

## SolarTech Power Solutions

# How to divide the sectors of the EMS of the communication base station

*LiFePO<sub>4</sub> Battery, safety*

*Wide temperature: -20~55°C*

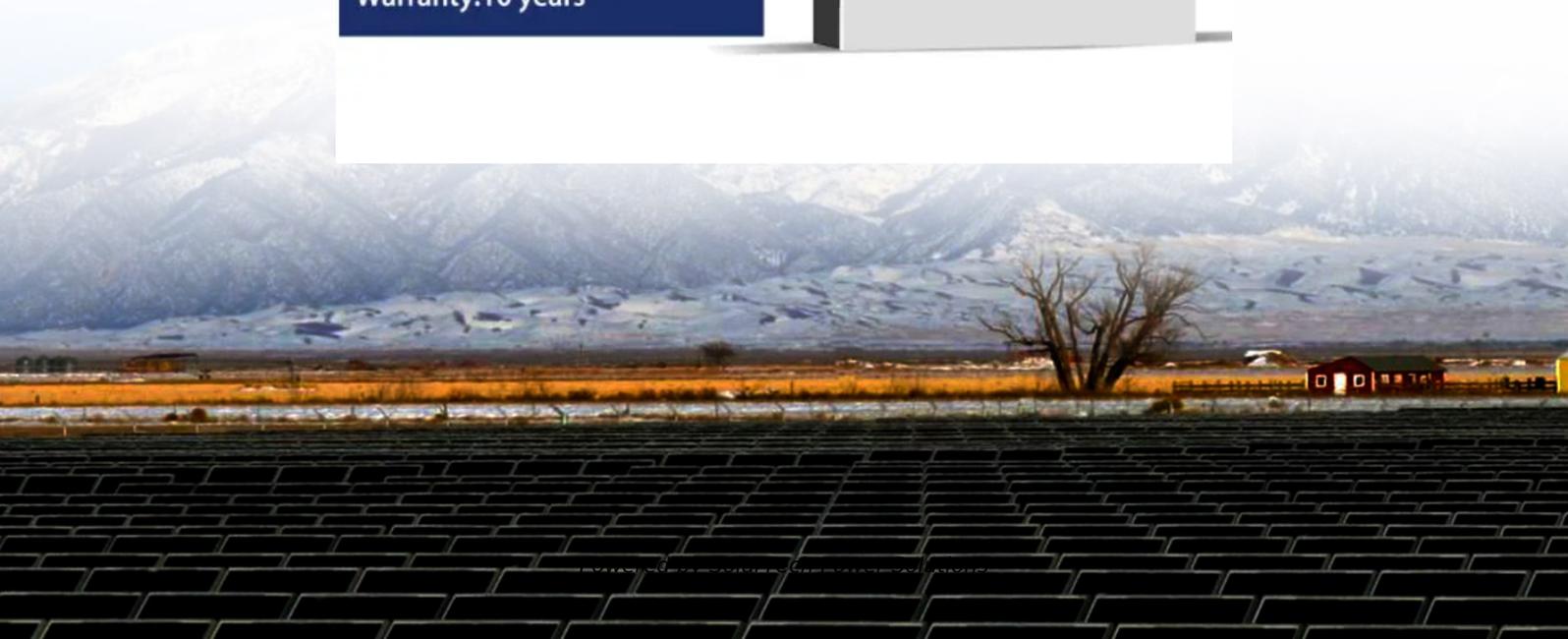
*Modular design, easy to expand*

*Wall-Mounted&Floor-Mounted*

*Intelligent BMS*

*Cycle Life: ≥ 6000*

*Warranty: 10 years*



## Overview

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What is a directional sector antenna?

Each sector can be considered as a new cell, with its own (set of) frequency channel (s). The base station can either be located at the corners of the original (large) cell. The use of directional sector antennas substantially reduces the interference among co-channel cells. This allows denser frequency reuse.

Where should a base station be located?

The base station can either be located at the corners of the original (large) cell. The use of directional sector antennas substantially reduces the interference among co-channel cells. This allows denser frequency reuse. Sectorization is less expensive than cell-splitting, as it does not require the acquisition of new base station sites.

How does cell sectoring reduce co-channel interference?

Cell sectoring, on the other hand, lessens the effects of co-channel interference by cutting down on the number of potential disturbances that each cell is subjected to. This is accomplished by dividing each cell into radial sectors using directional base station antennas.

Do sector antennas reduce interference (I<sub>0</sub>)?

By using sector antennas at the base stations, I<sub>0</sub> (interference) reduces. This allows a system to be deployed for a lower N (number of users per cell), resulting in a higher capacity system. However, each cell's channel group must be divided into one sub-group for each sector.

How many base stations will provide interference?

Only 1, instead of 6, of the first tier base stations or mobiles will provide interference. The S/I goes up by a factor of 6 relative to the omni case and by a factor of 2 relative to the 120-degree sectoring case. But, the system

complexity increases and the trunking efficiency decreases accordingly.

What is the difference between omni-directional mobile and primary base station?

The mobiles transmit omni-directionally, but the base stations only see those mobiles that fall within their 120-degree sectors. The primary base station thus sees only two, instead of six, interferers in addition to the primary mobile. Figure 16.4: Worst case uplink S/I for  $N=4$  and 120 sectoring.

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