

Application

MADE
IN
GERMANY



Plastics Machines



Continuity and Experience



For more than 10 years KEB supplies worldwide leading plastics machine manufacturers with high-quality frequency inverters.

They are used

- in hydraulic injection molding machines to operate pump systems
- for electrical screw drives (plasticizing)
- in hybrid injection molding machines and
- in all-electric injection molding machines

Further applications are removal robots and injection blow molding machines.

In the extrusion KEB systems control the main drive for single-screw and double-screw extruders in extrusion plants, blow film plants or blow molding machines.

Granulators and mixers complete the field of application.

The success and the experience of KEB are reflected in more than 60.000 installations.

*Experienced technicians and engineers
in the sales department Application Plastics Machines
support you in the project planning of your drive engineering!*



KEB Solutions – Plastics Technology

With the knowledge of various industrial tasks control concepts and technical solutions have been developed, which result in new possibilities for the plastics technology.

ASCL and SCL control procedures describe high-precision, real field-oriented control without encoder feedback for asynchronous and synchronous machines.

Water cooling of the frequency inverter optimizes the heat dissipation, increases the life time of components and allows fanless control cabinet solutions. The heat sinks made of anodised aluminium profile with easy to clean channels are approved for operating pressures up to 10 bar and certified according to UL. Thus open and closed cycles can be designed without mixing valve (internal anti-condensation function) and without pressure-reducing valve.

Compact single-axe units up to 900 kW are particularly space-saving, modular designed and flexibly connectable to all established fieldbus systems.

The axis modules, lined up in a row, with integrated IEC control, up-to-date EtherCat technology and 24 V supply, make the **multi-axis applications** in blow molding machines and plastics injection molding machines particularly efficient.

Integrated safety technology in the drive controller is achieved by means of the basic functions STO and SBC. Additional safety features with reversing axis are in preparation for the multi-axis series **KEB COMBIVERT H6**.



The high cost pressure in the extruder engineering demands optimized concepts for the mechanical and electrical configuration.

In the production of plastic products machine user expect good product quality with optimal use of material and high productivity.

KEB has developed the systems ASCL and SCL for the encoderless operation of asynchronous and synchronous motors!

The systems offer top drive qualities and operate the following types of motors:

- IEC-standard motors for the cost-optimized solution
- Water-cooled motors for sophisticated requirements in the sound and dust emission
- High-Torque-Motors for gearless applications or
- CMG-Drives alternatively to the Torque-Motor.

ASCL

SCL



Technology ASCL / SCL

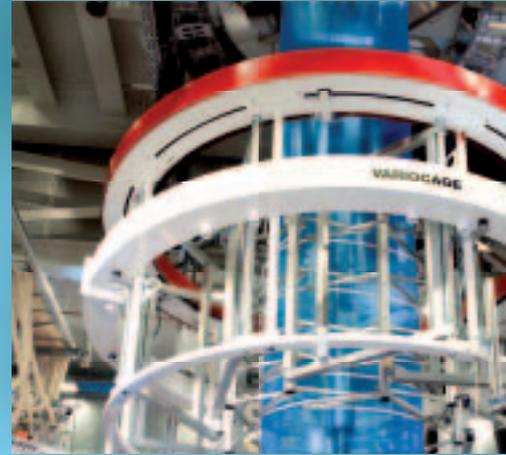
KEB COMBIVERT F5-ASCL / -SCL

on extruder main drives stand out due to ...

- high speed rigidity for constant output and optimal reproducibility
- torque calculation in a quality < 3 % for a safe process monitoring
- speed range 1 : 100 and higher
- blockage detection and gentle relaxation of the torsional forces in the screw (of particular importance with CoEx)
- model monitoring in the lowest speed range for optimal running characteristics
- adjustment setting for the representation of the torque directly on the extruder screw (behind motor and gearbox); thus for the first time the possibility exists to observe the torque directly during plasticizing

Further benefit and cost advantages of the encoderless drive technology arise from the downstream units such as haul-off, wind-up and stretching units.

KEB has placed trend-setting developments on the market.



Speed-controlled Hydraulic Pump



The increased environmental awareness makes the energy consumption and the noise development of machines and plants to decisive criteria.

With the speed-controlled hydraulic pump an application solution has been developed, in which the frequency inverters **KEB COMBIVERT F5** have been proven a thousandfold. The pressure and with it the volume flow are corrected dynamically by the internal PID-control to the process requirements.

Demand-controlled volume flow rates result in following advantages:

- Energy saving up to 60 %
- Reduction of noise level
- Operation in the field weakening range (speed > 1.500 rpm)
- Up to 60 % less heat input into the hydraulic oil
- Longer lifetime of the hydraulic oil
- Steadily adjustable volume flow (0 – 100%)
- Application in 1- up to 4-quadrant operation depending on design
- Reduction of motor size by 87 Hz characteristic
- Same system for 50/60 Hz 380...480 V mains
- No high starting currents

Energy saving by frequency inverter-controlled hydraulic pumps ...



ALL-ELECTRIC Machines

The servo controller **KEB COMBIVERT F5** and the multi-axis servo system **KEB COMBIVERT H6** are first choice for all-electric drives in the plastics injection molding machine.

KEB COMBIVERT F5

- is designed as single-axis servo controller and offers unit gradations with peak currents up to 1,800 A
- the solution for all systems with single drives
- from electrical screw and servo pump drives to hybride and all-electric machines

KEB COMBIVERT H6

- the solution for new generations of high-dynamic and precise electric plastics injection molding machines
- offers per axis peak currents up to approx. 400 A
- B6-rectifier feed-in or
- sinusoidal feed-in and feedback units with step-up chopper function as well as
- an EMC concept tailored to the application

KEB COMBIVERT H6 convinces by user-friendly setup, easy and fast assembly, reduced costs for wiring plus the ease of maintenance.



In addition **KEB COMBIVERT F5** and **KEB COMBIVERT H6** cover all electrical auxiliary drives such as height adjustment of tools, door drive, rotary plate, turning plate, index plate or removal robots efficiently.



Headquarters

Karl E. Brinkmann GmbH
Försterweg 36 - 38
D-32683 Barntrup
Internet: www.keb.de

Tel.: + 49 (0) 5263 401-0
Fax: + 49 (0) 5263 401-116
E-mail: info@keb.de

COMPANIES

AUSTRIA

KEB Antriebstechnik
Austria GmbH
Ritzstraße 8
A - 4614 Marchtrenk
Tel.: +43 (0)7243 53586-0
Fax: +43 (0)7243 53586-21
E-mail: info@keb.at
Internet: www.keb.at

CHINA

KEB Power Transmission
Technology (Shanghai) Co. Ltd.
No. 435 QianPu Road
Songjiang East Industrial Zone
CN-201611 Shanghai, PR. China
Tel.: +86 (0)21 37746688
Fax: +86 (0)21 37746600
E-mail: info@keb.cn
Internet: www.keb.cn

GERMANY

KEB Antriebstechnik GmbH
Wildbacher Straße 5
D-08289 Schneeberg
Tel.: +49 (0)3772 67-0
Fax: +49 (0)3772 67-281
E-mail: info@keb-combidrive.de

FRANCE

Société Française KEB
Z.I. de la Croix St. Nicolas
14, rue Gustave Eiffel
F - 94510 LA QUEUE EN BRIE
Tel.: +33 (0)149620101
Fax: +33 (0)145767495
E-mail: info@keb.fr
Internet: www.keb.fr

GREAT BRITAIN

KEB (UK) Ltd.
6 Chieftain Business Park,
Morris Close
Park Farm, Wellingborough
GB - Northants, NN8 6 XF
Tel.: +44 (0)1933 402220
Fax: +44 (0)1933 400724
E-mail: info@keb-uk.co.uk
Internet: www.keb-uk.co.uk

ITALY

KEB Italia S.r.l. Unipersonale
Via Newton, 2
I - 20019 Settimo Milanese (Milano)
Tel.: +39 02 33535311
Fax: +39 02 33500790
E-mail: info@keb.it
Internet: www.keb.it

JAPAN

KEB - Japan Ltd.
15 - 16, 2 - Chome
Takanawa Minato-ku
J - Tokyo 108 - 0074
Tel.: +81 (0)33 445-8515
Fax: +81 (0)33 445-8215
E-mail: info@keb.jp
Internet: www.keb.jp

RUSSIA

KEB RUS Ltd.
Lesnaya str, house 30
Dzerzhinsky (MO)
RUS - 140091 Moscow region
Tel.: +7 (0)495 5508367
Fax: +7 (0)495 6320217
E-Mail: info@keb.ru
Internet: www.keb.ru

USA

KEB America, Inc
5100 Valley Industrial Blvd. South
USA - Shakopee, MN 55379
Tel.: +1 952 2241400
Fax: +1 952 2241499
E-mail: info@kebamericacom
Internet: www.kebamericacom

Representative offices in Belgium • Korea • Sweden • Spain

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