

# Modular Controls Increase Efficiency

**Machine Peripherals.** A new control system for material handling unites extensive functionality and network capability. This contribution describes what the advantages of the modular control concept are and what properties characterise it.

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A new Ethernet based generation of control systems opens new possibilities for plastics processing plants. The control concept of Motan GmbH combines high flexibility with great technical and economical advantages. The internationally active enterprise specialised in storage, drying, blending and conveying systems, offers a modular control system world in Controlnet for further networking the processes mentioned. The key is the nearly limitless communication capability of all the control blocks – Luxornet for the dryers, Gravinet for the dosing and blending units as well as Metronet for the conveyers – under the Controlnet umbrella.

The new control concept makes it possible for plastics processing plants to control and oversee raw material handling and preparation processes reliably and flexibly from practically any place. The controls Luxornet, Gravinet and Metronet referring to the individual tasks are merged into the overall system. Each of these controls can be operated as an individual controller or in the group as a network solution in the context of the integrated system Controlnet.

## Horizontal Integration of the Control Modules

With the touch screen web panel the operator can adjust all the equipment, regardless of whether it is a dryer, mixer or conveying unit, either directly at the apparatus or from any position in the production enterprise. The high flexi-

bility of the control system is evidenced in the fact that the different Motan devices can communicate directly with one another.

Due to horizontal integration the control modules can exchange data with other Motan devices on the production level so that for example a blower station can be used by several blending units of the type Gravicolor. The control system Gravinet simplifies the use of a central blower unit because extensive SPS programming is thereby a thing of the past. Those who do not want to use the advantages of the central unit can handle the blowers as decentralised systems with the same control system.

In addition the system has the ability to communicate with software based on Windows; this facilitates vertical integration between the levels production, quality assurance and production planning on the one hand as well as calculation, cost

estimation and management on the other hand. This function is thus practical for users as it permits data transfer directly into software programs, as is usual in the office world. Thus for example report and check data can be represented and worked on in Microsoft Excel without additional expenditure.

## Freedom of Application almost without Limit

The use of internationally recognised communication standards such as Ethernet, TCP/IP, http and e-mail made it possible to develop this most flexible control system for equipment components economically. The basis of the network technology is software platforms that are usual in the PC world, which simplify communication between all modules of the Controlnet. Thus via the network the plant manager can view for instance sta-



Fig. 1. Here the web panel shows the overall Controlnet system on a 5.7" touch screen display

(photos: Motan)

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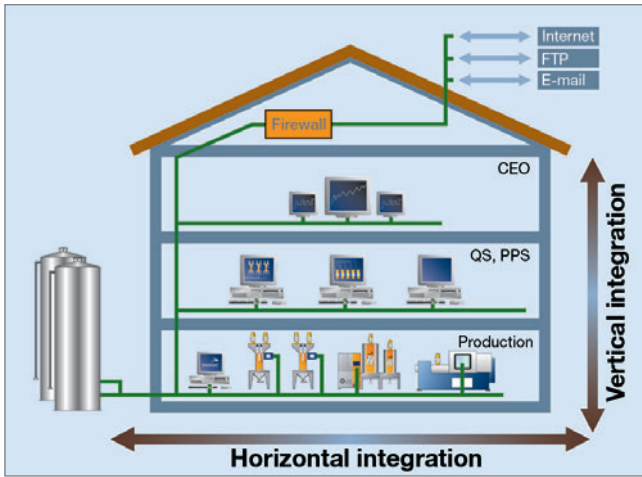


Fig. 2. The horizontal and vertical networking possibilities in an enterprise

tus or error messages of all integrated Motan units in his office and intervene in the processes.

These communication standards make possible not only interaction of the control modules with other report and control systems, but also adjustment to individual needs. The individual modules can also control apparatus other than those directly planned. Thus for example users of Luxornet cannot only supervise up to 16 drying funnels of the Luxor type, but all funnel conveying equipment and at the same time up to 24 conveying systems installed on plastics processing machines, two blower stations and a stand-by station. These capabilities go far beyond conventional dryer control.

To increase the size of a production process it is advantageous that the control network can be developed around the

changing machine periphery step by step. The control system is extended as if it consisted of building blocks. If desired, using Motan's Linknet connecting to the master computer as well as extended data administration is even possible. For users the standard on board Ethernet access for each control unit means no additional installation or hardware expenditure in the periphery working with the control modules for drying, dosing, blending and conveying (Luxornet, Gravinet, Metronet). Controlnet is to be regarded as an open total control concept that can accept future developments.

**Easy to Work with**

It is intended that web panels be used to work with all the Controlnet modules installed at the plastics processing plant.

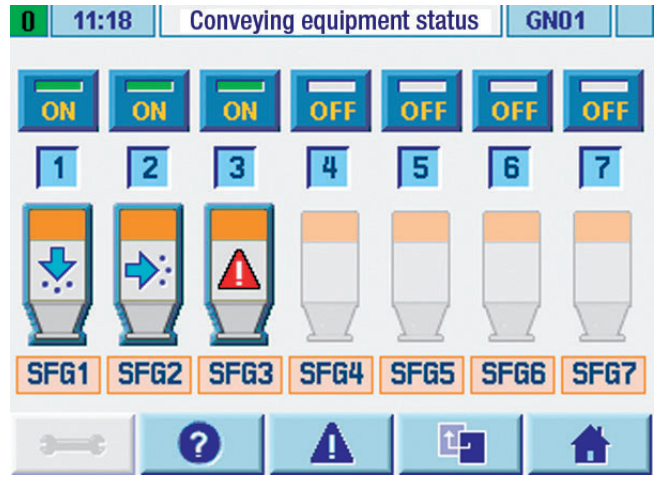


Fig. 3. Extract from the Gravinet control system: status indication for the transportation equipment

These intelligent panels can be installed at a freely selectable place in the production enterprise, also directly at the Motan devices.

Clear, overall user control is an important condition for training personnel quickly and avoiding control errors. The

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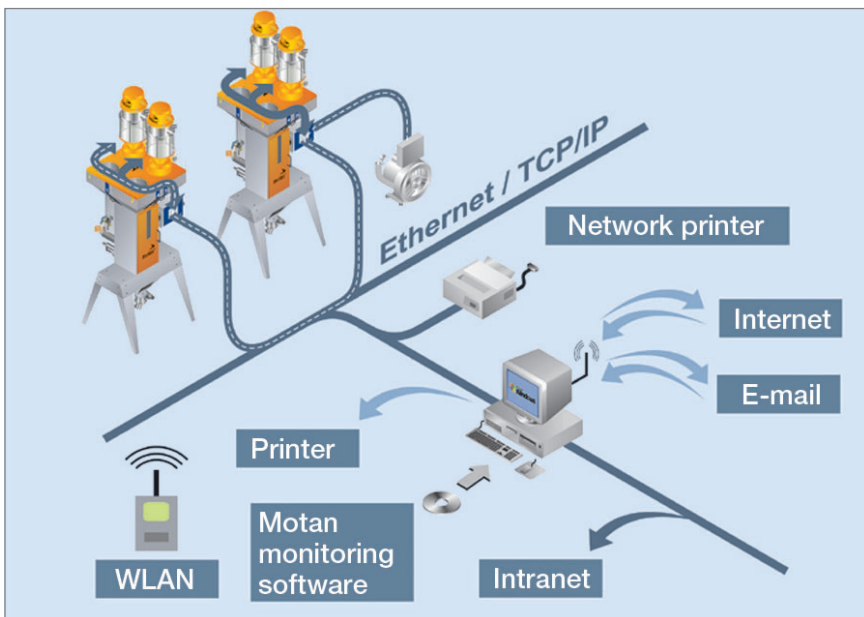


Fig. 4. Various communication possibilities in and with Controlnet

text is easily readable on a coloured touch screen in the language of the operator – the five European languages German, English, French, Spanish and Italian are available according to standard and any other language optionally. The diagram display contributes to visualising processes. The control surface is arranged practically and because of self-describing symbols it is intuitive to understand. An on-line help function is available in any case. ■

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