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Successfully Reducing Energy Costs

Regenerative inverters improve the energy balance of wood-processing machines. Georg Schwarzbeck GmbH takes advantage of this in meeting the demands of its customers. Using the inverters reduces operating costs and amortization periods as well.

Georg Schwarzbeck GmbH & Co. KG, headquartered in Pinneberg, Germany, develops and produces machines, additional drive sets, and high-performance planers for wood processing. The Rex machines built by the family-run business are used all over the world. To quickly modify the machines for the processing of various products in different batch sizes,

Schwarzbeck uses frequency inverters for the drive motors on feeds and knife driving shafts, which keep speeds constant even at variable loads.

New possibility of energy regeneration

In the past, the kinetic energy depleted with every brake application was con-

verted to heat by means of brake resistors in the switching cabinets. This heat had to be dissipated from the switching cabinets afterward by means of air-conditioning systems, which meant additional technical effort and energy consumption. The mechanical engineering company has now found a much more energy-efficient solution: it is equipping all its machines with regen-

erative inverters from the Sinamics G120 series. These inverters are able to feed the energy of the braking process previously converted to heat back into the grid so that it can be used again. The result is measurable energy savings from which both the manufacturer and the user can benefit. With multiple feed and numerous spindle drives per machine, and motor outputs of up to 90 kW, frequent braking processes lead to measurable energy savings – especially on

the amount of cabling and ensures that installation remains straightforward and simple. The Profibus technology also facilitates communication with up- and downstream applications such as conveyors. In addition, using this technology opens up the possibility of what is referred to as “routing into the drives”; this enables consistent and easy remote diagnosis and maintenance, which reduces time- and cost-intensive servicing interventions. The

Customers profit from the use of inverters

“The system changeover was inspired by the Siemens office in Hamburg. They have supported us from beginning to end,” says Schwarzbeck. A drive expert also assisted with the start-up. “This technical support is extremely important for a medium-sized company like ours,” emphasizes Schwarzbeck. “With a partner like Siemens we are also able



“The changeover to regenerative drives from Siemens was beneficial both for us and for our customers.”

Joachim Schwarzbeck, Marketing Manager, Georg Schwarzbeck GmbH & Co. KG

the axes with greater moments of inertia, as in the case of knife drives. Another positive effect of energy recovery is that less heat is generated in the switching cabinet, so the air-conditioning units (and in some cases also the switching cabinet itself) can be a bit smaller and, as less energy is required in total, the infeed capacity can be reduced.

Remote maintenance reduces downtimes

The regenerative inverters of the Sinamics G120 series have a modular design and are very cost-efficient due to the control components and power elements. Schwarzbeck is using both conventionally wired versions and those that communicate via Profibus. For the latter, inverters are connected to the Simatic S7-300 control, which reduces

operators also benefit from shorter downtimes and can therefore enjoy the highest availability and plant output.

“We use additional Siemens devices for local operating and visualizing,” explains Joachim Schwarzbeck, who is responsible for marketing at the company. Among these are the HMI devices, which are inherently optimized for interaction with Siemens control systems, eliminating the need for time-consuming coordination. For simpler machines, the combination of a Simatic S7-300 and an operator panel with a touch display is standard. The larger machines with additional linear units are controlled via the Simatic MP377 Multi Panel embedded system with the Simatic WinAC MP software PLC, which has proven its effectiveness in practice.

to obtain spare parts and support all over the world, 24/7, if necessary. Thanks to Siemens, our machines can therefore also be serviced reliably by a relatively small team.” According to Schwarzbeck, machines equipped with Sinamics G120 have been running for more than a year without any failures at many leading wood-processing companies. “The changeover was therefore beneficial both for us and for our customers,” concludes Schwarzbeck. ■

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