

# Implantable Medical Device Capabilities

## Applications

**Defibrillators:** Continuously monitors the heart and will restore a normal heartbeat by sending an electric pulse or shock to the heart if the heart stops.

**Pacemakers:** Control abnormal heart rhythms and uses electrical pulses to prompt the heart to beat at normal rate.

**Spinal Cord Stimulators:** Pain management for the treatment of long term sciatica, lower back pain, back pain, herniated disc pain, and pinched nerve pain.

## How does APITech contribute?

- Ceramic capacitors can protect implantable devices against EMI/RFI susceptibility
- Custom designs include multi-pin EMI filter arrays and feedthrough assemblies made with APITech's discoidal or planar ceramic capacitors
- EMI filter plates and arrays are produced in Fairview, but also incorporate ceramic capacitors produced at the Stated College manufacturing facility
- These filter plates and arrays prevent the implantable devices from malfunctioning by:
  - Functioning when necessary;
  - Not operating when it should not

## Product Features

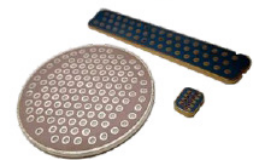
- MRI compatible
- Mixed loading including filtered, grounded, and pass through/antenna compatible line within the same device
- High voltage capable, to survive external defibrillation exposure
- Available with hermetic interface; isolation with feedthrough pins from device internals to body cavity/fluids



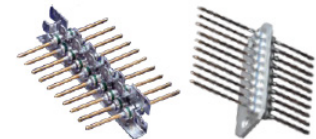
Discoidal Caps



Planar Caps



Filter Arrays



## Testing Requirements

High reliability automated testing; 100% thermal shock, voltage conditioning, customized transient/pulse testing, dielectric withstanding voltage, insulation resistance, ground continuity, equivalent series resistance, capacitance, dissipation factor.