

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Production Control

Type of Industry Automobile Manufacturing

Name of User Rootes (Scotland) Ltd.
Linwood, Scotland

Equipment Used I. C. T. 1301 Computer
I. C. T. Unit Record Equipment

Synopsis

At Rootes (Scotland) Ltd. in Linwood, Scotland, an I. C. T. 1301 computer system is used for stock control and production scheduling.

For data processing purposes, each automobile is subdivided into major units such as engine, transmission, front suspension, etc., and these are further broken down into its constituent parts.

Stock and material records are held on punched cards and updated daily, and each day a material control list is produced by the computer. The system also prepares a monthly parts requirements schedule.

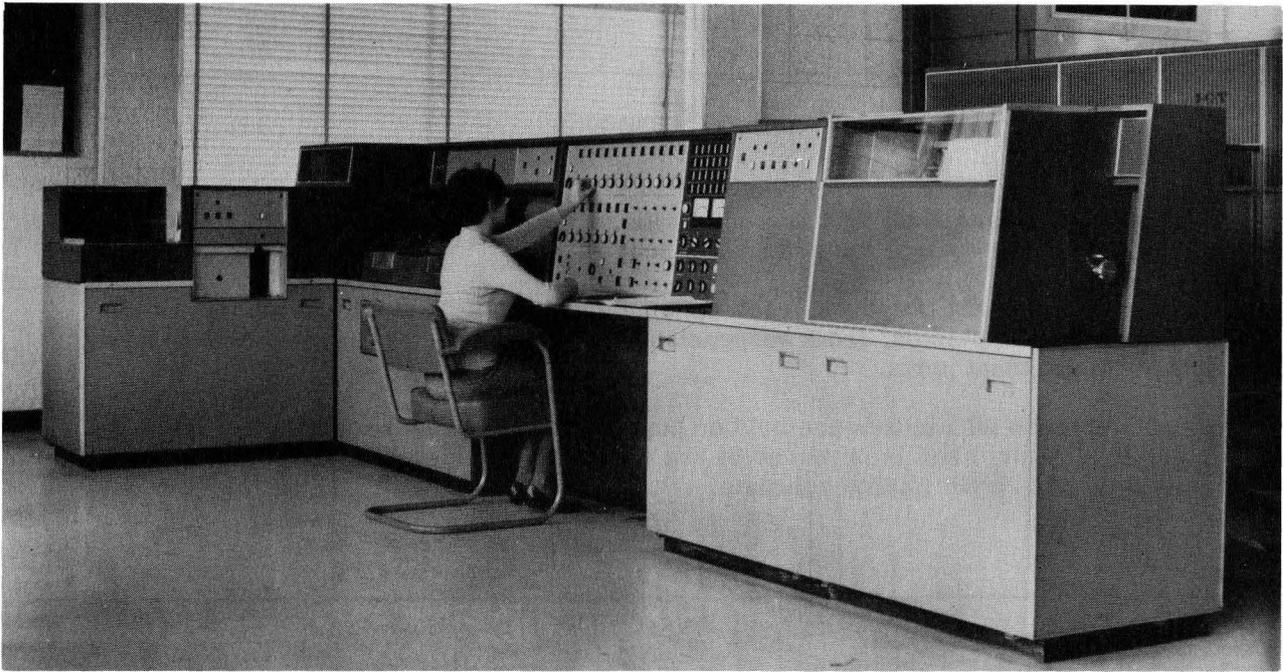
At Linwood, near Paisley, Scotland, Rootes has one of the most modern car manufacturing plants in Europe, producing the Sunbeam "Imp," Sunbeam "Chamois" and Commer "Imp" van.

About 50 combinations of models are produced to meet the needs of the different world markets, and each model has numerous variations. Such diverse combinations of the 2,000 or so component parts that go into each vehicle lead to a complex stock control and production scheduling problem. With over 800 suppliers providing materials or parts, supplier scheduling is also a formidable task.

In order to solve these problems, an I. C. T. 1301 computer was installed at Linwood. Within a month after delivery, the computer was engaged in straightforward stock control. Thereafter an integrated system was introduced in two stages. The first included production control and supplier scheduling and the second, payroll and financial accounts.

In scheduling for the many variations of the "Imp," it is essential to maintain absolutely accurate and up-to-date files of the specifications for each model. Such files are recorded on punched cards and can be easily modified. Furthermore, the introduction of a new model merely involves the preparation of additional punched cards.

Thus, the specification of each car is organized before any part of it approaches the assembly "track." Electronic punched card control ensures that each model will combine the exact units planned for it.



I. C. T. 1301 COMPUTER INSTALLATION AT ROOTES (SCOTLAND) LTD.

THE SYSTEM

Vehicle Specification Tallies

For data processing purposes, each car is subdivided into major units such as engine, transmission, front suspension, etc. In turn, each unit is further divided into its constituent parts. In addition to the model specification file, which contains the unit make-up of each model, a second standing punched card file records the constituent parts of each unit. Other standing files are kept, giving color range and trim range.

ROOTES (SCOTLAND) LIMITED

The vehicle specification procedure is initiated on receipt of a coded rota sheet from the sales division of Coventry. The rota sheet gives details of cars ordered, each line being devoted to a batch of vertical cars. Any special requirements (non-standard units) for each batch are also indicated on the rota sheet. One card is punched for each line on the rota sheet; i.e., for each batch of identical cars ordered, and these rota cards are fed into the computer together with all standing files. From this information the computer prints out a vehicle specification tally for each car.

VEHICLE SPECIFICATION TALLY		
ROTA No. 1234	CHASSIS No. B732	HSC
MAKE & MODEL 2 SINGER SALOON		
MODEL ASS. L. No. 210201	DRIVE HOMERH	
COLOUR CODE 700BH	COLOUR MAROON	F WHITE
SALES ORDER No. 9998	TRIM BLACK	
CHANGED UNIT NUMBERS		KEY No.
ENGINE SLAVE No.	TRANSMISSION No.	
UNIT CODE	UNIT DESCRIPTION	* N/S
10052	HC SINGER HOME	
20001	TRANSMISSION STD	
26001	STANDARD REAR SUSPN	
30021	F SUSP HOME NCT SPRT	
40010	STD RHD CONTRCLS SGR	
53022	RHD NDV STD SINGER	
54028	STD FITTINGS RHD SGR	
55002	SGR BPRS AND CRIDERS	
57013	STD HEATER W BLOWER	
60001	STD LIGHTING RHD	
62004	MPH HAND DIP TEMP G	
64001	SEVEN PLATE WET	
65010	RHD STD ELEC MIS SGR	
70018	2 PLY RTG R FIN HOME	
72014	STANDARD NO SHIELD	
74001	STANDARD TANK HOME	
79011	TOOL KIT NO JACK	*
PASSED TO SALES BY:		
DATE:		
DEALER CODE:		
INVOICE No:		
DATE DESPATCHED:		
SPECIAL INSTRUCTIONS & REMARKS:		
UNWAXED		

VEHICLE SPECIFICATION TALLY.

Printed by J. B. Gillings and Sons, Ltd.

Form No. 6019

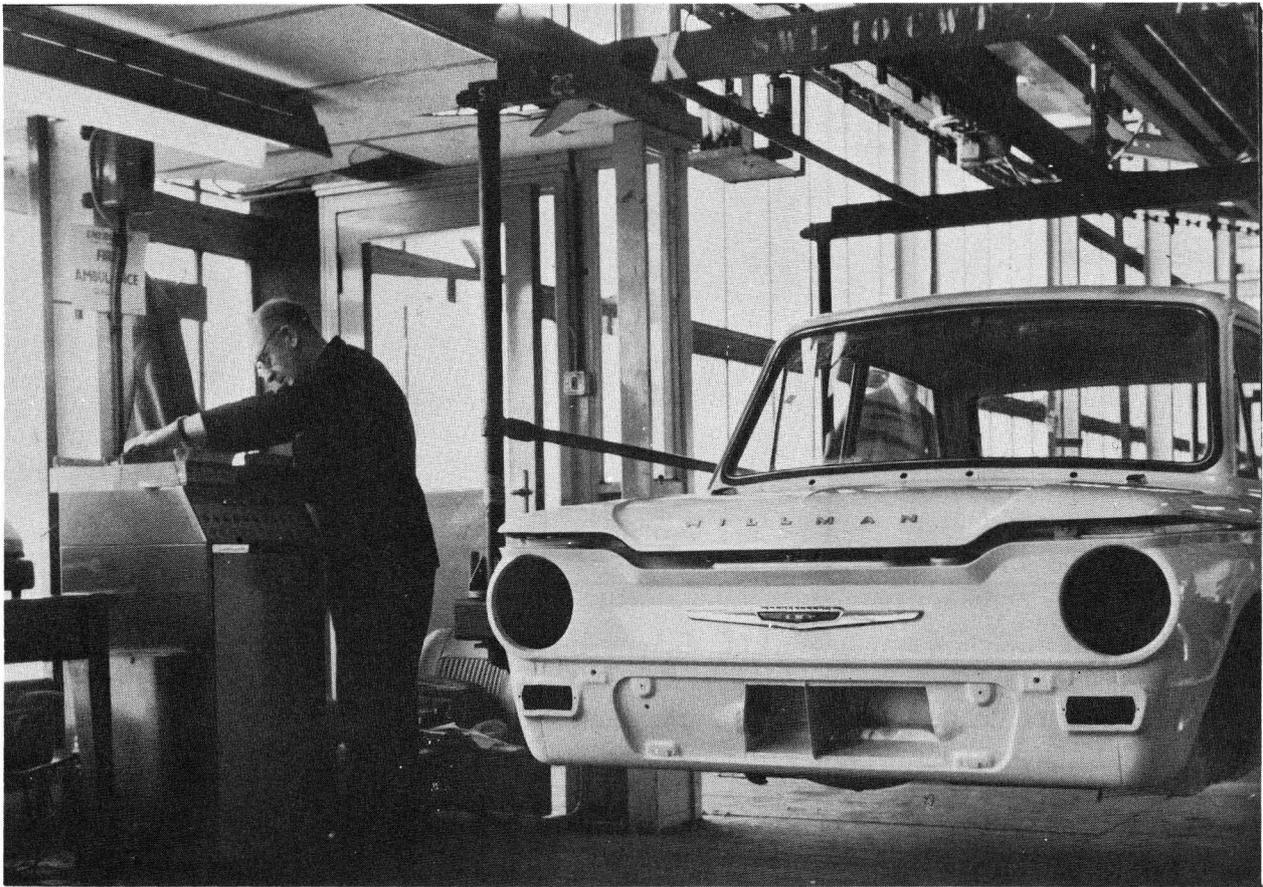
MAKE & MODEL		CHASSIS No.	ROTA No.
2 SINGER SALOON		210201 B732	HSC 1234
COLOUR CODE	COLOUR	TRIM	
700BH	MAROON	F WHITE	BLACK
ENGINE SLAVE No.		TRANSMISSION No.	
BODY No.	KEY No.	DATE MOUNTED	

Form No. 6019

This tally itemizes all units, standard and non-standard, required to produce the car to which it refers. It also gives such basic information as model number, chassis prefix and suffix and body and trim colors. While printing the specification tallies, the computer punches out a data distribution card for each car, containing similar information to the specification tallies. The run is completed when the computer punches out a second set of cards, essentially similar to the data distribution cards, for retention by the data processing department. At this stage there exists a specification tally and two cards for each car ordered.

The data distribution cards are sent to the adjacent Rootes Pressings Company where the car bodies are manufactured. Each card initiates production of a new car body and is attached to that body while it passes through the Rootes Pressings Plant. In this way, the body design is made to conform to the original requirement for each car.

The body ultimately arrives at the bridge conveyor connecting the Rootes Pressings Plant with the Rootes Assembly Block. Here, an operator takes the data distribution card from the body to which it refers and substitutes the specification tally obtained from the computer section. The data distribution card is immediately inserted into an I. C. T. data transmission device. This device scans the information on the card (indicating the major units required to produce the finished vehicle) and transmits it to several areas in the Rootes Assembly Block. These areas include the arrival point from Rootes Pressings, Front Suspension Section, the Rear Suspension Section, the Engine and Gearbox Section, and the Wheel and Tires Section. Operators on the track are thus given early warning of the detailed requirements for components and units of the car bodies they will shortly receive. The advanced information is received on I. C. T. printing devices some one and a half hours before the arrival of the car body.



THE READER UNIT IN ROOTES PRESSINGS (SCOTLAND) LTD. PLANT.

Once scanned by the data transmission system, the data distribution cards are returned to the computer section where they are compared with the duplicate file to ensure that no car body has left Rootes Pressings that was not ordered on the original sales rota sheet. The file is also used as a check on outstanding orders. At the end of the day, these data distribution cards are read against the standing file, and the computer calculates the production usage for each individual part and records this on a punched card which is subsequently utilized in the stock control application.

Meanwhile, a specification tally accompanies each car along the assembly track to identify the vehicle and to ensure that the operators fit the correct components and units. As the tally proceeds along the track, the engine slave number, transmission number, chassis number, etc., are added to its appendix which is subsequently detailed and returned to data processing in order that the computer chassis register may be updated.

Stock Control and Supplier Scheduling

By automating stock control, Rootes has been able to safeguard against lost production resulting from deliveries of parts falling below requirements. Moreover, capital tied up in component parts is significantly reduced by retailing stock levels at or just above a pre-determined minimum level. Stock and material records at Linwood are held on punched cards and updated daily. Each day a material control list is produced by the computer; it is effectively an exception report of parts stocks below minimum (or alternatively above maximum) levels. Production usage is deduced from the stock balance, and receipts are added. In the case of receipts, the supplier's delivery position is updated by reducing his arrears position by the quantity of his receipts. Once a week the quantity scheduled against each supplier is added to his arrears.

Once a month, the computer carries out an overall stock evaluation. At the end of each accounting period, which is roughly a calendar month, a list is provided by the computer showing the stock quantity against each part, multiplied by the unit price. A grand total of these values is the value of the overall stock.

Also prepared montly is a supplier parts requirement schedule. This contains suppliers' instructions with firm scheduled requirements for the first two months and estimated requirements for the third. By comparing these figures with actual deliveries, the computer is able to evaluate the suppliers' performance once a week.



OPERATORS ON THE ASSEMBLY TRACK RECEIVE THE INFORMATION ON I. C. T. PRINTING DEVICES ABOUT ONE-AND-A-HALF HOURS BEFORE ARRIVAL OF THE RELATED CAR BODY.

RESULTS AND FUTURE PLANS

Although installed particularly for stock control, Rootes' I. C. T. 1301 is employed in several other tasks, each resulting in a substantial saving in time and manpower over manual methods.

Some financial and works accounting at Linwood is undertaken on the computer. The computer updates the purchase ledger and automatically prints all checks payable to suppliers. The payroll for 1,500 hourly-rated employees is also handled by the 1301, and this application goes a long way toward justifying investment in the computer since the saving in clerical effort, both in calculation and coin make-up, is considerable. All payroll tasks, including analysis and printing of pay advices, are completed in a single run on the computer - in just under one hour. P. E. R. T. techniques are used in forward planning applications.

Further applications will mean shift-working because the computer is, at the moment, fully occupied from 8:30 a. m. to 7:00 p. m., five days a week. But, management at Linwood is not rushing new applications on to the 1301. Changes are being introduced gradually after careful consideration.