Terminal frustration

Could there be simple, less costly solutions to looming capacity crunch?

BY THEODORE PRINCE

Summer is traditionally the peak season for transpacific imports. Today, volumes remain strong despite worldwide economic uncertainty. Regardless of how import traffic develops, enormous attention will be paid to labor-management relations. The legacy of last October’s dispute — and coast-wide shutdown — between the Pacific Maritime Association and the International Longshore and Warehouse Union forces a heightened awareness of the role international trade plays in our economy.

The 10-day shutdown last year impacted a wide range of industries. The effects of the backlog were still being worked through months later. For an industry used to working in relative obscurity, the mainstream publicity was a true novelty. The general public came to understand the West Coast ports as a critical piece of the infrastructure that supports our nation’s economy.

However, the ports can also be considered an extravagance — a golden funnel through which vast amounts of money pour — with mixed results. The new contract will be costly — the exact magnitude of the immediate increase will become clearer when the PMA publishes its 2003-2004 assessment rates. The six-year agreement may — or may not — foster an environment conducive to resolving issues around implementing technology.

The implications of any technology decision are significant. New terminals are wildly expensive. The past year has seen an unprecedented introduction of terminal capacity. In southern California alone, Pier 400 in the Port of Los Angeles opened for Maersk Sealand and Hanjin opened its new terminal at Pier T in the Port of Long Beach. Hanjin’s “old” Long Beach Pier A terminal (it was opened only five years earlier) will be expanded to serve Mediterranean Shipping and Zim.

Beyond expense, the amount of readily available land for terminals is dwindling. To realize their vision of offering seven mega-terminals (i.e., greater than 200 acres) the Port of Long Beach has began an extensive reconfiguration of existing facilities, including filling in several slips to connect adjoining properties.

The new challenge to the liner shipping industry is managing increased volume. Even conservative projections envision volume doubling over the next 20 years. The old business practice of building more capacity is not viable long-term. However, increased throughput would create additional capacity without construction (Just for reference, U.S. ports handle approximately 2,000 to 5,000 TEUs per terminal acre per year, whereas European and Asian ports routinely achieve 10,000 TEUs per acre, per year, and some have achieved upward of 25,000 TEUs per acre, per year.)

Before we get enthralled with the prospects for improvement, though, we should understand the differences between existing operations. For example, ports in Asia and
Europe conduct non-truck feeder operations using other vessels (and barges). These TEU counts are included in productivity figures. In the United States, feeder operations are conducted mostly by rail. Not only are rail TEU counts excluded, but they require specific infrastructure that cannot support other operations. Furthermore, most overseas facilities are common user facilities, accommodating many lines — in diverse trade lanes (i.e., Asia/Europe, Asia/U.S, and intra-Asia.) On the U.S. West Coast, the prevalent model is a single-user facility devoted to the transpacific trade lane.

Traffic flows vary. For example, dwell time in Asia is much less than in the United States. Exports are pushed out — they arrive in advance of their scheduled sailing and very quickly load out. Empties — usually in short supply — are pulled out for loading. U.S. terminals are the opposite. Imports arrive and often await customer requirements, while empties are stockpiled for vessel load-back.

Chassis are unique to the United States, and large amounts of land are consumed by storing them. Additional acreage is consumed by placing import loads on chassis in advance of their being picked up. Overseas, there are no empty chassis in marine terminals other than whatever may be connected to a tractor transiting the terminal.

**Transferring Problems.** Clearly, U.S. terminals could increase their productivity per-acre by increasing volume, but that seems unachievable, given the current state of operations. Sadly, many industry providers believe that they can, by transferring their problems, solve them.

On-dock rail is a good example of this. As vessel size increased, many terminals found themselves unable to accommodate the consequent volume surges at their gates. Rather than identify and address the gate-processing problem, terminals sought to transfer the problem by eliminating the gate moves associated with the intermodal bridge moves to and from the off-dock rail terminal. This increased expense transferred operating costs to the railroads — and did nothing to solve the gate congestion problem. This merely transferred the problem to the harbor truckers, who responded by achieving passage of recent California legislation that penalizes terminals with waiting lines of more than 30 minutes.

Many “experts” suggest solutions that merely transfer terminal problems. One idea involves vessels being stowed overseas in exact reverse order of their intended discharge and dispatch. (Most vessels are already basically stowed.) This would help less-efficient U.S. terminals at the expense of added handling complexity for (more efficient) overseas terminals. It also ignores the piece of supply chain management that seeks to defer U.S. logistical routing decisions until the cargo has actually arrived. A more rigid system is not the answer. Another idea is to go to 24-hour gates. This sounds like an obvious solution, but it also ignores supply chain realities. While some customers operate 24/7 receiving, many still do not. The decision is not always their own. Many municipalities have curfews or other zoning restrictions that preclude such operations. A container picked up, but not yet deliverable, would be placed in a less-secure location than the marine terminal. Increased pilferage and hijacking seem inevitable. This is not a minor issue for truckers struggling with an insurance crisis. The terminals would benefit to their customers’ detriment (Furthermore, current labor contracts do not support a cost-effective application of 24/7 gate operations).

**Technology.** The possible panacea for U.S. ports that sorely need to catch up with their international competitors — technology — was one of the key areas of dispute in last year’s negotiations. The hope is realistic. Marine terminals look overseas and see automation achieved from significant hardware and robotic investment. However, if marine terminals looked beyond their insular world, they would see that many U.S. railroads have already achieved great success in their intermodal terminals through effective software operating
systems and coordinated marketing. Many intermodal terminals exceed 7,500 TEUs per acre, per year, and some approach 15,000 TEUs per acre, per year.

There is one application of technology that remains shrouded in mystery. A marine terminal produces only one “product” — the lift to or from the vessel (Even the gate move is a by-product). The number of vessel lifts performed in a shift determines terminal productivity.

Crane productivity can be degraded in any number of ways. If the yard drivers that support it are not cycling in a timely fashion, cranes will have to “wait” between lifts. This was certainly an issue on the West Coast, as the PMA sought a way to eliminate the need for marine clerks’ clerical involvement (and delay) on every lift. International best practice seems to be 40-45 crane lifts per hour. Although the crane hardware is the same, these levels are rarely achieved in the United States.

Keeping in mind the mantra that “you can’t manage what you can’t measure,” it might be interesting for terminals to start publishing metrics along these lines. Lifts per man hour could be compared with cost per lift. The former tracks raw productivity, while the latter reflects the actual labor cost. It is likely that there might be significant tradeoffs between the two.

Our industry faces a looming capacity crunch. Before we continue to throw money at the problem, why not try some simple solutions? There have always been allegations about certain terminals “buying” productivity. The PMA has a wealth of statistical data. Why not let the market see the productivity numbers and decide for itself?

There is also a great deal of debate about the various types of hardware deployed and the method of terminal operation (i.e., arguments continue to rage between advocates of straddle carriers and yard cranes). Adequate terminal capacity is necessary to support our nation’s economy.

The time is past for consultants and vendors selling pet solutions. We need real engineering research to maximize scarce resources. The long lead times of implementing solutions requires this effort to start soon, before it is too late.

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back to top

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