

Service Power Technologies

# Medium voltage service Retrofit solutions for rapid arc fault extinguishing

# The new active arc fault protection device for medium voltage switchgear

The know-how of the ABB vacuum interrupter and  $I_g$ -limiter products, each successfully in service for decades now, has made it possible to develop an ultra-fast arc fault protection system in the form of the UFES ultra-fast earthing switch. UFES is a combination of devices consisting of detection and release electronics and the corresponding primary switching elements (PSE) which initiate a 3-phase short-circuit to earth in the event of a fault. The extremely short switching time of the special vacuum interrupter in combination with rapid and reliable detection of fault current and light leads to an extinguishing of every arc, effectively preventing thermal and mechanical damage inside the protected switchgear system.

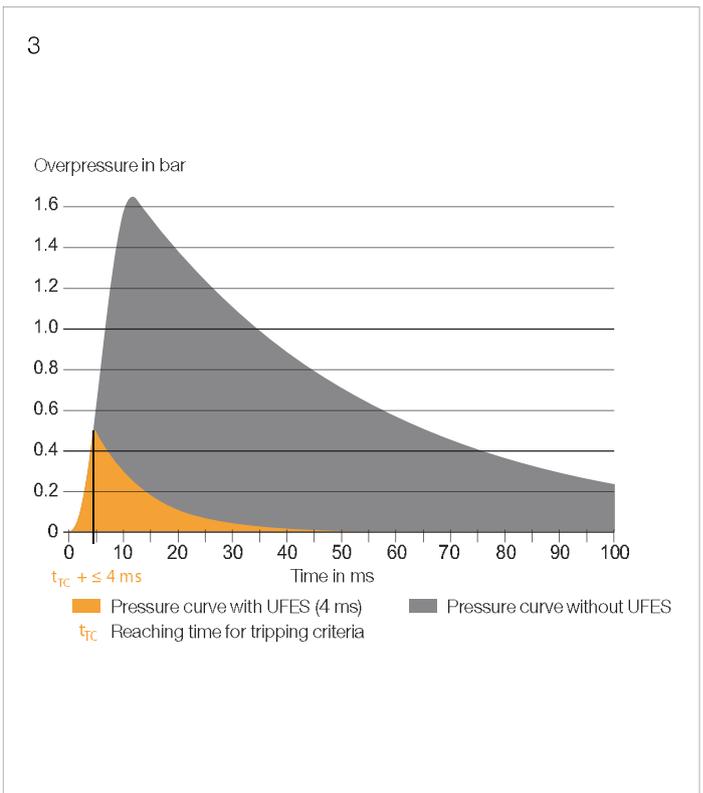
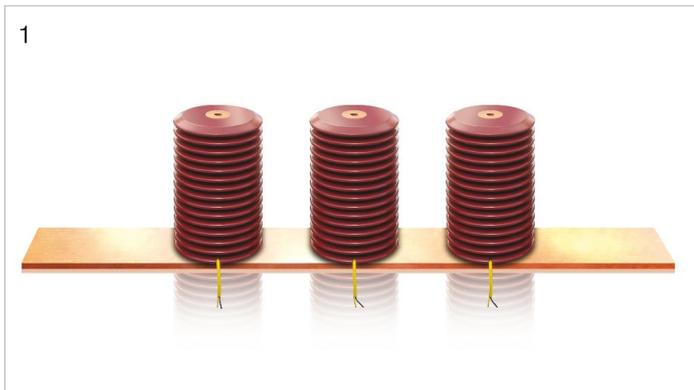
## Retrofit solutions for extinguishing of arc faults in switchgear

Retrofitting with an integrated UFES thus provides an additional, active protection system which extinguishes any arc almost immediately after it arises due to the extremely short switching time of the PSE (less than 1.5 ms). The system brings advantages to every air-insulated medium voltage switchgear installation, irrespective of its test classification.

Particularly for older, non IAC switchgear systems UFES retrofit solutions provide maximum personal and equipment protection.

Upgrading of arc proof qualified switchgear is also useful. These systems do of course fully meet the operator safety requirements of IEC 62271-200, but the destructive effects of an arc fault in the switchgear can still be drastically reduced. The UFES minimizes the pressure rise and the consequential damage in the switchgear system, while without additional protection facilities the panel concerned would in most cases have to be completely replaced. In consequence, the repair work caused by a fault can be greatly limited and system and process availability increased.

1 Primary switching elements | 2 Measuring and tripping electronics | 3 Example pressure curve with and without UFES retrofit solution



# Retrofit for medium voltage switchgear

## Various opportunities are available for retrofitting of existing medium voltage switchgear systems

### ABB service withdrawable solutions

The UFES ultra-fast-earthing switch in ABB withdrawable assembly or truck design provides a simple opportunity to upgrade existing switchgear systems with active arc fault protection. For air-insulated switchgear systems based on withdrawable assembly type, a plug & play module which avoids modifications to the infrastructure can be directly inserted.

This solution is designed for switchgear configurations with spare panels. Similar solutions are also available for other switchgear system types with trucks or withdrawable assemblies.

Ratings: 24 kV bis 25 kA / 3s  
17.5 kV up to 31.5 kA / 3s

### ABB UFES Service-Box (up to 24 kV)

The type-tested ABB UFES Service-Box can be used proprietary.

It is mounted directly on the switchgear system, taking account of short-circuit strength, and connected by copper bars to the busbar of the switchgear system.

Various installation configurations are possible to ensure flexibility in mounting of the UFES Service-Box at site:

- Top mounting:  
for panel width of at least 800 mm
- End cover mounting:  
vertical or horizontal, independent of panel width

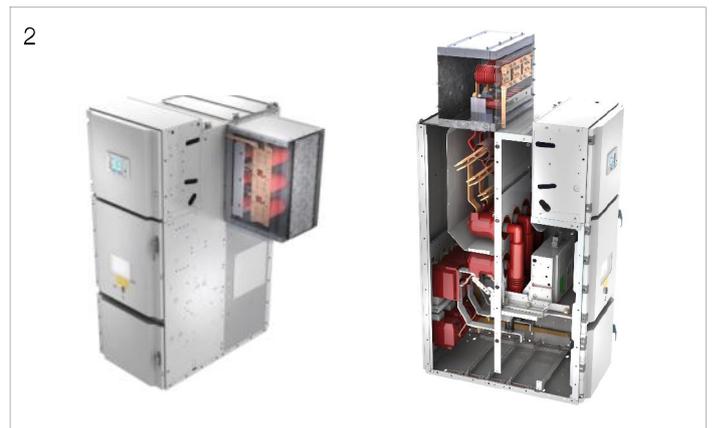
Ratings: 12 kV / 17.5 kV, up to 50 kA / 3s  
24 kV, up to 25 kA / 3s

UFES retrofit solutions prevent the extreme effects of an arc fault. This leads to unbeatable advantages in the avoidance of injury and damage, the maintenance of secure power supply, and the reduction of production stoppages.

### Advantages

- Universal usability of the retrofit solutions
- Short shutdown times for installation
- Greatly increased operator safety for all switchgear systems
- Drastic reduction in downtimes and repair costs
- Prevention of serious damage in switchgear systems, switching devices and their environment
- Minimization of pressure rise in the faulty compartment and surrounding switchgear building
- Highly reduced release of toxic gases from combustion/vaporization of metal and insulating material

1 Type tested UFES retrofit solution on a withdrawable assembly for ABB ZS switchgear | 2 Universally usable UFES Service-Box



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