ABB DC Drives

Modification - Expansion - Modernisation

with digital converters
22 to 20,000 A
230 to 1500 V

Two-quadrant / four-quadrant

Save money with modification

Millions of DC drives are being used worldwide in every thinkable application, often giving excellent service for years on end. Frequently, however, for multifarious reasons, users want to modernise their drive systems. This brochure is intended to provide some helpful hints on this, and indicate various solutions with which ABB, the world's market leader for DC drives, can be of meaningful assistance.

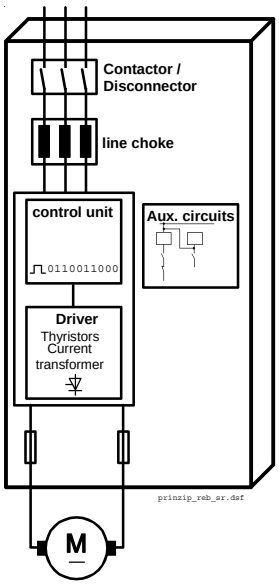
Why modernise?

The motives behind a modernisation job for existing DC drives are many and varied:

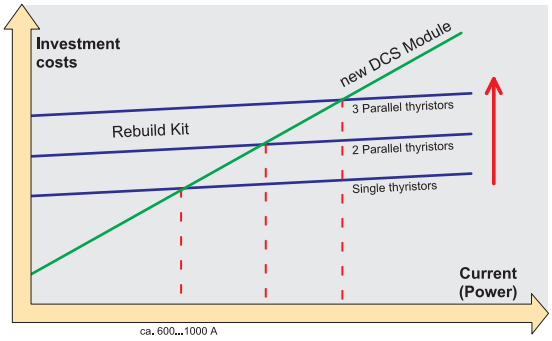
- performance enhancement
- increasing the production speed
- changing over to digital communication, particularly when simultaneously modernising the PLC
- upgrading control precision and process accuracy
- reducing downtimes due to maintenance and repair work
- reducing maintenance and spare parts costs

As a rule, it's not necessary to replace the entire drive system all at once in order to achieve these objectives. Many of the components can be re-used, e.g.

- DC motor, including motor cable
- transformers
- cabinets and busbars
- line chokes
- line contactors and disconnectors
- external fuses
- power cables
- power sections of the converters, i.e. thyristors and current transformers



This form of modernisation offers a lot of advantages compared to replacing the drive system in its entirety. The capital investment costs required, for example, are significantly reduced by re-using high-quality and simultaneously long-lived components. Existing spares can still be utilised. Thanks to the reduced workload for installation, the downtime needed for the modification job can be minimised - all that needs replacing is the easily removed electronics, not the heavy cubicles or motors. Often, in fact, routine shutdowns (e.g. eight hours) will suffice for modifying a drive



Feasibility study
When is it worth while keeping the power sections?

Customers also benefit from the persuasive advantages that modern-day control electronics provide:

- reduced downtimes, thanks to increased drive availability
- higher control precision, leading to enhanced end-product quality
- minimised make-ready times
- enhanced productivity
- state-of-the-art communication interfaces, e.g. field buses, Ethernet
- tele-maintenance option, over the internet too
- improved man-machine communication
- use of sophisticated PC tools
- same communication and operator interfaces as modern DC and AC drives
- change-over from mechanical or analog process controls (e.g. mechanical winder control) to digital solutions

For modernising your DC drive system, ABB offers you customised packages specifically tailored to your own particular needs. Just ask us.

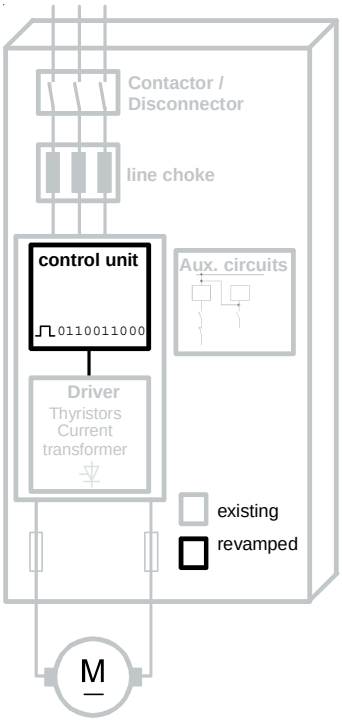
The Modification Options

1) DCR 500 / 600 Rebuild Kit

The DCR500/600 Rebuild Kit replaces the control electronics of an existing DC drive. All power components, including the thyristors, are retained. The DCR500/600 Rebuild Kit is suitable for almost all existing drives from different manufacturers. In addition, ABB has developed specifically tailored solutions for some existing types of converter: this is a cost-efficient option for currents above approx. 600...800 A. For smaller currents, a new converter module is a favoured solution.

DCR500/600 Rebuild Kit

- (20) 400...20000 A_{DC}
- 0...1160 V_{DC}
- 230...1200V_{AC}
- 2-Q / 4-Q
- IP00
- 24 and more parallel bridges can be controlled
- consisting of
  - control board
  - power supply
  - firing pulse transmitter
  - current and voltage meters
  - accessories (firing cables, etc.)
- communication and I/O options as for DCS500/600 modules
- Also available as customised solutions for:
  - BBC PxD and SZxD
  - ASEA Tyrak
  - other manufacturers

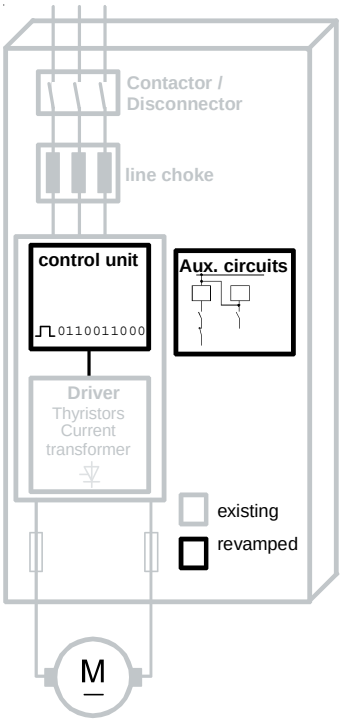


ASEA Tyrak8 Rebuild Kit

Consisting of a DCR500/600 basic unit PLUS accessories PLUS a mounting plate, the Tyrak8 Rebuild Kit has been specifically designed to fit the mechanical configuration of a standard Tyrak8 cubicle. All components have been installed on a mounting plate, which can be affixed quickly and easily to the inside of the cubicle door using only 4 screws. This ensures that the interior of the cubicle can continue to be used, and the mechanical installation work is completed in just a few minutes. It can even be carried out while the system is actually in operation. Prefabricated, ready-for-connection control cables, moreover, make the electrical installation work a whole lot easier. With minor modifications, this solution can be used for other drive systems as well.

Tyrak8 Rebuild Kit (DCR500/600 960x)

- (20) 650...3000 A_{DC}
- 0...1160 V_{DC}
- 230...1200V_{AC}
- 2-Q / 4-Q
- IP00
- also available as a pulp and paper version
- consisting of DCR500/600 Rebuild Kit PLUS
  - mounting plate
  - prefabricated, ready-for-connection cables
  - I/O boards
  - motor fan control
  - emergency stop relay

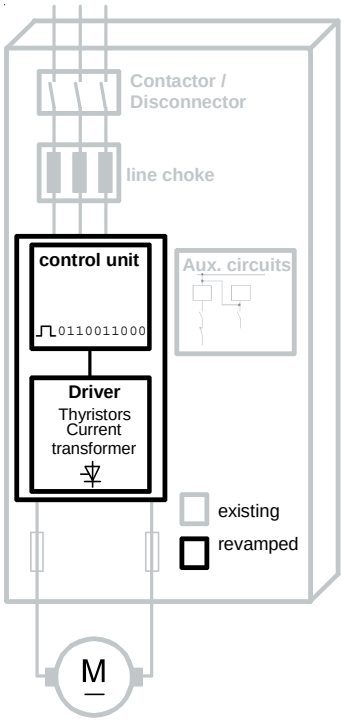


2) DCS500/600 Converter Modules

If the existing thyristors are not going to be re-used, the usual practice is to install a new module. In the case of current ratings below 400...600 A, particularly, this solution is conveniently cost-efficient. The other components in the control cubicle, such as chokes, contactors, disconnectors, external fuses, can in most cases be re-used. Thanks to the modules' extremely compact dimensions, they can be easily installed in almost any control cubicle. In fact, up to 5200 A can be fitted into a single cubicle bay.

DCS500/600 Modules

- 20...5200 A_{DC}
- 0...1160 V_{DC}
- 230...1000V_{AC}
- 2-Q / 4-Q
- IP00
- ready for connection complete with thyristors
- ultra-compact
- wide range of communication and I/O options



3) Module DCE500/600

The DCE500/600 modules speed up the installation work for new drives quite significantly. Their converters and the requisite external accessories are fully mounted and cabled on a mounting plate. The entire unit has been comprehensively function-tested. The mechanical installation work is confined to suspending and securing it in an empty 600-mm cubicle, thus ensuring minimised downtimes during modernisation projects.
The DCE series is available in the compact version up to 520 A and the Vario model up to 2000 A.

DCE500/600 Module

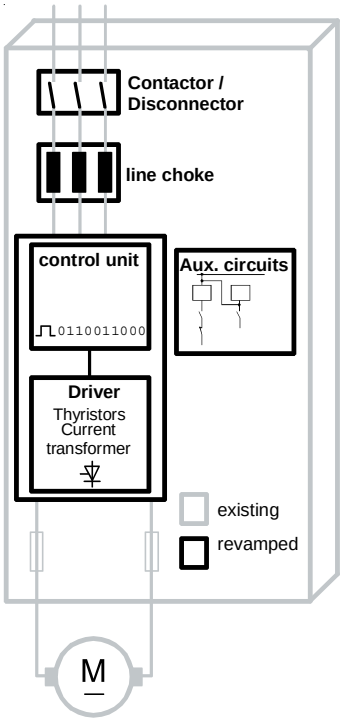
- 20...2000 A_{DC}
- 0...700 V_{DC}
- 230...600 V_{AC}
- 2-Q / 4-Q
- IP00
- ready-for-connection module including all the requisite accessories
- fits inside every 600-mm cubicle
- multifarious options available
- DCE500/600 Compact up to 520 A
- DCE500/600 Vario up to 2000 A

Compact - incl.:

- DCS module
- reactor
- line contactor
- fuses (AC/DC) with disconnector function
- aux supply transformer
- I/O boards
- auxiliaries

Vario - incl.:

- DCS module
- reactor
- fuses
- aux supply transformer
- I/O boards and auxiliaries on separate modules

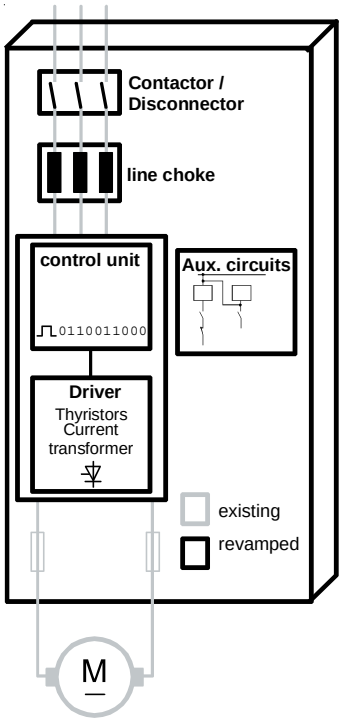


4) DCA500/600 Enclosed Converter

The DCA500/600 models are complete drive systems, including converters, switching devices, protection systems and auxiliaries. Thanks to a customised configuration of each system, and an abundant number of available options all individual requirement profiles can be met.
Extensive factory testing of the complete system, including an integration test with PLC applications or 12-pulse systems, ensures minimised downtimes during installation. Customised circuitry and safety functions can be integrated. The unit's compact dimensions mean that almost all old drive cubicles can be replaced for a reduced space requirement.

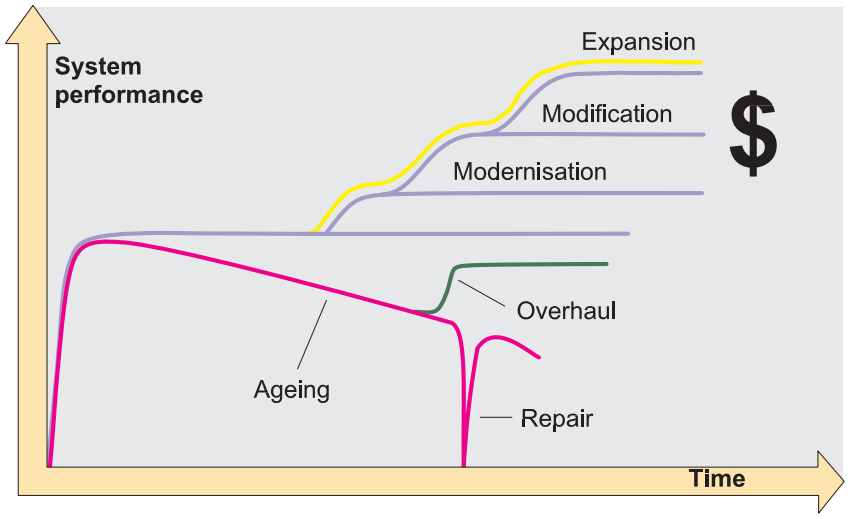
DCA500/600 Drive Cubicles

- 20...20000 A_{DC}
- 0...1500 V_{DC}
- 230...1200 V_{AC}
- 2-Q / 4-Q
- IP21-IP54
- Individually tailored to the customer's needs
- High-current solutions in 6- and 12-pulse design



Besides our extensive portfolio of field-proven products and packages for drive modernisation, we offer you our long years of experience, backed up by the world market leader's expertise in terms of DC drives. Whether you want a single compressor or a complete rolling mill, whether you're looking for single thyristor bridge or 12 of them in parallel - in numerous projects all over the world, ABB has regularly outperformed its clients' expectations.

Give your plant a new lease of life and increase your output while simultaneously upgrading the quality of your process. All of it in a minimised timeframe at an affordable cost - challenge us!



Since we continually design-enhance our products to the latest state of the art, we would ask you to understand that we reserve the right to make changes to the particulars in this brochure regarding construction, illustrations, size, weights, etc. for the equipment concerned.

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