



WEBfactory® Success Story

DHL

Open standards simplify integration:

Visualisation solutions for Germany's largest air freight centre

Humans experience their world mainly through their eyes and react to visual stimuli especially intensive. No wonder, that the modern automation technology absolutely requires visualisation on the man - machine interface. Web based SCADA systems (Supervisory Control and Data Acquisition) lead the way. Thanks to open standards you can compile various machines or production systems without any significant effort, on one unified user interface and monitor them online. Reaction to possible threshold value overshooting can be immediate and automatic, e.g. via defined alarm chains. Manufacturing and production plants benefit from these functionalities as well as the whole sector of logistics.

Since the month of May 2008 the DHL air freight hub at the Leipzig/Halle airport is in full operation. 1,500 t of freight are handled here every working day. In the sorting hall measuring a length of 400 m 100.000 packages, large envelopes and unbindable packets can be sorted per hour. The belt conveyors of 6.5 km in length are arranged in four levels one on top of the other and are completely automated. To achieve such operation the automation technology - starting with the simplest sensor and ending with the storage programmable

control units - must be highly reliable. Constant monitoring is mandatory for a fast reaction to a possible error message. Only in this way system stand-stills can be avoided or at least minimised. The visualisation of all measurement values, switching states and complex sorting installations was therefore an important subject. 40,000 online values, 75,000 alarm messages and some 15,000 historical values of the various system components must be visualised and managed.

Open standards - ideal for heterogeneous system landscapes

Our choice was for more than one reason the WEBfactory visualisation software developed by the Buchen based WEBfactory GmbH. The web based visualisation solution uses the usual internet standards such as TCP/IP, HTML, XML, VML etc. In addition the licensed model allows for a random number of operating terminals without any additional cost. These features combined with a scalable architecture facilitate a flexible adaptation to the respective situation.

Later extensions are easy to implement and even heterogeneous system landscapes can be visualised on a common platform.

In the sorting centre of DHL for example there are 34 control units of the different system components connected via the WEBfactory OPC server, partially from different manufacturers. However, thanks to the standardised interface, possible differences are not relevant. The visualisation is insensitive to the type of control system or bus system used by a machine or an installation. Via OPC all measurement values, status displays etc. are easily visualised and monitored at any time.

Seamless information management

For a seamless information management all relevant information is represented clearly and well-arranged and can be called up via internet wherever you may be. This aspect not only applies for the control room, but also for mobile use. Via Wireless-LAN for DHL, the service technician can display the relevant operating parameters on site, on his laptop or PDA, while moving around in the sorting hub. If required, remote access via internet is naturally also possible. However DHL does not use it at the time.

Its flexibility in the adaptation to heterogeneous landscapes was proven by WEBfactory in the DHL centre in another important point: Also when communicating with the SAP ERP system there was no problem. Organisational and technical visualisation work perfectly together thanks to open standards. In principle also access from other programmes is possible for purposes of evaluation and processing as well as for practically countless export functions.



Highest security also in the event of a fault

In case the automated processes do fail, WEBfactory immediately generates the corresponding alarm messages. In this case the user has access to the whole range of possible variants, starting with "simple" optical or acoustic alarm e.g. to the control room, or pager alarm, SMS or e-mail alarm to the respective responsible persons and ending with synthetic voice generation. In addition contingency plans can define responsibilities. In case of need the respective alarm escalation tables are worked through automatically.

In order to be able to analyse the situation and to react accordingly in the event of a fault, it is mandatory that the visualisation server is available in all situations. In case of an error of the automated systems, no relevant measurement values etc. can be lost and the visualisation on the main computer must continue to run without problems, in order to maintain operations. Redundant data storage is therefore mandatory in the sorting centre.

Also to this end WEBfactory offers ideal premises. The graphic displays the main structure of the so called cluster system, completing the web based visualisation software as high availability module. It consists of up to eight individual computers (knots) with common memory discs and a connecting network. In the event of a fault individual services move as defined from one knot to another (failover).



After the fault was removed, the system returns to its original status (failback). This ensures very high availability. Even in the event of a fault the visualisation continues. In the sorting installation of DHL four visualisation servers are sufficient. Should one fail, the responsible service technician is informed by the system.

In the air freight hub at the Leipzig/Halle airport web based visualisation has proven itself, while the same applies also for many other fields of application. In addition for many sectors specifically tailored special solutions were already developed, e.g. for building automation or water and waste water technology. Also in the modern maintenance of complex systems there is an interesting tool by means of which practically all possible maintenance tasks can be calculated and optimised based on current parameters (e.g. operating hours, revolutions, temperatures).

