

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Production and Inventory Control
Type of Industry Industrial Instruments Manufacturer
Name of User Beckman Instruments, Inc.
Cedar Grove Operations
Cedar Grove, N. J.

Equipment Used Two Friden 6010 Data Processing Systems

Synopsis

Beckman Instruments Cedar Grove operation is using two Friden 6010 data processing systems to handle production and inventory control. The system allows inventory to be continuously updated.

The system enables production to continue smoothly by noting shortages quickly and expediting the ordering of items not in stock. It also lets management know what is back-ordered for a particular job. Previously, it was too large a task to find out exactly what parts were required for a particular job.

A number of other functions are performed on the system, such as a daily printout of all purchase orders placed. In addition, there are a number of reports printed including a monthly finished goods inventory report that covers some 2,000 items.

Beckman Instruments, Inc. has introduced the use of computers to its operations to assist in the handling of inventory and production control. The computer systems used at Beckman Instruments, two Friden 6010 data processing systems, have not completely replaced manual operations with automated ones, but instead have allowed operations to be performed that were impossible to perform manually. For example, status of inventory is now continuously updated. This task could not even be attempted prior to the installation of computers.

The data processing system at Beckman Instruments is an amalgamation of operator and equipment, each dependent upon the other. At present, the system is small enough to dispense with the need for a data processing manager.

Beckman Instruments, Inc., of Cedar Grove, N. J., was founded in 1938. One of the company's principal product categories is electrolytic conductivity equipment for the measurement and control of solution concentration. These instruments are used in agriculture, steam-power generation, atomic power plants, chemical processing, textile manufacturing and other industries.

Other products include electronic test equipment and gas-analysis instruments for monitoring gas-stream purity and for leak detection.

There are 200 employes at the Cedar Grove plant.

THE SYSTEM

The system at Beckman Instruments starts with a sales order from the customer. This is edited by the order editor who adds to the sales order the part number of the item ordered, the customer's number and other items that the computer room requires. The data processing system is concerned mainly with the part number and the customer number.

An editing sheet with the original order attached goes through the credit department, has a credit check performed and then goes into the computer room where pre-billing is performed. An operator locates the customer card by noting the number that was entered on the editing sheet. This card is used as an input to type the customer's name and address, his code and the territory code for salesman's commission onto the order form. As this is being typed, a paper tape is punched. The operator then pulls out the finished goods status card for the item noted on the editing sheet according to the part number. The finished goods status card is put into the reader, the status is updated and a tape is punched. Included in the status card is the price of the unit, which is also typed onto the order.

From the punched tape, punched cards are generated; a card is punched for each item on the tape. This is for commission purposes. There is, at this point, one punched card with the customer's number, sales order number, the item and the price of the item. These are filed by territory and sales order number for one month. If there is any change during the month, the affected card is pulled out and a new card is put in its place. In the event of a cancellation, the card is destroyed. At the end of the month the punched cards are used for commission statements.

There is an individual status card for each item and, depending upon the number of items in an order, that many status cards are pulled out. When the last status card is put through the reader and typed on the order, a sub-total card is put into the reader and the order is given a sub-total. This is necessary because, at this point, freight, insurance and other charges are not known. These are included after the order is shipped.

SCHEDULE

DATE **5/7/66** PRODUCT **INST** WEEK **24** PAGE NO. **1**

QUANTITY THIS ORDER	REQ. NO.	LABOR \$	TOTAL QUANTITY THIS ORDER	CODE	B/M NO.	DESCRIPTION
40	1511.13	240	360	831	5599MP-1	
25	2560.13	161	54	537	1220L-7 MEGOHMMETER	
50	3061.23	138	351	539	2020RC-16-B2	
2	3182.24	2	2	539	6149RE-344M	
12	3197.24	33	13	529	1196MODEL C BRIDGE	
1	3201.24	3	1	539	6551R13-C1-S31-P6	
12	3204.24	10	12	539	2994LAMB-EM	
12	3205.24	137	12	539	2993LATB-E-M	
2	3206.24		2	539	6222R13-C1-S61-P4	
1	3215.24	1	1	539	2363RE-189-KGX14	
1	3223.24		1	539	4183R13-C1-S56P7-F-Y13	
1	3225.24	1	2	539	6108RA4-WC-S5-KBX18	
1	3227.24	1	1	539	1273RE-18G-Y11	
1	3228.24		1	539	2636RE-152-Y11	
1	3229.24		1	539	4903RE-U104-HI	
12	3246.24	9	12	539	11RD4	
2	3247.24	1	3	539	154RE-H3	
3	3248.24	47	3	539	2763RE1-D103	
1	3250.24		1	539	3153RE-328-KG	
1	3258.24		1	38	195RD-D2	
		784		1100		316 BAL

PART 35120D

COMPUTER PRODUCED SCHEDULE

The status card is updated on the Friden 6010 as the order is being typed and a new status card is generated on an IBM 026 with the updated status.

As the finished goods status card is being updated a scheduling card is made out. The scheduling card shows the item, the part number and the labor-dollars required to complete the number of items on order. They are filed in production control every week by the week they are to go into production.

Each week the cards for a particular week are taken and run through the equipment and the dollars available in a particular department is compared against the labor dollars shown on the scheduling card. The production control department can then determine if there is sufficient labor to run the job. The amount of labor dollars available is pre-determined each week. At times, schedules have to be revised depending upon the amount of labor dollars available. A printout of weekly schedules is given to each foreman so he knows what jobs he is going to run. Schedules are received sometimes as far as 10 weeks in advance.

If the updating of the status results in a shortage, a shortage card is generated and sent to production control. There are three types of shortages:

1. Status is below minimum.
2. Item is not in stock but it is on order.
3. Item is not on order and not in stock.

On shortage types one and three (above), a shop order must be generated for the item. A number two shortage means that it must be expedited since it is already on order.

In production control a shop order is assigned to the particular item, and the shortage card goes back into the computer room. It then becomes an order for manufacture and is no longer regarded as a shortage card. In the computer room a deck of bill of material cards is pulled from a file. These bill of material cards cover every item required to manufacture a particular unit. These cards are processed on the number one machine. Of the two Friden 6010 computers, the number one machine is for parts inventory and the number two machine is for finished goods inventory. Up to this point the sales order has been processed on the number two machine.

The deck of bill of material cards is read by an automatic card reader. The quantity of units to be manufactured is dialed in and the deck of cards is exploded onto a shop order. At the same time, the parts and assembly inventory status cards are updated.

The bill of material cards show the quantity of parts needed to manufacture one unit, and if, for example, 50 units are to be manufactured, the computer will multiply the quantity listed on the bill of material card by 50.

A shortage card is handled on the number two machine in a similar manner. The difference in this operation, however, is that from the shortage cards produced a three-part shortage ticket is prepared. (This is not done in the finished goods operation.) This ticket goes to purchasing which does the ordering for both purchased parts and fabricated parts. Purchasing writes on this shortage ticket set the order number and the vendor involved. This shortage ticket then goes to production control.

Production control takes one copy of the set and files it in the pending back-order file. One copy goes to the production control expeditor and one copy stays with purchasing so that any information that follows, such as delivery date, etc., will be noted on this copy and sent to production control to keep them advised.

Production control personnel then go to their pending back-order file and pull the back-order slips, and compare them against the pulled shop order to verify that what was shown as a back-order item was not found on the shelf. After the order is sent out on to the floor for manufacture, the back-order slips are placed in the active file.

The other copy of the shop order goes to the foreman of the department in which the item is to be manufactured. This is a notification to him that the order has been pulled and is waiting to be picked up from the staging area.

As parts are received at Beckman Instruments they go to receiving, incoming inspection and into the stock room. But before being sent to the stock room they must go through the back-order clerk who takes each receiving slip and checks it against her back-order file to see if a part is required on a pulled shop order.

If the clerk finds a back-order slip in the pending file she knows the parts are still in the staging area. If it is in the active file she knows the parts have to go onto the floor. An order may be pulled onto the floor even if there are parts missing. The clerk then sends the back-order slip along with the receiving slip into the stock room where the stock room personnel send the parts to the manufacturing floor or to the staging area.

A number of other transactions are performed on the equipment. There is a daily printout of all purchase orders placed. From this, purchasing can check old prices against new ones and look for variances.

In addition, management reviews a daily report from the computer room showing purchase orders placed, fabrication orders placed on the floor, material prices, etc. There is also a monthly finished goods inventory report that covers some 2,000 active items.

RESULTS AND FUTURE PLANS

Prior to installation of the Friden 6010 data processing systems, Beckman Instruments had a number of problems involving the handling of inventory and production control manually. According to Milton D. Steinfeld, a company executive, the biggest benefit of the new system is knowing what is back-ordered for a particular job. The system enables the company to expedite those parts which are required for a particular job and which are not in the house. Previously all that was known was that a job was not complete and it was too huge a task to find out exactly what parts were required for a particular job. The present system also provides continuous updating. This was attempted manually but proceeded to be too difficult. In addition, commissions are determined automatically.

There are no plans at present to expand the present system. Steinfeld feels that this will not be necessary until there has been a significant increase in sales.