ISO 14001 at Ford: Certification and Beyond

by John Connor and Robert W. Niemi

After the ISO 14001 flag is raised, what are the next steps? Integrating the elements of an EMS into the mainstream processes of your organization will not only improve efficiency, it will also ensure that the EMS drives continual environmental improvement. The experiences garnered from Ford Motor Company’s worldwide EMS implementation process may provide useful guidance for your organization.

INTRODUCTION

Companies expend significant resources to develop environmental management systems (EMSs) and, therefore, tend to implement these systems in a phased approach that focuses on those areas that will produce the greatest (and most immediate) benefits. This approach, however, can result in a stand-alone system that requires specialized training, documentation, and auditing, and one that is difficult and costly to maintain. On the other hand, choosing an integrated approach to EMS implementation can lead to greater efficiency in implementation, maintenance, and performance. This article provides some detail of Ford Motor Company’s environmental management systems and their evolution to demonstrate the benefits of integrating EMS requirements with other company management systems, such as quality, production, and product design.

The ultimate goal of an EMS is to optimize the environmental performance of an organization, ensuring that both organizational and regulatory requirements are met. By integrating environmental goals, objectives, and action plans into an organization’s mainstream processes, they become part of normal operating practice instead of a special project championed by an environmental group that might have little specific knowledge of the particular process being managed. In addition, using existing organizational processes results in increased efficiency and reduced bureaucracy by not having to duplicate these processes to achieve environmental goals.

THE FORD ENVIRONMENTAL SYSTEM

To address the need for a common, disciplined approach to environmental management, Ford developed and implemented the Ford Environmental System (FES). The FES was designed to address the requirements of the ISO 14001 standard,1 as well as existing environmental programs, including regulatory compliance assurance, waste minimization, pollution prevention, and energy management.

ISO 14001 is the only specification standard in the ISO 14000 series of standards, created by the International Organization for Standardization (ISO) in Geneva, Switzerland, that describes the requirements for certification, registration, or self-declaration of an organization’s EMS. The ISO 14001 standard defines the requirements that an organization must incorporate into its EMS to meet internationally recognized standards for sound environmental performance. ISO 14001 registration involves regular audits of an organization or facility by an approved registrar. The registrar is an organization that is accredited by the Registrar Accreditation Board to audit facilities under the guidelines of the ISO 14001 standard and provide certification to those organizations that meet the requirements of standard. ISO 14001 certificates are internationally recognized. It is also possible for a company to self-certify under the ISO 14001 standard.

Ford chose to pursue a strategy of ISO 14001 registration for all its plants worldwide even before the standard was formally published in September 1996. ISO 14001 was recognized
as a model in which Ford could build a framework around existing environmental programs and as a method to address the need for a common, disciplined approach to environmental management throughout the company’s manufacturing facilities. Over the past five years, Ford has adopted a more integrated approach to the process of certifying its environmental programs. The company’s manufacturing facilities were the first to implement the FES. Each facility developed a local EMS that conformed to the requirements of the corporate FES, and then applied for a separate ISO 14001 certificate. Within the past three years, these manufacturing facilities have incorporated their local EMS requirements into the Ford Production System (FPS), bringing the EMSs into the company mainstream. In the past year, Ford’s nonmanufacturing facilities and activities (e.g., product design) have begun the process of becoming certified. These facilities and activities are currently being certified to ISO 14001 under a group certificate using the Ford Automotive Procedures (FAPs). The FAPs are company-wide procedures that define the overall, integrated quality and environmental management system. Ford’s manufacturing facilities are currently in the process of incorporating the FAPs into their EMSs.

In December 1998, Ford celebrated its achievement of certifying more than 140 manufacturing facilities in 26 countries. Company-wide EMS implementation was accomplished with hard work by facility environmental engineers, significant use of environmental consultants, and corporate assistance. A detailed chronicle of the management initiatives, FES design, implementation experiences, and system documentation can be found in the recently published book by Tim O’Brien, entitled Ford & ISO 14001² (see “Now Available in the Bookstore” on p 28).

THE FORD PRODUCTION SYSTEM
The Ford Production System (FPS) is based on the following principle: “A lean, flexible, and disciplined common production system defined by a set of principles and processes that employs groups of capable and empowered people learning and working safely together in production and delivery of products that consistently exceed customers’ expectation in quality, cost, and time.” The FPS was being developed as the last of the manufacturing facilities were completing the FES implementation process. The FPS provided the opportunity to apply manufacturing principles to a single, coherent management system based on lean manufacturing concepts with the key goals of eliminating duplicated efforts and reducing waste from manufacturing processes. For example, the system includes an internal assessment to determine the effectiveness of plant-specific programs that focus on pollution prevention, waste minimization, resource conservation, and environmental compliance assurance, which are typical EMS activities. The system is therefore incorporated into preexisting organizational activities to help drive ownership of the key elements of the FPS listed in Table 1.

Although the FPS has a separate “Environmental” element, a number of environmental requirements are also contained in many of the other elements. While the fact that there is an environmental element that is an integral part of the FPS already demonstrates integration, there is evidence of further integration. Materials review and tracking requirements (a key component of environmental management) is contained in the “Industrial Materials” element, since this element is overseen by the group that controls what enters a facility. Other examples of integration are environmental training in the “Human Resources” element, equipment maintenance in “Maintenance,” and workgroup determinations of environmental aspects within the “Workgroups” element.

Table 1. Elements of the Ford Production System.

<table>
<thead>
<tr>
<th>Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health &amp; Safety</td>
</tr>
<tr>
<td>Environmental</td>
</tr>
<tr>
<td>Quality</td>
</tr>
<tr>
<td>Training</td>
</tr>
<tr>
<td>Human Resources</td>
</tr>
<tr>
<td>Workgroups</td>
</tr>
<tr>
<td>Maintenance</td>
</tr>
<tr>
<td>Process Control</td>
</tr>
<tr>
<td>Industrial Materials</td>
</tr>
<tr>
<td>Synchronous Material Flow</td>
</tr>
<tr>
<td>Manufacturing Engineering</td>
</tr>
</tbody>
</table>
The establishment of an environmental element within the FPS has resulted in improved environmental awareness above and beyond that gained through the EMS implementation process alone. Every Ford facility is assessed annually according to each specific element by a company expert. The overall score for the facility is its lowest score for any one element (analogous to a chain being as strong as its weakest link). The FPS scores are used for numerous purposes; one significant use is as an input used in consideration of local management compensation.

INTEGRATING QUALITY AND ENVIRONMENTAL SYSTEMS

By the end of 1999, it was common to see articles printed in trade publications and seminars promoting the integration of quality systems such as ISO 9001 and environmental systems such as ISO 14001. Experts for both environmental and quality systems understood the similarities within both standards and the opportunity to eliminate the duplication of activities. At this time, a few of Ford’s manufacturing facilities had integrated some of their quality and environmental procedures, such as internal auditing, calibration, corrective and preventive actions, and management review, during their initial implementation of the FES; most manufacturing facilities implemented the FES as a stand-alone system.

Ford also recognized the benefits of combining external certification audits into a single audit. With the cooperation of plant managers and registrars, pilot programs were conducted at a few facilities to determine the benefits of combining external quality and environmental audits. Much of the initial planning focused on organizing audit activities to optimize auditor activity and minimize disruption at a facility during an audit. Meetings with personnel responsible for quality and environmental activity at the various facilities were coordinated so that individuals were interviewed only once and essential documents could be readily available when the third-party auditor entered a particular department. The registrars cooperated by ensuring that the auditors participating in the programs were qualified in both environmental and quality management systems.

The pilot programs were organized with joint quality and environmental meetings between the plant managers and management teams. Internal audit results for both the quality and environmental systems were audited during a single audit, and calibration requirements were also audited at the same time. The results of the pilots demonstrated that third-party audits for ISO 9001 and ISO 14001 could be successfully accomplished simultaneously during a single audit. Results also revealed that, in most instances, there was generally less disruption to plant personnel and production activities when using the integrated audit. Disruption from department to department was also minimized due to a single visit and interview. By synchronizing the audits, there was also an overall reduction in registrar staffing costs that resulted in a savings of approximately one person per audit day.

INTEGRATED MANAGEMENT SYSTEM

Learning from experience, Ford recognized that the implementation of the FES was generally viewed by corporate and manufacturing facility personnel as bureaucratic and confusing. Worse, the implementation process was not clearly related to the Ford Enterprise Model, which incorporates the company’s vision, mission, and values (see Table 2). Two essential components of the Ford Enterprise Model are superior customer satisfaction and loyalty, and corporate citizenship. The company’s quality and environmental management systems define the specific requirements to which each department within the organization must adhere. These requirements are essential to achieving customer satisfaction and the environmental leadership aspects of corporate citizenship. Senior management also recognized that Ford’s reputation as a company that focuses on environmental issues is largely measured by its products, such as vehicle air emissions, rather than the environmental performance of its manufacturing facilities. It was decided that many of the lessons learned through implementing the FES and certifying the company’s manufacturing facilities could also be applied to product-related activities. As a result, in 2000, an integrated quality and environmental system was developed. The focal point of this system became the Ford Automotive Procedures (FAPs), which combine key FES and quality procedures. Implementation is being completed in product development-related activities, and is currently beginning deployment at all manufacturing facilities.

Ford’s integrated quality and environmental management system was developed, in part, as a way to eliminate ISO terminology in the rollout of the FES to the company’s nonmanufacturing facilities. The system is maintained by local management, internal audit staff, and third-party external registrars.

Table 2. The Ford Enterprise Model.

<table>
<thead>
<tr>
<th>Vision</th>
<th>To become the world’s leading consumer company for automotive products and services.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission</td>
<td>Ford is a global, diverse family with a proud heritage passionately committed to providing outstanding products and services that improve people’s lives.</td>
</tr>
<tr>
<td>Values</td>
<td>The customer is “Job 1.” We do the right thing for our customers, our people, our environment, and our society. By improving everything we do, we provide superior returns to our shareholders.</td>
</tr>
</tbody>
</table>
addition, the creation of local procedures and work instructions was kept to a minimum. This approach simplified the training of staff that had little responsibility for environmental aspects in their daily work. Implementation of the integrated quality and environmental management system was achieved by using a simplified training program to ensure that each employee has the information necessary to meet the system requirements without the need for employees to be experts on either ISO 9001 or ISO 14001.

'THE FIVE PILLARS'

During the implementation process, several existing business processes were successfully eliminated, including the need to maintain evidence manuals for the company’s existing ISO 9001 system, and the creation of long narrative document manuals that describe the interaction of the ISO 14001 standard and the FES. Business objectives for both facility- and product-related activities with targeted completion dates are now reviewed and included as part of an overall Corporate Environmental Control Plan, which identifies key organizational or individual responsibilities, as well as methods to monitor/track and report activities against the stated objectives and targeted completion dates.

The integrated system structure that Ford implemented was based largely on what has been described as “the five pillars,” as depicted in Figure 1. The five pillars identify the five key areas necessary to ensure that each employee has the necessary information to meet both quality and environmental requirements. The five pillars are defined below.

Organizational chart. The use of an organizational chart helps to clearly define the primary functions of each section/area within a department. The use of an organizational chart is a fundamental tool historically used within Ford.

Roles and responsibilities. The roles and responsibilities of each staff member have historically been defined by the organization. Each employee is required to understand his/her job function according to the defined roles and responsibilities.

Master Document List (MDL). The MDL includes all of the organization’s applicable policies, standards, and procedures. The MDL addresses the specific requirements of the ISO 9001:1994 and 14001:1996 standards. As part of the integration process, the company was able to consolidate 17 corporate environmental procedures into five integrated quality and environmental procedures that specifically address environmental-related requirements. The remaining 10 system-level procedures, previously created to address quality-related requirements consistent with ISO 9001, were modified to address environmental requirements consistent with ISO 14001.

Document/record matrix. The global document/record matrix identifies those records that are required for knowledge...
preservation, legal, or business reasons. Each department manager is required to develop a global document/record matrix, identifying the records maintained by the department, with an identified storage location and retention schedule/period.

Skills matrix and training. A skills matrix/profile lists the required skills and qualifications of each staff position within the company, as well as additional desired skills and training requirements.

Corporate-wide internal audits of product-related activities and nonmanufacturing facilities are completed on a monthly basis by internal auditors cross-trained in quality and environmental requirements. The internal audits are conducted to

- verify conformance with the corporate quality and environmental management system and organizational documents;
- facilitate an environment where each employee understands his/her roles and responsibilities as defined in the applicable MDL, and how their actions impact customer satisfaction and environmental performance; and
- identify value and improvement opportunities.

CONCLUSION

As of October 2001, all of Ford’s U.S.-based manufacturing facilities and product-related activities were recommended for ISO 14001 certification by the registrar. All European product-related activities were scheduled to undergo third-party audits by the end of October, and Ford fully expects that they will be recommended for certification. Ford is also continuing to maintain ISO 9001 and ISO 14001 certification at all wholly-owned manufacturing facilities, assisting suppliers in their ISO 14001 certification efforts, and working to achieve ISO 14001 at joint-venture manufacturing facilities. The integration of the FAPs into the EMS process is currently being implemented at the company’s manufacturing facilities and the alignment of numerous manufacturing facility certificates under group certificates (for like operations) is also being considered.

Full integration of the quality and environmental management system at all manufacturing and nonmanufacturing facilities, as well as within product-related activities, is expected to align the company’s business objectives and deliver significant efficiencies. Ford believes this will drive continual improvement, reduce non-value-added activities, minimize the bureaucracy of maintaining two separate systems, optimize internal/external auditor activity, and reduce costs.

REFERENCES