

User manual

Conveyor system with MP370

<u>(V1.0 – GB)</u>

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		<u> </u>	<u> </u>	10:28:44 AM	E	LEKTRO	DTECHNIK
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	customer	/					_
	line	Linie L					
main							
menu	english (akt	iv)	RUS				

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2. Introduction

This document will be necessary or possible settings on the operator panel SIMATIC MP370 Touch with a Bertram standard projection controlled transport system explained. In the screenshots shown equipment come from a sample unit and are not always those of this transport system, but may be applied analogously. The same applies to the plant layout.

3. Function of the standard projection

The standard projection allows the necessary programming and parameterization procedures so far largely segregated, the fact that the programming on the PLC and the parameterization on the operating interface of the HMI device.

This makes it possible to shorten start-up times and changes of drive functionality at any time with relatively little effort.

Based on a product data set, witch contains the parameters of the production quantity, the addition of a possibly existing accumulation table, article diameter and height, one descriptive plant configuration and a drive configuration, the speed and revolution speed requirements respectively for the drives will be calculated and provided the PLC program to transfer to the drives.

Plant specific characteristics can take into account by typing correction values during the start-up, as well as product-adjustment during the plants adapt to a new product. This product adjustments are, in most cases for comparable products reusable, so that the necessary parameterization steps for optimum equipment functionality is reduced to a minimum.

Are optimal settings found for a product, the settings can be stored in a recipe file and, if necessary, called again.



4. General information about HMI-unit SIMATIC MP370 Touch

The HMI-unit SIMATIC MP370 (MP) allows the user to change and observe each important parameter of the control system. Machine states are displayed as well as fault-messages. Some screens and parameters are protected so that only authorized users are able to make changes in these areas.

You will find each of the realized screens of the MP with an explanation of the in- and output parameters in the following chapters.

The screen of the MP is divided into three areas:

- the top area
- the button area and
- the input and output area.

The top area includes output-fields for date an time, buttons for login and logout of a user, an output field to show the actual authorized user at the headline of the actual shown screen.





The button area contains buttons to navigate in the realized screens of the MP. Most of the buttons are only available dependently of the actual screen, but the button to select the main menu is always available.

The input and output area contains input and output fields for the various system functions, presented by short texts, in functional structuring relocate in different screens.

5. Main menu

	main menu	0:	1/17/2 9:43:4	2008 1 AM	Ŧ		TRO	ТЕСН	NIK
Γ	ope	rating mode				actual line	e capacit	y	
Ī	production	line	e L1		loop 1 (right)	0	врм	-
-	deflector distribution table	automati	c -middle-		loop 2 (left)	0	врм	-
/	Accutable mode	Auto	omatic		line		0	врм	-
/	Accutable operating	cyclic o	peration						
	loop 1	norma	al mode						
- T	oop 2	norma	al mode	_					
- F	bottle distributor loop 1	enabled	manual mode						
	bottle distributor loop 2	disabled	manual mode	_					
	plant article data	operating mode		tre	ends	service	alarr messag	n fini ges ir	ish / 1fo

This screen is the start-up screen which will be displayed after starting the MP. From each screen the main menu can be selected. The main menu will be automatically selected by time control if there is no operating action at one of the other screens.



The main menu give a review for the sorting line like actual line capacity measured at the outlet of the distribution table, modes of deflector distribution table, accumulation table, servo deflector, inspection loop, etc.

Choices:

- plant
- article data
- operating mode
- trends
- service
- alarm messages
- info / finish
- operating mode accumulation table cyclic or continuous operation selected by touching the button right of the field **Accutable operating**
- bottle distributor (optional) enabled or disabled

No.	Time	Date	Text	
25	10:02:56 AM	1/17/2008	EMERGENCY STOP (M60.0)	
64	10:02:37 AM	1/17/2008	circuit breaker Movimot group 7 loop 2: FA_SLA1.E-1Q9-FL (M64.7)	
63	10:02:37 AM	1/17/2008	circuit breaker Movimot group 6 loop 1: FA_SLA1.E-1Q8-FL (M64.6)	
62	10:02:37 AM	1/17/2008	circuit breaker inspection loop 1: FA_SLA1.E-1Q7-FL (M64.5)	
61	10:02:37 AM	1/17/2008	circuit breaker Movimot group 4 loop 1: FA_SLA1.E-1Q6-FL (M64.4)	

Active alarm messages will be displayed in the popup-window shown above. Browse among the messages by using the scrollbar at the right side. If there is no message present the popup window is not visible.



5.1 Info / Finish

		/16/2008	
Info			• 211 1
			ECHNI
•			
	Info		
	-	_	
	ELEKTRO	TECHNIK	
Ber	am Elektrotechnik GmbH Telefon	(05531) 99 55 - 0	
Phil 376	p-Reis-Strasse 3 Telefax 9 Bevern elektrot	(05531) 99 55 50 echnik@bertram-bevern.de	
drawing - r). Z		
customer	/		
line	Linie L		
	,		
main			
menu english	aktiv) RUS	passwor	d finish

This screen comprised some information like Drawing-No. of the wiring diagram, customer and line.

Furthermore the language of the MP can be selected the language and it is identified by the annex (active) at the corresponding button.

Choices:

- back to main menu
- change language
- create / change / delete password
- finish



5.1.1 Finish Runtime

Finish	•	9: Superu	11 11 11	2/18/2006 1:55:45 AM		ROTECHNIK
	Herwith Yo	u will finish	the Visu	alisation	Run-Time !	
hark					finish	Run-Time and
	Einish	Finish · Herwith You	Finish 9: Super Therwith You will finish	Finish · Superuser 1 T	Finish I II:55:45 AM	Finish Provide Superviser 12/18/2006 11:55:45 AM FOR FILE STATES AN F

Choices:

- back Info / Finish
- finish Run-Time



5.2 Alarm messages

	alarm mess	sages	<mark>3:</mark>	
No.	Time	Date	Status To	ext 11
232	12:50:02 PM	12/18/2006	K DI	P-fault (PLC) slave 96
133	12:50:02 PM	12/18/2006	К са	aution: manual mode 0M1\0M2 accumulation table (M93.4)
129	12:50:02 PM	12/18/2006	K m	nessage: no enabling cullet convoyor (M93.0)
123	12:50:02 PM	12/18/2006	K Li	1 1A55 not ready (M90.2)
122	12:50:02 PM	12/18/2006	K LI	1 squeezer pressure not ready (M90.1)
121	12:50:02 PM	12/18/2006	K LI	1 squeezer not ready (M90.0)
115	12:50:02 PM	12/18/2006	K L2	2 2A55 not ready (M91.2)
114	12:50:02 PM	12/18/2006	K L2	2 squeezer pressure not ready (M91.1)
113	12:50:02 PM	12/18/2006	K L2	2 squeezer not ready (M91.0)
64	12:50:02 PM	12/18/2006	K ci	ircutit breaker Movimot group 7 loop 2: FA_SLA1.E-1Q9-FL (M64.7)
63	12:50:02 PM	12/18/2006	K ci	ircutit breaker Movimot group 6 loop 1: FA_SLA1.E-1Q8-FL (M64.6)
62	12:50:02 PM	12/18/2006	K ci	ircutit breaker inspection loop 1: FA_SLA1.E-1Q7-FL (M64.5)
61	12:50:02 PM	12/18/2006	K ci	ircutit breaker Movimot group 4 loop 1: FA_SLA1.E-1Q6-FL (M64.4)
60	12:50:02 PM	12/18/2006	K ci	ircutit breaker Movimot group 3 general conveyor: FA_SLA1.E-1Q5-FL (M64.3)
ſ	show nessage buffer	messa	:lear ge buffer	archive archive main alarm system menu

This screen gives an overview about the active alarm messages. Browse among the messages by using the scrollbar at the right side. If there is no message present the alarm box is empty.

Choices:

- show message buffer
- clear message buffer
- archive alarm messages
- archive system messages
- back to main menu

The button "**show message buffer**" selects a system screen, which gives an overview about the date back messages. This buffer can be cleared with the button "**clear message buffer**". It is automatically cleared by start-up the visualisation system.



5.2.1 Archive alarm messages

	archiua alarmu			0:	12/18/2006		he	ntr	am
	archive alarmi	messages		× .	12:54:15 PM	L±1	ELEK	TROTE	CHNIK
No.	Time	Date	Status	Text					
232	12:50:02 PM	12/18/2006	К	DP-fault (PLC) slave 96					
133	12:50:02 PM	12/18/2006	К	caution: manual mode (DM1\OM2 accumu	lation tab	le (M93.4)		
129	12:50:02 PM	12/18/2006	К	message: no enabling c	ullet convoyor (M	93.0)			
123	12:50:02 PM	12/18/2006	к	L1 1A55 not ready (M90).2)				
122	12:50:02 PM	12/18/2006	к	L1 squeezer pressure n	ot ready (M90.1)				
121	12:50:02 PM	12/18/2006	к	L1 squeezer not ready ((M90.0)				
115	12:50:02 PM	12/18/2006	к	L2 2A55 not ready (M91	L.2)				
114	12:50:02 PM	12/18/2006	к	L2 squeezer pressure n	ot ready (M91.1)				
113	12:50:02 PM	12/18/2006	к	L2 squeezer not ready ((M91.0)				
64	12:50:02 PM	12/18/2006	к	circutit breaker Movimo	t group 7 loop 2:	FA_SLA1	E-1Q9-FL (M64.7)	
63	12:50:02 PM	12/18/2006	к	circutit breaker Movimo	t group 6 loop 1:	FA_SLA1	E-1Q8-FL (M64.6)	
62	12:50:02 PM	12/18/2006	к	circutit breaker inspecti	on loop 1: FA_SL/	41.E-1Q7	FL (M64.5)	i	
61	12:50:02 PM	12/18/2006	к	circutit breaker Movimo	t group 4 loop 1:	FA_SLA1	E-1Q6-FL (M64.4)	
60	12:50:02 PM	12/18/2006	К	circutit breaker Movimo	t group 3 general	conveyor	: FA_SLA1.	E-1Q5-FL (M(54.3)
								back	main
								Dack	menu

This screen shows an overview about the last 2048 date back alarm messages. The buffer is a FIFO-buffer and cannot be cleared and is stored at the internal CF-Card of the MP.

Choices:

- back to alarm messages
- back to main menu



5.2.2 Archive system messages

ard	hive system	messages	0: 12/18/2006	ertr	am
				EKTROTE	CHNIK
No.	Time	Date	Text		▲
260003	12:54:10 PM	12/18/2006	User logged off		
260002	12:52:11 PM	12/18/2006	User coldend operator logged on with level 3		
140000	12:48:36 PM	12/18/2006	Connection established: line_A1, Station 2, Rack 0, Slot 3		
110001	12:48:30 PM	12/18/2006	Change to operating mode 'online'		
260002	12:43:48 PM	12/18/2006	User Superuser logged on with level 9		
240000	12:43:40 PM	12/18/2006	Demo version!		
170002	12:43:24 PM	12/18/2006	line_A1 Reading diagnosis buffer not possible, error code: 0x8000	0105	
170002	12:43:20 PM	12/18/2006	line_A1 Reading diagnosis buffer not possible, error code: 0x8000	0105	
260003	12:37:49 PM	12/18/2006	User logged off		
260002	12:37:16 PM	12/18/2006	User coldend operator logged on with level 3		
240000	12:33:37 PM	12/18/2006	Demo version!		
240000	12:23:36 PM	12/18/2006	Demo version!		
240000	12:13:35 PM	12/18/2006	Demo version!		
260003	12:13:14 PM	12/18/2006	User logged off		_
				back	main menu

This screen shows an overview about the last 2048 date back system messages. The buffer is a FIFO-buffer and cannot be cleared and is stored at the internal CF-Card of the MP.

Choices:

- back to alarm messages
- back to main menu



5.2.3 System messages

		a	×
No.	Text	PLC	
110001	Change to operating mode 'online'		
80026	Archive initialization completed. All archives OK		

System messages are triggered by the MP370. They are not configured. System messages indicate, for example, incorrect operation or communication faults. A selection of important system messages is provided in **Multi Panel MP370 Equipment Manual, Appendix C**.

The message window for system messages opens automatically as soon as a system message arrives. The window is closed automatically after the configured duration (3s) has expired or by touching the x-button right on top of the window.



5.3 Article data

capacity lehr	250	BPM	technik - def	fault-product		
offset accumulation table	20	%				
diameter	75	mm				
height	285	mm				
				loop right		
loop 1 (right)		180	ВРМ	line	0	BP
		100	PDM	,	, -	1
loop 2 (left)		180	DPIM			
loop 2 (left)		180	DPM			

This screen shows an overview about the actual article that is running at the sorting line, the calculated line capacity and the actual measured line capacity. In case of user-login the input fields will be enabled and changes or entering of a new article are possible.

Required article data:

designation: article designation max. 40 characters
 capacity lehr: container per minute from the annealing lehr
 offset accumulation table: addition in % from the accumulation table
 diameter: container diameter
 height: container height

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This data are required for calculation of the conveyor speed set points and to calculate the switch-on delay of the jam light barrier.

After entering new data the complete sorting line will be new calculated by touching the button with the calculator on itself.



A moving blue bar shows that the calculation is executed.

Choices:

- recipes
- calculate
- back to main menu



5.3.1 Recipes – general information –

It distinguishes between two different types of recipes.

Conveyor:

In the recipe **conveyor setup** parameter values are stored to be used for the start-up, and then usually not changed. Because here are parameter changes not useful or necessary, there is only one data record.

Article:

The data records of the recipe **article** contain all relevant input values, depending on the product to be transported, if necessary, to modify, to the best possible product flow. Thereby it is possible, that for several different – in their relevant dimensions, but comparable – products identical data records can be used.

Basically, it is advisable for each product to use its own data record and those store with a striking designation, to use it in again easily recover. They have the product number or the product name of the article proved to be particularly suitable



5.3.2 Recipes - create -

1. Select the screen "recipes article"

Data Record Name:			No.:
Entry Name	Value		
Article			
Article_from_lehr		0	
Article_from_table		0	
Article_diameter		0	
Article_height		0	
area_relativ_1		0	
area_relativ_2		0	
area_relativ_3		O	



2. Press the button



"create a new data record"

area_relativ_2	0	
area_relativ_3	0	
Data Record Name		

- 3. Click in the input field "Data Record Name", now the keyboard appears at the screen.
- 4. Prompt the data record name and press "Enter".

area_relativ_2		C		
area_relativ_3		C)	_
Data Record Name	Bertram -Test-			
Data Record No.	999			
1				
???			back	main menu

At the screen appears the field "Data Record No." with the entry 999, this is the identifier for a new data record.

5. Press the button **"save data record**" The data will be read now from the PLC and then stored at the MP.



5.3.3 Recipes - load, save, delete -

1. Select the screen "recipes article"

Data Record Name:				No.:
			Ť	
Entry Name	Value			
Article from lebr				
Article_rom_table			2.	
Article diameter		0		
Article height		0		
area_relativ_1		0		
area_relativ_2		0		
area_relativ_3		0		

2. Press the arrow right beneath the field "Data Record Name:", all existing data record will be displayed now at the screen.

Recipe Name:			No.:
article		Ŧ	1
Data Record Name:			No.:
		•	
Bertram -Test-		-	
		-	
	<u>`</u>		
area_relativ_1	0		



3. Select a data record, the name of the selected record will be taken the field "Data Record Name:".

Data Record Name: No.: Deta Record Name: No.: Deta Record Name: I Image: State S					1
Data Record Name: No.: Bertram -Test- 1 Image: Constraint of the state	Jarucie			Ľ	-
Entry Name Value Article BERTRAM Elektrotechnik - Test Article_from_lehr 400 Article_from_table 20 Article_height 200 area_relativ_1 100 area_relativ_3 60	Data Record Name:				No.:
Entry Name Value Article BERTRAM Elektrotechnik - Test Article_from_lehr 400 Article_from_table 20 Article_diameter 65 Article_height 200 area_relativ_1 100 area_relativ_2 100 area_relativ_3 60	Bertram -Test-			•	1
Article BERTRAM Elektrotechnik - Test Article_from_lehr 400 Article_from_table 20 Article_diameter 65 Article_height 200 area_relativ_1 100 area_relativ_2 60	Entry Name		Value		
Article_from_lehr 400 Article_from_table 20 Article_diameter 65 Article_height 200 area_relativ_1 100 area_relativ_2 100 area_relativ_3 60	Article		BERTRAM Elektrotechnik - T	est	
Article_from_table 20 Article_diameter 65 Article_height 200 area_relativ_1 100 area_relativ_2 100 area_relativ_3 60	Article from lehr			100	
Article_diameter 65 Article_height 200 area_relativ_1 100 area_relativ_2 100 area_relativ_3 60	Article_from_table			20	
Article_height 200 area_relativ_1 100 area_relativ_2 100 area_relativ_3 60	Article_diameter			65	
area_relativ_1 100 area_relativ_2 100 area_relativ_3 60	Article_height		:	200	
area_relativ_2 100 area_relativ_3 60 Data Record No. 1	area_relativ_1			100	
area_relativ_3 60 Data Record No. 1	area_relativ_2		:	100	
Data Record No. 1	area_relativ_3			60	
	Data Record No. 🏾	1			

4. Press the button

apply
Data Record Name



article		<u> </u>	
Bertram -Test-			:
J.	Value		
Article	BERTRAM Elektrotechnik - Test	 	
Article from lehr	400		
Article_from_table	20		
Article_diameter	65		
Article_height	200		
area_relativ_1	100		
area_relativ_2	100		
area_relativ_3	60		
Data Record Name Bertram -Test-			

Now following facilities will be available:

Save a data record:

Press the button

"save data record"

The data will be read now from the PLC and then stored at the MP370.

A popup windows appears at the screen "Overwrite YES or NO $\ref{eq:screen}$ and $\ref{eq:screen}$

Confirm with "YES".



Load a data record:

ЬÜП Press the button



"load data record to PLC"

The selected data record will be transferred now to the PLC. After this press the calculation button at the screen "enter article data".

Delete a data record:

Press the button



"delete data record"

The selected data record will be deleted.

A popup windows appears at the screen "Delete YES or NO ?" Confirm with "YES".

The procedure to load and store the conveyor data is the same as the article data. Different is a higher password level of 7 and only one data record is available.



5.3.4 Recipes - export / import -

There is the possibility to export all data records to a CF-Card and import from this card which is mounted at the MP370. For this the following screen can be selected from the screens "recipes article" and "recipe conveyor setup".



<u>Attention:</u> The saving of the recipes to the CF-Card should be done in regular intervals (e.g. once a month) to make sure, that the data at the CF-Card are so up-to-date as possible. In case of too old data at the CF-Card, the actual recipes will be over-written with older data.



5.4 Operating modes

Operating mo	de 3: coldend opera	tor 20-12-2006 14:07:10	KTROTECHNIK
	operat	ing mode	
	Accutable operating mode	cyclic operation	
	-		
Loop 1 normal mode		Loop 2 normal mode	

After entering the password the screen looks like the picture above. By touching the field "**normal mode**" the screen changed onto the picture below.

Loop 1 setup mode	Loop 2 setup mode
ON 1M9 infeed Wheel Squeezer	OFF 2M9 infeed Wheel Squeezer
ON 1M11 feeding Mould Number Reader	ON 2M11 feeding Mould Number Reader
OFF 1M14 conveyor Leaner	OFF 2M14 conveyor Leaner
OFF 1M15 feeding Multi Inspector	OFF 2M15 feeding Multi Inspector
OFF 1M16 conveyor Wall Thickness/Stop Rotate	ON 2M16 conveyor Wall Thickness/Stop Rotate
OFF 1M17 feeding conveyor elevator	OFF 2M17 feeding conveyor elevator
	main menu

Here the operator can start and stop each of the above listed conveyors without interlock by touching the OFF/ON button. This operating mode is for set up the inspection machines.

Touching the field "setup mode" the conveyors of the accordant loop change to normal mode.





5.4.1 Trend view line capacity

This screen is intended for an overview of the calculated and actual capacity for the last two hours.

At this screen there are three static lines (1-3) dependant of the calculated line capacity.

- 1 container per minute from the annealing lehr
- 2 container per minute feed distribution table
- 3 container per minute total amount distribution table loop 1+2

Also there are three coloured lines that indicate the measured container per minute for feed distribution table, distribution table outlet loop 1 and distribution table outlet loop 2.



5.5 Plant



This screen is the menu for operating the line like set points for conveyor speed, switchon/switch-off delay for light barrier, tumbled bottle, etc.

The line is divided into detailed screens, which can be separately selected from this screen. Touching the accordant button at the lower area or touching the zone at the displayed layout at this screen selects a detailed layout.





5.5.1 Detailed overview plant section

The screens detailed overview section 1 - xy show information about the line conditions like conveyor speed, conveyor state, light barrier state, etc. and the screens for settings of elevator lubrication, tumbled bottle, reject control etc. can be selected from this screens.



The operator gets information about the conditions of the conveyors with displaying the velocity the conveyors, in meter per minute, and if the motor is ON, OFF or disturbed and the output frequency of the frequency converter.



Touching a motor button the screen "settings drives" will be selected.

Also the operator gets information about the condition of the jam detectors.



OB4

no jam

📕 jam

Touching a jam detector button the screen "settings jam detector" will be selected.



5.5.2 Settings jam detector

settings jam dete	ctor	1/17/2008 1:17:16 PM		CLITT
	1B5_35.0 - Loop 1: jam	1 behind distrib	oution table	
	switch-on delay switch-off delay	0.808 sec		
	, distance for calculation of switch-on delay	400 mm		
			back	main menu

There are two different settings for jam detectors possible. Jam detectors mounted at conveyors or places where the container flow is <u>not</u> single, both delays are changeable. Jam detectors mounted at conveyors or places where the container flow <u>is</u> single only the switch-off delay is changeable, the switch-on delay is calculated. The switch-on delay is calculated in consideration of the conveyor speed where the jam detector is mounted and a *distance for calculation*. If the distance is 400 mm, the switch-on delay of 0,808 sec is the time what the container need to pass this distance dependent of the conveyor speed where the light barrier is mounted.



After changes of *distance for calculation* the calculator button has to be pressed so that the complete sorting line will be new calculated.



5.5.3 Settings drives

settings Motor	3: coldend ope	erator 19-12-	-2006 9:46	
	0M5 - feeding co	onveyor 1 se	parating unit	
	correction value [m/min]	velocity [m/min]	frequency [Hz]	rows
deflector> middle	0,0	4,7	23,4	4,0
deflector> left	0,0	4,7	23,4	
deflector> right	0,0	4,7	23,4	
on delay 1,000 sec	:	ot	perating state	Motor running
	hand mode			back main menu

Pressing a motor button, explained in the previous chapter, will display the speed and frequency setpoints of the selected drive. The drive identification is shown at the top of the screen consisting of Motor-No and designation. There are depending on the parameterization up to four speed setpoints available. Also is displayed the operating state of the motor in plaintext.

Depending on the band-type are additional different values displayed, like gap, rows, offset gap, start-up separating unit, finger, on-delay and off-delay.



Explanation input options:

correction value [m/min]	additional offset of the calculated velocity for each setpoint
gap [mm]	distance between the container for single-tracked conveyor
offset gap [mm]	offset container distance for elevator well as whose discharg- ing conveyor. This is needed to protect against container col- lision inside the elevator.
rows	amount of container side by side for multi-tracked conveyor, changeable only at conveyor without calculated rows.
finger	number of fingers of a spacer wheel (used to calculate the wheel velocity)
factor start-up separating unit	multiplication factor of the normal velocity, used at start-up of the separating unit
on-delay [msec]	switch-on delay for conveyor start
off-delay [msec]	switch-off delay for conveyor stop



After entering new data, except on-delay and off-delay, the calculator button has to be pressed so that the complete sorting line will be new calculated.



5.5.3.1 Drives manual mode

For each drive, excluded the deflector, there is the possibility to select a hand mode for switching the motor manual ON and OFF.

If the hand mode is active, a flashing message will be displayed at most of the screens. The information what motor is in hand mode is displayed in the message box which is shown at the screen main menu and the screen alarm messages.

The last automatic condition will take over to the hand mode to ensure that a running motor won't switch OFF only by activating the hand mode.

!!! In case of manual ON the enabling of the drive is unaccounted **!!!**



Display detail: motor manual switched ON



Display detail: motor manual switched OFF



5.5.3.2 Drives 50Hz mode (user service)

For each drive, excluded the deflector, there is the possibility to switch the 50Hz mode ON and OFF. Precondition is the manual mode for the motor is active.

If the 50Hz mode for a motor is active, a flashing message will be displayed at most of the screens. The information what motor is in 50Hz mode is displayed in the message box which is shown at the screen main menu and the screen alarm messages.

!!! In case of 50Hz mode ON the enabling of the drive is unaccounted **!!!**



Display detail: motor 50Hz mode switched OFF



Display detail: motor 50Hz mode switched ON

How to use the measured value velocity at 50Hz see at chapter 5.6.1

!!! Never use this mode with container on the conveyor **!!!**



5.5.4 Accumulation table

settings accumulation table	3: coldend operator	19-12-2006	bertram
OM1 charge	correction value vel [m/min] [m, 0,0 (operating state	ocity frequency /min] [Hz] D,9 21,7 Motor off	rows 30,0
	manual mode		
0M2 discharge discharge active	0,0	1,0 26,0	30,0
discharge break	30 sec		
operating mode	cyclic operation operating state	Motor running	
	manual mode		
			back main menu

The accumulation table has two modes for clearing out (discharge), changeable by touching the button right of operating mode.

- cyclic The table will be clocked against the times discharge active (motor ON) and discharge break (motor OFF)
- continuous The table will be clearing out for the enabling duration



Touch this button after changes of correction values.



5.5.5 Deflector separating unit

deflector separating unit	· 19	9-12-2006 13:29:03	B		
Mode Deflector	auto	omatic	-middle-		
frequency	15,0	Hz			
ON delay B20.1 -INI Pos. Mitte	0,150	sec			
delay left> middle	3,0	sec			
delay right> middle	3,0	sec			
shift control deflector	30	sec			
position	nc	position			
					2
				back	main menu

The motor speed has to be entered in Hz because the motion of the deflector is a rotary motion.

For direct hitting the middle position from both directions the proximity switch middle has an adjustable on-delay. The delay left \rightarrow to middle and delay right \rightarrow middle are waiting times to avoid against unnecessary motor activity. The shift control is a monitoring time for the panning of the deflector.



5.5.6 Tumbled bottle



At the separating unit there is equipment to detect and reject laying bottles and fragments of bottles which consists of two light barriers, mounted one upon the other, air nozzle and an encoder mounted at the conveyor.

A laying bottle or a fragment is detected when the lower light barrier is shaded and the upper light barrier is free for the distance **track for detection tumbled bottle**. As from now the length of the laying bottle is measured and the signal "tumbled bottle" will be transported to the air nozzle by using the encoder signals. The rejector (air nozzle) is activated for the measured length of the laying bottle, start and stop for blowing is adjustable in plus or minus direction.



The value "encoder resolution" is for convert the distance inputs [mm] to increments with which the PLC works. This value only has to be changed if there is not a 500-pulse encoder mounted. (user service)

The output field **actual counter value** is to control encoder and PLC-counter-module for right condition. If everything is all right and the conveyor is running the displayed value changes each second (count up).

Any changes at this screen require pressing the accordant button "data --> PLC".

The screens "help tumbled bottle" containing a drawing with the relevant remarks of setting values, the important detail is shown below.





5.5.7 Reject control

cattings reject control	5: set-up operator	19-12-2006	—	bertram
settings reject control	▶ ●	13:13:28		ELEKTROTECHNIK

	perating mo	monitoring time LB control		monitoring time reject control		monitoring time reject counter		No. of pieces reject failure	
bottle tray loop 1	with	5,0	sec	3,0	sec	30	sec	10	Stück
bottle tray loop 2	without	5,0	sec	3,0	sec	30	sec	10	Stück

back main menu

operating mode

For each bottle tray the operating mode can select between **enabled** and **disabled** by touching the button. If **no control** is selected the other settings are irrelevant.

monitoring time LB control

Time to control the light barrier against fouling, misalignment, destructed reflector and blocking with bottles.



monitoring time reject control

Time within a rejected bottle has to pass the light barrier. If the light barrier detects no rejected bottle after this monitoring time an error message will be triggered.

monitoring time reject counter

-

Time slice (interval) for the reject counter.

No. of pieces reject failure

Amount of bottles that can pass the light barrier within the time slice without triggering an error message.



5.5.8 Lubrication elevator

				2005			_
lubrication	5: s	et-up operator	22-12- 12:58	2006 3·27			
					EL	<u>. EK</u> 1	ROTECHNIK
	loop	1 - right	-				
	lubricatio	n interval	lubrica	ition in	tii	me	
elevator	0:30:00	[hh:mm:ss]	0:30:00	[hh:mm:ss]	30	[sec]	lubrication aktiv
,		,	, 	, , , , , , , , , , , , , , , , , , , ,		,	
	loop	2 - left	-				
	lubricatio	n interval	lubrica	ition in	tii	me	
elevator	0:30:00	[hh:mm:ss]	0:30:00	[hh:mm:ss]	30	[sec]	
							1

Elevators are equipped with a lubrication unit which is controlled by an adjustable time interval. This time countdown only when the elevator is running. If the elevator stopped the time also stopped. The residual term is displayed at the column *lubrication in*. If 0:00:00 is reached, the lubrication starts for the amount of seconds what is displayed at the column *time*. The lubrication interval time-format is hh:mm:ss. A lubrication activity is displayed with the message **lubrication aktiv**



5.5.9 Vibration border

la	oop 1			
vibration border (nos. 1M16b)	ac	ctive	10.0	eak
lc	хор 2			
lc	pop 2	tive	br	eak
lc vibration border (pos. 2M16b)	oop 2 ac	ctive	br	eak [sec]

The vibration border is controlled by the time intervals *active* and *break*.



5.6 Service

				7.	Corvice	12/10	2006		_			
_		menu Serv	vice			12/10/		ŦŦ	JP	ги		ш
					2	4:36:2		E	LEK	TROT	ECH	NIK
				(1		1			
	conveyor data	ΜΟΥΙΜΟΤ	Combi Master	PROFIBUS	PROFIBUS	PROFIBUS	S7 Diag	Sy	stem		m	ain
	uata		Master	Common			Diag		-570			enu

From the menu service the user has access to the conveyor setup, plant configuration, state and diagnostics of SEW MOVIMOT and CombiMaster, Profibus diagnostics, diagnosis buffer of the PLC and the MP370 system features.



5.6.1 Conveyor data

		0M5 ·	- fe	eding c	onve	yor 1	separatin	g unit			
	velocity at 50Hz [m/min]	Fmin [Hz]	I	Fmax [Hz]	width [m	band m]	drive t	уре	directi of rotat	on tion	
	10,0	5,0		100,0	2	50	MOVIMO	т 🚽	Rever	se	
	enable speed	& text	1	factor machine			are	a Line			Moto +
SP1	deflector> mic	dle	•	1,00	6	loop 2	eft				
SP2	deflector> left			1,00	6	loop 2	eft				Mote
SP3	deflector> righ	nt	<u> </u>	1,00	3	loop 1 i	right				
SP4	on delay	off delay	<u> </u>								
		conveyo	or ty	pe				no resu	me drive	_	
	multi-tracked var	iable arrang	ge				-	non	•	-	

velocity at 50Hz [m/min]

password level 7

This value is needed to convert the calculated velocity in m/min to the frequency converter set point in Hz. This value has to be measured with a speedometer when the conveyor runs with a frequency of 50Hz.

frequency fmin and fmax

password level 7

Limit values for the frequency set point of the frequency converter. An error message will be generated if the frequency set point is lower fmin or higher fmax.



width band [mm]

password level 7

This value is needed to calculate the number of rows (bottles side by side) on conveyors with two or more tracks.

Drive type

password level 9

For a correct speed calculation the PLC needs the information what kind of frequency converter controls the motor. To adjust the type, touch the field and select the type of frequency converter.

drive type	
MOVIMOT	•
unknown	
MOVIMOT	
CombiMaster	

If unknown is selected, no calculation for this drive will be done.

direction of rotation

password level 8

To adjust the direction of rotation of the motor to the transfer direction of the conveyor, the operator can change it without using a programming device.



touch this button to change direction of rotation

Reverse

drive with changed direction of rotation

<u>Caution:</u> Incorrect adjustment can damage the conveyor !!!



enable speed & text

password level 9

To display the speed level description and the input/output fields for correction value, velocity and frequency at the screen setting drives, here can select the adequate text. For each speed level the operator can select a text.

	enable speed & text
SP1	normal 🔹
SP2	normal 🗾
SP3	fast
SP4	table charge 🚽
	table discharge 📃 🖃

<u>Notice:</u> Speed level 2 – 4 will be enabled if the combo box of the accordant speed level is not blank.

factor machine

password level 7

Factor for velocity adaptation, normally set to 1.0 except conveyors like single liner, accumulation table, feed separating unit and separating unit. Herewith the velocity calculation will be fitted to the mechanical configuration.

<u>Notice:</u> Deflector separating unit, factor machine = 0.0 !!

area Line

password level 7

Allocate the drive to a part (area) of the plant for each speed level. This designation is used for proper velocity calculation of the drive. This allocation refers to the value BPM (bottle per minute) of the selected area.

When the value for the area is entered, the text field right of the input box displays the description of the area.

	enable speed & text		factor machine	↓	area Line			
SP1	deflector> middle	•	1,60	2	production lehr incl accumulation table			
SP2	deflector not in middle	•	1,60	1	production annealing lehr			



on delay / off delay

password level 9

To display the delay description and the input field for the time value at the screen setting drives, here can select the adequate delay.

 on delay	off delay	no delay
on delay	off delay	on delay selected

conveyor type

password level 9

To select the mode of calculation, here the operator can select the conveyor type.

Following conveyor types are selectable:

- single-tracked absolute gap [mm]
 Normal transportation conveyor like discharge separating unit, feed inspection loop, discharge inspection loop, feed stacker.
- single-tracked relative gap [% of bottle diameter] not used at the time
- elevator absolute gap [mm]
 Elevator as well as whose discharging conveyor, conveyor inside the inspection loop with one conveyor selected as master conveyor for the loop.
- elevator relative gap [% of bottle diameter] not used at the time
- multi-tracked fix arrange Conveyor MAG table
- multi-tracked variable arrange Accumulation table, single liner, feed separating unit
- separating unit double-line
 Conveyor separating unit
- spacer with finger
 Infeed wheel inspection loop



conveyor type	
multi-tracked variable arrange	•
single-tracked absolute gap [mm]	_
single-tracked relative gap [% from diameter]	
elevator absolute gap [mm]	-

If unknown is selected, no calculation for this drive will be done.

resume drive

password level 9

If the conveyor type is elevator absolute/relative gap or separating unit double-line, here the resume drive has to be selected. The calculation for this conveyor types builds up to the calculation of the resume drive.

resume drive	
1M4	•
1M2	
1M3	
1M4	-



At the screens data common drives, data drives loop 1 and data drives loop 2 is it possible to switch the 50Hz-mode **for all motors** ON and OFF.

all motors 50Hz-mode

press to switch ON the 50Hz-mode for all motors

all motors 50Hz-mode

press to switch OFF the 50Hz-mode for all motors

<u>Attention</u>: When the motors are running in the 50Hz-mode all locking and enabling for this motor is switched Off.

!!! Never use this mode with containers on the line **!!!**

- **Notice:** This special mode is necessary to find out the conveyor speed [m/min] when the motor runs with a frequency of 50Hz. This with a speedometer measured value is needed to convert the conveyor velocity [m/min] into the frequency converter set-point [Hz].
- <u>Notice:</u> Any changes at the screens conveyor data, except on-/off-delay and direction of rotation, needs to press the calculator button.



5.6.2 Plant configuration

				<u> </u>		18:4		EL	<u>ekt</u>	<u>R 01</u>	ECH
			p	lanned p	erforma	nce	3				
Ĺ	area 1	production anneali	ng lehr		10	D [[%]		result	400	BPM
	area 2	production lehr inc	l accumulatio	n table	10	D [[%]		result	480	BPM
	area 3		60		[%] from area	2	result	288	BPM		
Ē	area 6	loop 2 left			60		[%] from area	2	result	288	BPM
		area description			plar peri	ine¢ form	d nance	are	a selec	tion	

area description

password level 8

Name of the area max. 40 characters. This description will be displayed at some other screens like conveyor data and article data.

planned performance password level 7

Percentage value from capacity lehr (area 1), capacity lehr + offset accumulation table (area 2) entered at the screen article data.

area selection

password level 9

Area selection for planned performance of area 3 and area 6.

Notice: Any changes at this screen needs to touch the calculator button.



5.6.3 SEW MOVIMOT

			Loo	op 1:	1M1 ·	- conve	yor 1 separa	ting unit	
	N	1achii	ne data	3				input data	а
ramp	1000	[ms]	(0> 5	OHz)			status word 1	0000	hex
setpoint 1	148F	hex	32,1	Hz	964	1/min	status word 2	0000	hex
setpoint 2	0056	hex	19,3	Hz	578	1/min	actual current	0,0	[%] nominal current
setpoint 3	0333	hex	5,0	Hz	150	1/min		device state	ıs
setpoint 4	0333	hex	5,0	Hz	150	1/min		no line voltaș	je
								output dat	.a
							control word	0000	hex
							setpoint	0000	hex (4000 = 100%)
							ramp	1000	[ms] (0> 50Hz)

Machine dataramp time in msec relating to 0 – 50 Hzpassword level 7(There is only one value for ramp up and ramp down)setpoints for 4 speed level in 3 different display forms

Input data status word 1, status word 2, actual current in % of the nominal current, device status

Output data control word, setpoint, ramp time

This screen is helpful to get a lot of information about the MOVIMOT state without using a programming device.



5.6.4 CombiMaster

status/s	setpoint Co	mbiM	aster	<mark>7:</mark> >	ء 💌	iervice		27-12- 9:39:	2006 :21		TROTE	CHNIK 128
			Loop	1: 1	M9 - i	nfeed	wł	neel in fr	ont	of loop 1		
	I	Machi	ne data	1						input data		
setpoin	it 1 148F	hex	32,1	Hz	964	1/min		status word	11	0000	hex	
setpoin	it 2 0C56	hex	19,3	Hz	578	1/min		status word	12	0000	hex	
setpoin	it 3 0333	hex	5,0	Hz	150	1/min						
setpoir	it 4 0333	hex	5,0	Hz	150	1/min						
										output data		
								control wo	rd	0000	hex	
								setpoint		0000	hex (4000 =	100%)
1A9	1A15					2A9		2A15			back	main menu

Machine data setpoints for 4 speed level in 3 different display forms

Input data status word 1, status word 2

Output data control word, setpoint

This screen is helpful to get a lot of information about the CombiMaster state without using a programming device.



5.6.5 **Profibus diagnostics**

overvie	w diag	postic	s Prof	ibus	0:	19-12-2 (19-12-2) 16:15			19-12-20 16:15:4	-2006 5:41			KTR		
	Slave Diagnose conce											<mark>ed slav</mark>	<mark>es:</mark>	2	
16	15	14	13	12	11	10	9	8	7	6	5	4	3	CPU	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81
112	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97
n.p.	n.p.	126	125	124	123	122	121	120	119	118	117	116	115	114	113
ol	ok					<mark>DP-Ma</mark> s	<mark>stersys</mark>	tem:	1	PLC	/ Profi	bus 1			
fa	failed					Interf	ace CP/	/IM:	no						
no 📃 no	not configured														
detailed o	diagnost	tics				acceptance No. DP-Master / Interface							me Ser	enu vice	main menu

Screen PROFIBUS overview diagnostics

In the Profibus diagnostics overview faulty Profibus participants will be signalized by color change from green to yellow or red.

The button "acceptance No. DP-Master / Interface" is used for refreshing the screen. The screen detailed diagnostics is selected by touching the button "detailed diagnostics".



detailed diagnostics	Profib	us 0:		19-12-2006 16:18:18	Ŧ		
	PLC / F	Profibus 1					
DP-Mastersystem :	1	0M10 - feeding co	nveyor separ	ating unit MA(i table		
DP-Address :	24						
Station status :		Slave turne	ed out				
Diag. counter :	0						
Vendor ID :	0000						
Error number :	0						
manual		next Slave I	next Error			Overview Diagnostics	

Screen PROFIBUS detailed diagnostics

The operator cans readout additional notification about the failed or turned out slaves.

If there are two or more slaves failed or turned out the operator can switch to the next slave with the button "**next slave**".

If there are two or more failures at a slave the operator can switch to the next error with the button "**next error**".



5.6.6 S7 diagnosis buffer

	S7-diagn	neie	0:		12/27/2006	Π.	be	rtr	am
		10313			10:13:00 AM		ELEK	TROTE	CHNIK
No.	Time	Date	Text						<u> </u>
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					
00002042	2 10:12:49 AM	12/27/2006	I/O access error,	reading					
00002042	2 10:12:49 AM	12/27/2006	I/O access error,	reading					
00002042	2 10:12:49 AM	12/27/2006	I/O access error,	reading					
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					
00002042	2 10:12:49 AM	12/27/2006	I/O access error,	reading					
00002042	2 10:12:49 AM	12/27/2006	I/O access error,	reading					
00002042	2 10:12:49 AM	12/27/2006	I/O access error,	reading					
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					
00002043	3 10:12:49 AM	12/27/2006	I/O access error,	writing					-
	rood	1					[main
diagn	osis buffer							back	menu

The diagnostics buffer of the PLC can be read without connecting a PG or computer to the PLC.



5.6.5 MP370 system features

MP 370 system features	7: Service	18-12-2006 15:23:09	B	
	actual system time	15:23:09		
	actual system date	18-12-2006		keyboard signal ON (low)
da	ily synchronisation time	12:00:00		clean Touch Screen
				Keyboard
				Touch Calibration
Date/Time to PLC				back main menu

actual system time and date

System time and date, which are displayed at the top of the screens. In case of changes time and date can be transferred to the PLC by pressing the button "**Date/Time to PLC**".

daily synchronisation time

At this time set point the system time and date of MP 370 and PLC will be synchronised.

Keyboard signal On/Off

The acoustic keyboard signal (beep) can be switched On or Off by touching this button.

Clean Touch screen

When the Touch Screen is contaminated with dust, finger prints etc. it can be cleaned after touching this button. The operator has to follow the instructions which are displayed.

Touch Calibration

The Touch Screen can be recalibrated. The operator has to follow the instructions which are displayed.



6. Password

To operate the MP in some cases a password is required, a maximum of 10 different levels is possible.

Password properties:

- min. 4 max. 8 characters
- alphanumeric upper and lower case, no special characters
- automatic logout after 15 minutes

Password level:

Level 0-2: no changes possible

- Level 3 : motor settings and settings jam detector
- Level 5 : article data, recipe article data, drives manual operation
- Level 7 : conveyor data, recipe conveyor data, drives 50Hz mode plant configuration (% values)
- Level 8 : recipes export/import, drives direction of rotation, area designation plant configuration
- Level 9 : drives band type, resume drive and enabling speed, resume area plant configuration



6.1 Password - Login, Logout -

At each screen there's the possibility to enter a password, the actual password and the username is also displayed.



Password:	
OK Cancel	
` 1 2 3 4 5 6 7 8 9 0 - = -	🏘 Touch inp 📃 🗵
→ q w e r t y u i o p []]	Ins Home 🙀
	Del End 🛃
û λ z x c v b n m , . / û ESC	Num 🛉 ENU
Ctrl 🙀 Alt F1 Help Alt 🙀 🔣 Ctrl	← ↓ →

Touching the login button the login box and the keyboard is displayed. Enter the password, take notice for upper and lower case, and then press ENTER (keyboard) or OK (LOGIN box). If a correct password is entered a system message is displayed.



6.2 Password - create, change, delete -

pass	word	8:	Administrator	12/20/2006	F	Эег	Fa
				A		LEKTR	OTECH
	User		Password		Level		
	coldenc	l operator	0815		3		
	set-up Admini		4711		5		
			nimda		8		
	Service		ober		7		
						_	

The screen **password** is selected by touching the button password at the screen **Info**. This button is visible and operated with password level 7 or higher. Displayed are only users up the active password level, e.g. level 7 users with level 8 and 9 are not displayed. Only users with the same or lower level may be created, changed or deleted.

Create user:

- Touch the empty field in the column User
- Touch the field Password in the same row
- Touch the field Level in the same row

enter the user name enter the password enter the level



Change user, password or level:

- Touch the corresponding field

change the entry

Delete user:

- Touch the corresponding field in column User delete the entry
- Touch the corresponding field in column Password delete the entry
- Touch the corresponding field in column Level delete the entry

Information: All activities have to be finished with ENTER at the keyboard.



7. SIMATIC Panel MP370

The SIMATIC Panel MP370, a operator guidanced visualisation system, via touch screen for following operating actions:

- Visualisation by graphical user interface
- Operate the line by explained buttons at the screens
- Calculate the set points for conveyor and jam light barrier
- Recipe administration
- Archive of error messages and system messages
- Trend view for line efficiency

PLC and MP370 communicate by MPI-Bus with 187.5kBaud.



Schematic diagram MPI-Bus

Connection elements and storage cards



- 1 line voltage 24V DC
- 2 MPI-Bus
- 3 backup battery
- 4 PC-Card for backup operating system and runtime visualisation
- **5** CF-Card for recipes and archives



8. Additional documents

In the present document only the specific functions for the conveyor system should be explained. Therefore you will find the actual issue of the user documentation of HMI unit MP370 Touch in the SIEMENS Internet portal by using the following link:

http://cache.automation.siemens.com/dnl/zE1NDU3OQAA_6909030_HB/MP370_e.pdf

or via the standard search area

http://support.automation.siemens.com/WW/llisapi.dll?aktprim=99&lang=en&referer=%2fWW %2f&func=cslib.csinfo2&siteid=cseus&extranet=standard

by using the keywords "MP370 manual".

In this document you will also find explanations of the standard controls (e. g. recipes, user administration, ...) and how you have to use them.