



Rubber Rheometer

LB-10RRM

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1. Introduction

Rubber rheometer LB-10RRM is an automated system ensures accurate determination of the samples response to applied forces. It is completely functioned computationally. The rheology of the sample is characterized with the standard orientation of the determining system.

2. Features

1. Operational keys for ease of accessibility
2. Visual monitoring through data displayed on screen
3. Multi-parameter detection system (scorch time, rheometry time, sulfide index, torque)
4. Vulcanization and temperature curve orientation
5. Printer (Built-in)
6. Anti-corrosive structural unit

3. Specifications

Model No.	LB-10RRM
Temperature range	RT ~ 200 °C
Heating rate	15 °C / min
Torque range	0 Nm ~ 5 Nm
	0 Nm ~ 10 Nm
	0 Nm ~ 20 Nm
Air pressure	0.5 MPa ~ 0.65 MPa
Temperature fluctuation	$\leq \pm 0.3$ °C
Temperature resolution	0.1 °C
Torque resolution	0.001 Nm
Pressure	0.4 MPa
Ambient temperature	10 °C ~ 20 °C
Relative humidity	55 % ~ 75 %
Compressed air	0.35 MPa ~ 0.40 MPa
Swing frequency	1.67 Hz
Dimensions	650 × 650 × 1100 mm
Weight	93 kgs

4. Applications

Used in determining the rheological measures of suspensions, slurry, etc. in rubber processing industries, quality control, and basic elastomeric research units.

5. Operations

5.1 System Login

Login Software

After installing the software correctly, click the desktop shortcut icon to log into the rubber tester software interface (Figure 1 shows the login).



Figure 1 (Login)

Input an “**admin**”, without a password, click” yes” and enter the interface. The following diagram (Figure 2 shown on the page).

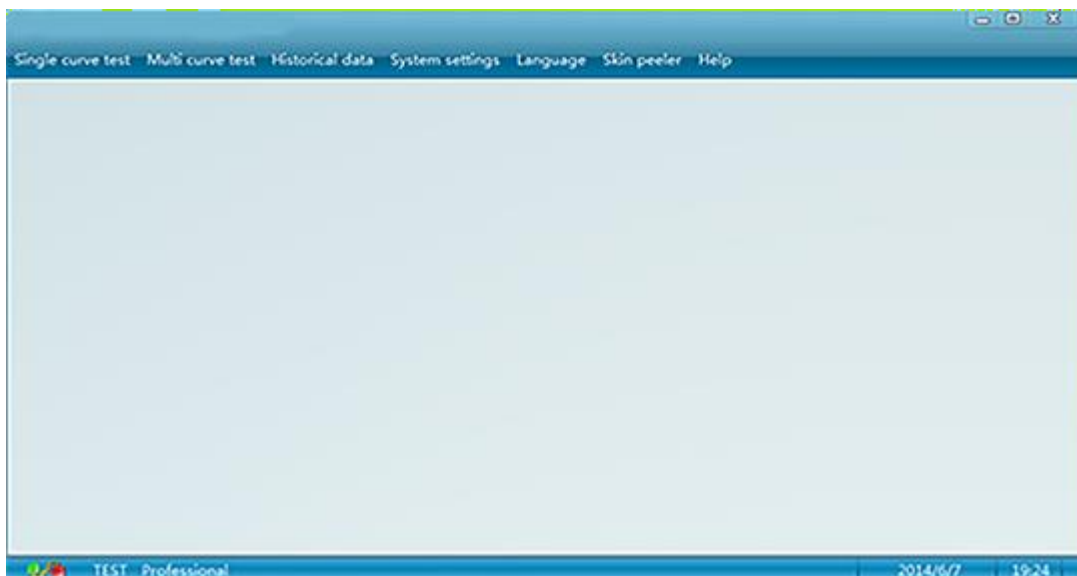


Figure 2 (The main interface)

5.2 Using the settings the first time

1) Set Up Unit

Click “**set up system**”, then knock on “**unit information**” again.
The following chart (Figure 3 shown in the unit of information)

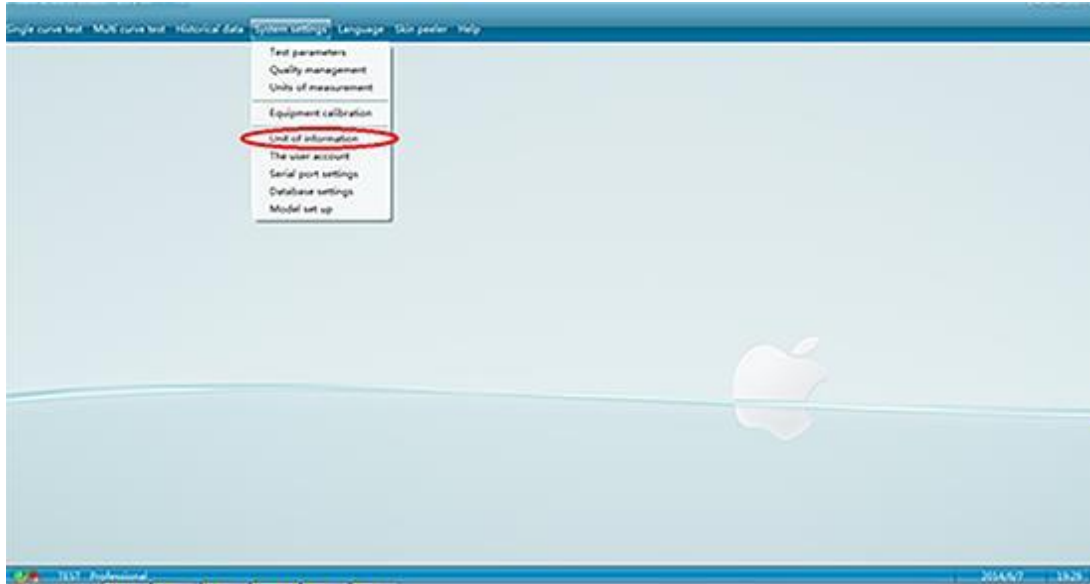


Figure 3 (Unit of information)

Input your company name and click the “**store**” hen, all the statements will be printed automatically. The following diagram (Figure 4 units using the settings shown in the name):

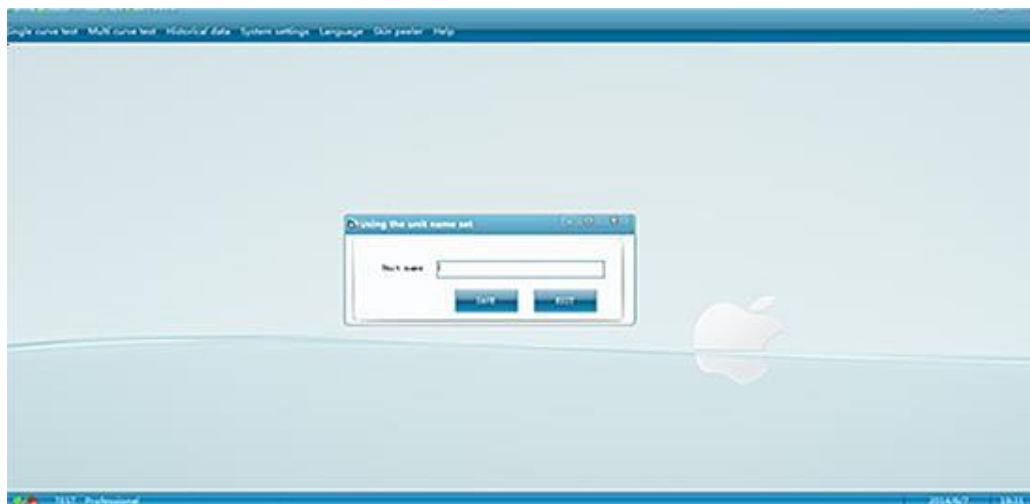


Figure 4 (Using the unit's name set)

2) Set up a user account

Click on “**set up system**” and then click “**User account** ” and appeared as “**User account management**” interface the following diagram (Figure 5 shows the user account).



Figure 5 (The user account)

Users can build a user account, and after setting it, users can see and operate their experiment data only, double click “**revise**” then you need to click “**store**”, and everything will be ok, users can also delete a user account and select to delete. The following chart (Figure 5 user account management) is shown.



Figure 5 (User account management)

3) Set up COM

Click **“set up system”** then click **“set up COM”** the user can see the **“set up COM”** interface
The following diagram (Figure 6 serial port settings shown)



Figure 6 (Serial port settings)

Find the corresponding COM, through the device manager on the pc, after setting it, click **“store”**. The following diagram (Figure 7 serial port settings shown)

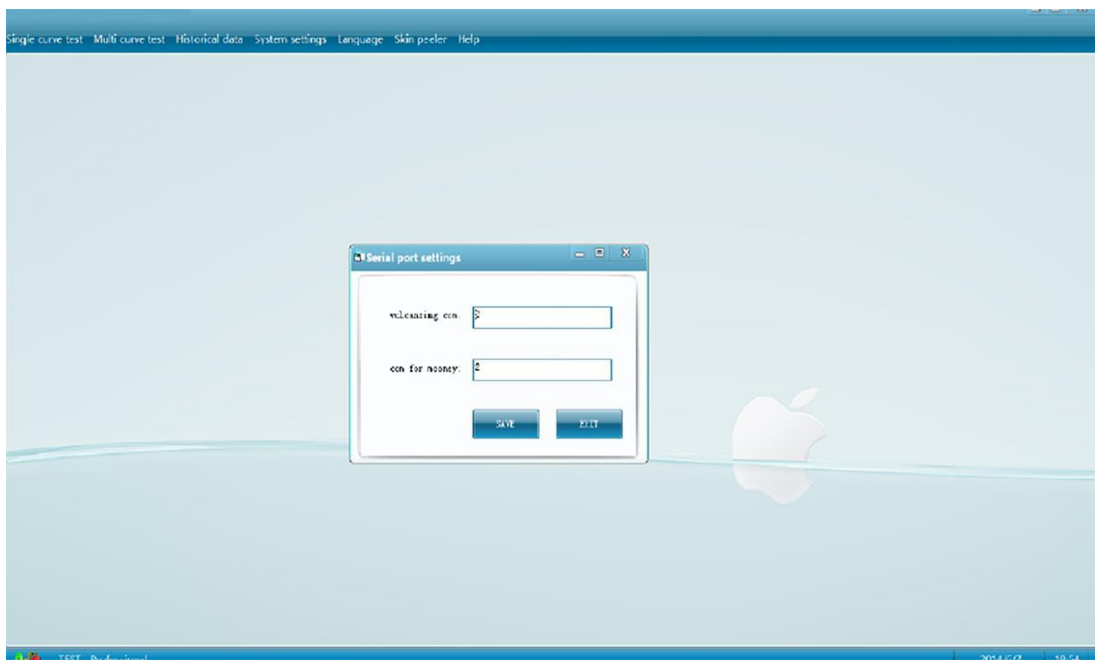


Figure 7 (Serial port settings)

5.3 Users Register

1) Gain registration code

The process of gaining the corresponding registration code is as follows:

Insert registration code

Open the experiment home screen, click “**help**” then click “**register**” The following chart (Figure 8 shown in the.1 Registry)

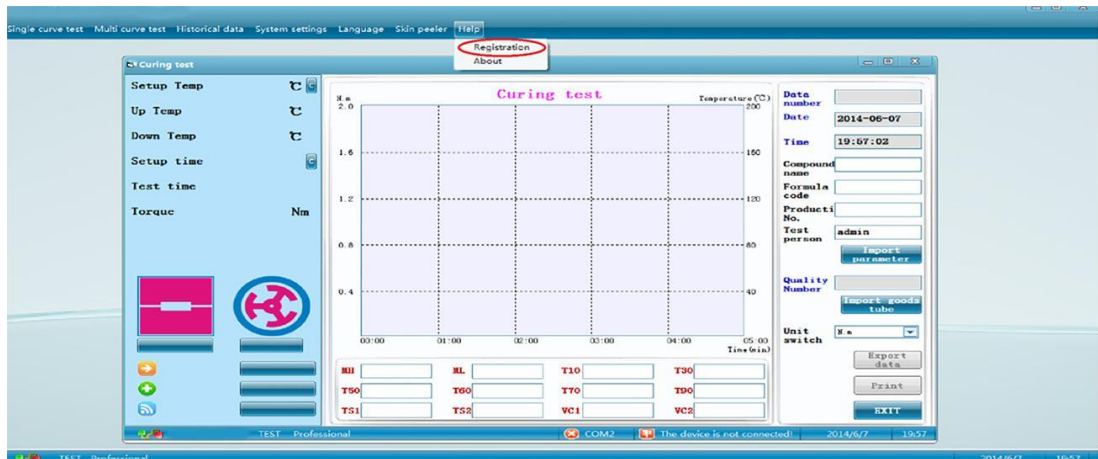


Figure 8 (Register)

From the picture we can see, input the registration code inside the red circle position, then click “**register**”.

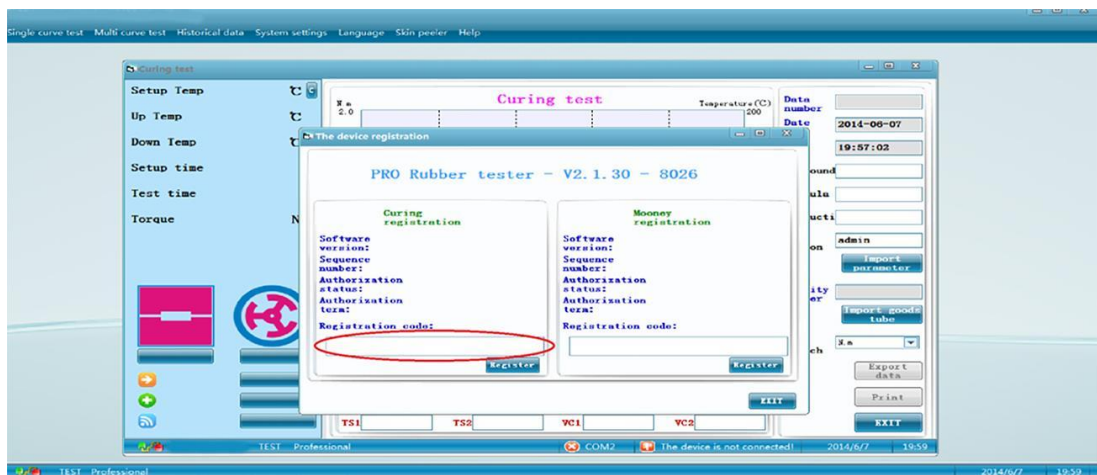


Figure 9 (Equipment register)

If appears as shown in the figure interface, the authorization status appears “**overdue**” Equipment can only Mold, close the dies, and check historical data, it cannot expertly supply equipment serial NO to apply for permanent authority or apply for extended probationary period registration code.

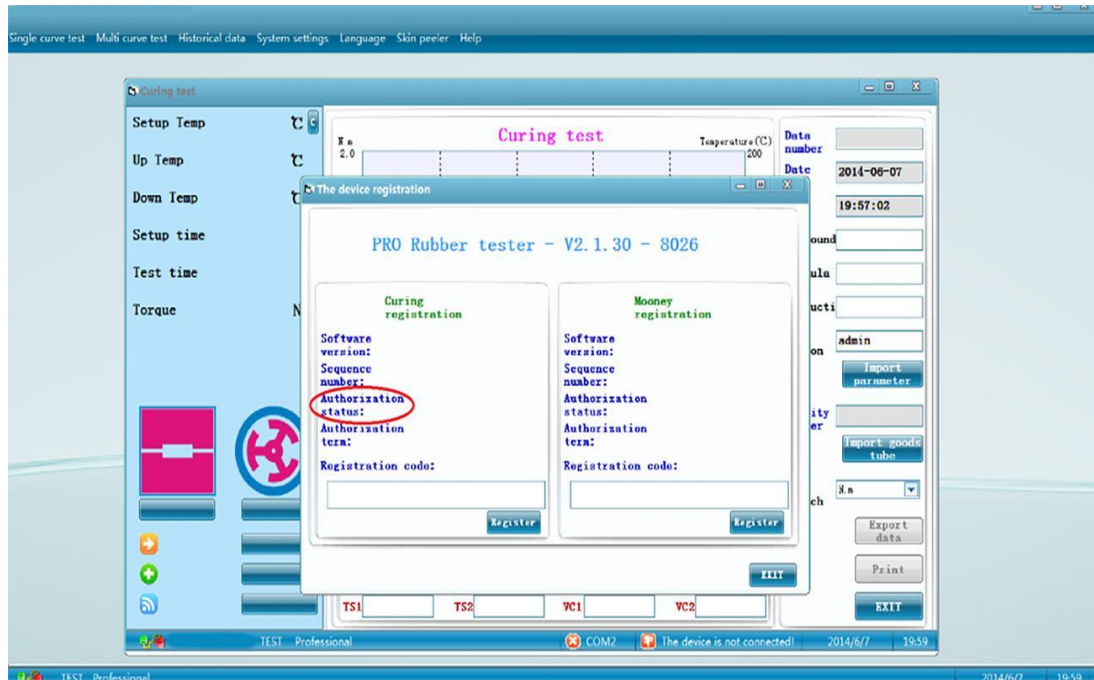


Figure 10 (Extra-service state)

Note: The system time of the computer cannot be arbitrarily changed, regardless of time or backward-forward adjustment time, and is likely to cause authorized overtime.

5.4 Vulcanization Experiment

1) Open the window

Boot: (first open the computer equipment) operator clicks a desktop icon, logs into the interface (Figure 1 login), then inputs your username and password, and clicks "OK", to enter the main interface (as shown in Figure 2 of the main interface); Click on the "test", then click "selected according to the single curve was" or "multi- curve was" demand, as shown in the following figure (Figure 11 curing single curve experiment), (Figure 11 sulfide multi-curve shown in an experiment):

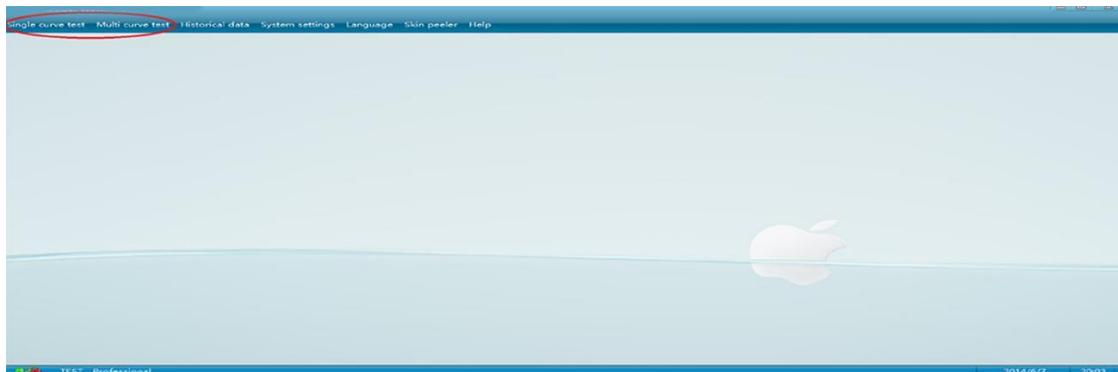


Figure 11 (Curing experiment)

The experiment before the preparation according to the above steps to ensure proper equipment serial port settings, the normal power supply, and the boot :

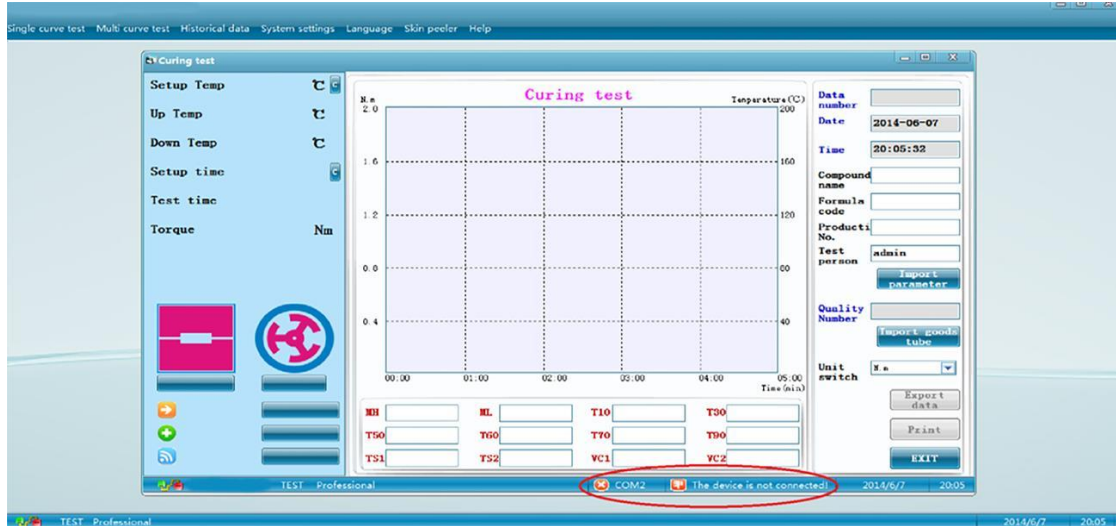


Figure 12 (The main interface curing single curve experiment)

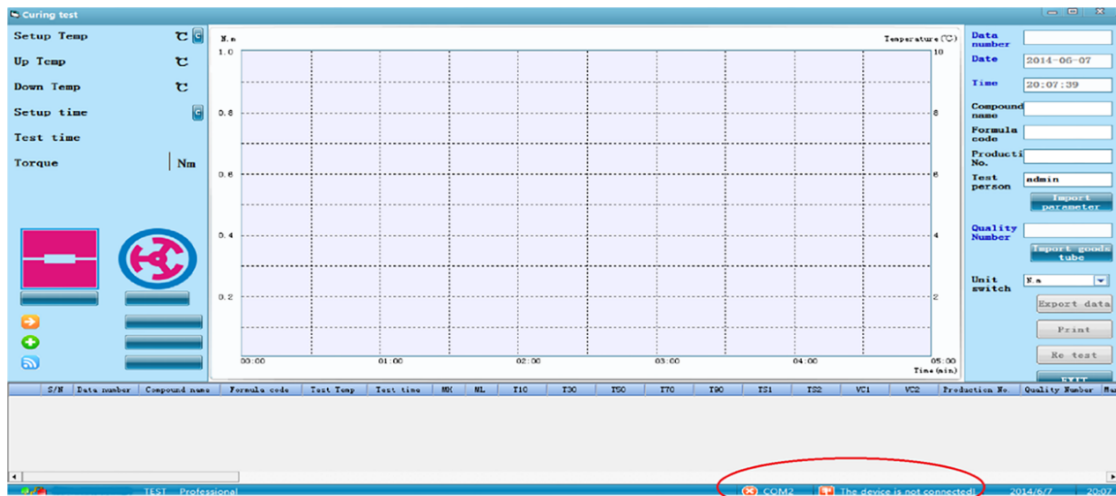


Figure 13 (The main interface curing multi-curve experiment)

2) Set parameters

The curing instrument operating parameters and change the parameters, as shown in the following figure (Figure 3.2.1curing experiments the main interface of data shown in mouse click); change to change settings, as shown in the following figure (Figure 14 temperature change, time change shown in Figure 15).

"Set temperature": Display to the set temperature.

"The mold temperature": To display the actual temperature of the mold.

"The lower die temperature": Displays the current actual temperature.

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"Time": Display the testing time is set.

"The test of time": Display the current test schedule.

"Torque": Display the current experimental torque values.

Note: Change the parameters when the temperature is degree centigrade, for the second time unit.

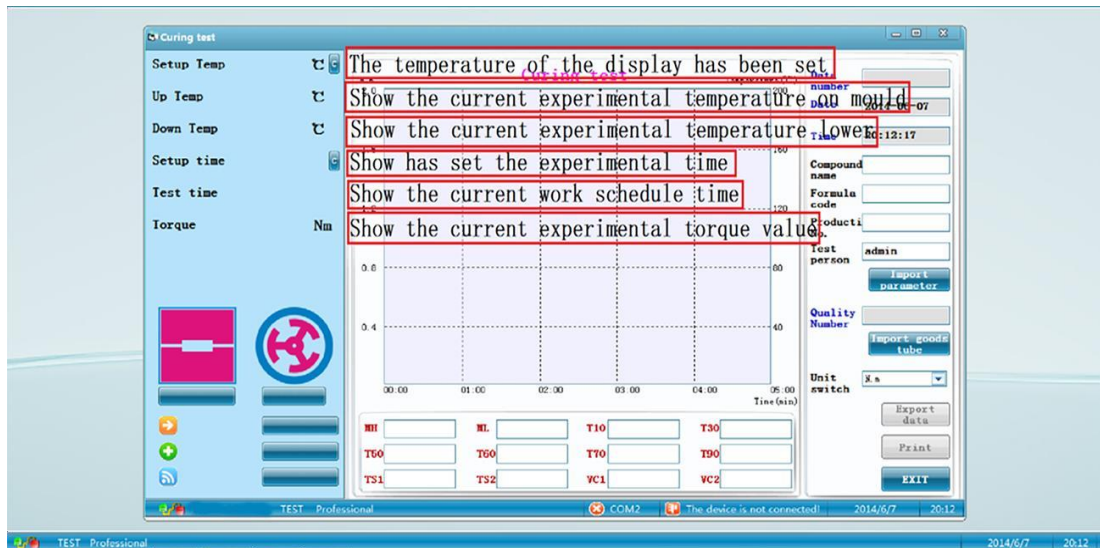


Figure 14 (Temperature change)

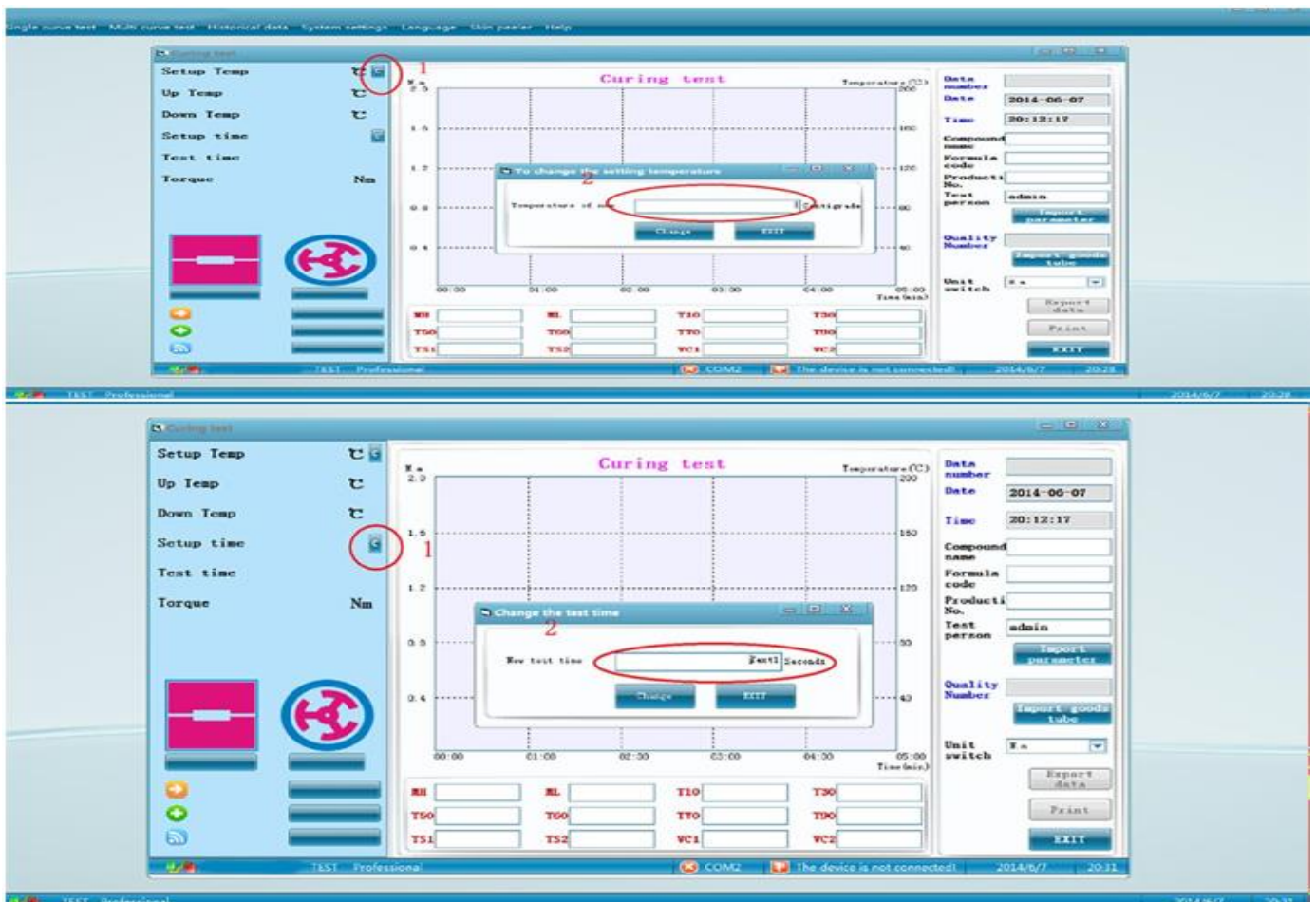


Figure 15

5.5 Status indication

The current working state of the vulcanizer. The following chart(Figure 3.3.1 shown in the opening and closing) :

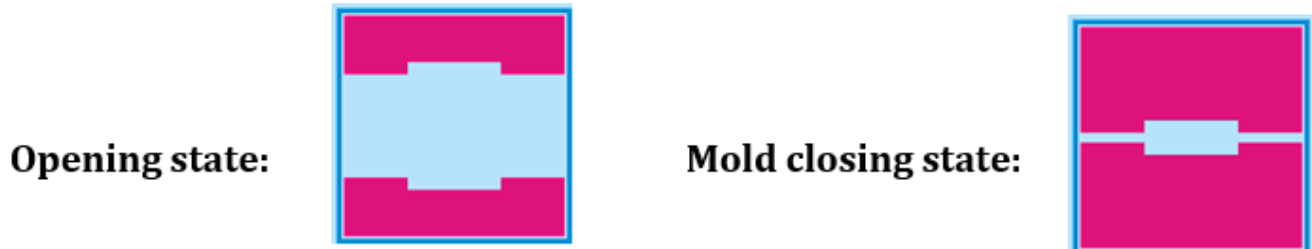


Figure 16



Figure 17 (Stop or turn motor said motor closed or open graphics)

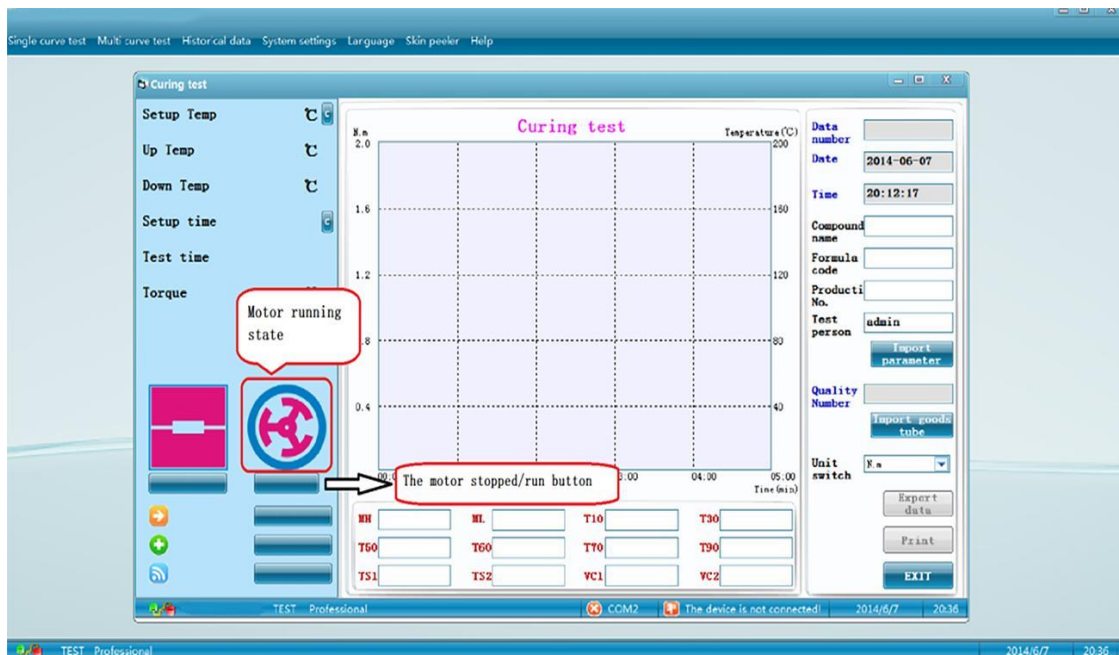


Figure 18 (Motor stop/run)

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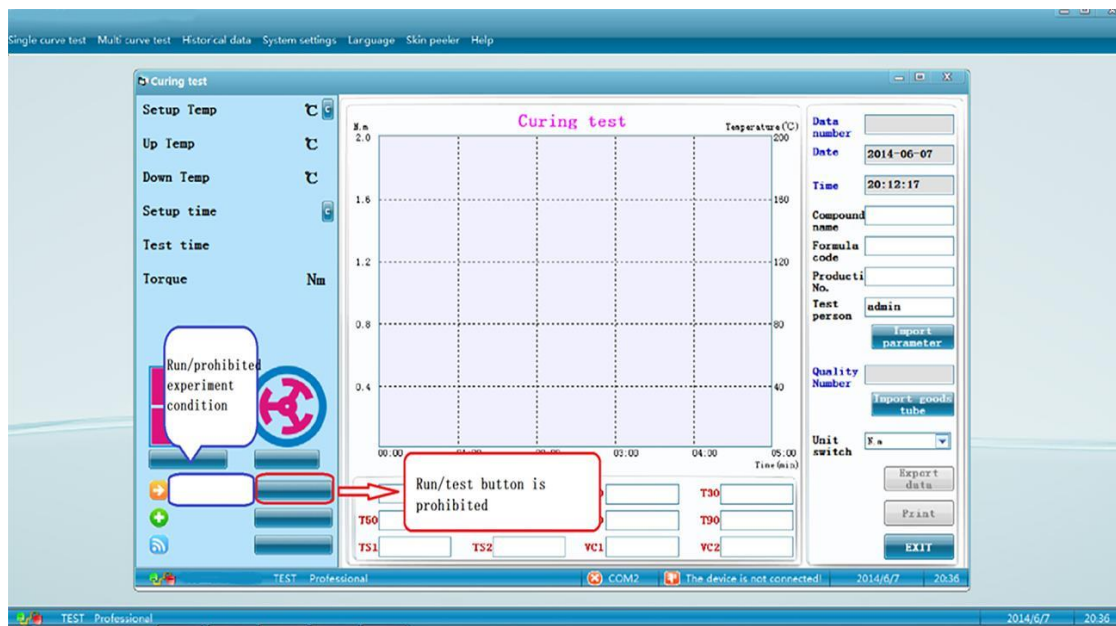


Figure 19 (B a n / allows test)

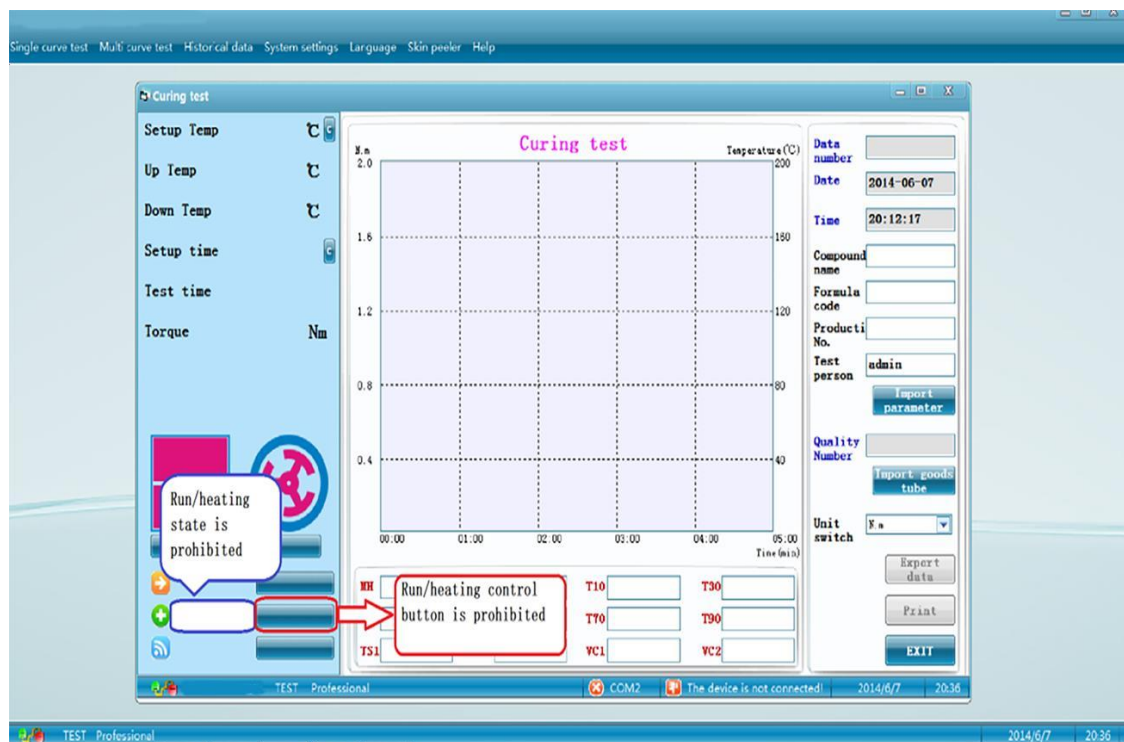


Figure 20 (Forbidden or allowed heating)

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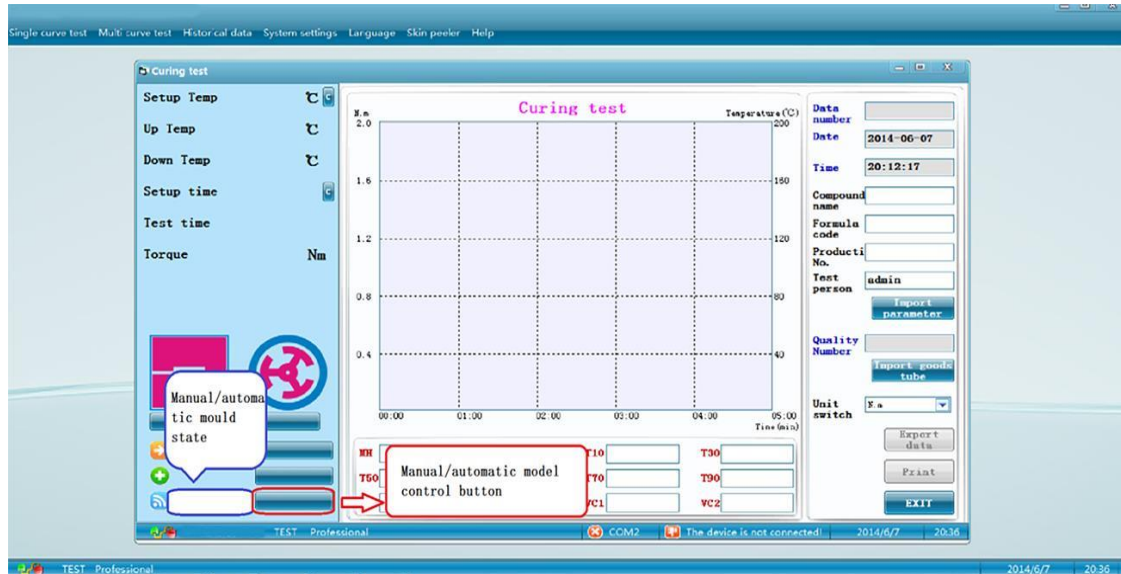


Figure 21 (Manual/automatic die sinking)

5.6 Calibrate equipment

In the "system settings", click "calibration", as shown in the following figure (Figure 21 shows calibration equipment) :

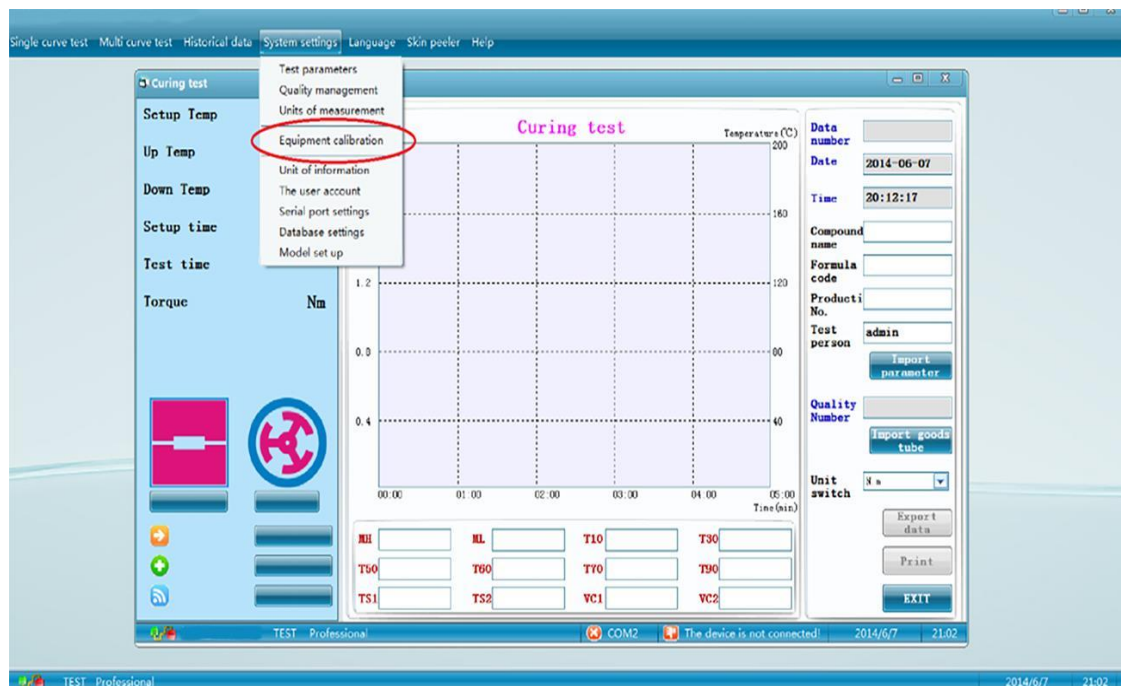


Figure 22 (Equipment calibration)

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Enter the password for: "1234", in the following chart (Figure 22 shows the password) :

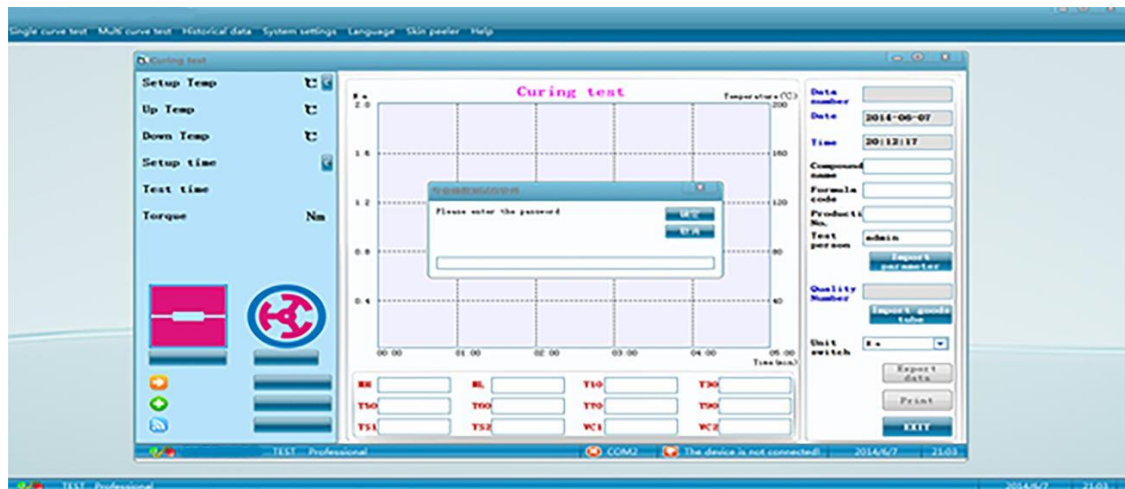


Figure 23 (Password)

The following chart (Figure 23 sulfide calibration parameters) is shown, click on: "die temperature calibration", and "lower die temperature calibration":

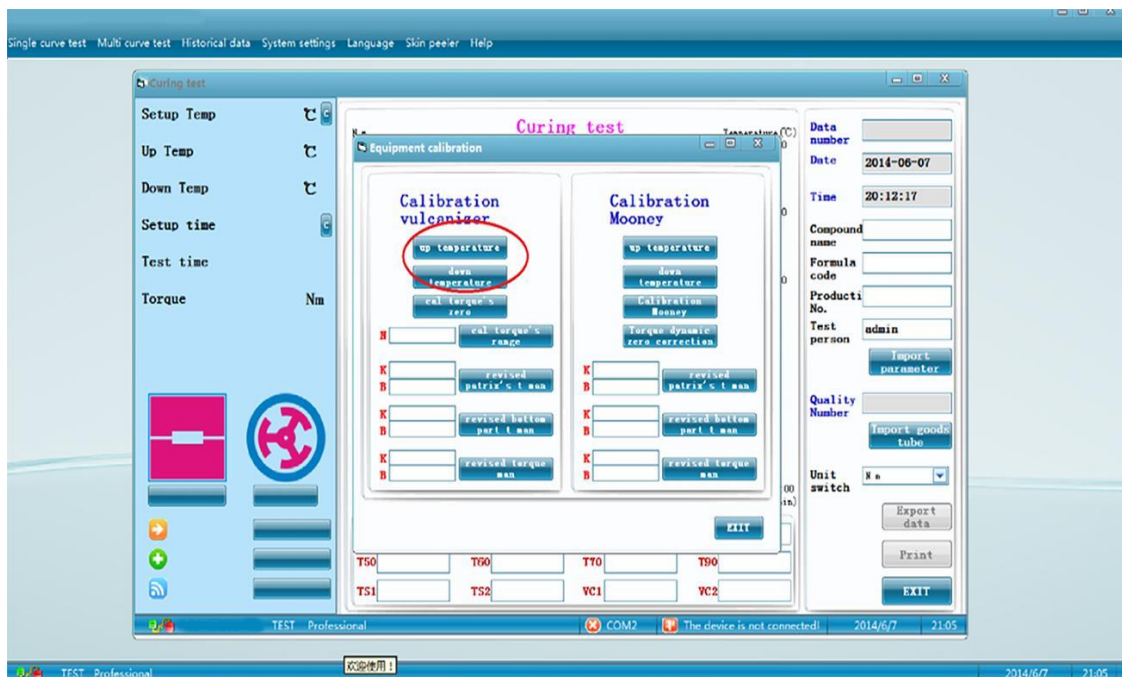


Figure 24 (Calibration graph vulcanization parameters)

5.7 Start test

Ensure the serial port settings are correct, and the normal power supply. The experimental parameters after setting:

- 1) Click on the mold.
- 2) Click allow heating.

Pay attention to the first heating (upper and lower die temperature is below 30 degrees Celsius), allowing the heated front, must ensure machines have mold, and ensure the instrument temperature is in clamping state because when the machine is studied the temperature rises characteristics. If the preset temperature reaches the set temperature and stability.

3) Click allow experiment.

4) Set after the experiment manual / automatic die sinking method.

Suggest each boot the first heating, the temperature reaches the set value, after a while of experimenting, make the heating tray full uniform heating.

5) Click Open in the test material

6) Click on the mold

The test of automatic start, waiting for the end; if the end of the test is set to automatically open, so after the test, the automatically open cavity instrument will; finally, remove the experimental samples.

Note: In the experimental conditions allowed experiment began with an opening and closing end signal as the start stop

5.8 Operate LED panel

- As the host and the computer display are normal, the key operating indicator light flashes, click on the curing test the main interface of the "**mode**" button or press the host panel "**opening and closing**" button and then click "**allow heating**" button or press the host panel "**heating**" button, heating.
- "**Open/close mode**" for opening and closing the mold cavity (sliding door with linkage).
- "**Heating**" opens the computer and computer, and the display is normal; in the un-heated case, click on the "**software allows heating**" button or press the panel "**heating**" button (Deng Liang), and the heating on the cavity; in the heating case, click on "**banheating**" software a button or press machine panel "heating" button (out), then stop heating.
- The "**Enable/disable test**" button only allows the test conditions can be tested.
- The "**Calibration**" and "**motor**" buttons are for debugging and need not operate the normal test, the automatic light of the lamp test process arc reflects its working state, the light that its corresponding functional devices at work.
- After the start of the test, the software interface test position does not display the "**allow-able test**", and displays "warming up" or "being tested"; it no longer shows "**no test**" button, the display "stop test" button; "motor" indicating exhibit of lanterns automatic lights, said electric machine began to turn.
- For the test, click the "**stop the computer software interfaces**", and "**open**" or in the instrument panel according to the "**test**", "**opening**" can stop the test.

5.9 Set up test data

1) Put in QC/QA

"**Imported goods**" used to set each compound basic data, as shown in the following figure (Figure into quality control):

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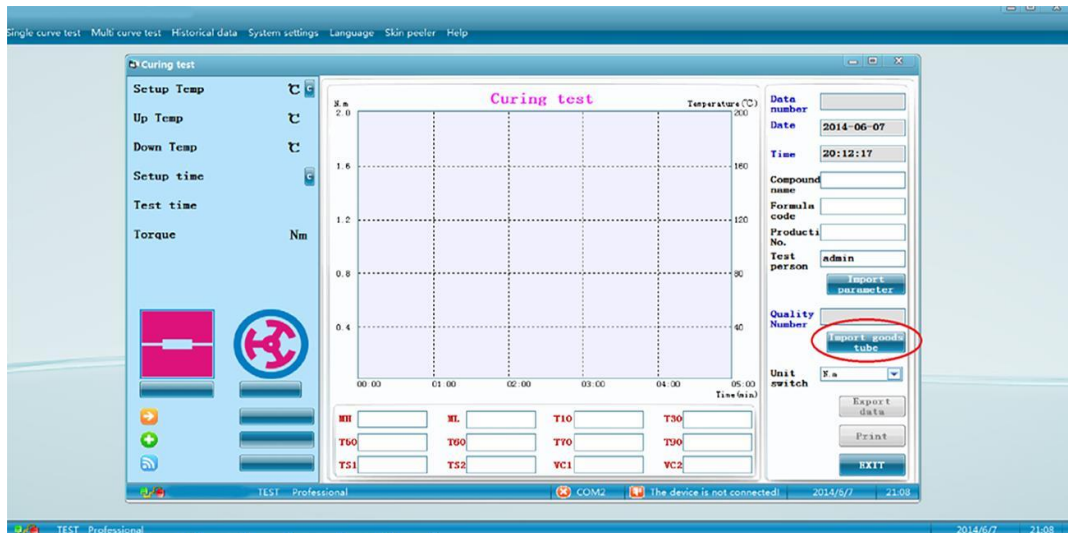


Figure 25 (Quality control)

Click the "**import goods tube**", into the quality management parameter interface, check the required tube number, and click the "**import**", can be set directly, or call the set data, as shown in the following figure (Figure 4.1.2 in quality control) are shown:

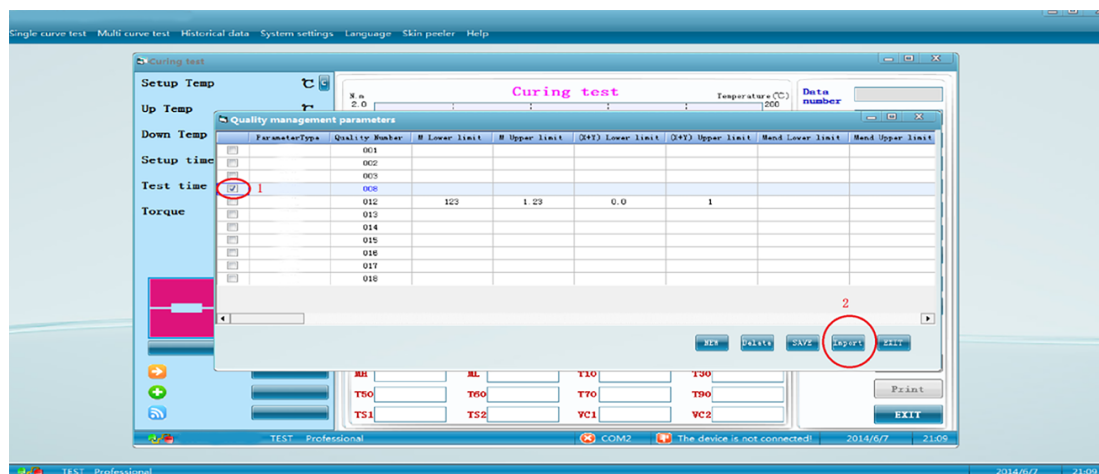


Figure 26 (Quality management)

For the new project, click the "**new**", then fill in the corresponding information as tailed as possible, all after the completion of the input, click "**save**", otherwise invalid input.

2) Input name & NO.

"Import parameters" for the rubber factory test parameters, as shown in the following figure (Figure 4.2.1 import parameters) are shown:

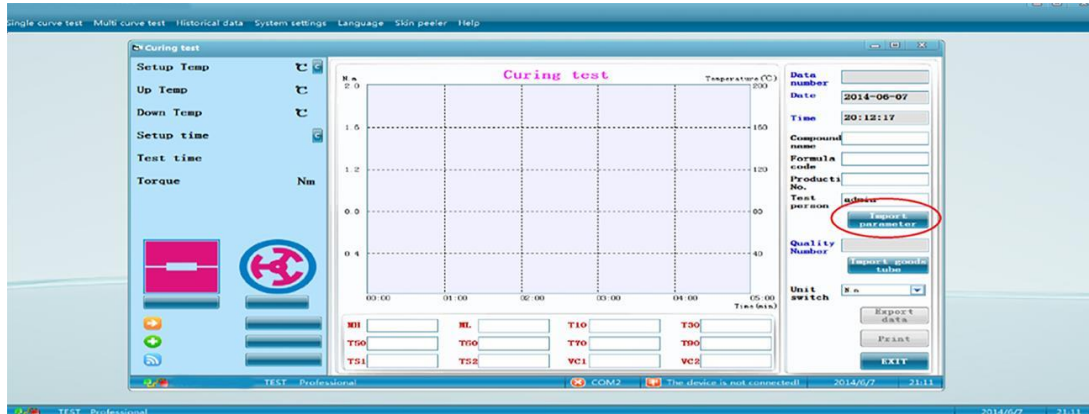


Figure 27 (Import parameters)

Click the "**import parameters**", enter the test parameter management interface, select the required information, and click the "**import**", can be set directly or call the set data, as shown in the following figure (Figure 4.2.2 import parameters) are shown:

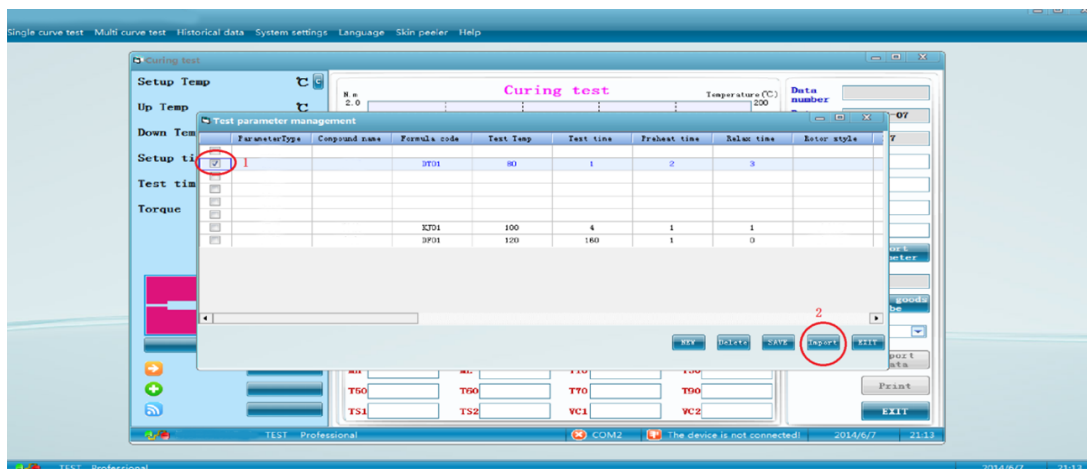


Figure 28 (Parameter management)

For the new project, click the "**new**", then fill in the corresponding information as tailed as possible, all after the completion of the input, click "**save**", otherwise invalid input.

3) Print export

Print: Used for curing test data to print the current display.

Export data: Data will be the current test results to a specified directory, specify a file name in EXCEL.

5.10 Microsoft SQL server

1) Open vulcanization historical data

Open the vulcanization of historical data, the following chart (Figure shown in his-
historical data):

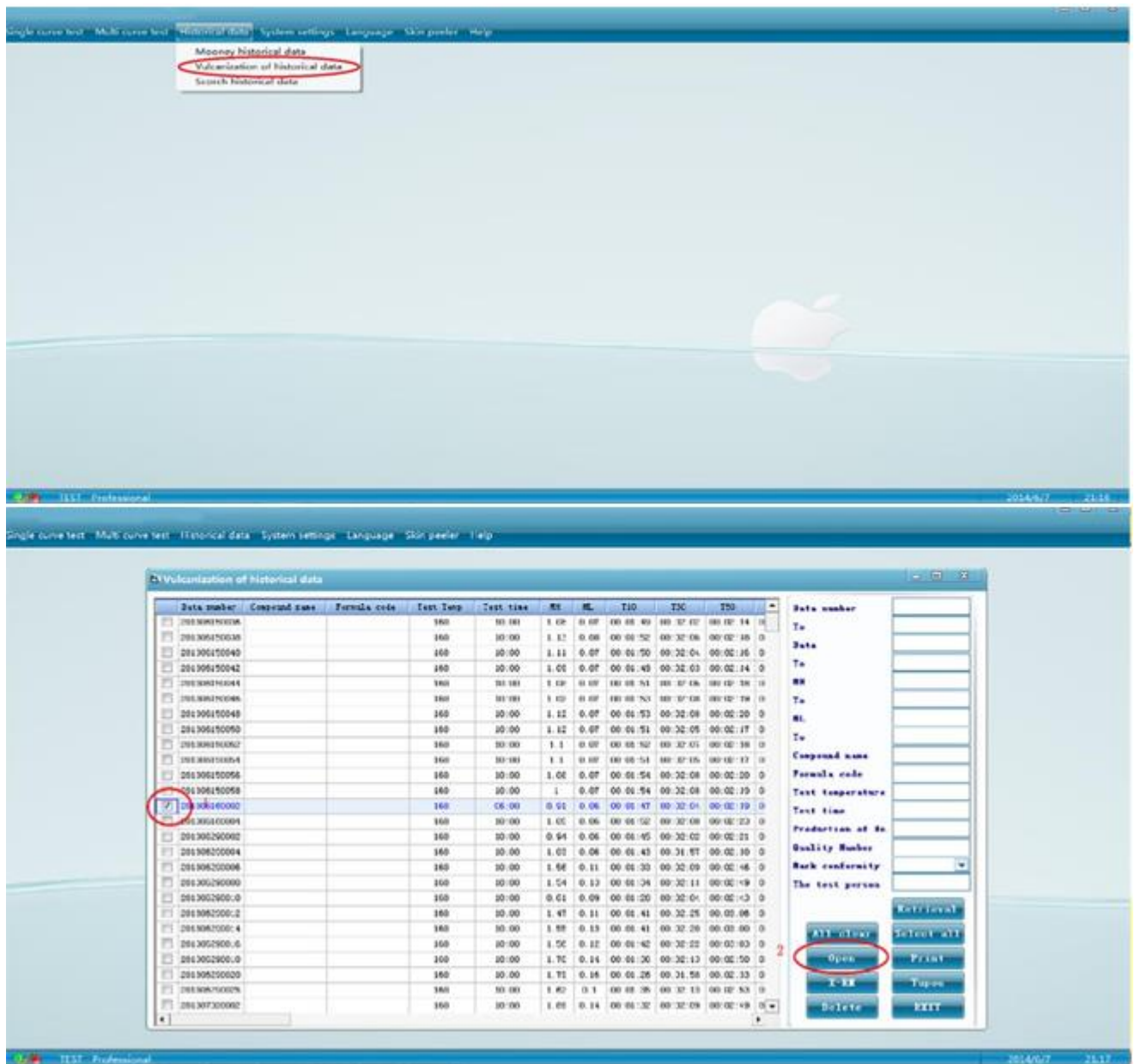


Figure 29 (Open curing single curve of historical data)

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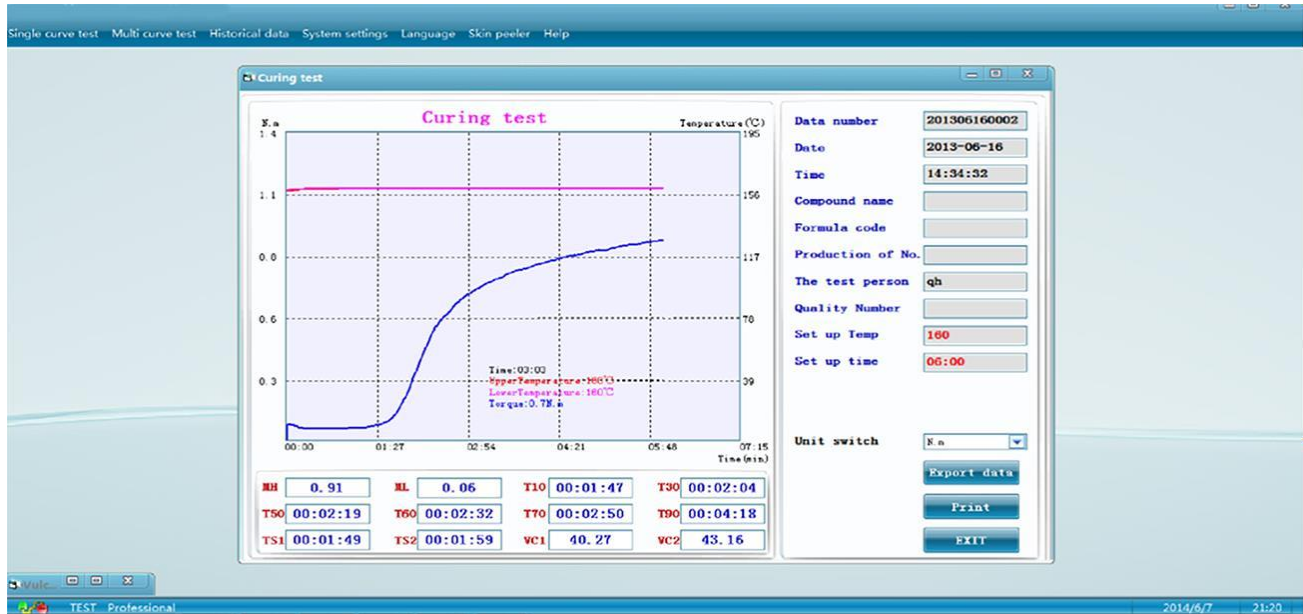


Figure 30 (Curing single curve of historical data)

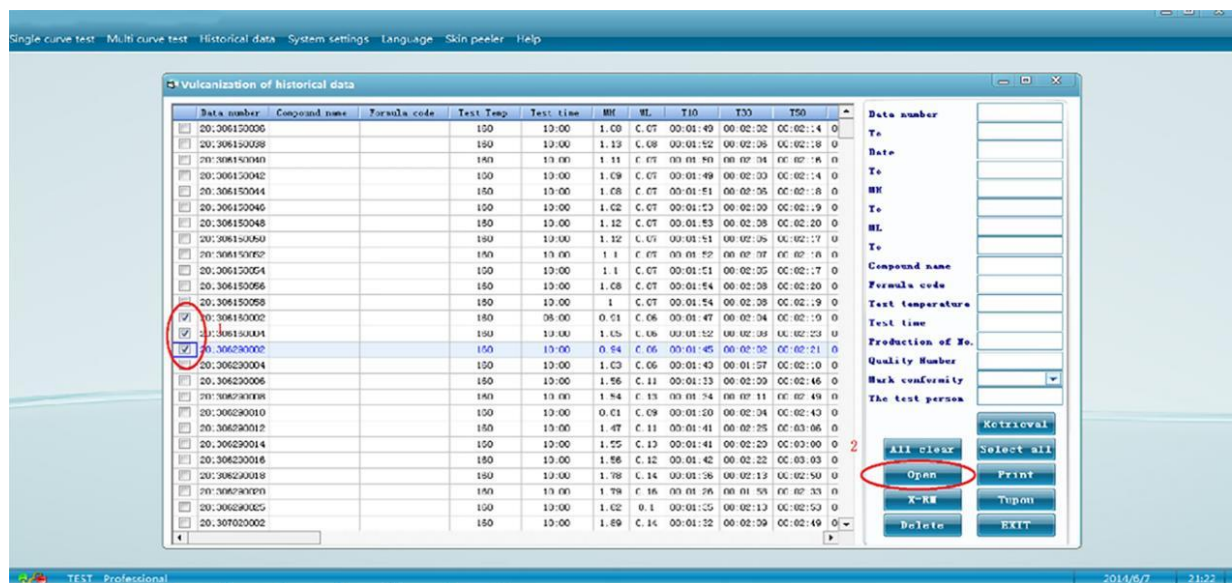


Figure 31 (Open sulfide multi-curve of historical data)

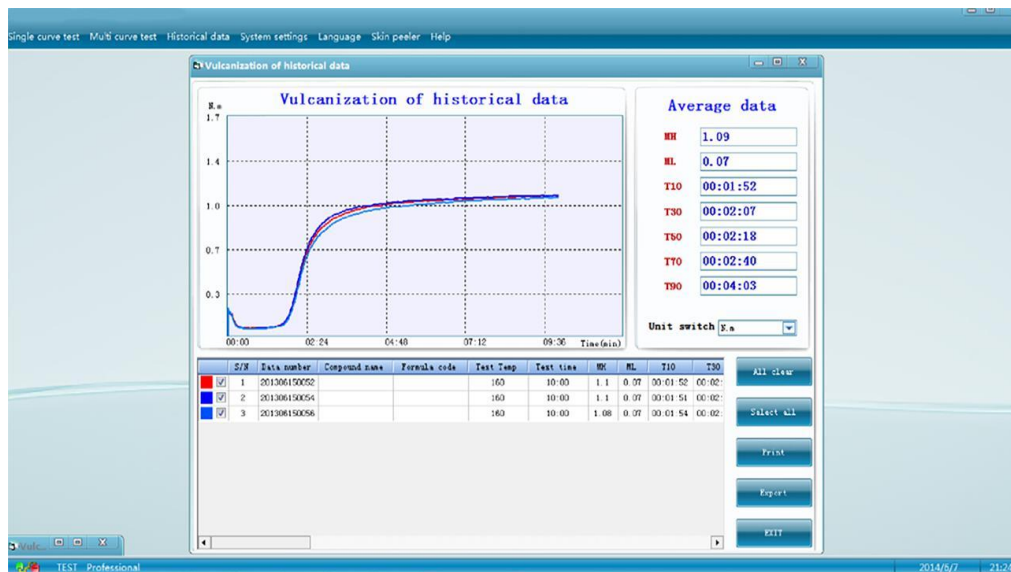


Figure 32 (Sulfide multi-curve of historical data)

The display screen on the right side of statistical data is the average value of these test data.

2) Print export

- **Print:** Print the current display for curing a single curve or curve of historical data.
- **Export data:** The single curve or curve history derived to the specified directory, specify a file name in EXCEL.



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