

Utmost availability is a must – not only during Christmas

PROmanage® NT at work at Baur Versand

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Order today, delivered tomorrow – mail order is the most convenient mode of shopping. The Internet creates a broad range of new opportunities in the previously catalogue-based trade while massively increasing the requirements in logistics for short delivery cycles and drop-off times. „From the outside, you can hardly imagine all the things happening from the time you press the ‚Order‘ button until the merchandise is delivered,“ says Harald Fiedler with a grin. Working together with his 25 colleagues in a three-shift operation at Baur Versand GmbH & Co. KG in Altenkunstadt, he makes sure that all items and packages leave the warehouse at the right time. On an area of about 125,000 m², a 13 km

long labyrinth of conveyor belts and sorting systems, called „sorters“ for short, transport about 200,000 items on average per day to shipping. „A downtime of ten minutes can hardly be compensated within a day,“ explains Fiedler regarding the high requirements for logistics. To ensure trouble-free processes, central monitoring of the implemented systems is entrusted to the monitoring software PROmanage® NT from Indu-Sol.



The combination of the main trade base (lower part of the picture) and warehouse at one location as in Altenkunstadt is a unique selling feature of Baur Versand GmbH & Co. KG and ensures speedy processing.

In 1925, Friedrich Baur founded the first German shoe mail-order retail company in the Upper Franconia town of Burgkunstadt. Today, not only the portfolio has been expanded by jewellery, furniture and fashion. Baur has become part of the OTTO Group and operates several subsidiary companies. The growth of the corporation is also clearly reflected in the business locations: In Altenkunstadt, there is a high bay warehouse that primarily contains items that are in great demand, i.e. merchandise with a high turnover. Since 2002, a main trade basis – a kind of „lorry hub“ – has been built to ensure the speedy delivery to the point of destination (Figure 1). In combination with the multi-layered storages, which are located in Burgkunstadt and Weismain due to capacity reasons, there are a total of a half-million standard box spaces to be managed – an enormous logistical achievement by any standard.

Due to the continuous expansion of the facility, different technologies are also being operated simultaneously, their operation and maintenance requiring the observance of individual peculiarities. Whereas the emphasis in the 1990s and early 2000s was still based on fieldbus technology (PROFIBUS and CAN), the implementation of PROFINET at Baur has been mandated for new systems since 2010. Back then as well as today, the ASi bus is also used.

From practical experience it soon became clear that a monitoring system was necessary. „In 2001, we put the loading sorter into operation. This has priority 1 – if it is at standstill, the whole company will come to a stop before long,” said Fiedler, describing an actual case. Sporadic malfunctions and even failures occurred from time to time which soon became unbearable for daily business. In 2008, the decision was made to have the installed PROFIBUS network inspected by Indu-Sol. The possibilities for the analysis during measurement were so impressive that the PROFIBUS INspektor® from Indu-Sol GmbH was purchased as an analysis tool. It permanently and passively monitors the logical data traffic in the PROFIBUS and alerts the operator at the earliest indications before visible or noticeable disturbances of the operational proceedings occur.



„Silent monitor” in the control cabinet: The PROFIBUS INspektor NT shows the current network overall status on the display and supplies initial diagnosis notifications.

Based on these positive experiences, the other systems were over time equipped with the appropriate INspektor® from Indu-Sol for the respective network. There are currently a total of 33 of these measuring and analysis devices for PROFIBUS, PROFINET and ASi installed as „silent monitors” in the control cabinets. They monitor the network for quality parameters such as telegram repetitions and bus cycle times (PROFIBUS) or network load, update times, or delayed or lost telegrams (PROFINET). The team from systems engineering faced the challenge of consolidating the diagnosis information of the individual devices, to maintain an overview and to evaluate the overall condition of all networks. This is where the central network management software PROmanage® NT comes into play. It collects the events of all fieldbuses and networks centrally onto one server, visualises the result and provides numerous options for analysis – in light of all the branches at Baur, this is quite a convenience.

The employees, that are responsible for systems engineering for example, can review the archived and current condition of the entire system using the network status graph at any time and across the whole network. If the values exceed or drop below the threshold values that can be defined by quality parameters monitored by the INspektors®, these events are saved with a time stamp and can also be referred to later when troubleshooting causes. A click on the respective data point of the archived course reveals in-depth information on the event (quality parameters, see above). In particular for shift operation and for the retrospective analysis of malfunctions that have occurred, Fiedler is of the opinion that the decisive capability of PROmanage® NT is the ability to provide historical data with a precision down to the minute for up to a year: „The INspektor® is important for monitoring a current fault, but for the history, we need PROmanage® NT – the faults that it detects are not visible to someone from the outside.”

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Harald Fiedler is one of 26 employees of the systems engineering team at Baur which is responsible for maintenance of the automation applications.



PROmanage NT provides the operator with all important information at a glance: for example, the overall network status over time with a graphic emphasis based on the principle of stop light colours (top centre), a device matrix with colour evaluation of the current status (bottom right) and the overview of all monitored networks with quick control access (left side panel).

In 2012 for example, there were numerous sporadic faults and failures of a system component where the error information from the PLC alone did not identify the cause. The external installation company of the system component at first modified the earthing. For a short time, it seemed that the fault was rectified, but it resurfaced during further operations – the archived status data from PROmanage® (back then still in the predecessor version) was a valuable support as well as proof. Also during the PROFIBUS retrofit of the loading sorter at the main trade base in 2016, the communication in the network was checked regularly during running operations in order to monitor the successful exchange of the components and devices.

Even when no retrofitting measures are planned, those in the Altenkunstadt logistics centre constantly monitor the data traffic in the network in order to be notified promptly in case there are any changes in the quality. „Especially convenient is the alarm function by e-mail as soon as there is an incident. We just can't put one employee to the task of constantly keeping an eye on the web interfaces of all 33 INspektors®,” says Fiedler with emphasis on the facilitation for maintenance provided by the central software. A further advantage of PROmanage® NT in this constellation is that the user can see immediately which of the installed INspektors® has triggered an alarm. Thus the technical personnel can react quickly and to the point.

Here too, Fiedler outlined the necessity in case of a malfunction: The order dispatchers pack the items not according to customers, but according to similar items from several orders into bin-like transport containers. At special packing stations, the individual components are combined by hand out of the various bins into an individual customer order and augmented by supplements and documents. „If the bin supply should come to a stop, 50 persons can, at a single stroke, no longer work.” This can be compensated only by overtime. The notification parameters can be adjusted individually by the alarm management and all necessary employees are informed immediately in order to react to early warnings of quality degradations before they become visible.

Looking into the future, the focus is on conveying technology where some components are already more than 25 years old. In this regard, PROFINET technology will be used for any new systems. Furthermore, the company wishes to remain at the current status for the own analysis tools, because the challenges for maintenance are constantly increasing in light of the steadily expanding networks – keyword: Industry 4.0. That is why the PROFINET INspektors® NT from Indu-Sol are currently replacing their predecessor versions step-by-step, because they further facilitate the monitoring of the network with several innovations and contribute to better reliability. A display makes it possible to view initial diagnosis information directly at the device and to receive notifications on the network status – the laptop therefore does not always need to be carried along. The presence of unknown devices is also reported immediately and also detected and documented by PROmanage® NT.

With such permanent network monitoring (PNM), it should be possible for Baur to make the recipients of the approximately 50 million items sent every year happy on time thanks to a fault-free operation – no matter if during the slow summer months or at peak times such as during the Christmas season.