

SUCCESS STORY

BRINGING THE LUMBER

INFORMATION

Industry:
Lumber

Application:
Sawmill

Product:
U1000 Industrial Matrix Drive



OVERVIEW

L&S Electric, located in Schofield, WI, stands as the Midwest's preeminent service center for rotating apparatus repair and a leading distributor of power generation systems. The company's reputation stems from its committed team, high-quality products, and superior service capabilities. As an authorized distributor and service provider for Yaskawa, L&S Electric identified a need for the Yaskawa U1000 Industrial Matrix Drive in a local machine builder's operation.

APPLICATION CHALLENGE

Cleereman Industries, based in Newald, WI, is a leader in the field of advanced sawmill equipment, maintaining operations since 1954. Originally a sawmill business, Cleereman now manufactures a wide range of sawmill equipment including carriages, track frames, and trim & grading lines.

A recent Cleereman initiative was to redesign a rotary log kicker with the objective of expanding its size range and transitioning from a hydraulic system to a completely electric one. The challenge lay in the overall size of the log kicker. The significant machine inertia posed difficulties in achieving the 15 cycles per minute rate. In fact, managing the machine's inertia and cycle-per-hour requirements would necessitate a substantial braking package to dissipate energy.

THE YASKAWA SOLUTION

To address this challenge, Cleereman sought assistance from L&S Electric. While initially considering a standard Variable Frequency Drive (VFD) and brake resistor, L&S proposed a more energy-efficient solution: the U1000 Industrial Matrix Drive to control the 30 HP electric drive system. This solution effectively minimized maintenance time and costs associated with hydraulic systems, provided a cleaner energy solution, and was more compact.

RESULTS

Cleereman can now successfully control the high-inertia log kicker with the U1000 Industrial Matrix Drive. Whether motoring or regenerating, the U1000 provides a clean power solution by maintaining ultra-low input current harmonics.

Moreover, the drive's regenerative capabilities eliminated the need for braking resistors, reducing heat production during load deceleration. As a result, Cleereman can offer a solution that lowers their customers' utility expenses. The energy previously wasted on resistors now returns to the power grid. This change also extends machine lifespan and decreases maintenance needs by eliminating an additional potential point of failure. Ultimately, by using the U1000 Industrial Matrix Drive, the safety concerns associated with using resistors in lumber mills to dissipate regenerative energy are removed.

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Innovative Matrix Technology



The U1000 can be used for standard and regenerative applications with the unique advantage of direct AC-to-AC power conversion. This unique design offers the best choice for induction motors (IM) and permanent magnet motors (PM). Benefits include low input current harmonics with near unity power factor allowing for increased energy efficiency. The bi-directional switching technology allows for continuous motoring or continuous regeneration. This means that fewer parts are required, leading to higher machine reliability. Moreover, the U1000 can automatically switch into across-the-line operation through the drive, eliminating drive generated harmonics, drive losses, and motor noise.

Low Harmonic Solution



The U1000 offers the best low harmonic solution in one unit. It does not need any external devices for IEEE 519 compliance. Its harmonic performance meets the most stringent requirement of IEEE 519 at the input of the drive, making it an all-around green solution. Its input harmonics remain low, not just at rated power, but well below leading harmonic solutions throughout the speed/load range.

Clean Power



The sinusoidal input current, with a total harmonic distortion of less than 5%, and a displacement power factor of approximately 1.0, minimize losses in grid components like generators and transformers. This, at the same time, greatly reduces the potential of disturbance of other devices and improves the reliability of your system.

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Energy Saving 4Q Operation



Thanks to matrix technology, the U1000 can operate in full, continuous regeneration. It is your best drive for applications like conveyor, winder, escalator, lift or test bench, where braking energy needs to be considered. The AC-to-AC design does not require any braking resistor which takes space in the cabinet and creates additional heat during regeneration. Best of all, no parameter settings are needed to enable the U1000's regeneration. The U1000 can instantaneously and automatically switch from full motoring operation to full regenerative operation.

Compact Size



The U1000 is an all-in-one compact solution for low harmonics and regeneration. There is no smaller solution. Save as much as 80% space. Retrofits and upgrades are easy, since it easily fits in nearly every 18-Pulse package.

Cost Saving



The U1000 provides cost-saving benefits through a simplified installation and smaller panel requirements. The U1000 eliminates braking resistors that convert regenerative energy into heat which can be a safety concern in some application environments.

Time-Saving Installation



As no external components like harmonic filters or active front end units are required, connecting a U1000 drive becomes a matter of minutes. 3 wires in, 3 wires out. It cannot be easier to build a low harmonic regenerative solution.