KOCH

Managing DC Link Energy:

Handling Robot

Situation:

The robot drives 12 cycles/min with a traverse path of 6.5 m and a power consumption of 10.7 kW.

Problem:

Short cycles and big masses lead to excessive stress of the electronic drive unit and thus to unplanned outages.
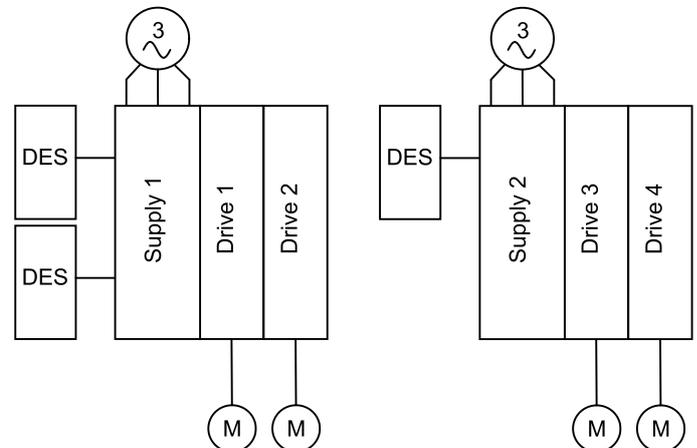
Intention:

Raising the dynamics of the robot

thus achieving higher cycle rates with reduced energy consumption.

Solution:

> Use of 3 DES3.0 via "Plug & Play":
  Stabilizing the DC link by storing brake energy and providing it again once needed
  2 DES3.0 parallel for the linear drive axis
  1 DES3.0 for the robot axis

Results:

1. Increasing cycles from 12 to 15/min: **raise in productivity by 25%**

2. Lowering the power consumption to 8 kW: **energy savings of more than 25%**

3. Longer service life of the electronic drive unit

Further information: DES

Handling Robot   **Dynamic Energy Storage**

We look forward to hearing from you!

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Dynamic Energy Storage Combination
DEK

The dynamic energy storage combination DEK is optimal, when the energy supply for the drives has to be ensured and at the same time the braking energy for the system can be regenerated. DEK is the optimal combination of the Dynamic Energy Storage Unit DES and the Dynamic Power Supply Unit DEV. A part of the installed energy storage – to be defined individually, but at least 50% – is reserved for the UPS case, the remaining part is used for intermediate storage of braking energy. This part helps make the investment in the UPS functionality cheaper due to the possible energy savings.
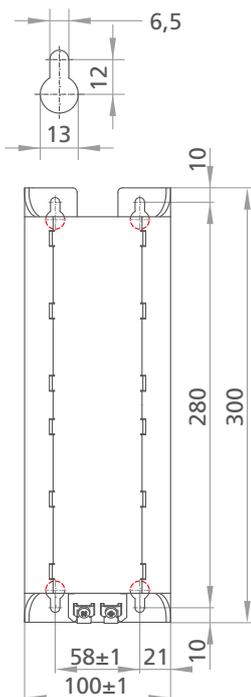
Active supply module for DC links

> for single axis and multi axes systems
> buffers braking energy for use in the system
> no buttons, display indicators, other controls
> provides support during power failures or interruptions
> with a digital interface

www.brakeenergy.com/dek

Dimensions and mounting holes (mm)

6,5
12
13
10
280
300
10
58±1   21
100±1

Combined optimally: Buffer with UPS–function

DEK can both store braking energy as well as compensate for voltage fluctuations and power failures. This is enabled by the division of the storage into one area for braking energy and one for the short-term UPS energy, where the UPS area is allocated at least half of the energy storage. The exact division of the amount of energy available is thus the result of application engineering.

Starting with an example where it applies that 500 Joules of energy are stored temporarily, the remaining 1,500 Joules are stored for the UPS case.
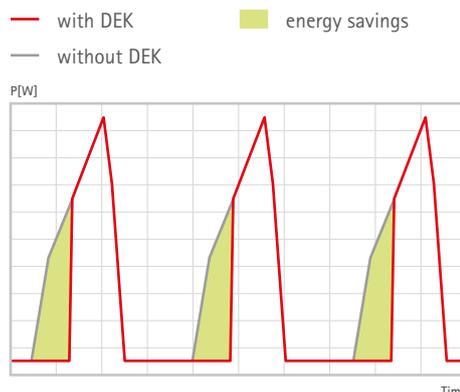
Connecting the DEK to the machine is very easily done by three strands via "Plug&Play". The device then works without any further actions. Based on its concept the DEK can easily be tested in an existing system as a retrofit solution. At the same time a braking resistor can be installed in the converter of the drive system. After a few cycles the collected data in the processor can be read out and evaluated. Based on the analysis of these data the suitable DEK solution can be chosen – Can it get any easier than this?

DEK is available in several power classes. Besides the basic variant 2.0, which is offered in two power classes, variant 3.0 offers another energy boost, it can thus be loaded higher in case of factor power multiplied by time. The higher load capacities for the isometric devices are achieved by changed electronics and active cooling. For the Dynamic Energy Storage Unit, this means the same amount of energy with short cycles, for the Dynamic Power Supply Unit, very large amounts of energy with unplanned, or in the other case the same amount of energy with commonly planned, power failure.
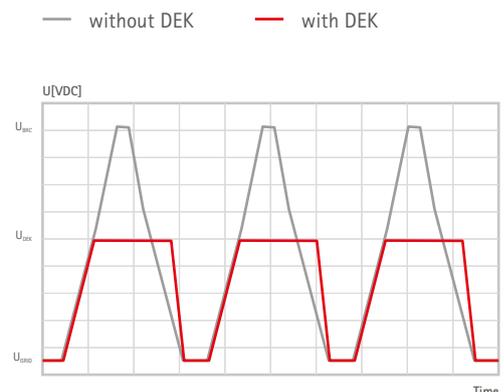
Technical Specifications DEK

Parameter	Value
Available storage capacity, up to	2,000 Ws
Continuous voltage DC link Output power	max. 800 VDC
Output	max. 18 kW
Digital interface	24 VDC (for function monitoring)
Built-in PTC braking 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 DEK

— with DEK   ▨ energy savings
— without DEK

P[W]

Time

Voltage curve of the DC link

— without DEK   — with DEK

U[VDC]

U$_{MC}$

U$_{DEK}$

U$_{GND}$

Time

We look forward to hearing from you!

⊡ **KOCH**