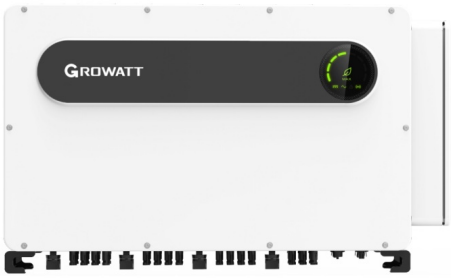

Growatt How to Solve the Power Factor Problem of C and I PV Power Stations Instructions

Contents

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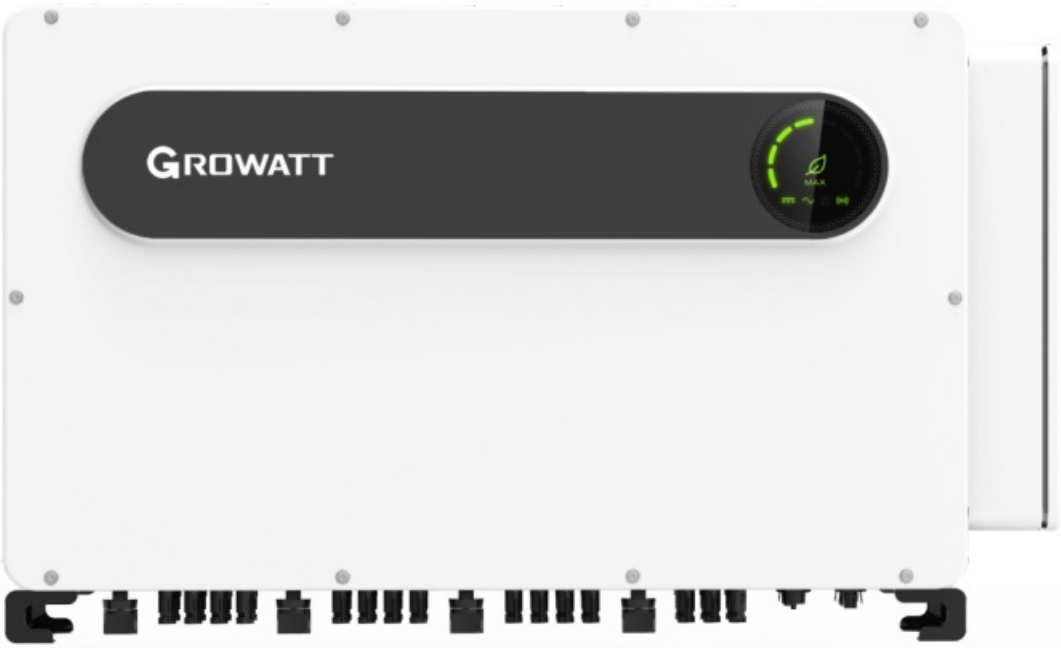
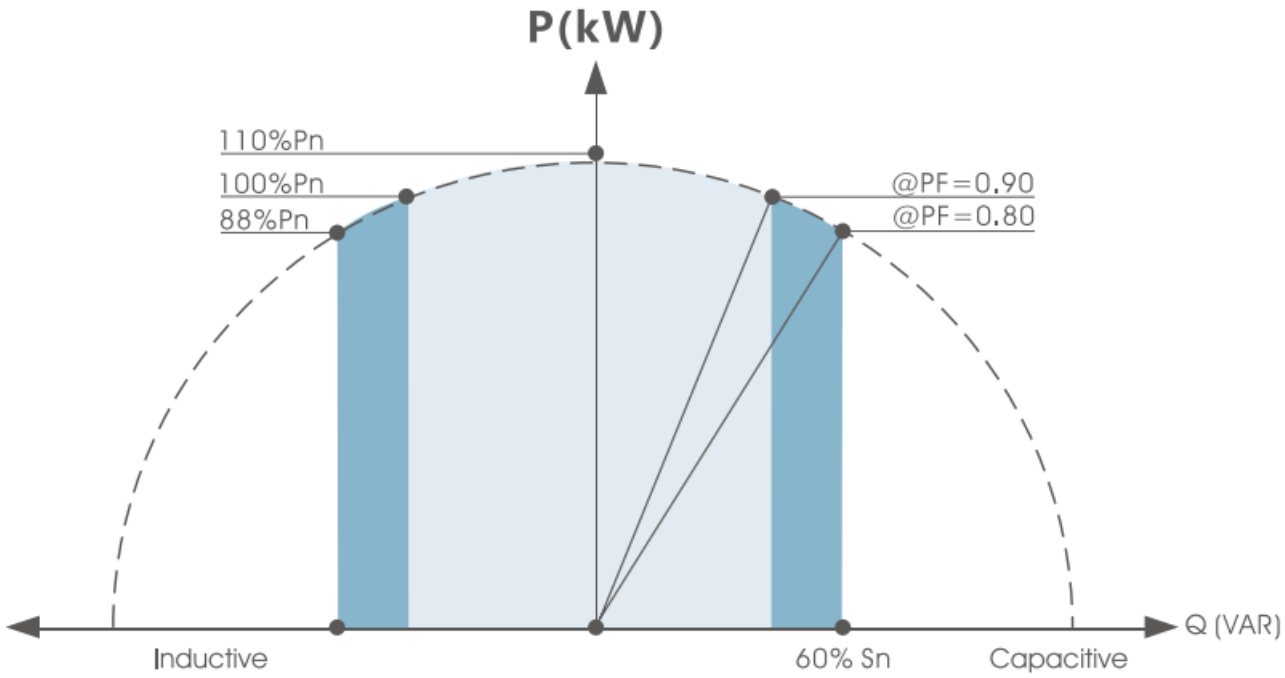


Power factor is an important indicator to measure whether an enterprise uses electricity economically and is

popularized in today's PV power generation. In this case, most enterprises will encounter a decrease in the power factor of the power grid after installing PV power generation, let's find out the specific reason.
In industrial enterprises, the commonly used motor equipment consumes both active power and reactive power from the grid, Active power is the power that converts electrical energy into other forms of energy such as mechanical energy light energy heat energy. Reactive power is more abstract. It is the power used to exchange electric and magnetic fields in a circuit and to establish and maintain magnetic fields in electric and gas equipment.
Power factor (cos) is the proportion of active power in the total reaction power (apparent power), equivalent:cos =P/S.(P is active power, S is apparent power, and power factor is also referred to as PF.]The relationship between reactive power @ and the first two Is $? P24+6?, Therefore, the closer the power factor is to 1, the less reactive power it consumes. On the contrary, the Since PV power generation only provides active power, while factory loads consume both active power and reactive power, the active power provided by PV power generation is consumed first, leading to the reduction of active power obtained from the grid, and all reactive power consumption only comes from the grid. According to the formula in cos introduced above, the power factor of the grid test point must be reduced, which may cause the power supply system pressure fluctuation, harmonic increase and other phenomena.
We have talked about the concept of power factor and the causes of power factor reduction, to solve the low power factor requires reactive power compensation, generally enterprises will improve the power factor by adding reactive power compensation devices, then how to solve such problems from the inverter side?



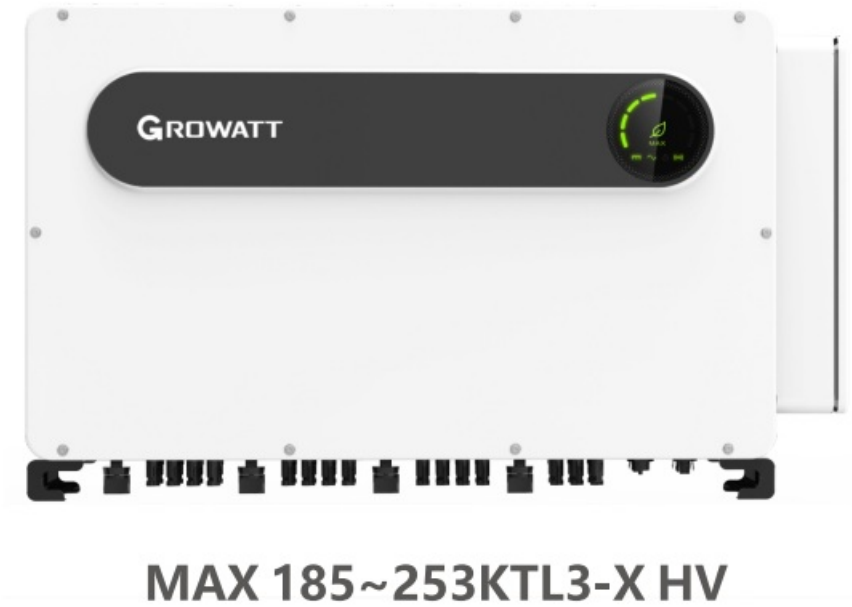
MAX 185~253KTL3-X HV Reactive Curve

There are two ways to set the inverter to generate reactive power, one is to set the power factor PF fixedly, which can be set in the range of =0.8 and output reactive power fixedly; the other is to use GROWATT smart energy manager(SEM), which can also be set in the range of ‡0.8. The advantage is that the reactive power required by the plant can be calculated according to the data of active power, reactive power and power factor at the detection point, and the output reactive power size of the inverter can be adjusted reasonably.
Performing reactive power compensation improves the power factor, which equates to increased efficiency, and has many positive implications besides reducing the load on the transformer and reducing transformer losses.

1. Reduce the power loss and electric energy loss in the grid. Through reactive power compensation, the line loss in the plant can be reduced, which directly lowers the power consumption and reduces the cost of electricity consumption.
2. Improve the quality of power, improve the efficiency of electricity equipment and reduce the failure rate. The reactive power compensation can improve the power quality, make the voltage and frequency more stable,

filter out certain power harmonics, so as to ensure that the electricity equipment work more stable, work more efficiently, and reduce the failure rate of electricity equipment.

3. Save investment. After the power factor is improved, the load of the plant changes to lower, the some transformer can supply more equipment which reduces the investment of substation equipment indirectly improve economic efficiency.



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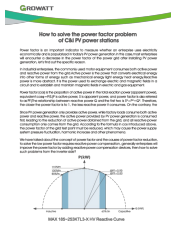
Documents / Resources

	Growatt How to Solve the Power Factor Problem of C and I PV Power Stations [pdf] Instructions How to Solve the Power Factor Problem of C and I PV Power Stations, MAX 185 253KTL3-X H V