Version S.C.L.

Synchronous drives

without feedback

Version A.S.C.L.

Asynchronous drives

without feedback

COMBIVERT F5

…encoderless controlled drives

KEB

GB

COMBIVERT

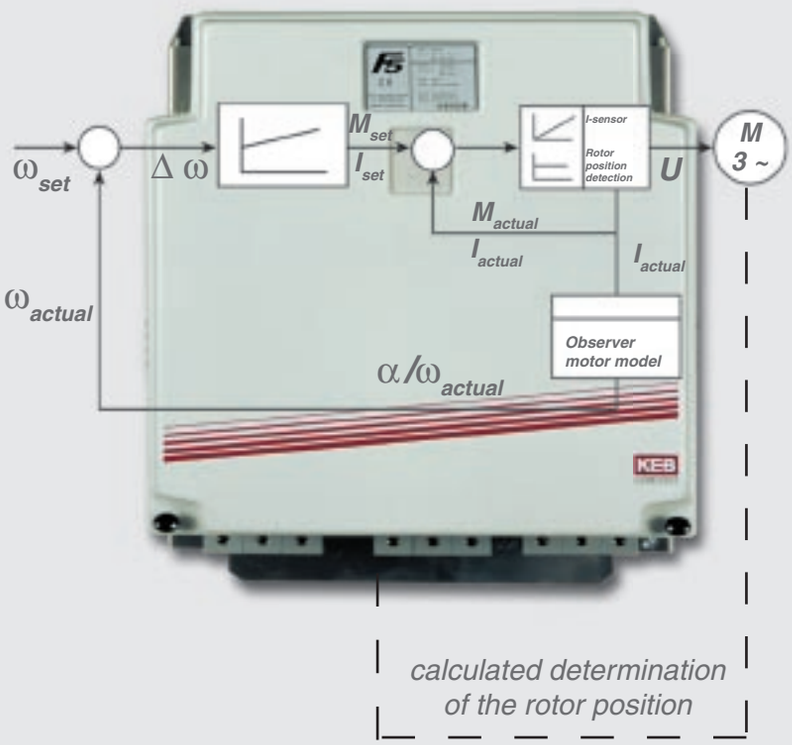
High End Open Loop ...

High speed stability and accurate, reproducible torques form the basis for process chains, in which high-quality products are developed.

*From many years' of experience in applications based on the most modern simulation technique, KEB has converted new control algorithms in software, which optimally apply the electrical image of motors to the internal software control - **without feedback of the motor shaft**.*

As a result two unit variants are available, which replace feedback systems for tasks with high speed and torque accuracy.

The principle - genuine field operation without feedback



The advantages for the application are...

- *accurate speed and torque characteristics*
- *reduced costs due to omission of encoder, interface and cable*
- *robust system solution with increased operational reliability, since potential sources of interference from the encoder system are omitted*

- without feedback

Version F5-S.C.L. for Synchronous Motor Technology

has been designed for high performance speed and torque control in processes, where the system-dependent advantages of motors excited by permanent magnets can be gained without feedback

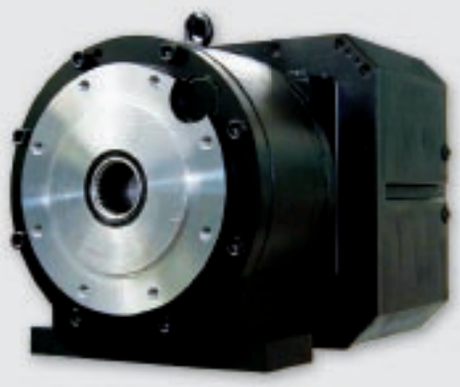
- *optimal degree of efficiency, high energy effectiveness*
- *wide speed range with slip-free control*
- *low rotor inertia and low thermal load*
- *reduced construction volume, smaller overall sizes with high power density*
- *high protection category, robust design*

Version F5-A.S.C.L. for Asynchronous Motor Technology

uses available standard drives with a wide power range, for applications with high requirements for consistent speed and torque accuracy.

In both versions the current controller provides a load-dependent current supply with:

- *excellent overload capacity*
- *without additional losses in idle-run mode*
- *fast correction of load peaks*



S . C . L .

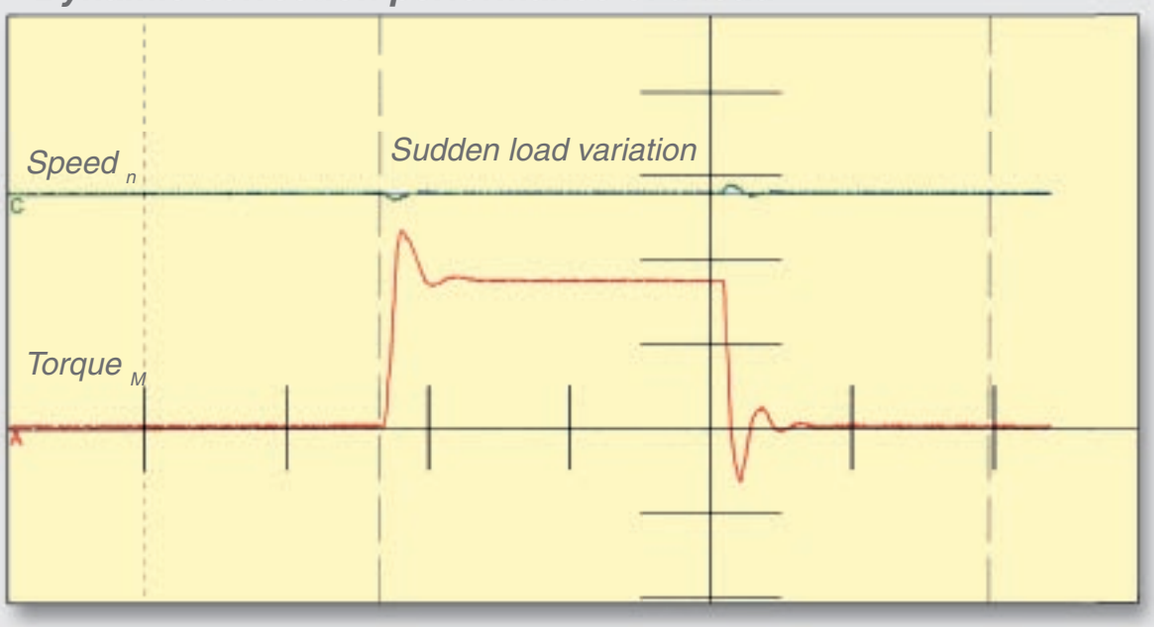
Sensorless Closed Loop for Sync

Conventional solution 	F5-S.C.L. 
with feedback	**without feedback**
➔ installation space for encoder	-
➔ encoder cable	-
➔ encoder interface in the inverter	-

Characteristics with F5-S.C.L.

- improved speed stability in relation to „vector control“ units
- identical performance during sudden load variation compared to closed loop drives
- torque accuracy < 0,3 % T_N
- speed accuracy < 0,3 % n_s
- **display values** with
  - ➔ correction alignment in the system „on the fly“
  - ➔ dynamic correction of the virtual rotor position by computer model

Dynamic correction performance of a load



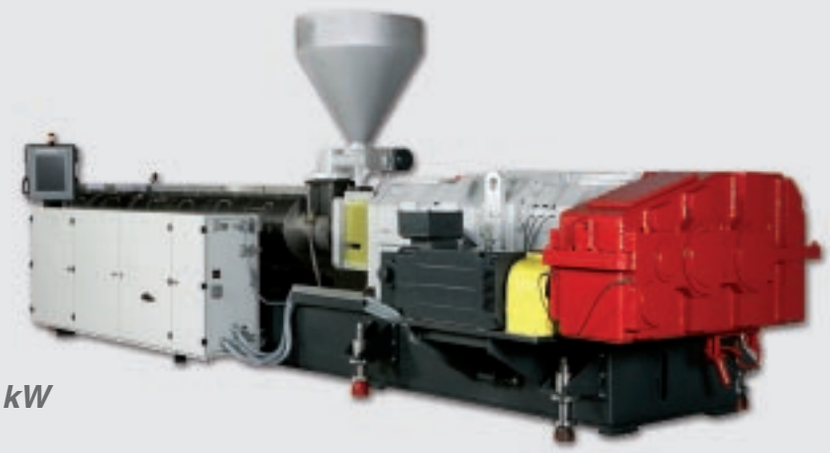
F5 - S.C.L.

Characteristics

- *low installation costs due to the omission of*
  - *- the encoder cable*
  - *- the encoder*
  - *- the encoder interface*
- *high dynamics*
- *slip-free motion*
- *less space required*
- *low weight*
- *high efficiency*
- *high availability*

Potential Applications

- ***Powered tools in machining centers***
- ***Synchronous processing in textile machines***
- ***Hybrid drives***
  - *- diesel electric traction drives in conveyor systems*
  - *- electric drives in boats, yachts and vehicles*
- ***High frequency pump drives in compressors, chargers, screws, vacuum pumps***
- ***Synchronous extruder***
- ***Injection moulding technology***
- ***Blow moulding technology***



available power range 0.37 kW … 800 kW
Order code: F5-E

A . S . C . L .

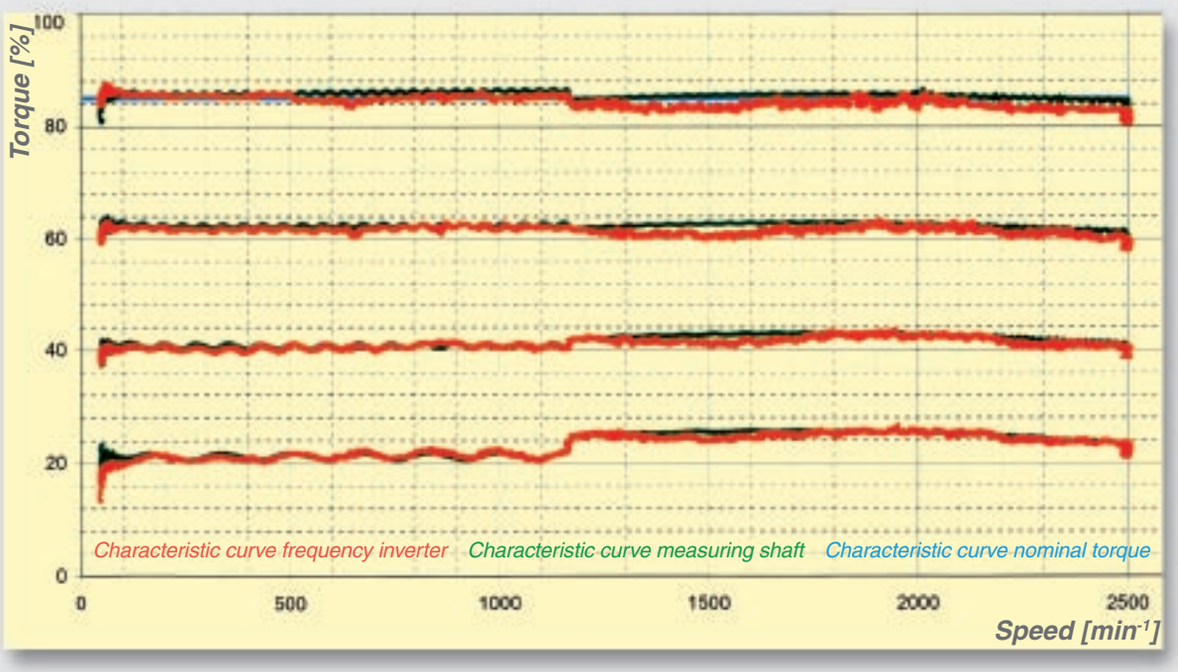
Asynchronous - Sensorless - Clo

Universal, asynchronous drives for top class tasks with the following characteristics:

F5 - A.S.C.L.

- ***Automatic motor data***
  - ➔ *measuring routine of stator and rotor resistance, main and leakage inductance and dead time characteristics curve*
  - ➔ *thermal computation in the motor model*
- ***Controller integration ➔ Symmetrical optimum***
  - ➔ *simplifies the Ki / Kp alignment of the outer automatic control loop (speed)*
  - ➔ *only 1 parameter for the optimization of the drive*
- ***Accurate torque indication**, among other things through*
  - ➔ *the determination of torque off sets and the elimination in the display*
  - ➔ *adjustment of the system‘s idle run torque (optional)*

F5 - A.S.C.L. *Torque characteristics*

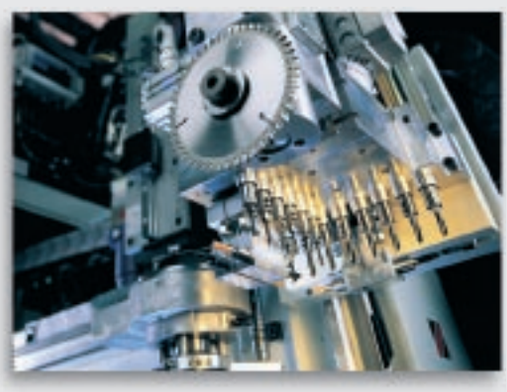


Torque accuracy < 0,3 % T_N

F5-A.S.C.L.

Potential Applications

- Extruder main drives
- Crusher drives / Shredder
- Centrifuges
- Test stands / test systems
- Agitators and mixers
- Cutter and passing machines
- Processing machines for wood, plastic, metal, …
- Mixers
- Heat pumps
- …



available power range: 0.37 kW … 800 kW
Order code: F5-H

people in motion

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