AVEVA Historian enables Namibia Brewing to successfully manage energy consumption, reduce CO2 emissions, and improve production of its popular brews.

Namibia Breweries

INDUSTRY
Food & Beverage

Goals

- To accurately record critical production information from the solar, NH3 cooling, boilers, and CO2 plants, as well as from the water and power meters.

- To transfer production information to the existing DCS.

- To develop a dashboard system for management to view consumption-related information linked to production volumes and KPIs.

Challenges

- The plant operations team faced reservations from the department management groups who were unsure that these goals could be achieved. They needed a convincing argument of the benefits to "buy in" from all stakeholders for implementation of the system.

- With massive amounts of plant data requiring processing, NBL faced the issue of time synchronisation between Historian and its current OPC server.

AVEVA Solution

- Historian

- Historian Clients

- System Platform

- InTouch

Results

- NBL successfully achieved compliance with municipal regulations.

- The renewable energy system supported with Historian provides for 8% of NBL's electricity demand as well as approximately 4.23 million kWh of green energy.

- NBL has achieved a savings of 4,230 tons of carbon dioxide (CO_2).

- Precise verification of KPIs can now be obtained to evaluate plant processes and related equipment operations.

AVEVA

AVEVA Historian Plays Central Role in Utilities Management at Namibia Breweries

Windhoek, Namibia – Namibia Breweries Limited's (NBL) commitment to excellence dates back to the company's founding in 1920, when it chose to uphold the tradition established in 1516 and brew its beer according to the Reinheitsgebot Purity Law, sometimes called the "German Beer Purity Law." This centuries-old standard requires that beer only be brewed with water, barley and hops.

In the case of NBL, only the highest quality ingredients are acceptable, which has made their products a source of local pride as they are unmatched in quality and purity.

NBL is not only committed to providing the regions of southern Africa with enjoyable beer-tasting experiences by delivering world-class products, the company also is dedicated to operating its business in a socially and environmentally responsible manner. The company believes in giving back to the community, and has made significant investments to ensure that its operations are efficient, environmentally friendly, and reduce its overall carbon footprint.

Optimal utilities management contributes to a greener environment and a healthier bottom line at NBL, where Historian from AVEVA helps efficiently operate the brewery's operations and achieve these goals.

Historian enables NBL management to generate daily, weekly and monthly consumption reports for water, electricity, chemicals, thermal energy, solar generation, and carbon dioxide, and compare those results with key performance indicator (KPI) targets.

By linking Historian tags to the company's production system, staff are able to more quickly and accurately detect production issues on the plant floor.

Achieving NBL's goal of creating a future, enhancing life

In 2013, NBL began its journey of making their manufacturing operation more efficient, environmentally friendly, and self-sufficient. The first step in this strategic goal was to find ways to cost-effectively generate sustainable energy to operate its facilities.

"That year we made a significant step in achieving this goal by installing a renewable energy solution to provide the power necessary to support the operation of our plants. Our investment in a 1MW solar power plant consisted of installing a series of solar panels on the plant's roof which connects all three of the company's generator sections. This has made NBL completely self-sufficient in regards to electrical power, and achieving something our competitors have only talked about."

**Andre Engelbrecht,
Manager of Industrial Control Systems, NBL**

But this was only the start. Electricity, though a major component, is only one factor in the complex world of utilities which, today, are highly significant contributors to product costs, competitiveness and profitability. There's much more to effective utilities management than simply watching the meter.

A Manufacturing Operations Management Survey conducted by LNS Research showed that the top two operational challenges for meeting strategic manufacturing objectives were that companies are faced with a wide range of disparate systems, as well as the lack of cooperation of stakeholders across different departments.

"In our case, we have the brewing, packaging and distribution departments. Each focuses on doing their job to the best of their ability, but without concerning themselves for the common denominator that makes it all possible – energy."

Andre Engelbrecht,
Manager of Industrial Control Systems, NBL

In addition, NBL decided to unify its various departments into a cohesive entity that could make real-time business decisions regarding utility usage based on a single set data from each of the company's operations plants. This included access to information generated by the CO2, NH3 ammonia cooling, boiler house, water treatment, sterile air and power meter facilities.

Real-time brewing information with the click of a button

The enterprise changeover project began in 2015 with the installation of Historian and Historian Clients, along with TOP Server from Software Toolbox.

"Having real-time information available at the click of a button is the key to a modern manufacturing business enterprise,"

Bernd Esslinger,
Engineering Manager, NBL

NBL has a central DCS which controls the beer-making process from beginning to end, but to achieve NBL's goals of accurate decision support based on reality and real-time production information, more data collection and collation resources were needed from the system.

"Once the management team received 'buy in' on the project from all department stakeholders regarding the value of the project, we began installation of Historian to gather and store vital plant data, along with Historian Clients to manage scripting. We also implemented TOP Server from Software Toolbox to effectively retrieve data from our utility plants and systems. Using the critical data collected from NBL's systems, the team built a powerful SCADA system."

Andre Engelbrecht,
Manager of Industrial Control Systems, NBL

NBL configured a virtual enterprise consisting of two TOP Servers to balance the load of more than 100 PLCs and systems, one data hub server, along with Historian as the main historian data warehouse, as well as a web server.

Once the data is collected from NBL facilities, it is stored using Historian for later review and analysis. As a large-volume plant data historian, Historian unites a high-speed data acquisition and storage system with a traditional relational database management system, facilitating easy access to plant data using open database standards.

Historian combines advanced data storage and compression techniques with an industry-standard query interface to ensure open and easy access to stored time-series information. This enables process and production decisions to be evaluated and made by NBL operators in real time.

To gain better visibility into its operations processes, NBL also installed Historian Clients, which generates real-time and historical data charts and reports directly from the Historian. This allows operators and decision makers to quickly visualise what is happening during the breweries manufacturing process.

Web access to KPIs essential to brewing success

A secure web-based dashboard server enables management to view daily and monthly sales and operational KPIs from anywhere. Weekly real-time stock volumes are sent to NBL's advanced planning system using Historian Clients queries.

NBL developed a web-reporting system for production personnel and a dashboard system for management. Most of its physical servers are now hosted in a virtual environment, simplifying things such as time synchronisation between Historian and the OPC servers.

"In my opinion, some of the most outstanding features of the system include its open standards, the wide range of drivers available, as well as its scalability, ease of use, customisation and ability to integrate with other initiatives."

Andre Engelbrecht,
Manager of Industrial Control Systems, NBL

The system also provides access for qualified personnel to view various utility consumption and production information at the same time wherever they may be. Operators and management are also able to view daily, weekly and monthly consumption information on the same platform. In addition, NBL will be able to switch off when needed non-critical plant equipment to ensure that their maximum power demand remains below target.

"It is great to see what can be done with technology and data when you use the right tools such as the AVEVA products we've implemented in this project. It was also a wonderful learning experience to see how combining these products enables the company to achieve end results, as well as improve the overall user experience."

Annemarie Kruger,
MES/MIS Specialist, NBL

The project's implementation was 80% planning and 20% implementation, with vital support provided via Wonderware's Customer FIRST support program as well as from the teams at Wonderware Southern Africa and Software Toolbox.

With the Wonderware Customer FIRST program, NBL has access to the latest software upgrades, expert technical assistance, self-help tools and a wide range of additional services to assist NBL in improving its operational effectiveness.

Results speak for themselves at NBL

With the implementation of Historian, NBL is pleased to find that its targeted performance results are being achieved beyond the expectations of brewery management.

CO2 sales targets are met by optimising sales versus storage capacity and usage, and water savings are achieved to meet the regulations required by the city of Windhoek and the Namibia Water Corporation Ltd. the country's federal water company.

Electricity savings are being met even with the implementation of the brewery's maximum power demand in operation. NBL attributes this to the improved solar plant operational effectiveness provided by Historian. With the improved fault-finding capabilities delivered by Historian Clients and video playback functionality on the central DCS, issues on the plant floor are quickly identified and corrected before impacting overall production.

NBL operations has also reduced its new BioMass boiler requirement from 8MW to 5MW with improved decision-making regarding plant requirements, such as historical thermal energy data.

Historian has enabled the plant to more effectively manage loss control by being able to view consumption data in conjunction with production information.

Historian Clients is critical to NBL achieving its overall business objectives and remain profitable in the ever-competitive business of beer brewing. With Historian, NBL corporate management and operations teams can quickly and easily verify the KPIs of new plant processes and equipment to ensure they are performing at optimal levels, as well as obtain more accurate calculation and conciliation of project KPIs and ROI.

"These tools have given NBL the ability to see, on a daily basis, where possible issues and/or excess consumptions occur and address them immediately. At the time of its installation in 2013, it was the largest hybrid system in the world and it also made NBL completely self-sufficient regarding electrical power."

**Kurt Gilge,
Team Leader for Utilities, NBL**

While NBL has a central DCS that controls the beer-making process from beginning to end, powerful data collection was required in order to successfully achieve the brewery's goals of accurate decision support based on real-time production information. This was provided by Historian.

To date, the renewable energy system supported with Historian provides for 8% of NBL's electricity demand as well as approximately 4.23 million kWh of green energy, which equals a savings of 4,230 tons of carbon dioxide (CO_2). Overall, these achievements support the company's goal of achieving a large reduction in its carbon footprint.

With Historian, the NBL system is able to quickly and easily grow and provide vital production information well into the future.

About AVEVA

AVEVA is a global leader in engineering and industrial software driving digital transformation across the entire asset and operational life cycle of capital-intensive industries. The company's engineering, planning and operations, asset performance, and monitoring and control solutions deliver proven results to over 16,000 customers across the globe. Its customers are supported by the largest industrial software ecosystem, including 4,200 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 4,400 employees at 80 locations in over 40 countries.

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