

# Technical Seminar for Cathodic Protection to GOGC Design Unit Specialists

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WITHIN THE JURISDICTION OF THE MINISTRY OF ENVIRONMENT, ENERGY & CLIMATE CHANGE



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# Isolating Spark Gap

## Definition (cf. EN 50164)

Component with discharge distance for isolating electrically conductive installation sections (in the event of a lightning strike, the installation sections are temporarily connected conductively as the result of the response of the discharge)





## DC decoupling device

### Definition (cf. prEN ISO 15589-1)

Equipment that provides a low impedance path for a.c. and high resistance for d.c.  
(e.g. Polarization cells, capacitors or diode assemblies)





# Parameters to be taken into account when selecting a dc-decoupling device

## General aspects to be taken into account

- · A.c. voltage mitigation effectiveness and respective a.c. corrosion risk mitigation methods
- · Resistance to earth of a.c. mitigation electrode
- · Influence on cathodic protection operation and monitoring
- · Existence of a.c. voltage/current activation threshold
- · Ability to withstand and/or conduct surges and lightning overvoltages
- · Size of the device
- · Maintenance



# Parameters to be taken into account when selecting a dc-decoupling device

## Electrical parameters

- · Capacitance
- · Activation a.c. voltage level
- · Activation a.c. current level
- · Deactivation a.c. voltage level
- · Deactivation a.c. current level
- · D.c. leakage vs. d.c. voltage or cathodic protection potential of the pipeline
- · D.c. leakage ratio to total cathodic protection current consumption of the pipeline
- · Max. continuous a.c. current
- · Steady-state a.c. current vs. a.c. voltage
- · D.c. nominal Voltage range (min.-max.)
- · A.c. nominal Voltage range (min.-max.)



# Parameters to be taken into account when selecting a dc-decoupling device

## Electrical parameters (continued)

- Frequency
- A.c. impedance
- D.c. resistance
- Ability to withstand and/or conduct surges and lightning overvoltages, e.g.:
  - o Voltage protection level at surges
  - o Transient kA (8/20  $\mu$ s)
  - o Transient kA-nominal impulse discharge current (10/350  $\mu$ s)
  - o A.c. current for 10 s for 50 Hz
  - o A.c. current for 0,2 s for 50 Hz
  - o A.c. fault current kA
  - o A.c. sparkover voltage
  - o D.c. sparkover voltage