

# PAIN RELIEF

*Bayer Inc. enjoys productivity gains  
with warehouse management system*

BY ROBERT ROBERTSON

To understand the impact that Bayer products have on the day-to-day life, just take a look around you. From the photos of a Child's birthday party to hospital life-saving diagnostic equipment to the treads on snow tires for tough winter weather or alleviating the pain of a headache with Aspirin™ — Bayer Inc. (formerly Miles Canada, Inc.) touches countless Canadians every day.

Though Bayer's full line of products may not be familiar to the average person, there are few industrial markets that do not depend, in some way, on its products, systems, services or technology. Similarly, there are few Canadian households in which Bayer is not present through its well-known Consumer Care, Healthcare or Agfa products.



Based in Leverkusen, Germany, Bayer AG operates in 150 countries and employs 142,000 people worldwide. With Canadian headquarters in Toronto, locations in Montreal, Amqui, PQ, Vancouver, Winnipeg, Ottawa, Sarnia, ON, and Halifax, and a sales and distribution network close to customers nationwide, the company in Canada is comprised of Bayer Inc. (seven operating divisions) with a total of 2,300 employees.

A company like Bayer Inc., which ships an average of 25,000 orders a month to everyone from the local drug store to the Big Three U.S. automakers, has to have a smooth-running supply chain. For instance, using warehouse technology to compete effectively is a must. This was Bayer Inc.'s dilemma a couple of years ago, as it lacked this capability.

Between 1990 and 1994, the company completed the consolidation of five companies into one. During this time, its customer base expanded in the areas of healthcare, chemicals and imaging technologies. Bayer Inc. healthcare product sales increased 30 percent each year between 1989 and 1993. Today, its overall annual sales revenue in Canada is \$1.2 billion.

At the time of the consolidation, the company's six operating divisions and facilities slimmed down to one 35,000-square-foot warehouse in Montreal and three warehouses totaling 150,000 square feet with 23 loading docks in Toronto. Once the dust settled, 55 logistics employees at the Toronto facilities had more products than ever to deal with.

The batch processing systems handling the influx of products were soon stretched beyond their capabilities. Mistakes occurred because of high volume and potential. To solve this problem, a process was put in motion that would see Bayer Inc. generate sizable supply chain benefits - the company overhauled traditional warehouse operations and created a paper-less environment.

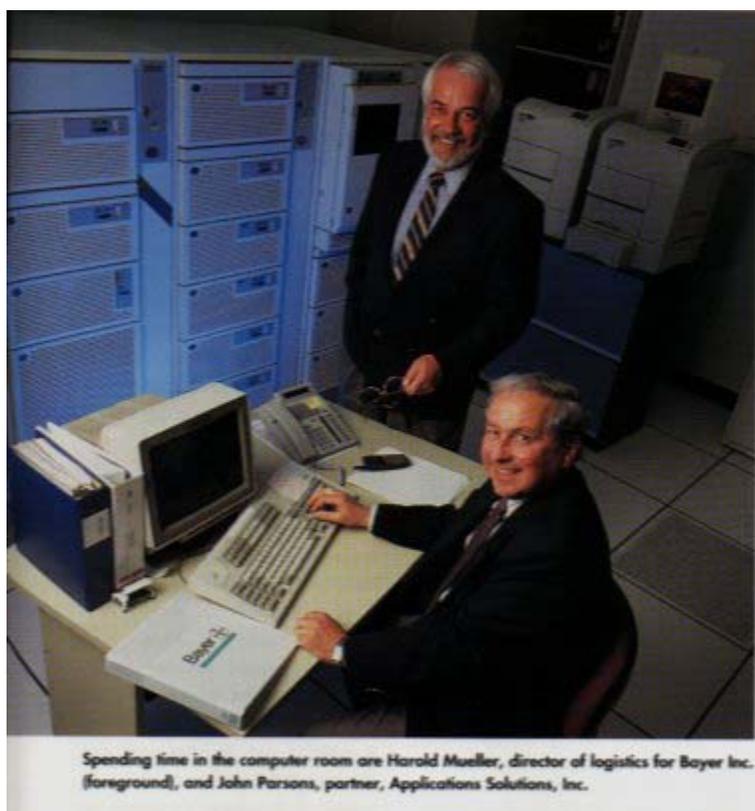
"Our challenge was that we brought together a handful of different companies. Our healthcare division was also experiencing a lot of growth," says Harold Mueller, director of logistics for Bayer Inc. "As a result, there was a certain amount of stress on the organization. It was obvious that we had to make changes to our logistics operation."

According to Mueller, the first step involved getting personnel to alter their thinking and how they worked in the warehouse. The goal was to reinforce the concept that the warehouse operation was key to the company's customer service efforts. Warehouse job descriptions and functions were redesigned to encourage a skill-based, self-directed approach.

Today, all traditional warehouse titles (picker, forklift truck driver, shipper and receiver) are a thing of the past. Replacing them is one Job description for everyone warehouse operator. Within that title, there are four skill levels. Once an operator can demonstrate required ability, he/she can then advance to the next level.

"There are 12 elements to the warehouse operator position. Six deal with 'hard' skills — shipping, forklift operation and stock keeping, and there are six that include 'soft' skills — communication, planning and leadership," says Mueller. "It took nearly two years to develop and institute this transformation, but it has been worth it.

"This move helped to improve employee morale and reduce discretionary absenteeism. As a result, we have been able to enjoy increased productivity and accuracy in the warehouse. From the outset, employees took ownership of their respective jobs. They also supported the warehouse team concept and tried hard to make it work."



Spending time in the computer room are Harold Mueller, director of logistics for Bayer Inc. (foreground), and John Parsons, partner, Applications Solutions, Inc.

### Job One

A decision was also made to design and implement a single warehouse management system. This would include saying goodbye to five independently developed systems, which had been previously used by the amalgamated companies. Top priority was to develop a system that would save money, reduce person hours and paperwork, and improve employee efficiency.

A 10-person warehouse management steering committee, consisting of Mueller and warehouse operators/managers, was established. After six months, the committee came up with a basic system concept. Once this was completed, the search was on to find a systems integrator. The committee decided that Toronto-based TECSYS Inc. and its WMS/400 warehouse system best met its needs. WMS/400 is designed to interface with any business system and can be tailored to many warehouse scenarios. It supports the

printing of industry-compliant bar code labeling — MH-10 labels, internal-slot labels, licence-plate and product labels. The system employs radio frequency (RF) terminals on-line to the IBM AS/400 platform.

The system also supports multiple warehouses and slotting. This includes *fixed*, random or by zone. It allows for multiple items per-location and multiple locations per-item, including multiple picking locations per-item. The system enables users to receive against electronic data interchange (EDI) Advanced Shipping Notices (ASNs), as well as outstanding purchase orders.

As well, it allows users to send a container-level ASN to the customer. Licence plates, task interleaving, sophisticated putaway algorithms, item alias, wave picking, and freight routing are incorporated into the system. Items that are lot- or serial controlled are also supported. Details for each transaction, such as user, date, time, and elapsed time are stored in a history file to allow for performance and sales reporting.

“The deciding factor was the IBM AS/400 platform, which is something that we had and were familiar and pleased with,” explains Mueller. “We already had in-house programming information (IS) expertise — we did not want PCs on a UNIX platform. The first six months of 1994 were spent installing and custom-tailoring the \$250,000 system. We came in on target and on budget.

“We had some initial software and hardware glitches, but TECSYS, Norand and our own IS group resolved them. We anticipated a few problems, as it is nearly impossible to be perfect on the first run. Right now, our entire warehousing and distribution process is totally paperless. Material comes in, it is identified with a bar code, and then it is tracked by the bar code within the building all the way to final customer delivery.”

According to Mueller, Norand analyzed the number of base stations required for the number of employees and the types of product Bayer Inc. stores, which includes one warehouse with hazardous products. The project team chose Norand hand-held RF terminals. From several manufacturers in testing, warehouse operators determined that the Norand terminals were durable, easy and the lightest to use.

Another factor that ultimately contributed to the selection of the Norand 3210s was their intended use in the hazardous materials warehouse. This application requires explosion-proof RF terminals. For the other Bayer Inc. warehouses, Norand RT1135 and RT1735 RF terminals were chosen. All are combined laser scanners, keypads and radio transmitter receivers.

Within the Toronto distribution centres, four base stations are up to 600 feet from the multiplexer or controller. Each base station has an antenna that communicates with units up to 150 feet away. For the Montreal warehouse, TECSYS could use the same IBM AS/400 system to link the RF computers and install software.

Bayer Inc. installed an initial 46 Norand hand-held computers with customized software by TECSYS that links the RF hand-held to an IBM AS/400 computer, printer and scanners. Following the installation, TECSYS instructed the warehouse operators on how to use the new system for inventory, tracking, completing paperless orders and more. In turn, warehouse operators conducted training sessions with smaller groups of employees.

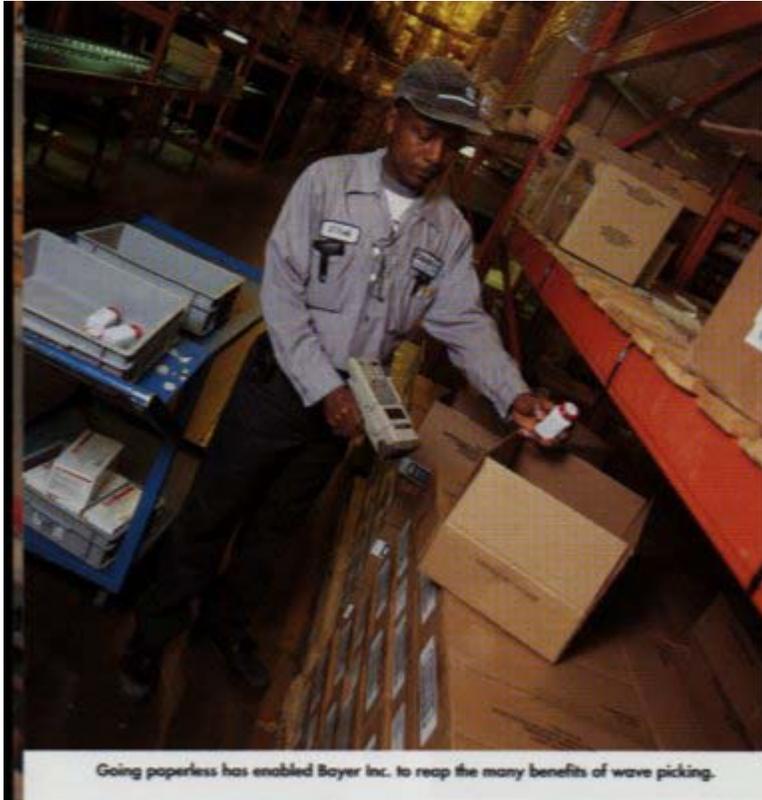
## **WAVE PICKING**

With products efficiently stored on Redi-Rack metal shelving in the Toronto warehouses, a fleet of Raymond high-reach powered units/Clark forklift trucks, a Raymond high-speed carousel, Remstar vertical-lift AS/RS, and Rapistan-Demag conveyor system also help warehouse operators with the picking

task. Bayer Inc. is now able to reap the benefits of wave picking —warehouse operators picking many orders of the same product at one time.

“Where we have multiple orders for the same product, instead of picking one order to completion and then moving to the next one, we can have an operator picking 150 orders at a time,” says Mueller. “In a paperless warehouse environment, you can do this sort of thing. Without a doubt, this is great for productivity in the warehouse.”

Mueller further points out that using the Norand RF system for real-time data transmissions, warehouse operators can take inventory counts at any instant and know what is available. Now, inventory counting is part of any warehouse operator's routine. As well, Bayer Inc. customer service staff can quickly find out the status of a customer order when it began and when its likely to be finished.



"We can process about 1,200 orders per day," says Drew Creswicke, a warehouse operator and member of Bayer Inc.'s warehouse management system steering committee. "I can process some individual orders in less than 30 seconds. The response time with the spread-spectrum models is much faster than with the narrow-band units."

Bayer Inc. has also established an EDI link and advises its carriers of shipments being made and will soon make payments, without waiting to receive an invoice. An automated routing and check-in for product destination, weight and product class was built into the warehouse system by TECSYS. According to Mueller, Bayer Inc. is also using fewer carriers than in the past.

"We are including our carriers in the paperless process. We electronically transfer as much documentation as we can. The system knows and does the right printing," says Mueller. "In

most cases, we print only a packing slip for the customer. In the case of hazardous chemicals, however, documentation needs to be with the vehicle. As a result, we do produce a Bill of Lading.

We have gone from using 150 transportation carriers five or six years ago, to about 15. We have given all of our volume to fewer carriers, and we view them as our partners. The bulk of our orders shipped are small packages, which are handled by Purolator and Priority Courier. For small packages, if we receive an order by 2:00 p.m., we can have that shipment to the customer anywhere in Canada by 10:00 a.m. the next day."

Mueller also says that Purolator and Daily Motor Freight, which hauls a lot of Ontario and Quebec truckload and less-than-truckload freight for Bayer Inc., have their own employees preparing loads for shipment on-site. When the loads are set, they can then go direct to the customer with minimal handling at the carrier's terminal. On the topic of rates, Mueller emphasizes that Bayer Inc. demands more than low price from a carrier.

"We do expect to gain from giving a carrier more of our volume. However, we have a written policy to the effect that we will not sacrifice safety or service performance for lowest cost," he says. "We can always find a carrier to do the job cheaper. But we view the carrier as an extension of quality service that we offer our customers. When it comes to hazardous chemicals, this is especially true. We need carriers that can operate safely."

## **ONE TOUGH BUILDING**

Bayer Inc.'s 46,000-square-foot Haz Mat Distribution Centre was the first of its type in Canada. And it is quite a facility, to say the least. It is designed to store chemicals safely and is compartmentalized. Different hazard classes are kept in separate areas within the warehouse.

Based on its hazard class, the TECSYS WMS/400 warehouse management system used by Bayer Inc. assigns locations for product putaway. There are also various rooms for different classes. All Transportation of Dangerous Goods (TDG) classes are stored, with the exception of Class I (explosives) and Class 2 (radioactive materials).

"We don't do bangs and we don't glow in the dark," says Bayer Inc.'s Harold Mueller. "The building is designed to contain any liquid spill that may result out of a fire, where the sprinklers go off and mix with the chemicals."

All sprinkler water and fire department pumper water is contained for 20 minutes. This is accomplished by using a sloped floor within the building. The low-end of the facility will actually fill up to about two feet, before flowing water out to containment sewers. The system controls water flow to outside sewers, which are valved to the sprinklers. If the sprinklers are activated, the valves automatically close the sewers.

In another room, the fire code calls for natural ventilation. Because it is necessary to heat the room, this posed a challenge to Bayer Inc. A sensor-based monitoring system, where the air is probed for an explosive atmosphere was installed. This alleviates any build-up of an explosive atmosphere.

"If we reach 10 percent of the lower explosion limit, louvers in the end walls open and large exhaust fans start up," explains Mueller. "We have two air changes per minute in that room."

"If this fails, we do have sprinklers at every storage level. We can also vent an explosion, where a wall will swing out on hinges. If there is an explosion, the wall will swing back shut to contain the fire. The other walls in the room have double-supported columns on each side of the firewall. If that room explodes and is totally gone, then the rest of the building will not be affected."

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