

EARTH OBSERVATION SYMPOSIUM (B1)  
Earth Observation Applications and Economic Benefits (5)

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SPACEBORNE SAR TECHNOLOGY APPLICATION IN THE SMART GRID

**Abstract**

The grid is widely distributed in China. For the safe and efficient operation of the grid, building of the smart grid is necessary. Only in this way can allocate resources optimally and achieve long range and large scale power transmission.

Based on the urgent requirements of the smart grid, spaceborne SAR can take its advantage of all-weather, all-time, high resolution and wide area monitoring to achieve the large area, real-time, accurate early warning and monitoring of grid operation state. The spaceborne SAR technology is an effective way to ensure the safety and reliability of the grid power transmission.

Spaceborne SAR technology application in the grid including:

(1) Aided power transmission line planning. Spaceborne SAR technology can be used to monitor the landform, surface features and geological condition along the transmission line corridor. With the scientific guidance of the new transmission line planning, spaceborne SAR technology makes the grid more efficient and economical.

(2) Transmission tower and transmission line corridor monitoring. Spaceborne high resolution SAR can be used to monitor the deformation of the tower. Using polInSAR technology, the tree height and illegal building under the transmission line can be accurately measured, to ensure the transmission security.

(3) Natural disaster warning and assessment. Through monitoring the ground deformation around the tower by D-InSAR technology, give early warning to the possible disaster, such as landslide and debris flow, etc. After a natural disaster (ice-snow disaster, earthquake, flooding, typhoon), the evaluation of the influence to grid devices help decision maker to take actions and guarantee the safety of the grid.

Moreover, based on the satellite constellation, the full coverage of the grid will be realizable. This makes full use of the advantage of spaceborne SAR technology, and will accelerate the construction of smart grid.