Operational Excellence in the Greek Brewing Industry

An overview of the two largest breweries in Greece reveals some of the ways that operational excellence can be achieved in the brewing industry. At Athenian Brewery SA, one of the largest companies in Greece, the total quality management philosophy addresses product quality and safety, environmental protection, and employee health and safety to focus on stakeholders’ needs and well-being. In addition to implementing a total productive management program to drive continuous improvement, the organization’s leaders also pay particular attention to raw material quality and the distribution network to ensure customer satisfaction. At Mythos Brewery SA, Greece’s second-largest brewing company, a revamped information management system complemented the company’s emphasis on recycling and other sustainability initiatives to cut costs and improve productivity. Pioneers in operational excellence in a demanding market, these two companies serve as role models for other organizations in their region and industry.

Operational excellence is a philosophy of leadership, teamwork, and problem solving resulting in continuous improvement throughout the organization by focusing on the needs of the customer, empowering employees, and optimizing existing activities in the process (Liker, 2004). In the brewing industry, achieving operational excellence demands a focus on production.

A brewery is essentially a factory with multiple operations and production lines. Therefore, any quality management system put in place to help achieve operational excellence must address day-to-day performance and how to ensure that repeated tasks conform to quality standards. In every industry, such tasks can be identified and described through specific case examples of excellence—that is, best practices.

Dominated by two companies holding 90 percent of the market, the Greek brewing industry mirrors the worldwide tendency toward consolidation through mergers, acquisitions, and alliances. Greece’s two largest breweries, in fact, are each part of a global conglomerate. Specifically, the Athenian Brewery is a member of the Netherlands’ Heineken NV, the third-largest brewer worldwide, and the Mythos Brewery is a subsidiary of Denmark’s Carlsberg Group, the world’s fourth-leading brewer. Such affiliations have enabled smaller brewers to diversify their products and gain greater market share than they would be able to do on their own.

Both Greek companies strive for operational excellence. Athenian Brewery, SA, which has about 75 percent of the Greek beer market, has won the Heineken Quality Award for excellence twice—in 1999 and 2004. Athenian Brewery adheres to various quality management standards, such as ISO 9001:2008, ISO 22000:2005, ISO 14001:2004, and OHSAS 18001:2007, and has instituted a total productive management (TPM) program to improve productivity by maximizing the efficiency of equipment, which requires the participation and cooperation of all workers.

The second-largest brewing company in the Greek market, Mythos Brewery, SA, has 15 percent of the domestic market and is gaining ground. Mythos Brewery has implemented the hazard analysis and critical control points (HACCP) system to ensure the safety of its products along with other environmental management systems for its industrial disposals. Recently, Mythos Brewery has revamped...
its information systems, which increased productivity by 10 percent and reduced operational costs by 20 percent.

Operational excellence in the Greek brewing industry is a topic that has not previously been studied in the international literature. Studies that have examined total quality management and lean manufacturing in general, have not particularly referred to the brewing industry. By redacting the operations excellence audit sheet for lean manufacturing and combining the three well-known plans of Goodson (2002), Kobayashi (1990), and Schonberger (1996), Alfnes, Dreyer, and Strandhagen (2008) give a very helpful tool for assessing operational excellence at a brewing company. Kristiansen (2010) wrote about lean Six Sigma concepts and some basic concepts of lean manufacturing for a brewers’ publication, while Liker (2004) addressed the operational excellence for a general audience.

An Overview of the Greek Brewing Industry

Despite strong evidence of maturity, the Greek beer market shrank by 5 percent in 2009 and by 8 percent in 2010. Operational excellence and the concept of total quality in the Greek brewing industry are mainly represented by the Athenian and Mythos breweries, which dominate the market. The next-largest Greek brewing companies are Macedonia Thrace Brewery, Olympic Brewery, and Greek Atalante Brewery. In recent years, some new manufacturers with microbrewery characteristics have entered the industry. Greek brewing companies either create new types of products or import new brands in order to maintain or strengthen their market position. They also seek to differentiate their existing products by updating their packaging in terms of both appearance and capacity. The main operations that take place in a brewery and offer opportunities to achieve excellence are production, utilities, and management.

Van der Wiele, Williams, and Dale (1997) and Dale (1994) present a clear concept of the gap that exists between ISO 9000, the family of standards for quality, and quality awards like those presented under the auspices of the European Foundation for Quality Management and the Baldrige program. That gap can be filled with various self-assessment activities. Their study points to the significant amount of time needed before a systematic and well-structured process of self-assessment can be installed. In their study, McAdam and Jackson (2002) refer to the relationship between ISO 9000 and TQM in the UK and Irish brewing industry. Their research concludes that the precepts of ISO 9000 and TQM complement each other and that organizations can successfully transition to TQM only if they avoid a bureaucratic approach to the standard. These works naturally build on that of Crosby (1979), Juran (1988), and Evans and Lindsay (1999) who set forth the basic principles of quality management.

The raw materials for beer production generally include malted barley, hops, water, yeast, and flavorings. Production methods differ from brewery to brewery as well as according to the type of beer being produced, the particular brewery’s equipment, and national legislation. The main processes, however, are the same: wort production, fermentation/beer processing, and packaging.

In a brewery, as in other factories, some complementary facilities operations (utilities) are necessary for beer production. These include utilities for boiling, cooling, water treatment, carbon dioxide recovery, nitrogen generators, compressed air, and electricity. The major administrative operations that take place in a brewery, which are essential for good plant performance, are:
• Supply chain management,
• Production planning,
• Human resource management,
• Quality control and environmental protection,
and
• Information technology.

Best Practices at Athenian Brewery

Athenian Brewery SA (www.athenianbrewery.gr) is one of the largest companies in Greece. Founded in 1963 by a group of Greek businessmen and now a member of Heineken Group NV, the company employs 1,500 people and owns three plants—in Athens, Thessaloniki, and Patras—where Amstel and Heineken beers are produced. In 1993, Athenian began the production of Ioli, a natural spring water, at its new bottling facility located in Lamia. The company also has manufacturing plants in Bulgaria (since 1994) and Skopia (since 1997). During the past ten years, the company has invested more than 370 million euro to improve and renew its equipment. Thus, its facilities are considered to be among the most modern and productive in Europe.

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Besides the beers it produces in Greece, Athenian Brewery distributes a large variety of imported brands. Despite the highly competitive environment, the company exports its products to 29 countries on 5 continents, and it is constantly striving to expand in new emerging global markets. According to statistics from the Export Promotion Organization (OPE), Athenian Brewery exports constitute approximately 7.8 percent of the total turnover of exportable alcohol drinks and 0.07 percent of the total turnover of all Greek exportable products.

Total Quality Management at Athenian Brewery

The administration at Athenian Brewery is dedicated to the principles of TQM. The company’s TQM philosophy focuses on five factors:

• Customers,
• Staff,
• Productivity,
• Quality, and
• Environment

The company’s customers and staff are considered the organization’s major advantages. Customer satisfaction in terms of product and service quality lies at the heart of Athenian’s improvement efforts. As for staff, they are considered “internal customers.” The company strives to instill quality consciousness in its employees and encourages them to take initiatives. These objectives are achieved through effective training—both at time of hire and during working hours at regular intervals—and by giving personnel small shares of the company in order to foster a sense of ownership. Striving for continuous productivity growth is essential for viability and is the only way to reduce costs. Athenian Brewery strives for quality not only in its products, but also in all its processes. Finally, environmental management is essential in terms of the company’s social responsibility and for reducing costs. All these factors are given equal importance and treatment.

The company has developed and instituted integrated quality management systems as instruments for implementing its TQM policies. These systems ensure the quality and integrity of the company’s products and support each activity and process regarding employee health and safety, environmental care, and compliance with laws and regulations. Overall performance is monitored through the use of key performance indicators, which are periodically evaluated to ensure continuous improvement through the timely adoption of appropriate preventive and corrective measures. Specifically, Lloyd’s Register Quality Assurance Limited has certified
Athenian Brewery in the quality management standards discussed next.

**ISO 9001:2008 for Product Quality.** ISO 9001:2008 aims at quality management through the vision of production as a process and focuses on meeting customer and legal requirements, as well as continuous improvement through objective measurement of the system effectiveness. ISO 9001:2008 applies to four main sections regarding organizational infrastructure that a company must address in order to operate effectively:

- Company’s management,
- Resources (people and equipment),
- Processes (manufacturing, services, etc.), and
- Measurement, analysis, and continuous improvement of business structures.

At Athenian Brewery, ISO 9001:2008 describes everyday procedures and work instructions that have to do with the four elements listed above, so that all work is standardized, able to be assessed, and structured in order to cover the company’s needs for quality and improvement toward operational excellence.

**ISO 22000:2005 for Product Safety.** ISO 22000:2005 is the first international standard for food safety management that has replaced the HACCP system. It aims to ensure food hygiene and can identify potential microbiological, chemical, and physical risks at each stage along the supply chain. It can also search the possible causes and the expected results and creates the necessary control mechanisms. At Athenian Brewery, every bottle is checked at several production control points in order to ensure compliance with the hygiene rules of ISO 22000.

**ISO 14001:2004 for Environmental Protection.** Every environmental management system is designed to help an enterprise improve its environmental and economic performance and is reported using ISO 14001 standards. ISO 14001:2004 mainly focuses on the actions taken by the company in order to:

- Minimize harmful effects caused to environment from industrial activities;
- Achieve continuous improvement of environmental performance and organism behavior; and
- Design a system for achieving its objectives in terms of procedures.

For example, the energy needed during wort processing and fermentation procedure is recovered, while attempts are made to minimize the waste that derives from raw materials used for the entire brewing procedure.

**Quality Standards Governing Raw Materials and Production.** The quality standards at Athenian Brewery have very strict requirements concerning the raw materials used in production. To ensure that these high standards are met, quality control managers continuously conduct chemical and microbiological monitoring of the raw materials used. In addition, the company has a system to evaluate its suppliers. Two types of evaluation are performed: internal evaluation, also known as self-assessment, and external evaluation by a third party. Company engineers who serve as internal commissioners conduct the self-assessment.

**OHSAS 18001:2007 for Employee Health and Safety.** This standard defines health and safety requirements in order to enable a company to control risks and improve performance. The health and safety management system at Athenian Brewery encompasses a number of company procedures at each workstation to ensure employee health on the job and create a safe working environment.

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The basic raw material for the production of beer is malt. The Athenian Brewery produces most of the malt it needs in its own malting facilities, which are located in the Patra and Thessaloniki plants. The barley that the company uses to produce its malt is primarily locally grown from certified seed under the supervision of the company.

Athenian Brewery uses state-of-the-art equipment operated by experienced, well-trained employees. They use several means to monitor the quality of all production processes. In addition to monitoring quality according to ISO 9001:2008, ISO 22000:2005, ISO 14001:2004, and OHSAS 18001:2007, the company also has an established TPM process.

Successful Application of Total Productive Management
Since 2003, Athenian Brewery has implemented a TPM program to increase productivity and assure quality. The TPM program is used to complement the company’s other quality management systems for continuous improvement.

Focused on improving productivity, TPM aims at maximizing the efficiency of equipment, matching a company’s organizational culture with a variety of tools and techniques applied at all levels. Thus, it seeks to ensure harmony continuum, from business strategy to the production line, through product design and procedure planning.

For a TPM program to be successful—that is, for it to meet its objective of aligning all organizational activities—employees from all business levels must be involved and cooperate with each other. Therefore, Athenian’s TPM program is addressed to all employees, from senior management to production workers. Everyone at the company participates in groups set up to identify areas of improvement. These meetings provide a forum in which problems are discussed and root causes are analyzed, so that decisions about preventive and corrective measures can be based on real facts.

The TPM effort at Athenian proved its value in addressing a warehousing problem. One warehouse manager asked for help because of delays in deliveries. A company engineer studied the delivery process at this particular space and presented several alternatives to the board of administrators. He subsequently used business process reengineering to redesign the warehouse according to economic and time management criteria.

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Distribution Network Aims Toward Customer Satisfaction
Athenian Brewery relies on a network of 1,700 independent wholesalers to sell and distribute its products in the Greek market. These local companies offer several crucial services in the logistics chain. The company uses owned warehouses in conjunction with large logistics centers all over its distribution network. This enables the company's products to be available in approximately 125,000 outlets. All operations related to sales and distributions are designed to satisfy the final consumer, who always lies at the center of the company’s value system. Customer satisfaction is achieved through excellent quality of the final product and efficient distribution.

An Eye on Environmental Protection at Mythos Brewery
Mythos Brewery SA (www.mythosbrewery.gr) is the second-largest Greek beer producer, widely known for its Mythos brand, the first authentic Greek beer. Since 2008, Mythos Brewery has been a subsidiary of the Carlsberg Group, which imports several other
beer brands into Greece. The company has its own production plant in Thessaloniki, where it produces the Mythos, Mythos Red, Kaiser, and Henninger brands, which are distributed in Greece and abroad. The Mythos brand, which has a loyal—some would say fanatical—following, is the only Greek beer exported to 30 countries.

The production and bottling plant located in Thessaloniki has three lines capable of bottling 11 million 20-bottle boxes per year. Since 2004, the company has established and implemented the HACCP food safety management system. It also uses investments to continuously upgrade beer production equipment machinery. The result is that the beers are produced and packed with excellent raw materials and modern machinery, passing through strict quality controls at every stage of production in accordance with international quality standards.

A member of the Hellenic Recycling Association, Mythos Brewery has implemented various programs to recycle the materials used in its production processes, such as paper, plastic, aluminum, glass, and pallets. In 2010, the company instituted a monitoring system for saving and recording usage of water, heat, electricity, and carbon dioxide. This program includes monitoring water consumption according to each stage of production (from the production of malt to the finished product). Mythos Brewery’s environmental best practices have led to the following results:

- The company’s system for recycling and reusing pasteurized water has resulted in savings of tens of thousands of cubic meters of water each year.
- Calculations of individual energy consumption during each process allows for better management of the loads required for facilities operation, even during peak usage periods, when there is a need to cut back on electrical consumption.
- The installation of a carbon dioxide (CO₂) recovery system in the production facility has enabled the company to meet about 80 to 90 percent of its needs for CO₂, thereby lowering its purchasing costs. CO₂ recovery and reuse at the brewery also has led to the lowering of CO₂ emissions from fermentation tanks by 10 percent.
- Manufacturing process by-products (for example, residues from barley and yeast) are sold for animal food, thus minimizing the amount of waste designated for landfills.

Addressing a Need for Better Information Management

Although Mythos Brewery had procedures regarding information management in place in its various departments, information tended to be scattered, and there was a lack of cooperation when people had to deal with various streams of information concerning daily production. Moreover, the information was not consistently maintained or automated, which meant that different types of files were kept in different parts of the company. This made it difficult for staff members to address concerns coming from outside their own department.

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The Mythos Brewery Administration Board realized the need to organize its data in a way that would allow for complex analysis and ease of accessibility by relevant employees, regardless of their location within or outside the company. After conducting market research on various business intelligence solutions, management settled on one that allowed the company to consolidate data coming from different systems. The Mythos research and development (R&D) department implemented multidimensional models and created reports covering the following key aspects of the enterprise:
• Sales,
• Finance,
• Logistics,
• Sales force automation to those working off-site,
• Daily brewery operations, and
• Profitability.

Each employee that was involved in the program took part in a three-month training session on the new information system. The updated system for organizing, managing, and analyzing data from multiple sources helped workers better perform their everyday tasks, increasing productivity and improving the ability to make good decisions based on accurate and thorough information that they easily retrieved from the new system.

Thanks to the new information management system, company leaders now can easily access integrated, automated, reliable information needed to develop short- and long-range plans for its various sectors. Moreover, record-keeping costs are minimal because of reductions in printed material and in the need for frequent involvement of the IT staff. There have also been savings in terms of the time spent disseminating, analyzing, evaluating, and saving information within and between departments.

Although this discussion of the two leading breweries in Greece points to the types of best practices that other companies in the brewing industry can emulate to achieve their organizational goals, further investigation is needed, specifically on smaller companies and those in bordering countries. Both breweries and the logistics companies that serve them can provide prosperous ground for continued study that can yield valuable insight toward the achievement of operational excellence.

References

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