PDA System for the new bottling plant

Introduction

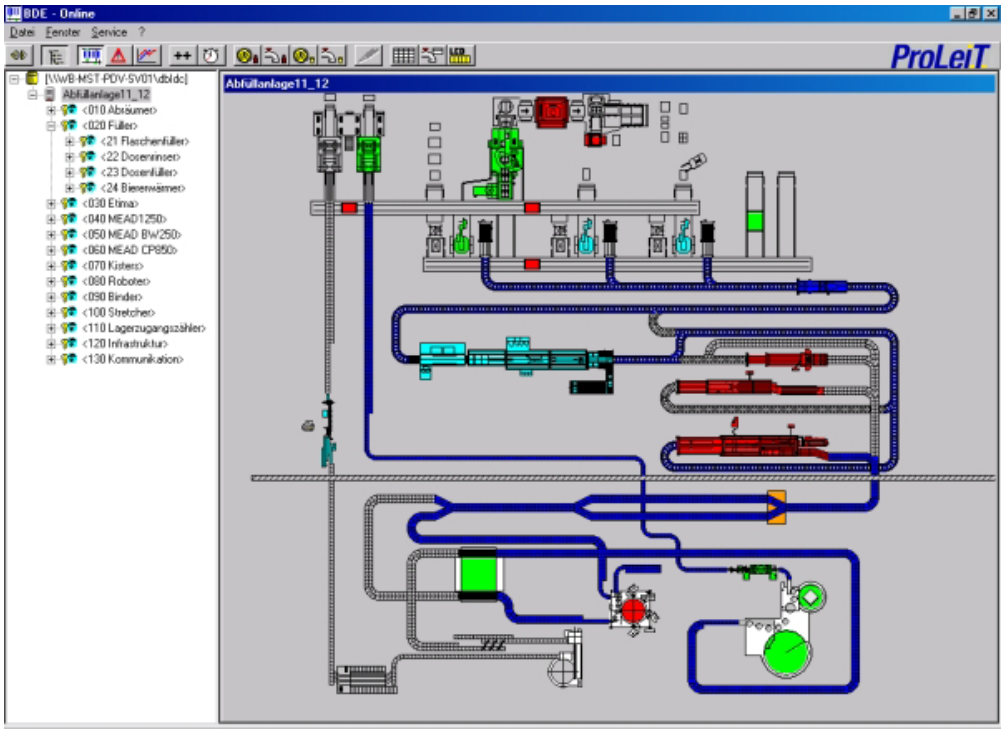
The WARSTEINER Brauerei Haus Cramer KG has been operating one of the most modern bottling plants for tins and disposable bottles in Europe. Even at the planning stage for the plant, flexibility in the packaging and palleting area was treated as a priority. In order to take full advantage of this feature, the Warsteiner brewery implemented a new concept in production data acquisition (PDA), supplied by ProLeiT AG, base in Herzogenaurach, Bavaria. PDA systems for bottling plants have been used in the brewing industy for some ten years, using data integration to improve the accuracy and uniformity of information flows and hence, increase the transparency of the manufacturing process. This significantly assists decision-making processes. The requirements include not only optimized operational sequences for increased pro-ductivity and economy, but also maximum reliability in product quality.

Task description

The large number of articles to be produced, together with the goal of processing and incorporation production planning data via the PDA system, means that a careful selection of system platform is required. The system concept from ProLeiT AG can meet all these requirements, enabling not only the reliable acquisition of machine and equipment data with standard interfaces, but also, using touch panels, decentralized article switching and fault cause assignment. This allows the rapid recognition of cause and effect relationships, as well as the analysis of process data for the purposes of system optimization.

Key criteria for the choice of system platform were:

- Reliable data acquisition from downstream controllers (PLC's), with effective tools for easy para-meterization;
- Use of the data structures specified by TU Weihenstephan in order to ensure that the system can also be used for the Warsteiner bottling plant in Paderborn, thus offering significantly better investment security for all future projects;
- Open interfaces for the complete data integration of the bottling plants, allowing efficient produc-tion planning and continous production controlling;



Two innovations in particular were key to achieving a new standard of data consistency: a new approach to article switching, and the assignment of faults occurring outside the plant using touch panels installed directly in the plant manager work areas. This also greatly increased system acceptance by plant managers.

Data acquisition in conformance with the standard TU Weihenstephan PDA interface Raw data downstream machine controllers was provided by the Warsteiner brewery. This data was for the main part in conformance with the PLC-based interface specifications for bottling and packaging plants. However, it became clear that an extension of the PDA interface functionality would be required in order to allow data input (article / order numbers, quantities, ect.) for the touch panels located at the individual aggregates.

INFO

Company:	Warsteiner Brauerei Haus Cramer KG
Sector:	Breweries
Location:	Warstein
Country:	Germany

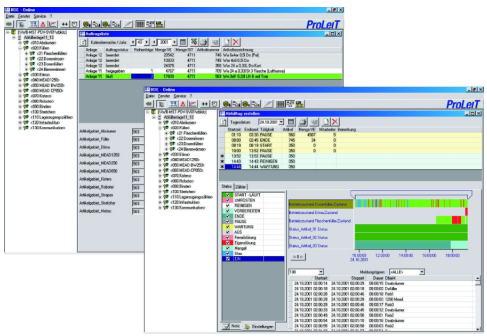
A further important task, in addition to the input of the appropriate article switching data, is the input into the system of all the production-related information which cannot be produced in the controllers itself (pause, setting-up, maintenance, etc.) Data acquisition from the inspectors proved more complicated than originally thought, as these were equipped with PC-based controllers and data processing mechanisms. A product from the standard ProLeiT range, the software program „Plant Connect iT“, offered essential support in this task, enabling simple and parameterizable data acquisition from PC-based aggregates by means of ASCII file transfer.

Technical reporting

Technical reporting is based on MS Excel: This documents all relevant operational sequences and - at the same time - monitors the functioning of the inspectors by automatitic archiving and evaluation of the inspector protocols. The reliable evaluation of the test protocols is one ot the main tasks of technical reporting. All reports important for the plant operator ca be parameterized. An Excel export function allows these to be sent to the Warsteiner Controlling Center for further processing.

Order list / Bottling planning

An updated order list from production planning is sent daily to the PDA system, i.e. the planned daily production. Using the list „Bottling day“, the system sends a message back to the production planning, detailing the quantities actually produced, and a pausibility report on the actual warehouse receipts.
This allows the actual levels to be documented continually and compared in detail with the specified setpoints.



Order list / Bottling planning

Online delivery level

Certainly of interest to every visitor to the brewery, and above all, an important source of information for the plant operator, two large LCD displays, situated above the bottling plant. There is a specific dialog box which allows the free input of texts, but at least, if not more important, is the function for the display of selected production data, e.g. performance measurement values, current delivery level, or the production status of a particular article.

Weak-point analysis

A wide range of error messages can be displayed and analyzed using the integrated weak-point analysis function. This includes:

- Internal plant malfunctions
- Operator errors (external malfunctions)
- Non-plant malfunctions
- Machine supplier errors

Results

This uniform, decentralized data acquisition of all article switches has enabled Warsteiner to collect precise and comprehensive data on material usage and wastage, and document this in the relevant reports. Such accurate reporting makes it possible for the first time to evaluate all relevant data in the framework of the company-wide controlling, and hence to optimize the plants uniformly - including adjustment of warehouse data for dispatch.

Looking to the future

Following the successful introduction at the Warsteiner site, the bottling plants in Paderborn are to be equipped wiht an identically designed PDA system. As with every future planned new plant, two aspects in particular have to be taken into account in this project: First, the standardization of data interfaces with the PC-based controllers; secondly the functional integration of the touch panels into the operator terminals of the machine controller for article switching. These are currently installed in parallel. The experience gained by those involved in the implementation of the first, complex PDA system at the Warsteiner site will be valuable for the future projects. In new plants, the PDA system should be installed and commissioned at the same time as the bottling plants; this leads to a significant reduction in the running-in and optimization time, and hence in personnel costs, as data from the new PDA system has clearly shown.