

# SZM

Schaltanlagen  
Zubehör

Bad Muskau

**ZUSCHA Boss**

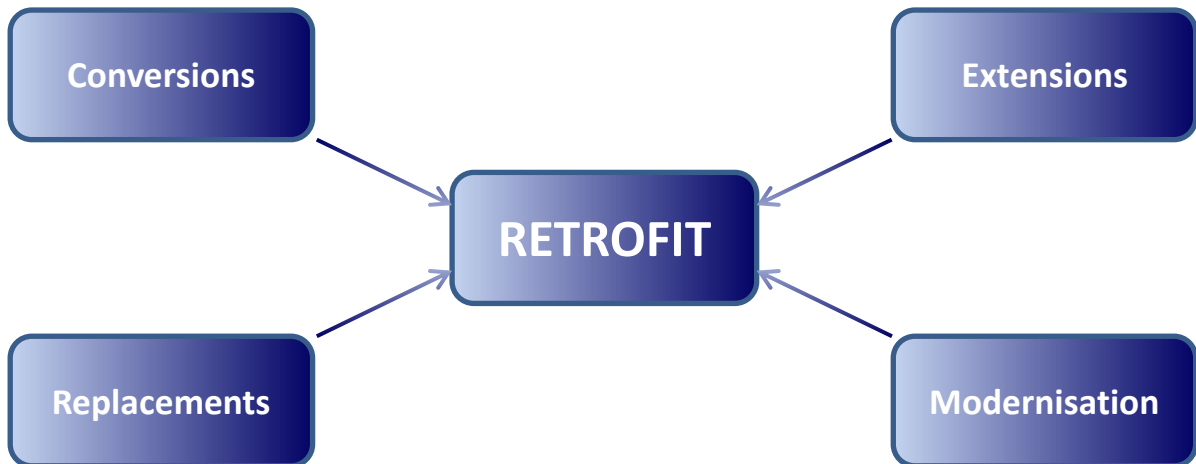
*Reliable Switching of Higher Voltage Current*



**RETROFIT in  
medium - and  
low voltage  
switchgear**

# Definition

RETROFIT is the upgrading/ modernisation of critical components in existing switchgear systems with the aim to improve their overall technical, safety-related and economical properties. In these systems, the components subject to the highest level of wear and tear are the circuit breakers and disconnectors. Medium - and low voltage circuit breakers RETROFIT is the most cost-effective method to modernize and extend the service life of existing switchgear.



## Method

### Conversions

Personnel and equipment protection is improved by for example installing modern protection technology in the existing systems, utilizing the existing panels.

### Replacements

Replacement of for example older technology circuit breakers with modern vacuum circuit breakers, leaving the existing switchgear unchanged.

### Extensions

Extensions include equipping spare switchgear panel or extending existing switchgear with additional panels of the same or of a more modern design.

### Modernisation

Modernisation of other system components according to the latest status of technology, thus improving system availability and uprating its operating ratings.

**SZM GmbH (SchaltanlagenZubehör Bad Muskau GmbH)** offers extensive possibilities for RETROFIT solutions in the area of medium - and low voltage thanks to its many years of experience.

# RETROFIT in medium - and low voltage switchgear

## What is the condition of your switchgear system?

- Good general condition of the switchgear
- The electrical or mechanical expected service life of the equipment has expired
  - High level of maintenance work for old switching devices
- The maintenance costs have risen with increasing age of the switching devices
  - Poor or no availability of spare parts for switching devices
  - The protective device are obsolete

## Your benefits from RETROFIT:

Use of vacuum or SF6 circuit breaker (tested)

Very short and limited operating interruptions

100 % Plug-and-Play solutions

Extension of the switchgear system life cycle

Reduction of maintenance costs

Improvement of system and personal protection

Completely new customized to order switch trucks

Low training requirements as the equipment is familiar

No tedious authorisation processes

Significantly lower investment costs

Inventory protection because the existing systems retains their structure

Improvement of environmental protection





OLD

## 1. Your enquiry:

The following details are required for a RETROFIT solution proposal:

- Make and types of the original CB trucks (rating plates)
- Make and type of switchgear panel (rating plates)
- Technical parameters of CB's and disconnectors
- Photos of the switchgear panel and components
- Main & critical dimensions of switchgear panel and CB trucks
- Definition of interlocking between the CB trucks and the switchgear panel (photos)
- Details of mains & auxiliaries connecting devices between CB trucks and switchgear panel
- Details of the CB trucks main earthing contacts (photos)
- Relevant circuit diagrams (CB, CB truck and switchgear panel)

ENQUIRY



NEW

PRODUCTION



PROTOTYP



PROTOTYPING

## 7. Production and commissioning your solution:

- Production under consideration of the supply quantity
- Performance of routined tests on each switch truck (routined test report)
- Definition of packaging and transport

## 6. Commissioning the prototype:

- On-site commissioning by qualified personnel
- Functional test of interlocking and mechanical/electrical functions
- Adjustments as necessary of interlocks
- Production release

## 5. Prototyping:

- Production of turned and milled parts in the SZM
- manufacture of moulds (e.g. for insulating parts and contact fingers)
- Order of sheet metal parts and welded assemblies (CB truck) from local suppliers
- Order of purchased material (e.g. circuit breaker)





## 2. Our offer:

An offer with the following contents will be prepared based on the information given:

- Price for development of the solution (per CB truck type)
- Price for the CB trucks (including CB's and depending on ordered quantity)
- Time schedule (delivery time)
- Possible requirement for sample devices
- All necessary changes to the panel, such as the secondary plug if necessary

## 3. Measurement recording:

*On-site*

- Availability of a sample device for approx. 6 hours
- Access to all relevant documents such as drawings, operating manuals, circuit diagrams, etc.); *sample devices are provided to SZM*
- If required, provision of sample devices to complete development/design

OFFER



MEASUREMENT RECORDING



DESIGN

## 4. Design:

We prepare a technical draft to discuss the details on the basis of documents and information received

- Consideration of current regulations such as IEC standards
- Details can be discussed and presented on the basis of drafts
- Specification of technical details (e.g. type of circuit breaker, secondary plug, contact system, etc.)
- Authorization or release of the draft by the customer
- Start of detailed design of the retrofit solution
- Design of a 3D model (software: SolidWorks®)
- Choice of materials, surfaces, connection elements and purchased parts
- Definition of manufacturing method such as laser, milling, turning or 3D print
- Technical drawings of production parts
- Definition of requirements in assembly (on drawings)
- Purchased parts enquiry

# A small selection of our RETROFIT solutions:

1.



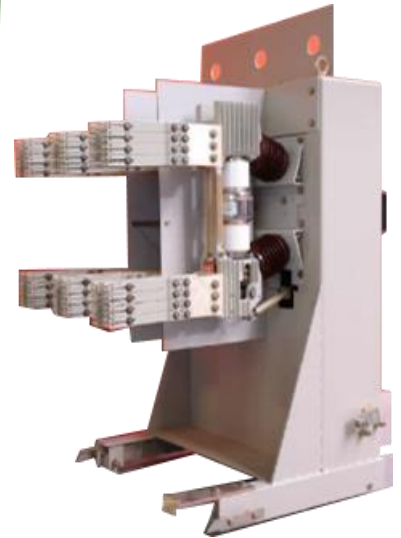
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3.



4.



Pic	Switch gear/ devices	Manufacturer	Ur kV	Retrofit-solution
1	CSIM1/ SCI4-12-1250	SAD / SGM	12	Vacuum circuit breaker NVL on switch-truck
2	PAD/ HPTw307h	Sprecher & Schuh	36	Vacuum circuit breaker 3AH5 on switch-truck
3	8BD1/ H515	Siemens	24	Vacuum circuit breaker SION 3AE1 on switch-truck
4	HF515	Fuji	15	Vacuum circuit breaker 3AH3 on switch-truck
5	HMX BS 5311	GEC	17,5	Vacuum circuit breaker VD4 on switch-truck
6	WA20	F & G	24	Vacuum circuit breaker NVL on switch-truck
7	RMB/ FAL 404	AEG	7,2	Vacuum contactor 3TL8 with HH-fuses on switch-truck
8	ME-1001	AEG	0,5	Low voltage circuit breaker Siemens 3WL1110
9	ME-5123	AEG	0,5	Low voltage circuit breaker Siemens 3WL1220

5.



6.



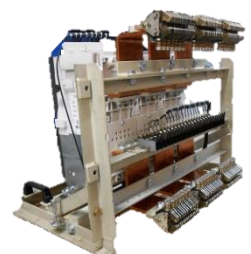
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8.



9.





# Other parts of our supply and service range:

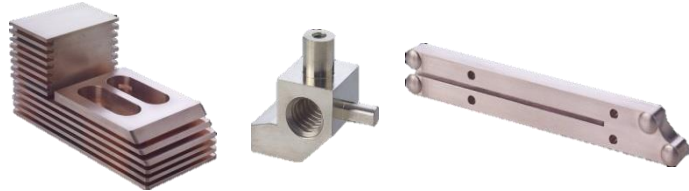
## Service

SZM GmbH offers you the opportunity to properly maintain your complete switchgear system and to supply original spare parts and/or install them as required. Alongside the extensions, RETROFIT, modernization and conversion of substations, we also carry out inspections, maintenance and repair work on medium - and low voltage switchgears.



## Mechanical production

SZM GmbH operates in a modern work environment, using conventional and primarily CNC-controlled metal processing centres. We manufacture with maximum precision, from individual pieces to medium batch sizes. We process a large variety of metal materials which we can also refine as required (hardening, grinding, galvanising, silver-plating etc.)

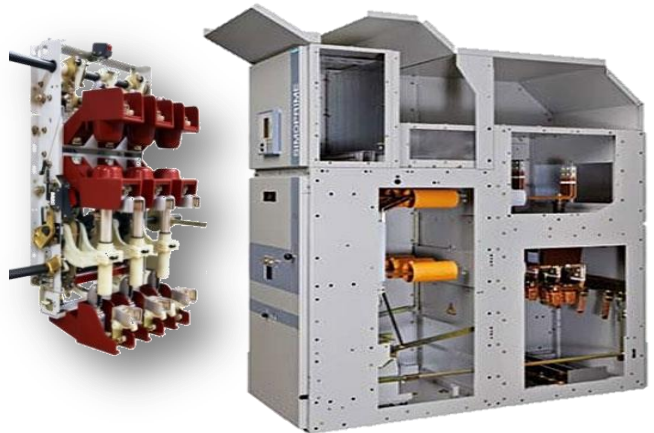


## Switching devices

Production of load-break switches type C3. Development/production/sale of vacuum CB's.

## Switchgear systems

We offer you an extensive range of medium voltage switchgear systems for primary distribution, both standard solutions, but also tailor-made specific customised solutions from development to type testing. Our range includes air and inert gas insulated switchgear panel with a selection of different switching devices such as SIMOPRIME/ PTG01/ PTG02/ SAM and much more.



## Drives

We design and produce manual and motorized drives for medium voltage load-break switches, disconnecting switches and earthing switches of various makes.



## Accessories

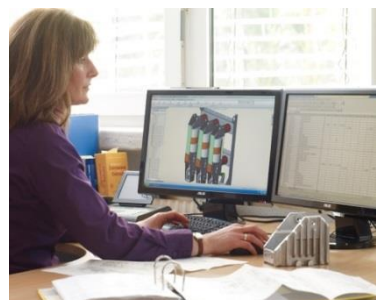
Various accessories for switchgear construction such as shaft extension, attachment sets for signalling switches, clamps for round bus bars, locks and much more.

## Contact systems

Due to our extensive RETROFIT program, we also offer a wide variety of contact systems for round and flat primary contacts. We are also pleased to design and produce special customized solutions for all current ratings.

## Design

SZM GmbH designs modern products for the energy market, especially medium voltage switching devices but also switchgear systems, drives for switching devices and RETROFIT solutions for the exchange of worn out devices. We provide a one stop shop, from giving competent advice to design, prototyping and to full type testing. We are equipped with all required CAD software, modern electrical test lab and advanced measurement technology.





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