

NANOPELEX



SOLUTION BRIEF



## NANOPELEX™ FILMS FOR MOBILE POWER DISTRIBUTION



# HIGH TEMP CAPACITORS FOR OPTIMIZED MOBILE POWER DISTRIBUTION

## NANOPLEX FOR HIGH FREQUENCY SWITCHING

- NanoPlex based capacitors  
Provide temperature tolerance up to 135°C
- NanoPlex based capacitors are predicted to have 3-5X longer lifetimes than BOPP based capacitors
- NanoPlex based capacitors enable faster discharge with lower impedance, making power factoring more efficient.
- Over 20 global patents for NanoPlex film technology.
- NanoPlex is 100% US-engineered and manufactured - no reliance on China.



## NANOPLEX™ FILMS FOR MOBILE POWER DISTRIBUTION

### Mobile Power Distribution

Mobile power distribution for power substations refers to the use of portable, self-contained units that can provide temporary or emergency electrical infrastructure. These mobile substations are typically mounted on trailers or housed in containers, making them easily transportable to various locations as needed. They include essential components such as transformers, switchgear, protection and control systems, and sometimes even backup generators.

Mobile substations serve multiple purposes in the utility industry, including providing power during maintenance or upgrades of permanent substations, responding to emergencies or natural disasters that damage existing infrastructure, supporting grid expansion projects, and supplying temporary power to remote or off-grid areas. These versatile units can be rapidly deployed and commissioned, offering utilities the flexibility to maintain service continuity, manage seasonal load fluctuations, and address unexpected power demands without the need for extensive permanent infrastructure.



- **Emergency Response** - In the aftermath of natural disasters or other emergencies, mobile power systems can quickly restore electricity to critical infrastructure and affected communities. Capacitors in these systems help ensure the power delivered is stable and of high quality, which is crucial for sensitive equipment in hospitals, emergency services, and communication networks.



- **Temporary Power for Events** - Large-scale events, such as concerts, sporting events, or festivals, often require substantial temporary power. Mobile distribution systems with integrated capacitors can provide reliable and efficient energy, ensuring the smooth operation of lighting, sound systems, and other equipment.



- **Construction and Industrial Projects** - Construction sites and temporary industrial operations frequently need robust power solutions. Mobile power systems with capacitors can deliver the necessary power quality and stability for heavy machinery and sensitive electronic equipment.



- **Remote Locations** - Mobile power systems can provide a flexible solution in areas where permanent power infrastructure is unavailable or economically feasible. Capacitors in these systems help maintain power quality despite the challenges of remote locations, such as long transmission distances or variable loads.



- **Grid Support and Maintenance** - During maintenance or upgrades of permanent power infrastructure, mobile systems can provide temporary support to ensure continuity of service. Capacitors play a crucial role in matching the power quality of the mobile system to that of the primary grid.



- **Military Operations** - Mobile power systems are essential for military operations in remote or hostile environments. Capacitors in these systems help ensure reliable power for communications, medical equipment, and other critical applications.



## The Role of NanoPlex Based Capacitors in Mobile Power Distribution

Mobile capacitor banks are packaged, factory-assembled reactive compensation systems that can be easily transported and deployed at different substations as needed. These systems typically consist of modular fixed or switched capacitor steps mounted on a trailer. Capacitors play a vital role in mobile power distribution, particularly in ensuring smooth and efficient power delivery to high-performance chips in smartphones and other portable devices. Their primary function is to serve as decoupling components in mobile power distribution networks (PDNs). Capacitors play several crucial roles in mobile power distribution for power substations:

- **Reactive Power Compensation** - Mobile capacitor banks serve as packaged, factory-assembled reactive compensation systems that can be easily transported and deployed at different substations to support various power demands including power factoring, stabilizing voltage levels, and reducing line losses.
- **Voltage Regulation:** Capacitors assist in maintaining stable voltage levels across the distribution network, especially during varying load conditions from seasonal load management in agricultural or industrial applications and peak load compensation when reactive power requirements exceed installed capacity.
- **Power Quality Improvement** - Mobile capacitor banks contribute to power quality improvement by mitigating harmonics through the creation of resonant circuits that filter out specific harmonic frequencies, reducing voltage fluctuations by providing reactive power compensation
- **Flexibility and Rapid Deployment** - The mobile nature of these capacitor banks offers several advantage of rapid deployment to address temporary or emergency power needs, the ability to relocate as power demands change across different parts of the grid, and support during maintenance of existing fixed capacitor banks

By fulfilling these roles, capacitors are essential in addressing the challenges of power delivery in modern mobile devices, enabling higher performance in smaller form factors while maintaining power efficiency.

## MOBILE POWER DISTRIBUTION

