AirStreamer comes of age and delivers real benefits

Two or three years ago we visited the Belgabroed Hatchery in Belgium to gain a hands on insight into the then revolutionary AirStreamer incubator from Petersime and the real benefits that it was giving to both the hatchery and the broiler farmer.

Since then the AirStreamer and the thinking behind its use have been fine tuned and so International Hatchery Practice recently revisited the hatchery to be updated on these developments.

The current Belgabroed business was created by the merging of the hatching interests of two Belgian family owned hatcheries.

The three Destrooper brothers merged their predominantly broiler hatching business with the Moonen family's predominantly table egg bird hatching business. This streamlined their activities and created real cost savings. Today the three Destrooper bothers and one of the Moonen family run the business.

Belgabroed operates to the highest Belgian and Dutch standards.

1.2 million chicks a week

At the time of the creation of the new business a total of some 900,000 broiler and layer chicks were being produced and now the broiler hatchery is producing some 1.2 million broiler chicks a week in the hatchery that we visited. The layer chicks are produced at a different hatchery.

At the present time the breed profile is 50:50 Ross and Cobb with the Ross 308 and Cobb 500 being used. One trial flock of Hubbard Flex is currently in the system for evaluation purposes. Some 95% of the hatching eggs are produced in Belgium and the remaining 5% come from Holland, which is only a few kilometres to the north. The largest chick vehicles carry 90,000 or so chicks and most of the chicks go to Belgian customers.

Originally the hatchery operated Petersime 1152 and 504 incubators. Then a few years ago Petersime worked with Belgabroed to evaluate their then new AirStreamer incubator under commercial conditions.

This machine was used for some five cycles and on a like for like egg basis showed a 2.13% improvement in hatchability. So, shortly thereafter when the hatchery had to expand it had no hesitation in doing this by acquiring 15 AirStreamer AS12 setters.

The performance of these machines mirrored what had previously been seen in the trial machine and the following year a further 21 AS12 setters were installed.

Feedback from the hatching world on the AirStreamer echoed the findings at Belgabroed. This feedback also begged the question 'can we have a larger AirStreamer machine?'

Petersime responded by creating the AirStreamer 24 setter, which was basically the same as the AS12 but twice as deep so that it held four rows of trolleys rather than two. Again, the prototype was field tested at Belgabroed and it gave the same performance in hatchability terms as the AS12 setter but the chicks took longer to hatch.

Petersime's engineers then made use of

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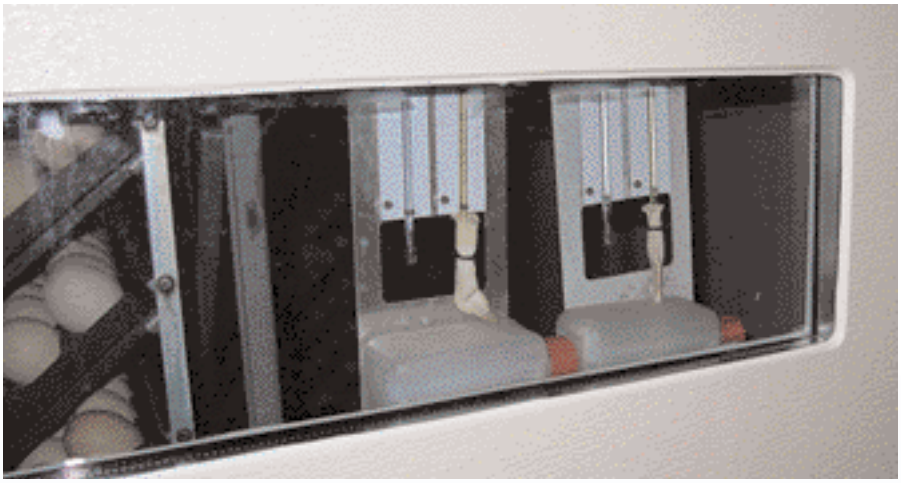
Left, the modern dispatch bay and, right, site security is controlled by electronically managed gates.



Carefully positioned windows in the setter doors allow easy inspection of the eggs and thermometers.

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another of their recent inventions, Ovoscan, to evaluate this situation and rectify the hatch time. Ovoscan monitors eggshell temperature and it showed that running the same machine temperature profiles in the AS24 setter as in the AS12 setter led to different (lower) egg temperature trajectories and thus longer incubation times. Adjustments to the AS-24S temperature settings resolved this issue.

Today's AS24 operates on the same principles as the original AS12 but its air flow is slightly different. Both machines work on the basis of ensuring an elevated carbon dioxide level in the machine for the first nine days and throughout the setter cycle achieving the desired egg weight loss by managing the humidity levels in the machine. The desired weight loss is usually 11% at 19 days (transfer or the end of the period of time that the eggs spend in the setter).

Air management essential

A key to the success of the AirStreamer is the management of the air in the machine. All air is freshly conditioned and flows through the eggs in the machine very uniformly.

This is critical because the AirStreamer's extra benefits in terms of hatchability come from the fact that no eggs are in those traditional 'hot' or 'cold' spots that can adversely affect embryonic development.

The air circulation produces a sucking pressure inside the AirStreamer. This necessitates a good quality seal on the machine and a very effective seal provides a positive benefit in terms of managing the carbon dioxide levels in the early stages of the incubation cycle.

Extensive monitoring has shown that this is what is really occurring, for example the AS24 that was first field tested at Belgabroed operated with 128 probes.

The carbon dioxide level in the first nine days is altered by subtly adjusting the ventilation. After the ninth day more emphasis is placed on achieving the desired weight loss. Hatching egg weight loss is monitored by using Petersime's especially adapted setter trays.

These very accurately measure weight changes in their eggs. Changes in air flow change the humidity level in the machine and this then modifies the rate of egg weight loss.

The uniformity of air flow means that all setter trays of eggs are similarly affected and extensive work by Petersime has identified the best position

The Petersime specialist egg weighing system and their Ovoscan egg temperature monitoring system.

for the special tray that weighs the eggs.

Experience and feedback from the field has confirmed that this position gives the best data from which he incubator's computer can then best manage weight loss.

Egg weight loss is greater after day nine and so the weight loss experienced by the eggs in the AirStreamers can no longer be described as a 'linear weight loss'. Linear weight loss is what occurs in some other makes of incubator and it is this novel weight loss pattern that Petersime believe is a key differentiating factor that helps them to achieve a superior performance.

Petersime's special Ovoscan system measures the egg shell temperature on four adjoining eggs in the AirStreamer and this is placed in eggs at high, medium and low positions in one trolley.

At Belgabroed all the AirStreamers use Ovoscan and the egg weight loss determining trays to comprehensively monitor what is happening in each machine.

The data derived from this and that from the single carbon dioxide probe in each machine is fed back into the machine's own computer where it is analysed to define the adjustments that need to be made to that machine's environment. All machines are similarly equipped.

The data from every incubation cycle is retained on the main computer. Then this is accessed for each new setting to provide the details of the settings that successfully hatched eggs of the same type when they were previously processed. This data highlights parameters such as breed, stage of lay and egg storage days.

Comprehensive analysis of this data over recent years has shown that the greatest benefits of using AirStreamers are obtained with eggs from breeder flocks that are in early or late lay. Here the advantage in hatchability terms can be almost 5%.

One slight disadvantage of the AS24 is that sometimes there are not enough eggs from one flock to fill it. This does not appear to be a problem as long as the eggs that are used to top up the machine come from a breeder flock of similar age.

Additional benefits

Early trial work that we have reported previously shows that the benefits of the AirStreamer are not just confined to hatchability.

This early work also showed that a 2.4kg broiler at 41-42 days could benefit by an extra 50g liveweight and a better FCR over broilers who came from conventional Petersime machines.

This was a reflection of better and more uniform chicks and the fact that the AirStreamer is a single stage machine and this conveys hygiene benefits.

More recently Belgabroed co-operated with Petersime on a trial to reassess the benefits of AirStreamer technology. They hatched four batches of 6,000 chicks that went to a special trial farm. Each batch was then subdivided down into four batches of 1,500 chicks. Ross, Cobb and Hybro breeds were used.

The end result – more uniform hatches of chicks with better hatchabilities that go on to perform even better on the broiler farm!

This trial showed a benefit of 55g in liveweight and two FCR points.

Interestingly, the benefits do not just arise from the AirStreamer technology. Some of the benefits appear to be coming from the improved measuring devices that Petersime have developed and how all the data is handled and processed.

This is borne out by the fact that prior to the arrival of Ovoscan liveweight benefits averaged 34g but since the widespread use of Ovoscan this has increased to 64g.

Today, Belgabroed operate 52 AS12 setters and 17 of the AS24 setters.

The benefits Belgabroed have gained from the AirStreamer technology are such that the few remaining traditional Petersime machines left in the hatchery will soon be replaced.

When you look at the payback gained from the better hatchability this was an easy decision to take. Interestingly Belgabroed only benefit from this – they do not benefit from the broiler benefits because they are an independent hatchery and not part of an integration.

This being the case, the benefits that an integrator would achieve would be even greater and the decision to switch to AirStreamers would surely be even easier.

The hatchery is fully automated with Breuil machines for chick processing. On the day we visited pulling the hatch started at 6.00am and by shortly after 9.00am some 200,000 chicks had been processed.

Typically some 65,000 chicks are processed per hour. By 11.30am most of the associated cleaning work had also been completed.

It was apparent from our visit to Belgabroed that the AirStreamer technology has come of age and the benefits it brings with it to your business are multifaceted and of real significance. ■