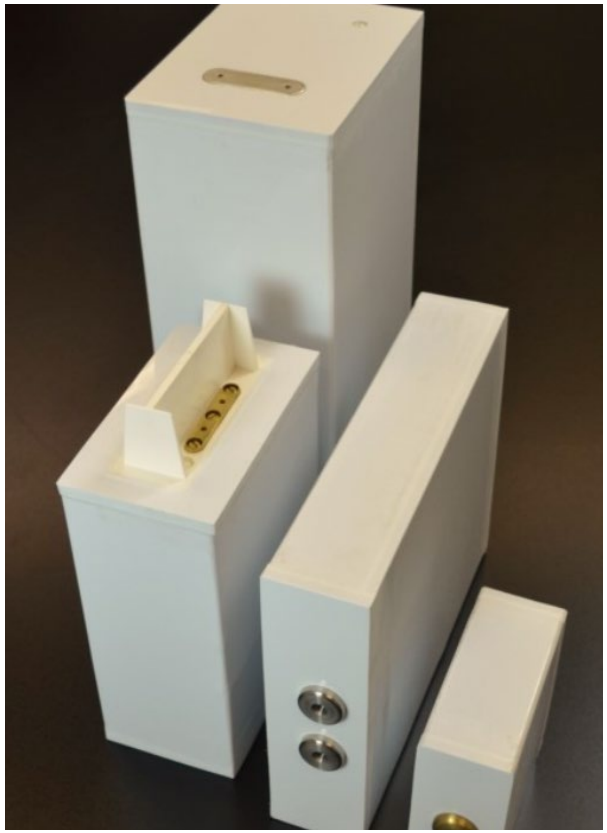
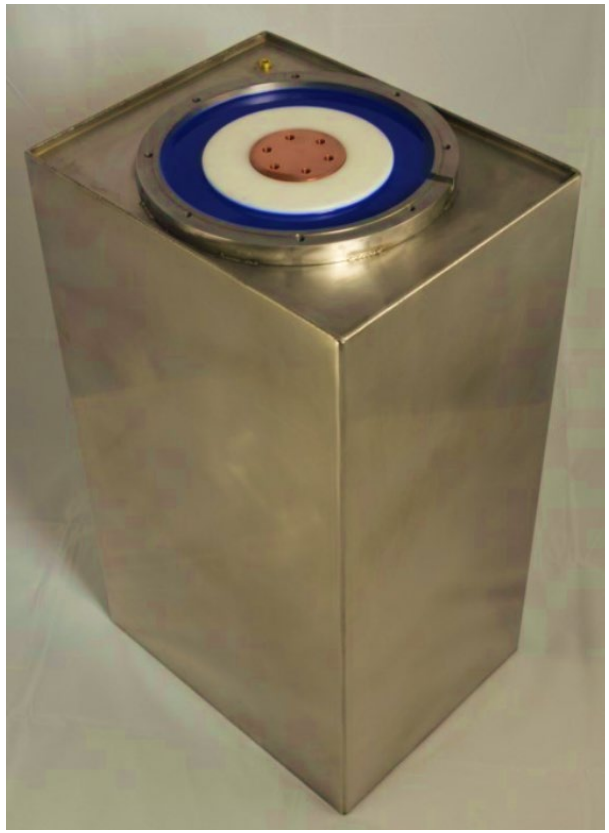




Custom, High-Power Capacitors for Demanding Applications

About CDE's Custom, High-Power Capacitor Division

Cornell Dubilier Electronics is a technology leader and manufacturer of high-quality capacitors.

Our recent acquisitions position us as a global leader in the design and manufacture of high-power film capacitors for medical, military, research and industrial applications.

Recent Acquisitions

March 2019
Purchased assets of Aerovox, Inc

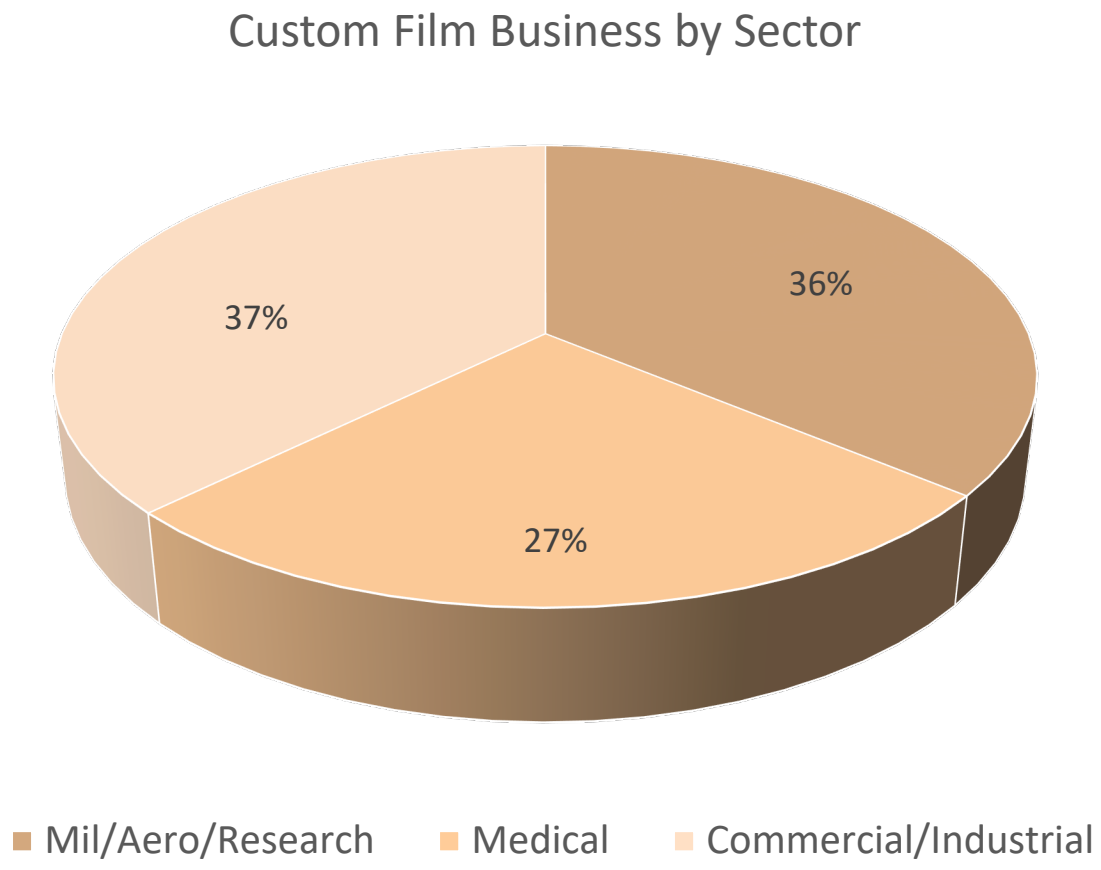
CD Aero, LLC
New Bedford, MA

Dec. 2020
Purchased assets of NWL's capacitor division

CD Snow Hill, LLC
Snow Hill, NC

CDE CORNELL DUBILIER
ENERGIZING IDEAS

About CDE's Custom, High Power Capacitors Division

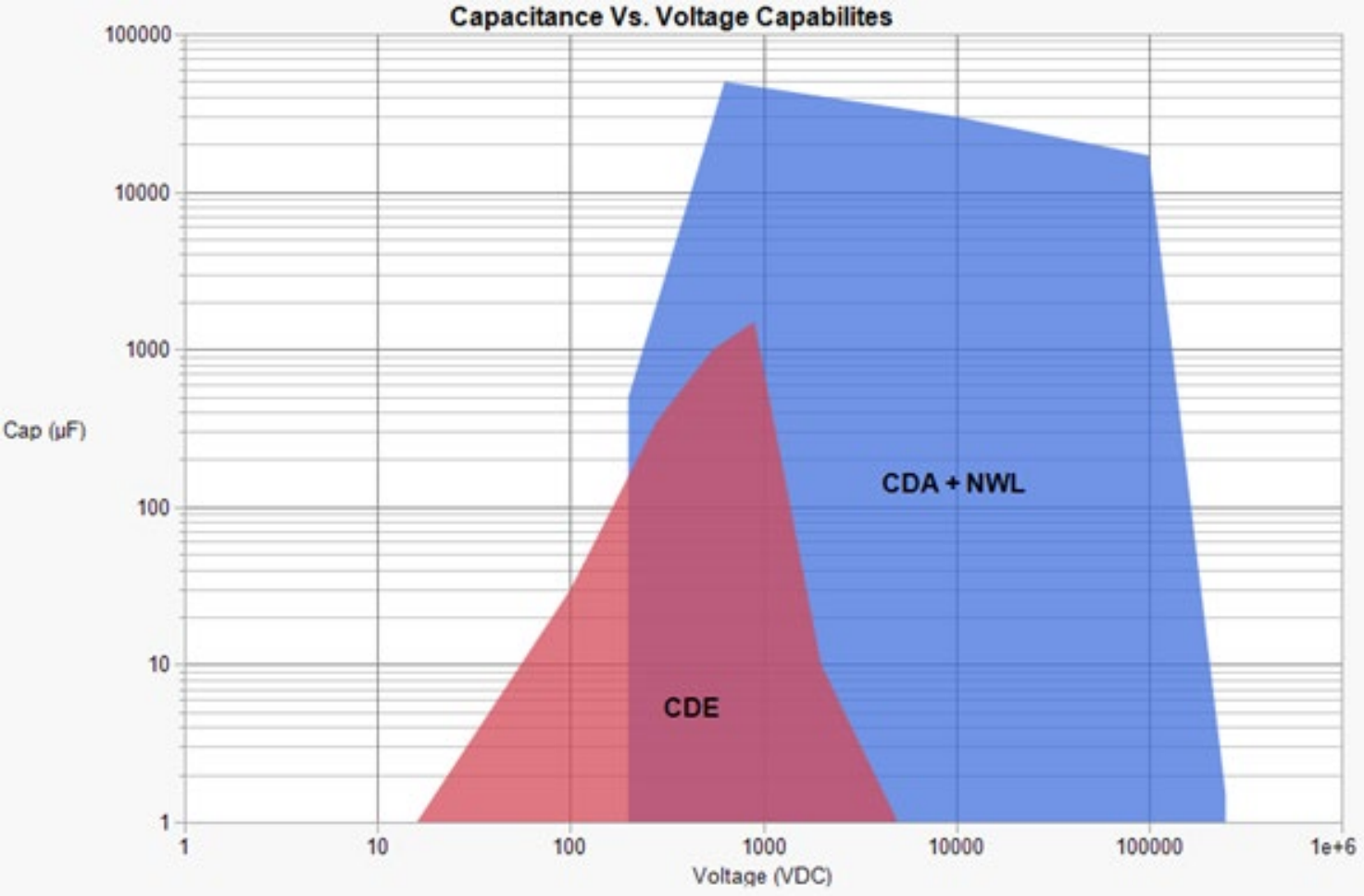


CDE CORNELL DUBILIER
ENERGIZING IDEAS

Extensive High-Power Capacitor Design Capability

- **Voltage:** AC 100 to 25,000 Volts
  DC 100 to 200,000 Volts
- **Capacitance:** 1 nF to 50,000 µF
- **Current:** 5000 Amps RMS, 250 kAmp peak
- **Energy and Power:** 350 kJ/unit, 12,000 KVAR
- **Physical Size:** 0.25 cubic inches (ounces) to
  10 cubic feet (>500 lbs)

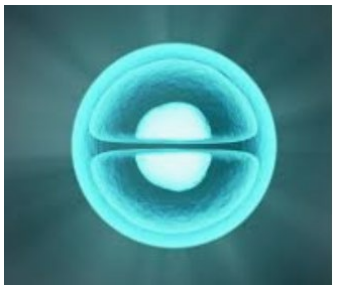
Expansion of Capabilities Range: Capacitance Versus Voltage



CDE CORNELL DUBILIER
ENERGIZING IDEAS

Major Markets and Applications

- **Medical**
  - Lasers surgical tools
  - Oncology radiotherapy
  - X-ray, Electric Pulse Therapy
  - External Defibrillators
- **Military**
  - Electromagnetic Propulsion
  - Radar Systems, Lasers
  - Medium Voltage Drives
- **Aerospace**
  - Magnetos, EMI Filters
  - Radar Systems
  - Inverters, Motors
- **Induction Heating**
  - Forging, Melting, Hardening
  - Automotive, Aerospace, Industrial
  - Crystal Growing, Coating
- **Research**
  - Fusion, High Energy Physics
  - EM Launchers, Welders, Pulsers
  - Universities, Labs, Industrial, Private



CDE CORNELL DUBILIER
ENERGIZING IDEAS

AC Resonant

Applications

Forging, Melting, Hardening
Automotive, Aerospace, Industrial
Crystal Growing, Coating

Custom Capabilities

- KVAR up to 15,000
- Vrms up to 8,500
- Irms up to 5,000
- Frequency up to 500 KHz
- Available in drawn or custom welded metal cases
- Water-cooled construction available
- Wide variety of terminations available

https://www.cde.com/custom-solutions/ac-resonant-and-harmonic-filter

AC Harmonic Filtering

Applications

AC harmonic input/output filtering for large inverter systems

Custom Capabilities

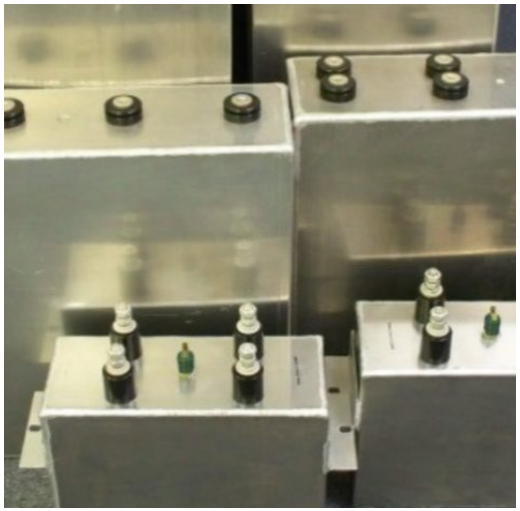
- KVAR up to 500
- Vrms up to 8,500
- Irms up to 400 A
- Single-phase and 3-phase available
- Designed for high harmonic content (%)
- Available in extruded or custom welded metal cases
- Wide variety of terminations available

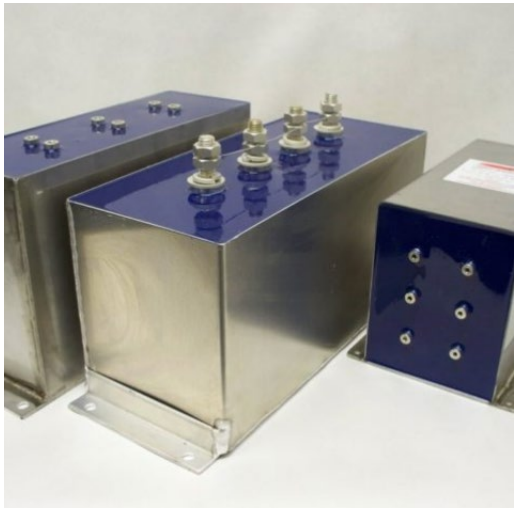
https://www.cde.com/custom-solutions/ac-resonant-and-harmonic-filter

DC Link & Filtering

Applications

Inverters: industrial, military, traction and renewable energy





Custom Capabilities

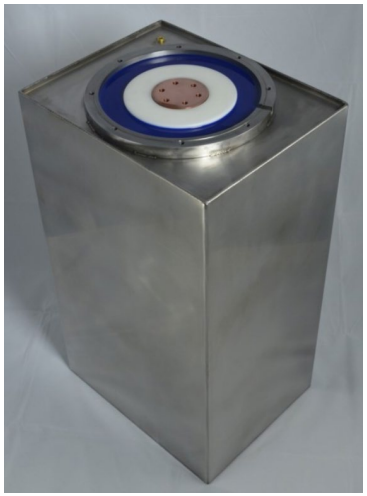
- Capacitance: up to 50,000 uF
- Voltage (DC): up to 100,000 VDC
- Current (RMS): up to 3,500 amp
- Inductance (nH): As low as 25nH
- Energy Density: Up to 3 J/cc
- Metal cases or isolated plastic cases available
- Water-cooled construction available
- Wide variety of terminations available

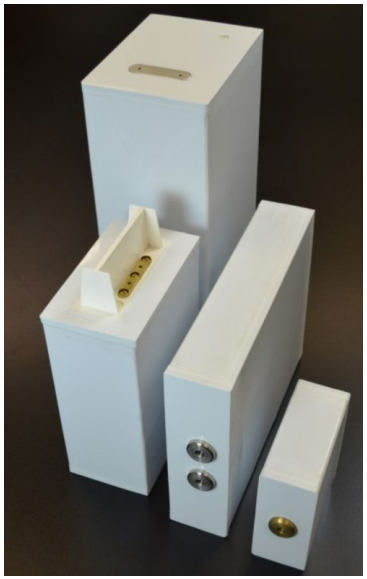
https://www.cde.com/custom-solutions/dc-link-dc-filtering

Pulse Discharge

Applications

Electromagnetic launchers, radiotherapy, defibrillator, pulse forming networks, particle accelerators





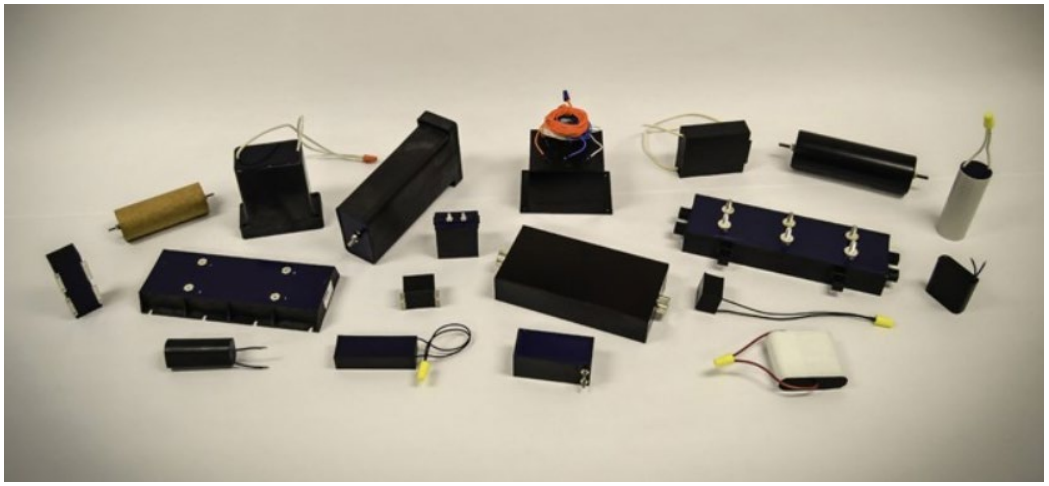
Custom Capabilities

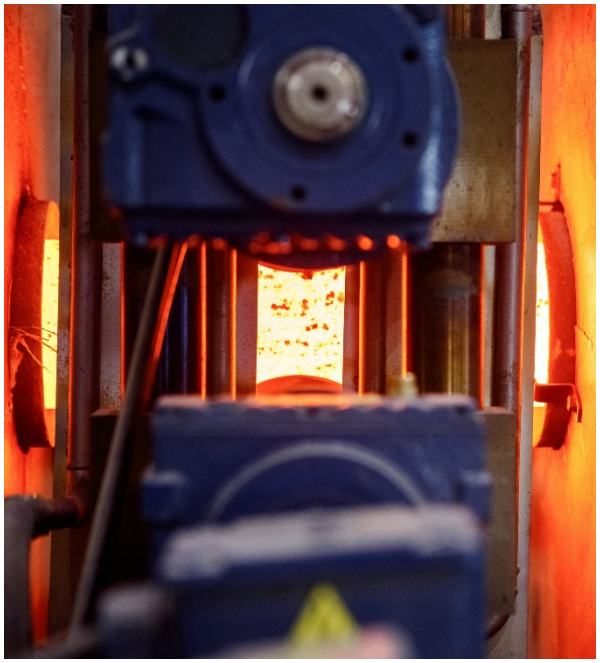
- Capacitance: up to 50,000 µF
- Voltage (DC): up to 450,000 VDC
- Current (Peak): up to 250,000 kA
- Inductance (nH): As low as 25nH
- Energy Density: Up to 3 J/cc
- Designs optimized for high or low rep discharge rates
- Metal cases or isolated plastic cases available
- Wide variety of terminations available

Custom Film Packaging

Applications

DC Filtering, AC filtering, pulse, snubber, resonant





Custom Capabilities

- Capacitance: up to 5,000 uF
- Voltage (DC): up to 30,000 Vdc
- Voltage (AC): up to 5,000 Vac
- Current (RMS): up to 3,500 amp
- Plastic Case, Molded Package, wrap & fill
- Variety of termination types
- Quick prototypes

https://www.cde.com/nwl-capacitors/t-series/

Significant OEM Customers

Advantages to working with CDE

- 12 engineers dedicated to the design of film capacitors. Average tenure, 20+ years industry experience
- Advanced capacitor modeling using COMSOL
- Maximum design flexibility, technical solution focused
- Advanced high voltage, high current testing capability
  - Corona (Pd) Testing facilities: 120 KVdc, 50 Kvac
  - 25 - 200 kwatt inverters with 60–450 kHz frequencies
- Significant 200,000 square feet production capacity, 3 film capacitor factories with state-of the-art equipment
- US Company, Made in America