

CONTROLS - PROCESS ORIENTED MODELS

Based on the Measuring techniques and the presentation of the measured process parameters, META offer a wide spectrum of controls relying on process oriented methods. These controls allow on the basis of the measurement results to influence the process parameters in such a way that

the process achieves always the strong quality standards.

On the other side with the implementation of process oriented control META offer complete systems which guarantee to run the process in the best economical and efficient way.

PRINCIPAL OF CONTROL

The control parameter is measured directly (e.g. thickness, moisture) or calculated from other measured parameters (e.g. bone dry weight, density).

The target value (set point) which is given by the operator will be compared with the measuring variable. This comparison yields a difference (control difference) which is taken into account and input as control parameter in the META control model.

In the control model the target value for the actuator operation will be calculated. The actuator influences the process in such a way that the control parameter will be equal to the target value. Then the control difference will be minimized.

Process inherent time delays (e.g. time lags, dead times) are estimated on line and taken into account by the control model. All controls can be switched from «automatic» to «hand» allowing so the operator to take control over the system at any time.

SPC CONTROL

In contrast to the DDC technique by the instrumentation of SPC control, a stand alone independent controller is devoted to the actuator controll.

This controller acts on the actuator in that manner that the actuator value (flow, steam) a certain value achieves. This target or set point for the actuator will be calculated by the control model as it is realized in the control model.

The target for the controller is calculated from the control difference (comparison of the operator given set point for process) under taking into account the present process disturbances and delays.

Over a digital input on the system (META computer) the set point value for the actuator-controller will be changed.

This technique is known as **Set Point Control** and is depicted in Fig. below.

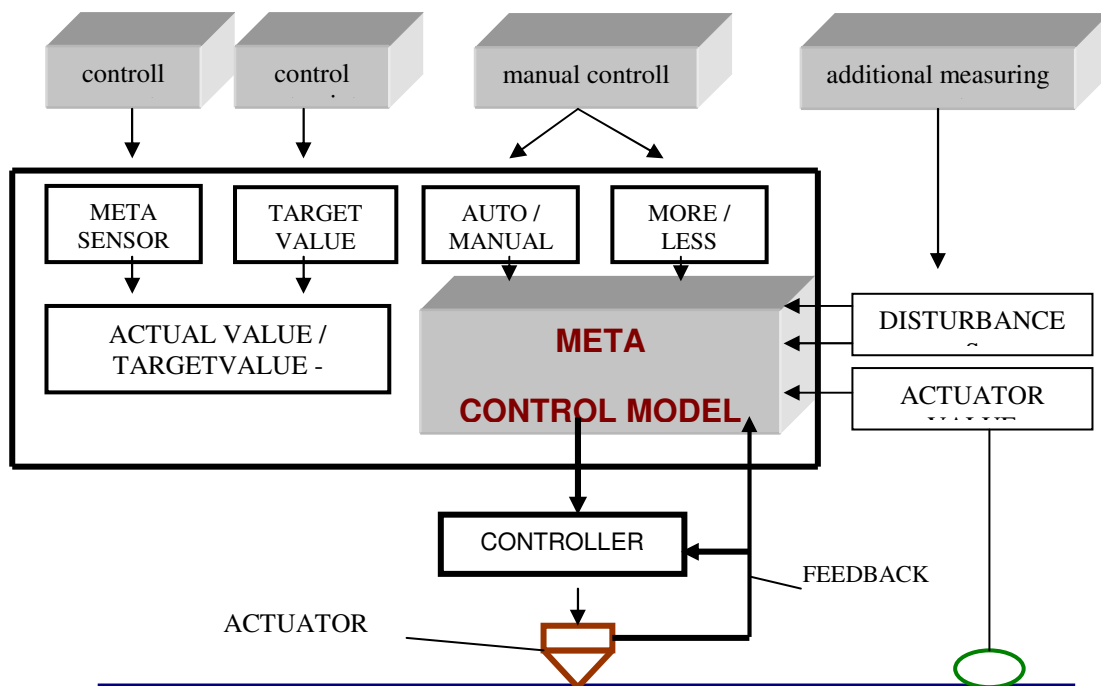


Fig. C01.2: SPC-control

COMMUNICATION BETWEEN SYSTEM-COMPUTER AND CONTROLLER BY SPC CONTROL

The communication interface between system computer and controller by the SPC-technique is standardized. There are certain signals for the communication defined. The use of the communication standard is strongly recommended in order to establish a *bump-free* change by switching from the computer control to local control (only stand alone controller is responsible) and vice versa. The necessary signals are depicted in the Fig. below.

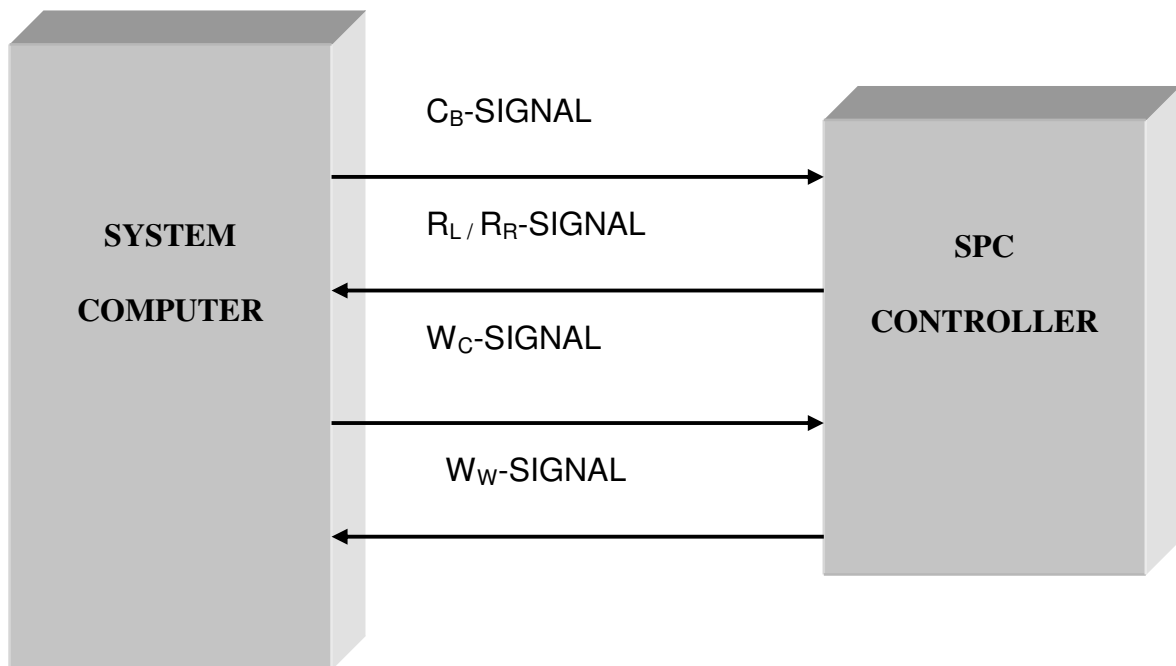


Fig. C01.3: Signal interface by SPC-control

C_B-Signal : This signal denotes to controller : **Computer Ready**

R_B/R_C-Signal : From controller is supplied the signal either **Controller Local** or **Controller Remote**.

Controller Local : Set Point for controller is only from controller-keyboard accepted.

Controller Remote : Set Point for controller is only from system computer calculated and accepted.

W_c-Signal : Set Point value (target value) coming from the system computer.

There are various accepted methods to send this signal.

One method is as analogue signal in range 0 to 20 mA or as 4 to 20 mA (life zero signal).

Other method is the PDM-Method (Pulse Duration Modulation) and another the PAM-Method (Pulse Amplitude Modulation).

W_w-Signal: This signal is necessary by certain processes and is the feedback of the transmitted Set Point from controller to system computer.

Also for that signal various accepted methods can be implemented as 0/4 to 20 mA signal or 0 to 10 V signal.
