

Works Manager Solution Overview

Datalinx Computer Systems Ltd
Linx House, 149 London Road
East Grinstead, West Sussex
RH19 1ET, ENGLAND

Tel: +44 (0) 1342 324469
Fax: +44 (0) 1342 315497

Email: sales@datalinx.co.uk
Website: www.datalinx.co.uk

Contents of Works Manager Solution Overview

Introduction	3
Shop Floor Data Collection	4
Fixed Position Terminals	5
Shop Floor Data Collection Terminals	6
Portable Terminals	7
WIP Tracking	8
Works Order Status Codes	9
The Route Card	10
Time and Attendance	11
Labour Costing	12
The System Operation	13

Introduction

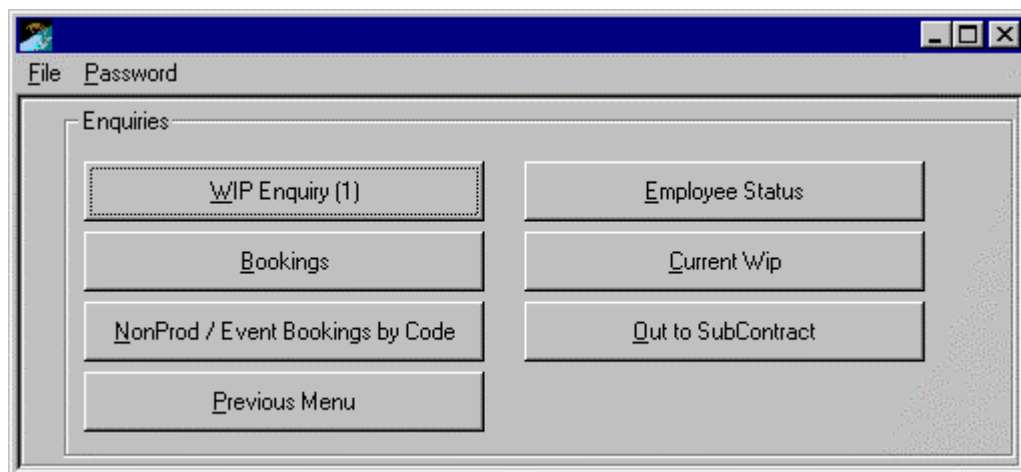
The detailed requirement of manufacturing companies will vary within the general definition of SFDC and Work In Progress. Companies that have their labour costs under control will have a greater emphasis on tracking, whereas within the jobbing environment labour costs may be of greater concern than tracking.

Through a set of tailorable modules Datalinx Works Manager has been conceived to give the flexibility that individual manufacturing companies' demand.

Datalinx software will run under most popular operating systems and relational databases. It may be used free-standing, or integrated into ERP or MRP systems, such as Sage Line 200 and 500 reading and writing to the system files.

The four major modules within Works Manager are:

- SFDC (shop floor data collection)
- WIP Tracking
- Time & Attendance
- Labour Costing



Shop Floor Data Collection

To most shop floor employees the Data Collection Terminals are their interface to the manufacturing computer System. However, there are three basic techniques for collecting data and communicating with the central system:

Fixed Position Terminals



Portable, batch or radio frequency terminals



Manual entry from VDU or PC's



Fixed Position Terminals



Normally operating in an on-line mode and validating data as it is entered; these highly programmable terminals are the shop floor interface to the computer system.

These devices are used to:

- Book employees on and off operations.
- Record quantities made and scrapped.
- Record jobs stopped or held, with the appropriate reason codes.
- Process split batches, generating replacement traveller documents as appropriate.

Fixed terminals can also be used to collect on-line data from weigh scales, counting systems, PLCs, and other transducers.

With these units variable teams of employees may be booked to a production process or works order. Sited in a shipping department, work can be booked to and from sub-contractors.

Within the factory, printers may be connected to the terminals, producing on-demand labels, which display batch number, serial number, quantity made, time & date, etc.

Shop floor Data Collection Terminals

These terminals are the primary interface of the shop floor to the computer system. Facilities exist to change the wording of prompts, including the use of foreign languages.

For additional security these terminals are designed to operate when the server or network is not available, ensuring that transactions can be recorded. A log is kept of all valid or invalid transactions, which allows corrections to be made if required.

Typically, terminals will have 2, 6, or 10 function keys that are used to guide the operator. Dependant upon the location and data to be entered. Terminals may be weatherproof and have numeric or alpha-numeric keyboards.

Typical functions	
F1	Clock In
F2	Clock Out
F3	Book on an operation (quantity received)
F4	Book off an operation (quantity made) (operation complete)
F5	Book out to subcontract (quantity issued)
F6	Book in from subcontract (quantity received)
F7	Book to finished goods
F8	Supervisor functions Create new operation Close works order Split batch

Portable Terminals



A wide range of devices exist including simple terminals that collect data, add a time & date stamp to the transaction, and are then periodically unloaded to the host processor. Radio frequency terminals effectively run a miniaturised VDU screen and have the advantage of being on-line giving instantaneous updates.

Manual Data Entry

There is always a need for some data to be entered or amended via a VDU or PC. Datalinx software allows for this with suitable audit trails of log-in and date & time stamp.

WIP Tracking

This module takes the data from SFDC for processing data to be subsequently viewed through a series of enquiries and reports.

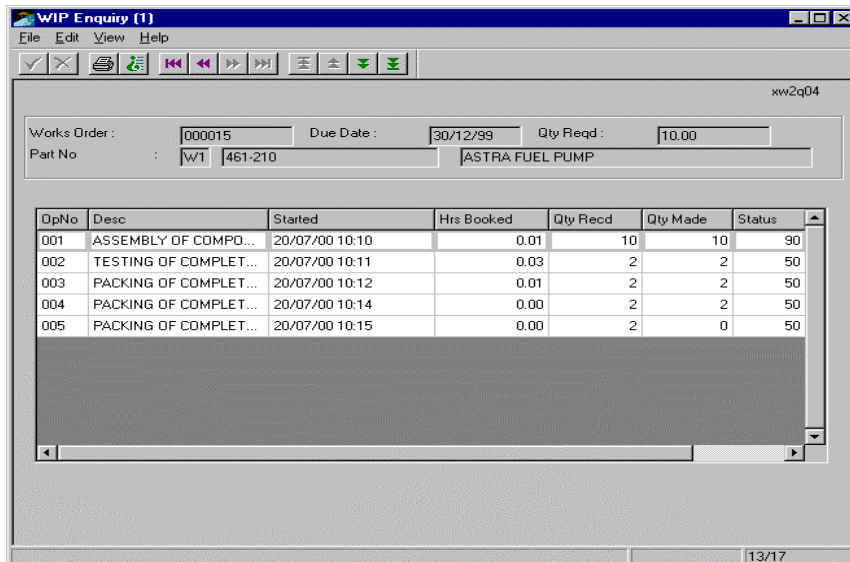
Against each works order at operational level it will show the:

- current location
- quantities made
- quantity scrapped and outstanding
- current status

The data can also be viewed by an employee displaying the jobs and operations together with quantities and status that employee has worked on within a given period.

Analysis of non-productive time by user defined codes is a standard feature.

The system is structured with cost centres and departments and has available work-to lists detailing all worked queued by work centre and due date.



The screenshot shows a window titled 'WIP Enquiry [1]' with a menu bar (File, Edit, View, Help) and a toolbar. Below the toolbar, there are input fields for 'Works Order : 000015', 'Due Date : 30/12/99', and 'Qty Reqd : 10.00'. Below these are 'Part No : WT 461-210' and 'ASTRA FUEL PUMP'. The main area contains a table with the following data:

OpNo	Desc	Started	Hrs Booked	Qty Recd	Qty Made	Status
001	ASSEMBLY OF COMPO...	20/07/00 10:10	0.01	10	10	90
002	TESTING OF COMPLET...	20/07/00 10:11	0.03	2	2	50
003	PACKING OF COMPLET...	20/07/00 10:12	0.01	2	2	50
004	PACKING OF COMPLET...	20/07/00 10:14	0.00	2	2	50
005	PACKING OF COMPLET...	20/07/00 10:15	0.00	2	0	50

The status codes in the table correspond to the legend below:

90	ASSEMBLY
50	TESTING
50	PACKING
50	PACKING
50	PACKING

The Work In Progress enquiry is a general-purpose enquiry and by using the sort facilities the status of a specific works order can be found. Alternatively, by searching by part number and status, all current works orders for a given status and part number will be displayed.

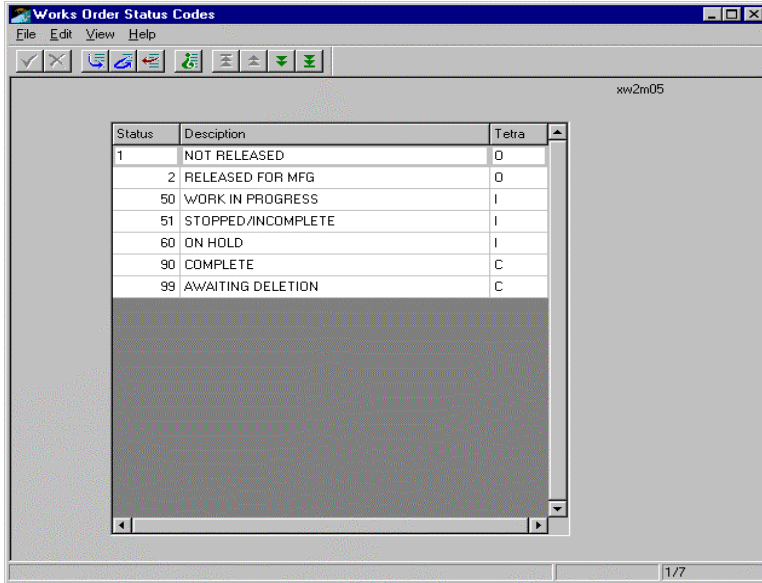
Further programs show the breakdown of set-up and runtime hours.

When an employee starts an operation the date is displayed. When the individual books off an operation irrespective of whether the booking is complete or incomplete, hours will be added to the hours booked field. This will total both run time and set-up.

When an individual books off an operation they are asked to declare a quantity made and a quantity scrapped.

Status is a user definable table of up to 99 codes. When interfaced to an existing ERP/MRP system these 99 status codes can be related to the host system enhancing standard functionality to allow for a more comprehensive analysis of a job's progress within the manufacturing process.

Works Order Status Codes








Status	Description	Tetra
1	NOT RELEASED	0
2	RELEASED FOR MFG	0
50	WORK IN PROGRESS	I
51	STOPPED/INCOMPLETE	I
60	ON HOLD	I
90	COMPLETE	C
99	AWAITING DELETION	C

Example of Use of Status Codes

Status Code		
60	Stopped	I
61	Stopped material problem	I
62	Stopped m/c down	I
91	Complete awaits customer accept	C
92	Complete await shipping instructions	C
93	Complete awaits export docs	C

The Route Card

The route card is available in a number of formats from a conventional route card or traveller, to a more comprehensive process card, which includes bills of material, extended process descriptions etc.

ROUTE CARD		
W/O..... PRINTED 24/01/01		
DESCRIPTION		
QTY REQD.....REQUIRED 30/04/01		
OP NO	DESCRIPTION	
001	ISSUE MATERIAL	
002	TURN & PART OFF	
003	MILL	
004	INSPECTION	
005	SUBCONTRACT CHROME PLATE	

Works Order Completion

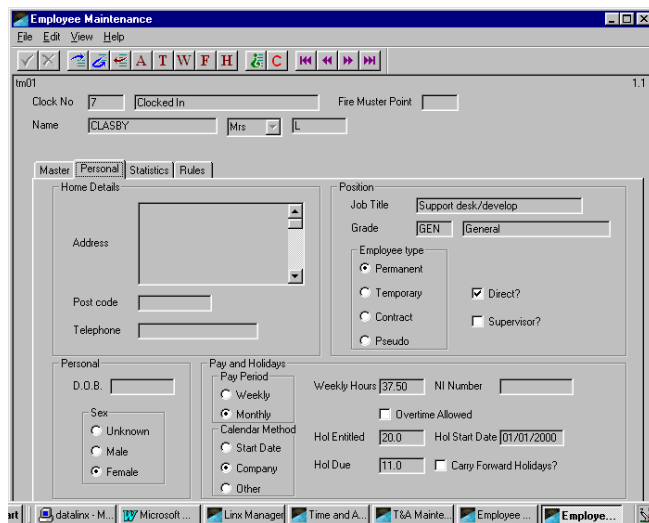
The function may be restricted to a specific terminal, sited in the stores or inspection, and if required will update the works order completion program.

Time and Attendance

The Datalinx Time Manager, time & attendance system has facilities to take in and out personnel clockings and apply these to a set of shift rules producing an hours worked output, which is directed to payroll and to the labour costing module.

Time Manager handles flexitime, standard factory shifts, thresholds and other types of shift patterns. Included is rotas, rosters and personnel management.

Please refer to the Time Manager overview for more detail.

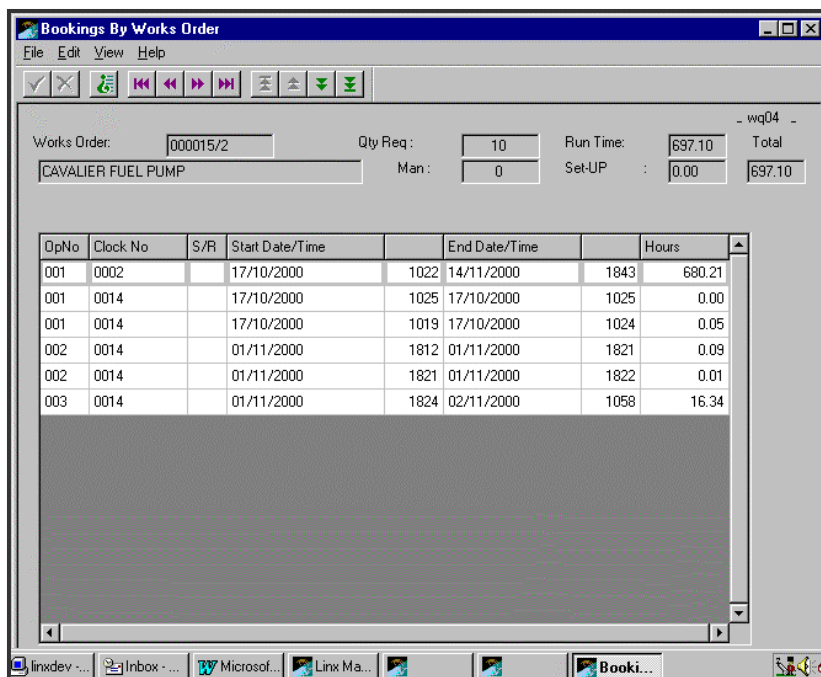


Labour Costing

Where employees are working variable hours then the Time & Attendance module is used to calculate the hours to be booked against each works order or operation. Time & Attendance will adjust for employees who clock in at 07:45 but whose shift starts at 08:00. The use of the Time & Attendance module ensures that employees do not have to book on and off each operation at start and end of the working period.

If an employee clocks out at 17:00, the system stops accruing time to that works order and when the employee clocks in the next morning the system assumes they are working on the same works order as when they previously clocked out.

Where employees book off an operation without booking onto new work, then their time is booked to a default non-productive code, which can later be re-assigned.



OpNo	Clock No	S/R	Start Date/Time	End Date/Time	Hours	
001	0002		17/10/2000	1022 14/11/2000	1843	680.21
001	0014		17/10/2000	1025 17/10/2000	1025	0.00
001	0014		17/10/2000	1019 17/10/2000	1024	0.05
002	0014		01/11/2000	1812 01/11/2000	1821	0.09
002	0014		01/11/2000	1821 01/11/2000	1822	0.01
003	0014		01/11/2000	1824 02/11/2000	1058	16.34

The System Operation

In a free-standing environment, works orders and manufacturing routings will be created in Datalinx Works Manager files. In an integrated environment this information will be read from the MRP system files.

When an employee books time to an operation then the system will validate that this is a valid operation and works order, that it is released for manufacture and that it is not being held in a stopped status.

When initially booking an operation there is an opportunity to record quantity received; the system will also automatically update the operation status to 'in progress'.

When an employee books off an operation, they would normally be asked for quantity made and if the operation is complete. If it is complete then the status of the operation will be updated to 'complete'. If it is the final operation then the status of the 'Works Order' will be updated to 'complete'.

If the operation is not complete then a number of options exist. It may be that the job has been stopped, to be restarted later; in which case the appropriate reason code can be entered. It may be that the batch is to be split; in which case new documentation may be automatically produced with the appropriate quantities adjusted. It may be that the works order is to be closed at the quantity made to date.

In an integrated environment the host system will be updated with status and quantities made. The detail records are held within Datalinx Works Manager with a variety of enquiries and reports. Typically these are by works order to show who booked time and quantities made, or by operator to see which works orders and operations the individual booked their time too.

Where Time & Attendance is installed then the works order bookings which are an elapsed time will be adjusted by the attended hours and appropriate shift patterns to give the actual hours to be booked to the works order/operation.

By use of the programmable shop floor data collection terminals most data can be automatically collected. Some examples would be:

- Sited in a raw materials stores with a weigh scale connected then when the stores personnel enter Operation 1, 'material issue completed', the terminal would automatically collect the weight of the material on a weigh scale.
- Weigh scales or counters may be used in a press shop such that when a stillage was full, the forklift truck driver would press a 'stillage full' button. The weight or quantity would be automatically recorded and a batch-tracking label produced to affix to the stillage.
- A terminal sited in inspection can have a function that is specific to that terminal, such that when the inspector confirms the items have passed inspection the system will automatically update the works orders file with the quantity made and complete.
- A terminal sited in a finished goods stores will be used to automatically update the works order completion program.

The standard package includes software to produce identity cards, route cards, process cards and a wide range of analysis and reports.