

Environmental Certification of AT&T-GIS in Augsburg, Germany

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To remain competitive, organizations must increasingly apply effective and efficient management systems, sustain satisfactory financial "health," and achieve exemplary environmental performance. A European directive (EEC Regulation 1836/93) encourages industrial companies to participate in a voluntary community eco-management and audit scheme. The Workstation Products Division (WPD) of AT&T Global Information Solutions (AT&T-GIS) in Augsburg is a PC development and production facility. It is the first company in Germany to achieve both certification of its environmental management system (EMS) and ISO 9001 registration of its quality management system (QMS). *Quality* in the EMS/QMS integrated management system was redefined as *fulfillment of defined and perceived requirements to delight customers and society through economic and environment-friendly processes*. The certification of WPD's total quality management system demonstrates leadership in this highly competitive arena.

Project History

Since the early 1970s, a defined, documented, and implemented quality management system (QMS) existed at the AT&T Global Information Solutions (AT&T-GIS) Workstation Products Division (WPD) in Augsburg, Germany. Internal audits at the WPD were conducted regularly, and they were complemented by external audits managed by the central quality management organization. Continuous improvement programs and a system to record and analyze costs already existed. When the standards of the DIN/ISO 9000 audit series (in which the individual standards are numbered 9001 to 9004) were announced and analyzed in the late 1980s, the following determinations were made:

- In essence, the QMS (then still a quality assurance system) conformed to the recommendations of the DIN/ISO 9004 standard; and
- Some elements of the QMS did not fully comply with the requirements of the DIN/ISO 9001 standard.

Gaps existed in the documentation of the

QMS. That is, some parts did not meet ISO 9001/9002 requirements.

When the decision was made to certify the QMS, preparations proceeded normally without any additional haste or effort because the WPD did not have to meet a specific deadline. It must be emphasized that Quality Management was the organization driving coordination of all the preparations. The documentation that was missing or in need of revision, however, was produced by the appropriate departments and process owners.

The AT&T-GIS manufacturing operation includes the following four processes:

- Circuit-board production,
- PC final assembly,
- Logistics, and
- Supporting functions.

These processes were certified in July 1992 according to the DIN/ISO 9002 standard. The development process, however, was certified the following December according to the DIN/ISO 9001 standard. The five-month gap resulted from personnel

and management changes within the AT&T-GIS organization in Augsburg, which affected the decision-making process and delayed development process certification.

When the first draft of the environmental management system (EMS) standards was published in 1993, the following two factors became apparent:

- Environmental issues and concerns had held a high priority at AT&T-GIS and some other companies for many years, and such was not merely a matter of satisfying legal requirements; and
- The EMS standards compared favorably with the proposal to extend the DIN/ISO 9001 standard (now German Society for Quality [DGQ] Publication 100-21), although some of its elements did not fully correspond to the DGQ requirements.

In addition, some gaps existed because certain EMS processes, although already in place, were not documented as required by DGQ standards. Thus, after the successful certification of the QMS, the next step was to pursue certification of the EMS. AT&T-GIS began discussions with DQS, the leading German certification agency in Berlin. These talks resulted in the development of another contract to certify AT&T's EMS in a pilot project. The EMS then served as an extension to the existing QMS.¹

Genesis of a Single EMS/QMS System

European consumers have traditionally placed equal importance on both product quality and environmental concern. In a typical purchasing decision, the environmental characteristics of a product often can be the deciding factor given comparable product features and pricing. Thus, a European consumer typically evaluates the following two factors before making a purchasing decision:

- The environmental "friendliness" of a product and its packaging, and
- The extent to which a product can be disposed of in an environmentally responsible manner at the end of its life cycle.

Many European consumers are integrating the term "environmentally friendly" into their understanding of what a quality product should be. Furthermore, their concern about environmentally responsible manufacturing processes—which, as previously mentioned, are becoming a significant factor in many buying decisions—is also growing. Thus, concern for the environment and product quality have assumed equal importance to many of these customers.

Panel 1. Abbreviations, Acronyms, and Terms

DGQ—*Deutsche Gesellschaft für Qualität*, the German Society for Quality
DIN—*Deutsches Institut für Normung*, the German standardization organization, similar to the ISO
DQS—*Deutsche Gesellschaft zur Zertifizierung von Qualitätsmanagementsystemen*, the leading German certification agency in Berlin
EEC—European Economic Community
EMAS—Environmental Management and Audit Scheme
EMS—environmental management system
EN—*Europäische Norm*, European standard
ISO—International Organization for Standardization
OEM—original equipment manufacturer
QMS—quality management system
WPD—The Workstation Products Division of AT&T Global Information Solutions

This new concept of quality clearly shows that no separation between a QMS and an EMS can exist. One overall solution within the total quality management concept must emerge, integrating the requirements of both a QMS and an EMS. This is the approach suggested in the aforementioned DGQ Publication 100-21, which was initially conceived as an extension to the DIN/ISO 9001 standard.

DGQ Publication 100-21 includes all 20 elements of the DIN/ISO 9001 standard, and each element now contains specifications relating to the environment. Additionally, EMS specifications are set in italics to make them typographically distinct from the QMS specs. This technique ensures a company's agreement on and acceptance of all the standards because some elements—for example, supplier control—already complied with QMS standards but had to be extended by requirements relevant to the environment.

In many companies, discussions were held concerning ownership of the proposed integrated QMS/EMS. Questions arose about who would assume the leadership position, as well as who would represent

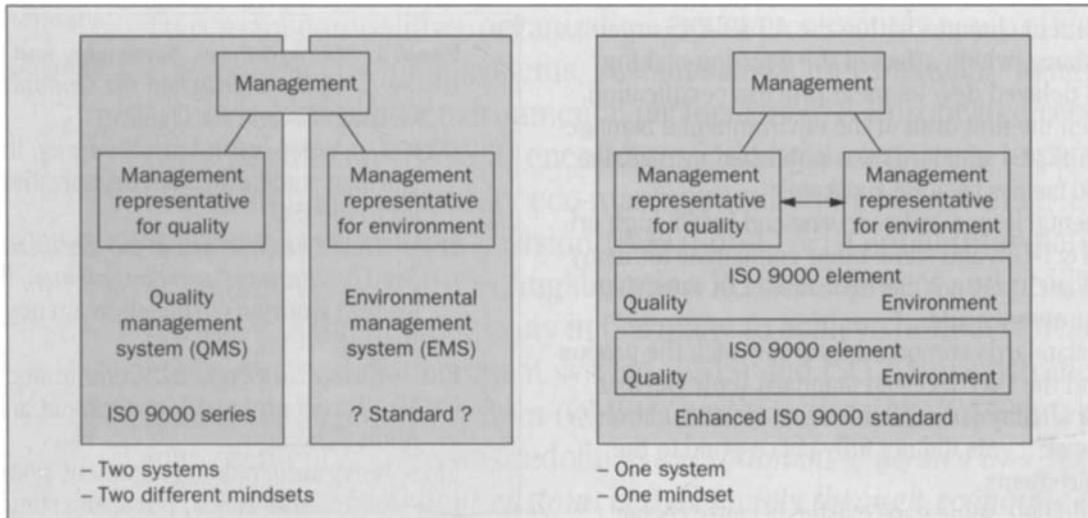


Figure 1. This block diagram, which represents the separate and combined quality and environmental management systems of AT&T Global Information Solutions, illustrates that both quality and environmental issues

support top management. *Management review* and *internal audits* of quality and environmental issues apply to both the quality and environmental management systems (QMS and EMS) and are now carried out jointly.

top management on issues concerning quality and the environment. The answer to these questions soon became obvious—*top management itself*.

Representatives for both quality and environmental issues now support top management. Thus, the elements *management review* and *internal audits* of quality and environmental issues apply to both QMS and EMS and are carried out jointly (see Figure 1).

Environmental policies should be just as clearly defined as quality policies because both will be covered by an EMS certificate. All statements regarding the environmental policies of AT&T-GIS must be described in the EMS in terms of actions and then implemented accordingly. This means that management must define the objectives, which also must be covered by a formal action plan. The successful implementation of this program depends on the *management review process* depicted in Figure 2.

Identifying Environment-Related Issues

The following subsections presuppose that AT&T-GIS—as a global computer company—has the

responsibilities of developing PCs and workstations for a worldwide market, manufacturing them, and distributing them through various marketing channels. Moreover, Blue Angel certification of AT&T-GIS products by the German agency that awards the highly desired *eco-label* demonstrates the company's proactive stance and sensitivity to environmental issues, both major parts of the EMS.

External Requirements. The requirements imposed on the EMS from external sources originate from national legislation, international recommendations, and regulations. Not only is the current status of the EMS considered. Future developments and trends are also taken into account. The goal of the EMS is to be *proactive*—that is, oriented toward the future in its approach. A reactive EMS adapts only to current requirements, such as those promulgated by the Environmental Protection Agency in the United States. The *introduction* and *announcement* of external requirements is the responsibility of the representative designated by top management while *implementation* is the responsibility of the process owners.

Additional external requirements result from AT&T's ethical and environmental policies. One responsi-

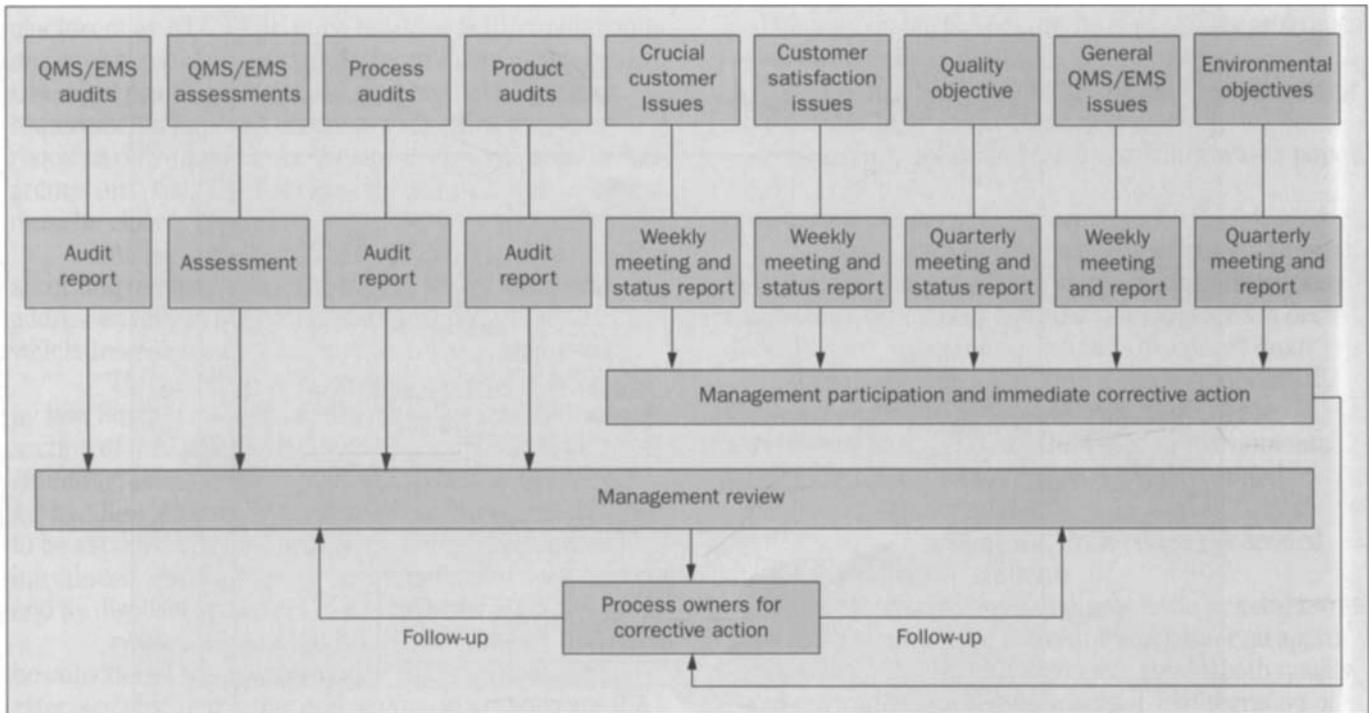


Figure 2. Depicted in this block diagram is the AT&T Global Information Solutions (AT&T-GIS) quality and environmental management systems (QMS and EMS) management review and improvement cycle. All statements regarding the environmental policies of AT&T-GIS must be

described in the EMS in terms of actions and then implemented. Management must define the objectives, which also must be covered by a formal action plan. Successful implementation depends on the management review process shown.

bility of a company's designated environmental representative is to transform such requirements into practical goals. The representative must also provide adequate internal guidance so that implementation of the requirements and attainment of the goals become the responsibility of the process owners.

Internal Requirements. Generally, a company's internal quality and environmental policies are established by upper management. These policies, which include the 20 elements of the DIN/EN/ISO 9001 standard, are then handed down to management of the individual business processes, making the 20 elements part of the formal operating structure.

Development process. A list of materials not approved for use either by a company or any of its suppliers—as well as a preferred materials list—must be developed. Clear

rules for plastic parts marking to facilitate recycling must also be established. These requirements are listed in the *Environmental Requirements & Guidelines*, a compendium of specifications for product development, which is based on technical specifications.

Another important aspect in the product design process is the development of ecologically acceptable packing material. Such material is:

- Nonpolluting and biodegradable, such as compressed cotton;
- Recyclable; and
- Suitable for take-back and possible reuse.

Procurement. The most important aspect of the procurement process is that all contracts with suppliers contain clear guidelines concerning environmentally

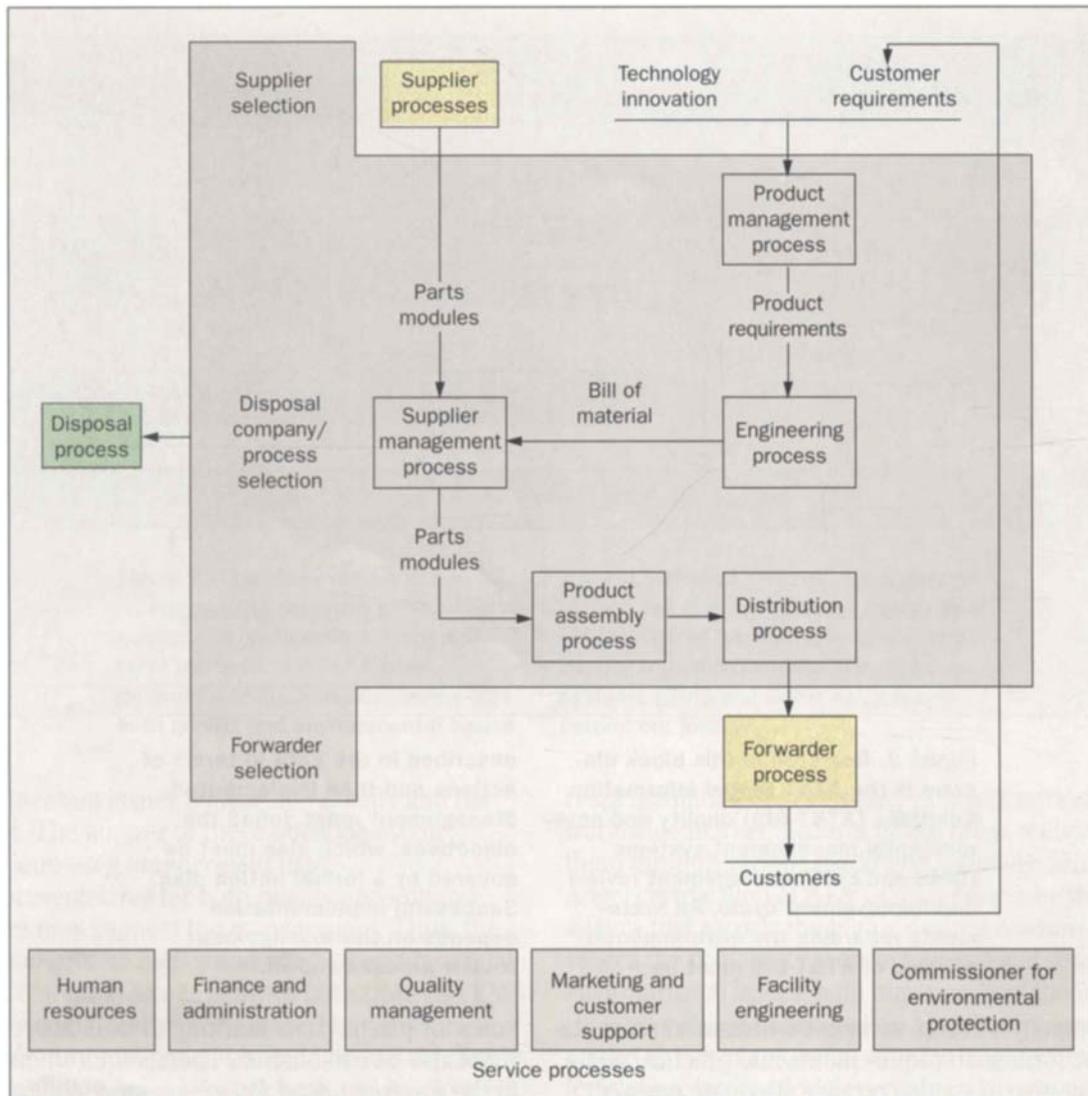


Figure 3. The correlation and progression of the key quality and environmental management system (EMS/QMS) processes is shown in the upper portion of the illustration. The various groups

involved in the EMS/QMS at the AT&T Global Information Solutions Workstation Products Division in Augsburg, Germany, are shown horizontally across the bottom.

acceptable products. These guidelines must be established in either one of the following two forms:

- OEM (general) contracts, or
- Procurement specifications for each component.

These guidelines are not new. In fact, they have

been used by numerous companies for many years in the establishment of quality requirements. The new aspect is the inclusion of environmental considerations in the contracts and specifications.

Production. The production processes of such man-

ufacturers as AT&T-GIS must produce neither pollutants nor environmentally hazardous byproducts of any kind. Chemical plants, however, do not have such stringent requirements imposed on them. Currently, they are required only to *minimize* the use of environmentally hazardous material. The handling of such material, however, must be closely controlled.

All packing material must be collected, separated according to type, and properly disposed of. This issue is addressed fully in the procurement section of the EMS, which describes how to at least minimize packing waste.

The handling of hazardous material is governed by law. Furthermore, handling guidelines are found in the section of the DIN/EN/ISO 9001 specification titled *Handling, Storage, Transport, and Shipping*. Guidelines for handling electronic scrap material, however, still had to be established. New processes were developed and introduced, ensuring the proper handling of such material and its disposal at the end of its life cycle.

Products and packaging. Two components that must be considered when determining the environmental effects of any installation and service operations are the product and its packaging.

By returning a product to the manufacturer at the end of its life cycle, customers can dispose of it in an environmentally responsible manner. The manufacturer, in turn, follows legal guidelines for the safe recycling or disposal of the electronic scrap material. Components that must be replaced while a product is still in use—for example, batteries—must be marked with respect to their proper method of disposal.

Customers can also return product packaging material to the manufacturer, who then makes a decision about its further use, recycling, or disposal.

Supporting processes. *Energy consumption* is a major concern for most companies. It is continuously being monitored and reduced by effective energy-management programs despite the general trend toward increased production of goods and services. The following measures are currently being implemented by AT&T-GIS in its effort to reduce the use of energy:

- Installation of such energy-saving equipment as reduced-wattage lamps, timers, photosensor-controlled lighting, and PCs that consume less power; and
- Active employee participation in day-to-day energy-saving and waste-reduction measures, such as:

- Using washable coffee cups instead of disposable cups made of paper or plastic;
- Patronizing beverage vending machines having returnable glass bottles; and
- Separating, collecting, and recycling waste paper.

QMS/EMS Manual

Considering all that has been discussed thus far, it is logical to conclude that a single manual incorporating the requirements of both the QMS and EMS is desirable. The present manual's layout is discussed next.

Chapters. The QMS/EMS manual comprises 20 chapters corresponding to the 20 elements of the DIN/EN/ISO 9001 standard. Quality and environmental policies are discussed in Chapter 1, which is titled *Management Responsibilities*.

Chapter Segmentation. Each chapter is divided into the following two sections:

- *Policies*, which outlines and discusses in general terms the implementation of the requirements for all appropriate DIN/EN/ISO 9001 elements, covers both quality and environmental requirements. The integration of these requirements in one document results in a valuable reference guide appropriate for most businesses.
- *Procedures*, also known as operating instructions and process descriptions, delineates the implementation of process-related policies in detail. The number of procedures varies from chapter to chapter depending on the subject being discussed. With regard to environmental issues, this section supplements the existing procedures and process descriptions.

Furthermore, the following three types of operating instructions and process descriptions can be found in the QMS/EMS manual:

- QMS only,
- QMS and EMS, and
- EMS only.

Existing lower-level operating instructions below procedure level are not part of the QMS/EMS manual. Moreover, they are subject to the control of the process owners, who are also responsible for them.

Conclusion

The transformation of Regulation 1836/93 into effective country-specific rules and laws is currently taking place all across Europe. The concept of a single certi-

fied management system, which includes both the QMS and EMS, is highly preferred for the following three reasons:

- Less complexity and greater effectiveness,
- Lower administrative costs, and
- Enhanced focus on the quality and environmental concerns of European customers.

The single certified EMS/QMS management system as discussed has been implemented by AT&T-GIS in Augsburg (Figure 3). This system covers each of the foregoing aspects and allows AT&T-GIS to remain one step ahead of European regulations in its implementation of crucial environmental and quality initiatives.

A culmination of these efforts to achieve environmentally responsible products occurred in September 1994 when the computer workstation products of WPD became the first of those to be certified by the German agency that awards the Blue Angel eco-label. Shortly thereafter, the Danish government purchased several hundred of the workstations; the Blue Angel eco-label was a deciding factor in the acquisition.

Although current trends favor the implementation of a separate ISO 14000 standard, the integrated system approach as discussed in this paper still remains a more economical choice for most companies. Its advantage is that only minimal effort is required to reach the ISO 14000 or Environmental Management and Audit Scheme (EMAS) level of certification. Nevertheless, the decision of which approach to support rests ultimately with each AT&T-GIS customer.

Reference

1. *Environmental Management Systems Model for Demonstrating the Environmental Capability of an Organization*, DGQ-Schrift 100-21, Teil 2, Deutsche Gesellschaft für Qualität e.V.

(Manuscript approved October 1995)

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