



Product Training Routings

Where “Lean” principles are considered common sense and are implemented with a passion!




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Routings

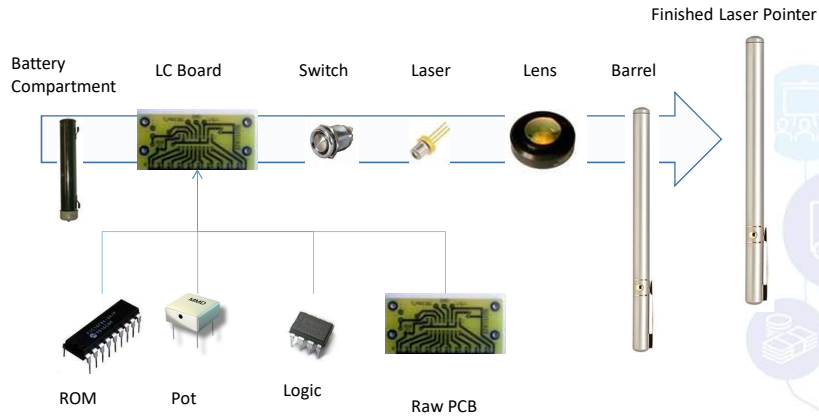
A routing for a product is like a roadmap or build sequence. While the Product Structure is a list of ingredients the routing tells us the operations and their sequence to build the assembly.

Let’s review our assembly from the Product Structures section.



2

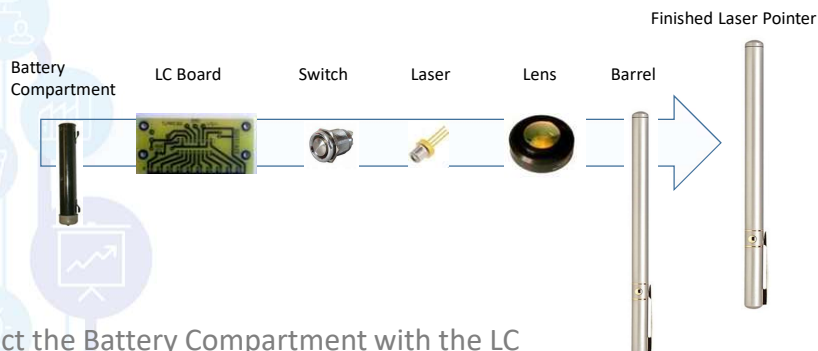
Routings



Our assembly's part requirements. For our routing, we are going to concentrate on the upper part with the light arrow going through it.

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Routings



1. Connect the Battery Compartment with the LC Board and the Switch
2. Connect the Laser Diode and test
3. Insert assembly into Barrel and attach lens

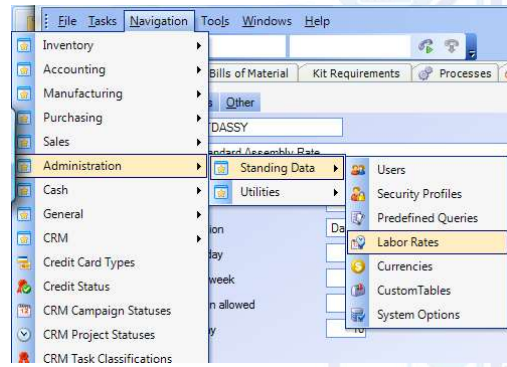
4

Routings Prerequisites

Labour Rates

In addition to showing the steps required to make an assembly, the routing also allows us to put in the operation time for each operation. This in turn allow the calculation of expected labour value.

To start, labour rates must be created.



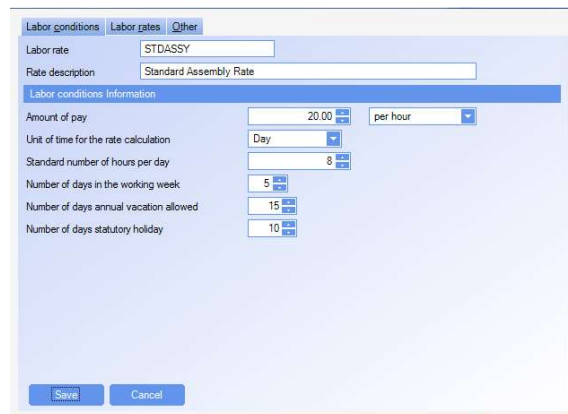
5

Routings Prerequisites

Labour Rates

The “Amount of Pay” is based on the unit in the next column, in this case 20.00 per hour. If the work day is 8 hours, 41,600 in “Amount of Pay” and “per year” would yield the same results.

Vacation days (standard) and holidays (i.e. New Year’s Day) help to calculate the actual labour rate.



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Routings Prerequisites

Labour Rates

Labor conditions Information	
Planned efficiency level	100
Percentage overhead loading	0
Calculated chargeable rate	160.00 per day
Percentage billing uplift	0
Calculated billing rate	160.00 per day

The “Labour Rates” tab is the basis for labour value usage throughout the system.

Efficiency can be any number between 1 and 100. Most companies do not want to build waste into the system, so they set it at 100%.

Overhead can be loaded directly into the labour rate. Percentage uplift comes into play if you are charging your customer directly for labour.

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Routings Prerequisites

Labour Rates

The “Calculated chargeable rate” is calculated differently by WinMan depending up the unit of time for the rate calculation from the previous screen.

Labor conditions Information	
Planned efficiency level	100
Percentage overhead loading	0
Calculated chargeable rate	160.00 per day
Percentage billing uplift	0
Calculated billing rate	160.00 per day

Labor conditions Information	
Planned efficiency level	100
Percentage overhead loading	0
Calculated chargeable rate	22.12766 per hour
Percentage billing uplift	0
Calculated billing rate	22.12766 per hour

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Routings Prerequisites

Chargeable Rates

Assume 20.00 per hour or 41,600 per year. (20*260*8)

Assume 15 vacation days and 10 paid holidays

Assume 8 work hours per day

This means that there are 235 work days per year (260 – 25).

For Daily Rate against an annual salary, the calculation is 41,600/235

For Daily Rate against an hourly rate, the calculation is 20*8

For Hourly Rate, the calculation is hourly 20 * 8 * 260/235



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Routings Prerequisites

Activity Centres

Activity centres are where work is done. It could be a cell, a group of cells, a machine or group of machines, an area, etc.

General Overhead Recovery & Billing Other	
Work Center	POINTERASSM
Work Description	Laser Pointer Assembly Area
Work Center Information	
Unit Of Time	Hour
Standard Quantity	5 per hour
Labour Rate	STDASSY
Labour Chargeable Rate	22.12765
Labour Charge	4.42563
Resources Available	5
Work Schedule	STANDARD

Using the data from the previous screens, we create a Activity Centre that can make 5 units per hour per resource. There are 5 resources available.

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Routings Prerequisites

Activity Centres

Overhead recovery rates can be for the Activity Centre. There are three ways to allocate overhead:

- Absolute Value** – Overhead Rate / standard quantity (i.e. if the overhead rate was 20, the recovery charge would be 4, 20 / 5.
- %** - This is a percentage of the labour charge
- Each** – Means a rate per unit. The rate will be the recovery charge.

The "Billing Rate Uplift" allows building a profit into the labour cost.

The screenshot shows the 'Overhead Recovery & Billing Information' dialog box in SAP. It includes the following fields:

- Work Center: POINTERASSM
- Work Description: Laser Pointer Assembly Area
- Overhead Recovery Unit: None
- Overhead Recovery Rate: 0.00
- Overhead Recovery Charge: 0.00
- Total Cost: 4.42553
- Billing Rate Uplift: Each
- Uplift Required: 0.00
- Billing Rate: 4.42553

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Routings Prerequisites

Processes

The screenshot shows the 'Processes' dialog box in SAP. It includes the following fields and a table:

- Process: BATBOARDASSM
- Description: Laser Pointer Battery, switch, and board assembly
- Work Center: POINTERASSM
- Quantity: 1
- Labour Cost: \$ 4.42553
- Overhead Cost: \$ 0.00
- Other Cost: \$ 0.00
- Total Cost: \$ 4.42553
- Labour Account: Default
- Overhead Account: GL Chart Id | GL Chart Description
- Other Account: GL Chart Id | GL Chart Description

GL Chart Id	GL Chart Description
01.0000.00	- Suspense - 00
01.1110.00	- Cash-Operating - 00
01.111111.00	- Default - 00
01.1120.00	- Cash-Money Market - 00
01.1150.00	- Cash-Petty Cash - 00
01.1210.00	- Accounts Receivable - 00
01.1280.00	- Allowance For Bad Debts - 00
01.1310.00	- Inventory-Raw Materials - 00

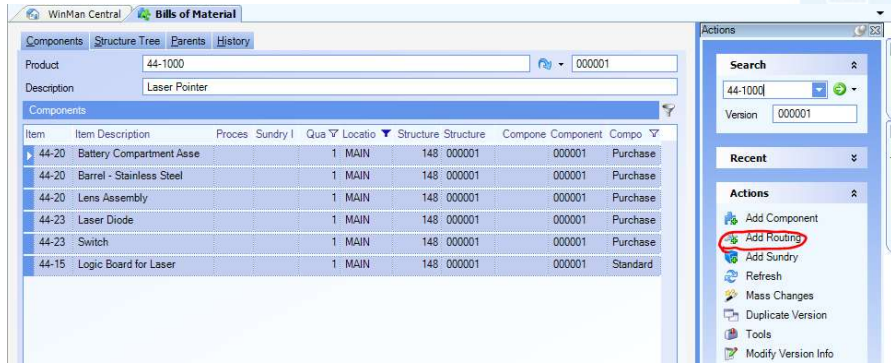
A process simply describes the activity. In our sample, we could have used the same process for each step.

The quantity field represents the number of resources required to do the work on a single unit.

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Routings Entry

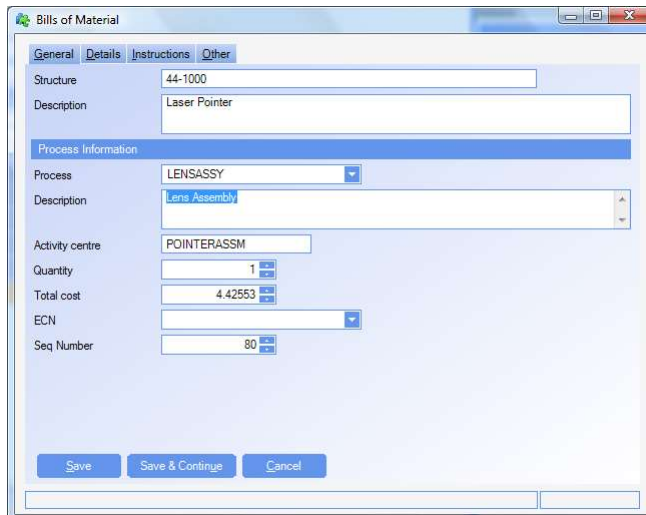
Routing entry is identical to entering a product structure. In fact, you do it in the same screen. Clicking on “Add Routing” brings up the routing entry screen.



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Routings Entry

Once again, we can save and continue.



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Routing Entry

Once the routing entries have been completed we can view the finished structure. You can see that the view is colour coded. The blue highlighted lines are components and the other rows are routing steps. The type column also distinguishes the types, "C" type is component and "R" type is routing.

Product Id	Product Description	Prod	Type	Item	Item Description	Component Id	Component Description
44-1000	Laser Pointer	M	C	44-20	Battery Compartment Assemb	44-2010	Battery Comparme
44-1000	Laser Pointer	M	C	44-20	Barrel - Stainless Steel	44-2001	Barrel - Stainless St
44-1000	Laser Pointer	M	C	44-20	Lens Assembly	44-2015	Lens Assembly
44-1000	Laser Pointer	M	C	44-23	Laser Diode	44-2300	Laser Diode
44-1000	Laser Pointer	M	C	44-23	Switch	44-2303	Switch
44-1000	Laser Pointer	M	C	44-15	Logic Board for Laser	44-1500	Logic Board for Las
44-1000	Laser Pointer	M	R	BATB	Laser Pointer Battery, switch.		
44-1000	Laser Pointer	M	R	LENS	Lens Assembly		
44-1000	Laser Pointer	M	R	POIN	Final Assembly for Pointer		

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Product Costs

Now that we know what goes into the product and the work to make it we can let the system calculate the cost for us.

In the Product Structure window, select tools, opening up the box as shown below. Expand the view and click on Cost Roll Up. There is a nightly run that will also do cost roll ups.

The screenshot shows the 'Bills of Material' window with a 'Tools' dialog box open. The dialog box has a tree view with 'Structures Maintenance' expanded, and 'Cost Roll Up' selected. The background window shows a list of components for product 44-1000 Laser Pointer.

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Product Costs

Here is the result of the cost roll up. The labour costs from the routing step is placed in the Activity Based cost field. The labour cost field is used when the costs are known and entered manually rather than using routings.

Notice that the Costs at this level for the activity based costs are different than the standard. That is because the lower level assembly had labour associated with it.

Standard Costs		Costs At This Level	
Material	43.43	This Level	1
Labor	0.00	Labor	0.00
Overhead	0.00	Overhead	0.00
Activity Based	13.49398	Activity Based	13.27659
Total	56.92398		

Overhead Recovery Method		Automatically Recover From Standards	
Type	Both	Labor	<input checked="" type="checkbox"/>
Absolute Value	0.00	Overhead	<input type="checkbox"/>
Percentage Uplift	0 %	Activity based	<input checked="" type="checkbox"/>

Latest Costs		Average Onhand Costs	
Latest Cost	0.00	Average Cost	0.00
Latest Cost Date	Thu, Feb 21 2008	Average Cost Date	

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Other Utilities

Mass changes to a structure can be done through the actions.

Mass Change Selection
Select the type of mass change to apply

- Replace one component with another in all assemblies
- Change the starting effectivity date for a component
- Change the finishing effectivity date for a component
- Change the manufacturing location of an assembly
- Change the offset leadtime of all of the components of an assembly
- Change the location of a component in all assemblies
- Update the component leadtimes to be the same as the assembly leadtim

Buttons: Back, Next, Finish, Cancel

Replace component
Replace a component with another part

Original:

Replacement:

Keep using the original component until:

Buttons: Back, Next, Finish, Cancel

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