Huerisms and algorithms in the hog industry

Let's start this discussion with a definition of these two terms.

Heurism

Pertaining to, or consisting of, knowledge derived from empirical study and practical experience. (antonym: algorithm)

Algorithm

A procedure for solving a problem in a finite number of steps, frequently involving repetition of an operation, especially by a computer. (antonym: heurism)

How do heurisms and algorithms apply to the hog industry?

From the very beginning of livestock production on a commercial scale, heuristic rules evolved in order for the producer to achieve his goals. These goals have been and continue to be the humane and efficient production of animals destined for the food chain.

Heuristic rules or 'rules of thumb' have been invaluable in the past and will continue to be in the future, albeit to a lesser degree as technology advances supplant heuristics as the mainstay of running production facilities.

Heuristics depend on human observation to confirm or reject previous decisions, as the result of such changes become obvious. The frequency of such human observations determines the effectiveness of these 'rules of thumb'. Therefore, continuous human observation of variables is necessary.

Continuous human observation is an expensive and time-consuming activity, fraught with human error at almost every turn. In addition, heuristic knowledge rests mostly in the mind of the operator and might be difficult to pass on to others.

The introduction of new automated systems means that proven heuristic rules can be converted to algorithms to be used by these systems. While these algorithms may be considered proprietary, nevertheless they can be disseminated easily to similar production facilities. This extends the knowledge base more efficiently and should provide more consistent production results.

By using a heuristic approach to assess formative relationships that might appear in data collected by an automated system, you could see continuing development of improved algorithmic solutions. Logically this would lead to the development of a 'continuous improvement' scenario that should benefit the industry.

What are the perceived drawbacks of automated systems?

Cost

The most obvious drawback is cost. But what is the true cost of implementing such a system? It cannot be based on a straight comparison of the materials and labor required to implement the system. If so, there would be no progress in the industry; we would simply maintain the status quo. *When assessing the true cost of an automated system, you must consider and quantify the benefits to be derived from the system compared to the status quo.*

Automated systems can provide the basis for the establishment of a 'continuous improvement program', thus helping reduce the variable costs of production and helping maintain a high level of quality. In addition, they can help eliminate catastrophic failures.

If such a system had been available, how much would it have been worth to prevent just one cow with bovine spongiform encephalopathy (BSE, also known as 'Mad Cow Disease') from entering the United States? Certainly heuristic rules were in place to prevent this from happening, but perhaps if an automated system for traceability had been available, it could have been prevented.

Complexity

Another perceived drawback is complexity. The complexities of these systems are transparent to the producer. *A properly designed system does not require higher skill level at barn level.* In fact, these systems can actually free up personnel to do other essential work.

Heurism and algorithms are not at odds in this discussion. Algorithms used in automated systems in every industry are based on heuristic observations of the elements placed under automated control.

How do automated systems help producers implement Six Sigma?

Phason believes that without automated systems such as OMNI-4000 and OMNI-Enterprise, it will be very difficult to implement technically superior management techniques such as Six Sigma (also 6 Sigma). The very keystone of such systems is in the monitoring and collection of data from the production cycle.

Perhaps a review of the five steps that comprise the Six Sigma methodology might be in order.

Define

A serious problem or a goal in the area of continuous improvement is identified. A project team is formed and given responsibilities and resources to develop strategies to resolve either of these scenarios.

Measure

Data that describes how the process is currently working is gathered to produce some preliminary ideas about what might be causing the problem or help determine factors that might lead to improvement.

Analyze

Based on these preliminary ideas, theories are generated regarding what might be causing the problem. By testing these theories, root causes are identified.

Improve

Root causes are removed by means of designing and implementing changes to the offending process.

Control

New controls are designed and implemented to prevent the original problem from returning and to hold the gains made by the improvement.

How do OMNI-4000 and OMNI-Enterprise help producers implement and continue using the Six Sigma philosophy?

Let's start by looking at five of the main elements:

Data acquisition

Without a method of acquiring relevant data with respect to the production cycle variables, it would be impossible to implement any of the five steps in Six Sigma! While it might be possible to collect such data in ways other than using OMNI-4000, will they be as comprehensive and cost effective?

Measurement

What elements are necessary to provide the right data on a timely basis? OMNI-4000 at its current state of development can accept a great variety of sensor inputs to monitor and record these measurements. The success of the Six Sigma program could be put at risk by excluding any production variables.

Analysis

OMNI-Enterprise is a key element in the analysis of data collected by the OMNI-4000 system. This is likely going to be the source of problem identification for the 'define' step of Six Sigma. By comparing all production sites to a standard site or standard production expectations, deviation from these standards can be identified.

Improvement

Key strategies can be determined from the information generated by OMNI-4000 and then analyzed and compared in OMNI-Enterprise. This allows development of and implementation of an action plan to be applied to each of the remote OMNI-4000 sites.

Control

OMNI-4000 provides the ultimate solution for preventing the original problems from returning or the new strategy for improvement from being changed. After the solution is developed and implemented, the security system can eliminate any changes to control set points or other strategies.

We do not suggest that OMNI-4000 and OMNI-Enterprise will replace the human element in the production of livestock in confinement; far from it. But we do believe that without similar systems, successful implementation of programs like Six Sigma will become more costly and the results perhaps less precise.

The thrust of business practices in the 21st century must be based on continual improvement of all systems used by that business. The seeking out of causal relationships that either negatively or positively affect these systems must be determined and modifications made to the operating strategies.

Data is key to any continuous improvement program and the OMNI suite of products can provide it automatically in virtually all variable production cost areas: ventilation and barn environmental conditions, feed disappearance, water consumption, animal sorting, and many other areas.

It has been said that, running a business without adequate information that can be used to plan the future course of that business, is like driving a car by looking only in the rear view mirror. To stay with this analogy, consider your business as a car running up a steep incline. It becomes obvious that 'neutral' or 'reverse' are not options…unless you really want to go backwards.

The only option is to 'drive' your business forward with the intelligent use of systems that will generate the data required to implement programs like Six Sigma to continually improve your business and maximize the return on your investment.

A brief overview of the OMNI platform

OMNI-4000 is a comprehensive approach to monitoring and controlling virtually all of the production variables in the hog barn. The system is fully password protected so that changes to operating parameters can be made only by authorized personnel. The system logs all changes in a database, including who made the changes and the date and time.

OMNI-4000 provides the producer the ability to control and monitor the barn environment, and to monitor weather, manure levels, feed consumption, water consumption, and many other 'critical variables'. There is also an available alarm system that dials out on a telephone line and notifies personnel of alarm conditions in the facility.

The OMNI-4000 design philosophy is one of "open architecture". This means that as new sensors evolve, they can be incorporated into the system. Either to monitor, or in some conditions modify, the overall control strategy.

The system automatically collects data and stores it in a database that can be viewed either in local viewers or automatically retrieved by remote data collection systems such as OMNI-Enterprise.

OMNI-Enterprise

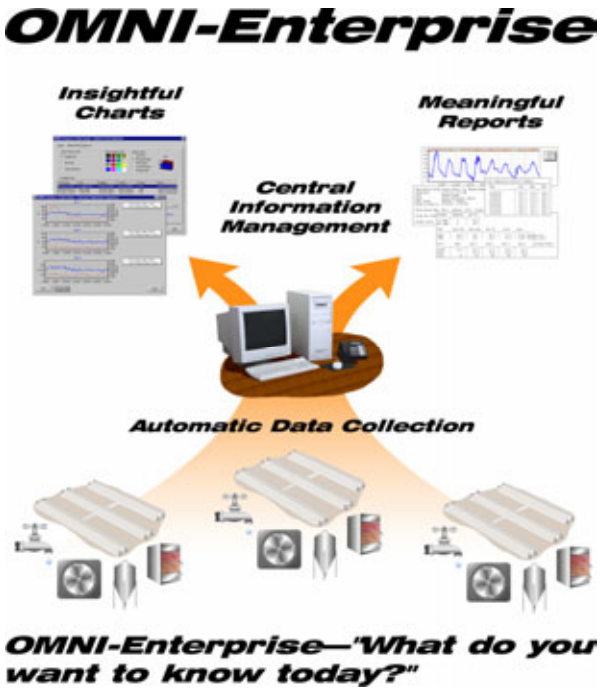
OMNI-Enterprise was developed to satisfy the requirements of larger corporate farms for a central repository of production data at head office. OMNI-Enterprise retrieves data from remote sites automatically by telephone in off-peak times at whatever interval is determined adequate by the producer.

OMNI-Enterprise extends the reach of production specialists, cutting down on travel expenses and lost time.

Fully functional analytical tools are available as well as detailed reports that would satisfy many elements of the Six Sigma program. Comparative analysis can be done between barns or sites to compare production values to a standard to establish if there are variances and what corrective action might be taken.

The OMNI Suite of products will make a valuable addition to any producer's Six Sigma goals.

For more information, contact Jeff Mah by phone at 204-233-1400, extension 204, or by e-mail at **jmah@phason.ca**.



For more information about Phason's OMNI-4000, visit **http://www.phason.ca/omnioverview.htm** or contact Phason. Our experts will be happy to assist you.

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