Inspecting the PID issue

1. Inspecting the PID issue

If the power generation is lower than designed, or the operating voltage(MPP voltage) of the inverter is lower than designed, there may be some problems in the solar plant. One problem is PID. We propose the inspecting method to make clear if the problem is caused by PID issue.

If there is PID issue, the client can install ANTIPID(PV Booster) to recover and prevent PID problem quickly to improve the profit.

1.1 Voltage to the ground

Measurement Device: Voltmeter

Inspect the voltage between DC+ of the inverter and the ground when the inverter is running.

Inspect the voltage between DC- of the inverter and the ground when the inverter is running. (Table 1)

Table 1

No. of inverter	Voltage of DC+ to the ground (V)	Voltage of DC- to the ground (V)
Inverter 1#		
……	……	……

If the voltage of DC- to the ground is minus voltage, PID issue may happen.

1.2 The voltages of different strings

Measurement Device: Voltmeter

Inspect the voltages of different strings after disconnecting strings and inverter, as table 2.

The voltage should be inspected at the noon of one sunny day(without cloud).

Table 2

String number	String Voltage (V)	Example(V)
1		732
2		733
4		709
5		690
6		708
7		712
8		716
9		680
10		662
11		685
12		696
13		719
14		704
……	……	……

If voltages of different strings are different (**For example:** There is 71V difference between the highest value and the lowest), PID issue maybe exist.

1.3 The voltages of different modules

Measurement Device: Voltmeter

Inspect the voltages of every module in the low voltage string **(For example**: the 10# string) after disconnecting every modules as table 3.

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The voltage should be inspected at the noon of one sunny day(without cloud).

Table 3

| Module No. (from the negative side)	Module voltage（V）	Example(V)
1		18.95
2		21.41
3		21.15
4		25.27
……	……	……
18		35.08
19		34.9
20		35.9
21		35.15

If the voltage of the negative side is lower than the positive side(as the example), PID issue maybe exist.

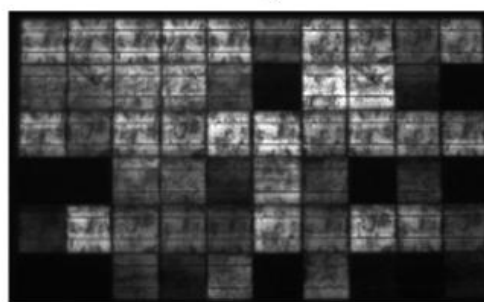## 1.4   Inspect the EL picture(if possible).

Measurement Device: EL camera

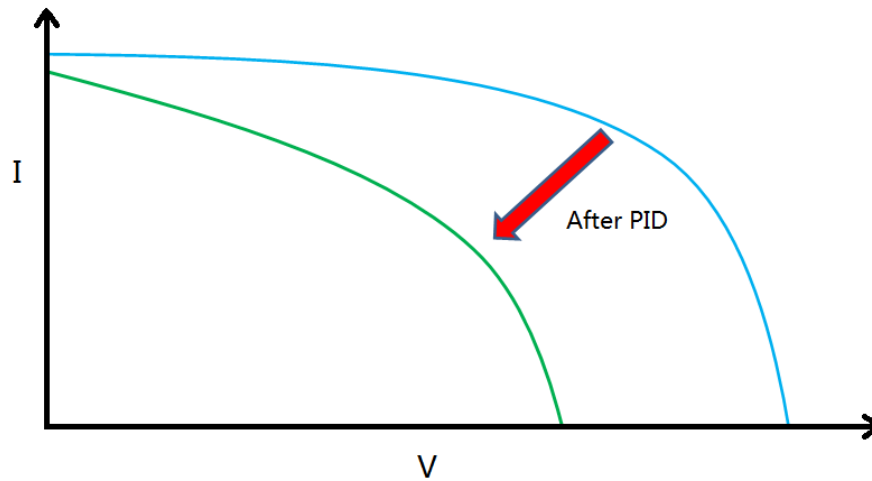Take the EL pictures of every module in the "1.3" string after disconnecting the modules.
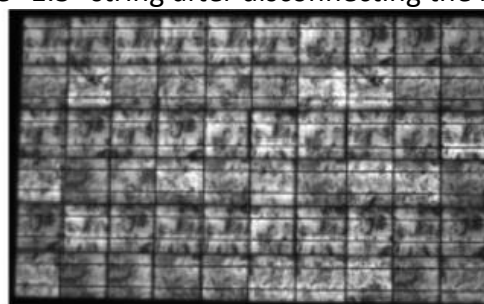
If there is some dark cell in the module, especially around the frame, PID issue maybe exist.

1.5   Inspect the IV curve(if possible)

Measurement Device: IV tester

Take the IV curve of every module in the "1.3" string after disconnecting the modules.

If the IV curve is checked at outside, the noon of one sunny day(without cloud) should be selected.

If the current, especially the voltage, FF are lower than the normal value, PID issue maybe exist.
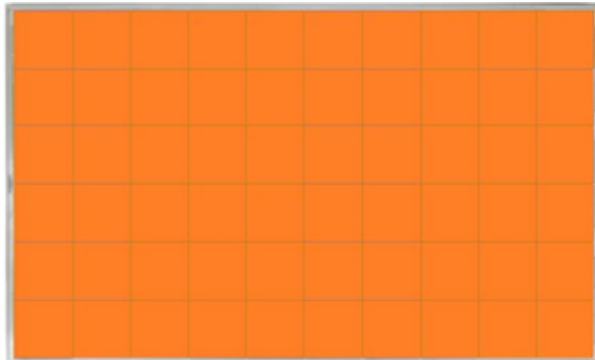
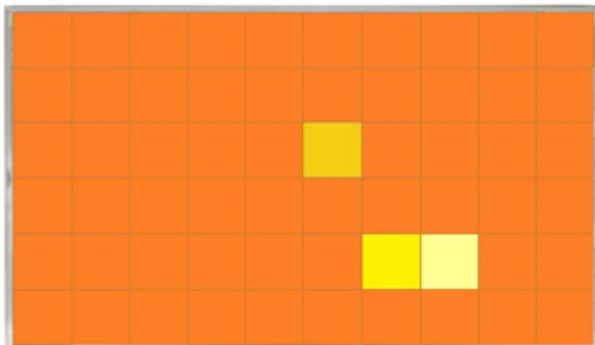## 1.6 Inspect the IR picture(if possible)

Measurement Device: IR camera

Take the IR pictures of every module in the "1.3" string when the plant is running.

The noon of one sunny day(without cloud) should be selected.

If there is some hot cell in the module, especially around the frame, PID issue maybe exist.

1.7 Inspection Summery

Item	Device	site	note
The voltage to the ground (1.1)	Voltmeter	Solar plant	Simple method. Almost ensure the PID problem.
String voltage(1.2)	Voltmeter	Solar plant	
Module voltage(1.3)	Voltmeter	Solar plant	

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EL(1.4)	EL camera(if possible)	Solar plant or Laboratory	Assist method.
IV(1.5)	IV tester(if possible)	Solar plant or Laboratory	Assist method.
IR(1.6)	IR camera(if possible)	Solar plant or Laboratory	Assist method.