EGG STAMPING:

BENEFITS, FEASIBILITY AND OPTIONS FOR AUSTRALIAN EGG PRODUCERS

Juliet R. Roberts
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AUSTRALIAN **EGG**
CORPORATION LIMITED

Disclaimer

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Design Angel Ink.

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Summary

Egg stamping — also known as egg marking, egg coding or egg printing — is compulsory in the European Union. In Australia, the only state that currently has compulsory egg stamping is Queensland, although Tasmania has specific traceability requirements and is contemplating introducing compulsory stamping. The national Primary Production and Processing Standard for Eggs and Egg Products was gazetted in May 2011 (Australian Government Department of Health and Ageing). This Australian standard requires eggs to be stamped.

Egg stamping enables shell eggs to be traced from the farm to the table. This has advantages for consumers, retailers and also for producers. The main advantage for producers is that, if there is a food safety, or any other quality problem with eggs, the source of the egg can be located quickly. The alternative is that all egg producers are blamed and all eggs are potentially withheld from sale. It reduces the damage to the industry's reputation and the risk of ongoing effects on sales. However, there are costs in setting up egg stamping, and ongoing running and maintenance costs (for a detailed breakdown see FSANZ, 2009b, pp. 40–45). The entry level for buying an in-line printing system is about $12,000. Leasing is also available.

Eggs can be stamped using manual (hand) stamps or inkjet printers (though laser printers are being investigated). Some of the older egg graders are already fitted to take the newer pre-inked stamps used for hand stamping. Hand stamping can be used by small producers if the cost of automatic or mechanical stamping is prohibitive. Manual pre-inked stamps can be ordered from local stamp makers.

Larger producers will need some sort of in-line printer and it will usually be an inkjet printer. Manufacturers of egg grading and packing equipment will recommend printers that are compatible with their machines, however, most inkjet printers designed for labelling food products can be adapted for use with eggs. Some Queensland producers have reported problems with servicing and supply of some of the printing equipment and availability of consumables. It is essential that the printer system be compatible with the egg grading and processing equipment and work well from the computerised equipment already in use.

Equipment that has an Australian distributor (particularly if there is a local distribution outlet) has obvious advantages.

1.   Introduction

Egg stamping — also called egg coding, egg labelling or egg marking — is compulsory in some countries and in one state of Australia. It is likely to become compulsory in other states. Its main purpose is to provide a means of tracing the origin of eggs.

In the European Union (EU), from 1 January 2004, Council Regulation EC/5/2001 amending Regulation (EC) No. 1907/90, required all Class A eggs sold at retail level within the EU to be marked (stamped) with a code identifying the establishment (production site), country of origin and method of production (i.e. 0 for organics, 1 for free range, 2 for barn, 3 for cage).

Two Australian states currently have traceability requirements. Queensland requires eggs to be stamped with a unique identifier linked to the farm, see the *Food safety guide for Queensland's egg suppliers* (Safe Food Production Queensland, 2007). As part of its food safety program, Tasmania also has requirements to identify where and what day the eggs were laid (FSANZ, 2009a). A report by the Auditor-General of Tasmania recommends that compulsory egg stamping, similar to that used in Queensland, be introduced into Tasmania (Auditor-General of Tasmania, 2008).

The Primary Production and Processing Standard for Eggs and Egg Products was gazetted in May 2011 (Australian Government Department of Health and Ageing). This Australian standard requires eggs to be stamped. It has an 18 month implementation period. Each state is required to draw up the necessary regulations to enforce the standard. Whether each jurisdiction will implement the stamping requirement is unknown at the time of publication.

A number of producers and egg marketers in Australia, other than Queensland, are stamping some of their eggs for their own purposes.

Egg stamping involves the placing of a stamp, code or mark on each individual egg so that the source of that egg can be identified. Information about the date the egg was laid or processed and the production system from which the egg originated and logos can also be included. For examples of the types of stamps that are in use in Australia, see the *Queensland Unique Egg ID Register* (Safe Food Production Queensland, 2009, http://www.safefood.qld.gov.au/index.php). The following is an example of egg codes used in Queensland.


The picture at left shows two versions of marks that are stamped on eggs produced in Queensland. **DH** on the left egg is a producer/processor unique identifier for Safe Food Queensland requirements. The egg on the right provides more information that is useful to the farmer in a trace back. It has the producer/processor unique identifier **MF**. The **V** is one of several letters used by the producer to indicate which production system/farm the egg came from. The number **216**, the Julian date, represents the day of the year the egg was packed on, and the **smiley** symbol is a promotional logo used by the egg distributor/marketer.

A Safe Food Queensland unique farm identifier and a promotional logo.

2.   The benefits of egg stamping

Right: Additional trace information can be placed on egg cartons and linked to a stamp.

Egg stamping allows traceability of each individual egg sold to consumers. It means that if there is a quality problem with a sold egg, the problem may be quickly traced and addressed at the source. It avoids many farms being involved in a possible recall until the problem eggs are traced. This in turn benefits the whole industry as an isolated problem is less likely to be blamed on all producers. This is particularly important if (or when) there is a food safety problem. Traceability can be enhanced by placing additional information on the egg carton. The image of a carton stamp on the right includes the best before date, ID stamp on the eggs and packing information — the Julian date, packer row and time of packing.
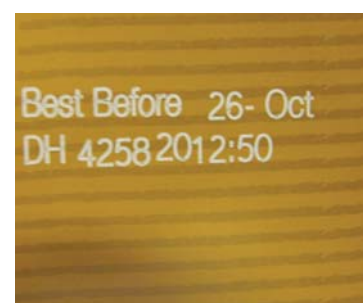
For the farmer there are other benefits.

• Customer confidence in the farm's brand is improved particularly if a logo is used.

• The swapping of individual eggs in cartons by customers in shops can be detected and if there are quality issues the actual source of the eggs at fault can be traced.

• Reused cartons, particularly in farmers' markets are easier to detect. Producers are often blamed for poor quality eggs purchased in their reused cartons at farmers' markets. Stamped eggs can be used to quickly eliminate farmers as the supplier of the eggs.

3. The costs of egg stamping

The Food Standards Australia New Zealand report (FSANZ, 2009b, pp. 40–45) contains a detailed account of the estimated costs of introducing compulsory egg stamping for the purposes of traceability, into all states of Australia. In short, the cost of printing equipment for Victoria has been estimated at $4000–$30,000 per producer or about $450,000 for the state (according to data from the Victorian Department of Primary Industries). Using this figure as a basis, the cost for introducing such equipment into the rest of Australia (excluding Queensland) is $1 million. The cost of stamping for medium and large scale producers is estimated at $2.8 million for setup and the first year of production (FSANZ, 2009b, pp. 40–45).

Ongoing costs (ink, repairs and maintenance) are estimated at $31–$36 per 100,000 eggs from information provided by some Queensland farmers, though some farms experienced higher costs. Costs vary due to farm size, the type of equipment used and the quality of the printing required.

Since stamping was introduced in Queensland, farms have experienced issues with:
- Printer selected initially was unable to print the image quality required.
- Higher than expected ink, repair and maintenance costs.
- Parts and or service, not available in Australia.
- Price increases in ink costs after the initial supply contract ceased.

Some farms are in the process of, or have replaced the original equipment for the above reasons.

Including more information than the farm unique identifier and logos in the stamp to be printed on the egg increases both equipment and ink costs. Each producer will need to decide how much information, in addition to the unique identifier if required by regulation, to provide on each egg. Expressing running costs per 100,000 eggs is an ideal way to compare costs between suppliers of stamping equipment.

4. Printing onto eggs — the limitations

How much information can be printed on an egg is determined by the equipment being used and is limited by the curvature of the egg which is influenced by the egg's size and shape. The area suitable for stamping on the top of the egg is about 15 mm diameter and on the side it is 20 x 15 mm. Printing outside this area increases the risk of image distortion or blurring, particularly with smaller eggs. How much of the area available that is used for printing is determined by what information is to be printed on the egg and if logos will be included.

The size, shape and concave surface of the egg affect the amount of image distortion on the egg as inkjet printers propel the printed image onto the surface being printed on. As the diameter of the egg varies according to shape and size, the distance the print head is installed away from the egg is determined by the maximum egg diameter likely to pass by the printer. The maximum distance the print head is from the egg is determined by the smallest egg diameter that is likely to pass the printer. The printer must be capable of effectively printing on this small egg without distorting the image. And of course, the further the print head has to propel the ink, the larger the image printed on the egg will be and the greater the risk of distortion or blurring.

It is important eggs are dried after washing as the egg surface must be dry to print on. Rinsing after washing must remove all detergent used during the washing process as any detergent left on the shell may cause blurring of the image.

The quality of the image printed on the egg is also dependent on the printer's resolution. It is recommended that food grade ink is used for all printing on eggs.
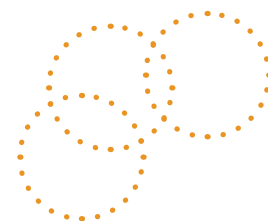
Inkjet printers — the differences

Selection of the right printer is critical to achieving a clear and non-distorted image on most eggs.

Inkjet printing equipment is divided into different technologies. Each technology is designed for a specific purpose — from printing text such as 'packed on dates' onto impervious surfaces such as bottles at high speed, onto flat surfaces such as paper, printing colour photographs to billboard displays or onto porous surfaces such as eggs or timber. For printing on eggs it is important to select the right type of inkjet printer. This will be influenced by the quality of text and logos required on the egg. It is about selecting the right printer technology as there may not be a significant difference in the cost between printers.

The inkjet technologies are continuous inkjet and drop on demand (DOD). DOD is divided into thermal DOD and piezoelectric DOD thermal inkjet. Continuous ink jet and thermal inkjet DOD technologies are typically selected for printing on eggs. Each has different characteristics.

Continuous inkjet	Thermal inkjet
Uses line printer concept with ink sprayed from one or more nozzles and ink pumped to printer from bottle.	Bubble of ink is created and released using heat through as many as 600 nozzles. Printer is capable of 600 dpi, though use at 300 dpi is adequate for printing on eggs.
Uses inbuilt fonts and is able to use logos.	Uses true type fonts and font size can be varied. Graphics and text can be rotated.
Typically print head can be up to 10 mm from egg shell surface to achieve acceptable print quality.	Requires a simple mechanism to position the egg shell surface a set distance from the print head, (typically 1 mm) for best image quality.
Requires a regular maintenance program.	No regular maintenance program required.
House keeping — clean print heads, flushing pumps after use each day.	House keeping — remove print cartridges after daily use and place cover on print head.
Can print on the egg from any angle. Suitable for high speed egg graders where print head is required to face upwards towards the egg surface available for printing.	Suitable where print head face is vertical or angled slightly less towards egg surface.
Complex to operate and repair. Requires a technician on call.	Simple to operate and repair.
Increasing the number of nozzles improves print quality and increases cost.	Resolution of 150 dpi is adequate for farm unique ID, but 300 dpi required for logos.

Printing logos on eggs

Ink costs and quality need to be considered when preparing to print a logo on an egg. Simplify the logo to get the best effect on the egg and ensure that it is easily read by the customer. The effect of intricate or fine lines adding detail to a logo will be lost when printed on an egg. Avoid using solid images as these will double the ink use. For example, use a diamond outline instead of a solid diamond.

Printing upwards onto eggs is prone to errors from contamination of the print head.

5.   Selection of egg stamping equipment

Eggs can be either stamped by hand or with inkjet printers. Laser etching or printing may become available in the future.

A small producer may find that a hand held stamp is sufficient for the number of eggs they are processing, though inkjet printers are available for relatively small-scale processing. Pre-inked stamps have replaced the traditional rubber stamp. Pre-inked stamps hold their ink inside a micro-porous material which releases ink through the design when stamped to create the image.

Hand stamping is done before or after the eggs have been candled, graded and packed into cartons or flats. The stamp is usually applied to the top or large end of the egg due to convenience. Eggs can be stamped when they are packed off the egg belt onto flats. Equipment is now available to hand stamp all 30 eggs on a flat at once. The maximum size of the stamp that can be applied to the large end of the egg without distortion is approximately 15 mm in diameter. This limits the information that can be placed on the egg to a unique identifier and the Julian date to indicate packaging date, or a promotional logo. More information can be placed on the egg by hand stamping the side of the egg.

Most inkjet printers designed for printing on food packaging can be modified for use with eggs. However, a number of printers that are already adapted for printing on eggs are available.

The stamp is either printed on the large end of the egg, or on the side depending on whether it is to be stamped during the packing or the grading process. If stamping occurs during the packing process, eggs to be packed into cartons or onto flats are stamped on the large end. Packing equipment must ensure that the large end of the egg is placed upwards, otherwise printing will be distorted. Multi-lane inkjet printers are available for use with packers.

Most egg grading equipment by design requires eggs to be stamped on the side. Stamping occurs after they have been through the washer, weighers, candler, crack detector and UV light disinfection and prior to being placed in the packing lanes.

With small egg graders, a printer can be fitted to print on the eggs as they are moving from the candler to the egg weighers. See image below left.

In medium and high capacity egg grading equipment, the eggs are held in grippers or fingers for transport from the candler to the packing equipment. The grippers or fingers limit where and from what direction the egg can be printed on. In the picture below left, the stamping is applied through the hole in the gripper which is sized at about 40 x 30 mm along the diagonals. On some graders there is no room to install the printer between the egg tracks so it prints sideways onto the egg and is therefore installed under the track so the print head is facing upwards. This exposes the print head to dust and material carried on the shell or to broken eggs which may result in parts of the image being missing. Keeping the print head clean is an extra problem to manage.
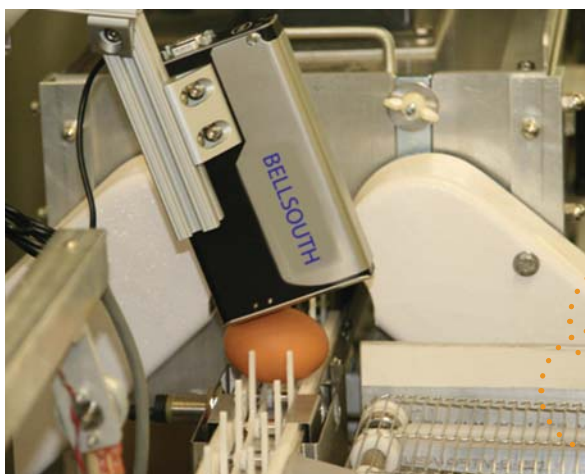
Left: Area available for stamping on egg held in grippers used in automated graders. Right: Inkjet printer for a small hand-fed egg grader.

With electronic graders, the printer is installed after the egg washer, weighers, candlers, UV light disinfection and crack detectors. Eggs can then be stamped according to the market or retailer requirements for each weight category being packed at the packing lanes. A printer is required for each line or track transporting the eggs. The printing equipment must be compatible with the grader computer for this to occur.

Printers that print upwards should be avoided if possible and this should be considered when purchasing egg graders that require the printer to print upwards. Any dust or other material carried on the egg shell or broken eggs will fall on the print heads and affect the quality of the image printed on the egg.

With older pre-electronic egg graders with mechanical weighers, the printer is installed at the point where the eggs are transferred to the egg fingers or grippers. As coordination with the weighers is not possible, all eggs are stamped with the same label. A printer will have to be fitted at each packaging line if it is necessary to have different stamps on the eggs according to grades. This is more expensive as the eggs are stamped after placing in the cartons or flats. Fitting printers to older graders and small capacity graders is often difficult and it is hard to achieve the same print quality as on newer grading equipment.

The equipment available ranges from small hand held pre-inked stamps to large, in-line inkjet printers. Each producer needs to determine their stamping requirements and should consider the following checklist when deciding on what sort of equipment to purchase.
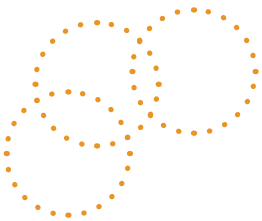
Checklist — deciding on what type of equipment to buy

- How many eggs are produced, and packed or graded per day?
- What are future intentions in terms of egg production and likely market growth?
- What is the current grader capacity (eggs per hour) and will this be ample for the future?
- Will the printer's stamping capacity of eggs per hour match the egg packer/grader's line capacity?
- Where in the grading/packing line can the printer/s be placed?
- How many printers will be required — one for each egg transport track or line, or packing lane?
- Does a packaging or optional equipment lane have to be foregone to enable the printers to be fitted?
- What is the estimated cost of fitting stamping equipment to the farm packer or grader?
- Can the printers be linked to the grading computer controller to allow the pre-weighed eggs to be stamped with the appropriate stamp?
- What is the stamping equipment computer controller cost?
- Is the equipment compatible with the grader and computer system?
- What is the cost of ink, cartridges, cleaning fluid, software upgrades, other consumables and servicing? Ask for this to be expressed on a per 100,000 or one million egg basis.
- Are spare parts and consumables readily available in Australia?
- Will the ordering/delivery time for ink ensure that ink stocks required to be kept on farm are not out of date before use?
- Does the printer supplier have staff available in Australia for problem resolution and servicing?
- What does the image look like on eggs of various shapes and sizes? Ask to see it.

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6.   Getting the best from your stamping equipment

For good print quality the eggs must be clean, dry and free of oil and detergent in the area where the stamp is to be applied.

Stamping needs to be done after washing the eggs, as washing is likely to remove or render the stamp illegible. The egg washer must effectively dry the eggs as any moisture on the egg will result in blurring of the stamp. Eggs to be stamped cannot be sprayed with oil prior to stamping, however applying a small amount of oil to the top of the egg will enable the stamp to be applied to the side of the egg. There is equipment available for doing this. People listed in section 8 (Useful contacts) will be able to help with oiling equipment.

Clean the print heads regularly — either follow the supplier's recommendation or else check they are clean at the end of each day. A dirty print head will result in part of the label missing as shown in the picture below where part of the 'W' and the '2' are missing. Dirty contacts on printer cartridges will cause similar problems, so clean these contacts as recommended.

Part of stamp image missing due to dirty printer head.

7.   Australian experiences with stamping equipment

For the purposes of this report, feedback was sought from Queensland producers and processors about their experiences using egg stamping equipment. Overall, they were supportive of egg stamping and the benefits of traceability.

The general consensus was that egg printers need to be chosen after consultation with the manufacturer of their grading equipment as communication between the grader's computing system and the printer is critical. Other considerations were price, availability of parts, service within Australia, as well as the cost of consumables (ink).

Queensland producers have experienced different levels of satisfaction with the equipment, levels of services and accessibility to consumables. Inks have a limited shelf life and need to be readily available in Australia otherwise over ordering can lead to product losses.

Any reliable stamp maker should be able to make and supply pre-inked hand stamps. Investigate the options with a provider in your local area.

8. Useful contacts

The following people have on farm experience with installing egg stamping equipment as well as oiling equipment onto egg packing and grading equipment which they install and service.

Contact: Wes Dudley
            Dudley Engineering
Address: 340 Bruce Crescent
            Wallarah NSW 2259
Tel: 02 4392 1502
Fax: 02 4392 2459
Mobile: 0412 606 507
E-mail: wesdudley@bigpond.com.au

Contact: Garry Sterling
            G G Sterling Pty Ltd
Address: PO Box 281
            Pittsworth Qld 4356
Tel: 07 4693 2959
Mobile: 0407 115 998
E-mail: ggsterlingptyltd@bigpond.com.au

9. Equipment currently available in Australia

Companies currently operating, or represented in Australia include those listed alphabetically on the following pages. Please note that some information was accessed from the company's websites and as such, uses their terms and descriptions. Note also, that prices are subject to change.

9.1 APS (Alternative Printing Services)

The APS group specialises in industrial marking and coding using ink jet technology on both cartons and eggs. APS develops alternative solutions for your product marking, enabling you to significantly reduce your marking costs with innovative maintenance-free marking systems and marking products for industrial ink jet marking equipment including economical high quality consumables and spare parts as well as professional services.

Address: Unit 2, 34 Collinsvale Street
            Rocklea QLD 4106
Tel: 1300 553 713
Fax: 07 3274 4493
E-mail: info@aps-direct.com.au
Web: http://aps-direct.com.au
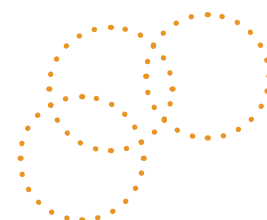
9.2 Ausgiant Marking Systems Pty Ltd

There are four inkjet egg marking systems available with the entry level being approximately $13,000–$14,000.

Address: Unit 25, 43 Johnson Street
            Chatswood NSW 2067
Tel: 02 9411 2452
Fax: 02 9412 2048
E-mail: info@ausgiant.com.au
Web: Egg Coder EC 2M   http://www.ausgiant.com.au/eggcoder_1.html
            Egg Coder EC M   http://www.ausgiant.com.au/eggcoder_2.html
            Egg Coder ED 5H   http://www.ausgiant.com.au/eggcoder_3.html
            Egg Coder EP 5C   http://www.ausgiant.com.au/eggcoder_4.html

9.3   Bellsouth Pty Ltd

Bellsouth supplies and installs inkjet stampers for lower capacity egg graders such as the Mobanette and Sanitouch grader/candlers. These inkjet stampers can be retrofitted to most small egg graders. Bellsouth single lane inkjet printing can be added to any single track system and several units can be added to multi-track graders. These units can print a number of formats including line art logos, and ID codes. Systems start from $2000 with running costs of approximately $70 per million impressions. They are ideal for low volume graders.

Contact: Jim Finger
Address: PO Box 1233
             Narre Warren VIC 3805
Tel: 03 9796 7044
Fax: 03 9796 7033
E-mail: poultry@bellsouth.com.au
Web: http://www.bellsouth.com.au

Inkjet printer for a small hand-fed egg grader.

9.4   Dunogan Farm Tech Pty Ltd

Dunogan supplies inkjet printers with Riva Selegg egg graders. Riva Selegg egg graders are made in Italy and the inkjet egg stampers are quality printers made in Germany. A new Riva Selegg egg grader ordered with inkjet egg stamper will be supplied with 10 cartridges of food grade ink that are capable of printing 3.5–4 million prints. A variety of ink colours are available. Current replacement cost of 10 units of food grade printer ink cartridges (complete with delivery) is approximately €475. Costs of the inkjet egg stamper vary according to the size of the egg grader. A general guide is:

1. Inkjet egg stamper (one line fixed print), ex-factory €1950

2. Inkjet egg stamper (two lines: brand name and date. Self programmable), ex-factory €4000

Note: These inkjet egg stampers are *pre-egg weighing stampers*.

Contact: Rob Duns
Address: PO Box 195
             Tamworth NSW 2340
Tel: 02 6766 9909
Fax: 02 6766 9977
Mobile: 0418 660 266
E-mail: info@dunoganfarmtech.com.au
Web: http://www.dunoganfarmtech.com.au
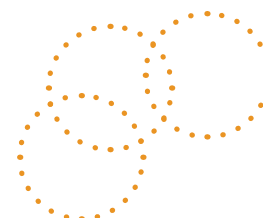
9.5   Easyprint Australia Pty Ltd

Easyprint supplies the Minijet-printer, a new industrial printer produced in Denmark. It is easy to mount and does not require any further integration into PC-equipment or the like. The wide range of inks enables the Minijet-printer to print on all surfaces — for example, directly on to eggs as well as on different types of packaging.

Contact: Chris Moog, National Sales Manager
Address: 27 Cleg Street
             Artarmon NSW 2064
Tel: 02 9439 9555
Fax: 02 9439 9556
Mobile: 0434 422 588
E-mail: chris@easy-print.com.au
Web: http://www.easy-print.com.au

## 9.6	Express Rubber Stamps

Express Rubber Stamps are suppliers of pre-inked hand held stamps for egg stamping to small producers in south east Queensland.

Address:	347 Ruthven Street
	Toowoomba QLD 4350
Tel:	07 4632 8349
Fax:	07 4638 3980
E-mail:	info@expressrubberstamps.com.au
Web:	http://www.expressrubberstamps.com.au

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## 9.7	Imaje

Imaje supplied continuous inkjet printers that code onto fresh eggs, utilising a Moba interface. The price of the printer varies depending on the application, environment and accessories/options required. The basic 9030 models starts off at approximately $16,000 and be as high as $23,000 if it needs to be waterproof/dustproof, or if the installation is difficult, etc. This price does not include accessories and optional features, which at most can come up to $5000 (i.e. if brackets need to be made, if a specialised integration and interface is needed, etc.)

Contact:	Catherine Topp, Marketing Specialist
	Markem-Imaje Business Group, Australia & New Zealand
Tel:	+61 1300 730 428
Web:	http://www.markem-imaje.com.au

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## 9.8	Insignia (Domino)

Domino manufacture continuous inkjet printers and pricing can range from $12,000–$20,000 per system depending on the solution required (i.e. number of lines of code, speed, integration level). Insignia is the distributor and authorised service provider for Domino printers. Insignia can install, customise and maintain machinery and will rent or lease machines to smaller users who cannot afford to purchase the systems.

Contact:	Brad Jeavons, National Sales Manager
	Labelling Systems
Tel:	1300 467 446
Fax:	07 3364 2111
Mobile:	0402 448 445
E-mail:	sales@insignia.com.au
Web:	http://www.insignia.com.au

Contact:	Russell Wiseman, Product Manager
Mobile:	0411 860 513

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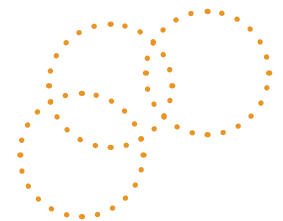
9.9   Matthews Intelligent Identification (Linx Printers)

Matthews have a wide range of coding, labelling and data-capture solutions including inkjet and laser printers. Matthews also sells laser printers but does not promote these for use with eggs.

Address: 35 Laser Drive
             Rowville VIC 3178
Freecall: 1800 333 074
Fax: 03 9763 2020
E-mail: bwnichol@matthews.com.au or customer.support@matthews.com.au
Web: http://www.matthews.com.au

9.10   Moba

Moba is a Dutch manufacturer of egg grading and packing machines and recommends printers made by two companies: Imaje and Domino.

Contact: Catherine Chin, Moba Asia Sdn. Bhd.
Address: Block D, Unit 201
             Phileo Damansara 1, Jalan 16/11
             46350 Petaling Jaya
             Malaysia
Tel: +60 3 7956 9336
Fax: +60 3 7958 6233
Service: +61 3 7954 4133
E-mail: info@asia.moba.com.my
Web: http://www.moba.nl
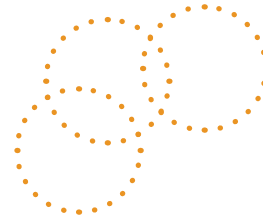
9.11   Prinzen

Contact: Mike Ward, Prinzen Asia
Tel/fax: +60 361 400 346
GSM: +60 163 318 436
E-mail: mike.ward@prinzen.com
Web: http://www.prinzen.com

Options available and costs

1. Ovoprint A5 is an integral printer built into Prinzen's PSPC-30 egg packer (a farm based unit for packing eggs into 30 cell trays).

2. Ovoprint A5 stand alone unit. This unit comes with a mobile stand and is ready to use from the box 'as it were'. Although dependent on how quickly the operator loads the unit with trays, it is possible to print up to 50,000 eggs per hour. There are five print heads inside the unit that use inkjet cartridges to print one or two lines of alpha-numeric text of up to 17 characters long. Time/date coding is also possible.

The ex-works price of the Ovoprint A5 stand alone unit is €7373 (€7607 with date/time function). Food grade ink cartridges are available in two colours (blue and pink) and cost €32 each. A single cartridge will print over 200,000 eggs with a single line of text with 14 characters.

Outlets in Australia

Imexco Australia Pty Ltd   Ryan-Ryte Enterprises Pty Ltd
Address: Lot 2, Winta Road   Address: 4 Frankston Gardens Drive
             Tea Gardens NSW 2324   Carrum Downs VIC 3201
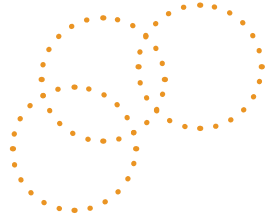Tel: 02 4997 2045   Tel: 03 9782 5515

9.12   VISY Technology Systems

Visy supply Hitachi continuous inkjet printers for printing on cartons and eggs.

Contact: Len Jones
Address: 11A Ferndell Street
            Granville NSW 2142
Tel: 02 9892 9500
Fax: 02 9892 9599
Mobile: 0412 067 412
E-mail: len.jones@visytech.com
Web: http://www.visytech.com

10.   Egg stamping inks

10.1   Bellsouth Pty Ltd

F284 Egg Stamping Dye is a standard food grade impact dye for use on open stamp pad egg stamping systems. Identify your eggs with your brand to increase customer loyalty. Suits auto stampers on Ben Nevis, Staalkat, Moba, etc. or manual stamp pads. Bottles of dye are available in 500 ml for $30 plus delivery.

Contact: Jim Finger
Address: PO Box 1233
            Narre Warren VIC 3805
Tel: 03 9796 7044
Fax: 03 9796 7033
E-mail: poultry@bellsouth.com.au
Web: http://www.bellsouth.com.au

Egg stamping dye

11.   Equipment currently available internationally

11.1   Advanced Industrial Micro Systems

Contact: Samir Garg
Address: 201, Triumph Industrial Estate, Pt Motilal Nehru Marg,
            Behind Patel Extrusion, Goregaon (E)
            Mumbai 400 063
            Maharashtra
            India
Tel: +91 22 2875 6353 / 2876 6351
Fax: +91 22 2876 6352
E-mail: SamirGarg.AIMS@gmail.com or samir_garg@vsnl.com
Web: http://www.coding-india.com/index

11.2 Nuovo Printing Systems

Nuovo manufactures printing systems for the marking and coding of eggs by inkjet egg printing or stamping. Nuovo delivers stand-alone egg printers and stampers but also delivers egg printers and stampers for installation on farm packers or graders. Nuovo egg printing systems has been active since 1992 in the poultry/egg industry.

Inkjet egg printing

This cartridge based technology could be used to print a traceability code, the production/expiry date and/or a small logo. Prices from approximately €3000–€9000. These printers can be delivered as:

- off-line systems; various models with capacity from 4000–40,000 eggs/hour
- in-line systems; various models for (Moba/Staalkat/Diamond) farm packers, capacity up to 40,000 eggs/hour
- in-line systems; various models for the weighing track of all type of graders, capacity from 1500 up to 40,000 eggs/hour.

Easy-print egg stamping: This screen printing based technology could be used to stamp a traceability code and/or a logo (no date). Prices from approximately €500–€6000. These stampers can be delivered as:

- off-line systems; various models (hand stamp to stand alone unit conveyors) with capacity up to 17,000 eggs/hour
- in-line systems; various models for packing lanes (Moba/Staalkat/Diamond) farm packers and grading machines, capacity up to 36,000 eggs/hour.

Contact:	Maurik Wouters	Australian	
	Nuovo BV	contact:	Garry Sterling
Address:	Dorpsstraat 84	Address:	PO Box 281
	5471 NA Loosbroek		Pittsworth QLD 4356
	The Netherlands	Tel:	07 4693 2959
Tel:	+31 (0) 623 207 337	Mobile:	0407 115 998
Fax:	+31 (0) 413 229 158	E-mail:	ggsterlingptyltd@bigpond.com.au
E-mail:	maurik.wouters@nuovo.ch		
Web:	www.eggprinting.com		

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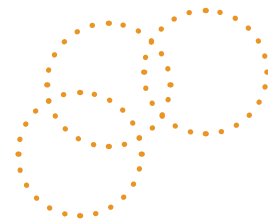
12. General printers that can be adapted

12.1 Anser Coding

Anser Coding Inc. (USA)		Anser Coding Inc. (China)	
Address:	502-A Chaney Street	Address:	7F No. 52 Huli Road
	Lake Elsinore CA 92530		Huli Industrial Zone
	USA		Xiamen 361006 China
Tel:	+1 951 674 0051	Tel:	+86 592 571 8888
Fax:	+1 951 674 0055	Fax:	+86 592 571 0888
E-mail:	sales@anser-printers.us	E-mail:	sales@anser-printers.com
Web:	http://www.anser-printers.com	Web:	http://www.anser-printers.com

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12.2 Videojet Excel

There is a range of Videojet printers that can be used for egg stamping with prices ranging from a few thousand dollars to around $15,000 depending on the speed and resolution required.

Contact: Michael Best
            Tronics Pty Ltd
Address: 85 Northgate Drive
            Thomastown VIC 3074
Tel: 03 9464 2400
Toll free: 1300 66 1300
Fax: 03 9464 2538
E-mail: m.best@tronics.com.au
Web: http://www.tronics.com.au

Global office
            Videojet Technologies
            1500 Mittel Boulevard
            Wood Dale IL 60191
            USA
Tel: +1 630 860 7300
Web: http://www.videojet.com

Contact: Ben Gillespie
            Dy-Mark (Aust) Pty Ltd
Address: 89 Formation Street
            Wacol QLD 4076
Tel: 07 3271 2222
Fax: 07 3271 2751
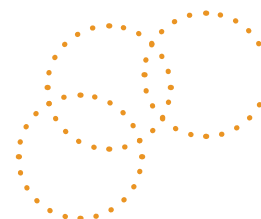
13. Laser etching of eggs

This process uses a thin laser beam to etch fine lines on the shells of eggs before they are placed into cartons. The etching leaves a darkened mark on white eggs and a lightened mark on brown eggs. The etching penetrates approximately 5% of the shell's thickness. It is claimed not to increase the susceptibility of marked eggs to breakage. Field evidence from Europe suggests the shelf life of laser etched eggs is reduced and oiling is required to extend it.

Attempts to market laser etching equipment have been unsuccessful to date due to the high set-up costs. Laser printers print at a slower speed than that required to print on eggs being graded on the higher volume egg grading equipment. Two laser printers are required for each track of eggs which increases the stamping equipment installation cost. Indications are that the saving in ink costs is not offset by the higher capital and maintenance costs.

Laser etching on white shelled eggs.

14. General conclusions and recommendations

It is highly likely that egg stamping will become compulsory in all states of Australia in the near future and there is a cost associated with its implementation for each producer. The introduction of stamping will most likely be associated with more stringent food safety regulations. If the farm is already operating a well implemented quality assurance program additional changes to meet the new regulations will be minimal, however it is the additional licensing and auditing costs together with the set-up of egg stamping that are significant. Small farms (fewer than a 1000 hens) are most likely to use a manual pre-inked stamp which can be purchased locally. Small farms with more than about 1000 hens can purchase an inkjet stamper that can be fitted to their small egg grader.

All medium and large enterprises will need in-line equipment such as inkjet printers, with the purchase of such equipment costing at least $12,000. Entry level for Imaje printers is $16,000, for Domino $12,000 and for Ausgiant $13,000–$14,000. A number of companies have leasing arrangements which may assist in financing the introduction of stamping.

It is essential that in-line printers are compatible with the grading and processing equipment being used and it is strongly recommended that producers consult the company that manufactured their processing equipment. For instance, Moba, who markets their own and Diamond brand machines, recommends using Imaje or Domino printers. Ausgiant advertises four different egg coders.

Any inkjet equipment designed for use in labelling food products can, potentially, be used for labelling eggs. However, there are advantages in purchasing equipment which has already been adapted for use with eggs and tested over a period of time. Laser printers are available, however, initial purchase costs may be higher and this equipment has to be tested extensively for its suitability of use with egg grading and packing equipment.

Other important considerations are the availability and quality of parts, servicing and the supply of consumables such as ink from within Australia. Many imported products can take a significant period of time to arrive and ink has a limited shelf-life so cannot be stored indefinitely. The cost of consumables also needs to be evaluated as the amount of printing on each egg will determine how much — or how little — these ongoing costs will be.

Checklist for the introduction of egg stamping

1. Familiarise yourself with the legislative requirements in your state and the requirements of your major customers.

2. Consider the size of your farming operation — is it small enough to use manual stamping? If not, you will need to consider an in-line inkjet printer (either purchased or leased).

3. Do you want to use stamping as a promotional tool?

4. Check with the company who manufactured your egg grading and processing equipment to see what they recommend in relation to compatibility.

5. Make contact with suppliers of suitable equipment to identify specific options for your farming operation. Arrange for a visit by their technical representative.

6. Check on the availability and time frame for servicing and supply of consumables, e.g. ink.

7. Consider how much information you want to include on your 'stamp'.

15. Sources of information

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http://www.defra.gov.uk

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