

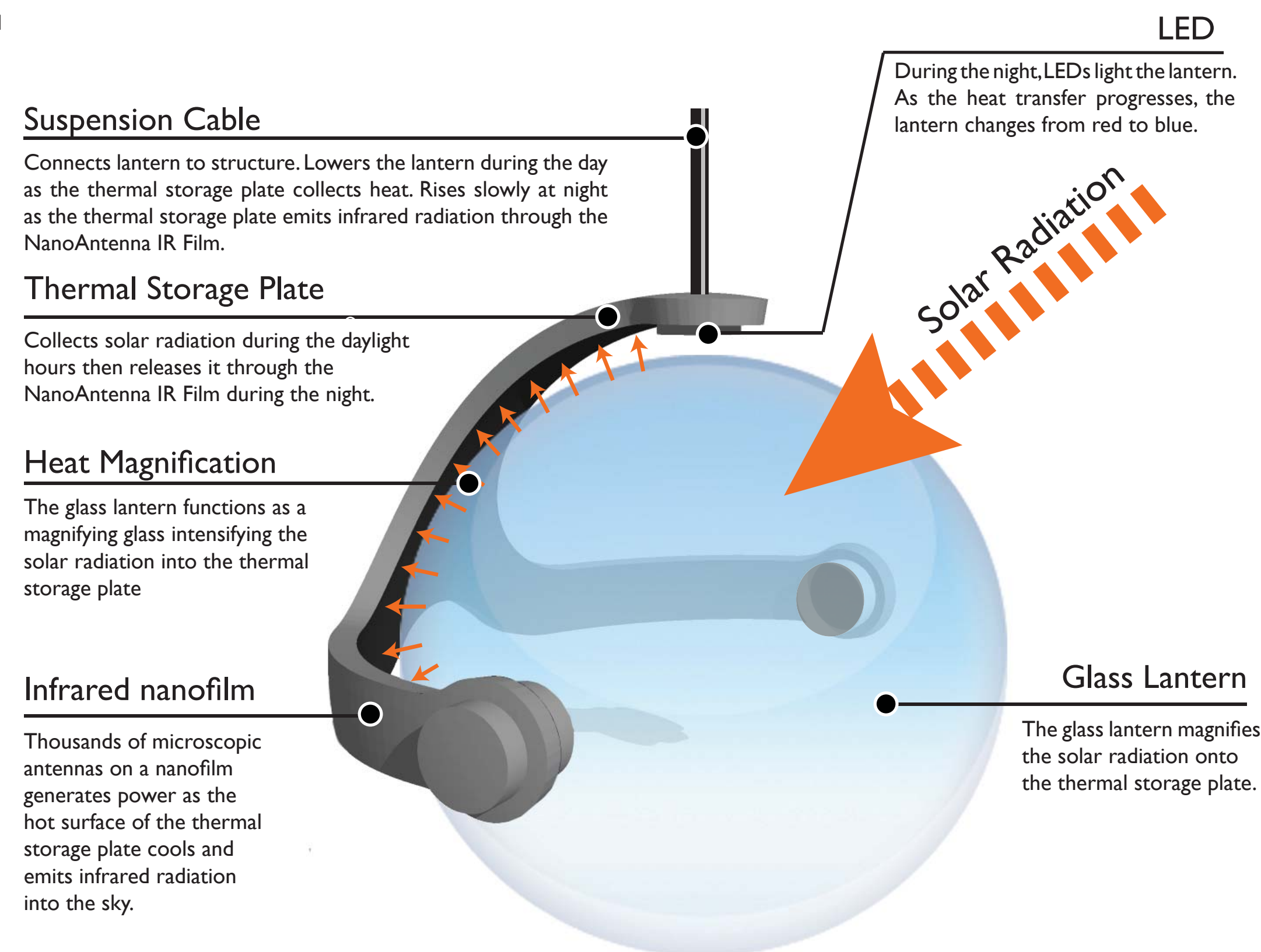
# RISE

## TRANSFORMATION



At night, the lanterns are lit with LEDs. The color of the lantern changes throughout the evening as the warmth of the thermal storage plate emits infrared radiation into the sky. The lanterns begin the evening red, but as the infrared radiation dissipates from the thermal storage plate, it shifts to yellow then purple and finally blue when the heat exchange is completed.

## LANTERN CONCEPT



### Suspension Cable

Connects lantern to structure. Lowers the lantern during the day as the thermal storage plate collects heat. Rises slowly at night as the thermal storage plate emits infrared radiation through the NanoAntenna IR Film.

### Thermal Storage Plate

Collects solar radiation during the daylight hours then releases it through the NanoAntenna IR Film during the night.

### Heat Magnification

The glass lantern functions as a magnifying glass intensifying the solar radiation into the thermal storage plate

### Infrared nanofilm

Thousands of microscopic antennas on a nanofilm generates power as the hot surface of the thermal storage plate cools and emits infrared radiation into the sky.

### LED

During the night, LEDs light the lantern. As the heat transfer progresses, the lantern changes from red to blue.

**Solar Radiation**

### Glass Lantern

The glass lantern magnifies the solar radiation onto the thermal storage plate.

### HEAT TRANSFER

Thermal energy moves from hot places to cold places. Heat transfer can be through conduction, diffusion, convection, advection, or radiation.

### INFRARED RADIATION

Only 51% of incoming solar energy is actually absorbed by Earth's surface of which 21% is then emitted into space as infrared radiation through the principle of heat transfer.

### COLLECTING INFRARED RADIATION

The collection of infrared radiation occurs at the microscopic level between diodes and antennas. During the night, when thermal energy is expelled from a heat sink, the emitting infrared radiation moves across microscopic antennas toward the sky. The thermal transfer of hot to cool across the antenna makes it act as a resistor which in turn generates voltage. A surface could be coated with a nanoscale film containing thousands of these microscopic circuits to generate power.

## WATERFRONT PARK

Copenhagen's success is contributed to its strategic location as a port city. It was important to make the design accessible to those traveling by boat. The design carves away a portion of the land to make a mini port where boats can leisurely congregate.

## RENEWABLE ENERGY SOURCE

