

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Warehouse Inventory Control,
Accounting and Billing

Type of Industry Tire Manufacturing and Distribution

Name of User Kelly-Springfield Tire Company
Cumberland, Maryland

Equipment Used IBM System/360 Model 30
IBM 357 Data Collection System
Teletype Model 28 ASR Equipment

Synopsis

Kelly-Springfield markets approximately 26,000 different types and sizes of tires from three manufacturing plants and ships them from 26 warehouses throughout the U.S. From its headquarters in Cumberland, Maryland, it must maintain control of inventory and plan production and shipping. Before automation, sales orders were written by hand and mailed to headquarters. The old system was prone to delays and difficulty in deciphering handwriting. Then, moving from an IBM 1440 computer and affiliated hardware to the System/360 Model 30, the company developed its system into a tool of versatility and considerable storage.

THE SYSTEM

The unique feature of Kelly-Springfield is that it produces and sells a great variety of tire types and sizes. Getting the right tire to the right place at the right time is the prime function of the organization and its warehouses. An IBM System/360 Model 30 is the nucleus of the data processing center that makes the product movement possible and keeps the entire operation under control. IBM was the company chosen to supply both the initial and the present data processing equipment because, according to Kelly-Springfield, the computer manufacturer is geographically convenient.

A 65K central processing unit is supported by six magnetic tape drives and six 1311 disc drives.

"To fill our sales orders promptly," says Vice President Howard F. Radcliffe, "we have to know exactly what each warehouse has in stock and what has to be shipped to replenish its supplies. Similarly, to plan ahead, our headquarters people must have a complete picture of the company's operations in front of them." The dp equipment ties in with facilities in the Tyler, Texas, and Freeport, Illinois, plants and with the company's mixing warehouses across the country.

In 1894, Arthur W. Grant, blacksmith and inventor, found that two strands of wire embedded in rubber could be drawn around a carriage wheel, cushioning it and muffling the sound. The subsequent partnership with Edwin Kelly marked the beginning of the Kelly-Springfield Tire Company on whose product the cars and trucks of the nation still ride. Plants are in Cumberland, Maryland; Freeport, Illinois; and Tyler, Texas.

Sales orders at the company's 26 warehouses are prepared on teletypewriters. In preparing the typical order, the set attendant first places a master "customer tape" kept on file for each customer, into the teletypewriter's reader. All constant information about the customer (name, shipping and billing address) is typed in automatically. A product master tape is then run for the product description. The attendant at the teletypewriter enters only the variables (the number of units ordered). The master tape programs the equipment to stop automatically at the point where such variables should be entered.

The prepunched master tapes help eliminate errors by keeping manual typing to a minimum.

The teletypewriter produces a page copy of each sales order as well as a punched paper tape. In addition to sales orders, information about other transactions, such as shipments received, is also reported on punched tape. Earl M. Jobe, manager of data processing operations, illustrates the speed with which warehouse needs can be determined by the computer system: "We in Cumberland... could determine if the Chicago warehouse has 100 units of a certain tire much faster than the Chicago warehouse people could physically check inventory themselves."

Data is transmitted to Cumberland at the rate of 6,300 characters per minute via a band 6 WATS line using Dataspeed terminal equipment. Each day the System/360 receives approximately 2,000 orders from about 47 inventory points, which total close to 20,000 transactions, according to Neal K. Nelson, manager of computer systems and procedures. Aside from orders, Cumberland Central Control also receives information on shipments and all other transactions affecting inventory such as receipts, transfers, returns, purchases and adjustments.

This data enables the company to see a complete picture daily of any inventory change at any location throughout the country and is as current as the close of business for that day. Transmissions received during the day are processed by computer operations personnel on second and third shifts, arranging data for a daily, weekly and monthly reporting. Nelson explains, "Once this data is edited and classified, it has three primary daily functions." A multifactory availability report is run to

enable the production planning and merchandise distribution departments to be aware of the inventory status of each item in the product line at the close of business the previous day. Orders and shipments are measured against sales estimates to determine the company daily sales progress. Invoices are prepared daily on all customer shipments.

FORM NO. 15-101

SHIPPING ORDER

S. O. NO.															FROM		TO		DIV		DT		CUSTOMER		C		P.O. NUMBER		S		ITEM		QD		JD		ED		BO		CUST. NO.		VENDOR		REQN. NO.		AAC		SC		ENTRY DATE	

PULLED BY	
CHECKED BY	
DATE SHIPPED	PAGE
	OF

										UNITS		WEIGHT	
										TIRES			
										TUBES			
										TREAD RUBBER			
										OTHER			
										TOTAL			

SPECIAL INSTRUCTIONS										UNIT DATA																																																	
PRODUCT CODE										SIZE DESCRIPTION										PLY GR CUSTOMER STOCK NO.										ORDERED CODE										RELEASED SHIPPED										WEIGHT PER 1770									

PLEASE REMIT DIRECT TO

THE KELLY-SPRINGFIELD TIRE CO.
 POST OFFICE BOX 2108
 CHURCH STREET STATION
 NEW YORK, NEW YORK 10008

THE KELLY-SPRINGFIELD TIRE COMPANY

CUSTOMER NO. _____ DATE _____ INVOICE NO. _____

ADDITIONAL INFORMATION _____

SHIP TO _____

CUSTOMER ORDER NO.	O/U	TERMS	SHIPPER NO.	T/C	SHIP FROM	SHIPPING DATE	B/L NO.	ROUTING

QUANTITY	SIZE AND DESCRIPTION	PRODUCT CODE	UNIT PRICE	UNIT TAX	PRODUCT AMOUNT

BILL TO _____

TOTAL	→
-------	---

*ALL GOODS NOT SHIPPED ARE AUTOMATICALLY BACK ORDERED AND WILL BE SHIPPED LATER.
 RETURN OF UNRECORDED CANNOT BE ACCEPTED WITHOUT THE SELLER'S AUTHORITY. A HANDLING CHARGE OF 20% WILL BE CHARGED FOR TRANSPORTATION IF NOT PREPAID. WILL BE
 DEDUCTED FROM THE SELLER'S ACCOUNT. DAMAGE OR LOSS OF GOODS MUST BE MADE ON RECEIPT. SEE INVOICE NUMBER IN ALL
 REQUESTS. WHEN THE SELLER'S NAME IS AT THE END OF THE LINE, IT IS A SIGN OF A RETURNED ORDER. ALL RETURNS MUST BE MADE WITHIN 30 DAYS OF THE DATE OF
 CORRESPONDING. CASH DISCOUNT TO ANY WILL BE CALCULATED ONLY ON NET PURCHASES AFTER ALL NON-CASHABLE REQUIREMENTS OF THE TIRE LABOR STANDARDS
 WE HENRY, CANTON, MASS. HAS BEEN MANUFACTURED. THIS WERE PRODUCED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF THE TIRE LABOR STANDARDS
 ACT OF 1966, AS AMENDED, AND OF REGULATIONS AND ORDERS TO THE UNITED STATES DEPT. OF LABOR ISSUED PURSUANT THEREOF.

INVOICE WITH PRODUCT CODE AND SUBSEQUENT SHIPPING ORDER.

The only difficulty the company had in implementing the new system was in accustoming the suppliers to unfamiliar forms and operational methods. From the employee standpoint, there was little agony in the transfer to the 360. Possible hardware problems were "worked out initially," according to the company, and changes were explained to suppliers as questions arose.

Each morning by 8 a. m. , central control begins transmitting to each inventory point a message regarding the status of its previous day's activity. Included in this message is such information as its updated balances, outstanding orders and any errors that were encountered in the previous day's transmissions.

At the present time, messages are sent and received in paper tape form. Future plans include converting the transmission mode to magnetic tape terminals, thus improving both speed and accuracy.

"In our business a single error on a handwritten report can cause considerable confusion and expense," says Radcliffe. "For example, if an order for whitewall tires is mistakenly coded as blackwall, we relieve our inventory of the designated number of blackwalls and manufacture more to replace the tires we thought we had sold. Meanwhile, instead of whitewalls, blackwall tires are shipped to the warehouse where they aren't needed; and several days are lost before the correct type of tire is finally shipped. By greatly reducing the possibility of this sort of error, our new system has smoothed out operations all along the line."

A company-wide inventory status report is prepared on a weekly basis. With this, production planning, merchandise distribution and warehousing and customer service departments are informed of product availability on a national level and its month-to-date performance.

An audit trail is prepared weekly, reporting, in detail, all the activity submitted from all warehouses. If at any time a warehouse wishes to know the status of an item or items as maintained by the computer, a request may be submitted for an inventory balance. The data processing division reports to the comptroller so that communication is maintained with management. On a purely informational level, transfer of facts is more "people to people" rather than computer to people. Using the computer system, a quarterly profit and loss statement is printed and circulated to management. These plus periodic inventory reports come under discussion at quarterly management meetings. Whether profit and loss reports generated the meetings or whether the meetings generated the profit and loss report is not nearly as important as management's understanding of the system as a tool and the willingness to deal with it in that way.

Also on a weekly basis, data processing department prepares a report which indicates to each warehouse, in summary form, all orders they have placed with Cumberland control which are pending shipment.

An in transit report is prepared to inform warehouses of tires enroute and from which point they were shipped. In Cumberland, a 357 data collection system captures production not only to update the factory inventory position, but to pay employees whose wages are determined by their production.

The computer also stores data on every size and type of tire and tube, every type of tread rubber, every accessory and all repair material in the company's line.

RESULTS AND FUTURE PLANS

Plans for the future include production control and production scheduling via the 360. At present, the system provides the quick, accurate information required. "We have the tools to quickly determine our needs," says Vice President Radcliffe. "To keep improving our customer service and increasing our sales, constant modernization of our data processing and communications system is producing results. It's faster and more accurate than anything we have had before and gives the company greater control over production, shipping and inventory."