GETTING THE GOODS

FAYETTEVILLE, Ark. – Consumer goods and manufacturing materials move between countries, states and facilities by truck, train and boat. And at some point they usually move from one mode of transportation to another. University of Arkansas researcher Miles Sonstegaard has found that of the two common methods, horizontal transfer can be more efficient, particularly for “slugs.”

“Slugs are loads that are several times larger than a pallet, but smaller than a semitrailer load,” explained Sonstegaard, associate professor in the Center for Business and Economic Research at the Sam M. Walton College of Business. “It might comprise a stack of parcels, a tank for liquid or dry bulk or a piece of equipment.”

Sonstegaard will present his findings today at the 2003 Annual Meeting of the Transportation Research Board in Washington, D.C.

Intermodal facilities typically use one of two methods to transfer cargo from one type of transportation to another. In the United States the most common method is “lift and load,” where giant cranes lift the goods off of one carrier and deposit them in a terminal or on another type of
The second method, horizontal loading by use of sideslip containers, is more common in Europe.

“A sideslip vehicle takes many forms, from a road chassis to a railcar or dray,” Sonstegaard said. “It has two crossbeams that correspond to crossbeams on a vehicle or dock. A crossbar can be extended from the sideslip container to lock it into the dock while it slides horizontally.”

Because the weight of the sideslip container is supported simultaneously by two docks and/or vehicles, there is no stress on the spine of the container, unlike the “lift and load” method. This means that lighter-weight containers can be used, which allows transport vehicles to carry more products. It also reduces the shipping costs, since “tare weight,” the weight of the containers, is included in the cost of delivery.

“And another benefit of the horizontal transfer method is that, because it requires little reach and force, it can be easily automated,” explained Sonstegaard. “Using machinery built into the docks, one trackside dock can be pulling a container off of a linehaul railcar at the same time it is pushing a different container off of itself and onto the same car.”

This automation makes horizontal transfer more cost-effective for slugs, since they may be going to different destinations. A container of slugs can be moved to a cross-docking facility, sorted according to the address information and reloaded onto sorted, single-address containers automatically. These containers can then be stored or transferred to semitrailers as required.

For example, a dozen unsorted containers arrive at the sorting dock. The sorting dock computer has the addresses of the slugs within each of the unsorted containers, as well as the addresses of those that will arrive on the next train. On the basis of this information, the computer will divide the slugs into sorted carriers according to their destination and priority date, combine them with those that arrive on different trains but have the same destination, and load them onto the appropriate outbound trains.

Because the transfer is much faster, it can increase the viability of relatively cheaper railroad transportation for cargo with diverse origins and destinations. It can also decrease the cost of rail transport, since more way trains, which are larger and cover longer distances, could be used instead of shorter, more expensive point-to-point unit trains.

“Bundling of diverse container runs on one train could help shift some truckload shipments to rail. And the bundling in one container of slugs having diverse origin-destination
runs could help shift some less-than-truckload shipments to rail,” said Sonstegaard. “A shift away from unit trains toward way trains would shorten the break-even distance for high-capacity container train service.”

Use of horizontal transfer facilities can provide significant economic benefits, according to Sonstegaard. “Current trends in land values, energy costs, air quality and road and air congestion will motivate the United States and Canada to upgrade their rail systems,” he added.