

Delivering multi gob production flexibility

Martin Grönblad discusses the production flexibility afforded by the latest multi gob manufacturing technology for glass containers.



Martin Grönblad, Product Manager of Process Products at Bucher Emhart Glass.

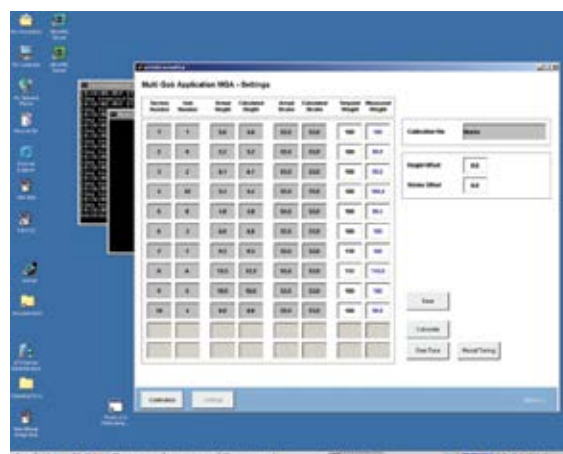
In 1924, Bucher Emhart Glass received a patent for the individual section machine, the IS machine. The brilliance of this technology is its redundant nature. No longer must a complete machine line be shut down for maintenance or adjustments and therefore creating another level of flexibility for the glass container industry. Later, with the introduction of the electronic timing system, the user obtained the possibility to easily make independent and individual adjustments on each section's

timing. Combining individual section technology with the electronic timing system gave the users the opportunity to mechanically and electrically give each section its own production setup.

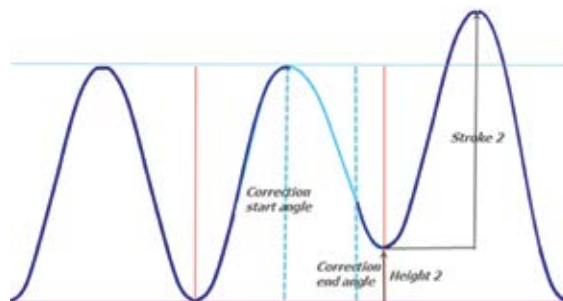
One additional way for the user to benefit from these advances in technology and further increase flexibility is to be able to shape the glass gob for each section individually. This can give the glass container producer the possibility to accept orders of smaller lot sizes and run samples without job changing a complete production line and therefore match the glass industry's request for higher flexibility. Other benefits include an increase in utilisation on the IS machine, together with a reduction of inventory as well as investments in mould equipment.

Bucher Emhart Glass answered this call from the industry by introducing the Multi Gob System in 2008, which was subsequently further enhanced with the innovative Multi Gob Application. The Multi Gob System gives the producer the opportunity to make individual section changes to the feeder parameters. This allows changes to

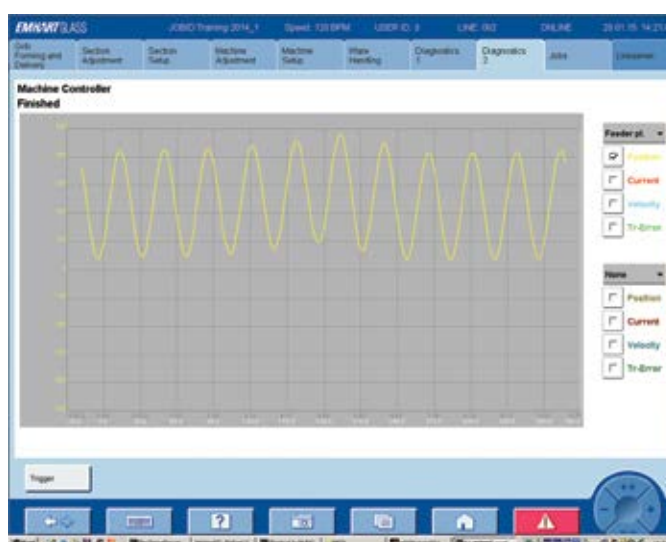
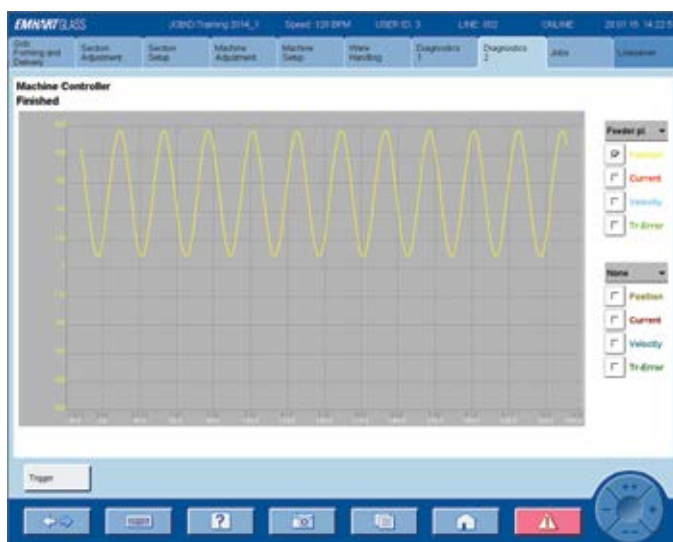
plunger stroke, height, start delay/early end, correction start and stop angles, cam profiles and also shear parameters such as differential, move time and blade overlap.



User interface.



Feeder plunger parameters.



The left-hand graph displays a normal plunger motion profile, while the graph at right shows a plunger motion profile set up for multi gob operation.

Providing the user with such a large set of parameters requires a high level of expertise and time for trial and error during setup. The shaping of a gob is strongly coupled to its neighbouring gobs. This means that parameter changes to the target gob will in many cases spill over to the preceding or following gobs. So the user must not only find the correct values to shape the target gob but also change the parameters to counter the residual effect to the gobs close to the cutting order of the target gob. Understandably, this leads to a constant tweaking of parameters, which in the worst case means across the entire machine.

Additionally, the parameter changes are specified in units that do not really describe the change that the user wants to achieve. As an example, a plunger height change in millimetres does not have an absolute relation to a change in gob weight, as this also depends on several other factors such as glass temperature, tube height and glass pull to name a few. All of the many control elements and parameters make this a complex task and especially challenging for a first time user.

INTUITIVE TOOL

To simplify the setup, Bucher Emhart Glass has developed and released a cutting edge application for the industry. The Multi Gob Application MGA is an intuitive tool that assists the user with setting up the Multi Gob System by adding smartness to the feeder setup procedure.

Initially, the system is calibrated during given production settings and the feeder reaction to parameter changes is entered into the user interface. Once this step is completed, the user can enter the desired gob weights in grams for each section and a smart algorithm calculates the required parameter changes to achieve the weights. The MGA also takes care of the residual effects from the neighbouring gobs across the machine.

Today, the MGA is included in the standard Multi Gob package from Bucher Emhart Glass. Multi Gob is available together with a 555/570 feeder plunger and 565 shear mechanism that are both operating from a FlexIS control system. This technology takes the glass industry to another level of production flexibility and assists BEG customers to meet the demands of today, as well as tomorrow. ■

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