INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications   Inventory Control
                            Management Information

Type of Industry   Gas Appliance Manufacturing

Name of User   Caloric Corp.
                            Topton, Pa.

Equipment Used   Honeywell 200 Data Processing System

                            Mohawk Data Recorders

                            IBM Unit Record Equipment

                            Honeywell Data Stations

                            Teletype Terminals

Synopsis

The Caloric Corp., a subsidiary of Raytheon, has built a management
information system around its inventory control and distribution system.
The company, using a Honeywell 200 central processor, has all but eliminated
punched cards at its Topton headquarters by using Mohawk Data Recorders.
Caloric has found, however, that efficient inventory control can be achieved
at remote warehouses inexpensively using off-line terminals and punched
paper tape. Information that is funnelled into Topton from the field is used
to prepare a battery of management reports that cover nearly every aspect
of the firm's business from advertising to production.

Founded in 1889 as the Klein Stove Co., in Philadelphia, Caloric originally produced gas and coal stoves and heaters. A few years later founder Samuel Klein dropped the coal-burners to concentrate on gas ranges. Caloric has maintained its commitment to gas appliances down through the years, and today one in every four gas ranges in the United States bears the Caloric name. The firm is a subsidiary of Raytheon Co. and markets aggressively under a closely controlled franchise program through department stores, appliance dealers, gas utilities and builders. Some 1,100 persons are employed in Topton with another 200 in other locations.

The Caloric Corp., in Topton, Pa., is controlling inventory in five remote distribution centers in Chicago, Los Angeles, Dallas and Atlanta, using Honeywell data communications terminals interfaced with a Honeywell H-200 computer system. In addition, the firm's Topton headquarters serves as the main distribution center for the East Coast. Operations at Topton, where the computer is located, serve as the hub of Caloric's nationwide marketing activity. Systems and procedures, at least as far as the inventory control system is concerned, are handled somewhat differently when orders are placed directly to the Eastern distribution center where Mohawk Data Recorders are used to provide input into the 28K H-200.

Caloric's configuration, besides the H-200, includes six tape drives, a card reader-punch, a 650 line per minute printer, five Honeywell data communications terminals and Bell Data-Phone data sets.

THE SYSTEM

The order and inventory control system at the four remote distribution centers begins when a sales order is written. It is forwarded immediately, by either telephone or mail, to a regional sales administrator at the remote distribution center. In many cases the customer places his order directly to the distribution center. The regional sales administrator edits the data which is recorded on a four-part sales order.

SALES ORDER FORM IS COMPLETED AND EDITED AT REGIONAL OFFICE THEN THE DATA IS PUNCHED INTO PAPER TAPE FOR TRANSMISSION TO HOME OFFICE.

The completed sales order is then turned over to a teletypist who, using a Model 35 Automatic Send-Receive terminal in an off-line mode, adds the order to a punched paper tape. Orders are punched as they occur throughout the day. Toward the end of the day she prepares a data message advising the home office of the status of orders or shipping advice previously received from Topton (completed or incomplete). The final step is to punch any administrative messages that must be sent from the warehouse location to the home office. Thus, at the end of the day, new orders, advisories and administrative messages are queued in that order, the tape is put into a Honeywell tape transmitter and the teletypist goes home.

Later on in the evening, data processing personnel in Topton dial the distribution centers with Dataphone data sets, and the information contained on the paper tape is pulled directly into the H-200's core memory.

Caloric's management has found that the data communications function can be performed at less expense at night with the information being prepared off-line. There is little need for a real time application in this area. The company has had little trouble with the paper tape transmission from the distribution centers, despite the fact that the terminals are left unattended.

Once the information is drawn into core memory, the computer automatically performs two major inventory routines -- a credit check and a check on product availability.

If the credit check fails, the warehouse is advised with a computer-generated administrative message advising the distribution center of the reject. In addition, the credit department is automatically provided with a listing of all rejects, and has the authority to override the computer's determination. One way or another, the credit department is obligated to take some action.

The availability check is made against an uncommitted inventory list stored in the computer. Often, the center will have the needed model in stock, but committed to another customer. For this reason no order is sent from the distribution centers until it is first cleared through Topton. Each morning the order services department gets a copy of every order, printed out by the computer on Caloric's order form. Orders can be rejected for several reasons, most common of these are prior commitments, out of stocks or goods in the warehouse damaged in shipment.

Caloric ® **SALES ORDER REGISTER** HW-147 2

CUSTOMER CODE	T.C.	ORDER NO.	CUSTOMER P.O. OR REQ. NO.	M	FOB	T	ORDER DATE	SOLD TO IDENTIFICATION
CS012345	09	W221196	K201-22		2		081267	

SHIP TO — FOR TOPTON USE ONLY

JOHN DOE & CO.
1200 MARKET ST.
WAREHOUSE # 6
CHICAGO, ILL. 12345

SHIP VIA		DATE REQD.
4MTR. FRT.		091067

LINE	QUANT.	MODEL NUMBER	COLOR	GAS	PRICE	OC.	OP	W	A	B	C
01	0001	E105	OLV	N51	21778						
02	0001	HWAXKX	*00	N51	16587			J			
03	0001	DKGWXX	WHI		00000				—		
04	0001	DR4T	WHI	N51	06546						

THE COMPUTER PRINTS OUT ALL ORDERS IN TOPTON

The computer automatically prints two product availability lists during the availability run -- one for each order passed, and one for each order that failed to pass the availability check. The computer also automatically prints an administrative message telling the location where the order was rejected and which is now the responsibility of the home office.

Order availability printouts are sent each morning to the order services department which is empowered to make any necessary adjustments. There are three steps the department can take:

1. It can issue new available input data to cancel the rejected order and enter two new orders: one order to provide for delivery of the quantity that may be available in the warehouse, the second to backorder the units that are unavailable.

2. The department can also determine whether or not the items are available at another location and decide whether or not it is economically feasible to ship from that location.

3. The order can be re-entered as is, overriding the reject. The entire order then becomes a back order.

If the order clears all checks, the computer automatically generates a combined shipping list/ bill of lading on magnetic tape, and transmits it to the distribution center where it is received in punched paper tape form. Added to the shipping list/bill of lading are the day's order status report and any administrative messages from Topton to the distribution center. In addition, the bill of lading is preceded by a picking list summarized by total quantities of each model number needed to ship each day from that warehouse. The following morning, the regional administrator and his staff run the tape in an off line-mode on the 100 word-per-minute ASR printers.

When shipping is completed, the warehouseman gives the signed shipping document to the regional administrator who adds a shipment message including the customer number, the order number and the carrier's name to the administrative message queue. The shipment message serves as input to the invoicing system, and the invoicing output serves as input to Caloric's inventory control systems.

The system has given Caloric a great deal of flexibility in terms of determining optimum shipping points. This is true in cases when it is less expensive to ship an order received in Dallas from Chicago. It also is helpful when stock is unavailable at one center, but on hand at another.

Besides serving as data processing center and company headquarters, Topton is also the Eastern distribution center. All orders coming into Topton are routed to the sales administration department where customer identification is added, along with such items as product description, quantity and terms.

From sales administration the edited orders are sent to data processing where input is prepared directly to tape from the source documents with Mohawk 1101 Data Recorders. The computer then merges the information (which is now stored on magnetic tape) with the orders coming in from the other main distribution centers, and goes through its regular order processing routine.

Inventory Control

While the computer is processing orders, it is also generating an up-to-date daily stock status report in Product/Warehouse sequence. The Warehouse Inventory Stock Status report shows sales administration which numbers are available in each warehouse, what is on order from production, how many units have been received and cumulative sales for each number to date.

MODEL NUMBER	CLR	GAS	WHSE	INV AVAIL	ON HAND	RESERVED CUST	RESERVED WHSE	ON ORDER FROM PROD	ON ORDER SKED	ON ORDER WHSE	NEW DEMD	103 REL	SALEABLE IN	SALEABLE OUT	N/SALEABLE INV	N/SALEABLE NET	CUMULATIVE SALES FROM
E503	OLV	N51	15	3	3												01/67
E503	OLV	N51	24	6	6												01/67
E503	OLV	N51	73	5	5												01/67
E503	WHI	N51	2	21	22	1											01/67
E503	WHI	N51	3	10	10												01/67
E503	WHI	N51	15	5	5											1	01/67
E503	WHI	N51	24	4	4												01/67
E503	WHI	N51	73	1	1											1	01/67
E504	ACP	N51	2	8	8												01/67
E504	ACP	N51	3	6	6												01/67
E504	ACP	N51	15	4	4												01/67
E504	ACP	N51	24	4	4												01/67
E504	ACP	N51	73	13	13												01/67
E504	OLV	N51	2	8	8												01/67
E504	OLV	N51	3	7	7												01/67
E504	OLV	N51	15	4	4												01/67
E504	OLV	N51	24	3	3												01/67
E504	OLV	N51	73	15	15												01/67
F504	WHI	B52	3	2													01/
	WHI	N51	3														

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THE WAREHOUSE STOCK STATUS REPORT

The computer is also used to project future requirements through past performance, using an exponential smoothing technique. Another report shows sales by model and distribution based on historical performance. Caloric describes the report as nothing more than a systematic departure point for exercising informed judgment for the future.

The system has proven its value in terms of dollars and cents. Through computerization, Caloric in recent years has been able to reduce its distribution centers from 43 to 19. Not all are on the system at this point, but the four that aren't will be converted in the future. The inventory control system has enabled the company to stock in depth, reduce obsolescense and made it easier to contract with the best carriers for delivery. Overhead, too, has been reduced.

Invoicing

All invoicing is done directly from Topton within 24 hours of shipment. It's done automatically by the computer when the regional administrator sends his shipping message. At the same time the computer is producing the invoice, it is updating the reserve and on-hand columns of the daily stock status report.

The data gathered for invoicing and crediting serves as input to a number of other financial, statistical and marketing reports.

Among them are:

--Statistical Sales Vs. Budget (Daily)
--Gross Profit Margin Report (Daily)
--Sales By Trading Area By Product (Monthly)
--Sales by State and County (Monthly)
--Net Sales and Sales Tax By State (Monthly)
--Commission Statements (Monthly)
--Cooperative Advertising Budget Funds (Monthly)
--Sales By District Manager By Customer -- this year vs. last year (Monthly)
--Sales By District Manager By Product -- this year vs. last year (Monthly)
--Sales Status Report (weekly)
    This report includes sales for the week, the month, open orders and
    shippable open orders this fiscal month.
--Sales By Industry Class By Product (Monthly)
    Indicates what percentage of dealer line builders buy or what percentage
    of builder line is bought by utilities. It also shows what percentage of the
    total is bought by each major market.

Each report contains costs vs. sales figures, and the sum of the reports enable Caloric's management to spot trends and effectively act on them. For example, the strengths and weaknesses of each district manager can be measured with the sales reports.
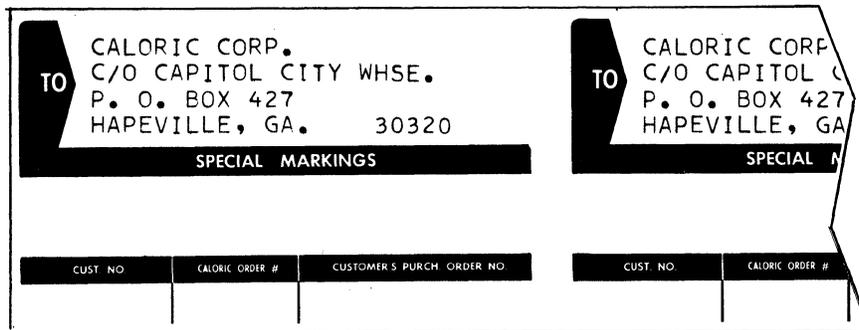
Production

Rounding out Caloric's total system is production control. Management uses information from sales and inventory reports to determine when to produce and what will be built in what amounts. The order to produce is put on a regular four part sales order form and is called a warehouse order.

An inventory administrator issues the warehouse order and sends it to the data recorders. The data is recorded on magnetic tape and the order is processed like a regular sales order. The difference is that the credit and availability checks are skipped. Also produced (by the computer) is a punched card which is sent with the bill of lading to the production department for scheduling. When the units are scheduled the punched scheduling card is returned to EDP where it serves as computer input for the creation of a production packet. The scheduling card may indicate that 100 ranges of a given number will be built. When the scheduling card is run through the computer, 100 punched cards, one for each unit to be built, are produced along with one foil serial number label, which contains the American Gas Assn. seal of approval, and two carton identification labels to be used in shipping.
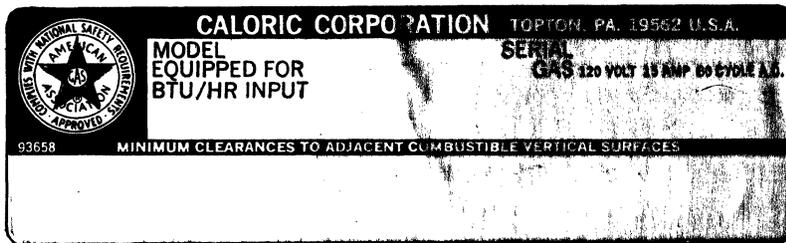
FOIL LABELS ARE IMPRINTED BY COMPUTER-PRINTER AND BECOME PART OF THE PRODUCTION PACKET. A LABEL IS AFFIXED TO EACH PRODUCT AS IT COMES OFF THE PRODUCTION LINE.

GUMMED LABELS ARE PRINTED OUT BY THE COMPUTER AND PLACED IN THE PRODUCTION PACKET. AFTER THE PRODUCT HAS BEEN PACKAGED, THE LABEL IS AFFIXED TO THE CONTAINER.

The packet, when complete, is put into a clear plastic envelope -- one for each unit to be built -- which stays with the range from the time the frame starts down the assembly line until it is completed. The production card is then returned to EDP where the card is used to put the finished unit into inventory and to determine payroll requirements for piece workers.

The punched card application in production is Caloric's only unit record application. Most of Caloric's input at Topton is done through the 1101 Data Recorders. Management believed that it didn't make sense to use punched card input with a tape oriented system. In all, the equivalent of 12,000 punched cards are run through the six data recorders daily. Besides order processing, which makes up about half of Caloric's volume, approximately 1,000 account receivable items, 2,000 inventory control entries and 3,000 payroll items are entered through the data recorders daily. Caloric estimates production gain at about 28 percent and error reduction at about 20 percent, since the six 1101's were installed.

Results and Future Plans

The most dramatic results experienced by Caloric have been in the warehouse operation. In most cases, the company rents public warehouse space, and shares that space with competitors. The ability to provide warehousemen with an efficient computer controlled picking list gives the company a competitive edge in gathering orders. In addition, the regional administrators like the system because it puts the computer at their fingertips. Caloric estimates that customer service is being maintained at approximately a 90 percent level, and this is as close to optimum as possible. Costs mount dramatically between 90 and 100 percent. Orders are being shipped within 24 hours after they're placed and bills sent out 24 hours after the orders are delivered.

The large volume of reports being generated by the system has enabled management to get a better overall view of the business.

Plans for the future include bringing the four warehouses that have yet to be converted into the system. However, it is inconceivable at this point, due to the success of off-line data processing, that Caloric will look seriously at on-line, real time applications in the near future.