Energy yield comparison of N-TOPCon bifacial and PERC bifacial in Yinchuan, Ningxia

modules was conducted in Yinchuan (38 ° 35 ′ N, 106 ° 1 ′ E) , Ningxia province, the northwest of China. The experimental results have proven that the energy yield gain of TOPCon bifacial modules is up to 3.82% higher than that of the PERC

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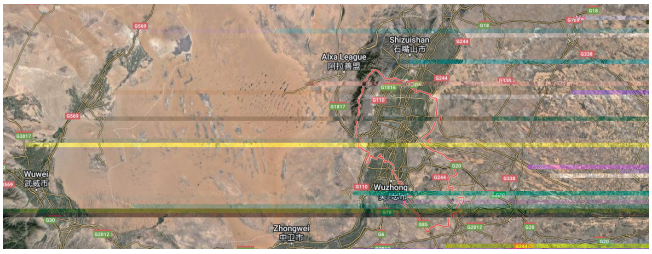

Figure 1.The location information of Yinchuan

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10 pieces N-TOPCon and 10 pieces P-PERC bifacial modules are installed in Ningxia (38.35ºN, 106.1ºE). The information of p-PERC and n-TOPCon bifacial module is shown in Table 1.

current tilt of 40°, 1 meter height above the grass ground. The model type of inverter is Sungrow 20RT-20 and the data is collected at every minute.

	P-type Bifacial Module	N-type Bifacial Module
Module Type	JKM540M-72HL4-BDVP	JKM560N-72HL4-BDV
No. of Modules/string	10 pieces	10 pieces
Ground condition	Grass	
Mounting	Fixed adjustable tilted 40°	
Minimum standoff	1m(From module bottom to ground)	
Inverter	20RT-20	
Collection Frequency	Once a minute	
Generation per watt kWh/kW	baseline	+3.49%

Table 1. System Information

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It is obvious that the N-TOPCon bifacial modules generate more energy than P-PERC bifacial modules from Figure 2.

On the one hand, the bifacility factor of N-TOPCon modules is 10%~15% higher than that of P-PERC modules. Therefore, the

on the same irradiation from rear side.

Another prominent difference is in temperature. The operating temperature of the N-TOPCon modules will lower down benefiting from lower temperature coefficient, and thus the power loss due to temperature is decreased.

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Since irradiation, installation tilt, the ground albedo or the module height above the ground, the temperature, will impact on energy gain. The higher the albedo or the height above the ground, the more irradiation the rear side could receive from the surrounding environment, and thus the more power generation. If in the same installation environment and design, the N-TOPCon bifacial modules show dominant advantage in energy generation with lower operating temperature coefficient. higher bifacility factor and superior low light performance in the morning, dusk and cloudy days.

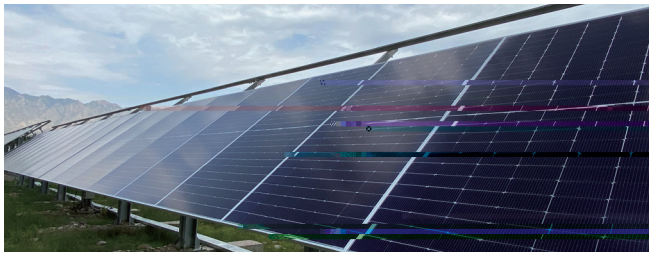

Figure 3. The project picture

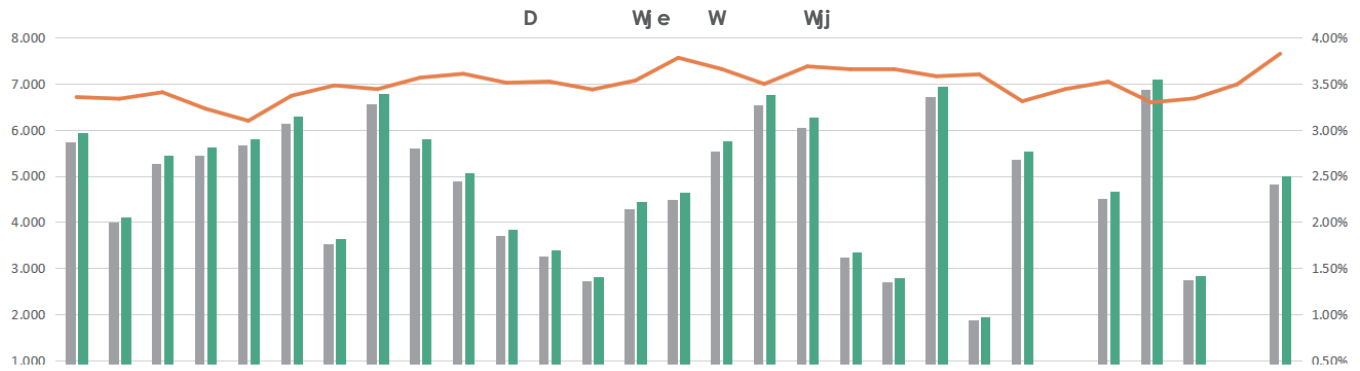

Figure 2. The Difference of Produced Energy in N-TOPCon and P-PERC Bifacial Modules