

The background of the slide is a photograph of a wooden utility pole with several power lines stretching across a bright blue sky with scattered white clouds. The sun is visible in the upper right corner, creating a lens flare effect. The Siemens logo is positioned in the top left corner, overlaid on a white rectangular background.

SIEMENS

Siemens Fusesaver™ *now with O-CO Functionality!!*

Automation At The Fuse

Siemens Fusesaver™

What is Fusesaver..

Ultra-fast circuit breaker up to 27kV

Clears the 80% of faults that are transient before the fuse blows.

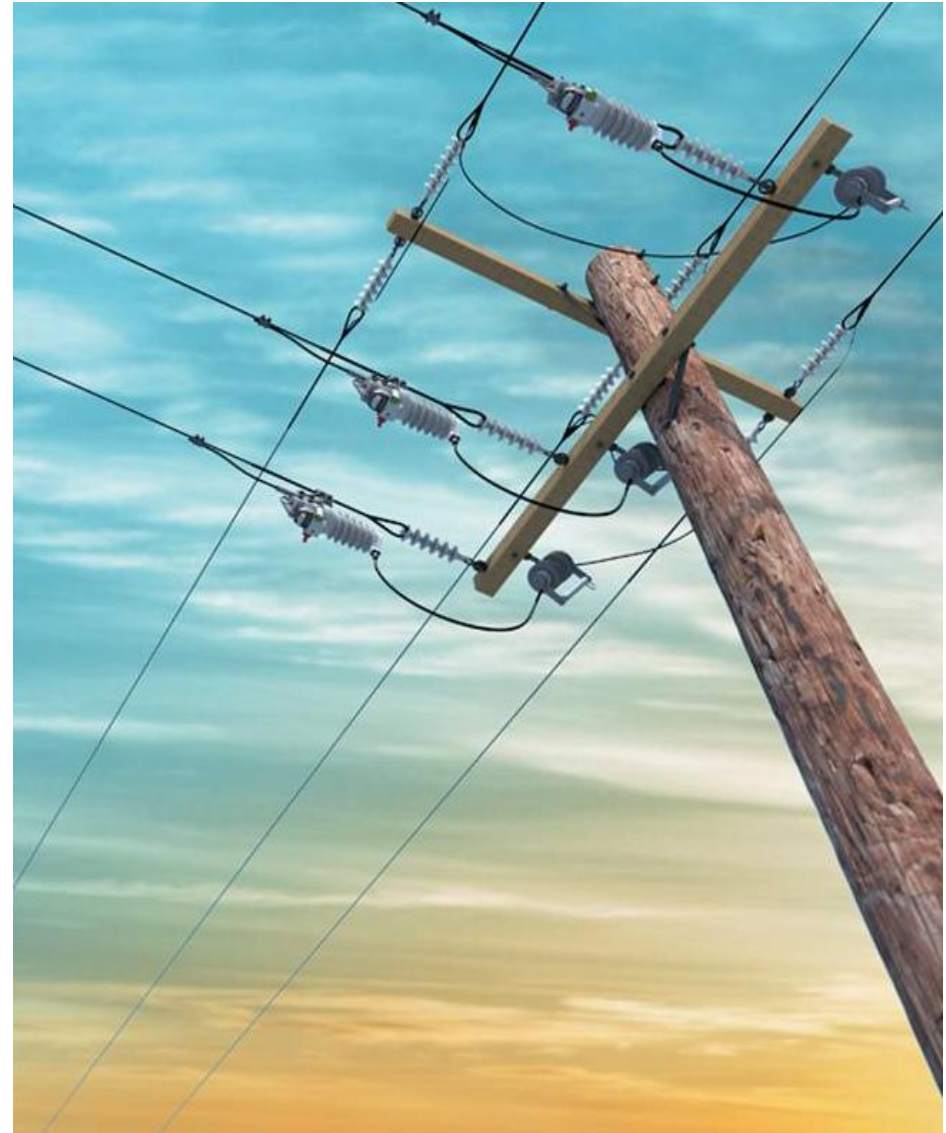
Can be used single-phase or wirelessly coupled multi-phase arrangements



Siemens Fusesaver™

The Solution – Siemens Fusesaver

- ... is a self powered, plug and play, electronically controlled, single-phase fault interrupting device that can clear and reclose on temporary faults
- ... is connected at the spur/lateral line level with or without a partner fuse
- ... is primarily targeted at providing protection and automation of low fault level lines
- ... creates the benefits of improved network reliability and reduced maintenance callouts



Siemens Fusesaver™ is now the Ultimate fuse saving device

Eliminates the need for a fuse altogether!

And now offers:

- Integrated faulted circuit indication
- Encrypted radio communications
- Battery test function
- -40°F low temperature rating

Can be configured to either OC or O-CO modes.

Siemens Fusesaver™

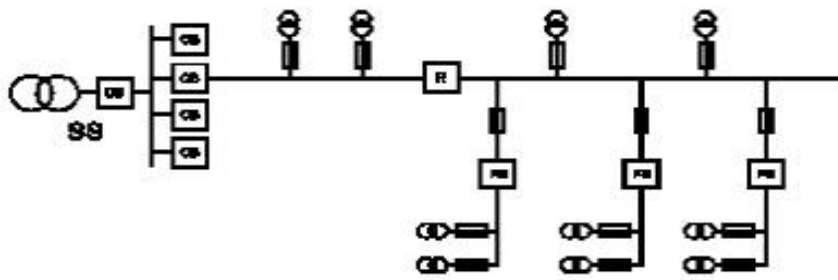
Fusesaver OC



Fusesaver clears temporary faults before fuse melts.

Fuse clears **permanent** fault.

Best application where fuses are already installed. Just add a Fusesaver OC to achieve improved reliability of fused lateral lines.



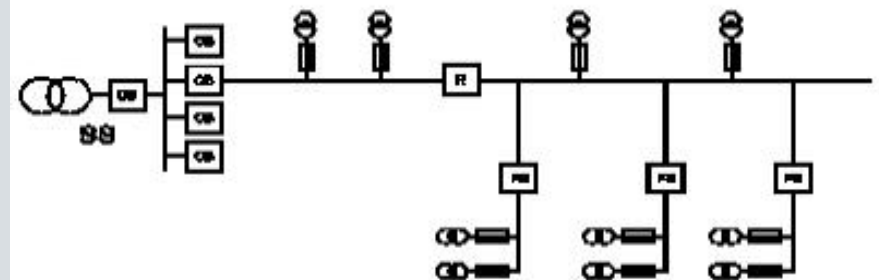
Fusesaver OCO



Fusesaver clears temporary fault

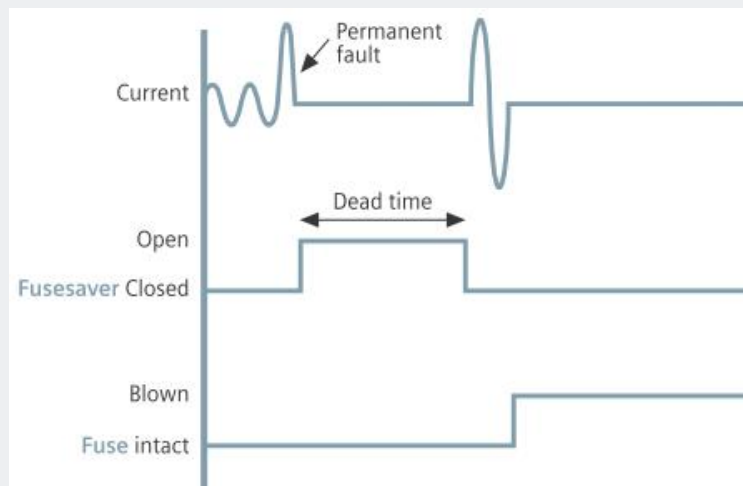
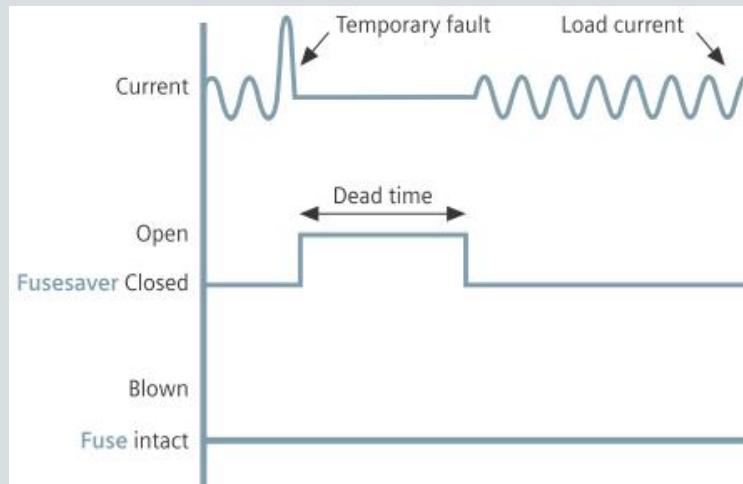
Fusesaver does 2nd trip to lockout to clear **permanent** fault.

Best application on networks that don't use fuses, i.e. replaces the drop out sectionalizer with better performance.

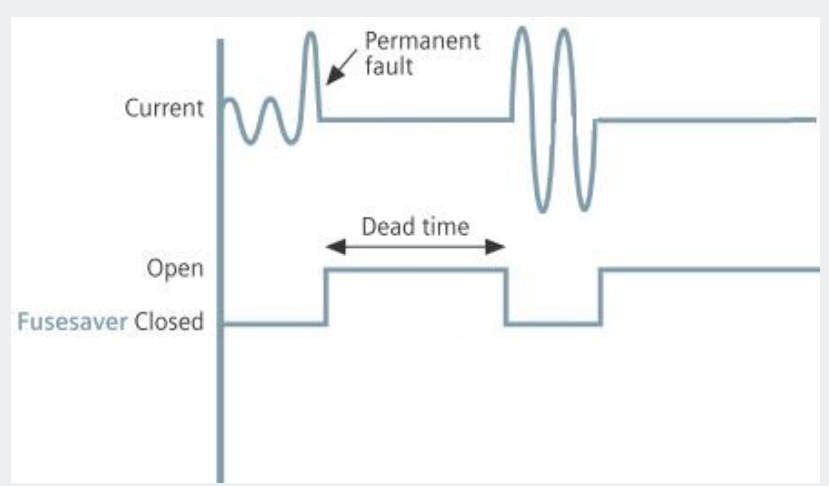
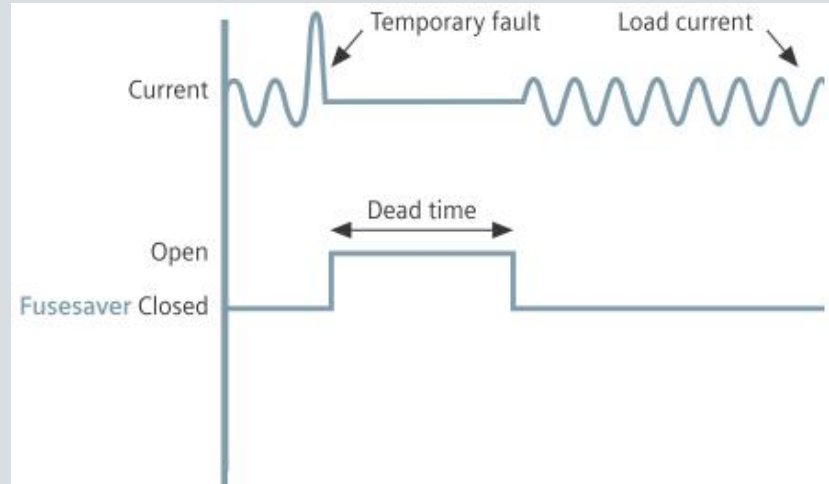


Siemens Fusesaver™ Operating Sequence

Fusesaver OC



Fusesaver OCO



T
E
M
P
O
R
A
R
Y

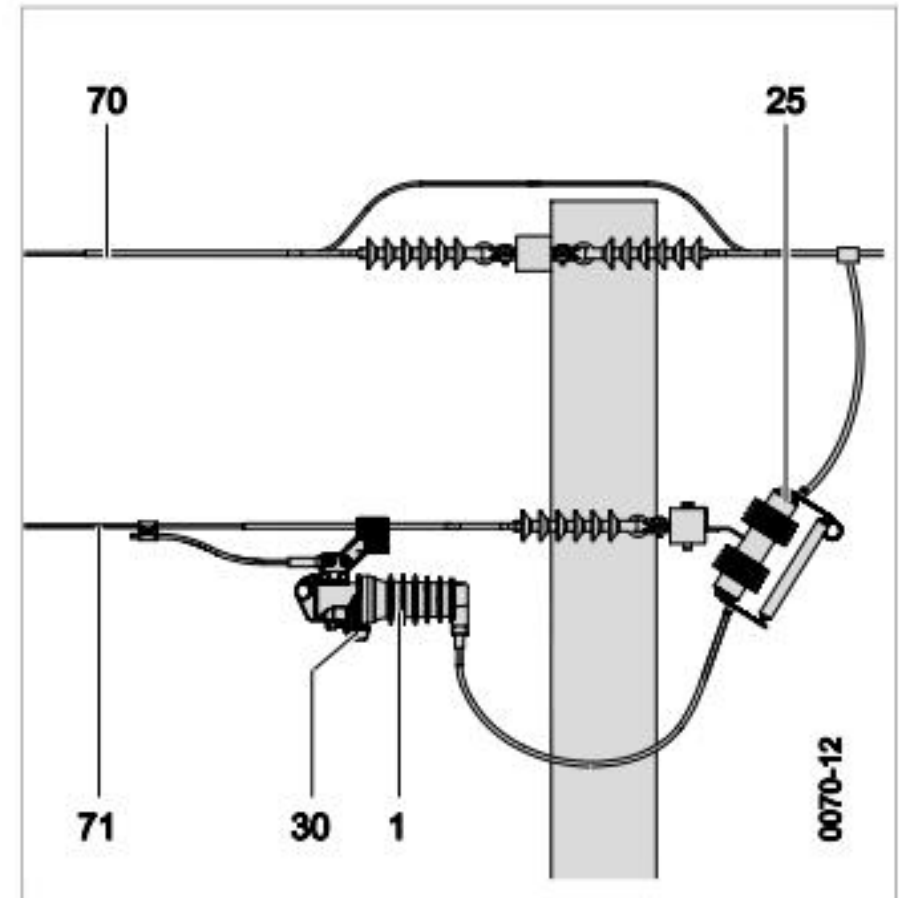
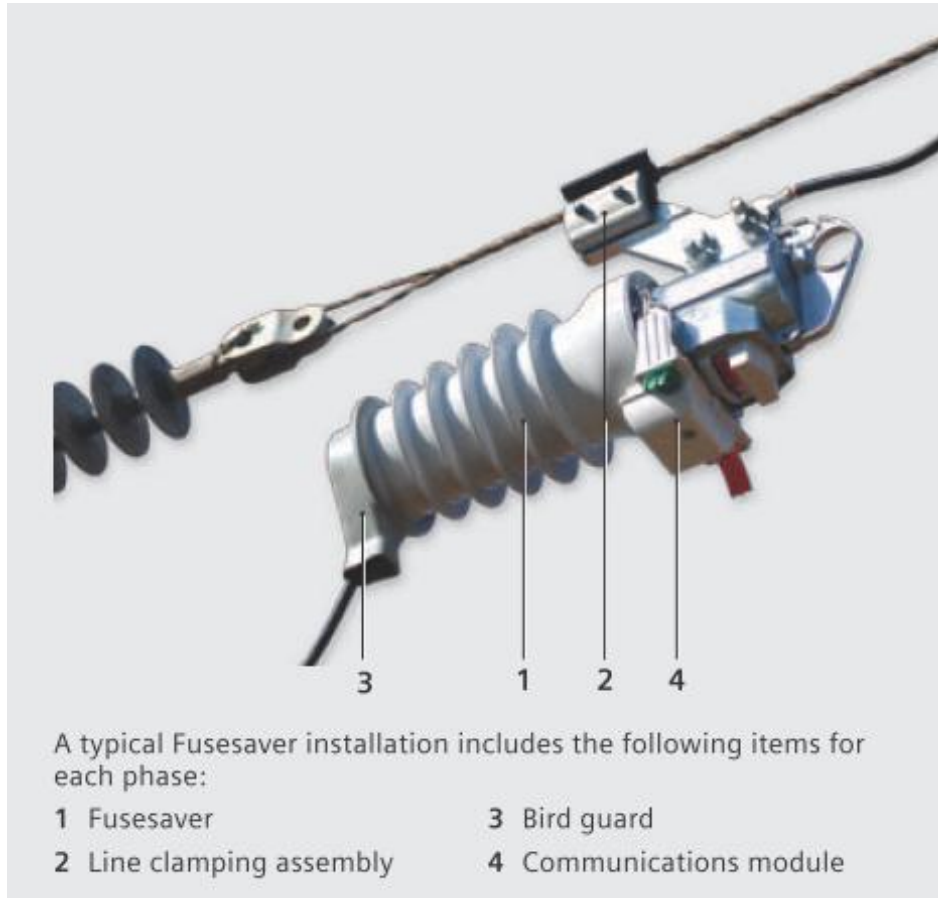
P
E
R
M
A
N
E
N
T

Siemens Fusesaver™ Comparison

	Fusesaver	
	Gen 2	Gen 1
Duty cycle	Open-Close-Open	Open-Close
Comms module required	Yes (for O-CO)/No (for OC)	No
Radio comms encryption	Yes	No
Faulted circuit indication	Yes	No
Extended battery life	Yes	No
Continuous current (A)	100/200	
Minimum load current (s)	0.5/1	
Short circuit breaking current (kA)	4kA	
Short time current (kA)	4kA	
Short time current duration (s)	0.2/1	
Number mechanical of operations	2000	
Weight (lbs)	12	
Maximum temperature	+50°C	
Minimum temperature	-40°C	
Line clamp mounting	Yes	
Cross-arm mounting	Yes	
Pole mounting	Yes	

No change to RCU except for Firmware to handle encrypted communications.

Siemens Fusesaver™ Installation – with or without fuse



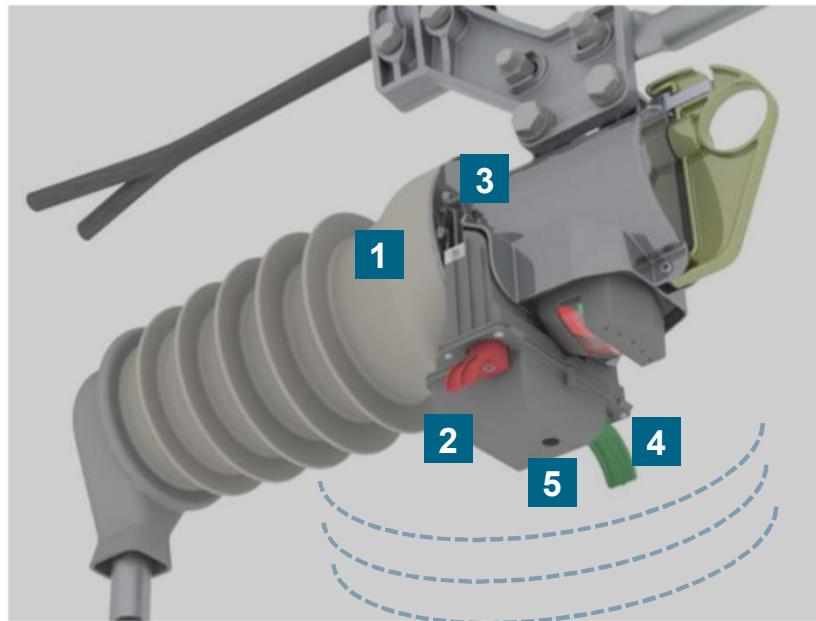
- 1. Fusesaver
- 25. Fuse or solid link
- 30. Communications module
- 70. Feeder Line
- 71. Spur/Lateral Line

Selling Points

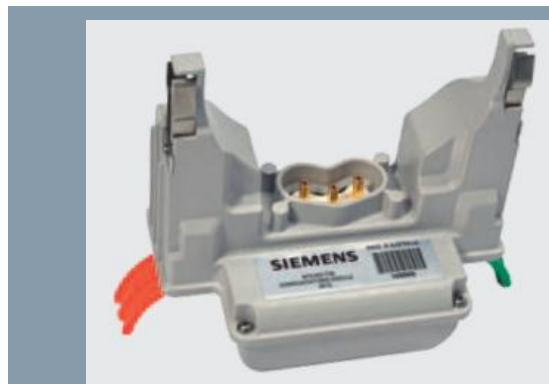
- Light weight: 12lb - 20 minute per-phase install time.
- Communications both locally and to SCADA
- Multi-phase operation
- Data logging – Events and Load
- Half-cycle switching – Saves a wide range of fuses
- Delayed operation – Operator Safety

- Integrated faulted circuit indication
- Encrypted communications

Siemens Fusesaver™ Radio Connectivity



- 1** Fusesaver
- 2** Communications Module with on-board radio
- 3** Clip-in-place connection
- 4** Actuators for trip/close
- 5** LED light



- ## Advanced Radio Communications for
- Fusesaver configuration
 - Multi-phase protection capability
 - Event and data retrieval from ground

Siemens Fusesaver™

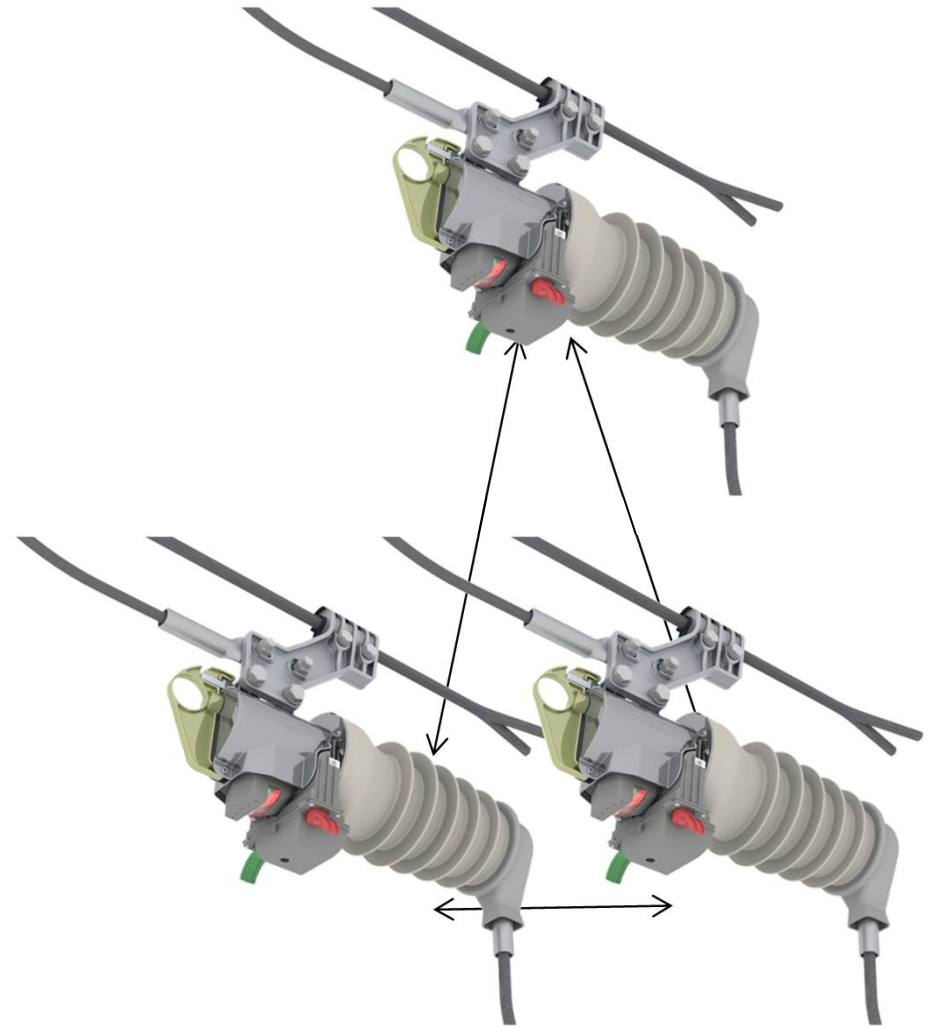
Single-phase or Three-phase “ganged” configuration

The Fusesaver can operate in either a pure single-phase mode or as a member of a coordinated group of two or three.

Encrypted, short range radios in the Fusesaver allow it to connect to up to two nearby Fusesavers and form a “tribe”.

Allows synchronized manual tripping of three phases.

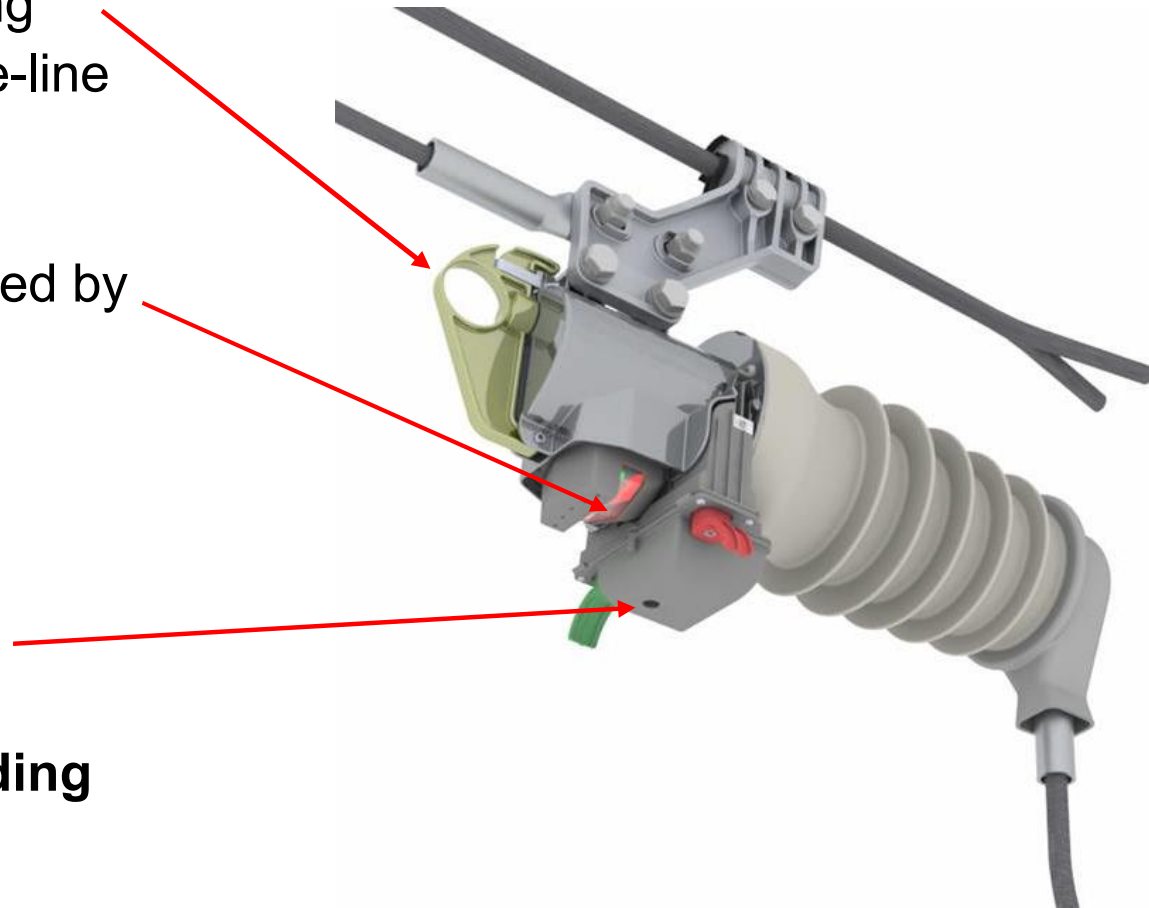
Allows three-phase lockout



Siemens Fusesaver™

Visual Indication

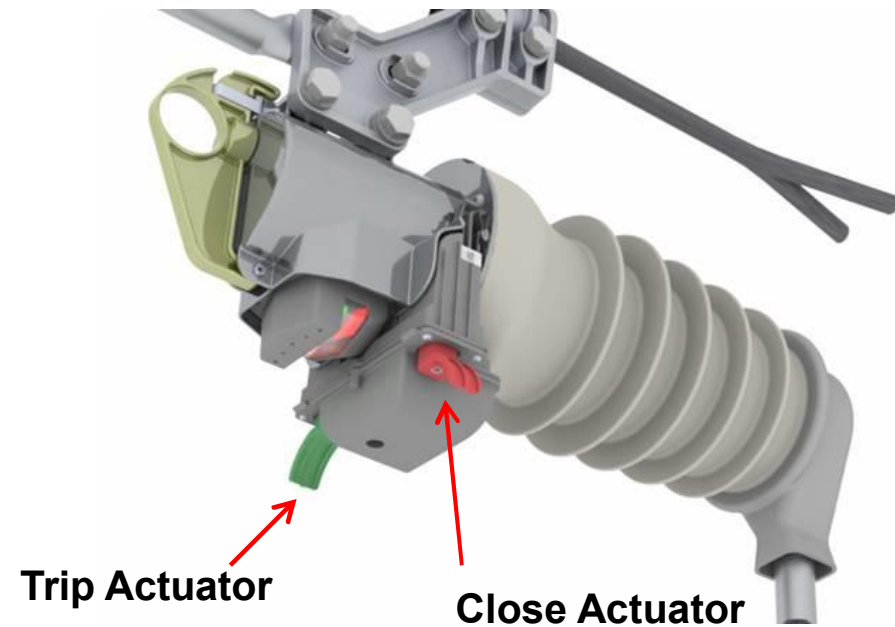
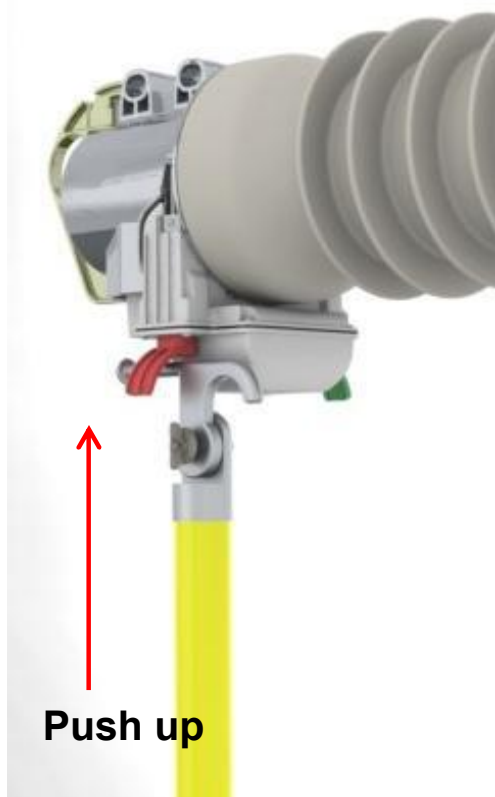
- **External lever** for changing protection functions for live-line work, e.g. reclose OFF
- Open/close state is indicated by a flag visible through a transparent window from ground level
- Flashing LED for operator assistance during commissioning and **providing faulted circuit indication**



Siemens Fusesaver™

Trip & Close Actuators

- Manual opening and closing via external actuators operated with a live-line stick from ground level
- Ganged operation configurable – synchronous to <40ms
- Hit and run – 60 second delay



Siemens Fusesaver™

Rating Overview

Fusesaver has been type tested in accordance with the applicable sections of the IEC: 62271-100 circuit breaker standard.

The Fusesaver is available in two models dependent upon minimum line current, rated current and fault current capability:

Model type	Standard range	High range
Minimum line current for operation	0.5 A	1.0 A
Fuse ratings	5-50 A	5-100 A
Rated normal current	100 A	200 A
Rated short-circuit breaking current I_{sc}	4 kA	4 kA
Rated short-circuit making current I_{peak}	10 kA	10 kA
Rated short-time current	4 kA	4 kA
Rated short-time current duration	0.2 s	1.0 s
Fault break operations at 100%	30	30

Siemens Fusesaver™

Product Overview

Model Type	Standard Range	High Range
Rated voltage	15.5 / 27 kV	
Rated lightning impulse withstand voltage U_p	110 / 125 kV	
Rated power-frequency withstand voltage U_d (60 s)	50 / 60 kV	
Minimum tripping current (configurable)	X 0,5 fuse rating	
Mechanical operations	2,000	
Rated frequency	50 / 60 Hz	
Weight	5.5 kg	
Maximum operating ambient air temperature	+50 °C	
Minimum operating ambient air temperature	-40 °C	
Solar radiation	1.1 kW/m ²	
Maximum altitude	3000 m	
Humidity	0 to 100 %	

A photograph of a utility pole with power lines against a sky with clouds and a sun. The sky is a mix of blue and orange, suggesting a sunrise or sunset. The sun is bright and in the upper right. The clouds are white and fluffy. The utility pole is wooden and has several power lines attached to it. The text 'Siemens Fusesaver™' is overlaid on the image in a white, sans-serif font.

Siemens Fusesaver™