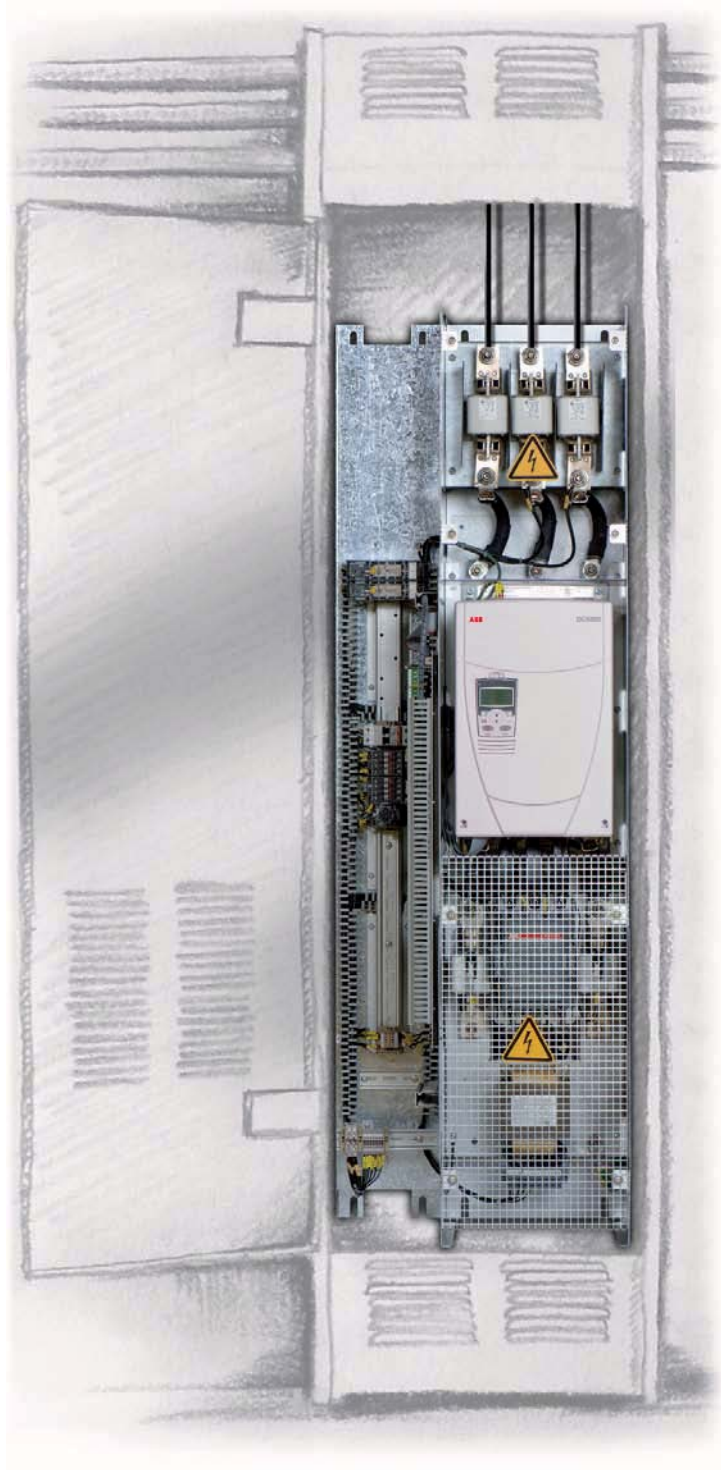


ABB DC drives

Revamp – Expansion – Modernisation
with digital converters 20 to 20,000 A, 230 to 1500 V
Two-quadrant / four-quadrant



Power and productivity
for a better world™



Save money with modification

Millions of DC drives are being used worldwide in every conceivable application, often giving excellent service for years on end. Frequently, however, for many different 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.

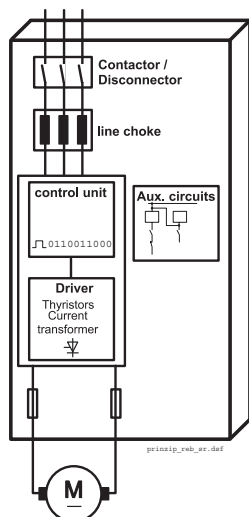
Why modernise?

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

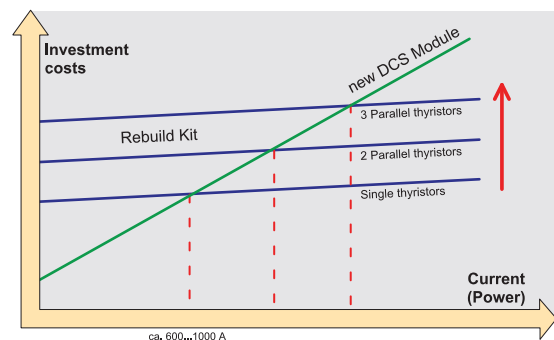
- performance enhancement
- increasing the production speed
- changing over to digital communication, particularly when simultaneously modernising the PLC
- upgrading control precision and process accuracy
- reducing downtimes due to maintenance and repair work
- reducing maintenance and spare parts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

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 entire drive system. 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 the 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 better end-product quality
- minimised make-ready times
- enhanced productivity
- state-of-the-art communication interfaces, e.g. field buses, Ethernet
- remote diagnosis option
- improved man-machine communication
- use of sophisticated PC tools for diagnostics
- 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 modifications options

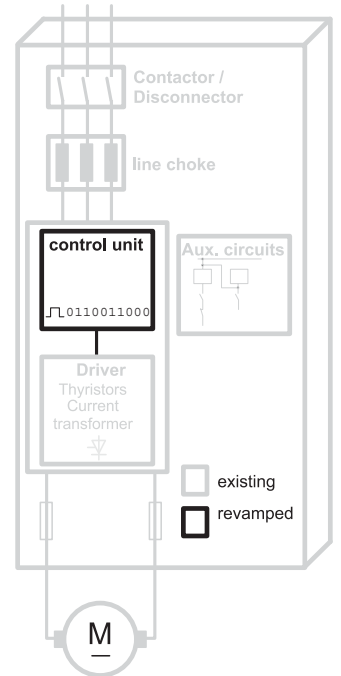
DCS800-R Rebuild Kit

The DCS800-R Rebuild Kit replaces the control electronics of an existing DC drive. All power components, including the thyristors, are retained. The DCS800-R 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 DC currents above approx. 600...800 A. For smaller currents, a new converter module is a favoured solution.



DCS800-R Rebuild Kit

- (20) 400...20000 A_{DC}
- 0...1160 V_{DC}
- 230...1200 V_{AC}
- 2-Q / 4-Q
- IP00
- 4 parallel bridges up to 24 thyristors per direction 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 DCS800-S modules
- Also available as tailored solutions for:
 - BBC PxD and SZxD
 - ASEA TYRAK
 - other manufacturers



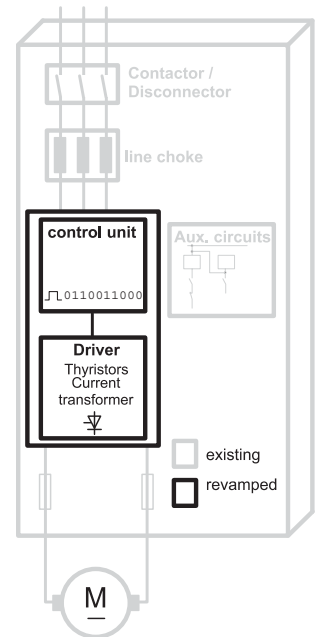
DCS800-S Converter Modules

If the existing thyristors are not going to be re-used, the usual practice is to install a new module. In the case of DC current ratings below 400...600 A, particularly, this solution is conveniently cost-efficient. The remaining 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.



DCS800-S Converter Modules

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



Module DCS800-E

The DCS800-E modules speed up the installation work for new drives quite significantly. Their converters and the requisite external accessories are fully mounted and cabled on an assembly 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 DCS800-E series is available in the compact version up to 520 A and the Vario model up to 2000 A.



Compact

Vario

DCS800-A Enclosed Converter

The DCS800-A 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.



DCS800-E Module

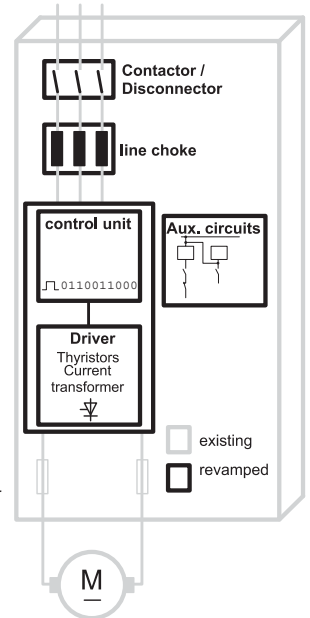
- 20...2000 A_{DC}
- 0...700 V_{DC}
- 230...600 V_{AC}
- 2-Q / 4-Q
- IP00
- ready-for-connection module including all the requisite accessories
- fits inside every 600-mm cubicle
- wide choice of options available

DCS800-E compact, up to 520 A:

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

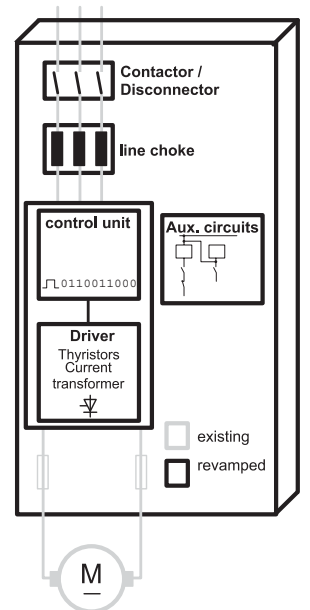
DCS800-E vario, up to 2000 A:

- DCS module
- line choke
- fuses
- auxiliary supply transformer
- I/O boards and auxiliaries on separate panels



DCS800-A 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
- Routine tested in the factory



Type specific tailored solutions

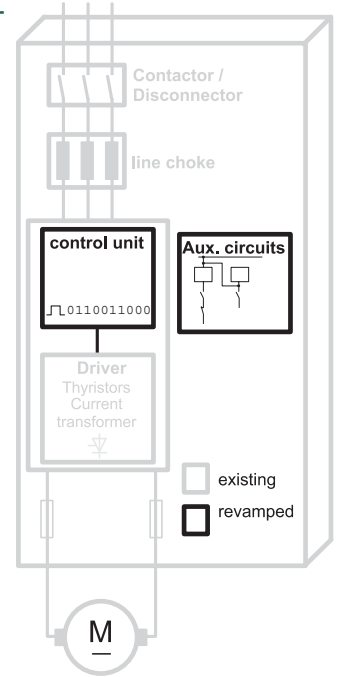
Example: ASEA TYRAK8 Rebuild Kit

Consisting of a DCS800-R 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 are installed on an assembly 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 (DCS800-R0x- 960x)

- (20) 650...3000 A_{DC}
- 0...1160 V_{DC}
- 230...1200 V_{AC}
- 2-Q / 4-Q
- IP00
- also available as a pulp and paper version
- consisting of DCS800-R Rebuild Kit plus
 - mounting plate
 - prefabricated, ready-for-connection cables
 - I/O boards
 - motor fan control
 - emergency stop relay



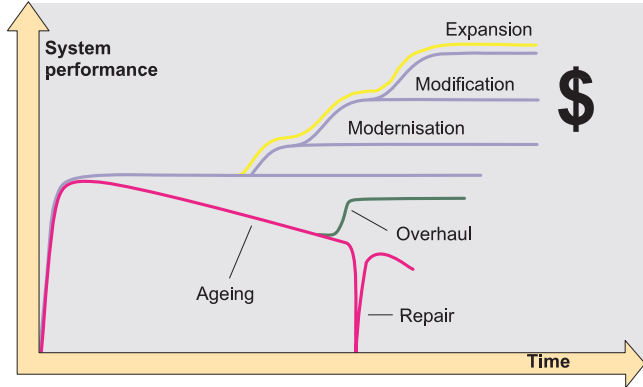
All available solutions

Types	DC current			Available Documents
	20- 520A	520-1000A	1000 – 3000A	
ASEA TYRAK 8	DCS800-E	TYRAK 8 Rebuild Kit		3ADW000184R0201 - TYRAK 8 Rebuild Kit 3ADW000210R0101 - DCS800-E Flyer
ASEA TYRAK L		DCS800-R	DCS800 Rebuild Kit TYRAK L (2Q/4Q)	PDC7 EN REVA - DCS800-R TYRAK L Upgrade Kit 3ADW000416R0101 - TYRAK L upgrade and installation manual
ASEA TYRAK Midi II	under preparation			
DCS500 / DCV700 DCS500B / DCS600	DCS800-S Module	DCS800-R Upgrade Kits Available frame sizes: C2b to D5, C3 to D6, C4 to D7, A5 to D5, A6/A7 to D7 (Note: field exciter needs to be replaced)		SDC3 EN REVA - ABB DC Drives Upgrade Kit 3ADW000256 - Upgrade Kits

Remark: These solutions are all based on standard cubicle designs. In each case it will be necessary to check if the standard has been met.

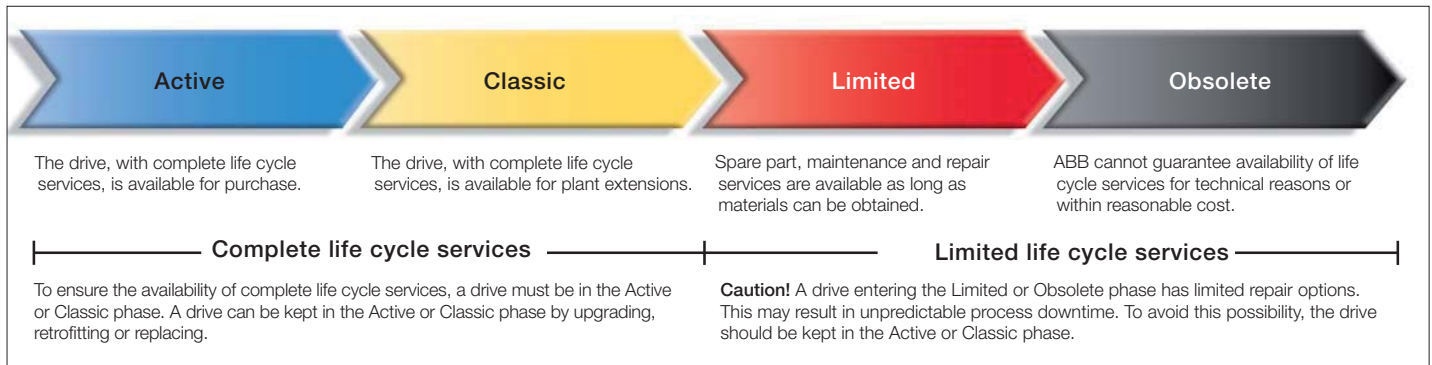
Modernisation and LV Drives life cycle plan

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 a 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. Feel free to challenge us.



Drives product life cycle management

- Ensuring spare part and competence availability throughout the product's life cycle
- Enabling efficient product support and maintenance for improved reliability
- Adding functionality to the initial product by following the upgrade path
- Providing smooth transition to new technology at the end of the product's life cycle



ASEAS TYRAK L and TYRAK 8 drives, DCS500 (based on CON-1 board) and DCV700 cabinets are already in an obsolete phase of their life cycle. For more information about ABB's LV life cycle plan, please see www.abb.com/drives

For more information please contact:

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