

Managing DC Link Energy: Carbon brush manufacturing



Situation:

Approximately 500 million high-quality carbon brushes are manufactured per year. New electrically operated servo spiral presses are used to optimize the process.

Problem:

The brake energy is wasted as heat. The dynamic of the machine is pushed to its limits.

Intention:

Increase the energy efficiency and reduce peak demands

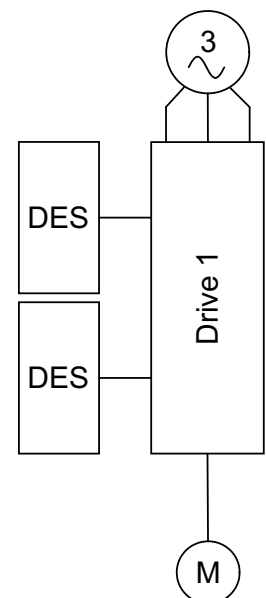
thus raise the dynamic of the press.

Solution:

- > Use of 2 [DES2.0](#) via "Plug & Play":
Stabilizing the DC link by storing brake energy
and providing it again once needed

Results:

1. Raise in energy efficiency and extended longevity of drive electronics
2. Reduction of peak demand
3. Raise in dynamic of the press



Further information:

[Carbon brush manufacturing](#)

[DES](#)

[Dynamic Energy Storage](#)

We look forward to hearing from you!

Dynamic Energy Storage DES

A new option to process braking energy: the Dynamic Energy Storage DES. A solution that is independent of the mains. One device that can be used on almost all converters and servo controllers with a maximum DC link voltage of 800 VDC. The DES is an opportunity to increase the energy efficiency of various applications, to save resources, protect the power grid and even the users nerves.

Active buffer module for DC links

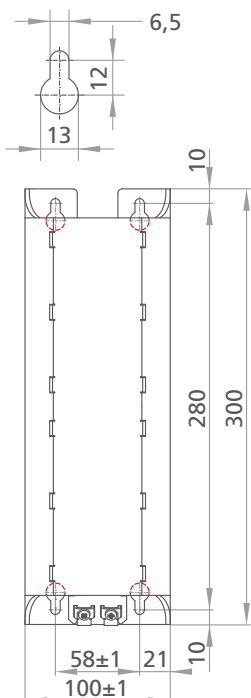
- > for single axis and multi axes systems
- > independent adjustment (Black Box)
- > no displays or any kind of control elements
- > shorter cycle times result in increased efficiency



www.brakeenergy.com/des



Installation dimensions and mounting-holes (mm)



The operation – savings without circuit feedback

Unlike the direct DC link capacity expansion of converters, the active DES does not have any contact with the input side of the mains. The DES is only energised and charged in the event of braking. This feature leads to one of the most important characteristics: the DES does not cause any circuit feedbacks.

The DES independently sets the range of its working voltage level. This range is defined by two values from the voltage level of the DC link: the maximum voltage level of the DC link and the minimum voltage level of the DC link. From now on the DES starts absorbing energy from the DC link once the voltage level reaches the defined maximum value (e.g. in case of braking). As soon as the voltage level in the DC link reaches the defined minimum value (e.g. in case of accelerating) the DES returns its stored energy to the DC link. This is the moment when energy is being saved, because instead of using power from the grid the converter is driven by electrical energy from the DES!

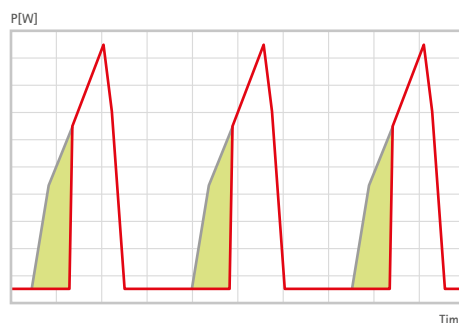
The DES stops supplying energy once the voltage level in its capacitor reaches the dynamically established charging level / minimum voltage level and waits for the next braking event which recharges the capacitor. Charging, discharging, charging, etc. can take place in fractions of a second without causing any power circuit feedbacks.

Technical specifications of the DES

Parameter	Value
Useful energy approx.	1,600 Ws
Continuous voltage of the DC link	800 VDC max.
Output	18 kW max.
Built-in PTC discharge resistor	+
Dimensions H x W x D	300 x 100 x 201 mm
Weight approx.	6.9 kg
Protection class	IP 20

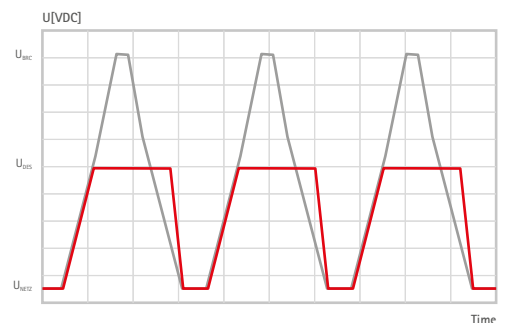
Energy savings with the DES

- with the DES
- without the DES
- Energy savings



Voltage characteristics of the DC link

- without the DES
- with the DES



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Michael Koch GmbH, Zum Grenzgraben 28, 76698 Ubstadt-Weiher
 Tel. (+49) 7251 / 96 26 20, Fax (+49) 7251 / 96 26 21
 www.brakeenergy.com, mail@bremsenergie.de

