

# ABB Service for traction motors Rail operator BLS Cargo

ABB Switzerland offers a wide range of products and services for the long-term safe operation of AC and DC traction motors of all kinds.

## History

The blue BLS Re465 locomotives were produced in the 1990's at the SLM plant in Winterthur. The engines originate from the historical BBC / ABB factory in Birr. During a period of three years, approximately 80 Performance grade P = 1600 kW traction motors were manufactured. In European transit traffic, the Re465 locomotive is mainly used for cargo transport.

## Age-related maintenance

Because traction motors are exposed to high levels of temperature, electrical, atmospheric and mechanical-related (workforce factors TEAM) stresses, a thorough revision needs to be carried out after approx. 1.5 million km or through old age. The first revision, R1 consists mainly of a visual inspection conducted by the customer. It is during the second revision, after approx. 10 – 12 years, that ABB performs its role.

- A major overhaul of the engines through the following measures will take place:
- Engine disassembly
- Electrical and mechanical testing of the stator and rotor
- Re-impregnation of the stator
- New bearings on the rotor
- Reassembly including trial-run in test-bay at nominal values

Nach nur drei Wochen sind die Motoren wieder einsatzbereit.



## Damaged motors and reconstruction of motors

ABB has successfully rewound three motors in the past two years and manufactured a new rotor. As former original manufacturer of motors in the 1990s, ABB has the required know-how. Thus, together with the benefits of the new factory in Kleindöttingen, this makes it possible to achieve an equal level of quality throughout the lifespan of the machine. This applies not just for the manufacture of identical reconstructions but also for all maintenance, repair or modernisation work.

## ABB's short reaction time

In order to achieve the shortest possible engine downtime, various components are already stored with ABB, e.g. the coil set is stored "green" (without main insulation) in the warehouse, which means that the coils are stored already formed (wound and spread) but without main insulation. This work method saves approximately six to eight weeks of work.

Thanks to professional and solution-orientated working methods, all maintenance or repair work on Re465 motors has been assigned to ABB since 2010.

### Replacement parts

ABB supplies replacement parts for all motors manufactured by ABB. Thanks to our Global Technical Support Centre (GTSC in Kleindöttingen) we are also able to reconstruct complete capital parts, such as rotors and stators.

### Revision

The disassembled component parts are washed in our fully-automatic washer using our special cleaning agents. Drying takes place in a vacuum oven so that residual moisture on windings and insulation can be completely removed. Depending on individual technology of the parts, rotors, stators and their windings are then re-impregnated under vacuum pressure impregnation (VPI) with resin or varnish by a dipping or spraying process and hardened. The engine is given a new coat of paint.



### Repairs

ABB carries out all types of repairs on traction motors; in particular, on the challenging rotor and stator windings. The condition of winding insulation is analysed with dielectric measurements, and worn parts such as bearings are replaced. The rotors are dynamically balanced.

In addition, during revision of DC motors, post-processing work is carried out on the collector. This includes over-wind of the collector, milling out the mica insulation and chamfering the mica edges.

Our workshop has the necessary know-how for this and the corresponding equipment.

### Modernisation

Operational adjustments on the part of the railway operator often require adjustments to be made to traction motors. ABB Engineering allows the modernisation of traction motors with changes to voltage, performance or speed, or when a new insulation system needs to withstand increased loads.

### Quality assurance and final inspection on test-site

Every traction motor undergoes a standard inspection before it leaves our workshop. This comprises a minimum of a no-load test as well as an inspection of insulation. At the new test bay in Kleindöttingen, higher quality tests, such as load, combined or dual frequency heating tests are also available.

For more information, please contact us:

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