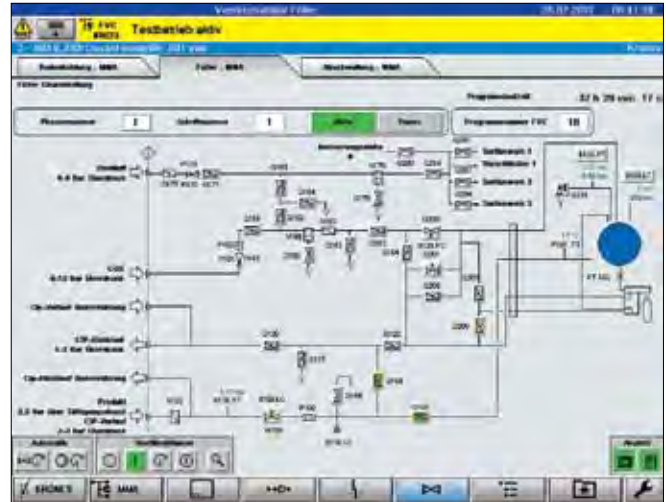




## Getting equipped today, ready for tomorrow's demands.

The demands placed by the market on the beverage industry are increasing all the time: companies are now facing up to the challenge of optimising their filling and packaging processes and becoming ever more competitive. This can only be achieved by using state-of-the-art information technology.

Unlike other production plants, filling and packaging plants are now generally not controlled from one central point. Many control panels on individual machines and conveyor systems look after the material flow throughout the plant. The drawback to this approach is that individual machines cannot always be reached directly in the event that operator intervention is required or problems arise. It is also not always possible to man every station with an operator, since this results in excessive time and expense. In order to remain competitive and to manage the plant more efficiently, an operator must have an overview of every operator station, must have the ability to intervene rapidly in the production process where necessary, and must have the ability to detect problems and respond immediately. Krones AG, a company specialising in installing and configuring complete filling and packaging lines, understands that information flow has today become every bit as important as material flow. This



company, based in Neutraubling in Bavaria, is in the vanguard when it comes to installing state-of-the-art network technology and software. Krones has already set up countless filling and packaging lines for glass bottles, PET containers and cans on behalf of breweries, soft drink manufacturers and companies involved with the wine and spirits industries.

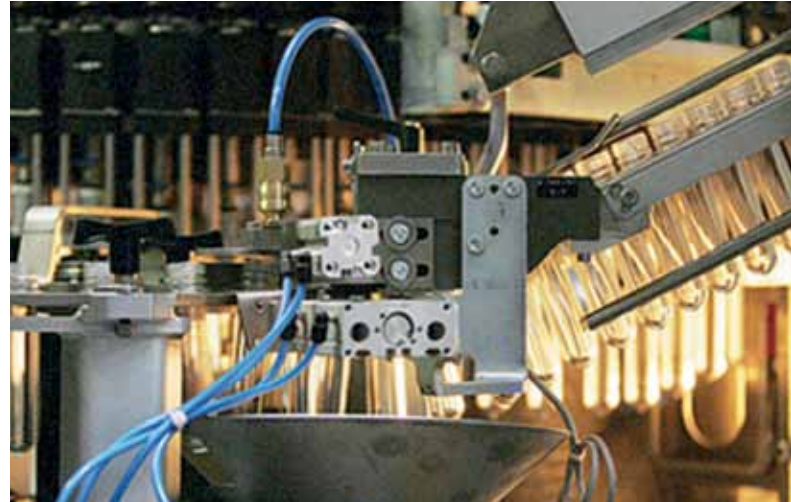
## NETWORK TECHNOLOGY UNDERPINS FURTHER DEVELOPMENT

Manufacturer-specific bus systems have so far been the most commonly used means of connecting individual machines with a system for the purpose of sending and receiving information. Industrial Ethernet has now emerged as the best medium for transferring large volumes of data between IPC devices. Krones uses fibre-optic cables here, thus avoiding electromagnetic interference from the word go. Krones installations are also unaffected by any limitation on the length of fibre-optic cables, since cables within the plant will never exceed the maximum permitted length of 2 km. When a network is implemented with copper cable, on the other hand, the picture is quite different: data transfer can become unreliable as soon as cable lengths exceed 100 metres. The network structure favoured by Krones for its filling and packaging lines has a star configuration with a central network server.

This guarantees the user maximum freedom from interference since the connections in the network are exclusive. Furthermore, every single machine can avail itself of a 100 Mbit/s bandwidth, and all applications – including the line diagnostics system, the line management system, the process control system and the mobile service information system – can run concurrently and without any form of mutual interference.

## VISUALISATION AND EFFICIENT MANAGEMENT OF PLANTS

Krones believes in state-of-the-art technology for its human-machine interface too, and has therefore chosen zenon from COPA-DATA GmbH for its machines. zenon is a software application whose strengths include scalability, flexibility and openness. zenon features a drag & drop interface for networking individual machines to form an integrated system; a separate machine (known as a “stand-alone project”) is activated with a click of the mouse and converted into a network project when the user drags it to the desired position in the zenon network manager’s project tree. If the user enters the corresponding computer name or selects a computer, then the desired operator terminals will become available immediately. An intelligent token ensures that all operator actions are managed in an orderly fashion. If an authorised user submits a request, then the token is passed to that user in order to avoid actions being duplicated and errors occurring. The project manager can define in advance which functions zenon is allowed to perform on the network, and which are not permitted. There is one more plus point with this software, which is that zenon does not require a central server. Any control panel that is assigned to a controller can act as a server for another client – an operator terminal, for in-



stance. In this way, data is transferred between the terminals and projects are also harmonised as soon as any changes are carried out on a project. One further advantage is that there is no need for any additional server hardware since the system has a distributed configuration and can thus operate on a Compact Flash-card basis. Maintenance can be carried out remotely on the HMI as well as the PLC systems. The basic philosophy behind the networked visualisation is that operators can perform whatever actions are required at any time and from anywhere in the plant. Such actions include configuring systems, changing types, switching on units and, if necessary, retrieving alarms and trend data.

## **COST EFFICIENCY IN FILLING AND PACKAGING**

In terms of improving efficiency and plant availability, innovative IT technology has a crucial role to play. State-of-the-art software and network technology ensure that systems are as safe and user-friendly as they possibly can be, that filling and packaging processes take place as efficiently as possible, and that as a result the costs per unit produced can be reduced ever further.

