INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications	Inventory Control
Type of Industry	Engine Parts Manufacturer
Name of User	Gould Engine Parts Div. Gould-National Batteries, Inc. Eau Claire, Wisc.

Equipment Used

IBM 1440 Data Processing System, including:

1441 Processing Unit (8K)
1411 Disc Drives (three)
1442 Card-Read Punch
1443 Printer
1447 Console

Synopsis

Gould Engine Parts Div. of Gould-National Batteries, Inc. has been using an IBM 1440 data processing system to control inventory on 10,000 items in warehouses across the country.

Daily minimum balance and priority order reports give the inventory control manager the information needed to arrange for delivery of rush items from headquarters or from the closest field warehouse.

On demand the computer can furnish information on a given item, individual warehouse or geographical sales, service level costs, etc.

The system has contributed to fewer lost sales, a stabilized inventory investment and better production and purchasing planning.

Central computer control has helped Gould Engine Parts Div. of Gould-National Batteries, Inc. to boost its customer service level at least 15 percent without any increase in inventory costs.

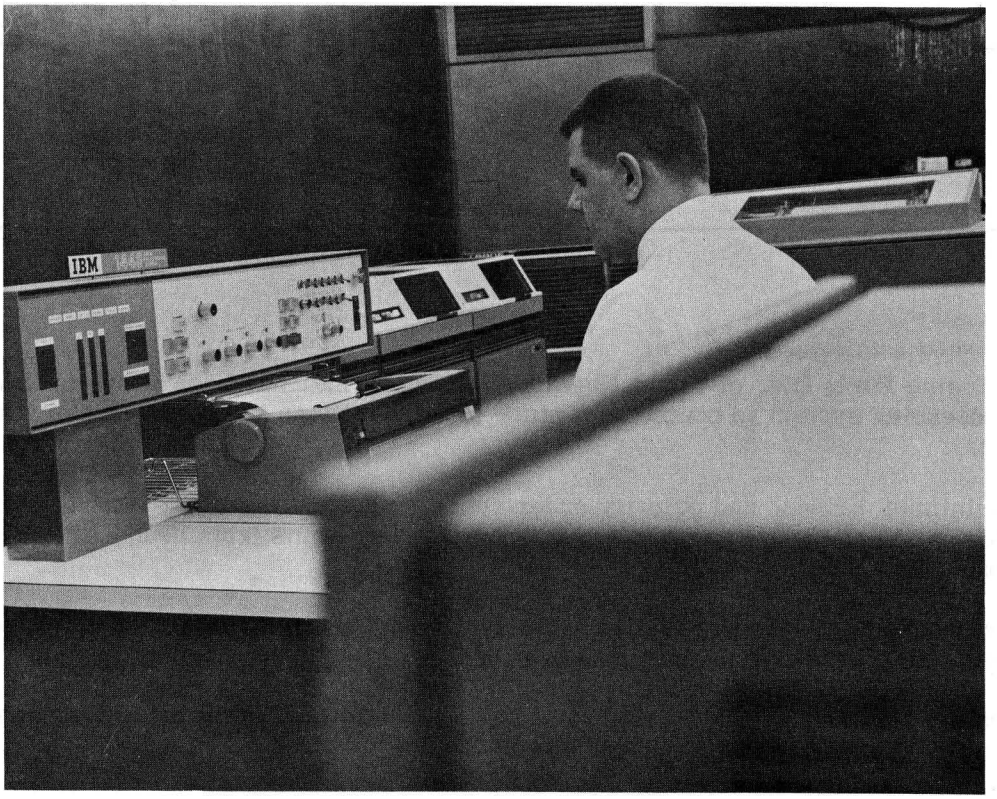
The central control system at Gould headquarters in Eau Claire, Wisc., keeps tabs on a 10,000-item inventory, scattered in a network of warehouses across the country. Average service level from the local warehouses has been increased substantially and delivery-from-stock from the headquarters warehouse is also up.

Previously, basic punched card equipment, including an IBM 402 accounting machine, was used primarily for minor accounting functions.

In its first year of operation, the IBM 1440 data processing system has contributed to:

1. Fewer lost sales: There has been a profitable speedup in inventory turns, but even more important is the sizable reduction in warehouse stockouts of demand items, which almost always result in a lost sale. The right products (those in demand) are now available when and where they are needed.

2. Stabilized inventory investment: Gould-National Batteries has not only been able to improve service without a corresponding increase in stock investment, but obsolescence is under much better control and a bigger percentage of inventory dollars is invested in currently saleable merchandise. And, as the program moves ahead, a substantial reduction in total inventory dollar investment is expected.



CONTROL CONSOLE OF THE IBM 1440 COMPUTER AT GOULD-NATIONAL.

3. Better purchasing and production planning: The system makes it possible to establish (and continually modify) the most efficient and economic order quantities for items purchased from vendors. It already has opened the door to better production scheduling and utilization of materials, manpower and resources.

Underlying these specific benefits is the system's ability to provide inventory management-by exception. The computer automatically triggers a print-out to call attention to items in any warehouse that are at minimum stock levels. It flags exception stockout situations which require special handling. And, it goes far beyond the routine inventory management report function by quickly pinpointing popular demand items, lost sales and obsolescence in a given market area.

Data accumulated in the master direct access, inventory information files furnishes all needed reports (on a scheduled or exception basis), such as sales performance and history, stock requirements and demand patterns, seasonal and geographic trends, etc. There is also the capability to inquire into the computer files at any time for a current and complete status report on any item, anywhere in the distribution system.

Inventory control and distribution has long been a major problem. Gould-National distributes some 15 principal component parts for each engine and in a variety of sizes and finishes. All told, the company stocks some 10,000 individual items, each of which must be available (in varying degrees) at every warehouse. And, warehousing is costly for many high precision parts which must be handled and stored under special conditions.

The inventory is further complicated by the on-demand sales nature of the business. When a customer needs a replacement engine part he needs it immediately and is rarely willing to wait very

INVENTORY TRANSACTION DATA FROM FIELD WAREHOUSES IS KEY-PUNCHED AND PROCESSED DAILY BY THE COMPUTER.

long to obtain it. In a large percent of the cases, the availability of a particular item from the distributor or jobber is the deciding factor in whether or not a sale is made.

On the other end of the distribution pipeline, there is the problem of extremely long delays (often as much as 90 to 120 days) to bring a component back into warehouse stocks. Stabilizing vendor arrangements to compensate for these long replenishment lead times is a prime objective of the computerized approach.

Prevention of lost sales caused by local warehouse stockouts is also an objective. The only way to offset the twin problem of replenishment delay and customer impatience, aside from building up excessive warehouse stocks, is to set up a system for gathering and evaluating a wealth of information as a base for literally thousands of daily inventory management decisions. This is the task that has been set for the IBM 1440 computer system.

THE SYSTEM

Keys to the system's operating effectiveness are the direct-access magnetic disc files which are updated on the basis of daily warehouse transactions and reflect the current, company-wide inventory situation. Information on the master disc goes far beyond the usual on-hand and on-order and current period sales record data and provides, in effect, a full appraisal of item performance.

For example, the 1311 disc record for each of the outlying warehouses in the distribution network includes a six-month history of customer demand for every item of stock, showing total sales and total lost sales. The number of times a sale was lost because of stockout conditions is recorded for the month-to-date and the year-to-date, again by item. The number of times each item had to be back-ordered through headquarters, along with the date of the last sale of the item and the minimum level recorder trigger is also included.

In short, the data on individual warehouse inventory provides a fact-base for classifying inventory by product as well as control of stock status. Information is at hand to accurately assay the popularity of the item, seasonally and geographically; judge and relative importance of immediate local warehouse availability as a sales factor; and project movement patterns and trends.

INVENTORY RECORDS ON THREE IBM 1311 DISC FILES ARE UPDATED TO REFLECT DAILY INVENTORY TRANSACTIONS AT FIELD WAREHOUSES.

DAILY MINIMUM BALANCE INVENTORY REPORT PRODUCED BY DATA PROCESSING SYSTEM BEING CHECKED BY PLANT MANAGER.

The same information, and much more is maintained on the master inventory disc for the headquarters warehouse; there is a service percentage for every item of inventory. For example, along with the current and preceding period unit costs. Using this data, along with lost sales and back-order specifics, Gould-National Batteries can actually pre-set a service level by item and know exactly what it will cost to maintain that level.

The Gould-National master inventory record contains six months of history, lead time, unit cost, units per set, date of last sale, order point, economic order quantity, average forecast error, lost sales, warehouse locations, unit weight, vendor code, popularity class and other control fields.

The on-hand, on-order and reserve (advance customer requirements) quantities recorded for each item, together with minimum balance requirements and vendor lead times, automatically generate replenishment orders and simplify purchasing procedure. The disc record also contains the EOQ (Economic Order Quantity) for the item.

In addition, the headquarters inventory master file lists the highest single demand item and total number of demands for the month at each warehouse; the six-month and year-to-date sales history, the date of the last sale of the item and an obsolescence index (number of days allowed from date of last sales before an exception report is made).

Both the individual warehouse and the headquarters master disc records are kept up to date as a result of daily processing of three basic inventory transaction forms: (1) priority order replenishment form; (2) lost sale form and (3) direct sale report. These are forwarded to headquarters from the field warehouses, key punched and entered into the 1440 processing routines to update all related inventory records and to trigger daily distribution operations.

All three transaction notices are first checked by the computer program against minimum balance levels for the item. If the transaction puts stock status at the originating warehouse at or below the minimum the system prints out an exception report for immediate review. The priority replenishment order (out-of-stock at the local warehouse but the customer is willing to wait for delivery from headquarters) is, of course, also flagged as an exception situation and gets special handling.

Reports

The daily minimum balance and priority order reports give the inventory control manager the information he needs to arrange for delivery of rush items from headquarters or from the closest field warehouse which has the needed item in stock. And, he can quickly determine quantities and items needed to bring warehouse stocks back up to desired levels.

Every two weeks, the computer system reviews the entire inventory situation at each of the warehouses and prepares a list of routine replenishment order quantities. In reviewing a field warehouse, the computer examines sales history for each item in that warehouse. Three figures are calculated: the total of the past three months' sales, the average sales times three and the order point. If the balance on hand is less than the order point, the highest of the three figures is used to order.

The order point for Eau Claire is determined on the basis of demand throughout the entire pipeline. If the quantity to be shipped to a warehouse causes the Eau Claire balance on hand to fall below the order point, an exception report is automatically produced. If the balance on hand goes below zero, a back order for the unshipped quantity is prepared.

The master inventory status is reviewed weekly and is ordered on the basis of the balance on hand falling below the order point. On demand, the system can furnish a virtually limitless variety of information on a given item, individual warehouse or geographical sales area; for example, stock availability and status, distribution, sales and customer demand history, service level costs, etc.

At the end of the month, management gets an inventory evaluation report showing the company-wide situation and the total demand for the month for each stock item. Another monthly report gives average demand for each item over a six-month period, the movement pattern for the previous six months, service level, economic order quantity, safety stock determinations and basic replenishment lead times. Using this data, officials can recalculate the most efficient re-order point for the item.

RESULTS

The net result of the central computer control setup is inventory stability in the face of random fluctuations in the marketplace. Management has the information it needs to respond quickly to change, and the system itself triggers the action needed to cope with day-to-day operations. This means a significant increase in the business forecast can be faced without building up inventory investment or risking lost business because of stockouts.

As Ray Priestly, inventory control manager at Eau Claire, puts it: "Now, we are truly controlling the current, company-wide inventory situation. We know where our inventory is and precisely what is happening to it on a day-to-day basis. We have the ability to analyze all of the factors governing any item of inventory at any point in distribution-status, movement, demand, cost and profitability -- and act in time to capitalize on opportunity or head off potential trouble."