



KS 90-1 application

Packaging material production

Drying of printing inks

Quality monitoring of the lacquer drying process

Traceability for QA

KEYWORDS

Packaging, cans, tubes, lacquer drying, quality assurance, GMP, clean factory, cleanroom

DESCRIPTION

The KS 90-I DP is used for the process of drying the printing inks (lacquer drying) on tubes and cans, which serve as packaging for pharmaceutical products, colours, etc.

Product quality is maintained by monitoring the control deviations within very tight limits. Furthermore, the process values are collected via a PROFIBUS network, and stored by a quality management system for the purpose of traceability (quality assurance). Numerous safety functions have been integrated to monitor all critical statuses, such as excess temperatures in the drier.

Operated by the Linhardt company, the factory is the world's first cleanroom production site in accordance with the GMP concept (good manufacturing practices).



Linhardt's GMP production site

IMPLEMENTATION

One KS 90-1 with four output relays is used to handle the following functions:

- 2-point heating (gas)
- 1 alarm (absolute) to open the exhaust flaps in case of an excessive temperature increase
- 1 alarm (relative -) and 1 alarm (relative +) for monitoring temperature deviations during lacquer drying (quality).



Cleanroom

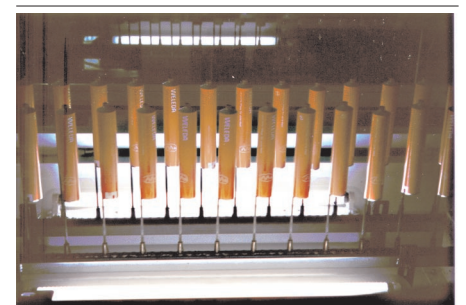
In case of a disturbance or stop of the plant, the setpoint temperature is to be lowered automatically by 20 K. This switchover is controlled by means of a digital input. Instead of switching to a fixed lower (safety) setpoint, the value is to be reduced by 20 K from the actual operating setpoint.

This means that if the setpoint is changed by the operator, e.g. for a product change, the reduced setpoint w2 must also be changed, i.e. the 2nd setpoint may not be stored statically in the unit.

For this purpose, a setpoint shift was configured via INP2 (INP2 acts on SP.E), for which an input signal of 4...20 mA was selected with a scaled range of 0...20. This combination ensures that with an open input and configured "up-scale" function, the required setpoint reduction value of 20 K is maintained. Hereby, it is important that INP2 is not connected, i.e. it remains open. This ensures that only the shift achieved by the scaling range is effective. Instead of acting on the 2nd setpoint value w2, the digital input acts on SP.E (setpoint shift), whereby the same behaviour is obtained, as with a 'normal' switchover to a 2nd setpoint (w2).

Via a PROFIBUS (DP-SS) link, the values X and W, and the alarm limits are recorded for the purpose of traceability (quality assurance). This enables the data specified by the customer to be accessed at any time, e.g. when checking whether all specifications have been met, without any exceeded limits.

The Linhardt company, one of the leading European producers of packaging, is headquartered in Viechtach, Bavaria



Tube production monitoring

(1.200 employees; turnover 100 million Euro).



Tube production line

Main product lines are aluminium and plastic molding for cosmetics and pharmaceutical products (tubes and cans, but also cigar tubos).

Every day, some 2 million aluminium tubes and 1 million plastic tubes are produced.

With its new plant, Linhardt has built the world's first production site in accordance with the GMP concept (good manufacturing practices): the clean factory. This means: no dust, no germs, and chemical compatibility (i.e. GMP-compatible production under cleanroom conditions).



PMA

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