ligent

Polishing Process

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Catalogue

Polishing Process

This chapter mainly describes the relevant information about the polishing process of this control system. iNexBot pioneered special instructions for edge solder joints polishing without complex programming.

It can realize automatic replacement of grinding wheels for various polishing, and the robot automatically polishes multiple times in different directions.

• Polishing of welding spatter

• Polishing of surface bumps and scratches

• Smoothing of weld reinforcement

• Smoothing of machining allowance

• Polishing of long and large welds

• Removal of edges and burrs

Combined with external axis equipment such as positioner, it can polish large sheet metal parts and ensure smooth and flat polishing effect

Combined with offline programming, it can achieve compliant polishing of complex curved workpieces

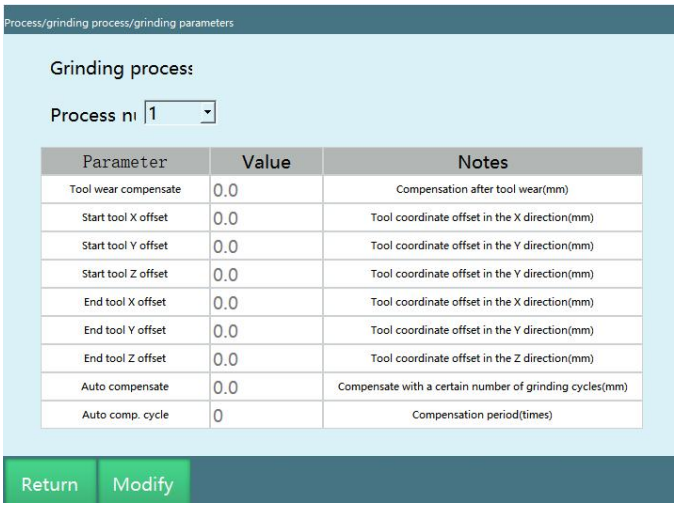
Combined with line scan laser tracking technology, it can achieve automatic programming of polishing

- 2-point positioning for straight line

- 3-point/4-point positioning for user coordinate system

> Polishing parameters

Turn on the teach pendant, enter the "Process" interface, select "Polishing process", and enter the "Polishing parameters" interface. At this time, do not click "Modify", only the process number can be modified. After selecting one of the process numbers, click the "Modify" button to perform modifications.



Process number: 1-9 process numbers are provided, each of which stores all the parameters below that process number.

Tool wear compensation: The value of polishing tool wear, which will be automatically compensated after filling in

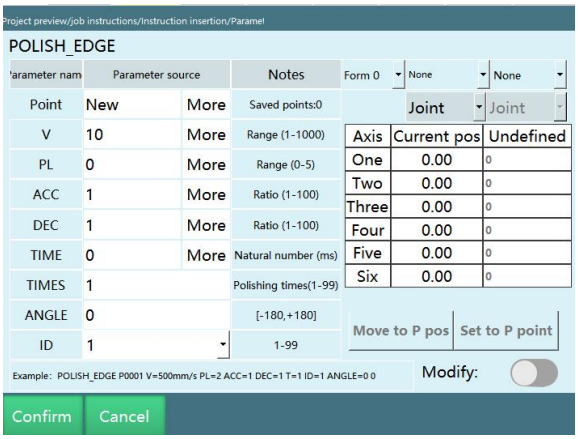
Tool offset at start point in X/Y/Z direction: Before polishing starts, the offset will be automatically performed at the start point

Tool offset at end point in X/Y/Z direction: After the polishing is completed, the offset will be automatically performed at the end point

Auto compensation period/auto compensation value: After every set number of polishing, all parameters will be automatically shifted by a certain distance

> Polishing instructions

POLISH_EDGE (edge polishing) instruction



At present, the polishing process only supports polishing in the straight line direction. Compared with the MOVL instruction, the POLISH_EDGE in the polishing process adds

the angle parameter (ANGLE) , the polishing times parameter (TIMES), and the process number parameter (ID).

V: linear motion speed, 2-1000 (mm/s)

PL: position level, 0-5

ACC: acceleration adjustment ratio, 1-100

DEC: deceleration adjustment ratio, 1-100

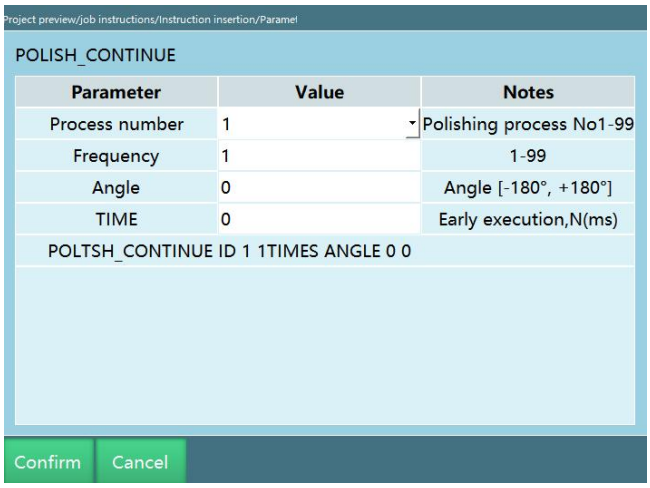
TIME: early execution time, natural number 1-999999

ANGLE: angle parameter, sets the polishing angle of the tool hand when polishing, -180° to +180°

TIMES: polishing times parameter, i.e. the number of times you need to polish, 1-99

ID: process number parameter, you can select the process number for which the polishing parameters have been set in the polishing process, 1-99

POLISH_CONTINUE (continue polishing) instruction



The main purpose of the POLISH_CONTINUE instruction is to facilitate the operator to check for leaks and fill in the gaps. During polishing, some parts may not be able to be polished well in the process, so this function is added to compensate for possible errors in some parts.

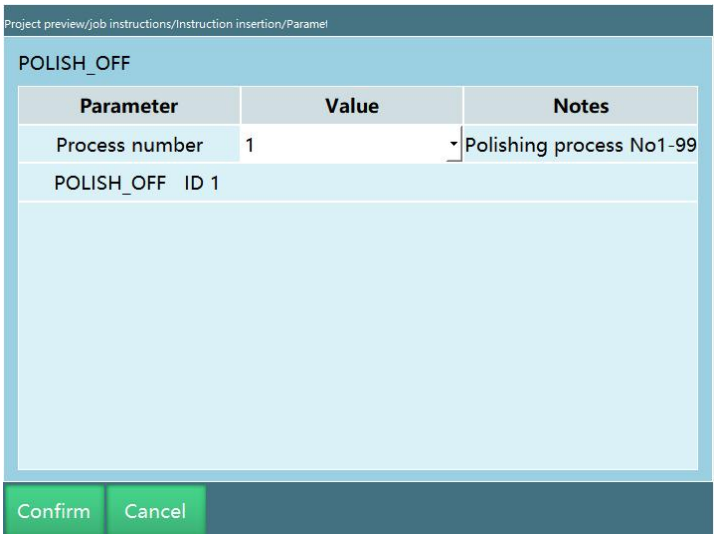
Process number: select the process number for which the polishing parameters have been set in the polishing process

Times: polishing times parameter, i.e. the number of times you need to polish, 1-99

Angle: set the polishing angle of the tool hand when polishing, -180° to +180°

TIME: early execution time, natural number 1-999999

POLISH_OFF (end polishing) instruction



End polishing instruction, run this instruction to end the polishing process.

Note: The whole process needs to be used together with the edge polishing. The polishing operator should do a good job of safety protection and examination data handover before the shift, prepare enough auxiliary materials such as abrasive sheets, steel wire wheels, sand paper and atomic ash, and check whether the operation of the abrasives is normal. The polishing operator must use the abrasives correctly when polishing to ensure the safety of use.

> Usage scenarios

Scenario 1

Polish a straight line

Polishing times: 1, polishing angle: 0 degrees (the angle of the current teach point), start polishing

After polishing, wait for the signal to continue polishing

The template is as follows:

```
NOP
INT I001 = 0                                                                    For the subsequent WHILE loop
MOVJ P001 VJ = 10 %  PL = 0 ACC = 10 DEC = 10                                   Run to safety point
POLISH_EDGE P002 V = 10mm/s PL = 0 ACC = 10 DEC = 10 T = 1 ID = 1 ANGLE = 0     Edge polishing start
WHILE (I001 == 0)                                                               Inner loop
WAIT(DIN2 == 1) T = 10                                                          Wait, judge whether to continue polishing
IF (DIN1 == 1)                                                                  Judge, receive signal to continue polishing
POLISH_CONTINUE ID = 1 TIMES = 1 ANGLE = 0                                      Continue polishing
ELSEIF (DIN1 == 0)
JUMP *E                                                                         Insert label, jump out of loop
ENDIFDIN1==0时,                                                                 Jump out of while loop when jumping out of if loop
ENDWHILEI001≠0
LABEL *E                                                                        Label, jump out of position
POLISH_OFF ID = 1                                                               End polishing
END
```

Scenario 2

Polish a straight line: polish 4 times at the teaching position, 2 times at a 15-degree angle in the positive direction, and 2 times at a 15-degree angle in the negative direction.

The template is as follows:

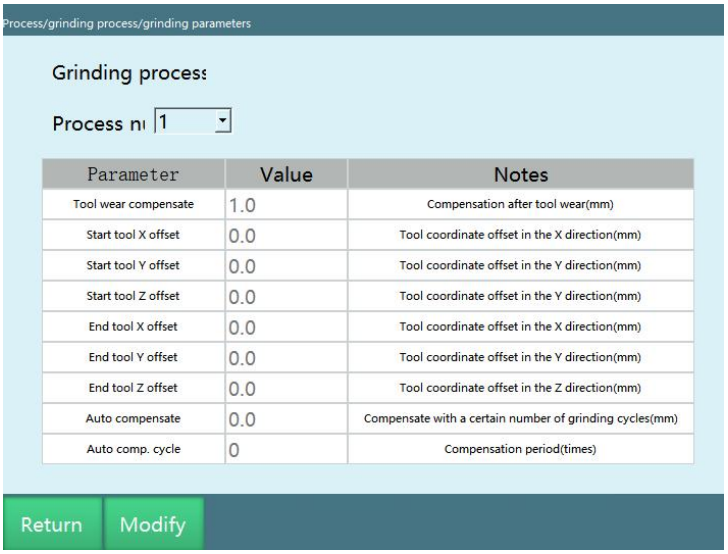
```
NOP
MOVJ P001 VJ = 10 %  PL = 0 ACC = 10 DEC = 10                                   Run to safety point
MOVL P001 V = 100mm/s  PL = 0 ACC = 10 DEC = 10                                 Run to the start of the polishing line
POLISH_EDGE P002 V = 10mm/s PL = 0 ACC = 10 DEC = 10 T = 4 ID = 1 ANGLE = 0     Edge polishing start
POLISH_CONTINUE ID = 1 TIMES = 2 ANGLE = 15                                     Continue polishing
POLISH_CONTINUE ID = 1 TIMES = 2 ANGLE = -30                                    Continue polishing
POLISH_OFF ID = 1                                                               End polishing
END
```

Scenario 3

The polishing head is worn by 1mm, and the parameters need to be adjusted

Setup steps

1. Go to "Process/Polishing process/Polishing parameters", select the corresponding process number and click "Modify"
2. Fill in 1 for "Tool wear compensation" and click "Save"



3. After the setup is complete, run the program

Scenario 4

Polish a straight line: polish 4 times at the teaching position, 2 times at a 15-degree angle in the positive direction by laser searching

The template is as follows:

```
NOP
MOVJ P001 VJ = 10 %  PL = 0 ACC = 10 DEC = 10                                  Run to polishing safety point
MOVL G001 V = 100mm/s  PL = 0 ACC = 10 DEC = 10                                Run to the start of the polishing line
POLISH_EDGE G002 V = 10mm/s PL = 0 ACC = 10 DEC = 10 T = 4 ID = 1 ANGLE = 0    Edge polishing start
MOVJ P004 VJ = 10 % PL = 0 ACC = 10 DEC = 10                                   Run to searching safety point
SEARCH_START ID = 1 TYPE = 0                                                   Search start
MOVL P002 V = 10 mm/s PL = 0 ACC = 1 DEC = 1                                   Move to P002
SEARCH_STATIC ID = 1 1 GP001 0.1                                               Store the static search results into GP001
MOVL P003 V = 10 mm/s PL = 0 ACC = 1 DEC = 1                                   Move to P003
SEARCH_STATIC ID = 1 1 GP002 0.1                                               Store the static search results into GP002
SEARCH_END ID = 1                                                              Search end
POLISH_CONTINUE ID = 1 TIMES = 2 ANGLE = 15                                    Continue polishing
POLISH_OFF ID = 1                                                              End polishing
END
```

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