ESSEN

Large-scale cattle farm in Saudi Arabia opts for RFID-based Intelligent ANIMAL TRACKING AND MANAGEMENT SYSTEM

Instant identification and location of individual animals within a herd of thousands of animals

Feed management and yield optimization

Real-time livestock monitoring and alerts

Intelligent management of animal life-cycle

TECHNOLOGY

Solution:
EPC Gen2 compliant livestock tracking solution

Tag Type:
Bovina™ UHF Passive

Reader/Antenna:
Xtenna™
Xtenna Proximity™
HandyScanna™

Method:
Multiple Tracking via Integrated Reader/Antenna modules
Single Tracking via hand-held

Integration Platform:
  RFID Middleware:
    Xtenna™ WebToolkit
    Xtenna™ Studio
  Application: Essen RFID's
  Livestock Management System
  Database: SQL Server 2005 Exp. ed.

Tag Manufacturer/Supplier:
Essen RFID, with US based chip inlay

Reader/Antenna Manufacturer:
Essen RFID, with US based module

Systems Integrator:
Essen RFID

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Xtenna™
Integrated RFID Antenna/Reader

INSIDE:

CASE STUDY

KEY REQUIREMENTS:

Maintaining cattle data and related information is a very difficult task as cattle of the same breed look fairly alike, and management of individual production details and genetic data for thousands of cattle is not feasible in the manual process. Since several steps are to be followed in the lifecycle of cattle for achieving optimum output, taking extreme care is essential in this business.

Main challenges in implementation:
- Tracking cattle location within various areas of the cattle-farm or ranch.
- Identifying individual cattle throughout their lives and taking accurate need-based action for each cattle.

Efficient cattle management requires the ability to identify each cattle in all locations in order to be able to isolate a particular animal for various purposes such as preventing the spread of disease. It is also required to maintain individual records of fresh breeding, heat expected, confirmed pregnancies, calving expected, dry-off periods, medication, feed management etc. and this type of information retrieval from a manual system is extremely complex, labour intensive and time-consuming. Hence the need for an automated cattle management system is obvious.

SOLUTION:

Essen RFID provides a solution for tracking the location of cattle through RFID. Using this technology, the Cattle Tracking System intelligently identifies each animal and manages health, output and feeding in real-time. It uses Xtenna™ antenna-readers and hand-held HandyScanna™ devices for this purpose.

The system uses SQL Server as the backend database and Web-based application as the frontend interface. The HandyScanna™ device uses a mobile application to identify individual cattle, and sends data via Wi-Fi network to the database.

IMPLEMENTATION:

For tracking individual cattle the system requires a HandyScanna™ for basic entries, since the operating environment is outdoors in the fields. Each gate in the various holding and transit areas for cattle, as well as every section in the premises requires Xtenna™ antenna-readers for tracking cattle location. A BOVINA™ tag is attached to the ear of each cattle for unique identification. Xtenna Proximity™ reader is used for assigning the tags to individual cattle in the database.

CASE STUDY

WORKING:

RFID is used for two main purposes:

• **Location identification**
Information about each location is entered into a database. For this purpose Xtenna™ is mounted at the gates. Cattle management has locations such as treatment location, cleaning location, lactation location etc.
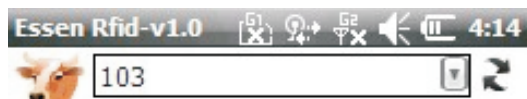
• **Cattle identification**
A BOVINA™ tag is affixed to each animal. The tag's unique identification number can be used to track individual cattle. The HandyScanna™ device is used for tracking cattle by scanning their tags.

Process Flow:

When a BOVINA™ tag is assigned to a particular individual cattle, all details pertaining to it such as breed, gender, colour, weight, sire details etc. are entered into the database. Efficient cattle management requires that each event in the lifecycle of an individual animal is entered in the database. Hence the system allows the operator to add event details such as fresh breeding, heat expected, confirmed pregnancies, calving expected etc.

When cattle move from one location to another in the premises, the Xtenna™ mounted at various locations track these movements and based on the last detection obtain the latest location of each cattle.

The operator or caretaker then uses HandyScanna™ to detect individual cattle from close range. The device scans the unique ID of the cattle's tag to find out individual cattle details. Based on the tag's ID, it fetches data from the server through Wi-Fi connectivity. HandyScanna™ is also used to add an event to the cattle's database and also get a list of event reminders. This allows the operator to take particular action based on the reminders for each cattle, such as period in heat, breeding time etc. The HandyScanna™ can also perform updation of medical information provided by the Vet for that individual
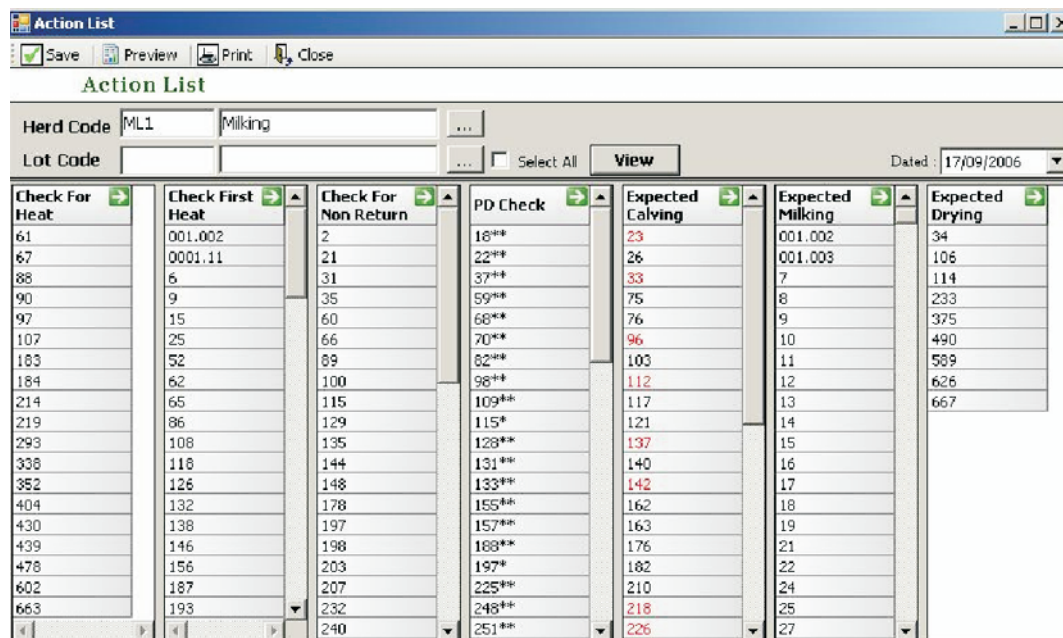
CASE STUDY

CASE STUDY

cattle. The device sends this new data to the server via Wi-Fi network. The operator can also make basic entries such as daily milk yield which is useful in determining the performance output of individual cattle.

The cattle management system keeps a daily track record of feeding provided to the cattle. If an individual animal is ill and not feeding well, the system can then identify such animals based on the record available and provide individual treatment.

The system has report facilities which provide necessary in-depth information about the herd and individual cattle to enable monitoring their health, movement, yield etc. The reports also provide reminders and checklists for individualized events needing to be performed at particular dates.

BENEFITS:

- The convenience, speed and accuracy of the Cattle Tracking System have brought many benefits to livestock farmers, veterinary officers and health authorities.
- Used to locate lost or stolen cattle.
- Proper care and monitoring of cattle through the Cattle Tracking System enables increase in milk production.
- Efficient management of cattle reproduction and genealogy.
- Feed management keeps track of which rations are to be fed to each cattle throughout the day.

CASE STUDY

LINKS:

Hardware:

Handy™ Scanna

Xtenna™

Xtenna Proximity™

Tags:

BOVINA™

Software:

Xtenna WebToolkit™

Xtenna Studio™

Reference Example:

http://www.essenrfid.com/Mailer/livestock-flash-demo.pdf