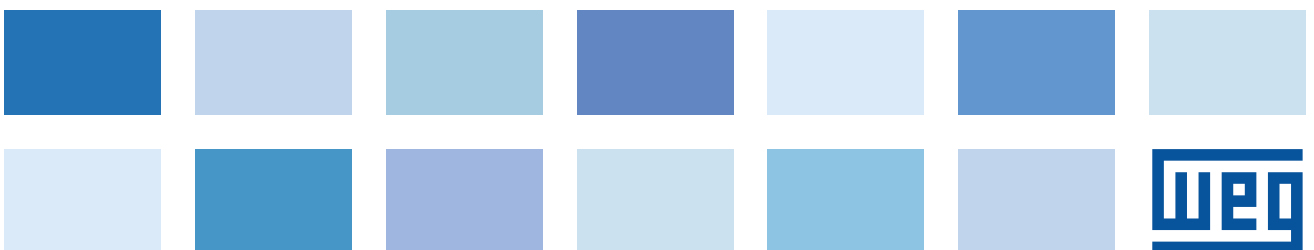


## The power of twin shafts



# The power of twin shafts

The mechanical shredding of waste is a tough job, so electrical drive systems for shredders must be especially sturdy and reliable. This also applies to the geared motors from WEG's subsidiary Watt Drive, which the Austrian recycling machinery manufacturer Wagner Shredder uses to drive its new twin-shaft shredder.

Wagner Shredder, a well-established and respected supplier to the waste disposal industry, is a family-owned and operated company in its second generation located in Neuhaus am Klausenbach in Austria. Wagner has been developing and producing high-quality recycling machinery for more than 30 years, including single-shaft and twin-shaft shredders, perforators, tyre dismantlers, bale breakers and special solutions. The company also offers an end-to-end service from consultation, engineering and production to delivery and turnkey handover.

For the development of the new WTS500 universal twin-shaft shredder on request

of a customer, Wagner entrusted the implementation of the drive systems to their long-time partner Watt Drive, located in Markt Piesting, Austria.

## Twofold Austrian quality

In the WTS500 the material to be shredded is pulled between two shafts rotating slowly in opposite directions, each fitted with cutter discs. The process is monitored by a PLC controller. If the machine is overloaded or foreign objects get into the cutting mechanism, the controller reverses the rotation. The gap between the cutter discs is precisely defined to reduce the shredding force. A top-mounted stripping comb holds down the shredded material and prevents it from winding around the shafts. The size of the output material is determined by the cutter width or the number of blades.

The WTS500 can be used for cost-effective shredding of all sorts of industrial waste, sheet metal and plastic waste, special waste, metal swarf, electronic scrap,



Wagner uses geared motors from Watt Drive to drive their new WTS500 twin-shaft shredder



The two independent drives in the WTS500 provide uniform torque on the two shafts

biological waste, wood, glass, and even liquid-filled containers.

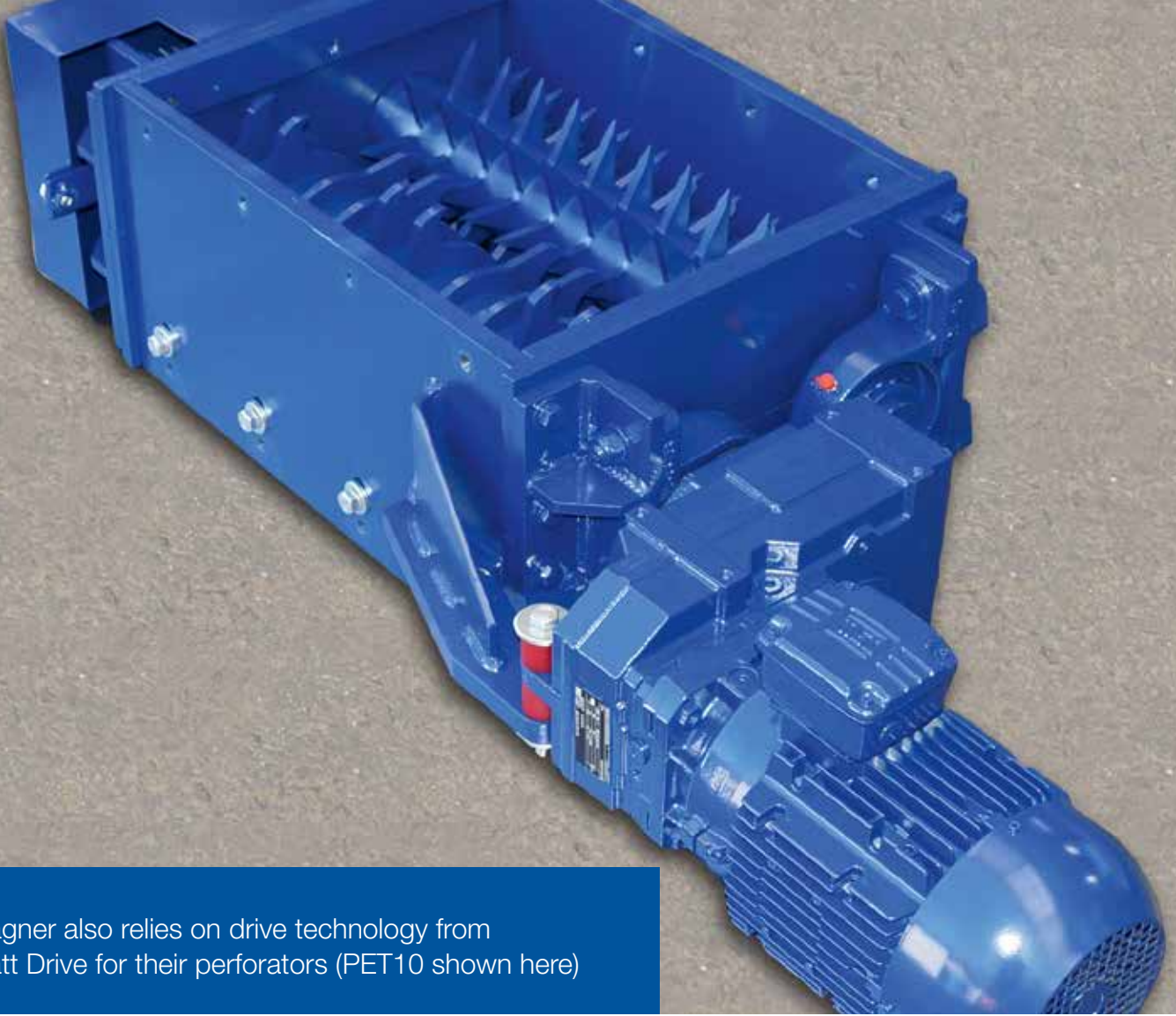
“Our recycling machines are top-quality units made in Austria, and our shredders are especially tough and durable. To ensure high quality and reliability in operation, we chose Watt Drive for the drive units of the WTS500 because the Watt geared motors fit perfectly with the machine concept, and because we know from experience that they have high operational reliability”, says Design Manager Alexander Wagner.

#### **Well-conceived drive concept**

Each of the two shafts in the WTS500 shredder is driven by a sturdy geared motor consisting of a Watt helical bevel gear unit (type KSA 86A) and a WEG four-pole

modular motor with frame size 112 or 132. The motors are rated at 4 or 5.5 kW and designed for an operating voltage of 400 or 690 V at 50 Hz. They comply with IP55 protection rating and insulation class F. For overload protection, the motors are equipped with thermal protection. With an output torque of 2,745 Nm and a reduction ratio of 81.14, the geared motors run at output speeds of 18 and 20 rpm respectively.

These relatively low speeds result in gentle shredding of the material with low levels of wear, dust generation and noise emission. There's a good reason for running the two geared motors at different speeds and driving the two shredder shafts of the WTS500 in opposite directions: in this way the shafts do a better job at pulling in the



Wagner also relies on drive technology from Watt Drive for their perforators (PET10 shown here)

material to be shredded. For protection against the harsh operating conditions, the geared motors are also equipped with protection-caps for hollow shafts, torque arms and rubber buffer kits.

Alexander Wagner describes the advantage of this well-conceived drive concept for machine operators as follows: “Independent shaft drive with two low-inertia geared motors results in constant torque on both cutter shafts. If one drive gets overloaded, the other one keeps running, which boosts the throughput of the shredder. The drive also needs little maintenance, and an accessory puller simplifies dismantling the geared motors for cutter exchange. The geared motors are rubber mounted to protect them against shock loads, which are sometimes very high. The quality of these

mounts contributes to the high availability of the machine.”

### **Perforated, not shaken**

Wagner also relies on drive solutions from Watt Drive for its perforators, which are available in three different sizes with throughput from 450 to 2,400 kg/h. The perforators are used to slit or puncture PET bottles and containers with capacities up to five litres. Slitting or puncturing makes the pressed bales more compact and denser.

In the perforation process, the PET bottles fall onto the two counter-rotating shafts and the stripper, which are equipped with interchangeable slitting tools. The bottles are first drawn in



by the shafts and then perforated by the tools. After this the shafts press the bottles downward, where they exit from the machine into a container or into the press.

One or two ASA 76A shaft-mounted geared motors from Watt Drive are used in the perforators, depending on the model. They are equipped with WEG modular motors with rated power of 2.2 or 5.5 kW and essentially the same basic specifications as the shredder drives. However, they differ from the geared motors for the WTS500 in terms of output torque (470 Nm) and reduction ratio (17.73), resulting in a significantly higher output speed of 81 rpm. The perforator drives are additionally equipped with a special hollow shaft.

“The Watt geared motors are sturdy and robust, and they have a track record for high quality and good service. We have been building the PET perforators for about 12 years now, and we have never had any problems with the geared motors”, says Alexander Wagner.



**“The Watt geared motors are sturdy and robust, and they have a track record for high quality and good service. We have been building the PET perforators for about 12 years now, and we have never had any problems with the geared motors.”**

**Alexander Wagner**  
Design Manager Wagner Shredder

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