

# MOBA

GRADING - PACKING - PROCESSING

## Omnia

85 | 125 | 170 | 250 | 330 | 500



THE PARTNER FOR PROFIT

[www.moba.nl](http://www.moba.nl)

Handling more eggs parallel keeps egg-handling at relatively low speeds possible

Never a collision between eggs; "individual egg handling"

User-friendly screens



The MOBA OMNIA range of egg grading and packing machines is designed to perfectly match the steadily increasing requirements of the egg industry. By using and incorporating ideas and demands of our customers continuously, the OMNIA range is built to your needs. With an impressive market share world-wide, the name "OMNIA" is well known in the egg industry. It is by no means a synonym for "a grader", but it stands for a versatile modular system, like a menu from which you can compose the optimal configuration for your individual situation. OMNIA FT stands for "Food Technology" and is the latest development in this impressive family of high-end egg grading machines.

### Capacity ranges

A higher capacity does not just mean speeding up processes. The egg, a unique creation by nature, is the focus of our technology. Numerous measurements taught us how to handle eggs in a very safe and gentle way. Limiting speeds and impacts leads the way to a safe and reliable output quality. By creating a modular range of egg graders, MOBA succeeded in handling eggs with the same care throughout the complete OMNIA range, from the lowest to the highest capacity machine.

By adding more tracks (egg transport chains in the main transport frame of the machine) and more infeed rows (the number of eggs transported next to each other at the rollers of the infeed conveyor) the OMNIA handles eggs very gently at all machine speeds.

### Individual Egg Handling

The basic idea in the OMNIA is that eggs are treated as individual products; once the eggs arrive on the rollers of

the infeed section, any contact between eggs is avoided. This principle, that already became famous in previous generations of MOBA egg graders, is well known by the name of "The Gentle Touch". It serves actually 3 purposes. First of all, individual egg handling reduces the risk of cracked egg shells. When two eggs come in contact with each other with only a minor force, both egg shells will suffer damage from this impact and the weaker of the two can show hairline cracks or worse. Secondly, eggs that are allowed to collide against each other and against equipment in the grading process are able to bring bacteria across to other eggs. Opposite to egg reservoirs in other machines, where eggs are touching each other constantly, this may form excellent breeding ground for bacteria, keeping eggs in individual positions without the opportunity to collide as in OMNIA, minimises the chances of cross contamination significantly. This is the only valid basis to use equipment for reducing bacteria on eggs, such as egg washers or ultra violet light disinfection systems.

Detection equipment is placed above the egg flow

Click out parts for easy external cleaning



	OMNIA 85	OMNIA 125	OMNIA 170	OMNIA 250	OMNIA 330	OMNIA 500
<b>Capacity [eggs/hour]</b>	30,000	45,000	60,000	90,000	120,000	180,000
<b>Capacity [cases/hour]</b>	85	125	170	250	330	500
<b>Tracks</b>	1	2	2	4	4	6
<b>Infeed rows</b>	6	6	6	12	12	18
<b>Minimum no. packing lanes</b>	4	6	8	8	10	12
<b>Maximum no. packing lanes</b>	10	12	16	16	24	24

Thirdly, if all eggs are known individually by the graders computer, all data is available per egg! This offers the unique prospect for sophisticated packing options such as batching or printing total egg weight per consumer pack, but also the ultimate form of traceability per pack source and the destination of all eggs are identified, and registered. This data can then be used for labelling or printing.

### Logistics and Capacity

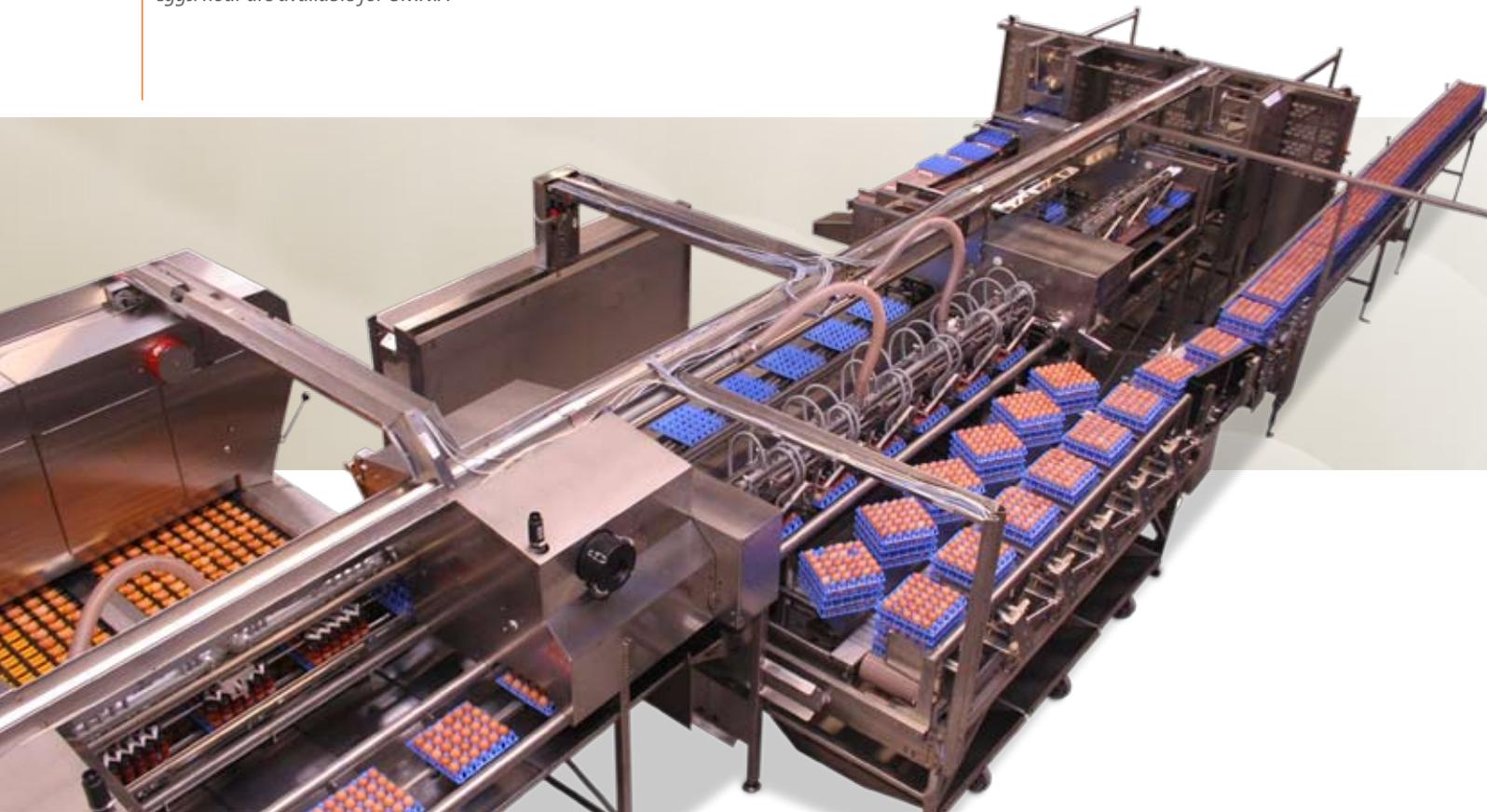
Another unique feature of OMNIA is the way the control system handles the logistic process. Other machines slow down or even come to a complete standstill when the number of eggs in the system exceeds the packing capacity. If you want, OMNIA can do the same, but also offers a much better alternative. Why stop a complete grading process if only one output is temporarily unavailable? OMNIA allows you to pre-program alternative destinations, a so called "by-pass". Even packing lanes can be set for other products without stopping the machine. Because of this principle,

you can count on your machine running at the speed you require, which is translated into a much better net output capacity of the machine.

### Automation

The variety of functions on the machine requires a user-friendly interface. Thanks to sophisticated menus, necessary settings are easily found and changed. There are different user-levels, for instance for production or technical staff. The user-control of the machine can be operated via one or multiple screens on various locations. The user-screens are connected to the machines by means of a modern computer network. Since this is standard technology, interfacing the machine to office networks and linking it to administrative software is easily accomplished. Several software options are available to exchange data to third-party applications.

Loaders with capacities up to 180,000 eggs/hour are available for OMNIA



In the machine itself a heavy duty industrial network handles the signals to control the machine. Because such a network prevents enormous bundles of cables and also offers an integral self-check and diagnostic system, a secure and reliable operation of the machine is ensured.

#### **Hygiene and Construction**

The MOBA OMNIA series is constructed from non-corrosive materials. All frame and metal parts are made from stainless steel, and chains, sprockets and bearings are of a anti-corrosive construction. This enables you to clean the machine thoroughly without the risk of corrosion. All parts that hold and handle eggs are made from plastics. Not “just” plastics, but carefully chosen materials that combine optimal egg handling with surface structures that keep accumulation of dirt and as a result micro organisms to the lowest possible minimum. Everything that is placed under the egg flow will suffer from pollution. In many machines the result of this principal is that sensitive parts such as weighing systems or detectors cannot be retracted and cleaned easily. This means unnecessary

downtime and during operation, unnecessary cross contamination. Not in OMNIA: at critical places, equipment is placed above the egg flow. This characteristic is typical for the OMNIA and underlines the thought of our research team: “Preventing a problem is better than finding a solution for it”. Due to this idea sensitive equipment such as detection systems, egg orientation and even the weighing system are placed above the egg flow.

Only when leaking eggs are already removed and the few parts necessary to hold the eggs and guide them to the packs require cleaning, these remaining parts can be clicked out and washed externally. This concerns relatively simple and small parts that can be exchanged by an extra set, so that machine production can continue without any noticeable downtime while parts can be washed externally, either by hand or in a controlled process in an industrial parts washer, which also guarantees the disinfection of these parts. In all situations where downtime is critical, the construction of OMNIA helps you to optimise your processes.

Hygiene and Construction

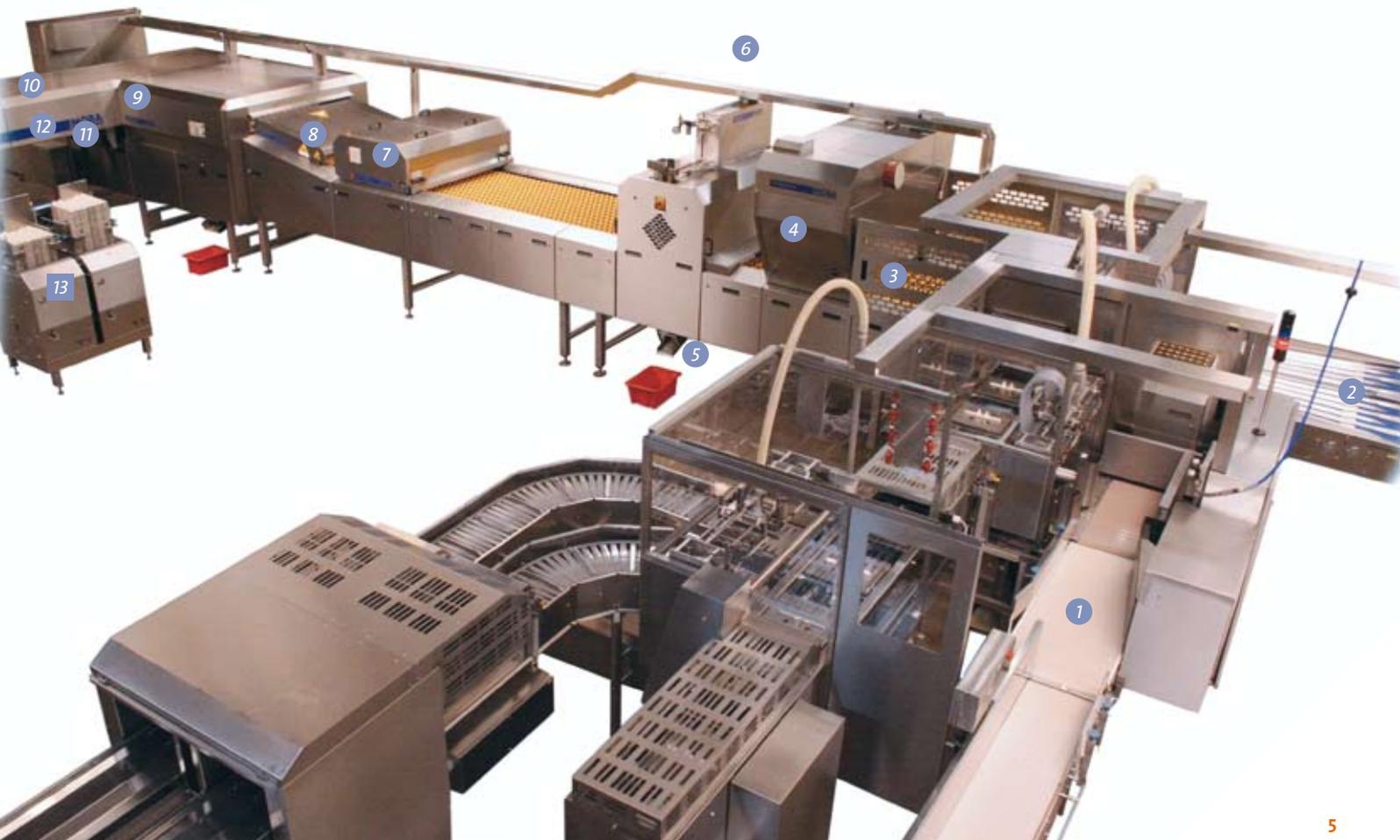
Egg-drying



- 1 Loader
- 2 Accumulator
- 3 Hygienic infeed
- 4 Dirt detection
- 5 Leaker detection

- 6 Infeed conveyer
- 7 Crack detection
- 8 UV Disinfection
- 9 Weighing and transfer area
- 10 Main transport frame

- 11 Blood detection
- 12 Inkjet
- 13 Packing lanes



Loader



Accumulator combining high filling ratio with gentle egg handling



Infeed conveyer



## A quick tour through the machine

### 1 Loader

When eggs arrive in the packing station, they are packed onto trays, in a 5x6 pattern. These may be either plastic or paper trays. The trays are put on the loader in stacks of 6 trays or as individual trays, depending on the type of loader. Stacks are carefully unloaded and the eggs are put on the rollers of the infeed conveyer by vacuum cups. If empty used trays are found to be ok, they are stacked for re-usage. When a new batch of eggs arrives, this can be indicated to the OMNIA so that each batch of eggs is accurately administrated and counted. Adding a code, either by keyboard or barcode reader will ensure quick retrieval of data at a later time and the additional automatic changes of texts in inkjet and labelling systems on eggs and packs. It also opens up the possibilities to full traceability. Loaders are available in different capacities:

Type	Fit for OMNIA type	Capacity [eggs/hour]	Processes
TVS 17	85	17,500	Single trays
TVS 28	85	28,500	Single trays
TVS 45	85 + 125	45,000	Stacks of trays
TVS 60	125 + 170	60,000	Stacks of trays
TVS 90	250	90,000	Stacks of trays
TVS 120	330 XF	120,000	Stacks of trays
FL 330	330 FT	120,000	Stacks of trays
FL 500	500	180,000	Stacks of trays

### 2 Accumulator

Eggs that come directly from chicken houses can be transferred to the OMNIA egg grader by means of what is called an "Accumulator". This system ensures the highest possible filling ratio of the machine combined with the most gentle egg handling possible in this function. Batches of eggs coming from different houses can be counted, administrated and even graded separately if required. Also combination-machines with both loaders and accumulators are possible. The accumulator area is often used as a pre-candling area as well. For this purpose, optional pre-candling buttons can be mounted here so that eggs that are manually removed can be counted in the exact right batch.

### 6 Infeed conveyer

MOBA OMNIA offers an infeed conveyer that also fits the "Gentle Touch" principle. As soon as the loader or accumulator puts the eggs on the rollers, the construction and shape of the rollers is made in such a way that new eggs arriving on the infeed are at a safe distance from the eggs previously placed in this area. Eggs settle steadily on to the rollers within milliseconds because of the unique wide roller shape. In machines of other manufacturers this construction offer less space to eggs and that is the cause of the majority of machine-made-cracks; not in OMNIA. Also a typical OMNIA feature is that on the infeed, eggs are already orientated (all air chambers positioned in the same direction). Because of this, the packing process can remain

*Unique: hygienic roller*



*The best transfer in the world, easy accessible in OMNIA*



*Even the electrical cabinet of the packer lanes is placed above the egg flow. By simple command, packer lanes can be reprogrammed without stopping the rest of the machine*



“individual” throughout the whole machine.

The infeed conveyor offers possibilities for various options, such as egg washers and dryers, detection equipment to detect cracked, dirty and leaking eggs and also, if required, a candling booth to enable human candling in an efficient and friendly way.

### 3 Hygienic infeed

In OMNIA FT the infeed system is a true revolution. A robust and very open construction holds a cleaning in place system for all rollers and additionally allows high pressure cleaning. The very open construction without dirt-traps keeps areas where dirt can accumulate to the absolute minimum.

Optionally, hygienic rollers can be mounted; a unique design which means that rollers are not shared by eggs, each egg is resting on its own individual sets of rollers. Where in normal conditions, a leaking egg will smear its liquid over many rollers and eggs, with this option this undesirable trait does not exist since each egg is carried by its own set of two rollers. If an automatic leaker detection is mounted on the infeed, the well known “orientation drum” not only offers you the perfect point-setting of the eggs but also takes care of the removal of leakers. Eggs that are detected as “leakers” are simply not grabbed by the drum and fall directly into a leaker outlet.

### 9 Weighing and transfer area

The weighing system, which is placed above the egg flow, ensures very accurate results combined with almost no maintenance and downtime. The occurrence of polluted weighing cells giving bad results simply does not occur in the OMNIA. Just like in the optional hygienic infeed, the weighing section offers a second position to remove critical eggs from further processing in all OMNIA configurations. Only qualified eggs are placed on the transfer system to the main transport frame of the machine. In the OMNIA, a continuous transfer system is integrated. This means that there is not some kind of intermittent, rotational or start-stop movement, but a system with continuously moving arms with egg holders that bring the egg into the carriers of the main transport track. The movement of the arms is such that the forward speed is gradually reduced to zero while the speed in the 90 degree direction towards the packing lanes is gradually increased. Without any significant accelerations or impacts the eggs end up in the carriers of the main transport frame. With this system the OMNIA holds the ultimate solution for one of the most critical processes in all egg graders. The transfer is easy accessible for cleaning and is mounted in the same stainless steel frame as the weighing unit.

MOBA's famous crack detector

UV-disinfection keeps the risk of bacteriological cross contamination to a minimum

Even the smallest bloodspots can be found by the blood detector



## 10 Main transport frame

Once the eggs are placed in the carriers of this machine part, they start their journey to the final destination; the packing lanes. Before arriving there, they pass locations where optionally inkjet or blood detection equipment can be mounted. Both processes take place without further touching of the eggs and the eggs simply stay in the carriers. When arriving at the location of a certain packing lane, the eggs must be released from the carriers. Highly reliable unlock magnets perform this action, combining this function with a perfect compensation of the forward speed. This means that the eggs arrive at the receiver set (little pocket that catches the egg from the carriers) with an accuracy of +/- 1mm. This accurate positioning ensures low impact on the eggs combined with individual egg handling; even after releasing the eggs from the carriers there is no way that eggs can touch each other (another major cause for egg breakage in the machine of many competitors).

## 11 Packing lanes

Coming from the tracks, the eggs are handled in individual flexible cups. All sets in this system are made of plastic and can be easily retracted to be cleaned outside the machine. This mechanism makes it possible to change a clean set of parts in seconds, resume machine operation and clean the removed sets elsewhere and have them ready for the next day (or what ever interval you choose to have clean parts in the machine).

To clean the parts with a high pressure cleaner, racks to mount in your washing room are supplied standard with the machine. An even more sophisticated cleaning method

is the use of an optional industrial washer. The use of water, pressure and detergents is optimised not only to clean the parts, but also guarantee a complete bacteriological disinfection.

The empty packs are unstacked in the so called "denester". One by one the empty packs are placed in a pin conveyor. This is a temporary buffer that is very useful to correct problems manually and also creates enough packs that are waiting to switch to another type of pack in the denester without stopping the packing process. Since the packs are denested upside down, the pin conveyor is also used to turn the packs. Once the eggs are inside the package, the packing lane will advance to the next row in a package, or if the package is full, to the next pack. This movement is servo controlled and positions the pack very accurate. Also this setting is directly programmed by only selecting the correct pack type. Because of this versatile system, the OMNIA packing lanes can handle the largest variety of pack types in the world.

After the closing unit, all information about origin and destination of the eggs is still available. With the additional option "Packprint" this information can be transferred to 3rd party labelling or inkjet devices. It is even possible to print the exact total weight of all eggs in the pack automatically. Finally, the closed packs go to the continuously running takeaway lane where they are packed by hand. Additional equipment, such as case packers can be attached either directly to the end of the takeaway lane or via optional conveyor systems ("Contiflow").

Semi automatic candling



EggInspector: Dirt detection + Leaker detection



Brown detection



### Optional functions

- **Egg-washing;** If third-party egg washers are incorporated in an OMNIA project, MOBA arranges of course the total project for you. We agreed interfacing points with the world leading egg washer manufacturers to enable a seamless integration.
- **Egg-drying;** If third-party egg washers are incorporated in an OMNIA project, MOBA offers the best dryers that are available. With an ingenious nozzle system, remaining water is first peeled off the eggshell and the last humidity is vaporised so that eggs end up in the grader completely dry. So dry that they can even be inkjetted directly after drying!
- **Dust and Feather removal system;** More than half of the dust in a packing station originates from the eggs. This system blows off loose dust and feathers from the eggs and removes this by means of a vacuum system. Reduction of dust not only results in cleaner eggs, but also in a cleaner machine.
- **Semi-automatic candling;** A system to appoint offgrades easily by human candlers and let the OMNIA take care of removing the eggs and keep an up-to-date administration.
- **Crack detection** ⑦; Magneto-acoustical system to detect even the smallest hairline cracks. The smart link to the OMNIA enables you to easily produce different output qualities, if necessary, simultaneously; you allow no cracks in your output for certain retailers while other destinations are allowed to have a programmable percentage of cracks in the product. The crack detector is placed above the egg flow.
- **Dirt detection** ④; A vision system, housed in a stainless steel unit, placed above the egg flow, to detect various spots on eggs. Because of the intelligence, different types of dirt can be treated in different ways. For example, small excreta spots are perhaps more “unwanted” in your output than a (relatively large) feather on an egg.
- **Leaker detection** ⑤; Integrated in a vision system, OMNIA “sees” if an egg is leaking. These eggs are simply not grabbed by the orientation drum, so they are removed in the very early stage of the egg grading process, which prevents contamination of the “downstream areas”.
- **Ultra Violet Light Disinfection system** ⑧; By means of UV-C light bacterial growth on both eggs and rollers is reduced significantly. Although infected eggs cannot be cured by this system, chances for a machine to become a source for cross contamination are kept to a minimum.
- **Blood detection** ⑩; By means of a spectrum analysis of the egg contents, bloodspots inside the eggs are noticed. Blood eggs can be programmed either to a packing lane or outlet of the machine.
- **Brown detection;** Eggs can be sorted based on the shade of brown. White and brown eggs can be separated or one nice uniform brown colour can be achieved for usage in a prime quality product.
- **Hand packing lanes;** Sometimes it is required to have a low-cost solution for grades that are hand packed, mostly for grades that occur very seldom.
- **Front block;** A functionality where some or all packing lanes are placed reversed under the main transport frame. By this option, the layout can be configured to match any kind of logistic or floor plan situation.
- **Autopack;** A combined name for numerous functions that can seamlessly be integrated with your OMNIA, varying from simple stackers for stacking trays with eggs automatically up to fully automated tray palletisers, or case packers. MOBA can also make complete plans to attach not only MOBA equipment, but also third party machinery in a smart way to your OMNIA. A team of Autopack specialists are available to handle even the largest projects honouring the statement that MOBA is moving “From Machine builder to Solution provider”.

Mobacom



Automatic inkjet control



Mainscreen



## Software & Control system

The user interface for programming the machine is available under Windows™. The Windows platform not only offers you an easy to understand menu to control the machine to your needs, but enables a revolutionary form of “order-oriented-programming”. With a few mouse clicks your machine “knows” your standard products and will remember all grade-, pack-, inkjet-, labelling and traceability functions from only one instruction.

### Integrated in the standard control system are following functions

- **Programming** of the machine, for grades, weights logistics and packing lane functions, complete with a library of all known pack types.
- **Counting's** of eggs in many ways; per input batch (also batch weight distribution for statistical purposes), detection systems, per packer lane etc. Actual and previous counting results are available and for individual batches of eggs an internal database with over 4000 counting's is standard.
- **Performance data**; how often did the machine stop and because of what? This feature tells you your day to day efficiency, a powerful tool to tune your machine and your staff to staggering results.
- **Diagnostic information**; a message file not only warns you about suspicious situations, but also gives you hints of probable causes of problems. It is like a “big brother is watching you” system, you even can find out who or what stopped the machine at a certain time! Graphical information helps you and the MOBA helpdesk if necessary, to use your machine as efficient as possible.
- **Mobacom**; the online link to MOBA in The Netherlands. Your computer screen including all diagnostic tools of the control system can be taken over via modem- and

network lines by our helpdesk. Even a defective sensor can be noticed from ten thousands of kilometres!

### Optional features

- **Inkjet**; Inkjets of several brands can be automatically controlled by OMNIA enabled batch dependent information about grade, supplier code or house number and (best before-) dates
- **Batch**; You can specify a certain weight per consumer pack with a certain tolerance. The OMNIA will now combine eggs to optimise to your settings.
- **Packweight**; You can (besides the normal weight settings) specify a minimum pack weight. This program makes optimal usage of allowed underweights (USDA 3.3%, EU 6%) possible.
- **Fillweight/Fillcount**; The possibility to allow a total amount of eggs (fill count) or a total amount of weight (fill weight) on a lane. After this amount the last package is left “unfilled” (and opened if not on trays), a signal is given, and the lane proceeds with the next package. (This option is a “Must” on Japanese machines and often used in combination with special large Japanese trays)
- **Family pack**; combine eggs of different grades in a specified pattern in one package

- **Separate weight limits;** The possibility to administrate infeed countings (per infeed-batch) according to different weight-limits than actually grading the eggs
- **MobaLink;** Automatic export of counting data per infeed batch via Serial or Network connection
- **TraceLink;** Full integration for traceability. Via network connection the OMNIA receives production information from third party software and returns the results, including all sources and destination for all products.
- **Separate infeed counting's;** Especially interesting on inline- and combi operations is the option to process 2 or even more batches of eggs simultaneously
- **Precandling;** Eggs that are taken out by human precandlers are counted accurately and can be addressed by a few simple buttons at the precandling position.
- **Capacity control;** The OMNIA uses given priorities in grades to optimise a certain pre-defined flow of eggs to go to a certain output, for instance a case packer or an egg breaker.

Technical data	OMNIA 85	OMNIA 125	OMNIA 170	OMNIA 250	OMNIA 330	OMNIA 500
Minimum capacity [eggs/hour]	10,000	15,000	15,000	30,000	30,000	45,000
Maximum capacity [eggs/hour]	30,000	45,000	60,000	90,000	120,000	180,000
Number of transport tracks	1	2	2	4	4	6
Number of infeed rows	6	6	6	12	12	18
Minimum length without options	6,584	8,493	11,445	10,545	12,021	14,026
Maximum length without options	11,012	12,921	15,873	16,449	22,353	22,882
Width without options	12,206	13,256	13,956	13,981	13,981	15,582
Minimum no. of packing lanes	4	6	8	8	10	12
Maximum no. of packing lanes	10	12	16	16	24	24
Power consumption (indication without options)	8KVA	10KVA	12KVA	14KVA	16KVA	18KVA
Power supply	Suitable for all 3 phase+ neutral systems, both 200-230V and 380-420V, 50 or 60 Hz					
<b>Possible configurations</b>						
Crack detection	+	+	+	+	+	+
Blood detection	+	+	+	+	+	+
Leaker detection	-	+	+	+	+	+
Dirt detection	-	+	+	+	+	+
Configuration	XF	XF	XF/FT	XF/FT*	XF/FT	FT
Inline	+	+	+	+	+	+
Offline	+	+	+	+	+	+

XF = Stainless Steel (eXtended Food safety), FT = FoodTec infeed

\*) inline only



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