

Lightning Protection Milestones in US

1750

The Lightning Protection Era Begins with the invention of the Lightning Rod by Ben Franklin

• Lightning Protection of Structures

The Lightning Rod (air terminal) is commonly used worldwide to protect structures of every sort in high lightning zones. Churches and Ships were the first recipients of this protection

- **1839** First US patent on the improvement of the lightning rod. 1,096
- **1858** First US patent on protecting boats from lightning. 20,877
- **1925** First US patent on the lightning protection of aircraft. 1,553,087

1846

The Telegraph is born along with the Era of Communication Lightning Protection

• Lightning Protection of Electrical Systems

- **1847** Professor Joseph Henry describes the first arrester (simple air gap) in a paper on lightning and telegraph lines.
- **1852** First use of the term Lightning Arrester. Used in overview of protection of telegraph systems.
- **1855** First Arrester patent but the term for arrester is atmospheric discharge device 13,389
- **1860** First US Patent to use the term Lightning Arrester 29,533
- **1876** The telephone is invented and arresters are immediately built into them.
- **1917** First Vacuum Tube Arrester and the beginning of the Electronics Equipment protection Era US Patent 1,244,528
- **1967** First Solid State Arrester invented based on Zinc Oxide 3,503,029

1882

Power Systems are born at Pearl Street in New York and the Era of Power Line Protection begins

• Lightning Protection of Power Systems

- **1885** Elihu Thomson of the Thomson-Houston Electric Company patents the first power system arrester 321,464
- **1890** Alexander Wurts is awarded the first US patent for Westinghouse Electric. 433,430
- **1890** First US patent on using a shield wire to protect a power system. 428,653
- **1892** Thomas Edison is awarded first Arrester Patent for GE. 476,988
- **1908** Electrolytic based arresters first using a nonlinear resistance in series with a gap were introduced. US Patent 992,744 (1911)
- **1930** Silicon Carbide arrester is invented US patent 1,763,667. The SiC is used as a nonlinear resistance in series with a gap
- **1939** Arrester Disconnecter is patented in US. 2,296,708 (Line Material Co.)
- **1954** First current limiting gaps used in arresters. (Hubbell) 2,825,085
- **1976** First Gapless Metal Oxide Arrester introduced to the US market by GE. A scale up of the 1968 solid state arrester used in communications.
- **1987** First Polymer housed arrester introduced.