

From the Knowledge Base of TranSystems' Legacy and Merger Firms



Greening the Supply Chain

BY

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EXPERIENCE | Transportation

EXECUTIVE SUMMARY

While making a contribution to the environmental movement is not only a personal and corporate imperative, the potential it holds for significantly improving efficiency and lowering costs within your organization's supply chain is compelling. For many companies, however, "Going Green" will require a cultural shift that fosters corporate-wide ownership and long-term commitment. One way to get the ball rolling is by tapping your internal resources; e.g., meeting with your warehousing and transportation staff to identify improved process, equipment and systems opportunities that will contribute to lower energy consumption and reduced costs. Here are a few ideas to prime the pump...

NETWORK OPTIMIZATION

Is your network optimally configured; that is, are your warehouses and inventories geographically deployed to satisfy customer demands at the lowest transportation and related energy costs consistent with your service level objectives? If not, you may want to take a look at the analytical tools available to assess your options.

FACILITY DESIGN

Lighting

Energy demand during the day can be reduced with the use of photo sensors and skylights. When sufficient sunlight is detected, the sensors turn off the lights and vice versa. Also, consider the use of T5 fixtures that feature shields to focus light on work areas. Further, lights in reserve storage areas can be fitted with motion sensors to remain off until a lift truck enters an aisle. Finally, low bay lighting can be converted to fluorescent for additional savings.

Heating & Cooling

Scientists have experimented with generating electricity from solar power using photovoltaic systems and solar water heating since the 19th century. Solar panels trap the energy from the sun through photovoltaic cells, which convert sunlight into electricity, often beyond the needs of the facility, thereby allowing usage by neighboring facilities on the grid. Solar collectors use the sun to heat water for use in the facility. In addition to offering significant utility energy savings, both approaches currently qualify for Federal tax credits through the end of this year.

If you dig down 6 to 15 feet on most of the planet, you'll discover that the temperature hovers between 45 and 60 degrees Fahrenheit year round. Connected to a system of underground pipes, geothermal heat pumps transfer heat from the warmer earth to the building in the winter and discharge the heat from the building into the cooler ground in the summer. Once the heat

is transferred from the pipes, it passes through a heat exchanger where the warmth is concentrated and then distributed through the building. The EPA estimates annual heating savings of as much as 70 percent and cooling savings near 50 percent. With the amount of outdoor space generally used for tractor-trailer access and parking, a subsurface geothermal infrastructure could well make sense for your warehouse.

Dock Seals

Did you know that depending upon your location and loading practices, installing the right dock seals can save from \$200 to \$600 or more per year in preventable energy loss?

Leverage Your Local Utility

Contact your energy provider to engage a specialist to conduct a facility walk-through and analysis that may help to identify savings opportunities beyond those mentioned above.

EQUIPMENT

Lift Trucks

Do your lift trucks go into service and return for charging at the same time? Plugging them in simultaneously can cause a peak in energy demand that increases costs. Take a look at your scheduling. Have you taken a look at fuel cell technology for powering your trucks? Refueling a fuel cell truck at a hydrogen refueling station takes only a couple of minutes compared to as much as the 20 minutes required to remove and replace a battery from the same truck. Fuel cells are potentially 80% more efficient than today's internal combustion engine technologies and can reduce carbon dioxide emissions by up to 45%.

Conveyors

1. Design the conveyor system with energy in mind. Use long, straight runs with fewer drives. If possible, power the entire system with one drive and use high-efficiency speed reducers.

2. How about turning your conveyors off when they are not in use? For some operations, it may not make sense to continually switch them on and off, but it can be done in many cases.
3. Use gravity feeds whenever possible.
4. Consider the use of linear induction motors and an energy management system to shut parts of the system down when not in use. Use sensors to automatically detect incoming cases and start it up again.

ASRS, AGV's & Other AMHS

You may not think of automated storage and retrieval systems (AS/RS) or guided vehicles (AGVs) as energy-saving devices. Depending upon the nature of your requirements, however, their costs may compare favorably to the costs of additional space, lighting, HVAC, pallet jacks and lift trucks required for the conventional warehouse.

Preventive Maintenance

Delaying necessary maintenance shortens equipment life, creates more downtime for emergency repairs and increases replacement costs. Keep maintenance on track by moving to a scheduled, well-managed maintenance program.

SYSTEMS

Inventory Slotting

Are inventories deployed in your warehouse based upon activity profiles or popularity? If not, your workforce may be spending inordinate amounts of time on travel and searching. Coupled with picking routines that maximize efficiency based upon order profiles and volumes, slotting tools can improve throughput while reducing labor and energy costs.

Task Management

Solid warehouse management systems (WMS) do an excellent job of selecting the right personnel and equipment for a given set of tasks based upon resource availability and task proximity, thereby reducing travel distances, times and related energy costs.

Cartonization

Many WMS offer a cartonization function that eliminates the guesswork associated with selecting the right carton for an order based upon weight, volume and protective dunnage requirements to reduce shipping and downstream recycling costs. Along similar lines, many companies are moving to reusable packaging, containers and pallets for interplant and steady customer shipments.

A FINAL THOUGHT

Research conducted by the Orbis Corporation indicates that:

- Eliminating 11 wooden pallets from the supply chain saves one tree.
- Removing 20 lbs. of solid waste from the supply chain saves 1 gallon of gas.
- Removing 5 lbs. of solid waste from the supply chain saves 9 gallons of water.

Just imagine the impact if every company in our country could commit to this modest set of objectives. And, there are few companies that could not do significantly more. Isn't it time to get moving on **Greening Your Supply Chain?**

If you are interested in reading more on green practices, you may want to download the white paper, "High Performance Buildings: The Fundamentals of LEED" by David Campbell, AIA, LEED, TranSystems which can be found at www.esync.com/knowledge-center

**About The Author - John M. Hill, Principal
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During the past thirty-five years, John has spearheaded the deployment of over 100 AIDC (bar code, RFDC & RFID), warehouse (WMS) and transportation management (TMS) systems for DoD and firms in aerospace, appliance, automotive, basic metals, consumer goods, electronics, food, lumber, medical services, pharmaceutical, steel and miscellaneous manufacturing industries. His accomplishments include: Co-founder of the Automatic Identification Manufacturers (AIM) Trade Association and a charter member of AIDC 100, former president of the Material Handling Education Foundation, Inc. and the Material Handling Institute, Inc. , member of the Board of Governors of the Material Handling Industry of America (MHIA), co-founder of MHIA's Supply Chain Execution Systems & Technology Group, recipient of the 1997 Norman L. Cahners and 2004 Reed-Apple awards for contributions to the material handling industry and material handling education, inductee into Modern Material Handling magazine's 20th Century material handling Hall of Fame and named to DC Velocity magazine's 2003 roster of Logistics Rainmakers. Widely published, he has given over 300 seminars and presentations for corporate clients, trade and professional societies in North and Latin America, Europe, Asia and Australia. John is also a faculty member of The Logistics Institute at Georgia Institute of Technology.

About TranSystems | ESYNC

TranSystems | ESYNC is strategic supply chain consulting, integration and implementation services firm that helps clients achieve bottom-line results by bringing the real world experience, methodologies and seasoned resources necessary to meet their supply chain challenges. Service offerings facilitate development of supply chain strategies, optimize logistics networks and operations and, when appropriate, deploy technology and software systems. ESYNC merged with TranSystems in 2007 and is now part of the Management and Supply Chain Consulting group of TranSystems.

Contact TranSystems | ESYNC today for more information.



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