ELECTRONIC ANIMAL REGISTRATION AND IDENTIFICATION

HERMAN TH. MASSINK

Texas Instruments Holland B.V.
Kolthofsingel 8, 7602 EM Almelo
The Netherlands.

INTRODUCTION

Animal Identification for a long time already has received considerable attention for a variety of reasons.
Texas Instruments Holland B.V. has in close collaboration with Texas Instruments Deutschland GmbH developed TIRIS which is a reliable, injectable, tamper proof and afordable identification system.
The TIRIS system is composed of an injectable transponder, injectiontool and reading equipment.
The above 3 items will be discussed in detail.

TIRIS TRANSPONDER

For the transponder a special development has been completed by Texas Instruments Deutschland on chip design, while packaging and antenna design has be worked out by Texas Instruments Holland. The result is a transponder with a length of only 29 mm and a diameter of 3.6 mm.
Although transponders of this size and even smaller being available, all lack a major feature, namely reading distance. This has been overcome by TIRIS that reaches from 50 to over 100 cm. depending on the reading unit used.
This contrary to existing systems that only reach a few cm's

On top of this the electronic transponder does not need batteries and contains a unique identification code of 64 bit or an equivalent of not less than 19 decimal figures.

The size of the transponder is small enough to allow insertion in animals.
For this reason the Dutch authorities have expressed interest in such a system to identify all pigs in Holland.
Due to the large amount of animals involved a comparable large scale production facility has to be established resulting in a price breakthrough for electronic transponders.
However to arrive at a safe and simple injection of the transponder in 4 week old piglets and extensive research and injection program has been carried oud by I.V.O. Schoonoord, the main Dutch Research Institute for Animal Production. A seperate report has been published on this subject by I.V.O.
The results were, safe and simple transponder injection by the farmers and easy and quick removal of the transponder in the slaughterline, without loss of expensive meat.

TIRIS TRANSPONDER INJECTOR

The transponder injector has the capability to contain a cartridge with 10 transponders, which are automatically transported after each injection.
The needle is injected at the earbase of the piglet, guided by a pin to facilitate transponder injection at a controlled place.

While pushing the trigger the transponder, embedded in a desinfectant, is inserted and automatically the needle is retracted from the animal.
This transponder injection is fully harmless to the animal and no aesthesia is needed at all.

TIRIS READING EQUIPMENT

Reading equipment is available in a hand held version with a reading distance of 50 cm plus especially designed to identify pigs in a pen. The animals are easily registered while each animal also gets a sequence number in the unit. A total of 500 animals can be stored in memory for 48 hours or through a RS 232 output fed into a computer system. The reading unit also is equipped with double reading protection and rechargeable batteries for 2000 readings per battery charge.

Next to hand held reading equipment stationary antennas can be provided for coupling via an interphase to exisiting management systems.

TIRIS APPLICATION

Due to its nature, allowing injection of the transponder in the animal, it is the ideal device for tamper proof registration and identification. When applied at large scale, animals can be easily traced in case of veterinary diseases or when unallowed medicines, hormones, etc. has been detected.
Database update can be maintained almost automatically since the reading units can be coupled to computers.

When farm animals have been injected with a transponder automatic identification for feeding, weighing etc. is possible with great accuracy and without the current transponder loss upto 10% and more.
At the same time initial transponder cost can be decreased provided the system is used a large scale.

Since the transponder is inserted in the animal it also will not be lost in the slaughter line, more over the TIRIS transponder has been designed in such a way that it withstands the slaughterhouse procedure and thus can be used to automatically identify and register:

* the animal at entrance of slaughterhouse
* the results of the veterinary inspection
* weighing and classification
* automatic payment
* information feedback to the farmer

CONCLUSIONS

Tests sofar have shown that TIRIS transponders can be safely injected, not only in pigs but also in other animals. They do not migrate and are well accepted by the animals. Technical tests have been carried out and have proven that TIRIS can reliably be interfaced with automatic individual feeding and farm management systems.

Many slaughterhouse organizations have showed interest in the system for automation of slaughterline functions. Taking the above in consideration and the fact that TIRIS has been selected for an extensive fieldtrial in Holland it may well become the system of choice in the industry.

REFERENCES

E. Lambooy and J.W.M. Merks (1989): Technique and injection place of electronic identification numbers in pigs, I.V.O. report.

+ photo transponder with coins
photo injectiontool + reading unit