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Technical News Bulletin

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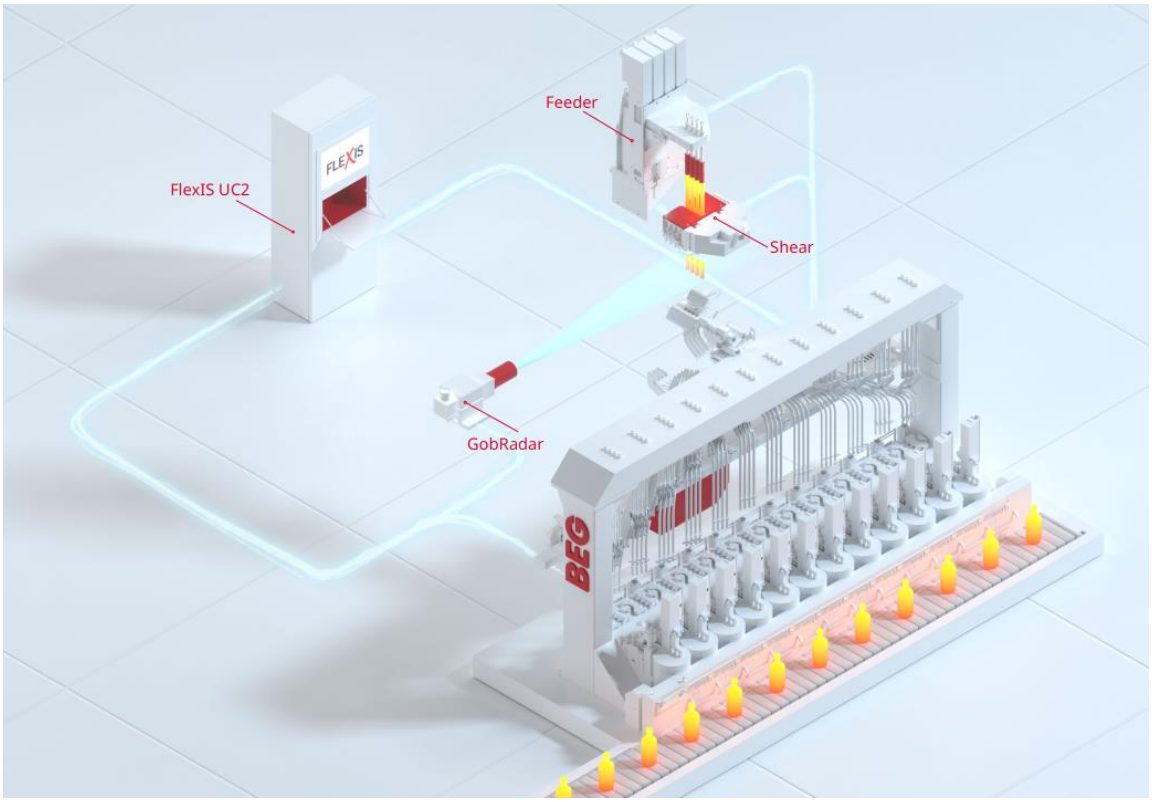

Gob Control Closed Loop

Integral part of SMARTFEEDER™

- Automatically adjusts and maintains gob weight and length for each section individually
- Easy gob forming for single and multi article production
- Reproducible gobs even under changing conditions

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Introduction

Setting up feeder and shear parameters to receive proper gobs can be quite a tedious task. Due to variation in glass temperature and the condition of the feeder, the settings of the last job run often need to be re-adjusted. Setting up the desired gob sequence for multi weight production turns this task almost into an art! The SMARTFEEDER products have been developed to make this job fast, easy and reliable.

Gob Control – the SMARTFEEDER closed loop

System Description

Gob Control is a control loop available in the FlexIS 3 timing system using information from the GobRadar and other sources. It receives weight and length values for each gob of each production cycle. The measured values are then compared to the setpoints for weight and length. The setpoints can be defined for each section individually. For a single article production, the weights are typically all equal, while the lengths can be set differently to compensate for the bigger elongation of the outer section gobs. For multi-article production, the weight setpoints are typically different and have to follow a certain pattern (sampling, blockwise, ABAB).

Section	1	2	3	4	5	6	7	8	9	10
Gob Number		1	2	3	8	4	6	7	5	
Weight Setpoint [g]		290.0	290.0	290.0	290.0	290.0	290.0	290.0	310.0	
Length Setpoint [mm]		118.0	118.0	118.0	118.0	118.0	118.0	118.0	124.0	

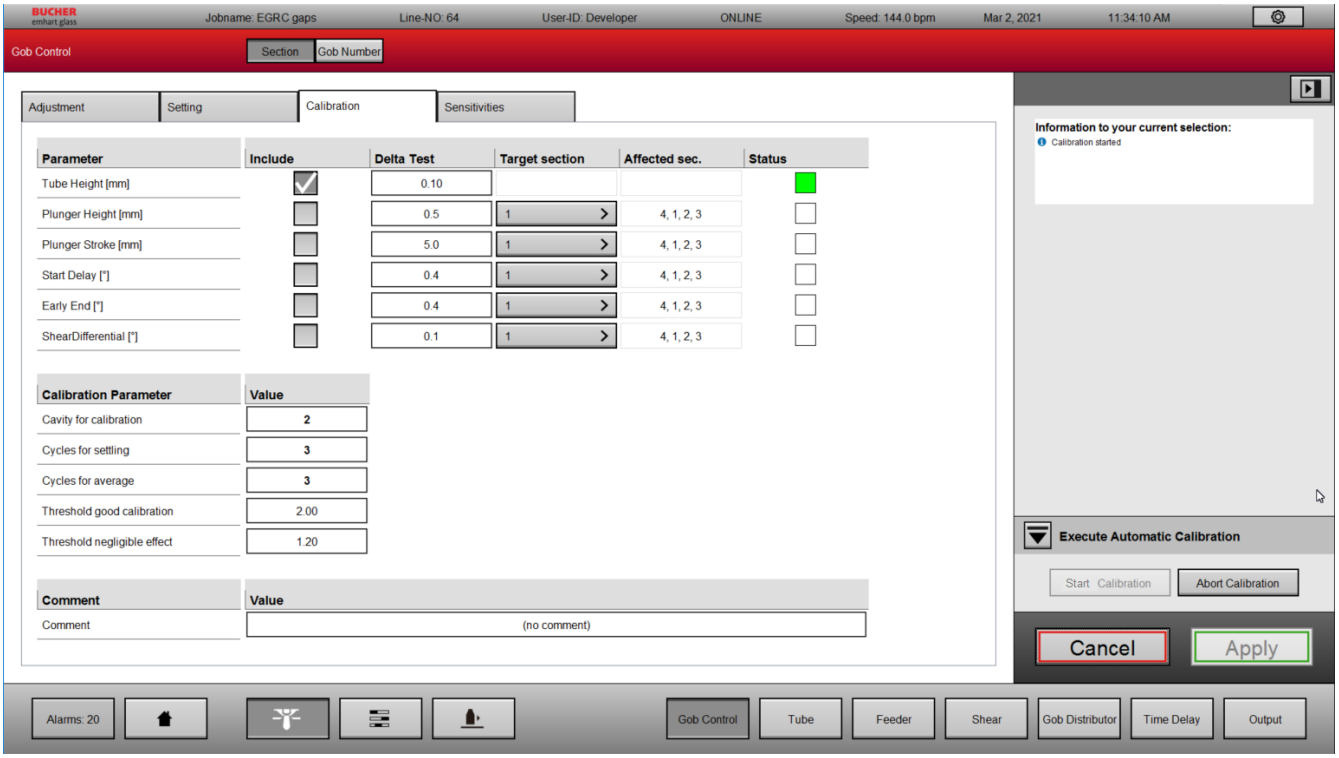
The control loop compares the measured weight and length values with the setpoints and calculates an optimal set of tube height, feeder and shear parameters to reach the target. The currently available parameters for the adjustment are:

- Tube Height
- Feeder plunger height
- Feeder plunger stroke
- Start delay
- Early end
- Shear differential

Some of these parameters do not only influence the gobs of one specific section, but also influence the gobs of the previous and the subsequent cut. Furthermore, some of the listed adjustments do have a different influence on the front gob and the rear gob. These factors are considered by the closed loop when it calculates an optimized next set of parameters. As in other FlexIS closed loops, the operator can set boundaries for each of the adjusted parameters, which defines the available space for the optimization.

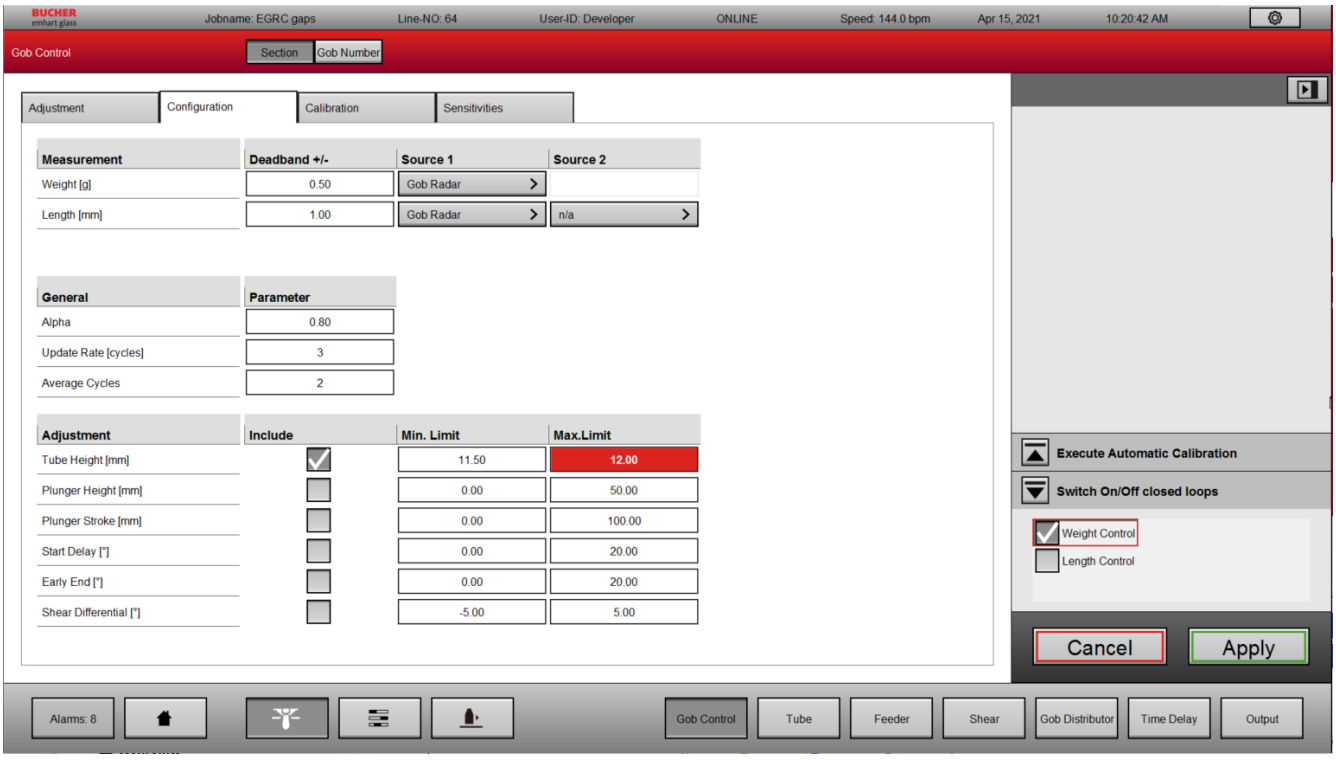
Calibration

To learn the influence of a specific feeder or shear setting on the different cuts, a calibration must be performed prior to the use of the system. The calibration is triggered by the operator and runs through automatically. It is possible to do the calibration before gobs are loaded into the machine. Once a calibration has been done for a job, it is only necessary to renew it if parts in the feeder have been replaced or if specific conditions have fundamentally changed.



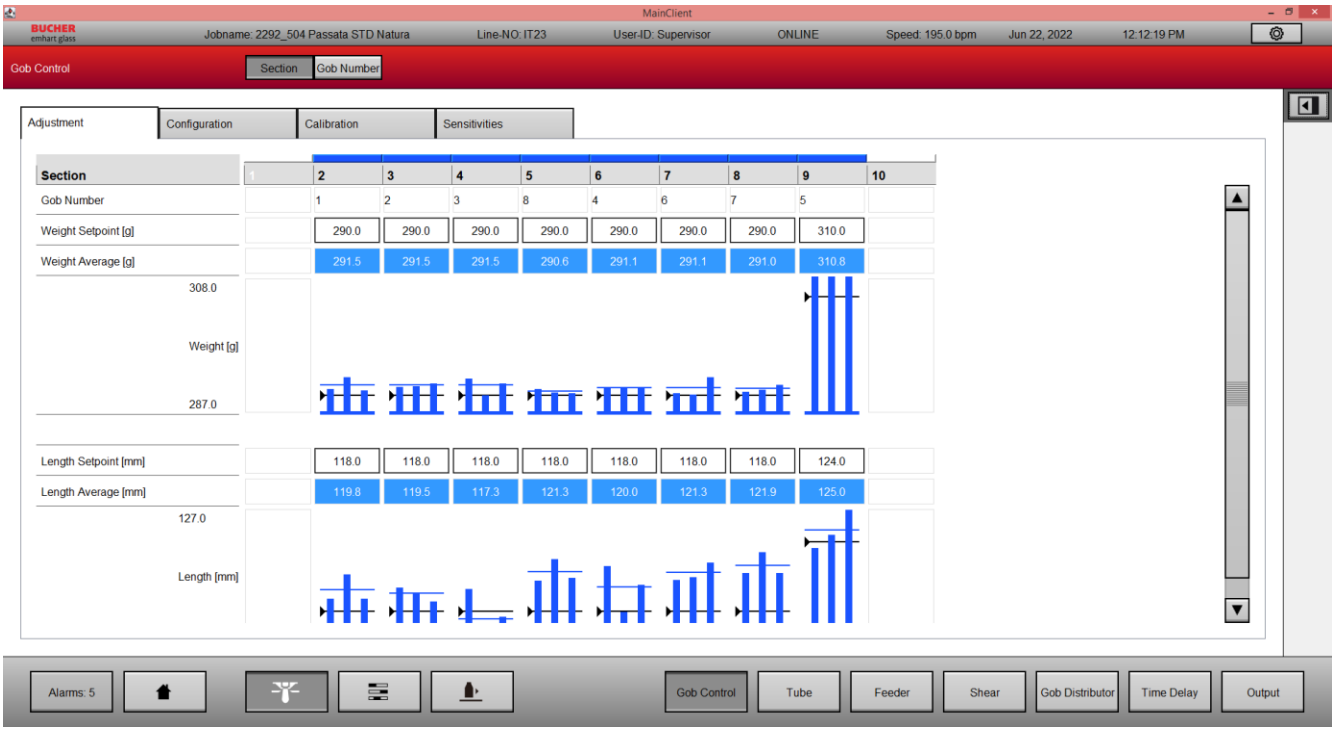
Configuration

The operator can narrow down the usage of specific adjustment parameters or exclude them completely, if desired. He can also select the appropriate closed loop mode to run (e.g. weight control only or combined weight and length control).



Adjustment

During production, the operator can see the currently transmitted weight and length values for the gobs of each section in a graphical display. It is thus instantly visible how the individual gob weights and lengths behave compared to the setpoint. The setpoint pattern for weight and length can be defined here, too.



The user is notified when the closed loop is not able to find a solution within the allowed adjustment space.

Application

The Gob Control closed loop is an integral part of the SMARTFEEDER. Combined with the 570 Multi Drive Feeder, front and rear cavities get adjusted individually. Combined with the 575 Dual Drive Servo Shear, future functions like controlling the gob shape will be enabled.
The closed loop is beneficial for any single weight production and unveils its full potential in multi article productions (sampling, block wise or ABAB).

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Installation Requirements

The FlexIS Gob Control can be installed for any forming machine having:

- ✓ FlexIS 3 timing control
- ✓ GobRadar system
- ✓ Basic Closed Loop Equipment (TNB248)

Gob Control includes:

- 601-20001-12 Software License FlexIS Gob Control (Smart Feeder closed loop)

Documentation

HE11135 is the manual for FlexIS covering also Gob Control.

Features	Benefits
Automatically adjusts and maintains gob weight and length for each section individually	Less variation in the production process (single and multi article). Easy setup of multi weight patterns for sampling, blockwise or ABAB production → shortened job change time. Faster start up after job change – weight and length from the previous run are achieved by automatic adjustment, even with different surrounding conditions.
Fully integrated in the FlexIS timing system	Follows the FlexIS philosophy. Relevant data is stored in the job.
Potential for future enhancements	Stay on top with upcoming software developments.