

Process control system ▶

Machine control system ▶

RETROFIT plant upgrading ▶

Glass industry ▶

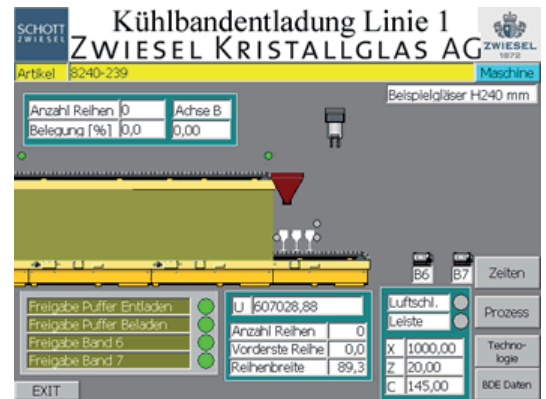
Paper industry ▶

## Annealing lehr unloader

The CNC control system SINUMERIK from Siemens is the base

We are well known in many different industry sectors. Now we added another area of expertise – transferring of work pieces. For such tasks we use the CNC control system SINUMERIK from Siemens, which can handle for example the complex requirements in the glass industry like annealing lehr unloader, packing machine and transfer stations.

The control of the annealing lehr unloader has been realized using a SINUMERIK 810D. The user interface has been expanded by using WinCC flexible, because the standard HMI SINUMERIK visualization didn't meet the requirements of an annealing lehr unloader. In general we work a lot with WinCC flexible, because with this we have a lot more features we can use to simplify the operation and to adjust all the functions to the customer requirements. One special feature of our control system is that all programs can be operated and controlled via a machine control panel in semi-automatic mode. This is very helpful for example after malfunctions or emergency stop, to be able to keep on producing. It is possible to go through the single program steps, whereby the adjustment of the plant can be done a lot easier.



Another big advantage is the buffer belt. The annealing lehr unloader can keep on unloading the glasses to the buffer belt in case of a malfunction of one of the production machines, which is next in line of the production process. Otherwise the glass would simply fall on the floor or into the basement and that would result in a lot of cullet. But with our control concept, the glasses can be stored on the buffer belt for the time the malfunction is lasting and afterwards they can be unloaded from the buffer belt.

## Article database

It is possible to create a CSV file for every article of the portfolio. That has the advantage, that all the necessary adjustments for the different kind of articles can be stored in these files. So if you need to change the production from one article to another, you can simply load the CSV file for that article and you don't have to do any adjustments in the program. Everything will be done from the automation system. You can store an unlimited amount of CSV files in our database, only the hard drive is the boundary. But the size of such a CSV file is only a few kilobytes, so the hard drive should also be no problem.

## Production Data Acquisition

The most important production data and down times are shown in this picture of the visualization. By using this option it is possible to assign an order number and the production data can be saved and related to the according article. This function is optional, you don't have to use it, but it is reasonable to work with it.

Betriebsdaten Erfassung						Maschine
Erfassung Laufzeiten						Auftrag STARTEN
Gesamtlaufzeit	Jahre	Tage	Stun	Min	Sek.	
0	57	23	58	48		
Laufzeit Auftrag						Auftrag FERTIG
0	0	23	18	40		
Auftrag: 28.02.06		Status: Auftrag LÄUFT				Zeitplan Prozess Techno- logie BOE Daten
Erfassung Zählerstände		Gesamtzähler		Auftrag Zähler		
Reihen erkannt Lichtschranke Entnahme		172115		2871		
Reihen von Kühlband entnommen		168989		2856		
Reihen von Kühlband nicht entnommen		3270		14		
Reihenfehler Lichtschranke KE Austritt		262		0		
Reihenfehler Lichtschranke KE Entnahme		759		1		
Reihenfehler Greifleiste sitzt auf		450		0		
Reihen auf Pufferband Zwischengelagert		342		1		
Reihen haben Kippgrenze überschritten		1799		13		
Gläser Band 6 / Übersetzer 1B		1191963		23445		
Gläser Band 7 / Übersetzer 1A		1189712		23219		