stop-shopping – we co-operate with a number of carefully selected partners, suppliers of specialized equipment, throughout the world. Each is committed to the same policy as we strive for in everything we do: Quality in all phases.







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# Everything the modern processing plant needs...

With BAADER Group and LINCO Food Systems as supplier, you get a dedicated partner who focuses on total solutions with quality in all phases. Our goal is to ensure that each step of the process is completed without defects in preparation for the next step of processing. In case of processing defects, intelligent production control systems enable upstream information for correction or adjustment.

By focusing on total solutions we support a Safe Food Policy in everything we do. Our entire organization is dedicated to providing solutions that enable modern processing plants to maximize quality in the finished products while optimizing yield.

