

Interrupting Mediums in High Voltage Circuit Breakers



Rich York
ABB Inc.



2008 IEEE PES GM
Pittsburgh, PA

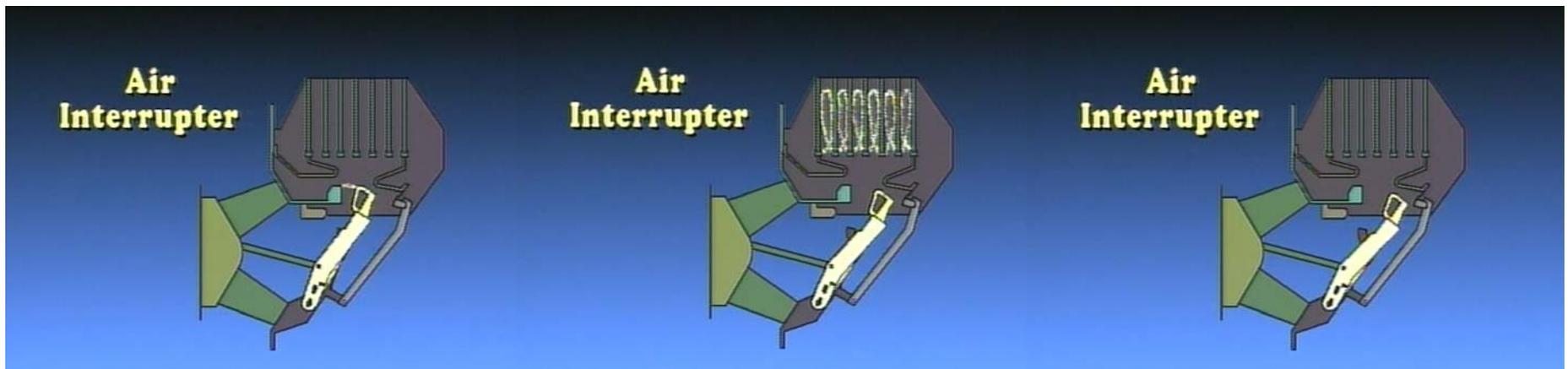
Interrupter Technologies

- Air
- Oil
- Air Blast
- SF₆
 - 2-Pressure gas blast
 - Single pressure SF6 puffer
 - Single pressure SF6 self-blast
- Vacuum



Air Interrupter

- Interrupting medium is plentiful & inexpensive
- Effective at low voltages
- Dielectric strength limits applications to lower voltage ratings



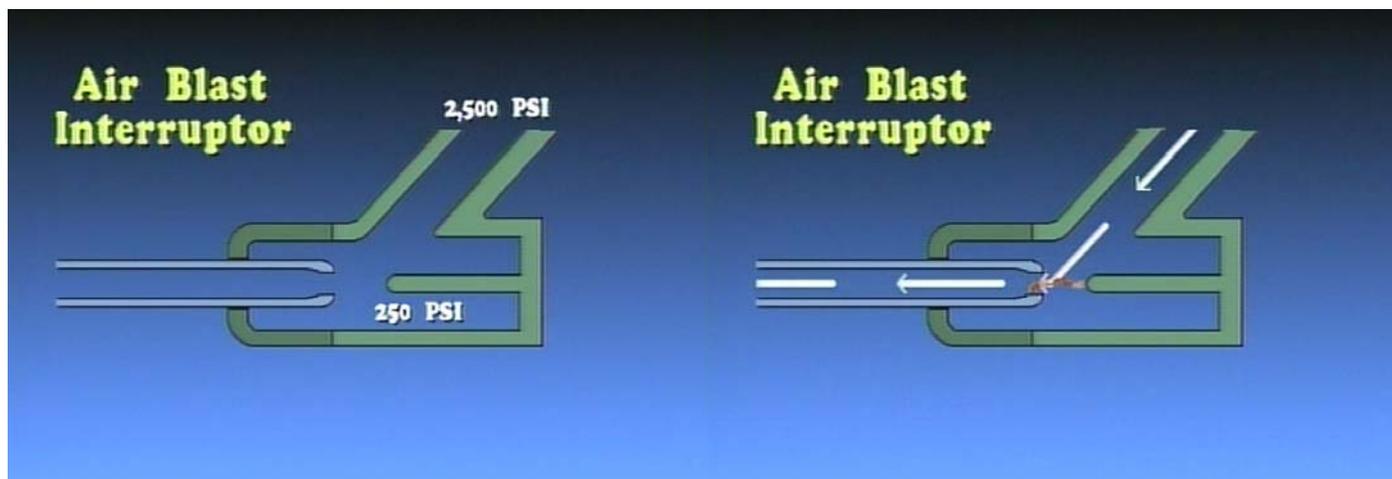
Oil Interrupter

- Higher dielectric strength compared to air
- Suitable for higher voltages
- Plentiful and inexpensive (in the 50's – 60's!)
- Efficient for high level fault currents
- Problematic for small capacitive currents



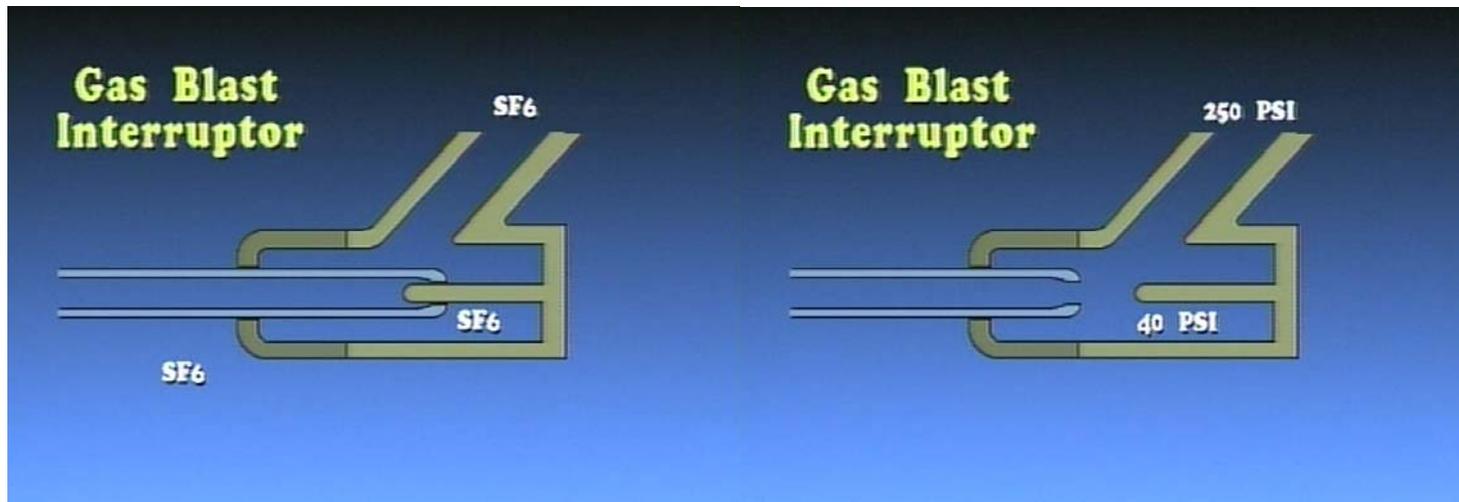
Air Blast

- 2-pressure compressed air
- Improved dielectric strength with higher air pressure, density
- Inexpensive and plentiful
- High energy operating mechanism
- High operating pressures



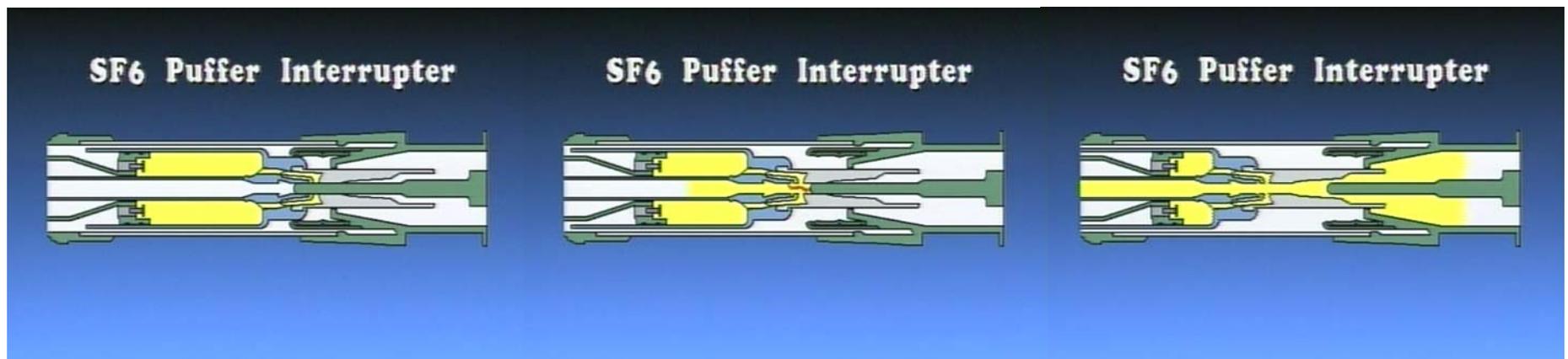
SF₆ – 2 Pressure Gas Blast

- Increased dielectric strength
- Lower pressures than air blast
- Closed system
- SF₆ compressor, high energy mechanism



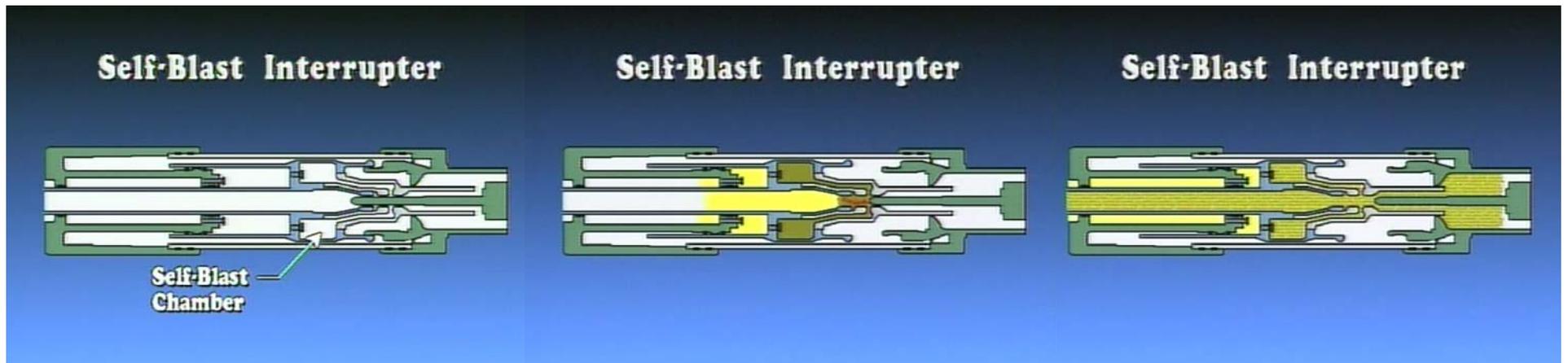
SF₆ Puffer

- Single pressure SF₆
- Eliminates SF₆ compressor, blast valves
- Efficient, high dielectric strength
- High energy operating mechanism



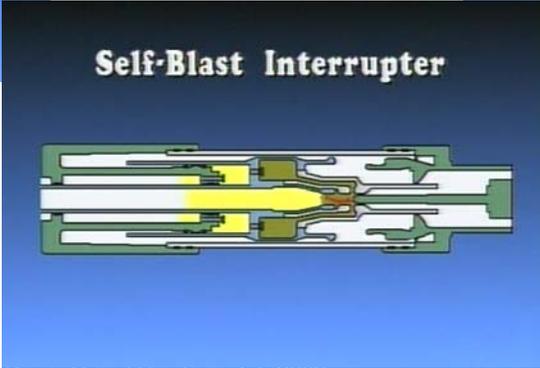
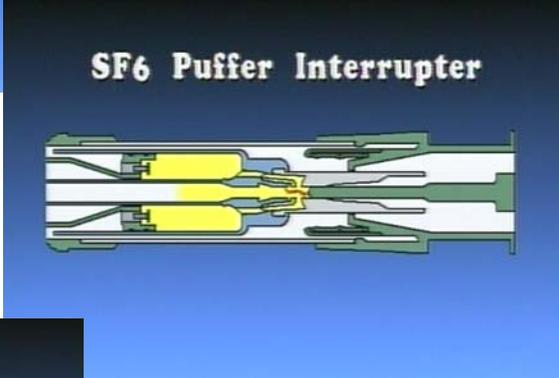
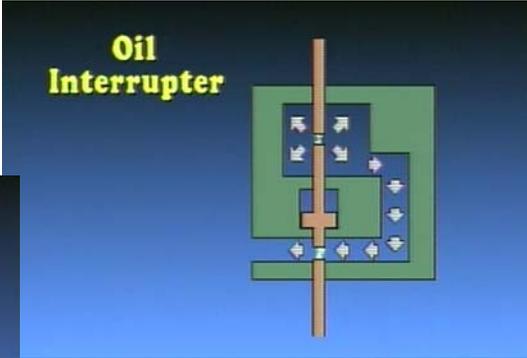
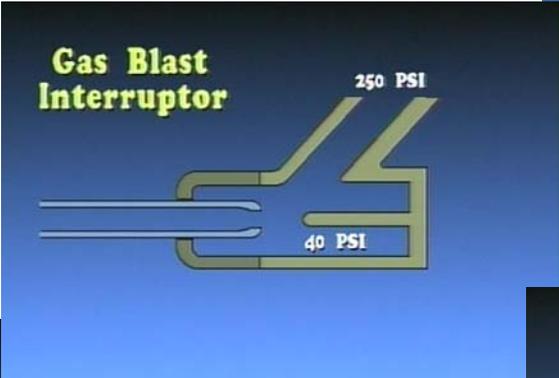
SF₆ Self Blast

- Reduced energy operating mechanism than puffer type
- Limits for voltage and current interrupting capabilities



Interrupter Technology Demonstration

■ Interrupter Video



Interrupting Mediums

Questions?

