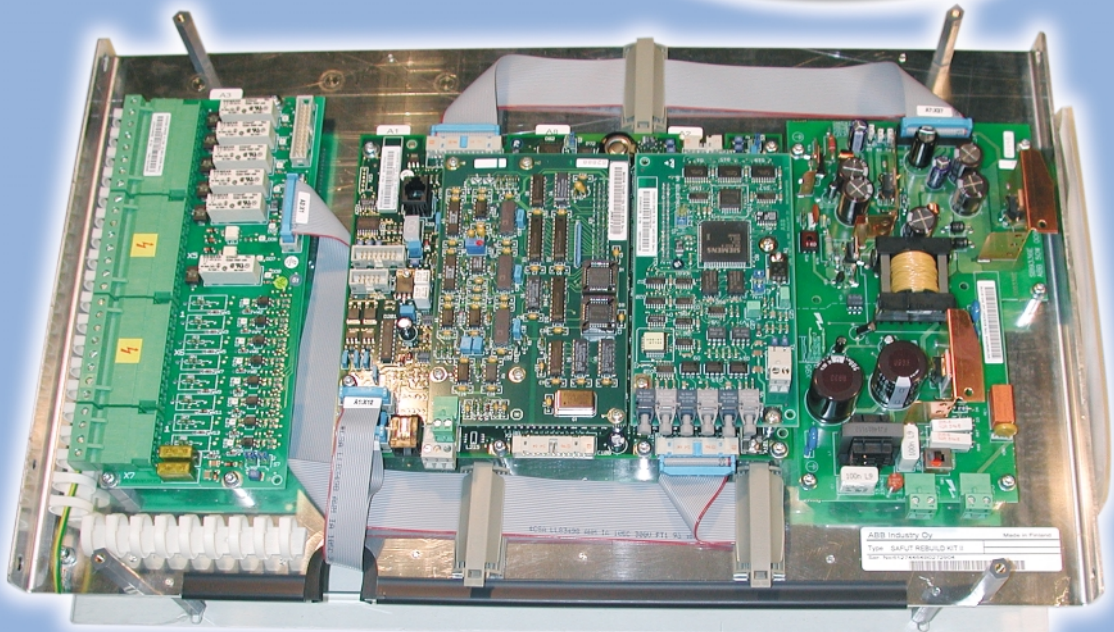
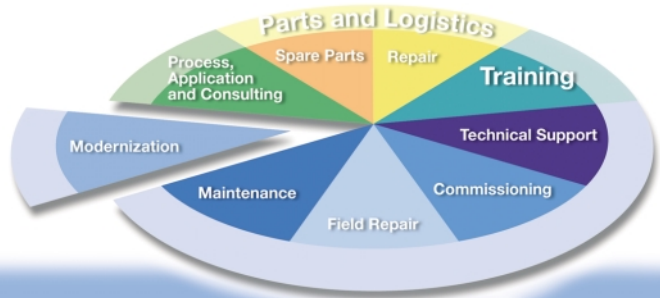


SAFUT Rebuild Kit

To upgrade SAFUX Regenerative Thyristor Braking Control



Upgrade the new Control for the Thyristor Braking Bridge SAFUX

A new advanced control can be replaced the old SAFUX type control in the regenerative thyristor braking unit of the ACV 700/SAMI STAR. The type designation of the new unit is SAFUT. The control software of the SAFUT is modified from the DCV 700 drive, and the control boards are from DCS 500.

The control principle is completely different from the SAFUX, and the control has many new features.

- The control of the SAFUT is more stable compared to the old SAFUX preventing unnecessary bridge changes and therefore reduces the risk of blown fuses during power dips or other disturbances.
- The control can be tuned precisely and easily by changing parameters with the PC tool.
- It is compatible with ACV 700/DCV700 commissioning tool (DDC tool 3.4).
- Connection to APC board is possible through optic TC link.
- A rebuild kit for converting an existing SAFUX control is available.

SAFUT Control

The control of the old SAFUX is based on measuring the line current. The line voltage is measured through a transformer. Although SAFUX has a microprocessor, the control parameters are fixed. This kind of control has in many cases been too unstable causing fuse problems and difficulties in tuning the inverters.

The new SAFUT control measures several parameters to determine the required power direction.

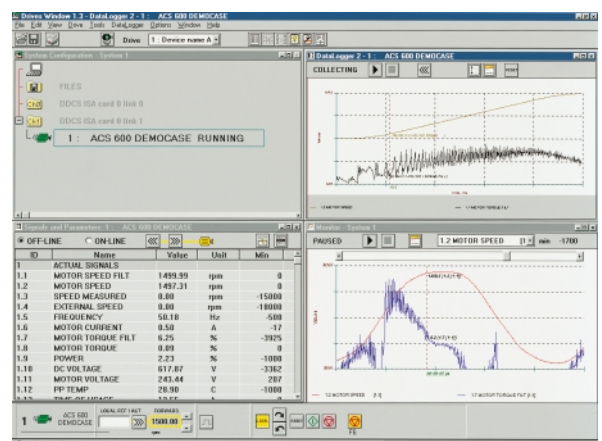
By changing the parameters, it can be adjusted to different supply networks. To achieve a better commutation margin in weak supply networks or to keep the braking power capacity constant, increased supply voltage can be used at 400 V and 500 V nominal motor voltage. The maximum AC supply voltage of existing bridges is limited to 690 V.

SAFUT Measurements

- Direct measurement of DC voltage
- Direct measurement of bridge's output voltage (DC)
- Direct line voltage measurement
- Line current measurement

Control Logic

- Bridge change according to DC voltage
- DC voltage 100 % (adjustable) when motoring at high power
- DC voltage 90 % (adjustable) when braking and when motoring at low power
- Braking is prevented when
 - DC voltage is high compared to the supply voltage
 - Supply voltage is too low
- High DC voltage is prevented in no load situations
- Variable commutation margin, thyristor firing angle depends on DC current
- Diode/normal mode control through the APC or digital input.





Rebuild Kit

SAFUT Rebuild Kit includes all necessary parts and wires to convert an existing SAFUX control to the new SAFUT. There are two Kits, Kit I for module type SAFUX (up to 1000 A) and Kit II for separate bridges (over 1000 A). All PC boards except the resistor board of Kit II are mounted on one assembly plate, which fits to the place of the old SAFUX control unit. The resistor board of the Kit II is mounted to the place of the SAFUX resistor board.

The thyristor bridges, RC circuits and the current transformers of the existing SAFUX are not changed. Charging resistors are not needed, charging of DC capacitors is done with voltage reference ramping. Main contactor can be controlled by the Rebuild Kit.

The installation is quick and easy:

- Removing the old control unit
- Installing the new control unit
- Installing new wiring; measurements, I/O-connections
- Parameter settings and commissioning

Documentation

Manual “Commissioning of SAFUT Thyristor Braking Unit, Installation of Rebuild Kit”, code 3AFE 61281053 and SAFUT Parameter and Signal Description, code 3AFY 61328386, will be sent with the Rebuild Kit.

Codes

SAFUT Rebuild Kit I	61254412	For SAFUX 315-1000 kVA
SAFUT Rebuild Kit II	61274464	For SAFUX 1250-2500 kVA

Why ABB

The main problem in an upgrading process is the standstill of the production. ABB has long experience of revamp projects. Planning and execution of tight schedules are honoured. With ABB's upgrading packages the repayment period of the investment will be reduced to minimum.

ABB