

## AutoCART Retrofit at Containerboard Packaging Plant

**Description:** Weyerhaeuser\* is one of the world's largest forest products companies and safety is one of its top priorities. When they notice a safety problem, Weyerhaeuser seeks to address the issue quickly and efficiently. As part of its ongoing commitment to safety, Weyerhaeuser released new corporate safety standards in 2005. The automated transfer carts (AutoCarts) in its containerboard packaging plants did not meet these new standards.

AutoCarts transfer corrugated material between work centers and are fitted with mechanical stop bumpers designed to limit harm to workers during contact. However, after the AutoCarts caused several injuries due to the fact that they require physical contact before shutting down the system, a new solution was needed. With extensive experience in the Converting industry and as a recognized expert with safety components/systems, Concept Systems was a natural choice for the upgrade program.

Concept Systems retrofitted the existing AutoCarts with two laser based area scanners, one for each direction of travel. In addition, certain AutoCarts required PLC, Drive, and Motor upgrades to achieve the desired functionality. The Laser Scanners are positioned about 6" above the floor surface and cast a horizontal laser plane 180-degrees, with up to a 23-foot radius. The Laser Scanners have easily configurable, dynamic warning and shutdown zones within the laser plane that are programmed to change on-the-fly depending on the AutoCart's location, as tracked by an encoder. With these features the AutoCart does not needlessly shut down as it approaches a wall, for example. In addition, workers can walk behind the carts because the rear Laser Scanner are disabled when the carts are moving forward. If an AutoCart does sense an unexpected object in the warning zone, horns sound and the cart slows. If an unexpected object is detected in the shutdown zone the AutoCart shuts down before ever making contact. The result is a safe, reliable, non-contact safety system that protects Weyerhaeuser's workers and equipment.

Because AutoCarts are critical to Weyerhaeuser's containerboard facilities, downtime for upgrades need to be minimal. In addition, the system has to be very versatile because the AutoCart systems vary from plant to plant. As such, Concept Systems designed the system in a modular fashion, with off-the-shelf components, that can be installed and commissioned over a weekend. The PLC and Drive integrates easily into the existing onboard control enclosure and provides the speed and the dynamic zone control. To limit costs and training requirements, the operator console is typically left largely unchanged.

The AutoCart upgrades have been a great success. With this system Weyerhaeuser improves worker safety, reduces risk of equipment damage, and increases system flexibility for far less money than buying a new AutoCart. The new, adaptable AutoCart design will continue to serve Weyerhaeuser well as its safety standards evolve in years to come.

**Services Provided:**

- Control Engineering and Design
- PLC/HMI Programming
- Start-up & Commissioning

## PROJECT BRIEF

*We Can Take You There!™*



**Results:**

- Increased worker safety from non-contact object detection
- Improved system capabilities with modern PLC/HMI technologies
- Reduced nuisance shutdowns from dual zones, speed control, & dynamic detection zones
- Efficient upgrades from versatile software and hardware

**Technologies/Platforms Used:**

- SICK S3000 Safety Laser Scanners
- Allen-Bradley CompactLogix PLC (using Rockwell Software's RSLogix5000)
- Allen-Bradley PanelView Plus Touch Screen with Alarming
- Allen-Bradley PowerFlex 70 Variable Frequency Drive
- Marathon Brake Motor

\*IP purchased Weyerhaeuser's CBPR division