JULY 2024

VD4-CS – Product overview

Capacitor bank switching application

Possible plant damages

Transient phenomena generated by capacitor switching:

- High inrush currents
- High voltage dips on network voltage
- Disturbance of power frequency and amplitude of the network current

Effects on the plant:

- Winding displacement, pre-damage of integrated fuses and accelerated ageing
- Fuse trip, winding break, failure of capacitor bank

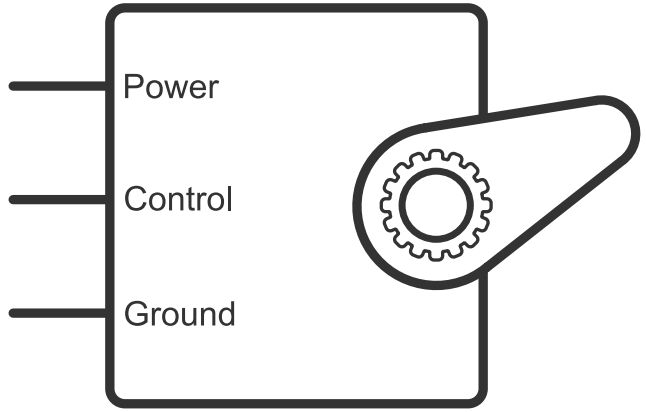
- Undesired tripping of relay
- Problems with voltage sensitive devices connected to the same network
- Loss of devices availability

- Power outages due to noising tripping of relays due to high inrush currents
- Loss of availability of the devices and related processes

VD4-CS capacitor bank switching dedicated CB

New switching concept

Synchronization with AC network



Servo motor actuators

Transient-free
Prestrike-free
Switching and fault protection integrated solution

VD4-CS capacitor bank switching dedicated CB

Key points

VD4-CS exceeds the performance of any other capacitor switch or capacitive rated breaker currently available in the marketplace.

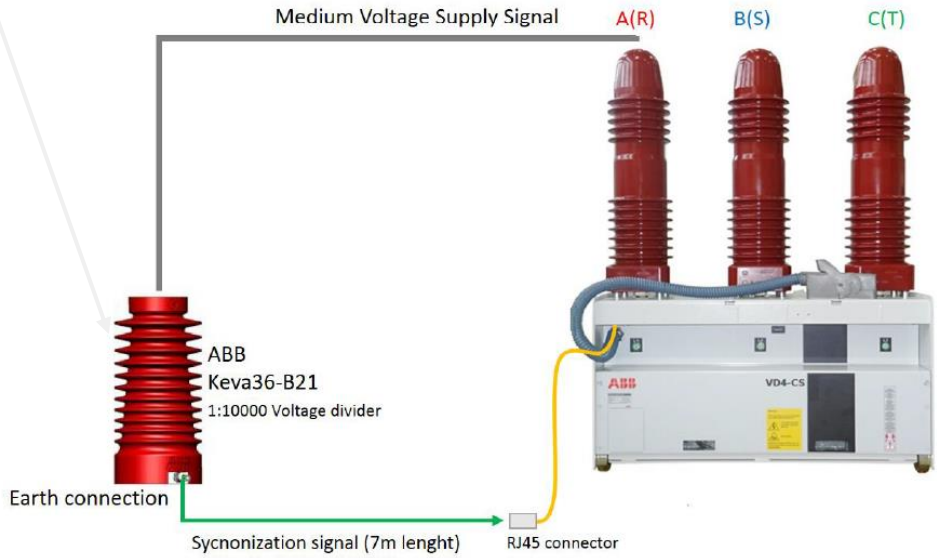
- **Inrush elimination** thanks to synchronous switching using single phase **servomotor actuation**
- **One solution for all** the capacitive applications
- Both **switching and protection functions** available, no need of additional protection devices for short-circuit events
- **No inrush limiting reactance** or resistance required
- **Restrike elimination** thanks to the dedicated poles (IEC 62271-100 C2 tested)
- **Optimized delivery time** thanks to the standardized footprint
- **20.000 CO Capacitive** operations with minimal maintenance
- **Monitor and diagnostic** feature to check health status and performances
- **Fully integrated closed-loop** controlled switching technology

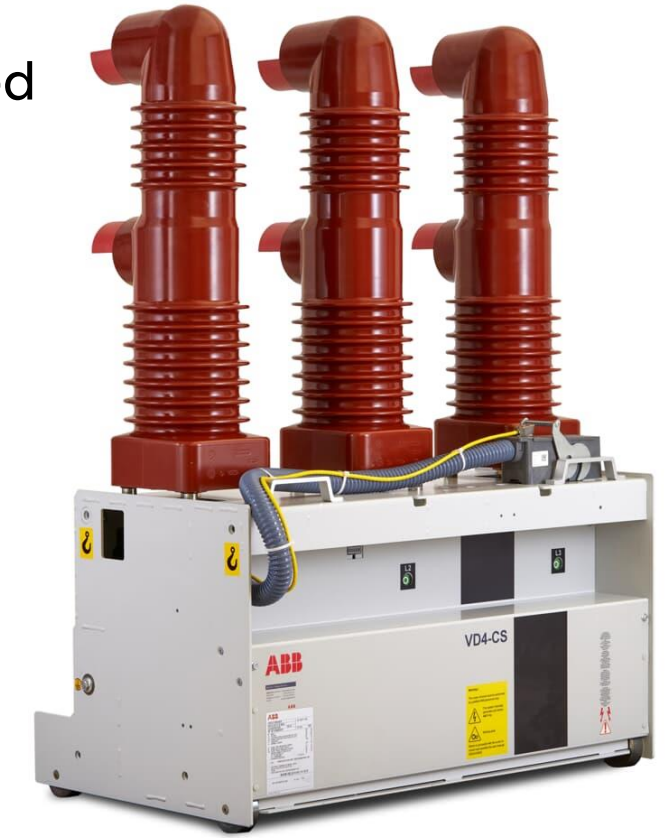
VD4-CS capacitor bank switching dedicated CB

How it works → **One breaker, full control, zero transient**

Synchronized mode

ABB voltage divider allows the breaker to be synchronized





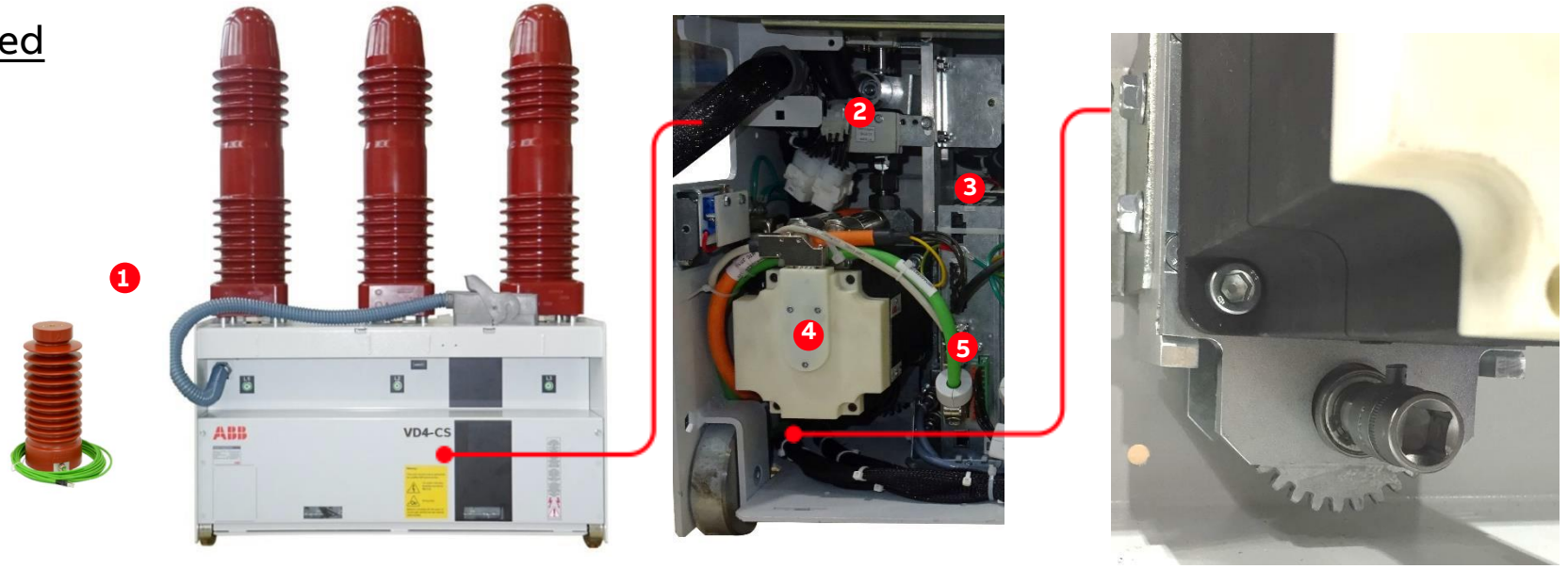
Safe & relentless capacitor banks switching!

VD4-CS capacitor bank switching dedicated CB

How it works

Servomotor technology → <u>ungrounded</u> capacitor banks with negligible transients.

IEC 62271-100 – Class C2 → able to withstand the TRV generation



1. Voltage Sensor
2. Phase position contact
3. Actuation capacitor
4. Servo motor
5. "A" phase controller

Manual open[1]

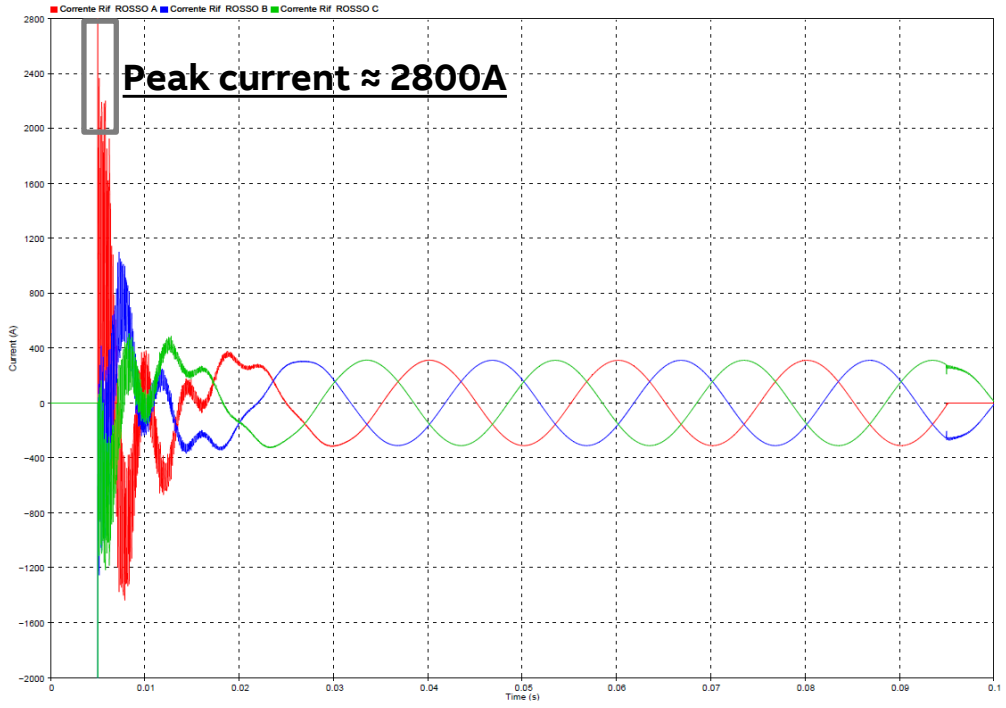
Safe & relentless capacitor banks switching!

VD4-CS capacitor bank switching dedicated CB

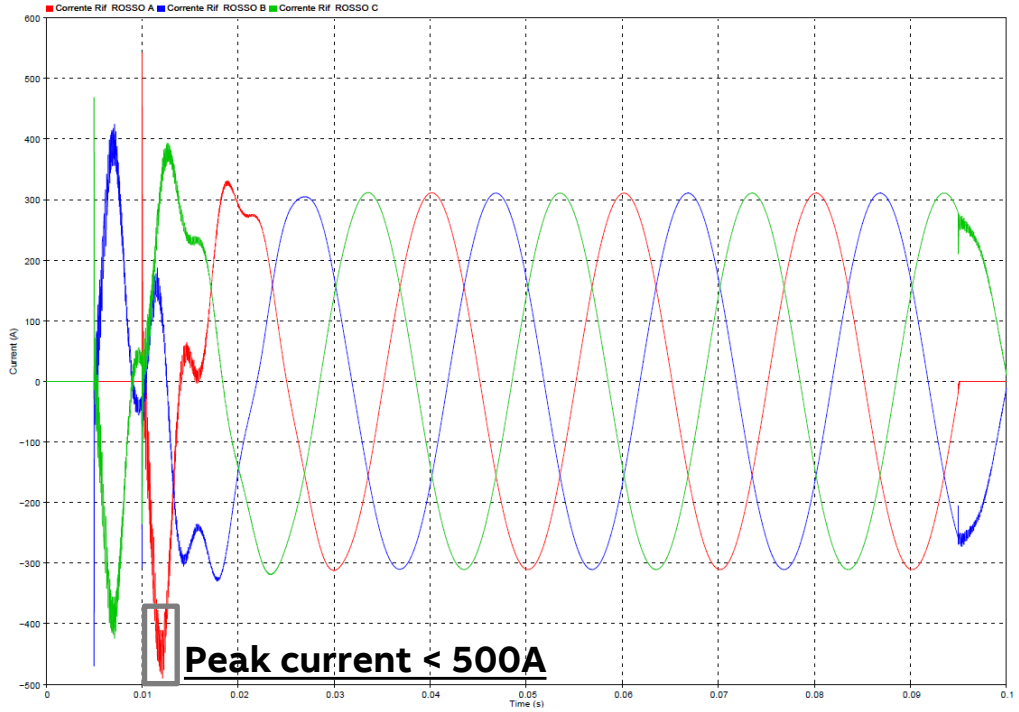
REAL CASE:

Energization of a capacitor bank of 5.4 Mvar at 15kV line to line voltage

VD4 standard inrush current



VD4-CS inrush current

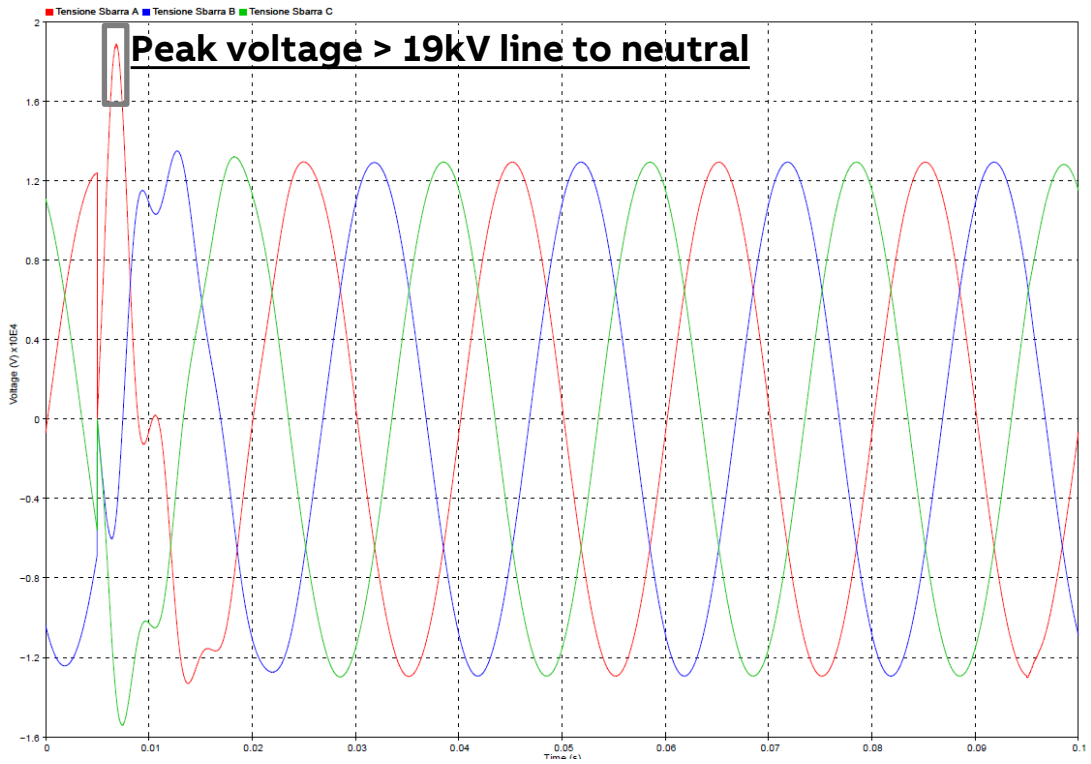


VD4-CS capacitor bank switching dedicated CB

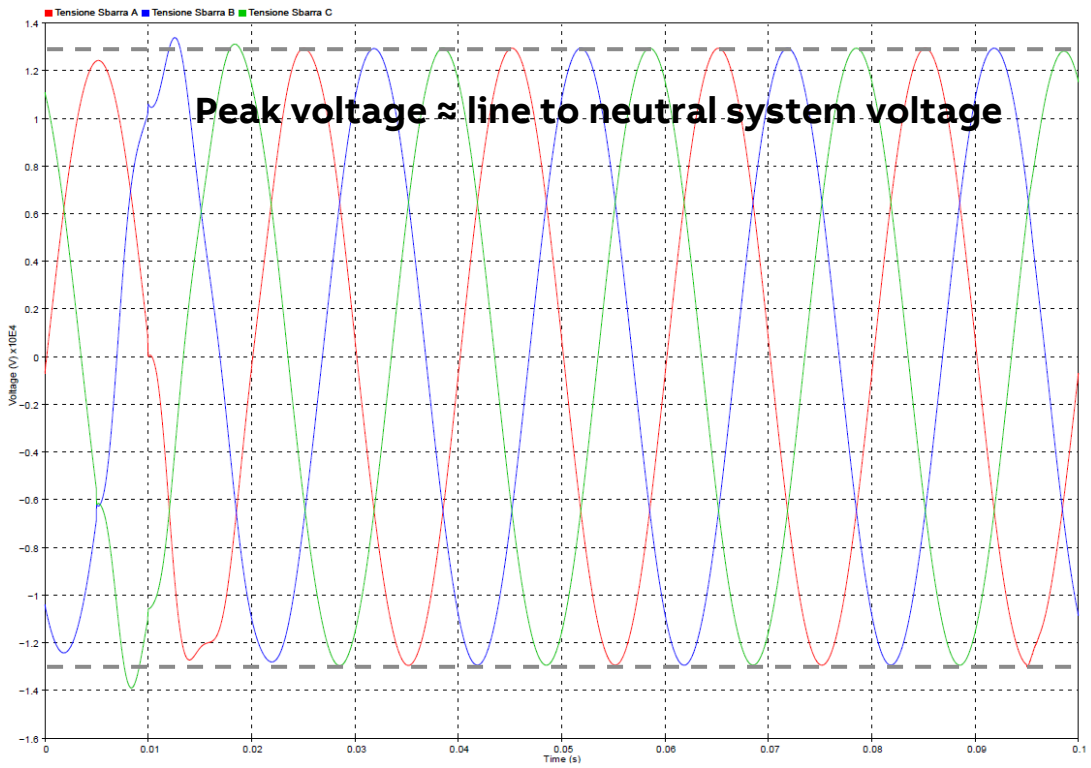
REAL CASE:

Energization of a capacitor bank of 5.4 Mvar at 15kV line to line voltage

VD4 standard inrush voltage transient



VD4-CS inrush voltage transient



VD4-CS

One breaker, full control, zero transient

Synchronization with the network

Noise-free power quality

Inrush elimination without limiting reactance

Switching and Protection functions

Restrike elimination

-20%

Capital cost

20k

Capacitive operations

+10%

Increased lifespan of the capacitors

One Standardized Plug & Play solution

New switching concept with a fully integrated closed-loop technology


ABB