

## **Top Notch Geared Motors for Energy Efficient Heating Systems – Drives for Biomass Heating Systems**

**Not only higher energy cost but also lower CO<sub>2</sub> emissions make wood chips or pellets biomass boiler heating systems sought after at this time. ABM Greiffenberger Antriebstechnik GmbH supplies geared motors best suited for many reasons for such unique installations.**

With biomass heating systems consumers can eliminate their exposure to constantly increasing costs of oil and gas. Furthermore they use local raw materials as heating fuels making not only a contribution to climate and environmental protection – wood chips and pellets have lower CO<sub>2</sub> emissions when burnt – but also stimulating the local economy by creating jobs for manufacturing and distribution of biomass fuels. For these reasons subsidies for retrofitting respectively purchasing biomass heating systems are available in all German Bundesländern and many European countries. Already many residential and commercial users switched to this environmental friendly heating method.

### **1. Drives for Feeding and Discharging**

Biomass heating system basically function just like the well known oil and gas heating systems, except the heating fuel is in solid state and needs to be fed and stored accordingly. This requires classic conveyor technology. Wood chips or pellets are stored in bunkers or silos from where they are removed by a delivery system and with an auger transported to the heating boiler. Depending on the design of the burn-back protection it might also be necessary to power a cellular wheel sluice. Even for ash removal special conveying systems are needed. To

maintain optimum efficiency it is necessary to clean heat exchangers regularly and larger installations require drives for this procedure, too.

### **Special Drive Requirements**

These applications demand highly efficient drives:

After all users of biomass heating systems are very energy and environmentally conscience or they would not have opted for such a heating system. Additionally, they must be very quiet in that they are installed in homes or even living quarters and extraordinarily reliable since nobody wants to be cold during a heating season just because a geared motor failed.

### **From Day One**

ABM Greiffenberger, an innovative manufacturer of geared motors, was involved from the beginning in developments of biomass heating systems. Thanks to these early efforts ABM Greiffenberger can today offer a comprehensive program of drives that are optimally adapted to these unique application demands.

## **2. New Parallel Shaft Gearbox Line uses Modular Design**

Part of this line is the parallel shaft gearbox type FGA. This new gearbox generation uses aluminum die cast housings with lower weights and reduced noise emissions. A modular design reduces component variety and cost but still maintains utmost flexibility to optimally adapt a gearbox to an individual application.

### **Top Notch Quality assures Long Life and Low-Noise Operation**

The high overall efficiency of the parallel shaft gearboxes reduces the required power input and consumption – ABM geared motors are real energy savers. They are available in two-, three- and four-stage models and high ratios up to  $i = 1500$  are feasible allowing even economical

operation of slow moving augers. In-house manufacturing of high grade gears is not only a guarantee for long life in continuous duty but also for smooth and silent operation.

### **Compact Solution**



*ABM Parallel Shaft Gearbox FGA 53 with 50 Nm for fuel feed in or ash removal on pellet boilers or -furnaces*



*ABM Parallel Gearbox FGA 103 with 100 Nm output torque for fuel feeding worm screw or worm screw for fuel storage removal on wood pellet heating systems*

Large axis distance and hollow shaft allow for a wide variety of mounting options even in tight spaces typically found in boiler rooms or heating centers; e.g. so called U-mount where the motor is parallel to the auger. On the smallest version type FGA 53, for output torques up to 50 Nm, of the new line, the motor is integrated into the gearbox housing. On the next larger size type FGA 103 the motor can be integrated or the user can choose from different available mounting options. The FGA line is available with output torques up to 1350 Nm. On all models motors and gearboxes are perfectly tuned to each other resulting in optimum efficiency and minimal power consumption.

### 3. Large Selection of Robust Helical Gearboxes



*ABM Helical Gearbox for conveying of wood chips*

Sometimes parallel gearboxes are not required by heating systems manufacturers. For such applications ABM can offer a wide variety of quiet and long life 2- and 3-stage helical gearboxes with ratios up to  $i = 550$  and output torques up to 3,000 Nm.

### 4. For Bunker Removal: Agitator Drive

Next to Parallel Shaft and Helical Gearboxes ABM Greiffenberger also offers system solutions specifically designed for biomass heating systems. The agitator drive SGS 125 not only transfers the needed torque but also reduces the speed to a range required for agitators of wood chip bunkers.



*ABM Agitator Drive SGS 125 for fuel removal from storage bunkers*

At a reduction ratio of  $i = 15,667$  an output torque of 2000 Nm is attained. Output shafts are equipped with specially designed discs that allow direct mounting of spring loaded discharge arms. The gearbox housing is not only a very robust design but also incorporates mounting tabs for direct mounting of feet. This eliminates complex sheet metal tubs typically required to house agitator gearboxes.

### **Life Time Lubrication and No Maintenance**

Because this application requires a shallow housing design ABM Greiffenberger uses a worm gear made from specially formulated materials. This patented combination of material and lubricant guarantees maximum wear resistance. The gearbox has been designed for a service life of 10,000 maintenance-free operating hours.

A specially developed sealing system effectively prevents wood particles from entering the gear housing. The agitator provides for continuous feeding of the bunker removal system that is typically designed as an auger driven efficiently and economically by ABM parallel shaft or helical gearboxes.

## **5. Comprehensive Know-how:**

### **A Benefit to System Manufactures and Consumers**

For many years immersed in the technology, ABM Greiffenberger earned a comprehensive Know-how in developing and engineering drives for biomass heating systems. Thanks to this vast experience ABM engineers can design drive solution optimally suited for individual applications. Besides energy efficiency, long life and quiet operation are in the spotlight for these geared motors installed mostly in residential buildings. For these reasons leading biomass heating system manufacturers use drives from ABM Greiffenberger for conveying fuel to the boilers, cleaning heat exchanges and removal of ash from the heating installations.

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*Application Wood Chip Heating System*