

# Software User Guide

for basic tests of thermoforming sheets on  
SIMATIC systems

## SMTTest-S



**Keep for later use!**

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Warning: The manual may contain references to optional options or features that your software does not have.

## CONTENT

1	Introduction .....	4
2	Overview of screens.....	4
2.1	Main screen .....	4
2.2	Force sensor replacement.....	5
2.3	Errors and reports .....	5
2.4	Information about the hydraulic unit.....	6
2.5	Users and permissions.....	6
2.6	Settings.....	<b>Chyba! Záložka není definována.</b>
3	Anisotropy test .....	8
4	Erichsen exam .....	9
5	Appendix - list of errors and alarms .....	<b>Chyba! Záložka není definována.</b>

# 1 Introduction

Only a trained person can work on the device.

The device is operated using the operator's touch panel. The standard of control and maintenance of this panel can be found on the manufacturer's website: [support.industry.siemens.com](http://support.industry.siemens.com).

## 2 Overview of screens

### 2.1 Main screen

When the main switch is switched on, the control program starts automatically and the Main Screen appears (Figure 1).

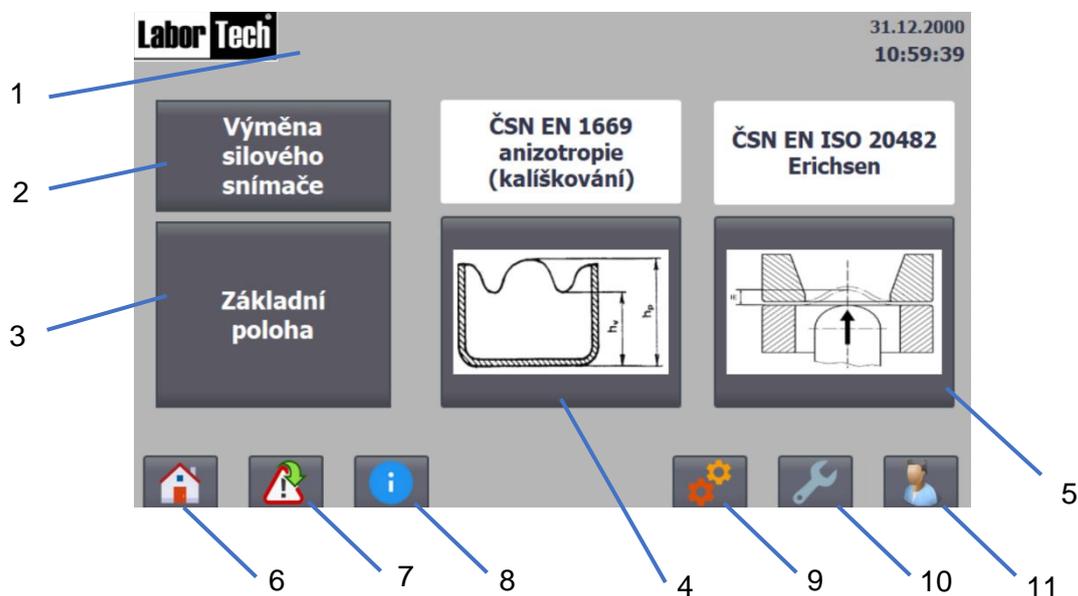


Figure 1 - Main screen

#### Legend

- 1 - currently logged in user
- 2 - Go to the appropriate screen
- 3 - execution of the basic position
- 4 - transition to the assignment of the relevant exam
- 5 - transition to the assignment of the relevant exam
- 6 - Go to the Main Screen
- 7 - Switch to warning and error reporting
- 8 - Transition to Information about hydraulic unit
- 9 - Go to the Service Menu
- 10 - Go to Settings
- 11 - Transition to user management

## 2.2 Force Sensor Replacement

For easier replacement of the power sensor, the "Sensor replacement position" function can be used, when the hydraulic cylinder and mandrel are adjusted to the upper position. As soon as a power sensor is connected, it is displayed on the display and can be confirmed with the appropriate button. On this screen, it is also possible to perform a basic position, when the mechanical parts are again adjusted to the lower position.

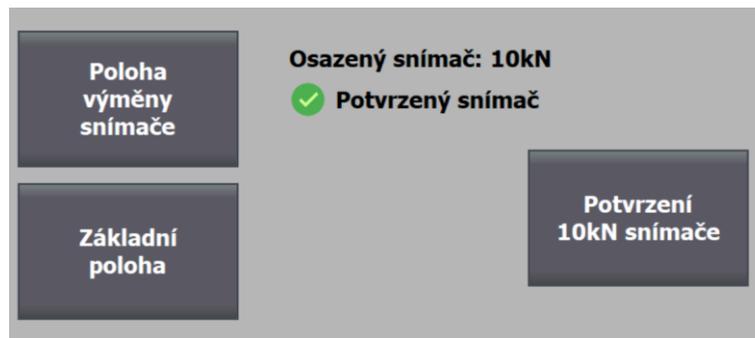


Figure 2 - Replacing the Force Sensor

## 2.3 Errors and reports

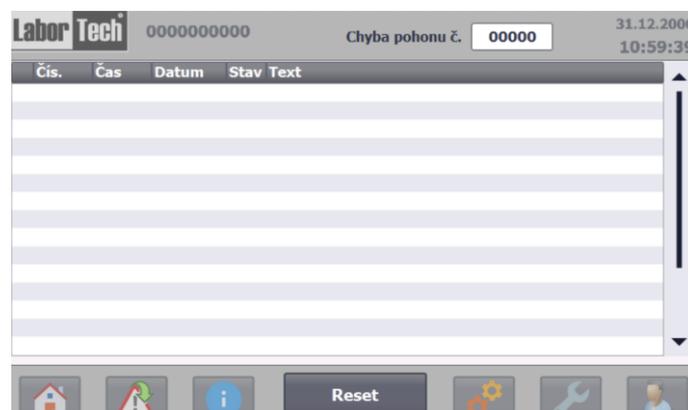
If an error occurs, a message switch appears Figure 3 Figure Obrázek 4



Figure 3 - Message switch

Each error has 3 states: I (incoming), A (acknowledgment) and O (outgoing) - i.e. when it became active, when it was confirmed by the user and when it stopped being active. Therefore, the error message may be repeated - always with a different state.

The error can also be confirmed by the appropriate button or additionally by the "Reset" button (Obrázek 4).



Obrázek 4 - obrazovka s hlášením

## 2.4 Information about the hydraulic unit

The current operating status can be checked on this screen. Users with higher privileges (e.g. master) will be taken to the settings screen.

If the filter is clogged, the oil level is low or an oil change is required, these errors must be confirmed or confirmed in the "Settings, Service" section.

Informace k provozu	
Konec záruky:	31.12.2000
Celkový čas chodu:	00000 hod
Od poslední výměny oleje:	00000 hod
Od výměny tlakového filtru:	00000 hod
Od výměny odpadního filtru:	00000 hod

**Další výměna oleje**

- za 0000 motohodin
- nejpozději 31.12.2000

**Provedena výměna**

Vyměněn tlakový filtr

Vyměněn odpadní filtr

Výměna oleje ->

Servis

Figure 5 — Information on hydraulic unit

## 2.5 Users and permissions

To enter some sections of the program, you need to know the login password. This can be entered when prompted (when entering a section with higher permissions) or on the appropriate screen - Figure 6. The default password for the master is "123".

Uživatel	Heslo	Skupina	Čas odhlášení

Přihlášení

Odhlášení

Figure 6 - User management

## 2.6 Settings

In addition to screen brightness and changing the time and date, you can also enable or disable remembering the markings (name, number, and thickness) of the pattern. A function can also be called up here to move the ejector to the upper position.



Figure 7 - Settings

### 3 Anisotropy test

When selecting an anisotropy test, the following screen appears (Figure 8) where you can continue the exam or start a new one.

In the case of continuation, the last completed phase is transferred – i.e., if the test has not yet been performed, the exam is assigned. If the test has already been successfully completed, you will be taken to the test screen, where you can additionally add the necessary data for export to the PC.

If a PC is connected to the device and waiting for the data to be downloaded, a new test cannot be performed until the PC program receives the test data.



Figure 8 - Anisotropy test, selection

When selecting a new test, a screen (Figure 9) is displayed where you can enter the specimen, the mechanical components used and the test behaviour settings – shearing/holding force and pull speed. It is also possible to enable/prohibit the use of the ejector at the end of the test/cup creation.

Once all the necessary data has been filled in, the start of the test is authorized.

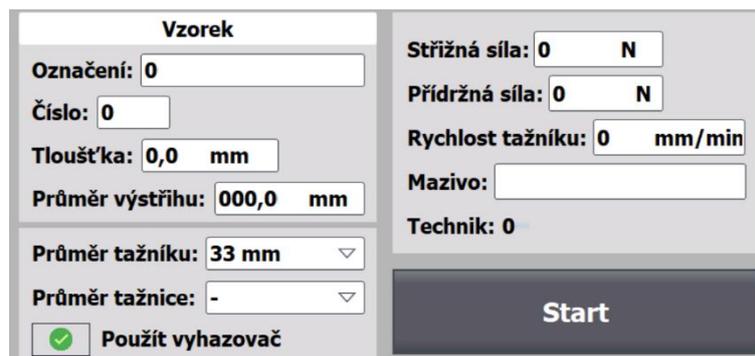


Figure 9 - Anisotropy test, assignment

After the start of the test, it is possible to monitor the progress – strength, track. Once the test is complete, additional data can be entered on the next screen (Figure 11).

Střih/přítlak:	<input type="text" value="0 N"/>	<input type="button" value="Home"/> <input type="button" value="STOP"/> <input type="button" value="Zadat další hodnoty"/>
Aktuální rychlost trnu:	<input type="text" value="0 mm/min"/>	
Aktuální síla trnu:	<input type="text" value="0,0 N"/>	
Aktuální pozice trnu:	<input type="text" value="0 mm"/>	
Maximální síla trnu:	<input type="text" value="0,0 N"/>	
<input checked="" type="checkbox"/> Použít vyhazovač		
Zkouška probíhá		
Osazený snímač: 10kN		

Figure 10 - Anisotropy test, course

Individual dimensions of pins can be entered on the screen "Entering dimensions of pins" according to the number of pins. Then the average values of  $h_v$ ,  $h_p$  and the result  $Z$  are calculated according to the formula used for the calculation. After entering all the required values and data, it is necessary to save them with the appropriate button to download them to the PC program.

<b>Cípy</b>		<b>Střední výška cípů Z</b>		<input type="button" value="Home"/> <input type="button" value="Základní poloha"/> <input type="button" value="Save"/>
Počet cípů:	<input type="text" value="0"/>	$Z = \frac{h_e}{\bar{h}} \times 100$	<input checked="" type="checkbox"/>	
<input type="button" value="Zadání hv, hp"/>		$Z = \frac{h_e}{h_v} \times 100$	<input type="text"/>	
$h_v =$	<input type="text" value="0,0"/>	$Z =$	<input type="text" value="0,0%"/>	
$h_p =$	<input type="text" value="0,0"/>			
Orientace dominantních cípů:	<input type="text" value="0,0"/>			
Pozn.:	<input type="text" value="0"/>			

Figure 11 - Anisotropy test, data input

<b>Zpět</b>		<b>Zadání rozměrů cípů</b>		
Počet cípů: <input type="text" value="0"/>				
$h_v$	$h_p$			
1	<input type="text" value="0,0 mm"/>			<input type="text" value="0,0 mm"/>
2	<input type="text" value="0,0 mm"/>			<input type="text" value="0,0 mm"/>
3	<input type="text" value="0,0 mm"/>			<input type="text" value="0,0 mm"/>
4	<input type="text" value="0,0 mm"/>			<input type="text" value="0,0 mm"/>
5	<input type="text" value="0,0 mm"/>			<input type="text" value="0,0 mm"/>
6	<input type="text" value="0,0 mm"/>	<input type="text" value="0,0 mm"/>		
		<b>Výsledek</b>		
		$h_v =$ <input type="text" value="0,0 mm"/>		
		$h_p =$ <input type="text" value="0,0 mm"/>		

Figure 12 - Anisotropy test, dimensions of points

## 4 Erichsen exam

When selecting an Erichsen exam, the following screen appears (Figure 13) where you can continue the exam series or start a new exam/series.

In the case of continuation, the last completed phase is transferred – i.e., if the test has not yet been performed, the exam is assigned. If the test has already been successfully passed, it will be taken to the exam screen, where you can additionally add the necessary data for export to a PC or continue in a series – up to 6 tests.

If a PC is connected to the device and waiting for the data to be downloaded, a new test cannot be performed until the PC program receives the test data.



Figure 13 - Erichsen exam, selection

When selecting a new test, a screen appears (Figure Figure 14Figure 9) Once all the necessary data has been filled in, the start of the test is authorized.

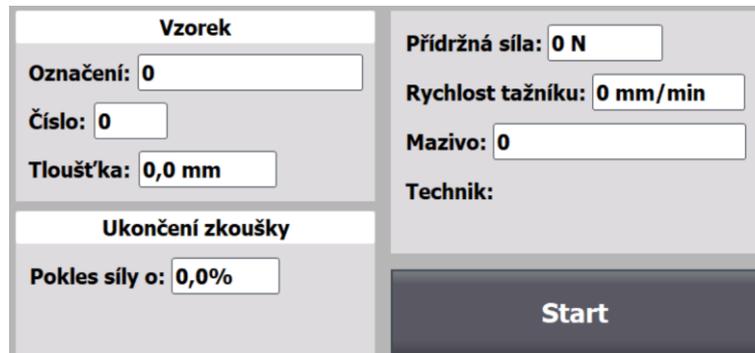


Figure 14 - Erichsen exam, assignment

After the start of the test, it is possible to monitor the progress – strength, track. Once the test is over, further data can be entered on the next screen or the series can be continued.

Continuation of the series can be a maximum of 5 times. On the completion screen, you can check the individual IE results and complete the appearance of the sample or a note. After this addition, it is necessary to save with the appropriate button to download the data to the PC.

<p>Č. zkoušky v rámci série: <b>0</b> (max. 6)</p> <p>Přítlak: <input type="text" value="0 N"/></p> <p>Aktuální rychlost trnu: <input type="text" value="0 mm/min"/></p> <p>Aktuální síla trnu: <input type="text" value="0,0 N"/></p> <p>Maximální síla trnu: <input type="text" value="0,0 N"/></p> <p>IE 0: <input type="text" value="0,0 mm"/>    IE: <input type="text" value="0,0 mm"/></p> <p style="background-color: yellow; text-align: center;"><b>Zkouška probíhá</b></p> <p> <b>Osazený snímač: 10kN</b></p>	<p></p> <p><b>STOP</b></p> <p><b>Pokračovat v sérii</b></p> <p><b>Doplnit údaje</b></p>
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Figure 15 - Erichsen test

Hodnoty IE	Výsledek IE	<p></p> <p><b>Základní poloha</b></p> <p></p>
<p>Počet zkoušek: <b>0</b></p> <p>IE1: <input type="text" value="0,0 mm"/></p> <p>IE2: <input type="text" value="0,0 mm"/></p> <p>IE3: <input type="text" value="0,0 mm"/></p> <p>IE4: <input type="text" value="0,0 mm"/></p> <p>IE5: <input type="text" value="0,0 mm"/></p> <p>IE6: <input type="text" value="0,0 mm"/></p> <p>Vzhled vzorku: <input type="text" value="0"/></p> <p>Pozn.: <input type="text" value="0"/></p>	<p>IE: <input type="text" value="0,0 mm"/></p>	

Figure 16 - Erichsen test, entry of additional data

## 5 Appendix – List of errors and alarms

Nr.	Description
1	Drive error
2	Emergency stop performed
3	-
4	Timeout when the drive is switched on
5	JOG error
6	Error entering position
7	HA pump inverter error
8	Failure of the pin drive protection
9	HA pump protection failure
10	Flooded bathtub
11	Low oil level
12	Accidental oil temperature
13	Failure of cooling motor protection
14	Positioning timeout
15	Oil not changed on time
16	Oil not changed after maximum operating hours
17	Clogged pressure filter
18	Waste filter clogged
19	Clogged pressure filter after oil change
20	Clogged waste filter after oil change
22	Request to move to a position outside the limits
24	Positioning timeout
25	Safety input module error – there may be a safety signal mismatch
26	Communication error with the drive
27	PLC fault – CPU module
28	PLC fault – module for safety inputs
29	PLC fault – module for safety outputs
30	Bayonet sensor signal mismatch
31	Emergency circuit signal mismatch
34	Overload of the force sensor
101	Warning 1/3 - the oil change date is approaching
102	Warning 2/3 - the oil change date is approaching
103	Warning 1/3 - the number of operating hours is approaching the maximum, oil change is required
104	Warning 2/3 - the number of operating hours is approaching the maximum, oil change is required
106	Alarm – clogged pressure filter
108	Alarm – clogged waste filter
109	Warning 1/3 - the oil change date is approaching