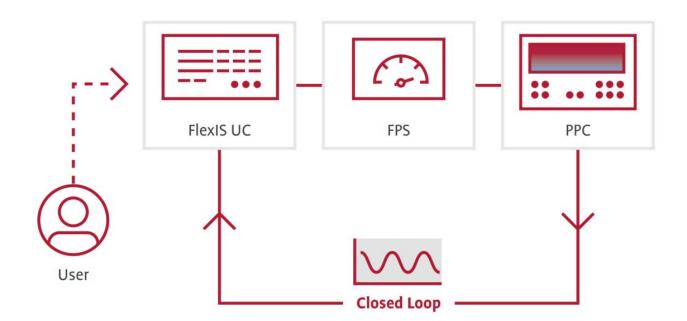


Technical News Bulletin

Steinhausen, April 2020

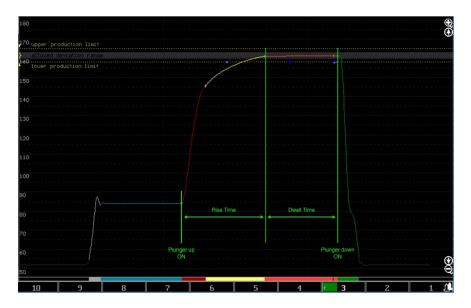


- FlexIS Plunger Up Control Automatically adjusts FPS pressure levels and timing to keep a constant plunger rise time / dwell time.
 - FlexIS Plunger Up Control is fully integrated into the FlexIS controls
 - Remote access to PPC and Plunger Up closed loop.

BUCHER emhart glass

Introduction

FlexIS Plunger Up Control is a control loop available in the FlexIS Timing using information from the PPC (Plunger Process Control). In Press and Blow (P&B) and Narrow Neck Press and Blow (NNPB) production, it determines the time needed to move the plunger up to its end pressing position. It adjusts FPS pressures and sets FPS timing values so that the desired time to raise the plunger is maintained. Having a defined plunger rise time means also having a defined full contact time ('dwell time'), which is – in common understanding - an important process parameter.

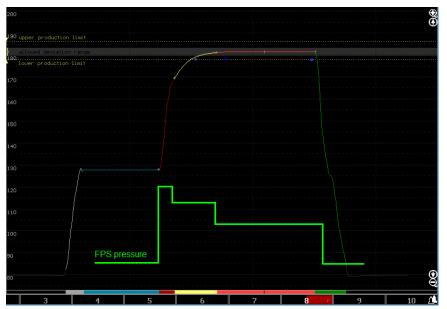


Plunger Rise- and Dwell-Time between Plunger up and down movement.

Up to now, controlling the plunger rise time and thus the full contact time between plunger and glass was hardly done systematically for all cavities. The result depended on many influencing factors like friction in the plunger mechanism, glass viscosity, loading situation etc. Even if it was controlled systematically, pressing with only one pressure offered a limited range to influence the plunger rise time without risking other quality issues.

FlexIS Plunger Up Control uses multi pressure pressing to have a wide range of influence on the plunger rise time. By continually adjusting the initial pressure levels and also the switch points (timing) for stepping between the pressure levels, the system makes multi pressure pressing usable in a comfortable way without risking any quality issues.





Press curve and FPS pressure sequence shown as example.

Application

FlexIS Plunger Up Control is very beneficial for NNPB and P&B production.

Setting Description

FlexIS Plunger Up Control is fully integrated into the FlexIS controls. All settings are done on the User Console and are stored as job data.

Settings (all per cavity)

- FlexIS Plunger Up Control on / off
- Setpoint value for plunger rise time
- Upper and lower limits for pressure adjustment

Feedback to the user (all per cavity)

- Actual (measured) value for plunger rise time
- FlexIS Plunger Up Control on / off
- Pressure reached a limit



Functions

- See all values per section or grouped in an overview
- Fill values to all cavities or to all sections

Remote Access Extension

• The 'PPC remote access box' makes PPC accessible through the FlexIS remote access system.

MHART GLASS	JOBID	JOBID:FPS_Flexte		Speed: 360 BP1		M USER ID: 3		LINE: 098		ONLINE		09.12.11 15:19	
b ming and Adjustm livery			Machine Adjustment	Machi Setup		Nare Handling	Diagn 1	ostics	Diagnostics 2	Jobs		Lineserver	
Plunger Up Contr Setpoint value rise ti		,											
Section	01	02	03	04	05	06	07	08	09	10	11	12	
Cavity (inner)	440	500	1000	660	500	545	455	495	400	400	400	400	
Cavity 2	440	385	450	660	375	385	475	470	320	320	320	320	
Cavity 3	440	390	735	660	425	395	430	320	430	430	430	430	
Cavity (inner)	810	690	720	695	615	605	690	715	785	715	780	655	
Section	01	02	03	04	05	06	07	08	09	10	11	12	
Cavity (inner)	810	775	720	735	780	920	720	715	815	815	780	770	
Cavity 3	715	745	795	655	695	795	775	825	820	790	840	735	
Canty 5		/40	180	000	035	185		020	020	130	040		
on / off	Take over	Fill		FPS Sett	ing	Overview		Settings	Setu	au			
	act.	Para	meters		~~~y	Parameters		Section		40		++	
			?		51	F				A	- (-))+	

FlexIS 1 user interface: Set point values and measured values with colored status indication shown in the Overview page (sample values).



	BUCHER emhart glass	Jobnam	ne: MyPUC	example	Line	e-NO: 112		User-ID: Supervisor	ONLINE	Speed: 188.0	bpm I	Feb 7, 2019	3:49	:39 PM	Ø	
Clo	sed Loop Adjustment			Section 1												
						_										
	General	Plunger Up Con	trol	Bottle Spacin	ng Control	Blank Cool	ing Control	Plunger Cooling Control								
	Cavity Actual rise time [ms]		(inner)	790	(2) 64	6										
											3					
	Setpoint rise time [ms]			800	80											
	p1/p2 ratio			1.20	1.2	0										
	Upper limit p1 [bar]			0.70	0.7	0										
	Upper limit p2 [bar]			0.60	0.6	0										
	Lower limit p1 [bar]			0.30	0.3	0										
	Lower Limit p2 [bar]			0.30	0.3	0										
	Automode on/off		On	>	Off	>										
					_									Closed Loop	External	
	Alarms: 18		Ÿ			<u> </u>			Bar C	Chart Pusher	Section O	ffsets H	EWR	Adjustment	Systems	

FlexIS 2 and 3 user interface: Setpoint values and measured values with colored status indication shown in the Closed Loop Adjustment page (sample values).

Installation Requirements

FlexIS Plunger Up Control can be ordered for any forming machine having:

- ✓ FlexIS Timing Control Software Version 1.07.03.033 or higher
- ✓ PPC Plunger Process Control system
- ✓ FPS Flex Pressure System
- ✓ Basic Closed Loop Equipment (TNB248)



Order Information

FlexIS Plunger Up Control includes:

- 601-20001-3 Software License FlexIS Plunger Up Control
- 601-217-2 Communication Kit for PPC (specify cable length PPC master to FlexIS MC cabinet)
- 601-217-5 PPC Remote Access Kit
- 1 day Service engineer for installation
- 2 days Production specialist for commissioning and on site training

Documentation

H11103_EN is the English manual of FlexIS Plunger Up Control.

Features	Benefits						
Automatically adjusts FPS pressure levels and switch points between pressures according to press curve	Keeps process steady / less variation - over time - from cavity to cavity - less stops						
	Machine reaches steady state production faster after job change						
Uses FPS multi pressure pressing	More regular plunger motion due to higher initial pressure levels.						
FlexIS Plunger Up Control is fully integrated into the FlexIS controls	Reduced complexity / better ease of use						
PPC remote access through the FlexIS remote access system	Optimal addition to FlexIS remote service. Experts can support remotely auditing real time PPC and Plunger Up closed loop.						