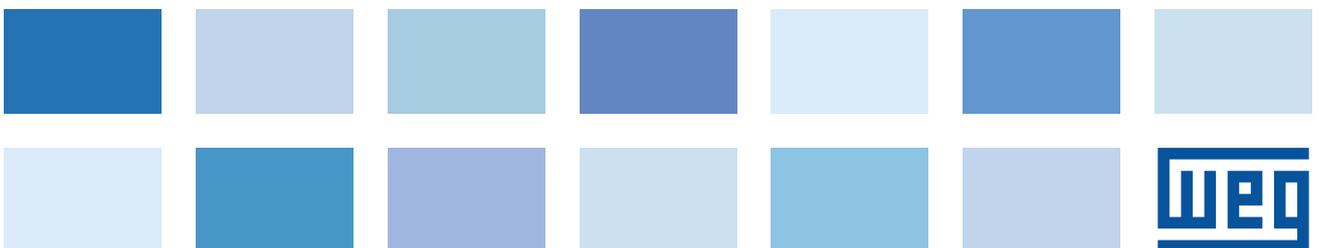


Trimmed to perfection: Beltless drive for the woodworking industry



# Trimmed to perfection: Beltless drive for the wood- working industry

The Springer Group, Austrian specialist in machinery and conveying systems for the timber industry, offers timber producers an innovative machine concept with the E-CUT 200 trimmer. The core of the innovation consists of electrically operated geared pivot saw arms – the first ever without belts. They were developed by Austrian gear unit specialist Watt Drive, a subsidiary of drive manufacturer WEG, and are made by Watt Drive as special products. The E-CUT 200 also incorporates helical bevel geared motors from Watt Drive and W22 induction motors from WEG.

The Springer Group, with headquarters in Friesach (Austria), is an international manufacturer of machinery and conveying systems for the timber industry, including logyard systems, planing machines, sawn timber sorting machines and production systems for woodworking. As the first electrically operated beltless trimmer, the E-CUT 200 represents a revolution in the timber industry in terms of drive type, operation and maintenance.

The novel crosscut saw arms are electrically operated, giving them higher efficiency than comparable models with hydraulic or pneumatic drive. The well-defined, precise operating curve enables optimal control of the crosscut saws and exact positioning of the saw blades in every sawing process. The E-CUT 200 is equipped with 21 saws in 300-mm modules as standard and designed for timber with standard lengths up to six metres and thicknesses up to 100 mm.

## **The challenge: beltless drive**

Conventional trimmers operate with belt drive, resulting in high belt wear due to wood dust. To reduce wear and simplify maintenance, Springer aimed to develop a novel beltless geared pivot saw arm. They also wanted the trimmer to set new standards for precise cutting and temperature immunity.

“Our customers expect technologically mature solutions from us that sustaina-



The circular saw blades are raised and lowered by helical bevel geared motors.

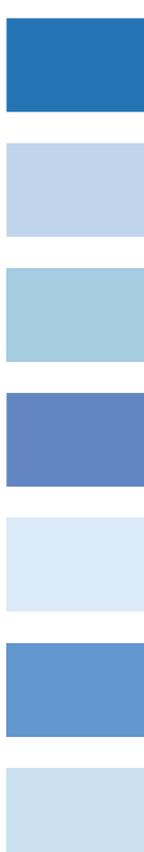
bly improve their production processes. As the first electrically operated beltless trimmer, the E-CUT 200 puts an end to the weaknesses of conventional trimmers. The basis for this innovative solution is the special gear unit from Watt Drive”, explains Egon Eisner, Engineering Manager at Springer.

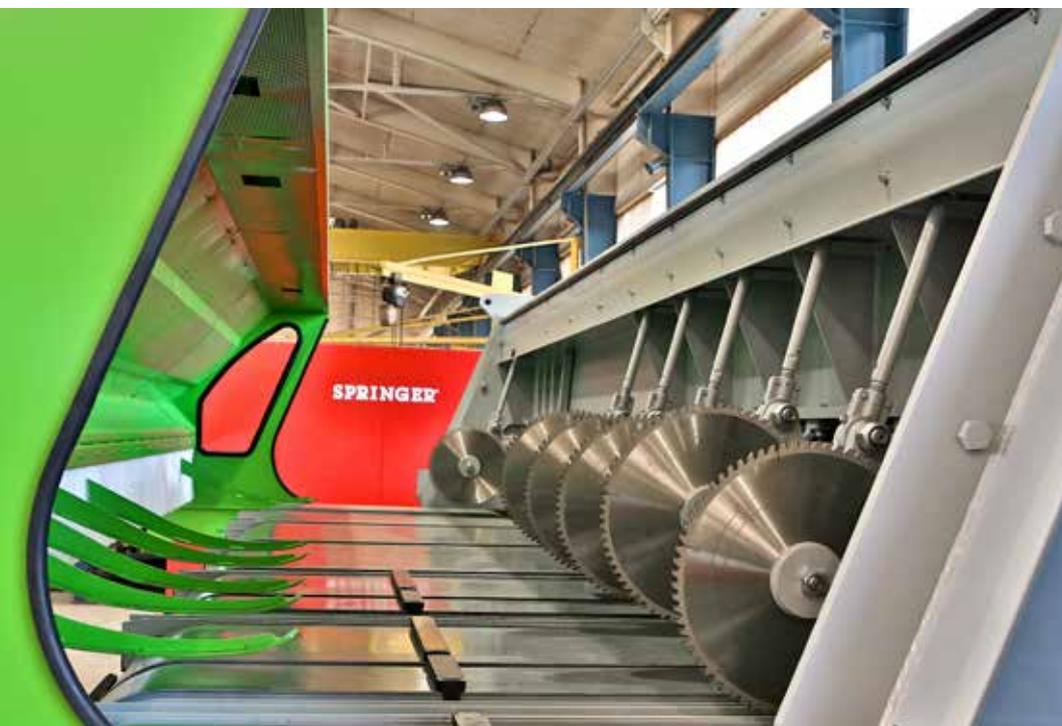
Springer turned to Watt Drive for the special beltless gear units. Based in Markt Piesting, the company specialises in the development and production of gear units and geared motors. As a subsidiary of WEG, Watt Drive also offers the parent company’s full range of electric motors and automation products. Watt Drive designed and produced a completely new drive system for each saw. It consists of the innovative trimmer gear unit, a helical bevel geared motor, and one or two W22 motors for the main drive, depending on the configuration. Before the definitive product launch of the E-CUT 200, the trimmer was tested for more than 1,000 hours under practical conditions with the new drive system.

### Special solution: geared pivot saw arm

In the E-CUT 200 the saw blades are turned by centrally positioned, external electric motors through the pivot arms, which are uniquely implemented as beltless gear units. The individual saws are operated by electrically actuated crank mechanisms with pushrods. This electrical operation allows the motion of the individual saws to be controlled precisely, independent of temperature variations. The sturdy pushrods prevent any damage to the mechanism from the motion of the trimmed timber. The trimmed lengths fall freely through a large chute onto an underlying conveyor belt for removal.

The circular saws are driven by one or two four-pole W22 IE2 motors with frame size IEC225 (model 225S/M-04). With a rated power of 37 kW each, the motors drive the input shaft of the special gear units via V-belts. The gear unit cases are made from nodular cast iron for especially high strength and resistance to ambient condi-





tions, which is essential for the harsh operating conditions in the timber industry.

With a torque rating of 593 Nm, the special gear units have a gear ratio of 2.42 to boost the blade speed. This gives a circular saw speed of 3,570 rpm with a four-pole motor speed of 1,475 rpm. However, the circular saw speed can also be changed to 4,307 or 4,748 rpm to meet specific customer requirements. This is achieved by a V-belt transmission with various sizes of belt pulley. The special gear units are specifically

designed for high ambient temperatures up to +50°C and are especially well sealed for operation in dusty environments. All covers are additionally glued in place.

Each of the circular saw blades is raised and lowered by a 3-kW helical bevel geared motor equipped with forced-air cooling and a brake (model KUS 60A 70 91L4 TH BR20 FL), which is controlled by a variable-speed drive. These drive units can optionally be fitted with incremental encoders.

The E-CUT 200 from Springer is the first beltless trimmer for the woodworking industry. It is equipped with 21 saws in 300-mm modules as standard and designed for timber with standard lengths up to six metres and thicknesses up to 100 mm. The innovative geared pivot saw arms reduce wear and maintenance effort.



### Lower wear and minimal maintenance

The new geared pivot arms dramatically reduce machine wear and maintenance effort by eliminating the drive belts, which were previously prone to wear due to the high dust burden. That yields material and cost savings for the plant operator. The E-CUT 200 also scores well for ease of maintenance with the new drive concept. All drive components are mounted externally, so they can be accessed easily and safely by service technicians with-

out opening the actual trimmer. It is fitted with a newly designed dust enclosure with linear travel that is especially compact and additionally enables unrestricted access to the machine's maintenance bridge. That facilitates fast, uncomplicated saw blade exchange.

"We are an innovative family business. To be successful internationally in plant engineering for the woodworking industry, we have to continuously refine our products and develop technologically creative solu-

The circular saw blades are driven by centrally positioned W22 motors.

tions. The E-CUT 200, which is a revolutionary product in the trimmer market, is a good example of our innovation strength. We are pleased that Watt Drive, as an established Austrian company, played a role in making this technological solution possible”, says Timo Springer, CEO of Springer Maschinenfabrik AG.

#### **Watt Drive - A suitable drive solution for each application**

*Watt Drive develops, produces and distributes geared motors and three-phase motors, offering these products with a unique and unrivalled modularity. This modularity provides an array of complete drive solutions for production machines and industrial manufacturing plants.*

*One of Watt Drive's strengths is that, alongside its comprehensive standard program, it also designs and realises special-purpose drive solutions, especially tailored for individual customer requirements. With the unique modular system, it is possible to offer various solutions by default, thus gaining a huge advantage in terms of costs and production time.*

*As part of the Brazilian WEG group, Watt Drive extends the latter's product range with high-class gears and geared motors since 2011.*

#### **WEG. Global solutions in the fields of motors, automation and energy**

*As an international company WEG manufactures products for energy generation, distribution and control allowing industry to operate efficiently and effectively. Founded in 1961 by three Brazilian entrepreneurs, WEG has grown into one of the most important producers for electric motors. With the W22 asynchronous motors, WEG offers one of the broadest range of energy-efficient motors (IE1-IE4) in the industry, thus assuming a leading position. WEG has more than 30,000 employees in production sites in Brazil, Argentina, Mexico, USA, Austria, Portugal, China, India and South Africa as well as in branches in 25 countries worldwide.*





“Our customers expect technologically mature solutions from us that sustainably improve their production processes. ... The basis for this innovative solution is the special gear unit from Watt Drive.”

Egon Eisner, Springer Maschinenfabrik AG

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