振冲碎石桩全过程质量控制记录仪

Whole process quality control recorder for Vibroflotation Gravel Pile

使　用　说　明　书

Operating Manual

（使用本产品前，请务必仔细阅读本使用说明书）

（Please read the instructions carefully before using this product.）

概述：

Abstract：

碎石桩全过程质量控制记录仪可以通过无线控制，控制距离为 500 米；实时准确地监测施工电流、深度、填料量的变化，对施工有很好的质量控制。

The whole process quality control recorder can be controlled by wireless, and the control distance is 500 meters. it can accurately monitor the changes of construction current, depth and filling amount in real time, and has good quality control for construction.

操作界面通过 10 寸工业触摸屏显示，方便快捷的操作界面，更加智能高效，双语设计，设置中英文两种语言界面，促进国际化交流。

The operation interface is displayed by a 10-inch industrial touch screen. With convenient and fast operation interface, more intelligent and efficient, bilingual design. And Chinese-English interface is set up to promote international communication.

记录仪记录的数据：
The data recorded by the recorder includes:

●电流 current

●深度 depth

●填料量（碎石量）filling amount（gravel amount）

对数据进行记录，形成曲线和表格。也可通过USB接口读取数据，在电脑上利用专用软件对导出的数据进行数据管理和分析，制成曲线图，并打印出来，对整个工程的施工质量和不可见的施工过程进行全方面的控制。

The recorder records data and forms curves and tables. The data can be read through the USB interface, and the data is managed and analyzed by the dedicated software on the computer. The curves are made and printed out, and the whole construction quality and the invisible construction process are controlled in full.

1. 电流测量 current measurement
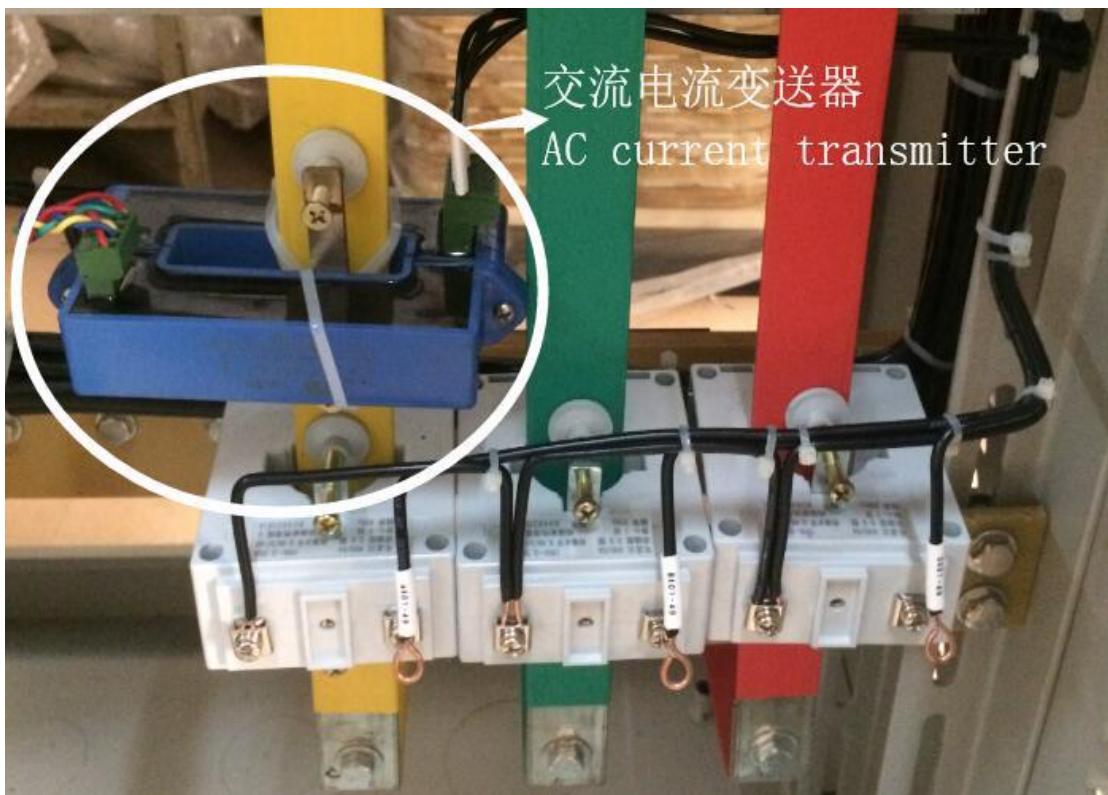
配电柜中的交流电流变送器将振冲器一根火线上的电流值测量出来转变成 4-20mA 的标准直流信号输入到配电柜 PLC 模拟量输入口，通过程序计算将测量结果再通过一对无线数传电台传到触摸屏里面进行数据的记录和显示。

The AC current transmitter in the distribution cabinet measures the current value on a fire line of the vibroflot and converts it into a standard 4-20ma DC signal. The DC signal is input to the PLC analog quantity input port of the distribution cabinet, and the measurement results are recorded and displayed by the touch screen through a pair of wireless digital radio stations after program calculated.

2. 电压测量 voltage measurement

交流电压变送器
AC voltage Transmitter
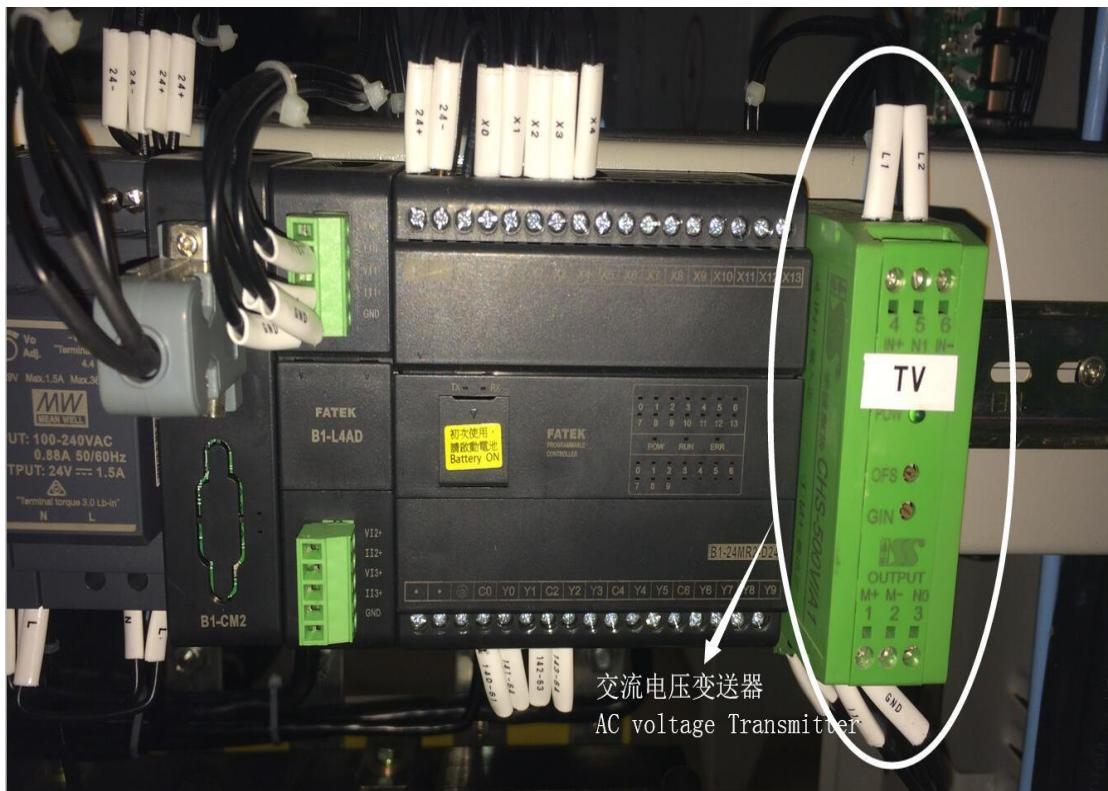
交流电压变送器安装在配电柜进电的主电路上，测量其中两根火线的电压，将测量出来的电压值转变成 4-20mA 的标准直流信号输入到配电柜 PLC 模拟量输入口，通过程序计算将测量结果通过一对无线数传电台传到触摸屏里面进行数据的记录和显示。

The ac voltage transmitter is installed on the main power line of the distribution cabinet to measure the voltage of two fire wires. The measured voltage value is converted into the standard DC signal of 4-20mA into the PLC analog input port of the distribution cabinet, and the measurement results are recorded and displayed by the touch screen through a pair of wireless digital radio stations after program calculated.

3. 深度测量 Depth measurement

滑轮组旋转带动编码器转动,编码器将产生的脉冲信号通过屏蔽电缆传送到记录仪 PLC 的高速计数器里面,再通过程序计算将测量结果传到触摸屏里进行记录和显示。

Block and tackle rotation driven in the encoder, the encoder will produce a pulse signal recorder via shielded cable inside the PLC high-speed counter, and the measurement results are recorded and displayed by the touch screen through program calculated.

4. 填料量记录 Filling amount record

通过记录仪触摸屏上的填料按钮或记录仪的外置加料按钮进行手动加料操作,每按一次,填料量就投加一次,并自动累加,每次的量在系统首页的参数设置窗口里面有设置。

Through the recorder external button or touch screen recorder the stone material on the operation panel button to Implement manually loading operation。With every time you press the button,filling amount is added once,and automatically accumulates. Each amount can be set in the parameter setting window of the system homepage.

5. 加密电流/预过载电流/留振时间提示

compaction current / pre overload current / compaction duration prompt

在制桩过程中，当电流值达到加密电流或预过载电流或留振时间的预设值时，记录仪控制面板的指示灯或蜂鸣器则会发出提示。记录仪的参数设置窗口和配电柜的继电器均可以设置各自的加密电流/留振时间/预过载电流/预过载延时，产生的报警也是独立的。振冲器过流产生跳闸，两者中哪个数值低跳那个数值。

In the process of making the pile, the indicator light or buzzer of the recorder control panel will be prompted when the current value exceed the preset value of the encrypted current or the pre-overload current or the compaction duration. We can respectively set the encrypted current/compaction duration/pre-overload current/pre-overload delay of the parameter setting window of the recorder and the relay of the distribution cabinet, and the alarm is also independent. When the vibroflot is used, the overload current will result in tripping, and the value of the overload current is depend on the lower pre-overload current of the two

.

控制流程图：
Control flow chart：

电流互感器
AC current transmitter

电压互感器
AC voltage transmitter

TV

4-20mA

plc

RS232

电流/电压值
Current and voltage values

通讯设备
Communication equipment

外置加料
External feeding

MCGS

深度
Depth

滑轮组
Sounding pulley group

触屏控制电机起停，设置加密电流值、留振时间、预过载电流、预过载延时时间

Touch screen control motor start and stop, set up compaction current value, compaction duration, pre overload current and pre overload delay time.

技术参数：

Technical parameter:

1. 记录仪电源为 DC24V 直流电源,最大功率 24W.

The recorder power supply is DC 24V , The maximum power consumption of 24W。

2. 测深装置：编码器电源电压为 DC24V, 分辨率 600P/R, NPN 输出。

The sounding device: The encoder power supply is DC24V, resolution is 600P/R, and NPN output.

3. 交流电流/电压互感器电源均为 DC24V 直流电源,电流量程为 800A, 电压量程为 500V,互感器输出信号均为标准 4-20mA 直流电流信号。

The power supply of ac current/voltage transformers are both DC 24V, the current range is 80 0A, the voltage range is 500V, and the output signal of the transformers is standard 4-20mA DC current signal.

4. 配电柜和记录仪内 PLC 电源为 DC24V,电柜 PLC 输出为继电器输出。

the PLC power supply of distribution cabinet and recorder is DC24V, and the output of distribution cabinet PLC is relay output.

5. 配电柜和记录仪内部的数传电台电源电压为 DC12V,通讯波特率 9600BPS,8 个数据位，1 个停止位，无校验。

The power supply of the distribution cabinet and the recorder internal digital radio power are both DC 12V,the

telecommunications baud rate is 9600BPS, with 8 data bits, 1 stop bits, no check.

安装位置：

installation site：

1. 记录仪安装在吊车的操作室里面，将天线吸在操作室外的顶部；天线安装时应避免它们之间有障碍物，否则影响信号的强度。

When the recorder is installed in the crane operating room, and the antenna is sucked on the top of the operating room。Antenna installation should avoid obstacles between them, otherwise the signal intensity will be affected.

2. 将测深滑轮组安装在吊车大臂最下面的一节上，如下图所示：

Install the bathymetric pulley set on the bottom section of the crane arm, as shown in the following figure:

3. 或将滑轮组安装在滚筒侧边上，如下图所示：

Or install the pulley block on the side of the drum, as shown in the following figure:

记录仪外形及接口介绍：

Description of shape and interface of recorder：

1:2芯DC24电源接口　　2 core DC24 power interface

2:4芯编码器接口　　　4 core encoder interface

3:2芯外置加料接口　2 core external feeding interface

4:电源开关　Power switch

5:天线接口　Antenna interface

6.USB接口　USB interface

7.加密电流指示灯　Compactiom current indicator lamp

8.过流指示灯　Overcurrent indicator lamp

9.留振时间指示灯　Compactiom dunation indicator lamp

10.急停按钮　Scarm button

记录仪航空插头接线定义表如下：

The definition of aviation plug connection is as follows:

插头名称 Plug name	型号 Model	引脚 Pin	定义 Definition
电源插头 Power plug	GX16-2P（公）	1	+24V电源
		2	0V
编码器插头 Encode plug	GX16-5P（公）	1	+24V电源
		2	0V
		3	A相
		4	B相
		5	空
加料插头 Charging plug	GX16-2P（公）	1	X2
		2	0V

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编码器屏蔽电缆航空插头接线

Encoder shielded cable aviation plug connection

位置 Position	插头型号 Plug Model	引脚 Pin	定义 Definition
编码器上的插头 Encoder side plug	蓝色防水航空插头 SP16-5芯（公头） Blue waterproof aviation plug	1	Brown棕 DC24
		2	Blue蓝 0V
		3	Black黑 A
		4	White白 B
		5	Shield屏蔽层
30米屏蔽电缆与编码器 连接端 30 meters shielded cable and encoder connection end	蓝色防水航空插头 SP16-5芯（母头） Blue waterproof aviation plug	1	Red红 DC24V
		2	Orange黄 0V
		3	Green绿 A
		4	Blue蓝 B
		5	Shield屏蔽层
30米屏蔽电缆与记录仪 连接端 30 meters shielded cable and recorder connection end	金属航空插头GX16-5P （母头） Metal aviation plug	1	Red红 DC24V
		2	Orange黄 0V
		3	Green绿 A
		4	Blue蓝 B
		5	Shiled屏蔽层

操作顺序指南：

Operation sequence guidelines ：

1. 开机　Turn on the machine

记录仪和测深度传感器滑轮组就位，并且两者之间电缆连接好后，将记录仪DC24V电源线连接吊车电瓶上电（**注意：区分正负极**）。记录仪首先进行自检，自检通过显示主页语言选择界面(右侧所示)。通过手指触摸显示屏选择语言类型"中文"或"English"后直接进入首页界面。（以中文为例）

主页：语言选择界面

The recorder and depth sensor pulley block are in place, and after connecting the cable between the two, connect the recording DC24V power cord to the crane battery (note: distinguish positive and negative poles).The recorder will first conduct self-inspection by displaying the main page language selection interface (as shown on the right).Select the language types "Chinese" or "English" through the finger touch screen and enter the homepage interface directly.(take Chinese for example)

2. 首页功能介绍
Homepage function introduction

语言选择完成后进入首页(右侧所示)。在首页界面可以进行修改桩号、填料量计数、深度校准、数据记录、查询数据、触屏控制电机起/停、数据导出等操作；显示潜水泵/清水泵/振冲器的工作状态、显示当前

首页：工作界面
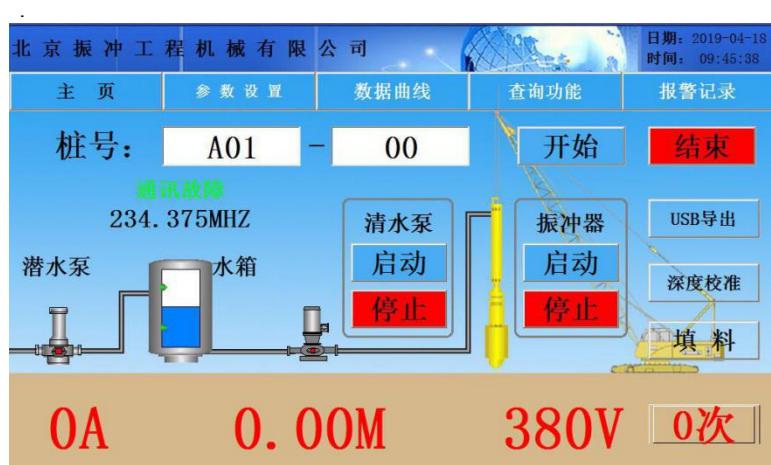
电压/电流/深度/填料次数、通讯状态（当通讯故障时，首页出现通

讯故障字体并开始闪烁）、设

备的通讯频率。

When the language selection is complete, go to the home page (as shown on the right).In the homepage interface, it can modify pile number, fill count, depth calibration, data record, search data,touch screen control motor start/stop, data export, etc.Display/fresh water pump, vibration pump working status, shows the current voltage/current/depth/packing number, communication state (when there is a failure in the communication, communication failures, home page font and began flashing), Communication frequency of equipment.
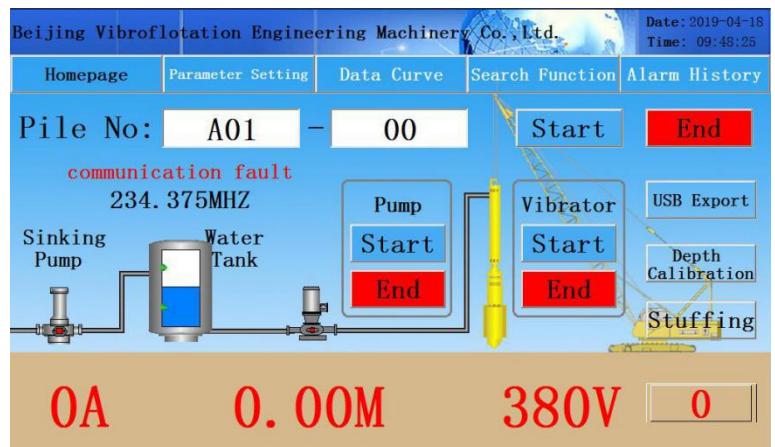
3．参数设置

Parameter setting

点击"**参数设置**"按钮, 弹出参数设置窗口，可以对加密电流值、预过载报警值、留振时间、预过载延时（电流大于预过载报警值延时的时间，到达此时间振冲器停机）、每斗石料体积、存盘间隔，进行编辑，点击确认后退出参数设置窗口(右侧所示)

After click the "parameter setting" button to pop up the parameter setting window,you can edit encrypt current, overload beforehand alarm value, vibration time, preoverload delay (When the current is greater than the preoverload alarm value, the vibroflot stops at this time), save interval,click confirm and exit parameters Settings window (as shown on the right)
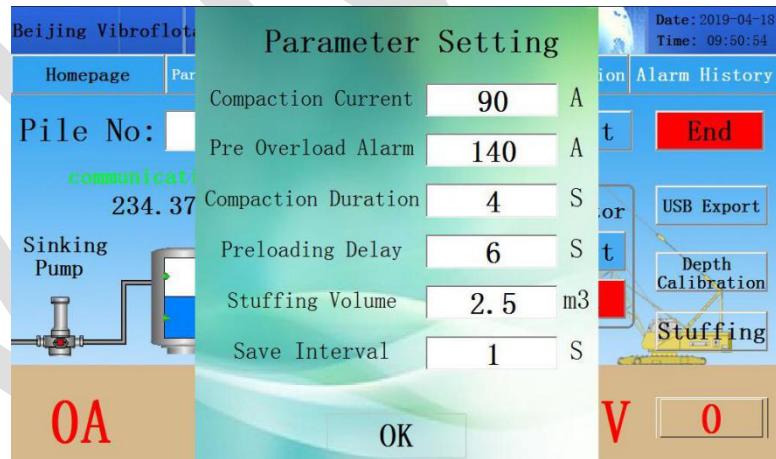
4. 深度校准

Depth calibration

点击"**深度校准**"按钮，弹出深度校准流程窗口，按流程顺序进行操作：首先将振冲器振头刚好接触地平面（零基准面），点击"**1.编码器清零**"按钮后；然后将振冲器提高 2 米处时，
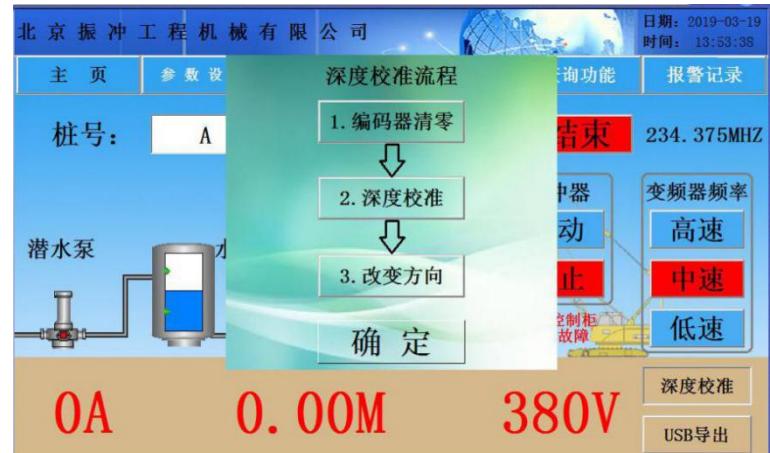
点击"**2.深度校准**"按钮；规定地面以上深度为正值，当方向相反时，点击"**3.改变方向**"按钮进行换向，完成深度校准操作。点击"**确定**"按钮退出。

Click on the "depth calibration" button, pop up the depth calibration process window, and operate according to the process sequence: first, the
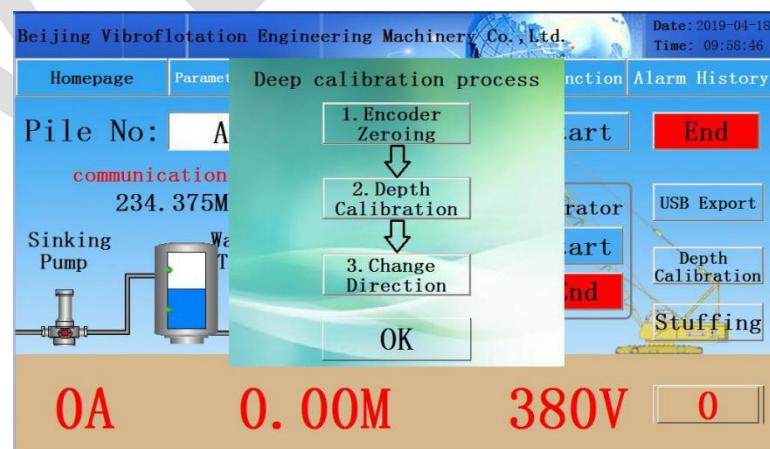
vibrator head just touches the ground surface (zero datum level), then click on the "encoder zero" button; then, when the vibrator is raised to 2 meter, click the "2. depth calibration" button; stipulate that the depth above the ground is positive,

and when the direction is opposite, click on "3. Change". Direction button carries on the reversal, completes the depth calibration operation. Click the "OK" button to exit.

5.控制电机起/停

Control motor starting / stopping

在首界面可以控制振冲器和清水泵的启动和停止，当振冲器和清水泵处于运行状态时，启动按钮变为红色；当振冲器和清水泵处于停止状态时，停止按钮变为红色。
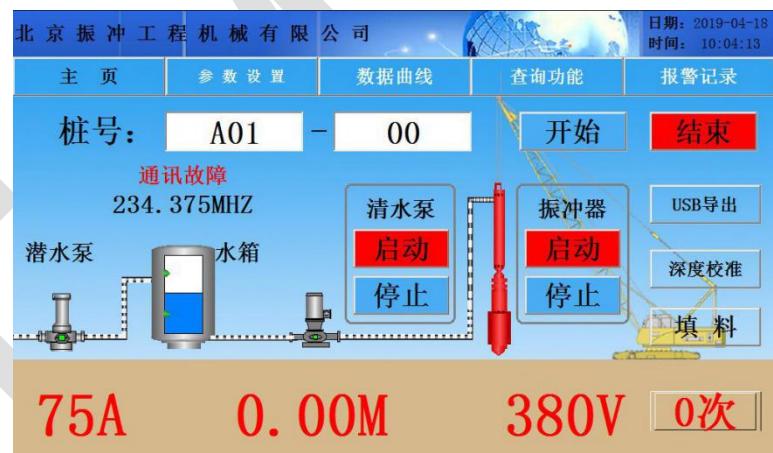
The start and stop of the vibrator and the water pump can be controlled at the front interface. When the vibrator and the water pump are running, the start button turned red; when the vibrator and the water pump are stopped, the stop button turned red.
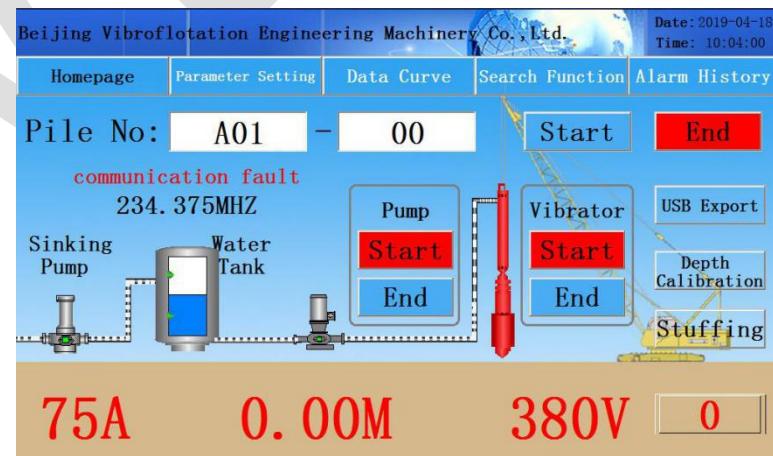
6. 修改桩号
Modification of the pile number

每开始打一根新桩前需修改一次桩号，用手指触摸桩号输入框，弹出小键盘对桩号修改为所需编号（例：A01-00 修改为 A01-01）后，点击确认完成修改。

Before starting a new pile, you need to modify a pile number, touch the number of pile number with your finger and change the number of the small keyboard to the number required (for example: A01-00 modified to A01-01), click confirm to complete the modification.
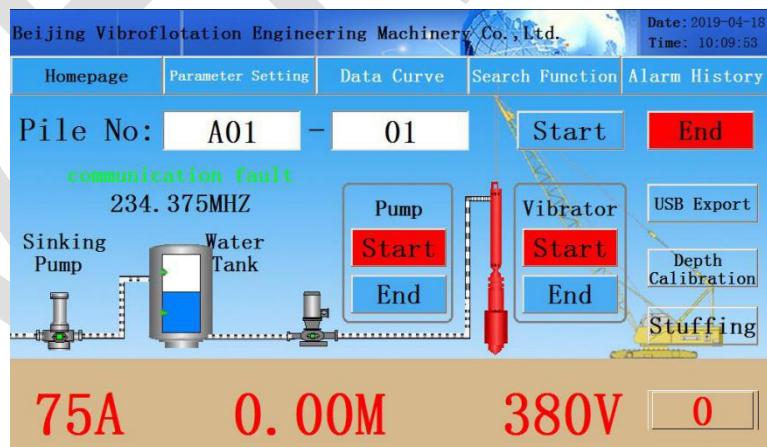
7. 开始数据记录

Start data record

修改完桩号后，当振冲器振头对准桩位并与地层 0 米处刚好接触时，按下**开始**按钮后按钮变红，并开始数据的记录和深度清零。
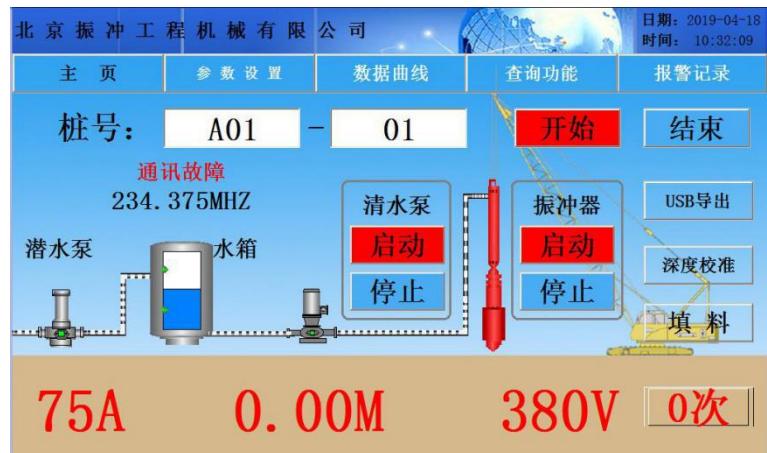
After modifying the pile number, when the vibrator head is aligned with the pile position and in contact with the ground 0 meters, press the start button and the button turns red, and start to record the data and the depth of zero.
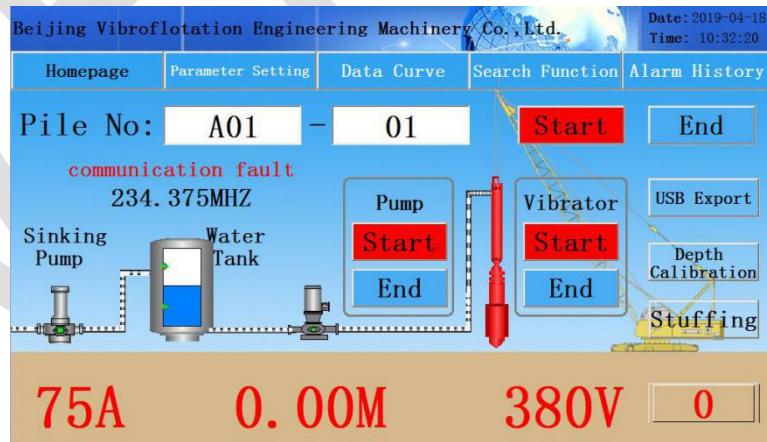
8. 填料量计数

Filling amount count

在加密过程中，通过触摸屏幕上的填料按钮或按下遥控石料加料按钮来记录填料次数，每加一次料，记录仪发出一次声音提醒，填料按钮下面的显示框便多加一个数值，填料量便多加一倍(右侧所示)。
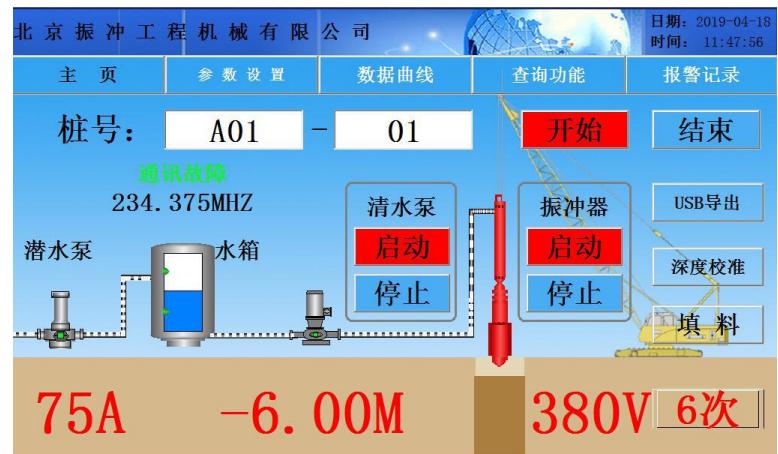
In the encryption process, the number of fillers is recorded by touching the padding button on the screen or pressing the remote control padding button.
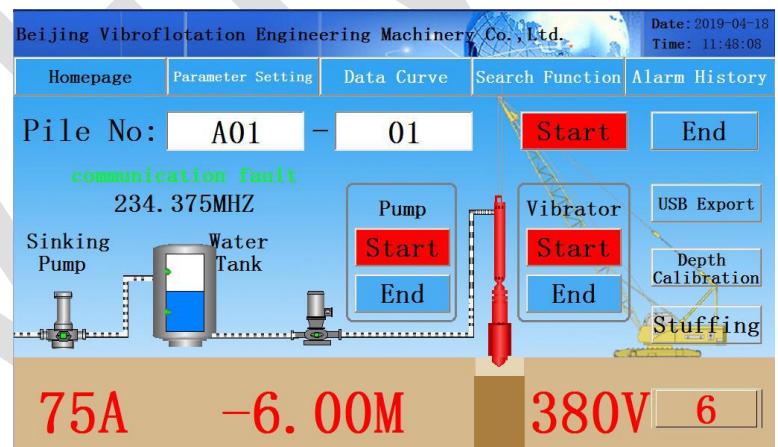
Each time the padding is added, the recorder sends out a sound reminder. The display box under the padding button adds an additional value, and the amount of padding is doubled (shown on the right side).

9．结束数据记录
End the data record

完成一根桩后，按下**结束**按钮后按钮变红停止数据的记录，下一根桩重复步骤（6.7.8.9）
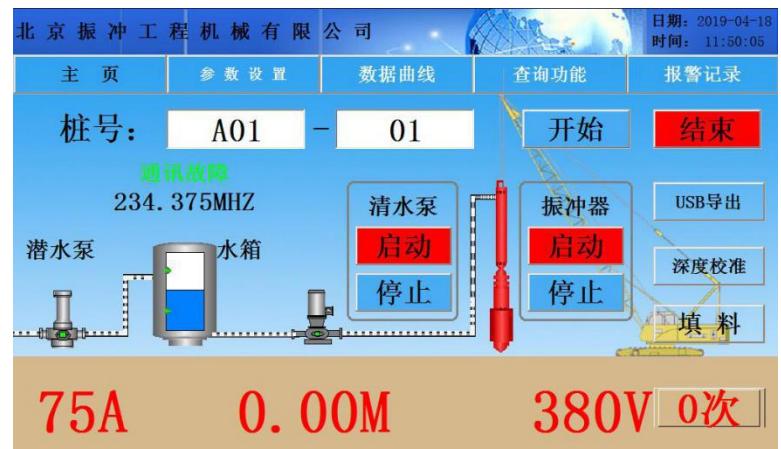
After completing a pile, press the end button to turn the button red and stop the recording of data. repeated step（6.7.8.9）to deal with the next pile.
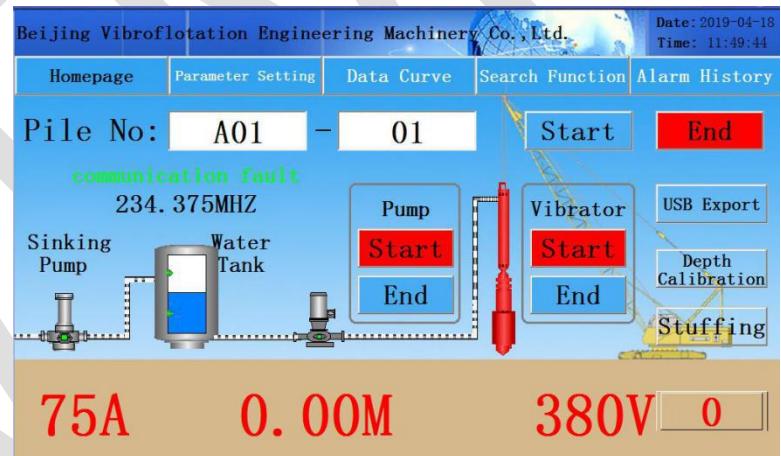
10．数据导出
Data export

将一天完成的数据导出，按下首页的 **USB 导出**按钮，弹出数据导出设置窗口（如右图），可以编辑导出数据的项目名称，导出方式分为两种：导出所有数据和按设置时间导出，

导出完成后提示导出成功。说明：记录仪只可以存储以当前时间为基点 240 小时内的数据，超过规定的时间数据自动删除，建议每天将数据导出一次到 U 盘。（USB 接口支持含 USB2.0 及以下接口）

To export the complete data,press the USB export home page button, pop-up data export settings window (as shown on the right), you can edit the project name of the export data,the export way is divided into two kinds: export all export data, and according to the set time,The export is successful after exporting..Note: the recorder can only store data within 240 hours based on the current time. Data over the specified time will be deleted automatically. It is recommended to export data to the usb disk once a day.(USB interface supports USB2.0 and below)

11. 各设备状态信息显示 Device status information display

在制桩过程中观察指示灯的工作状态和显示框显示的数值，潜水泵/清水泵工作时，画面上
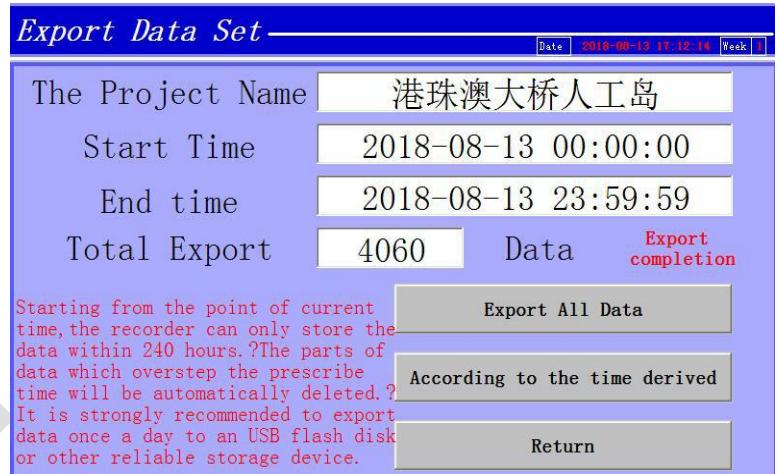
对应设备的指示灯由红色变成绿色，振冲器工作时变成红色并且开始晃动，当前电压/电流/深度等信息显示(右侧所示)

In the process of pile making, observe the working status of the indicator light and the value shown in the display box. When submersible pump/clear water pump are working, The indicator light of the corresponding element on the screen changes from red to green, and into red and began to shake when vibrator is working. current voltage/current/depth information display on the screen (as shown on the right).
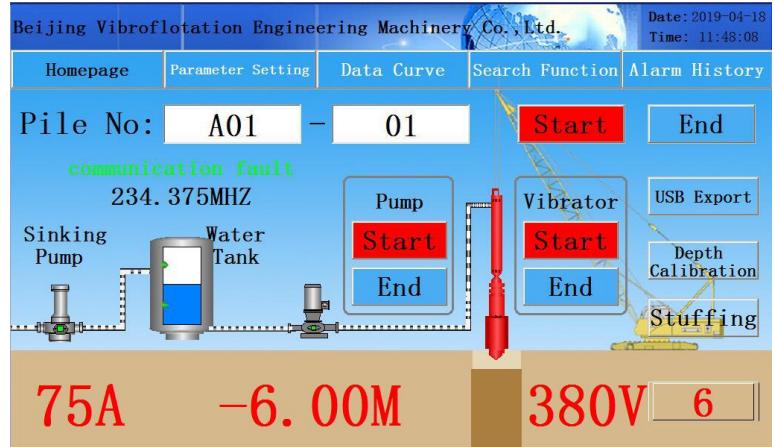
12. 查看实时曲线 View the real time curve

点击"曲线"按钮进入实时曲线界面，通过选择切换屏幕右下角的**电流曲线、电压曲线、深度曲线、石料曲线**四个按钮，进入对应的曲线图(右侧所示)。

Click the "curve" button to enter the real-time curve interface, by selecting the current curve, voltage curve, depth curve, and stone curve of the lower right corner of the switch screen four buttons, get into the corresponding graph (as shown on the right).

13. 桩信息查询 pile number query

在首页点击**查询功能**按钮，进入桩信息查询界面，可以查询已经打过的桩信息，显示内容包含桩号、加密电流、开始时间、结束时间、总时间，如右图。

On the front page, click the query function button and enter the pile information query interface. It can query the pile information that has been played. The content contains the pile

number, the encryption current, the start time, the end time, the total time, such as the right picture.

14. 记录的数据
Recorded data

在桩信息查询界面，点击"记录的数据"按钮，进入数据查询的历史表格，显示内容包括桩号、时间、电流、电压、深度、填料量(右侧所示)

。

Click the "recorded data" button to enter the history table of the data record query, and display the values of pile number, time, current, voltage, depth and filling amount (as shown on the right).

15. 报警记录查询
Alarm record query

点击"报警记录"按钮进入报警信息查询窗口，以表格的形式显示清水泵过载、振冲器过流、振冲器过载、通讯故障的开始时间和结束时间(右侧所示)

Click the "alarm record" button to start the alarm information query window, displayed in a tabular form clear water pump overload, vibrator over-current, vibrator overload,

communication failures of start time and end time (as shown on the right)

碎石桩质量分析系统：
Data analysis software for gravel pile

1. 将安装程序包拷贝到计算机上。

Copy the installation package to the computer.

2. 双击安装程序包里面的Setup.exe文件，完成软件安装。

软件安装完成后，选择语言类型进入首界面，软件首次使用会弹出提示窗口（要求进行注册），然后点击软件注册按钮，弹出软件注册窗口，提示需要将您的机器码发给管理员索取注册码完成注册，如右图。

Double click the Setup.exe file in the installer package to complete the software installation.

After the software installation is completed, select the language type to enter the first interface, the software first use will pop up the prompt window (request for registration), then click the software registration button, pop up the software registration window, hint that you need to send your machine code to the
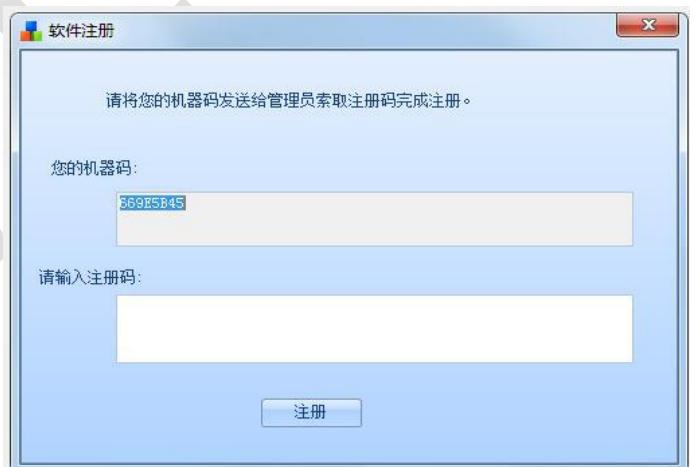
administrator to request

registration code to complete the

register, such as the right

picture.

注册后的界面如下：

The registered interface is as follows:
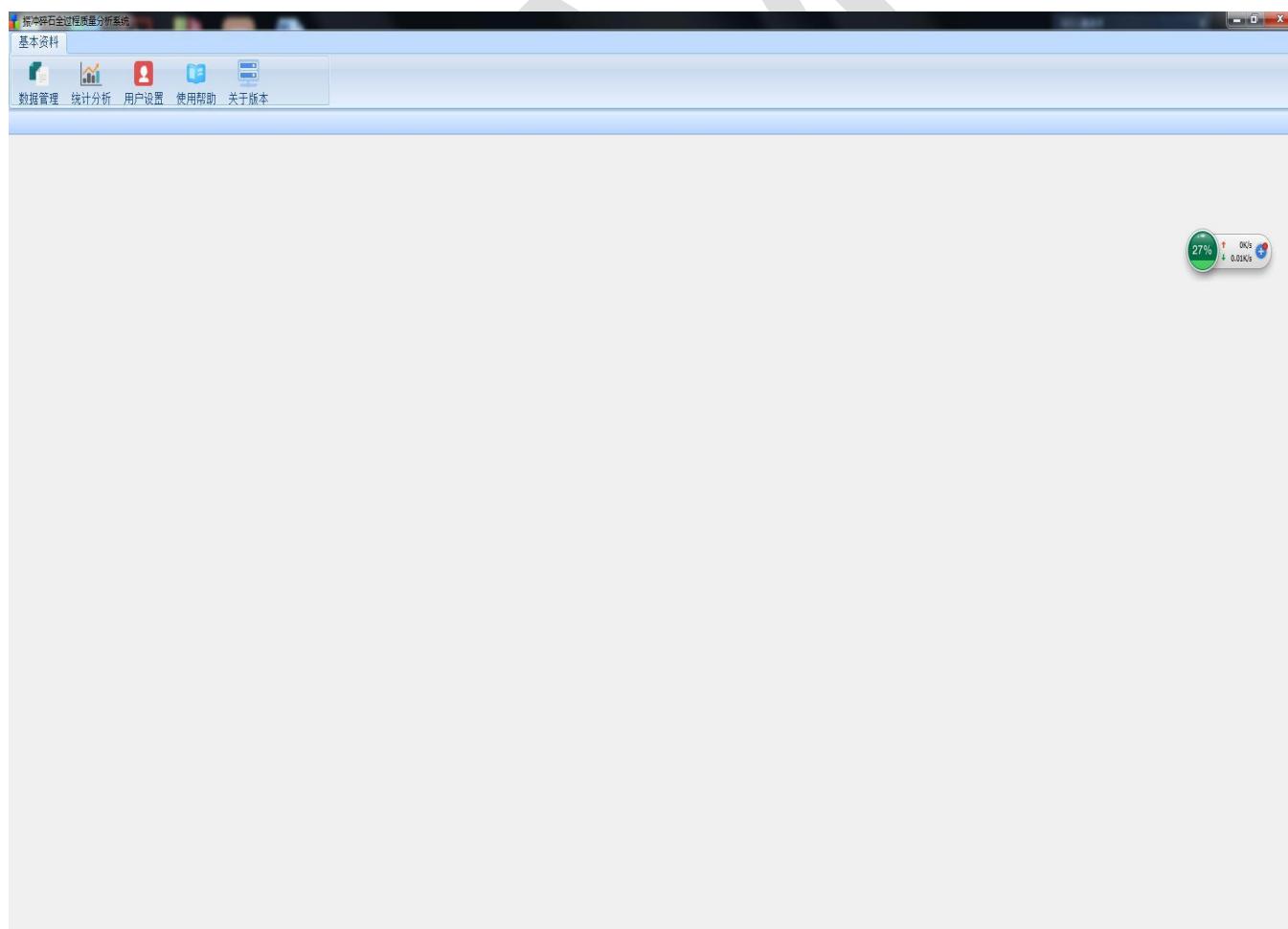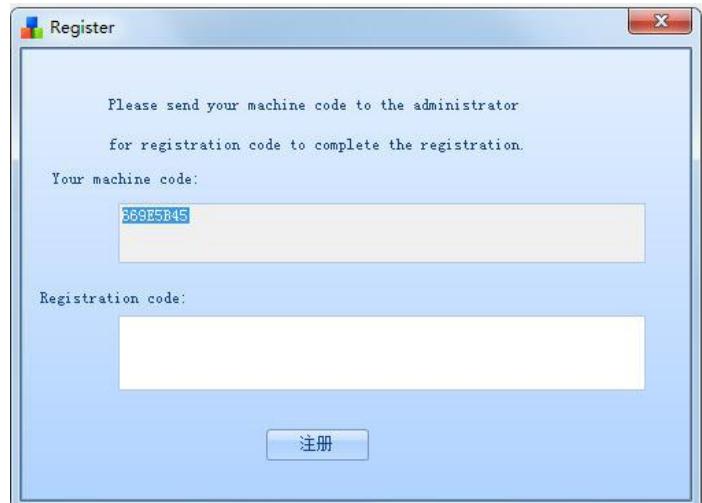
3. 点击**数据管理**，导入从记录仪上导出的文件，在下面便会显示桩

的基本信息：项目名称、文件名称、桩号、开始时间、结束时间、

沉孔时间、密实时间、深度、填料；在此界面还可以根据项目名

称、文件名称、桩号进行搜索，对桩号进行删除，清空数据库操

作。界面如下图：

Click on data management, import the exported file from the recorder, below will display the basic information of the pile: project name, file name, pile number, start time and end time, sink holes, compact time, depth and packing;In this interface, you can also search according to the project name, file name and pile number, delete the pile number, or clear the database operation. The interface is as

follows:

Stone Column Whole Process Quality Analysis System

Basic Data

Data　Statistic　User　Help　Version

DataStatistics

Project Name:　　　File Name:　　　Pile Number:　　　Search　Delete　Wipe Data　Import Files

First　Previous　Next　Last　1　Go　Total 124　PageSize 50

ID	Project Name	File Name	Pile Number	Start Time	End Time	Drilling Time	Compacting Time	Depth	Filling
545	港珠澳大桥人工岛	2018-05-31,14-27-05...	C15	2018-05-31 14:09:36	2018-05-31 14:26:12	0h5m25s	0h11m10s	8.24	4.8
544	港珠澳大桥人工岛	2018-05-31,14-27-05...	E15	2018-05-31 13:52:40	2018-05-31 14:08:30	0h4m35s	0h11m14s	8.18	4.8
543	港珠澳大桥人工岛	2018-05-31,14-27-05...	G15	2018-05-31 13:37:11	2018-05-31 13:51:46	0h5m4s	0h9m30s	7.68	4.8
542	港珠澳大桥人工岛	2018-05-31,14-27-05...	I15	2018-05-31 13:22:44	2018-05-31 13:35:59	0h5m32s	0h7m42s	7.86	4.1
541	港珠澳大桥人工岛	2018-05-31,14-27-05...	K15	2018-05-31 13:05:24	2018-05-31 13:21:48	0h5m3s	0h11m20s	7.71	4.8
540	港珠澳大桥人工岛	2018-05-31,14-27-05...	M15	2018-05-31 11:27:27	2018-05-31 11:42:34	0h5m14s	0h9m52s	7.98	5.5
539	港珠澳大桥人工岛	2018-05-31,14-27-05...	O15	2018-05-31 11:13:56	2018-05-31 11:26:25	0h4m24s	0h8m4s	8.09	4.1
538	港珠澳大桥人工岛	2018-05-31,14-27-05...	Q15	2018-05-31 10:58:43	2018-05-31 11:13:08	0h4m50s	0h9m34s	8.15	5.5
537	港珠澳大桥人工岛	2018-05-31,14-27-05...	S15	2018-05-31 10:44:57	2018-05-31 10:57:48	0h4m31s	0h8m19s	8.11	4.8
536	港珠澳大桥人工岛	2018-05-31,14-27-05...	D14	2018-05-31 10:09:01	2018-05-31 10:23:44	0h4m56s	0h9m46s	8.09	4.1
535	港珠澳大桥人工岛	2018-05-31,14-27-05...	F14	2018-05-31 9:52:55	2018-05-31 10:07:50	0h5m3s	0h9m51s	8.22	4.8
534	港珠澳大桥人工岛	2018-05-31,14-27-05...	H14	2018-05-31 9:38:31	2018-05-31 9:51:40	0h6m4s	0h7m4s	8.16	4.1
533	港珠澳大桥人工岛	2018-05-31,14-27-05...	J14	2018-05-31 9:21:36	2018-05-31 9:36:45	0h5m8s	0h10m0s	8.18	4.8
532	港珠澳大桥人工岛	2018-05-31,14-27-05...	L14	2018-05-31 9:04:55	2018-05-31 9:20:55	0h5m23s	0h10m36s	8.08	5.5
531	港珠澳大桥人工岛	2018-05-31,14-27-05...	N14	2018-05-31 8:50:05	2018-05-31 9:03:30	0h5m6s	0h8m18s	8.05	4.8
530	港珠澳大桥人工岛	2018-05-31,14-27-05...	P14	2018-05-31 8:20:26	2018-05-31 8:33:37	0h13m11s	0h8m25s	7.8	4.8
529	港珠澳大桥人工岛	2018-05-31,14-27-05...	R14	2018-05-31 8:04:29	2018-05-31 8:19:06	0h14m37s	0h9m37s	8.1	4.8
528	港珠澳大桥人工岛	2018-05-31,14-27-05...	T14	2018-05-31 7:48:11	2018-05-31 8:03:49	0h5m22s	0h10m15s	8.15	4.1
527	港珠澳大桥人工岛	2018-05-31,14-27-05...	C13	2018-05-30 13:48:30	2018-05-30 14:03:53	0h4m16s	0h11m6s	7.88	4.8
526	港珠澳大桥人工岛	2018-05-31,14-27-05...	E13	2018-05-30 13:30:03	2018-05-30 13:47:26	0h5m7s	0h12m15s	7.78	4.8
525	港珠澳大桥人工岛	2018-05-31,14-27-05...	G13	2018-05-30 13:14:38	2018-05-30 13:28:48	0h5m46s	0h8m23s	8.21	4.1
524	港珠澳大桥人工岛	2018-05-31,14-27-05...	I13	2018-05-30 12:57:13	2018-05-30 13:12:51	0h6m39s	0h8m58s	7.95	4.8
523	港珠澳大桥人工岛	2018-05-31,14-27-05...	K13	2018-05-30 11:21:50	2018-05-30 11:40:47	0h5m17s	0h13m39s	8.09	5.5
522	港珠澳大桥人工岛	2018-05-31,14-27-05...	M13	2018-05-30 11:06:09	2018-05-30 11:20:15	0h5m3s	0h9m2s	8.16	4.1
521	港珠澳大桥人工岛	2018-05-31,14-27-05...	O13	2018-05-30 10:51:27	2018-05-30 11:05:32	0h5m18s	0h8m46s	8.12	4.1
520	港珠澳大桥人工岛	2018-05-31,14-27-05...	Q13	2018-05-30 10:34:20	2018-05-30 10:50:38	0h4m58s	0h11m19s	8.05	4.8
519	港珠澳大桥人工岛	2018-05-31,14-27-05...	S13	2018-05-30 10:15:52	2018-05-30 10:33:18	0h17m26s	0h12m3s	7.87	4.8
518	港珠澳大桥人工岛	2018-05-31,14-27-05...	D12	2018-05-30 9:31:57	2018-05-30 9:45:39	0h13m42s	0h8m46s	7.92	4.8
517	港珠澳大桥人工岛	2018-05-31,14-27-05...	F12	2018-05-30 9:15:26	2018-05-30 9:30:34	0h15m8s	0h9m30s	8.08	4.8
516	港珠澳大桥人工岛	2018-05-31,14-27-05...	H12	2018-05-30 8:55:47	2018-05-30 9:14:21	0h18m34s	0h11m18s	8.14	4.8
515	港珠澳大桥人工岛	2018-05-31,14-27-05...	J12	2018-05-30 8:35:53	2018-05-30 8:54:19	0h18m26s	0h12m9s	8.03	4.8
514	港珠澳大桥人工岛	2018-05-31,14-27-05...	L12	2018-05-30 8:21:11	2018-05-30 8:34:43	0h13m32s	0h7m29s	7.7	4.8
513	港珠澳大桥人工岛	2018-05-31,14-27-05...	N12	2018-05-29 15:57:12	2018-05-29 16:11:16	0h14m4s	0h8m47s	8.06	4.8
512	港珠澳大桥人工岛	2018-05-31,14-27-05...	P12	2018-05-29 15:40:04	2018-05-29 15:55:29	0h15m25s	0h10m19s	8.05	4.8
511	港珠澳大桥人工岛	2018-05-31,14-27-05...	R12	2018-05-29 15:22:56	2018-05-29 15:37:41	0h14m45s	0h9m59s	8.15	4.8
510	港珠澳大桥人工岛	2018-05-31,14-27-05...	T12	2018-05-29 15:06:46	2018-05-29 15:20:51	0h14m5s	0h9m56s	8.19	4.8
509	港珠澳大桥人工岛	2018-05-31,14-27-05...	C11	2018-05-29 14:02:55	2018-05-29 14:19:42	0h16m47s	0h11m51s	8.16	5.5
508	港珠澳大桥人工岛	2018-05-31,14-27-05...	E11	2018-05-29 13:47:30	2018-05-29 14:01:33	0h14m3s	0h8m21s	8.14	5.5
507	港珠澳大桥人工岛	2018-05-31,14-27-05...	G11	2018-05-29 13:29:42	2018-05-29 13:45:25	0h15m43s	0h9m39s	8.15	5.5
506	港珠澳大桥人工岛	2018-05-31,14-27-05...	I11	2018-05-29 13:10:26	2018-05-29 13:27:08	0h16m42s	0h10m37s	8.16	5.5
505	港珠澳大桥人工岛	2018-05-31,14-27-05...	K11	2018-05-29 11:41:43	2018-05-29 11:55:28	0h13m45s	0h6m42s	8.14	4.8
504	港珠澳大桥人工岛	2018-05-31,14-27-05...	M11	2018-05-29 11:21:35	2018-05-29 11:38:45	0h8m24s	0h8m45s	8.45	5.5
503	港珠澳大桥人工岛	2018-05-31,14-27-05...	O11	2018-05-29 11:05:16	2018-05-29 11:18:28	0h6m22s	0h6m49s	8.22	4.8
502	港珠澳大桥人工岛	2018-05-31,14-27-05...	Q11	2018-05-29 10:48:09	2018-05-29 11:02:26	0h7m23s	0h6m53s	8.08	4.1
501	港珠澳大桥人工岛	2018-05-31,14-27-05...	S11	2018-05-29 10:32:57	2018-05-29 10:46:50	0h5m34s	0h8m18s	8.38	4.8
500	港珠澳大桥人工岛	2018-05-31,14-27-05...	D10	2018-05-29 9:46:50	2018-05-29 9:58:37	0h5m50s	0h6m56s	8.07	4.8
499	港珠澳大桥人工岛	2018-05-31,14-27-05...	F10	2018-05-29 9:33:04	2018-05-29 9:46:00	0h5m26s	0h7m29s	8.28	4.1

4. 点击**数据分析**，可以对桩形成深度时间曲线、填料时间曲线、电流时间曲线、综合时间曲线、统计曲线(桩形图仅做为参考，不做为质量控制的标准，综合时间曲线做为桩质量控制的标准)如下：

Clicking data analysis, the depth time curve of pile, filling time curve, current time curve, comprehensive time curve. (Pile shape can be used as reference only, not as basis for quality control, and the integration time curve is the basis for pile quality.)

深度时间曲线

Depth-Time curve

填料时间曲线

Pilling-Time curve
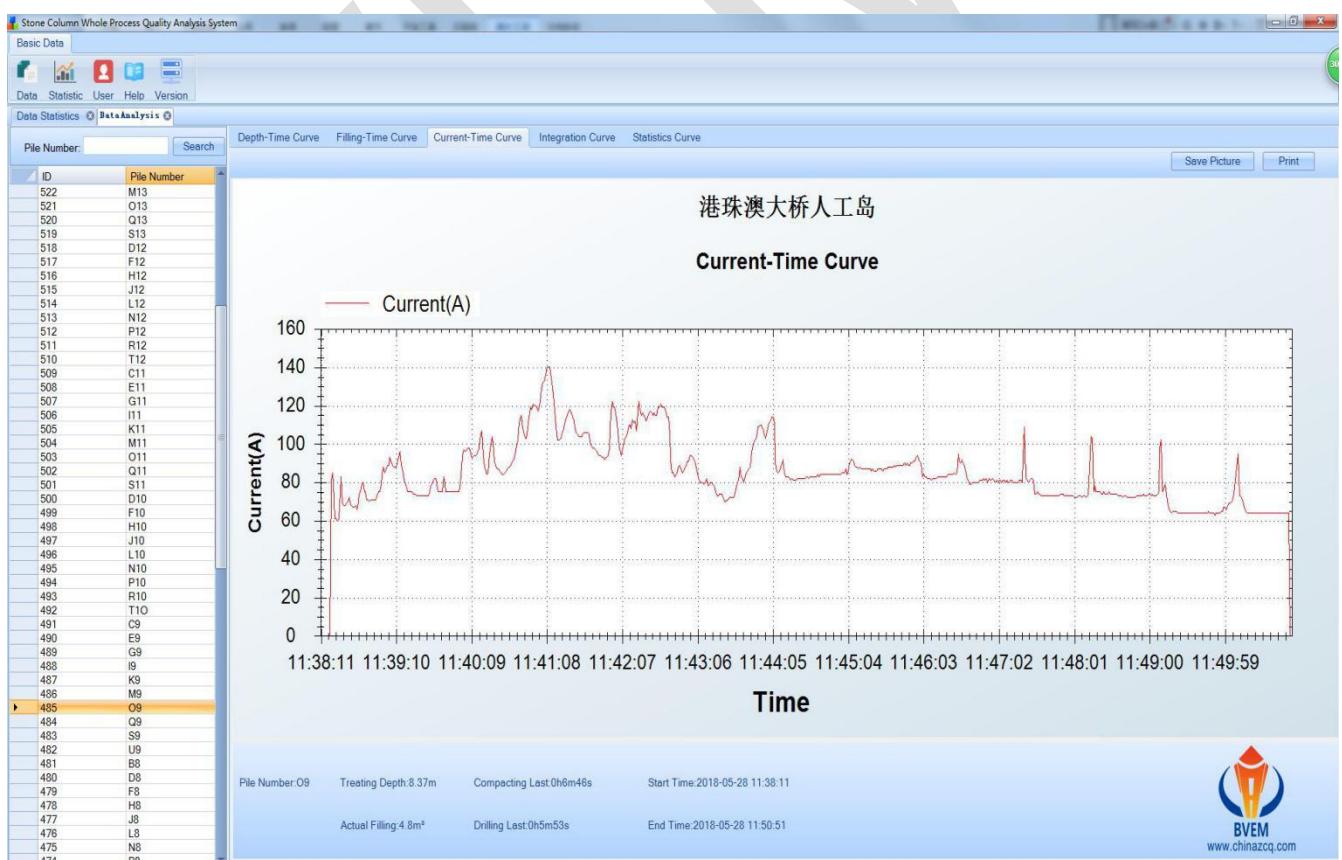
电流时间曲线

Current-Time curve

综合时间曲线

Integration-Time curve
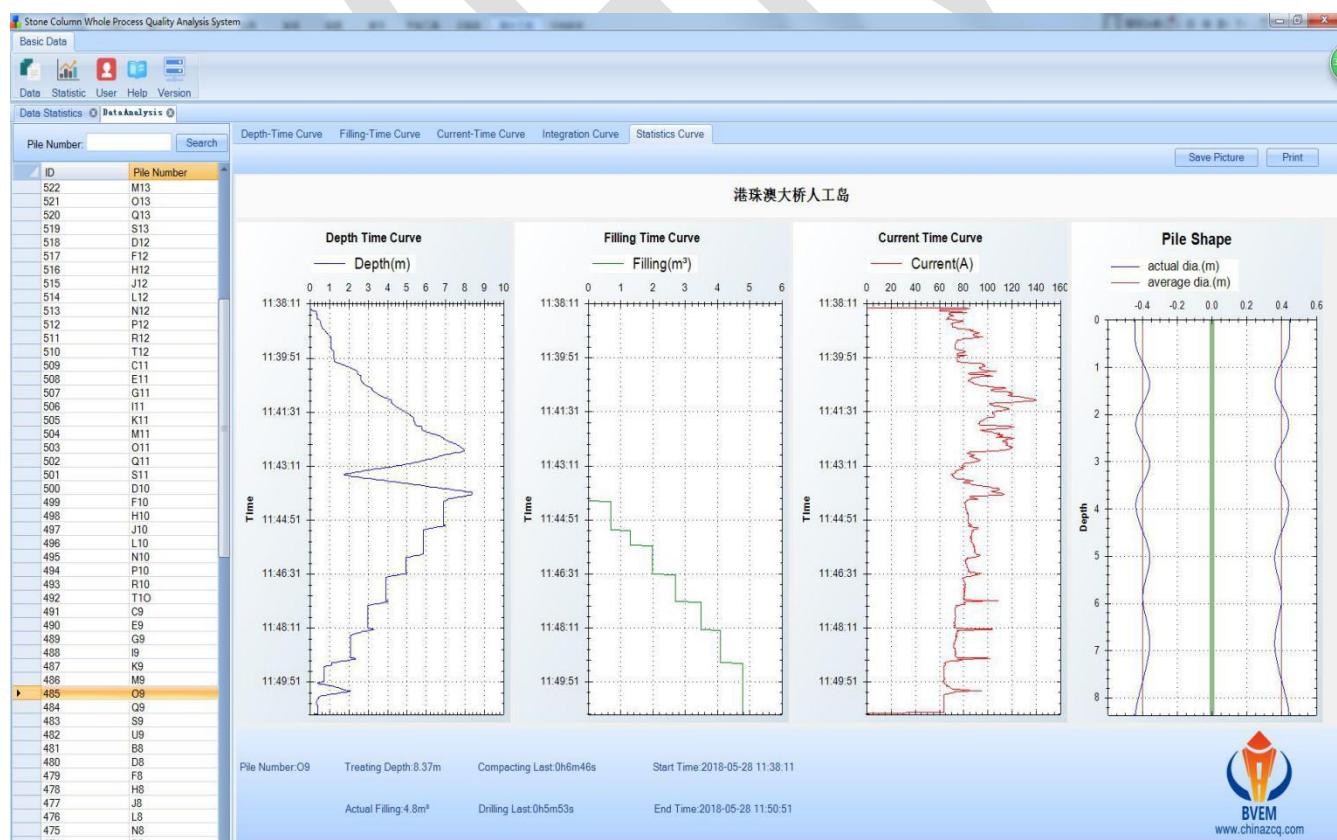
统计曲线

Statistics curve

5. **保存文件**按钮可以将曲线图保存成图片格式，**用户设置**可以更改登录的用户名和密码，原始用户名和密码均为默认为admin，点击**使用帮助**可以链接到记录仪的使用说明书，还可以点击打印按钮利用打印机打印。

Save the file button to save the graph as a picture format, you can change the login user name and password with user settings. The original username and password are both admin by default. click the help link to the recorder instruction for use. you can also use a printer to print by click on the print button.

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