

# The Pulse of Power

Newsletter from ABB Power Technologies, Components

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## Our growing family of dry bushings: Introducing GSB

The quantifiable cost savings for the user is resulting in a growing interest for dry RIP bushing technology. The most recent product in our growing family is named GSB and is presently available for 245/362/420 kV voltage classes, and later in the year for 550 kV class. The GSB line of bushings is intended for oil to air applications and is available with the choice of either porcelain or silicone insulators.

RIP bushings feature a number of tests to ensure optimal working performance which can be divided into three main categories.

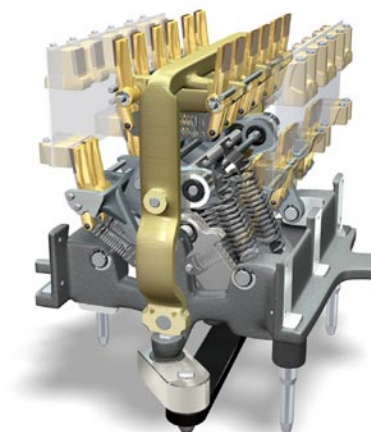
- To ensure the production process, each RIP bushing is subject to an electrical routine test sequence, before being cleared for delivery. The ABB acceptance criteria exceed the international standard for RIP bushings.
- To ensure the design, each new product family, such as the GSB, has to be type tested in compliance with the international standards, or higher.
- In addition ABB carries out comprehensive testing programs to verify certain characteristics unique to RIP bushings.



*Electrical routine testing of an oil-to-air bushing type GSB.*

## New maintenance video for UC tap-changers

The new maintenance video for UC tap-changers was finalized earlier this year. The video is available in DVD format in several languages, and shall be used as a complement to the printed maintenance guides.



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## It's time for vacuum!

The 41<sup>st</sup> CIGRÉ session was held in Paris on August 28<sup>th</sup> – September 1<sup>st</sup> and brought together some 2500 delegates from around the world, attached to high voltage transmission of electricity. In the technical exhibition ABB for the first time displayed full scale prototypes of the next generation tap-changers and motor drives. Both products are based on proven ABB technology and have a number of cost saving features for the end users.

The vacuum interrupter technology will be offered as an alternative to traditional switching technology in the UC range of tap-changers as a first step. The patented system will also facilitate full interchangeability in existing tap-changer installations by just swapping the diverter switch mechanism, an operation as easy as the ordinary field maintenance.

The system is designed to reduce the life cycle cost and increase transformer availability.

- Increased inspection intervals and reduced outage time when inspection is due. No special tools are required and only visual inspection in a clean environment is needed. The much appreciated external drive shaft and plug-in system remain for ease and failure safe inspections.
- Less sensitive to moisture in oil makes the system more forgiving in respect to improperly maintained breathers.
- Vacuum bottles, tailored to its application, and based on 25 years of ABB experience and millions of successfully delivered units provide for an extremely reliable product.

The next generation of motor drive is designed for operation of all types of ABB tap-changers. The modular design of functional units is based on decades of operational feedback and experience gained from previous motor drives and has a high emphasis on providing easy modification of functions and improved service friendliness in the field.

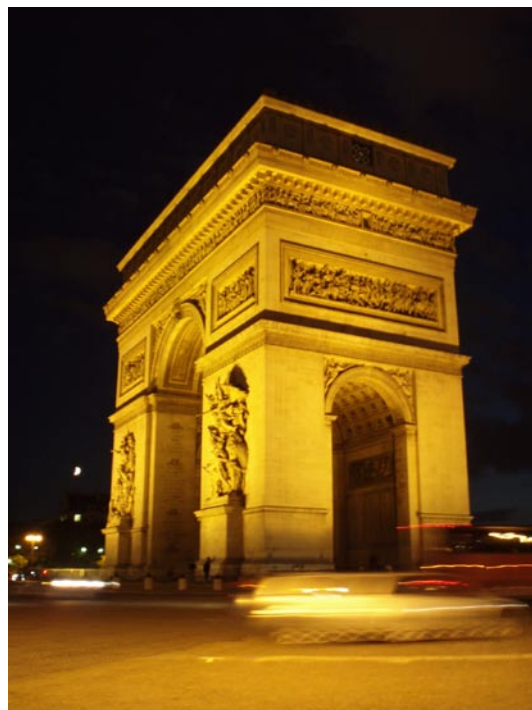
- Adding of functionality
- Change of supply voltage
- Change of limit positions

The modular design and a transmission gear made from maintenance free elements with low noise emission reduce the cost of overhaul.

- Self diagnostic
- Event handling
- Reduced number of parts
- Short delivery time

Product launch and technical data will be communicated separately as soon as the products have been cleared for sales.






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## Interchange

On-load tap-changers with vacuum interrupters



Full interchangeability in existing transformer installations.  
Increase the maintenance intervals.

The complex block contains the ABB logo, a title 'Interchange', a subtitle 'On-load tap-changers with vacuum interrupters', an image of a man holding a large blue puzzle piece, and two lines of text: 'Full interchangeability in existing transformer installations.' and 'Increase the maintenance intervals.'

## New generation of bushings for 800 kV dc meet coming market needs

The increasing interest world-wide, in 800 kV dc transmission systems, has put a focus on the development of apparatus for such systems. Some of the key components of a HVDC converter station are the transformer bushings and the wall bushings. ABB is pleased to announce the success of the development of 800 kV dc bushings.

The 800 kV dc bushings have to comply with a series of requirements, such as mechanical, electrical and thermal requirements. The coming 800 kV dc projects, in for instance China, aim to transport 5000 MW or 6400 MW from each converter station. This implies currents up to 4000 A at 800 kV dc. This combination of an extremely high voltage level and high currents has been a major challenge for the development team for 800 kV dc bushings at ABB in Ludvika, Sweden. The 800 kV dc bushings are based on a successful design, already in use in 500 kV dc bushings in the 3G projects in China with a total service experience of more than 800 000 hours, thus guaranteeing a reliability and cost-effectiveness required for the important 800 kV stations.

The development has been done in close collaboration with ABB Corporate Research in Sweden to assure the implementation of the latest tools and know-how for thermal, mechanical and electrical design and calculations.

The 18 m long 800 kV dc wall bushing, and the 10 m long 800 kV dc transformer bushing, are both equipped with SIR composite insulators for optimal performance. The composite

insulators are produced by ABB in Piteå, Sweden, which is the first manufacturer in the world, able to produce composite insulators of up to 10 m.

The bushings have passed all required dielectric routine- and type tests, performed by STRI, under the supervision of SATS, who will issue the formal test reports.

The ABB 800 kV dc bushings, the first in the world, have already been presented for delegations from China who are planning to build the first 800 kV dc transmission system in the world.



*Testing of the first 800 kV dc wall bushing at STRI, Ludvika, Sweden*

## New features in the TEC 2.0

The TEC is an electronic control, monitoring, and diagnostic device. The system is configured with a "fingerprint" of the transformer. The device provides a single interface to the entire transformer with present and historical status data and the possibility to predict loads, which gives possibilities for condition bases maintenance of the transformer.

The new TEC system "TEC 2.0" is a future development of the earlier systems. The main differences are.

1. Stand alone functionality. Everything is handled in the TEC unit, from event generation to data storage.
2. Connection to TEC web based user interface by TCP/IP.

3. Option for stripped TEC unit for direct mounting in transformer cabinet.
4. Additional order configuration for additional sensors.
5. Improved functionality for the event handling, cooling control and other algorithms.

See [www.abb.com/tec](http://www.abb.com/tec) for more information.



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