NANOPLEX

peak

SOLUTION BRIEF

PEAK FOR POWER GRIDS

PEAK NANOPLEX™ FILMS FOR POWER GRIDS

2-4X MORE ENERGY THAN INDUSTRY STANDARD

NANOPLEX FOR FUSION ENERGY

- NanoPlex is 100% US-engineered and manufactured – no reliance on China.
- NanoPlex-based capacitors enhance the scale and stability of the US power grid by delivering burst power and improving step-up and step-down power transmission.
- NanoPlex-based capacitors optimize power factor correction from multiple generation sources by consolidating up to 2-4x more energy than industry standard BOPP film.
- NanoPlex-based capacitors can be up to 50% smaller and lighter, enabling more powerful mobile power delivery.
- NanoPlex-based capacitors enable faster discharge with lower impedance, making EV charging more efficient.
- NanoPlex-based capacitors can be rated up to 135 degrees C, which is over 35 degrees C better than conventional capacitors.

NANO**PLEX**™

NanoPlex Optimizes Power Grid Scalability and Stability

Global power grids are a hybrid of traditional and renewable energy sources. They must integrate these diverse energy sources while providing predictable power delivery and meeting utility grid reliability requirements (voltage stability, phase stability, etc.). NanoPlex-based capacitors are leveraged by leading power suppliers, capacitor designers, and mobile energy deployments to ensure that the power delivered meets the needs of homes, industries, and other energy consumers

4 Ways NanoPlex Helps Power Grids

According to the U.S. Energy Information Administration, demand for the electric power grid in the United States will increase by 27 percent by 2050. Significant improvements to the grid infrastructure are needed to meet this demand and maintain safe reliability, in conjunction with new technologies that will make energy flow more efficient, affordable, and reliable. At Peak, we see four ways NanoPlex-based capacitors can achieve these objectives:

1 | **Hybrid Energy Factor Correction** - NanoPlex-based capacitors improve power factor correction across hybrid (wind, hydro, solar) and conventional energy creation sources to optimize step-up and step-down transmission. We enhance energy transfer efficiency by mitigating the phase difference between voltage and current.

2 | **Energy Storage and Stabilization** – NanoPlex-based capacitors assist in storing and discharging energy efficiently. In transmission and distribution, NanoPlex-based capacitors help manage energy spikes or fluctuations, stabilizing the voltage and ensuring a consistent power supply to the grid.

3 | **Mobile Voltage Support** - Mobile trucks equipped with NanoPlex-based capacitors can provide immediate voltage support to substations during maintenance, emergencies, or temporary events. Capacitors can stabilize voltage, ensuring the substation receives a consistent and reliable power supply.

4 | **Step-Up and Step-Down Optimization** – NanoPlex-based capacitors can optimize step-up power transmission to compensate for the inductive issues, reducing reactive power and enhancing voltage levels. In step-down environments, we can manage excess voltage, stabilize voltage levels, and ensure the electricity supplied meets the required parameters.

Peak NanoPlex Plays Across the Power Grid

Global power grids are a hybrid of traditional and renewable energy sources. They must integrate those diverse energy sources and provide predictable power delivery to industry and consumers. NanoPlex-based capacitors are used to optimize power factor correction from hybrid power generation sources, manage step-up and step-down power transmission, and enable mobile power solutions to improve the scalability and stability of power grids.

Peak is The Leader in Nanotechnology Metamaterials

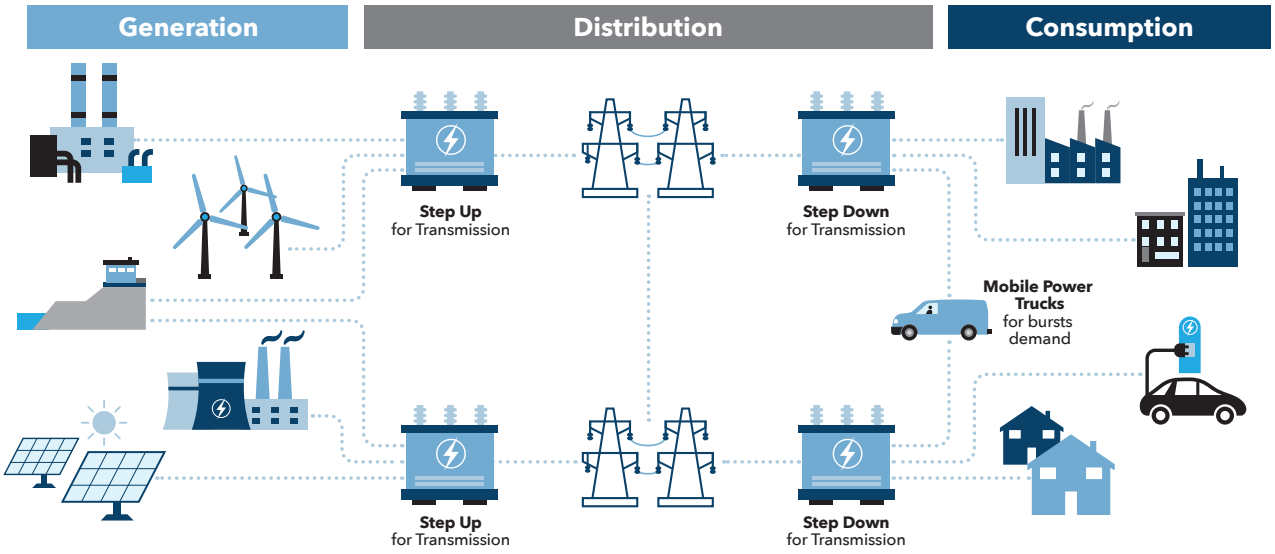
Peak's NanoPlex is a new generation of metamaterial that can be programmed and optimized for various applications. Our researchers, scientists, and engineers develop solutions based on our NanoPlex meta-material. NanoPlex provides three core capabilities that change how we can control and manage light, power, and structural strength.

1 | **Optimized Power Storage** – Capacitors based on NanoPlex can be used for electric. vehicles, Electromagnetic Aircraft Launch Systems (EMALS), fusion energy, and scaling and stabilizing power grids.

2 | **HawkAI Optics** – Our Layered Gradient Refractive Index (LGRIN) lenses, made from NanoPlex, improve the field of vision (FOV), color clarity and distance of optics, for night vision goggles, fire control systems, and UAS reconnaissance.

3 | **Energy Management Film Systems** – NanoPlex films can manage and reduce radiation and thermal cooling to protect equipment and stabilize operating temperatures in sensitve applications like satellites and aerospace applications.

According to the US Energy Information Administration, electricity demand in the United States stood at roughly 4,000 terawatt hours in 2022. The market is projected to rise and reach 5,200 terawatt hours by 2050 – an increase of approximately 27 percent.*



PeakNano Films, LLC
7770 Hub Parkway, Ste 8
Valley View, OH 44125

pnf@peaknano.com
www.peaknano.com
+1 216.264.4818