

Application

MADE
IN
GERMANY

Wood working machinery
HighSpeed Spindles



Continuity and Experience

KEB Solutions

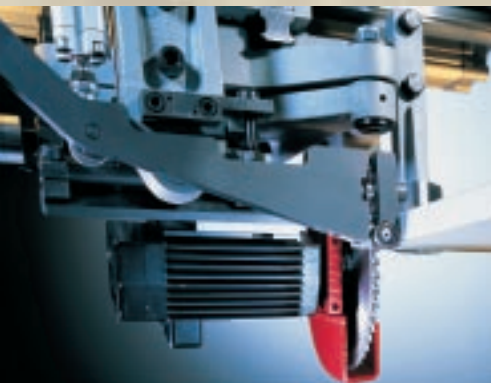
in field of woodworking machinery



Almost 200.000 KEB frequency inverter and servo controller are used in wood working machines since 1989. The way from the tree trunk to the solid wood front or from the chipboard to the entire piece of furniture...

High-performance, low-noise, production-increasing, energy-saving KEB drive controller and geared motor convey, saw, mill, grind, coat and transport workpieces in the processing.

As a result of constant market analysis and viewing of applications KEB realizes drive tasks into industrial standard solution.



With only one inverter single - as well as multi-motor drives can be realized. The operation of servo motors with or without encoder feedback at full shaft performance is a matter of course for us. New multi-axis-technology ensures energy exchange and reduces place requirements.



Application focuses:

- Edge processing machinery
- Solid wood working
- Panel processing
- Transport & Handling, Assembly
- Wood materials and veneer production
- Custom-designed and special purpose solution

Products - Systems & Solutions

With a wide range of products consisting of

- Visualization
- Embedded + IPC - control technology
- single- and multi-axle drive systems
- Synchronous- and asynchronous motors
- Gear technology
- Clutches and brakes

KEB offers complete solutions from the input- and control-station up to the executing motion phase of a machine.



- Set programming
- Open-loop
- Closed-loop
- Sensorless closed-loop (ASCL / SCL)
- Posi-Control
- 87 Hz characteristic
- CAM Software
- Roundtable software
- Customised solutions
- Flying saw software

Abbre.	Short description	Standard	Modul 1	Level (ISO 61508)	Modul 2	Level (ISO 61508)	Level EN 13849	Inputs
STO	Safe Torque Off (def.)	--	X	SIL 3	X	SIL 3	PL e	Ch. 1
SS1	Safe Stop 1	--	--		(x)	SIL 3	PL e	Ch. 2
SS2	Safe Stop 2	--	--		(x)	SIL 3	PL e	Ch. 2
SOS	Safe Operation Stop	--	--		(x)	SIL 3	PL e	Ch. 2
SLS	Safely Limited Speed	--	--		(x)	SIL 3	PL e	Ch. 2
SLP	Safe Limited Position	--	--			SIL 3	PL e	Ch. 2
SLI	Safe Limited Increment	--	--			SIL 3	PL e	Ch. 2
SDI	Safe Direction	--	--			SIL 3	PL e	Ch. 2
SBC	Safe Brake Control (def.)	--	X	SIL 3	X	SIL 3	PL e	Ch. 2
SSM	Safe Defined Max. Speed	--	--			SIL 3	PL e	Ch. 2
	Safe Grid	--	--			Basis		

Edge Processing

- Edge Banding machines (through feed-technique)
- CNC Processing centre (stationary technique)
- Drilling technique

- Profile milling units
- Servo multi function aggregate
- Through feedspeed-drives
- End trimming units
- Profile scraper
- Edge banding units
- Width-adjustment
- Tool changer
- Main spindle
- x-, y-, z-axis



Edge banding processing units...

sawing, milling, end trimming, drilling, plugging!



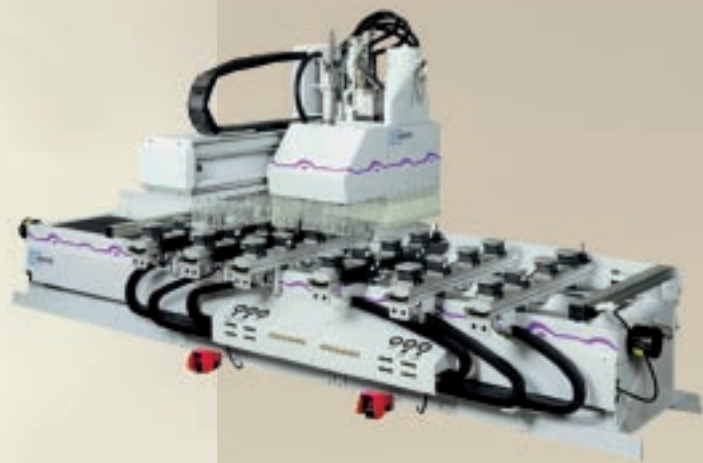
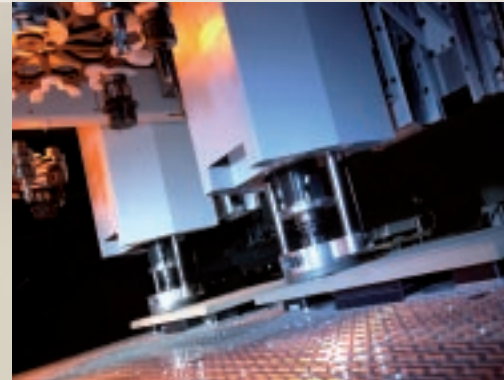
KEB solutions - Wood working

KEB drives with...

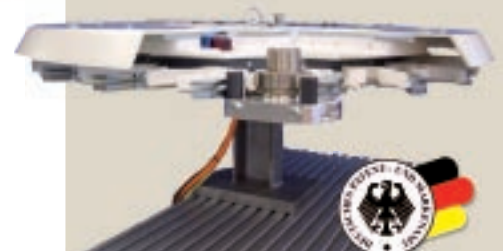
- Coated boards
- Individual protection against dust and moisture
- Power- range 0.25 ... 900 kW
- Customised solution... filter technique, braking resistors
- Flexible cooling systems
- Motor inverter

for

- Mid frequency application
- HighSpeed application
- Synchronous- and Asynchronous technique

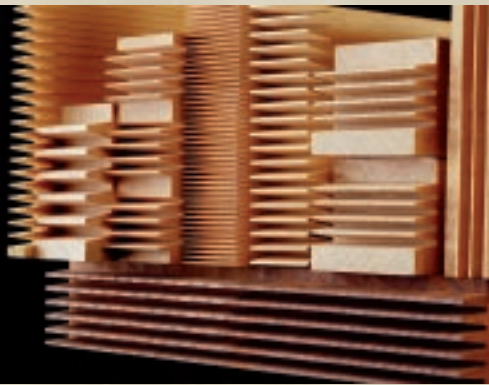


Tool changer -
Direct drive without gear box



protected utility model / patent pending

Flexibility and Applications



Solid wood working

- Panel saws
- Milling and planer machinery
- Finger jointing technique
- Sawmill equipment
- Drying plants
- Waste wood utilization



Solid wood processing units...

planing, sawing, milling, trueing,
grouting, shredding, drying!



KEB solutions - Wood working

Panel processing

- Panel saws
- Sliding table saws
- Material handling



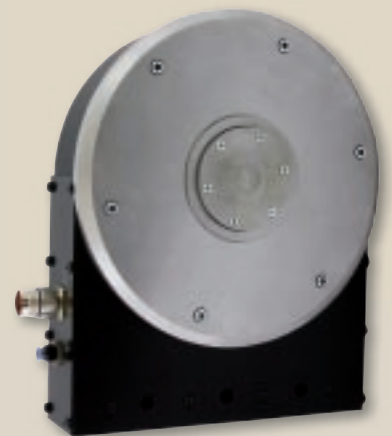
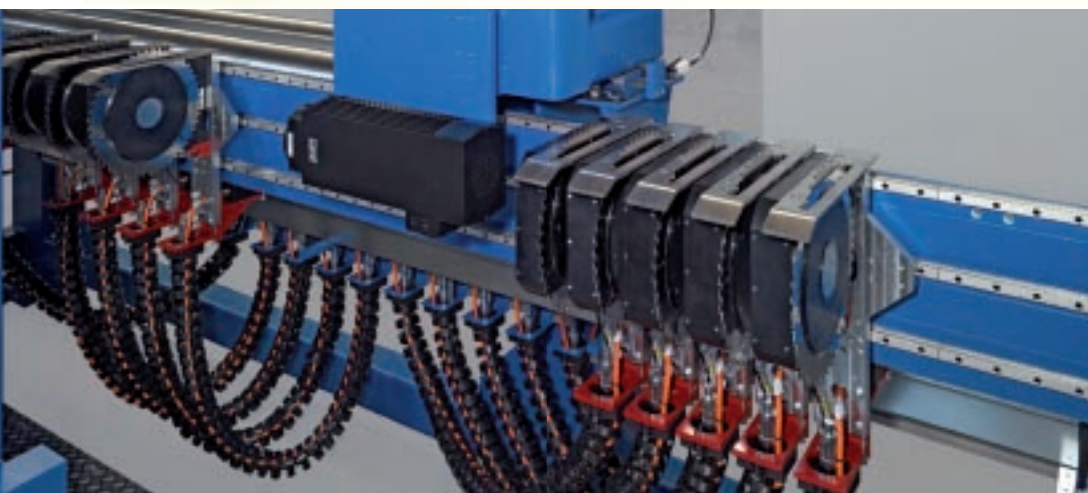
synchronous saw motor with SCL

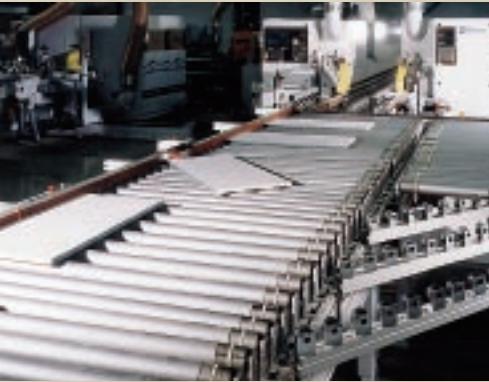


linear drives

Panel saws...

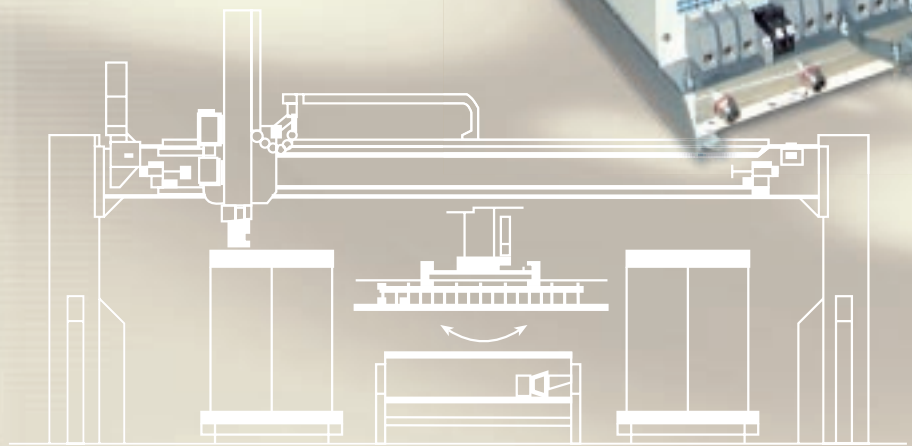
sawing, sorting, stacking, packaging!





Transport & Handling, Assembly

- Material handling
- Logistics
- Warehouse and commissioning technology
- Feeding and removal systems
- Car case presses



Material handling...

feeding, stacking,
transfer or convey, store!



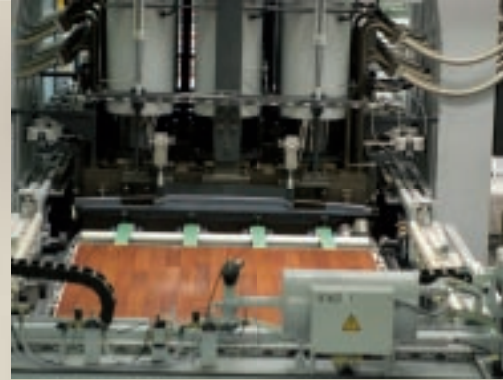
KEB solutions - Wood working

Wood materials and veneer production

- Press lines
- Sanding machinery
- Wood panel products and veneer
- Sawmills

Wood materials and veneer production...

pressing, laminating, sanding, process, convey!





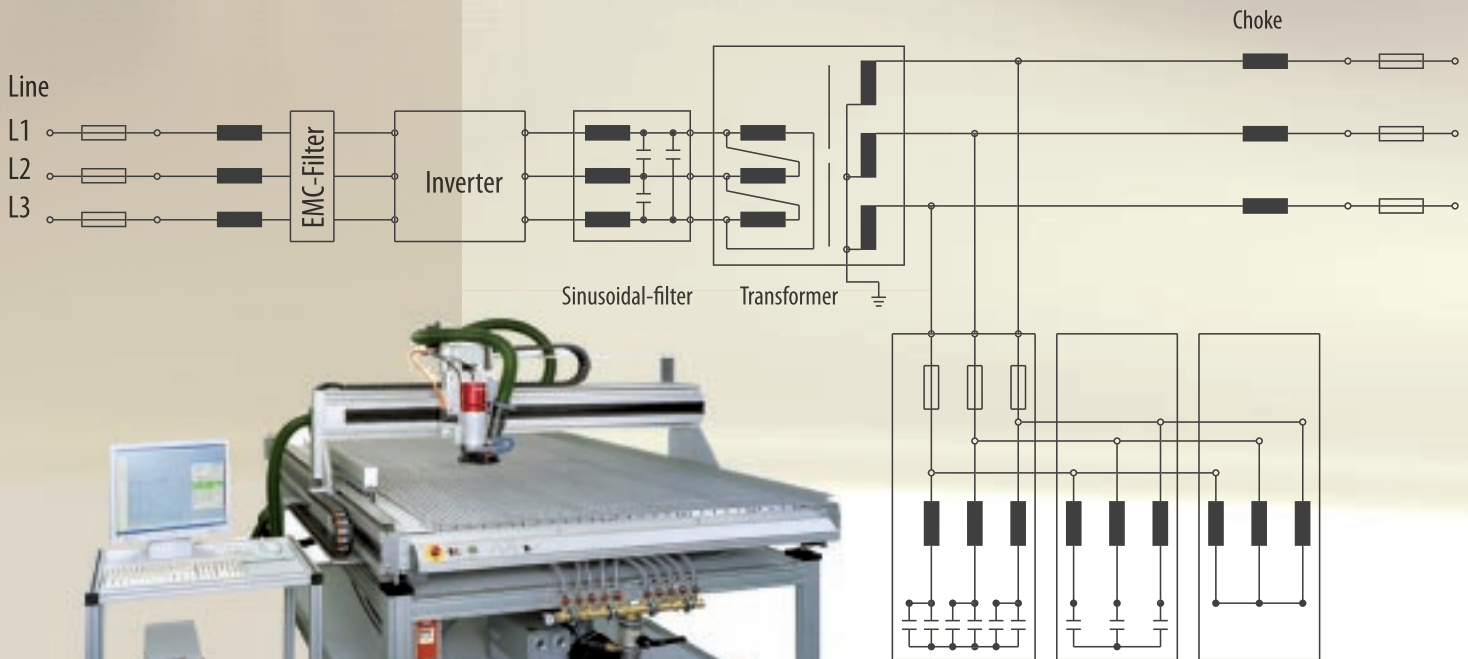
Custom-designed and special purpose solution

- Artificial mains - alternative to rotating converter
- High Speed spindles sensor closed loop spindle inverter with HIGH SPEED software



Advantages of artificial mains - alternative to rotating converter!

- Energy saving
- The static network simulation works more economical in all operating points
- Efficiency factor of approx. 93 %
- Controlled output voltage
- Easy retrofitting by control cabinet
- Solution, ready for connection
- Good availability



High frequency Spindle Inverter - ASCL / SCL

The principle – true field orientation without feedback

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

From many years of experience in applications and on the basis of state-of-the-art simulation technique KEB has realized new control algorithm in software, which optimally use the electrical image of motors for software-internal control – without feedback from the motor shaft.

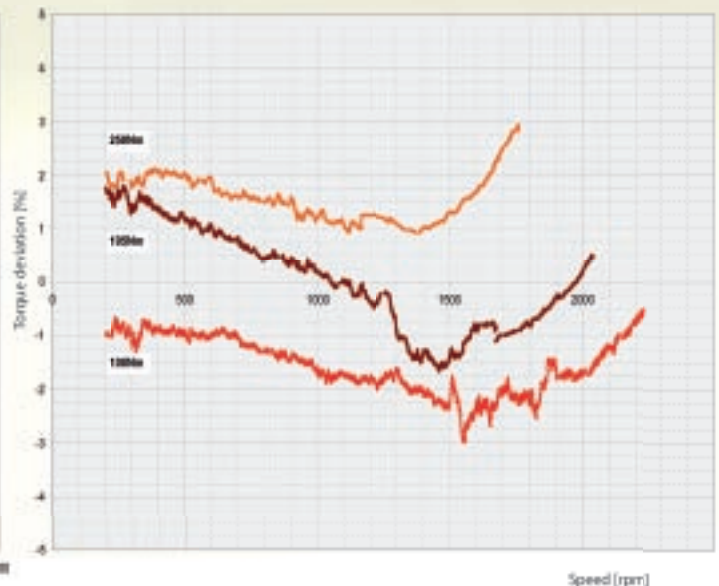
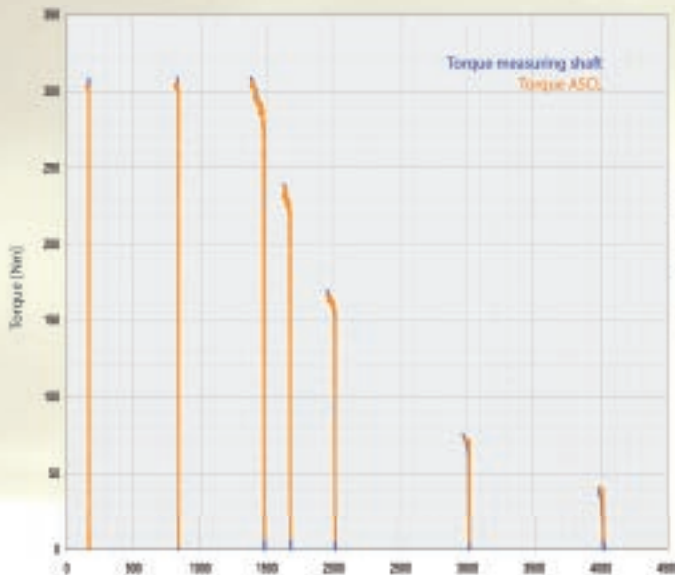
As a result two unit variants (ASCL / SCL) are available, that replace the feedback systems used up to now for tasks requiring high speed and torque accuracy.

High End Open Loop for your High Performance Spindle!

ASCL and SCL uses in many power ranges available standard drives for applications with high demands on speed stability and torque accuracy.

In both versions the current control method provides load-dependent current feed with

- excellent overload capacity
- fast compensation of load peaks
- low losses during idle running - protection of the bearings



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