



**Grid Solutions**  
a GE and Alstom joint venture

# RPH3

## Controlled switching device

RPH3 controlled switching device ensures optimum switching of circuit-breakers.



RPH3

### CUSTOMER BENEFITS

- Longer lifespan of assets
- Greater network availability
- Higher power quality
- Smarter than closing resistor: cost-effective and reliable
- Remote support

## For circuit-breakers up to 800 kV

Grid Solutions, a GE and Alstom joint venture, makes the most of more than 80 years of experience in design, material selection, development, engineering, manufacturing and servicing of circuit-breakers.

### OPTIMUM SWITCHING FOR GRID ASSETS

- Power transformer
- Shunt reactor
- Long transmission line and cable
- Shunt capacitor bank and AC filter

### HIGH RELIABILITY

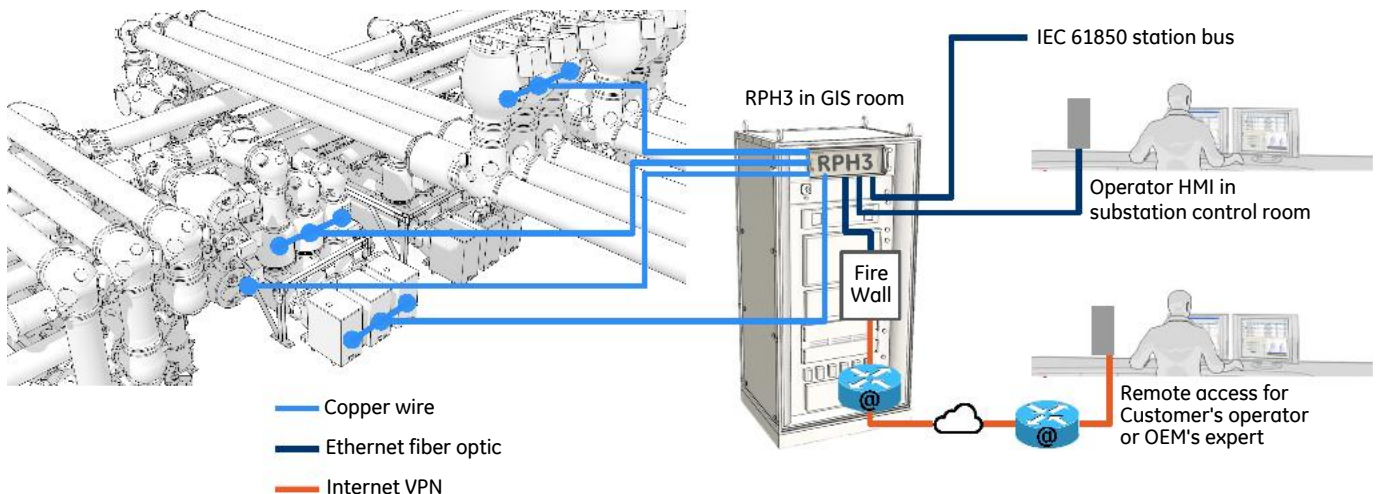
- Successful experience with over 1,000 RPH3 around the world
- Elimination of switching transients
- Minimization of inrush current, overvoltage and stress
- Accurate and fast analysis of current and voltage for optimal switching time
- No impact on protection scheme

### GREAT VERSATILITY

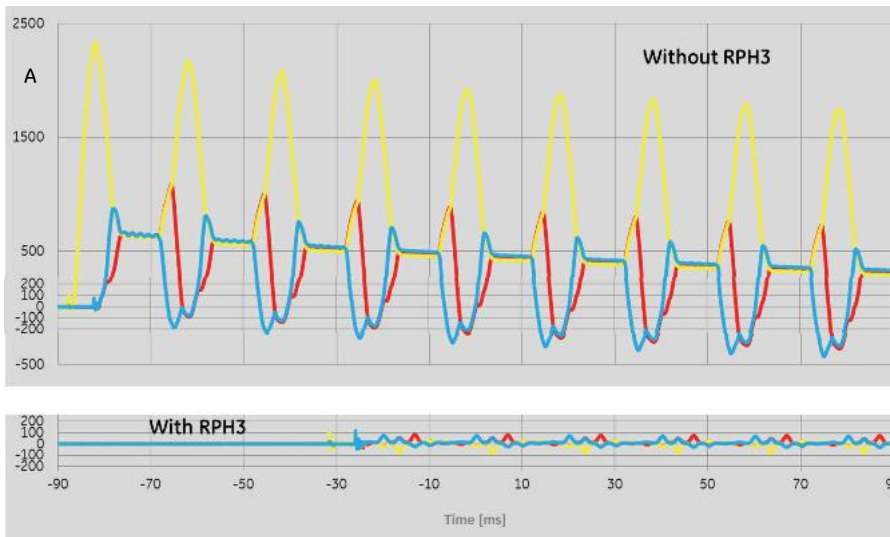
- Dynamic adaptation to all network and load characteristics
- Compatibility with a wide range of circuit-breakers (with appropriate dielectric strength) and operating mechanisms (with appropriate operating time scatter)
- Compensation for coil voltage, ambient temperature, driving pressure, idle time and long-term operation time drift.

### SMART GRID FEATURES

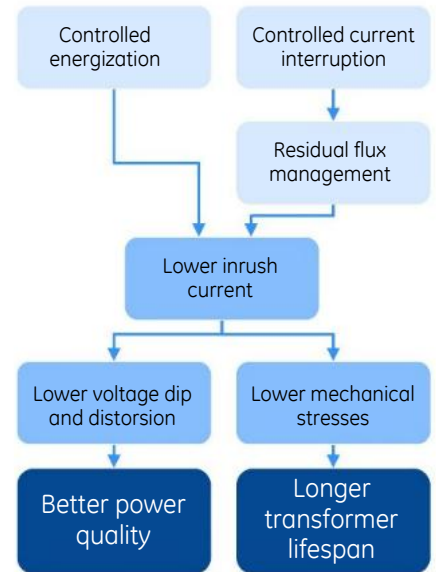
- Remote access for customer's and OEM's experts
- Available with IEC 61850 communication



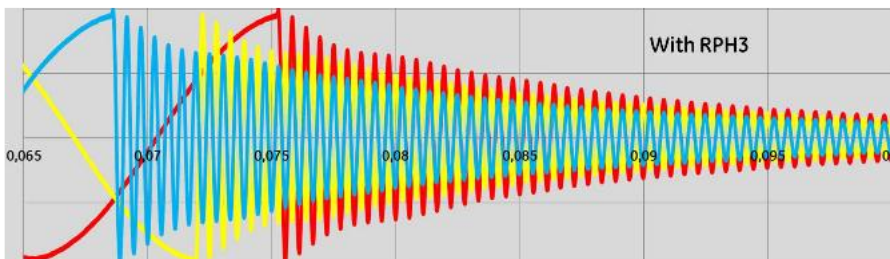
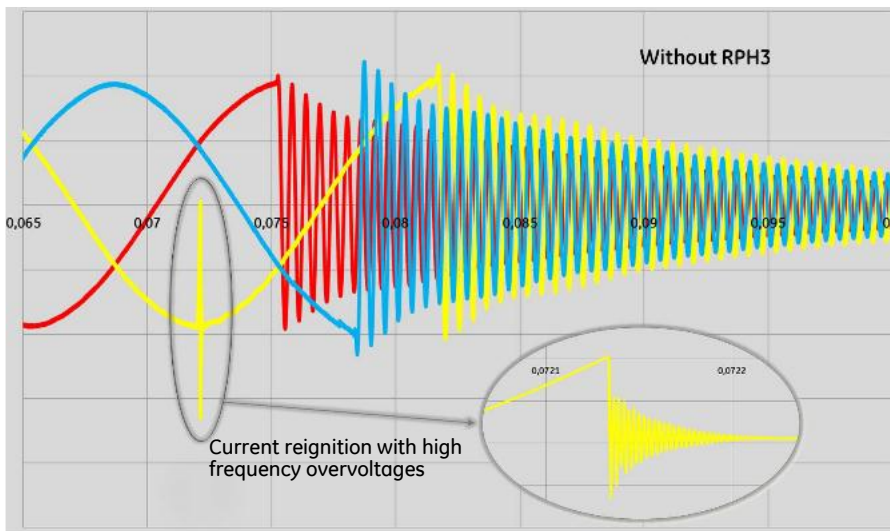
## CONTROLLED SWITCHING OF POWER TRANSFORMERS



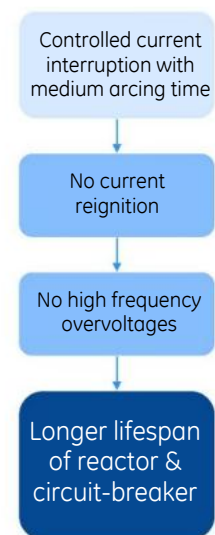
Inrush current



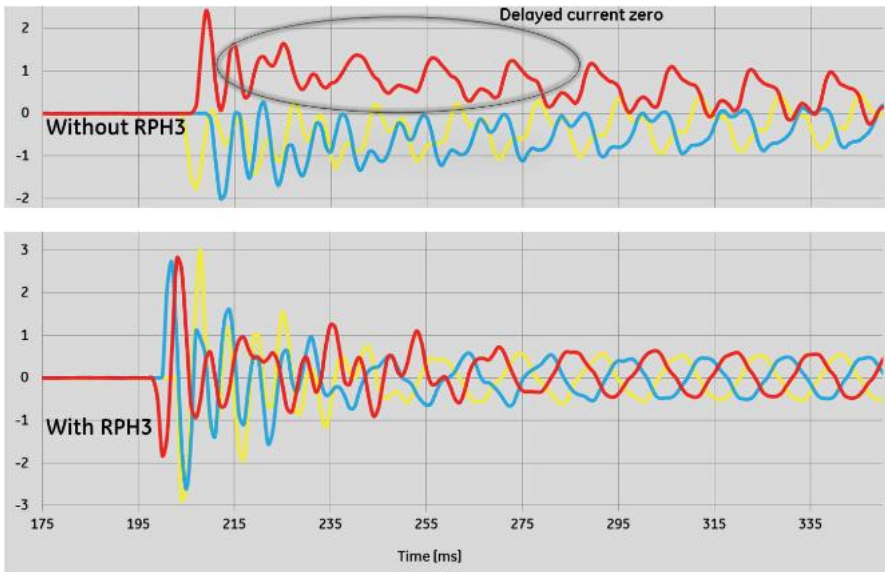
## CONTROLLED SWITCHING OF SHUNT REACTOR



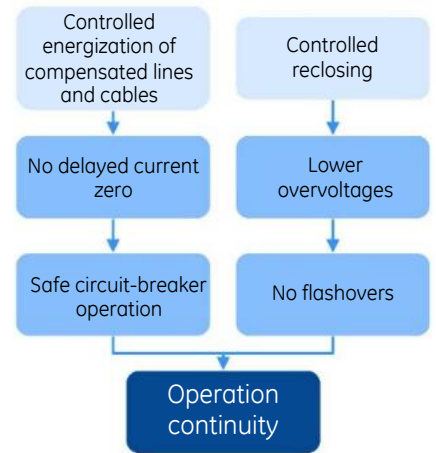
Overvoltages



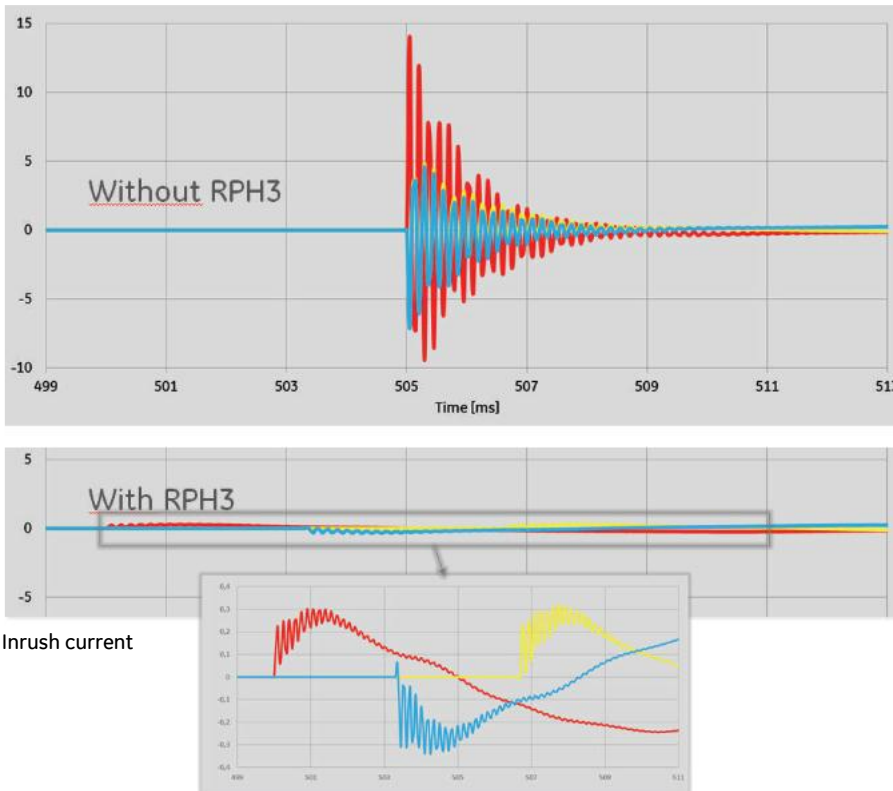
CONTROLLED SWITCHING OF LONG TRANSMISSION LINE AND CABLE



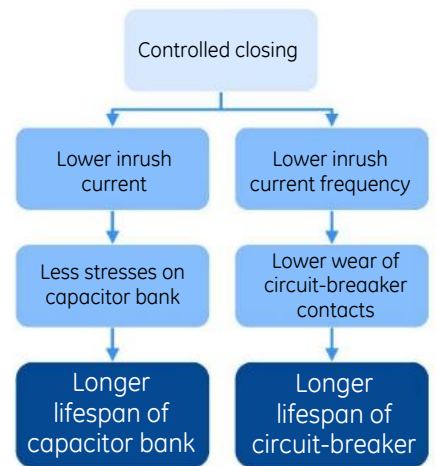
Compensated line charging current



CONTROLLED SWITCHING OF SHUNT CAPACITOR BANK



Inrush current

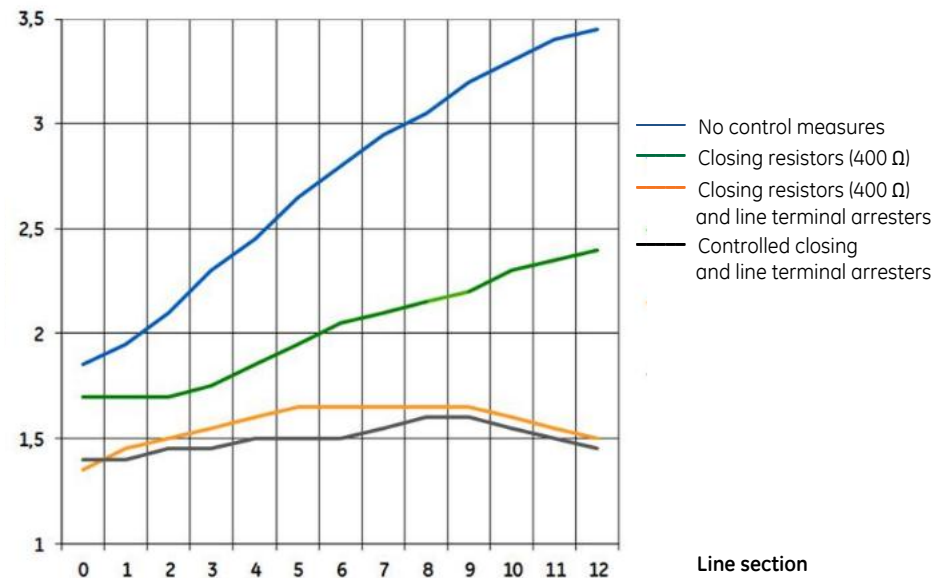


## GENERAL RATINGS

Temperature	°C	-25 to +55 (in operation)
Main supply	VDC / VAC	48 (-15 %) - 250 / 110 - 240 ±20 %
Power consumption	W	<20
Solid-state control of circuit-breaker	V / A	48 - 250 / 10 - 15
	ms (L/R of CB coil)	300 @ 10 A / 200 @ 15 A
Alarm relays operating range	V / A	230 / 5
Synchronizing voltage range	V (at 20-60 Hz)	15 - 330
Switching time resolution	ms	<0.1
EMC immunity standards		IEC 61000-4-2, 4, 5, 8, 16 Level 4 IEC 61000-4-3, 6, 17 Level 3
Emission standard		EN 55022 Class A
Digital interface		Ethernet 100 Mbit/s
Communication protocol		Ready for 61850, TCP-IP

## COMPENSATION

Switching overvoltage of long transmission line (P.U.)



Voltage profile along line for various mitigation measures

For more information please contact  
GE Grid Solutions

### Worldwide Contact Center

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