


FREE E-BOOK PDF


Types of Circuit Breaker & Function

WA Electronics
@Wa_electronics



An M
ele
br
dan
res
des
or

Residual Cur



The Res
breaker f
device to c
electrical l
ensuring pro
shock caus

MCCB



A moulded
(MCCB) is
protection o
protect the c
excessive
cause over

Wifi B



A smart wifi
device that c
triggers. Thi
when connect
a WiFi netw
wifi circuit b
your home
autor

EL



An Earth-leak
(ELCB) is a s
electrical instal
impedance to pr
small stray vol
enclosures of el
interrupts the c
exceeds d



A
c
pur
vol
ene

MF



A motor p
breaker
electromec
performs
functions up
motor: isolat
against o
circuit, co

BO



Bulk oil circ
such type
where oil is
media as w
between cur
and earthe
The oil u
transfo

SF6 Circuit



In an SF6
hexafluori
quenc
contacts o
in a high
hexafluor
is struck
capture
electr
relatively

Circuit Breaker

Definition:

An electrical circuit breaker is a switching device that can be operated manually or automatically for controlling and protecting the electrical power system. Without a circuit breaker, there is a high risk of electrical fires, electrocution and electrical shocks.

MCB



An MCB is an automatically operated electrical switch. Miniature circuit breakers are intended to prevent damage to an electrical circuit as a result of excess current. They are designed to trip during an overload or short circuit to protect against electrical faults and equipment failure.



MCCB



A moulded case circuit breaker (MCCB) is a type of electrical protection device that is used to protect the electrical circuit from excessive current, which can cause overload or short circuit.

MPCB



A motor protection circuit breaker, or MPCB, is an electromechanical device that performs three important functions upstream of an electric motor: isolation, motor protection against overload and short circuit, control of the motor (on/off).



ELCB



An Earth-leakage circuit breaker (ELCB) is a safety device used in electrical installations with high earth impedance to prevent shock. It detects small stray voltages on the metal enclosures of electrical equipment and interrupts the circuit if the voltage level exceeds danger threshold.



Residual Current Devices – RCCB



The Residual Current Circuit breaker RCCBs are the safest device to detect and trip against electrical leakage currents, thus ensuring protection against electric shock caused by indirect contacts.



Wifi Breaker



A smart wifi circuit breaker is a device that can control on and off triggers. This is done through ISC when connected in other words to a WiFi network. ... Above all this wifi circuit breaker will transform your home wiring into a smart automation system

ACB



Air circuit breaker is a circuit breaker for the purpose of protecting low voltage circuit, mainly for energizing and cutting off high current.



VCB



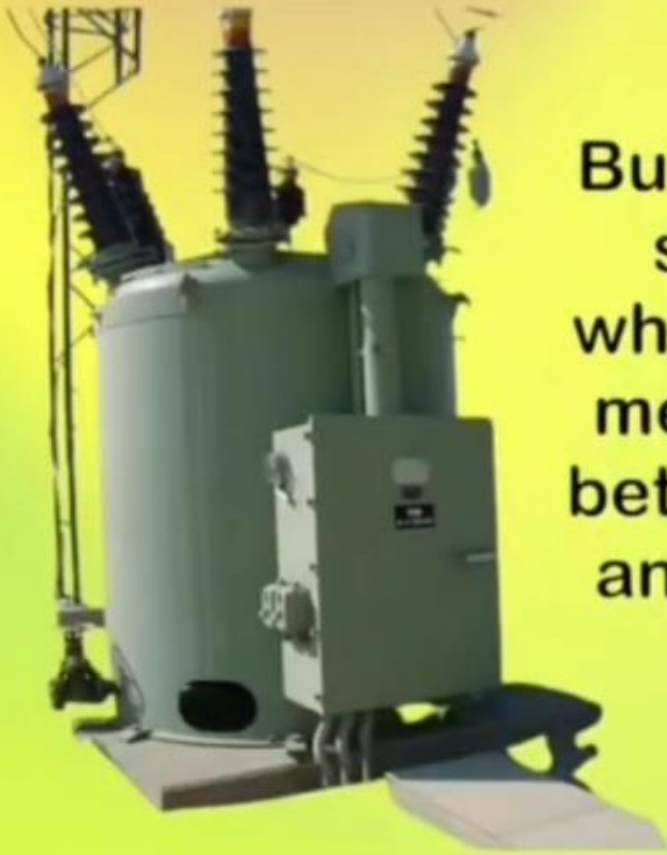
VCB stands for Vacuum Circuit Breaker. In vacuum circuit breakers, the vacuum is used as the arc quenching medium. Vacuum offers the highest insulating strength.

So it has far superior arc quenching properties than any other medium (oil in oil CB, SF6 in SF6 circuit breaker).



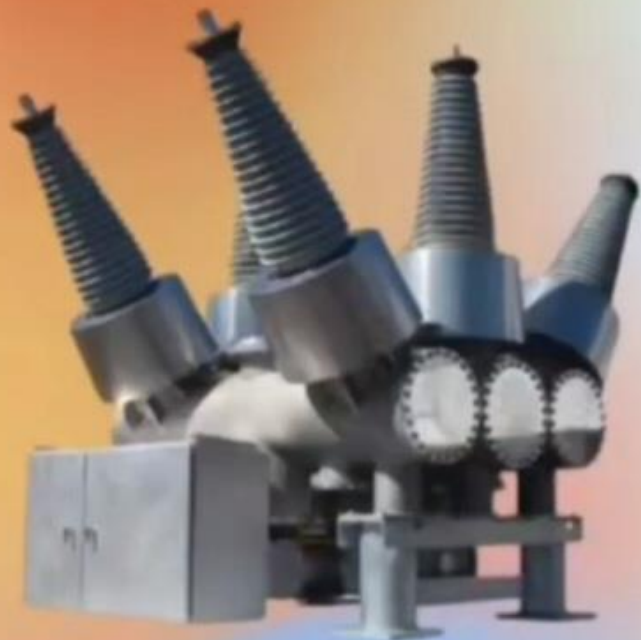
BOCB

Bulk oil circuit breaker or BOCB is such types of circuit breakers where oil is used as arc quenching media as well as insulating media between current carrying contacts and earthed parts of the breaker. The oil used here is same as transformer insulating oil.





SF6 Circuit Breakers



In an SF6 Circuit breaker, sulphur hexafluoride gas is used as the arc quenching medium. ... The contacts of the breaker are opened in a high-pressure flow sulphur hexafluoride (SF6) gas and an arc is struck between them. The gas captures the conducting free electrons in the arc to form relatively immobile negative ions.

Types: Based on Voltage

Low voltage circuit breakers

These breakers are rated for use at low voltages up to 2 kV and are mainly used in small-scale industries.



High voltage circuit breakers

These breakers are rated for use at voltages greater than 2 kV. High voltage circuit breakers are further subdivided into transmission class breakers. Those which are rated 123 kV and above. Medium voltage class (lesser than 72 kV) circuit breakers.



Based on Installation

Indoor circuit breakers

These are designed to use inside the buildings or in weather-resistant enclosures. They are typically operated at a medium voltage with a metal clad switchgear enclosure.



Outdoor Circuit breakers

You can use these breakers outdoors without any roof due to their design. Their external enclosure arrangement is strong compared to the indoor breakers and can withstand wear and tear.



Based on External Design

Dead tank circuit breakers

The breakers whose enclosed tank is at ground potential are known as dead tank circuit breakers. Their tank encloses all the insulating and interrupting medium. In other words, the tank is shorted to ground or it is at dead potential.



Live tank circuit breakers

These breakers have a tank housing interrupter that is at a potential above the ground. It is above the ground with some insulation medium in between.



Based on Arc Interrupting Mechanism

Air circuit breaker

This breaker uses air as an insulating and interrupting medium. The breaker is sub-classified into two types; Low voltage circuit breaker whose value lies below 1000V. High voltage circuit breaker whose value is 1000 V and above. It is further classified into oil circuit breakers and the oil-less circuit breaker.



Oil circuit breaker

It uses oil as an interrupting and insulating medium. These breakers are divided into two types based on the pressure and amount of oil used.



Continued....

Vacuum circuit breaker

These breakers use vacuum as the interrupting medium due to its high dielectric and diffusive properties.



Miniature circuit breaker (MCB)

The current ratings for this breaker are less than 100A and has only one over-current protection built within it. The trip settings are not adjustable in this circuit.



Continued....

Moulded Case circuit breaker

Current ratings for these breakers are higher than 1000A. They have earth fault protection along with current protection. The trip settings of the Molded Case Circuit Breaker can be adjusted easily.



Single Pole circuit breaker

This breaker has one hot wire and one neutral wire that operate at 120 V. When there is a fault, it will interrupt just the hot wire.



Continued....

Double Pole circuit breaker

This is used for 220 V. There are two hot wires and both the poles need to be interrupted.



GFI or GFCI circuit breaker

These are safety switches that trip on ground fault current. The GFCI breaker interrupts the electrical circuit when it detects the slightest variance between phase and neutral wires.



Continued....

Arc Fault circuit breaker

The AFCI breaker interrupts the circuit during excessive arc conditions and prevents fire. Under the normal arcing condition, this breaker will be idle and won't interrupt the circuit.



SF6 circuit breaker

In the SF6 circuit breaker the current carrying contacts operate in sulphur hexafluoride gas. It is known as an SF6 circuit breaker. It has an excellent insulating property and high electro-negativity. It can be understood that, high affinity of absorbing free electron. The negative ion is formed when a free electron collides with the SF6 gas molecule; it is absorbed by that gas molecule.



Thanks and
Come daily
for New
Updated
Books.

www.waelectronic.com