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Earning ISO/QS certification gives the right to lose it every six months. Maintaining the rigid quality system standards established by the International Standards Organization (ISO) dictates periodic re-evaluation of a company's adherence to those standards. Simply stated, the philosophy behind the ISO is:

- Say what you do—Document standard operating procedures (SOPs).
- Do what you say—Adhere to these SOPs.
- Prove it—Document the two previous statements.

Those in the manufacturing sector are familiar with the requirements of managing and maintaining their portion of the ISO/QS certification. Several years ago, the ISO standards were revised to require computerized maintenance management in place of older manual systems.

WCI Steel began computer management of its assets, maintenance responsibilities, spare parts inventory, labor force, and preventive maintenance in 1990. This article examines the solutions the computerized maintenance management system (CMMS) (Mapcon , Des Moines, IA) provides in maintaining an ISO/QS-9000/2 certification.

Say what you do

An existing table in the CMMS software provides a vehicle for creating and editing the control processes for the maintenance environment. Standard operating procedures (SOPs) for both maintenance and operations were developed. The What You See Is What You Get (WYSIWYG) format is compatible with the cut and paste features of Windows. Detailed schematics, diagrams, and photos can be attached to aid in the safe completion of a repair. An Import/Export feature can be used with existing files in other systems. Significant advantages can be gained by managing these records in a plant-wide CMMS.

Plant-wide, on-screen access to procedures. Many companies manage their SOPs via the department secretary/clerk who keeps records on a PC or saved to a network drive. The files are restricted to one or two employees for security purposes. Copies of the most current revision are made and distributed throughout the plant or department and placed in books for ready access and review. Since outdated information is a definite noncompliance in ISO/QS management, procedures have to be developed to define the handling of the old copies

removed from each book. Folders, files, and storage cabinets all require dedicated, labor-intensive management to ensure conformity.

A multi-leveled security system in a CMMS provides the same control features to create/edit records, plus allows on-screen viewing of the most up-to-date changes to procedures anywhere in the plant. There is no more need to make, distribute, retrieve, and manage copies of your procedures.

By managing SOPs in a CMMS, there are no outdated, obsolete issues to address; the most current revision is the one displayed. Browse screens or screen-editing security guarantee the integrity of the data.

Not all procedures are ISO procedures. The ability to customize screens and menus in a CMMS is a valuable tool in managing ISO/QS procedures. By creating a new dictionary item in the file, it is possible to add a Boolean-formatted field and place it on the screen as a required entry. This allows all ISO- and non-ISO-related procedures to be listed via ad hoc reporting features. Hands-on users can quickly find appropriate procedures when needed for review or as part of an audit.

Job safety analysis (JSA) management. In most manufacturing environments, safety procedures are defined for virtually every maintenance function. Documentation of these procedures ensures that the job gets done safely and correctly. In many cases, these procedures are a matter of law, and routine discussion with employees is part of an effective safety program.

Whether they are called JSAs, safe maintenance procedures, or job tasks, they all outline the step-by-step procedures to do the job correctly. These procedures are the basis for many ISO/QS standards for maintaining equipment.

As with corporate or departmental ISO procedures, JSAs are commonly managed in one location by one or two employees for security purposes. The same benefits can be reaped from a CMMS. Safety procedures can be attached to equipment records and to preventive maintenance (PM) routines as well. When work orders for the equipment are generated, safety procedures will be printed as part of the job.

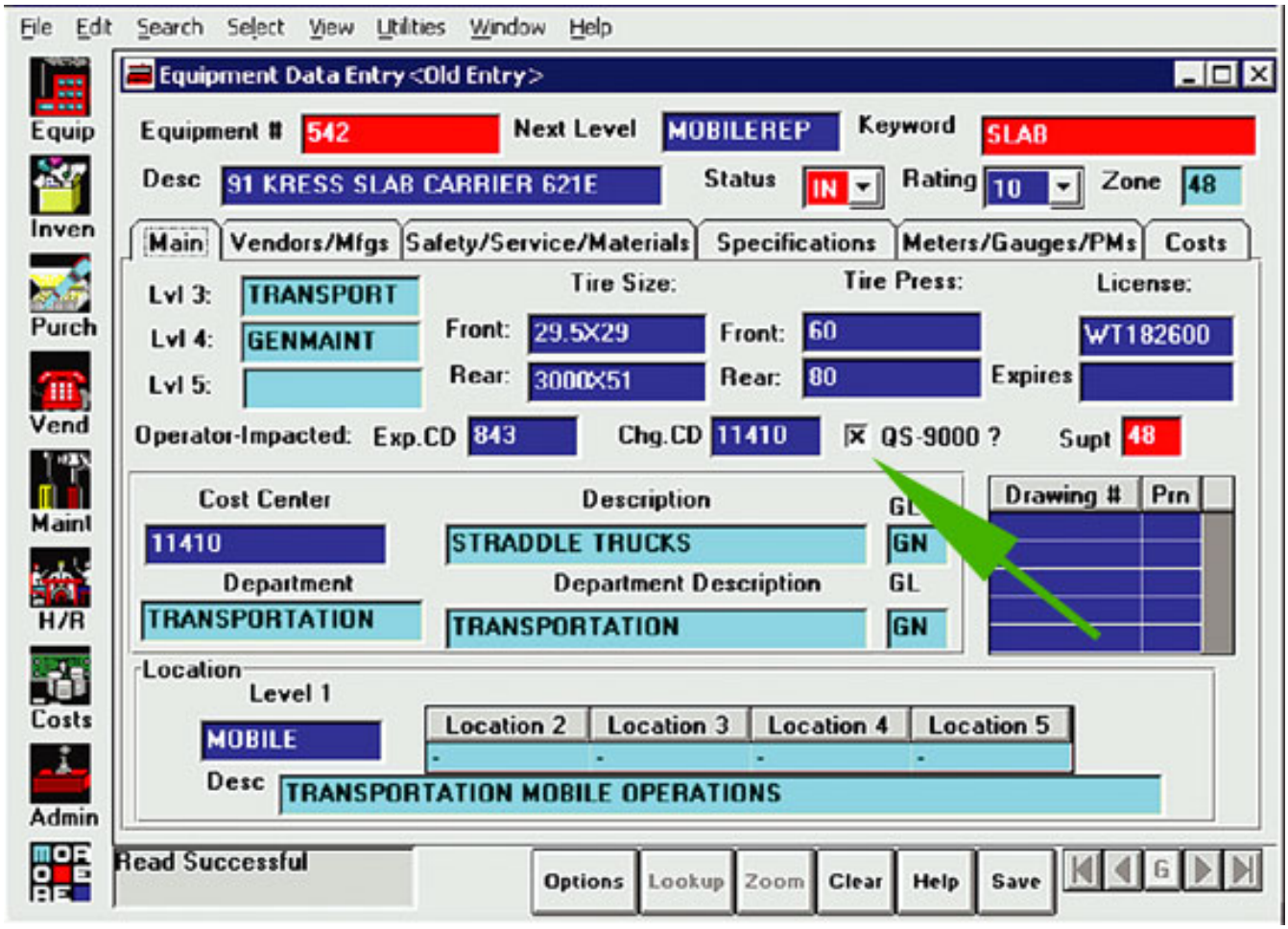

Fig. 1. A customized field indicates if a piece of equipment is ISO critical. **Identification of ISO-critical equipment**

. A basic requirement of ISO/QS certification is the identification of those pieces of equipment that have “a direct impact on the quality of the product.” If employees do not know which pieces of equipment impact quality, it is doubtful the equipment will be maintained to provide consistent quality.

As mentioned earlier, one of the strengths of some CMMS programs is the ability to customize the program to meet users’ needs. Coupled with a responsive support service from the developer, user-defined fields can be added to data entry screens. A required Yes/No entry enables a company to answer the question, “What ISO-critical equipment am I responsible for?” Fig. 1 illustrates this feature.

“Qualified” maintenance. Once an organization identifies which equipment is ISO-critical, the next phase of the process should be developed—who is responsible for maintaining the equipment and the skills required need to be addressed. Human resources, craft codes, or other integrated modules can provide the solution.

Craft codes are defined in the program, and employee records are entered in a human resources file. By defining specific training programs in an appropriate table, programs can be attached to individual employee records either through timecard screens or directly from a human resources table. Entries made via the timecard system should automatically update the HR record to show attendance at training sessions. Again, the software reporting features provide the tools to respond favorably to an audit.

Managing critical spares. It is not enough to know which equipment is critical, who will maintain it, and what skills are required. Keeping equipment on line means having critical spare parts available in the event of a breakdown. When this occurs, ensure that shortcuts are not taken that will compromise the ability to keep the unit performing efficiently to maintain product quality.

Inventory tables coupled with a vendor database provide organizations with the tools to ensure they have the right part when it is needed. Part status ratings enable maintenance to manage items in more than one location in the plant or to create a single stockroom and group all essential or long lead-time parts there. Reporting then can reflect the ability to make essential repairs to critical equipment in a timely fashion.

Do what you say

Preventive maintenance uses the minimum amount of resources required to maintain optimum equipment performance. Changing the oil and filter in the family SUV every week, although certainly a benefit for the engine, is hardly preventive maintenance. The same applies to gear reducers, motors, cranes, conveyors, and process lines. Every hour spent maintaining equipment affects profitability. On the other hand, spending too few hours on maintenance affects equipment negatively and seriously impacts its ability to maintain quality.

The pinnacle of any CMMS is its PM system. Once the What, Who, and How have been determined, the When becomes the job of the PM module. PM procedures detail the minimum steps required by the equipment manufacturer to maintain equipment uptime. The automotive industry’s 3 months or 3000 mile oil change interval is based on normal operation. Likewise,

manufacturers' minimum standards for equipment should be adjusted accordingly.

Once PM procedures have been developed and tested, turn the process over to the PC. Having established the Date Last Done for all equipment PMs, the computer keeps track of the next time each PM function is due by issuing a work order created from the information on the PM. Short-circuiting this step will jeopardize certification and lose the Do What You Say piece of the process.

Work orders are generated from written PM procedures and assigned to the appropriate craft personnel (or defined crews) for execution. Once the work has been completed, the work orders are closed, with supporting comments and details noted. As an organization's work orders migrate from reactive to proactive, its equipment up time increases, and costs ultimately decrease.

As mentioned earlier, JSAs or safety procedures that further detail the maintenance work required to safely keep the equipment running can be attached to a PM. Having a system that allows the user to draw information from several sources without duplicating is an asset provided by some CMMS packages. SOPs in available tables can be attached to a PM procedure without retyping information. Further, if changes are made to the parent document, they will be updated automatically the next time a PM is generated.

Prove it

Developing and managing all of this information takes the combined efforts of several groups within an organization. First, a system manager oversees the operation of the program and is responsible for the training, implementation, and maintenance of the software. Next, departmental staff must build the human resource information and related training programs. The maintenance group must identify and develop the equipment and inventory information essential for successful management. Finally, a well-informed maintenance crew whose job it is to keep the equipment running is a must. Each step of these processes creates the documentation that satisfies the Prove It phase of ISO/QS-9000. Reports can be generated that answer the questions needed to verify compliance.

Since it is not uncommon for an ISO/QS-9000 auditor to ask for evidence of equipment identification, critical inventory, employee training, or PM compliance records, a single menu was created in the software so anyone involved in an audit can obtain information that demonstrates compliance.

From this single menu, the department or individual being interviewed can answer questions such as:

• What equipment is defined as ISO-critical in this department?
- Can you show me how your crew is doing on their PM requirements?
- How many times and when have you completed PM work on equipment X?
- What are your critical spares?
- Which employees have been trained in the training program?
- What quality-related SOPs exist in this department?
- Can you show me a copy of all the PMs for equipment X?
- Do you have any open PM work orders for the millwrights?

Inquiries such as these involve equipment, inventory, human resources, work orders, and PMs. By consolidating all the reports to one menu, users do not have to know the layout of every report menu in the software or determine if certain information is available from one section of the program instead of another. **MT**

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