

Quoting & Estimating

Introduction (Seminar 5)

Quoting and Estimating is a key operational activity required to get the ManuDyn system fully operational. The reason for this is that in order to quote you have to define the Part. If the part is defined, then establishing a Sales Order “Book” (JOB file) and generating Job Tickets for the factory become easy things to do, and happen as a matter of course. I generally find that if the user is quoting on the system all other things will follow and the system will become fully operational (in time).

In addition the quoting module is usually the first system operational because it only involves a few operational people, and can be put into place without major organisational disruption. With fewer people directly involved there is less politics, and decisions can be made (and are generally made), without too much delay. You should remember however, that decisions made at this point will ultimately have a dramatic effect on the rest of the organization.

How do YOU Quote?

I’ve done many installations over the years (well over 200), and I’ve seen what people do. Let me tell you, there is not a lot of science used. This is what generally happens in quoting:

- Step 1** They determine cost of materials accurately. By contacting the supplier, or otherwise checking current raw material costs, and then add a small markup at this stage - about 2% - to cover handling etc. This is done for all materials so that a cost of materials (M^{cost}) is generally determined accurately.
- Step 2** They estimate the time to do each operation, the accuracy of which varies depending on the knowledge and experience of the estimator.
- Step 3** The labour time determined in step 2 above is converted into a cost of labour (L^{cost}), by multiplying the total time by a fixed recovery rate. Some companies are a little more sophisticated than this and have a different recovery rate for each operation.
- Step 4** To complete the quote the total cost (T^{cost}) is obtained by adding the labour and material costs together and a markup (say 30%) is applied to the result to obtain the total price (T^{price}), as follows.

$$T^{\text{cost}} = M^{\text{cost}} + L^{\text{cost}}$$

$$T^{\text{price}} = T^{\text{cost}} * 1.30$$

Step 5 The unit price is just the total price divided by the number of units as follows:

$$\text{Price} = T^{\text{price}} / \text{number of units}$$

Now ManuDyn can duplicate this quoting procedure. The material component of the quote is defined in the Bill-Of-Material (BOM) of the Part where the cost can be defined. If the BOM item is a stock item a “Standard Cost” on the Attributes tab, may be set on the Database Entry/Material Items menu option.

The labour recovery rate can be set against each work centre defined within a Work Group (System Settings/Work Areas). See figure 1 below.

Work Area: CUT

Estimating and Scheduling Variables

Priority: 1 Disabled

Recovery Rate: 50.0000 (\$/man-hour)

Efficiency: 100.00 %

Record Comment:

Setup Time: 0 Formula: 250+(@number-5)*45

Process Time: 0 Formula:

Process Detail: test default wording

Standard Capacity Minutes

Minutes per Hour: 60

Hours Per Standard Day: 8

Average Wait Time: 1 (minutes)

Monday: 480
 Tuesday: 480
 Wednesday: 480
 Thursday: 480
 Friday: 288
 Saturday: 0
 Sunday: 0

Non Standard Production Days

Date	minutes

Reschedule

Figure 1- Setting Work Centre recovery rate

It should be noted that the Efficiency Factory displayed in this tab has a dramatic effect on the labour cost calculation. If the efficiency is 50% then the time is doubled.

To affect a single markup (of say 30%), both the Material and Profit markups against the Product Type (System Settings/Product Type – Quote Defaults), will need to be set to 30 and all other markups set to zero. This tab is shown in see figure 2 below.

The screenshot shows the 'Quote Defaults' tab for 'ALLPRODUCTS'. The 'Quote Defaults' section contains four input fields for Quote Qty 1 through 4, all set to 0. The 'Mark-Ups and Minimum Charges' section contains seven input fields: Indirect Markup (30%), Material Markup (0.00%), Profit Markup (30%), Selling Markup (0.00%), Admin Markup (0.00%), Minimum Selling Markup (\$0.0000), and Minimum Admin Markup (\$0.0000). The Profit Markup field is highlighted with a blue border.

Figure 2- Setting the Quote Markups

So apart from the obvious things, such as the requirement to redo the entire calculation each time a quantity is changed, what is wrong with this method?

There are two major flaws with this method.

- You don't know the "true" cost of labour.
- There is little flexibility and in particular there is no facility of marginal cost pricing.

Both problems arise because of the way the labour recovery rate is applied. The labour rate used above has an overhead recovery component built into it. This hides or masks the "true cost" of labour. Now, if you wish to stay in the business of manufacturing, there is really just one thing you have to do and that is to **CONTROL YOUR COSTS**.

ManuDyn provides the perfect tool to do this. Firstly it allows you to define the labour time and quantity of materials you need to do the job. The system then allows you to purchase the materials and schedule the labour. Finally, a variance analysis is provided through the Job Cost reporting system, which records actual labour and materials that have been used.

The shop-floor data collection system allows you to monitor the progress of the job to ensure that you don't use more materials and labour than what was estimated. If you do, then either one of two things were wrong. Either, the way we did the job was wrong, or the estimates were wrong. It becomes a management problem to determine which is the case and take the necessary action. I will deal with this in a later seminar.

Material control is easy because you have an accurate handle on both estimated and actual (purchased) costs. Labour cost is a little more difficult to compare due to the presence of the built in overhead recovery.

What if you needed to drop the price to get the job? By how much could you drop the price and still not lose? So you start by cutting the markup to say 20% or 10% or even nothing. What if you had to drop price further?

You can't touch the materials because you know this cost, so you have to do something about the recovery rate on labour. So where do you stop and at what point do you lose? How much can you drop the recovery rate and still make a contribution to your overheads?

The answer is ***YOU DON'T KNOW***. What tends to happen is that some time you actually end up taking on a job for less than the cost of labour and materials, which is not a smart thing to do.

With regard to the second problem all work is charged out at the same rate whether it is a job worth \$100 or one worth \$100,000. Now, you can't do a job for \$100 and make any serious profit. The cost of processing the order alone is probably \$25 even before you start to make it. Your competitors, who are using marginal pricing, would probably say \$150 for this job. The result here is you win it (well done).

On the other hand the \$100,000 job has maybe \$30,000 of overhead recovery built into it. Your competitor with marginal pricing recognises this and only charges \$25 for the cost of processing the order. His price is \$70,025 and naturally you lose this job.

So what can we learn from this?

Without marginal pricing, you will tend to win a lot of low value, small run jobs and lose the large, long run jobs that in the end provide the serious profit.

Clearly you need to estimate the cost of labour accurately and price accordingly. To do this you should set a recovery rate for labour that reflects the direct cost of operating a specific work centre. The cost of Indirect Manufacturing can then be covered by a markup applied to the direct labour component. Overheads such as Selling and Administration can also be treated this way. Profit is also a separate markup and should only apply to the added value components of the pricing calculation. That is, to the Direct and Indirect labour components.

With the selling and administration charges determined separately a minimum charge can also be set to cover the cost of processing jobs. This minimum charge is only going to be applied to the small value jobs to ensure that these costs are recovered.

The standard job cost accounting formula used by ManuDyn is as follows:

Total		Direct		Indirect		Selling &		Raw
job	=	Mfg.	+	Mfg.	+	Admin.	+	material
cost		costs		costs		costs		costs

The Indirect Manufacturing and Selling & Administration costs may be expressed as a fraction of the Direct Manufacturing costs (determined say from last years accounts), as follows:

$$ID = \frac{\text{Total Indirect Mfg. Costs}}{\text{Total Direct Mfg. costs}}$$

$$SA = \frac{\text{Total Selling \& Admin. costs}}{\text{Total Direct Mfg costs}}$$

by substituting them for Indirect:Direct (ID) and Overhead:Direct (SA) ratios. The standard job cost accounting formula may be re-written as follows:

$$\text{Total job cost} = \text{Direct Mfg. costs} * \{1 + ID\} + \text{Direct Mfg. costs} * SA + \text{Raw material costs}$$

The Direct Manufacturing and Direct Material costs may be accurately determined for each job based mainly on the process operations and Bill-Of-Material (BOM). The estimated costs may be turned into a unit price by applying a profit mark-up to the Direct and Indirect Manufacturing costs, and a material mark-up to the Material Costs. This total may then be divided by the number of units to obtain a unit price as follows:

$$\text{Unit price} = \frac{\text{Direct Mfg. mark-up} * \{1 + ID\} * \{1 + Profit\} + \text{Direct Mfg. costs} * SA + \text{Raw material costs} * \{1 + Material\} \text{ mark-up}}{\text{number of units}}$$

The selling and administration costs may be determined separately and are not included in profit calculations because there is an option to set minimum charges. These minimum charges may then be used in the determination of unit cost, where the calculation based on the direct manufacturing costs and the SA ratios, is less than the minimum charge.

Note i. With this formula you only make profit on the value added portions of the job. That is, the direct and indirect manufacturing components. Selling and administration charges are simply recovered as are materials (which are marked up to cover yield and other considerations).

The direct labour costs which are the basis for quoting are obtained by determining the individual “cost centre” operating costs for each job by using the following formula:

$$\text{Cost centre operating cost for job} = \text{Cost centre operating costs (\$/man-hour)} * \text{Operational man-hours for the job}$$

In order to use this formula the “fixed components” of the equations need to be determined, maybe once per year, and the “variable components” need to be determined for each job quoted. The “fixed components” that need to be set are:

- The cost centre operating costs (\$/man-hour)
- The Indirect to Direct cost ratio (ID).
- The Overhead to Direct cost ratio (SA).
- The Profit and material mark-up assignments.

The “variable components” that will vary for each unique job are:

- The time for each work centre, broken down into setup time and process time (as defined by the process routing).
- The quantity of each material used (defined by the Bill-Of-Material).

These variable components, defined against the Part, are what it takes to make one unit of the job. With this information the requirements, both in terms of labour and materials, to make any job quantity can easily be determined. This is particularly important because you don’t want to do a lot of re-calculation every time the quote quantity changes.

Let’s examine each of these components to see how they can be determined.

The Cost Centre Operating Costs

The initial cost of operating the work centre is the labour that is employed. You should determine what proportion of each employee’s time is spent on each particular work center. The cost of labour should include the “add on” charges, such as long service leave and super contributions etc, over a full year of operation.

To this you should add the cost of consumables that can be assigned specifically to the work centre. If you have a furnace that uses gas, and there are no other work centre or appliances that use gas, then the gas charge can be said to be charged against the cost of operating the specific work centre. Tool replacement is another consideration here as are consumables such as oils, paints and solvents. They may all be classed as direct cost of operating the work center and which is not charged specifically against a job.

Finally, the replacement cost of the work centre, where appropriate, should be taken into consideration. If the machine costs a \$100,000 and it will be worn out and need to be replaced in 5 years, then \$20,000 per year (at least), must be recovered from this machine in order to do this.

The operating cost of the work centre is as follows:

$$\begin{array}{rcl} \text{Operating} & & \text{Direct Labour + Consumables + Depreciation} \\ \text{Cost} & = & \text{-----} \\ (\$/\text{Man Hour}) & & \text{Number of man-hours of operation} \end{array}$$

All figures are based on 12 months of operation.

Note i. Once this figure is determined it is a relatively easy task to monitor it on a monthly basis and perhaps apply a three month moving average correction, to ensure you don’t get trapped when a fundamental change to the operating circumstances of the work centre occur.

Now some work centers are primarily labour intensive, with no consumables and little or no depreciation component. The recovery rate here will be basically the cost of labour (plus the “add on” changes). Typical example are PACK & DESPATCH or ASSEMBLY type processes. The recovery rates in this case will be small (say \$15 to \$25 per hour).

Other work centers may have a very large consumable and/or depreciation components. Typical examples are work centers that represent a significant capital investment such as most CNC type equipment. Here the recovery rate may be 10 to 20 times that for the typical labour intensive operation.

The Indirect Cost Ratio (ID)

This cost represents the labour, consumables and other manufacturing related items that may not be assigned to specific machines. It includes the supervisory labour such as Forman and Leading Hands as well as Production Supervisors. Consumables such as water and electricity, gloves and rags, factory depreciation, tools and even quality control and maintenance activities.

Maintenance and quality control are interesting activities which may alternatively be charged against specific work centers. If this is the case they become direct rather than indirect cost activities.

The Indirect Cost Ratio is simply the Total Indirect cost divided by the Total Direct costs (usually taken over the previous 12 months of operation).

$$\begin{array}{l} \text{Indirect} \\ \text{Cost} \\ \text{Ratio} \end{array} = \frac{\text{Total Indirect Labour + Consumables + Depreciation}}{\text{Total Direct Labour + Consumables + Depreciation}}$$

If, for example, the Direct Costs were say \$1,000,000 and the Indirect Costs over the same period were \$500,000 then the Indirect Cost Ratio would be 0.50 and the resulting Indirect Manufacturing markup (on the Direct component), would therefore be 50%.

The Selling and Administration Cost Ratio (SA)

There are two ratios that are actually determined separately within the ManuDyn system. They are considered as one together here, solely for the purposes of simplicity.

The Selling costs include all of your marketing activities. It covers the cost of labour for the sales representatives, together with all the associated ancillary costs such as motor vehicle operating expenses, together with all other marketing expenses.

In essence any cost that cannot be assigned as either a direct or Indirect Manufacturing expense will need to be assigned to either the Selling or Administration areas.

The Selling Cost Ratio is simply the Total Selling cost divided by the Total Direct costs (taken over the previous 12 months of operation).

$$\text{Selling Cost Ratio} = \frac{\text{Total Selling Labour} + \text{Advertising} + \text{Depreciation}}{\text{Total Direct Labour} + \text{Consumables} + \text{Depreciation}}$$

The Administration costs include other office personnel such as accounts and management staff. Consumables and depreciation may also be appropriate when things like motor vehicles and computers are considered.

$$\text{Admin. Cost Ratio} = \frac{\text{Total Administrative Costs} + \text{Depreciation}}{\text{Total Direct Labour} + \text{Consumables} + \text{Depreciation}}$$

Purchasing staff may either be included as administrative or as associated with the indirect manufacturing ratio. It totally depends on your own internal accounts definitions as to what cost are assigned to each of these ratios.

The minimum selling and administration changes may best be determined by actually doing a study of what is done to process a customer order. Don't get shocked. It's a lot more than you think.

The Material Markup

There are no rules governing the determination of this markup. It tends to vary from one industry to another, from one manufacturer to another and even from one material type to another. The markup applied at this point should not be confused with that which is usually associated with the "material cost". The cost markup is usually small (of the order of 2-5%), and accounts for minor prices differences between multiple suppliers of the same material and also a material handling, or even stock holding change.

Material Markups applied at this point usually represent some wastage or yield factor, and (dare I say it), some profit on materials. If the yield factor is incorporated into the Bill-Of-Material quantity calculation and you take the line that profit should only be applied to value added, then the Material Markup will in fact be set to zero.

The Profit Markup

Profit is not a dirty word. It is essential if the business is to stay in operation and keep all of us employed. The equations are simple **no profit = no work** and **profit = work**.

The level of profit that is appropriate also varies from one industry to another and from one manufacturer to another. There are no rules as in the end the market place will determine what is an acceptable figure.

Applying Variable Markups

Once these recovery rates and markups have been determined they are entered into the system through the Install routine, as discussed earlier, and they are applied and varied at the quoting stage. On the second page of the quoting routine (Quoting/Quote Entry & Review – either do or select a quote), there is an option to “Modify Standard Markup”, as shown in figure 3 below.

Quote Number: Q0000068

Item Information

Item # 1

Item Code: PART Lead Time:

Description: A manufactured part

Customer Item Code:

Customer supplied materials

Taxable Item

Hide item price on quote (and add to next item)

Markups (%)

Apply Standard Markup Modify Standard Markup Apply Current Markup

Indirect Markup % Profit Markup % Material Markup %

Selling Markup % Admin Markup %

Quantity Breaks and Cost Details

	Quantity	Labour \$	Material \$	Total \$	Price \$	Quote Price \$
Quantity Break 1	<input type="text" value="1"/>	33.3320	19.0000	52.33	52.330000	<input type="text" value="52.330000"/>
Quantity Break 2	<input type="text" value="0"/>	0.0000	0.0000	0.00	0.000000	<input type="text" value="0.000000"/>
Quantity Break 3	<input type="text" value="0"/>	0.0000	0.0000	0.00	0.000000	<input type="text" value="0.000000"/>
Quantity Break 4	<input type="text" value="0"/>	0.0000	0.0000	0.00	0.000000	<input type="text" value="0.000000"/>

 Other Charges Shipping

 Move Record Before: 1 - PART

Figure 3- Applying the Default Quote Markups

The default condition is to apply the Standard Markup (those stored against the Product Type through the Install routine). These defaults may be varied once the “Modify Standard Markup” option is selected.

We now have a number of options with this markup regime in place and we can answer the question **HOW LOW CAN WE GO?**. Firstly, if all markups are set to zero, the unit price represents just the cost of direct labour and materials. The only overhead recovery that will have been made is the minimum selling and administration changes, (if these were set).

If we wanted to achieve full overhead recovery then only the profit markup (and maybe the material markup), should be set to zero. In varying the markups away from the defaults there is really only one rule, namely:

You can not reduce the markup for all jobs. For each job, where the markup is reduced there must be another job (or group of jobs), where the markup is increased.

If you fail to do this, the relationship between the various markups and the direct cost will change over time and a new set of ratios will need to be defined.

Quote Follow Up

To finish this seminar I wish to say something about Quote Follow up. Most manufactures, in my experience, do not realize the importance of following up the quotation. Usually considerable effort is put into generating the quoted document and once it is done they sit back and wait for the response.

The marketers among you will however quickly point out that less than half of the effort in winning a job is done when the quote is presented. You will win more quotes if you follow them up and the feedback obtained from the Customer will, at the very least, help you the next time you quote and often presents an opportunity to re-quote.

ManuDyn provides a strong quote follow up facility through the Status Update routine located on the Status tab of the Quoting/Quote Entry & Review menu item. Select an existing quote - The Status Update tab is shown below in figure 4.

Figure 4- Status Update data entry routine

The operator is required to indicate whether the Quote has been Won, Lost, Undecided or Discontinued. The winning price and quantity is also required whether or not the quote has been won or lost. The number of competitors is also required.

This information forms the basis of a Win/Loss analysis report that you can create in the Report Generator. First you need to setup the report from Reporting/Report Generator; Enter the name WINLOSS and select the Quote file. Your screen display after selecting the appropriate columns would be similar to figure 5 below:

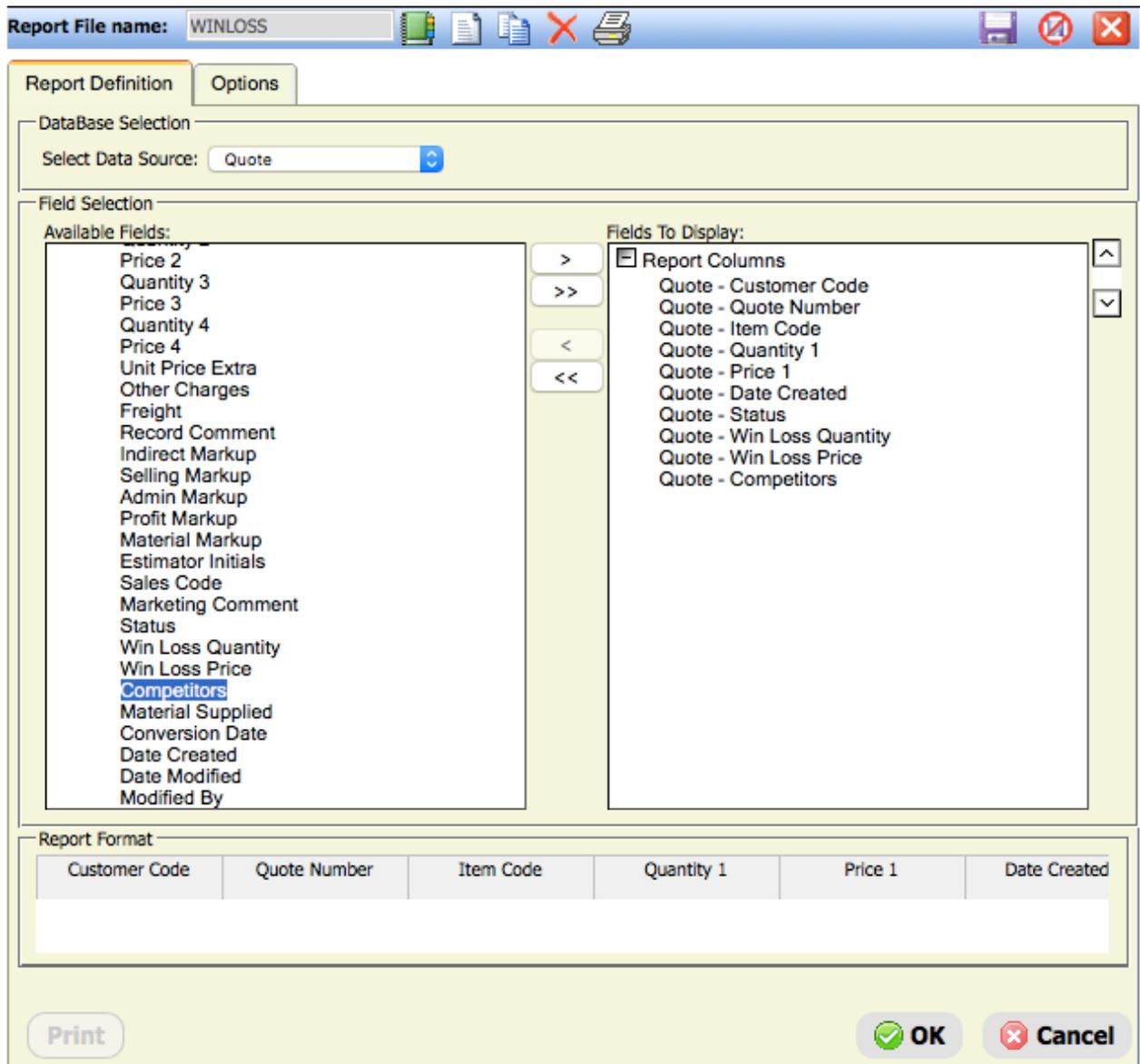


Figure 5 - Win/Loss Report Setup

Provide you enter the appropriate information into the Sattu tab as discusse above the report would look similar to figure 6.

Customer Code	Quote Number	Item Code	Quantity 1	Price 1	Date Created	Status	Win Loss Quantity	Win Loss Price	Competitors
ABP	Q0000066	MANUDYN_USER_06-10_ITEM	6	49.170000	6/22/2016		0	0.0000	0
ALAGENTRA	Q0000067	MANUDYN_USER_01-05_ITEM	5	50.000000	6/22/2016		0	0.0000	0
ALAGENTRA	Q0000067	MANUDYN_USER_06-10_ITEM	6	49.170000	6/22/2016		0	0.0000	0
ALAGENTRA	Q0000067	MANUDYN_USER_11-20_ITEM	11	41.820000	6/22/2016		0	0.0000	0
ALAGENTRA	Q0000067	MANUDYN_USER_21-50_ITEM	21	43.330000	6/22/2016		0	0.0000	0
CUSTOMER	Q0000068	PART	1	52.330000	8/4/2016	W	0	0.0000	0

Figure 6 - Win/Loss Report

Except I have not entered any data against my quotes either.

You get out of these reports what you put into them.

Quote follow up should even be done when you know you have lost the job. You can find out what the winning price was, and also which competitor. This is all vital marketing information that helps you make better future marketing decisions.

The Quote Routing Sheet

This report is accessed from the *Quoting/Quote Routing Sheet* menu selection. It is similar to the Item Routing Sheet discussed in Seminar 4 in that it provides a useful summary of the information that is entered against the Quote. The difference between the two report is that the Part Routing shows the information entered against the Manufactured Item required to make one(1) unit of the Part. The Quote Routing provides the details to make the first quantity break of the Quote as shown below;

Material Details:		Supplier	Quantity Required	Price
#	Description			
1	RM_1 Raw Material 1	SUPPLIER	100.0000 units	\$1.00
2	RM_2 Raw Material 2	BESBUY	10.0000 units	\$.00
Total Material Cost				\$100.00

Processing Details:		Setup Time	Process Time
#	Operation Details		
1	CUT make cuts 200mm then paint it blue with pink spots Tooling:12345	0 Minutes	150.00 Minutes
2	FOLD 5 folds as per drawing the send line says nothing	20 Minutes	50.00 Minutes
Total Times:		20.00 Minutes	200.00 Minutes

Quote Quantity Breaks							
For quantity of	Material Cost	Labour Cost	Setup Time	Process Time	Total Cost	Quote Price	Margin
10	100.0000	183.3260	20.00 Minutes	2,000.00 Minutes	283.33 \$28.33 per unit	283.30 \$28.33 per unit	-.03 \$.00 per unit

If the quoted part contains sub-assemblies, they will also be recalled and a routing sheet for each sub-assembly will be generated. The documentation provided, therefore, is a complete job routing which includes every process and every material concerned with the manufacture of the nominated quote.

The Cost Price Update Routine

The next menu item to examine is the ‘price’ update routine. This routine provides a convenient method of altering the cost of materials, used for quoting purposes, which are held on the stock file. There are also options whereby the material cost data held against individual part numbers may be updated, to alter stock purchase and selling price data and to re-price quotes, based on the current BOM price data.

The update routine is access from the Quoting/Cost/Price Update menu item. The tabs available indicate that the update routine is used to update many different prices namely:

- The Standard Cost tab – to update the “Price” used for Quoting.

- Purchase Price tab – to alter a Vendors purchase price.
- Selling Price tab – to update your selling “Price List”.
- B.O.M. Price – to alter the price information stored in a BOM.
- Quote Price – to change the price detail stored against a quote.

Each of these options will be examined in detail below.

Standard Cost - Price Update

In this tab the operator is first required to indicate the percentage change and the basis for the standard price change (that is based on current price, supplier purchase price or average purchase cost).

Next you need to select the Search Criteria to define the list of items that are to be adjusted. In the example below I have decided to change the standard cost for all items beginning with the letter “R”

Cost/Price Update Routines

Standard Cost | Purchase Price | Selling Price | B.O.M. Price | Quote Price

Set Specifics

Percent Markup: 5 Decimal Places: 2

Basis for Price Update

Current Standard Cost Supplier Purchase Price Average Purchase Cost

Affected Records

Update the following records: Search Criteria

Item Code	Description	New Standard Cost	Standard Cost	Purchase Price	Average
RM	Raw Material 1 Raw material	2.000000	1.9000	1.9000	1.8789
RM_1	Raw Material 1	1.050000	1.0000	1.0000	1.0000
RM_2	Raw Material 2	0.000000	0.0000	11.0000	11.0000
RM_3	Raw Material 3	0.000000	0.0000		0.0000
RM2	Raw material	1.280000	0.000000	1.0000	1.0000

The routine will proceed once the operator selects the Proceed (OK) button changing the Standard Cost to the items listed as shown.

Purchase Price Update

The second price update tab concerns making global or selected changes to the vendor (or supplier) purchase prices stored against the material item.

Once again there is a selection option to define the materials that are to be updated. In the example shown below a Vendor selection has been made

Cost/Price Update Routines ✖

Standard Cost | **Purchase Price** | Selling Price | B.O.M. Price | Quote Price

Set Specifics

Percent Markup: Decimal Places:

Affected Records

Update the following records:

Item Code	Description	Supplier	New Purchase Price	Purchase Price
RM	Raw Material 1 Raw material	SUPPLIER	1.940000	1.9000
RM_1	Raw Material 1	SUPPLIER	1.020000	1.0000
NEW_RM	test new rm	SUPPLIER	1.020000	1.0000
NEWEST_RM	a new rm	SUPPLIER	1.020000	1.0000

Selling Price Update

The third price update option is concerned with changing the stock item selling prices. The procedure is similar to that described above. In this case however, there is an additional selection option activated for the selling price categories.

B.O.M. Price Update

The fourth price update option provides a facility to update the material price, stored against each Bill-Of-Materials item, for the Manufactured items (parts) stored on the system. In this option the Standard Cost, stored against the Material Item, is transferred to the each BOM item, for each of the selected parts.

- Note i.** If the operator chooses not to update the BOM cost data it remains as it was originally set when the part was created. That is it is a historical material cost.
- Note ii.** Other BOM detail will also be adjusted, in addition to the material price. The current stock item description, units of measure and supplier will also be transferred to the BOM.

Once again, the operational procedure is similar to that described in the preceding sections. In this case, however, there is an additional selection option activated for the supplier identity stored against the BOM item.

Quote Price Update

The final price update option concerns the re-pricing of quotes, either globally or selectively, held in the Quote file. In this case, the current quantity breaks are used to determine a new unit price, based on the current part details, system recovery rates and default markups.

The Item Configurator

The final thing I wish to examine in this seminar is the Item Configurator in ManyDyn. This option is accessed via the *Data Base Entry/Item Configurator* menu item as it is about creating Parts but its primary use is in Quoting and Sales Order Entry.

As the name suggests this routine allows you to define a “template” which can be used to create parts consistently (and also easily), by presenting the operator with a series of options/choices for labour and materials for a part. The system operates by first defining a **Template Code** (or name), by then defining the **Option Codes** used in the Template, and for each Option Code what are the **Options**.

In the example below I have created a Template called MANUFACTURED_ITEM and then selected the List of Options grid to bring up Option Code dialog to select an existing Option Code or create a new one. Let's create a new one called OPTION_CODE_1.

Item Configurator - Template Code: MANUFACTURED_ITEM

Template Settings | Create New Item

Description: A Manufactured Item

Base Price: 0.00

Create item selling price based on material price list

#	Option Code	Type	Instructions

Option Number: 1

Option Code:

Type: Material

Instructions:

Delete Move Record Before: 1 Move OK Cancel

OK Cancel

You do this by selecting the New Icon. The dialog displayed will be similar to that shown below:

Option Definition

Option Code: MATERIAL_CODE_1 

Type: Material 

Instructions:

List of Selections

#	Selection Value	Comment

OK Cancel

The Option Code I have selected is called MATERIAL_CODE_1. There are 3 types of option codes, namely;

- Material – which become the BOM of a Part
- Routing – which becomes the process instructions for the Part
- Notes – which are appended comments on the Part

Once the item type is selected (in our case material) we need to define the actual options/selections for this code. This is done by selecting the empty grid which recalls the selection dialog to enter the first item in the list

Item #: 1

Item Code:  

Comment:

Delete Move Record Before: 1  Move OK Cancel

A new Material Item may be created (New Icon) or an existing one selected (use the Lookup).

In my example I have selected 3 material options for this code as shown below:

Option Definition

Option Code: MATERIAL_CODE_1

Type: Material

Instructions: Prick material from store

List of Selections

#	Selection Value	Comment
1	RM_1	Raw Material 1
2	RM_2	Raw Material 2
3	RM_3	Raw Material 3

OK Cancel

That is, when creating this part any one of these three materials could be used depending on the nature of the part. A similar procedure can be followed to define the first routing option a

Option Definition

Option Code: ROUTING_CODE_1

Type: Routing

Instructions:

List of Selections

#	Selection Value	Comment
1	DRILL	DRILL HOLES
2	PUNCH	PUNCH HOLES

That is this the part can either have the holes drilled or punched. What occurs will depend on the nature of the part.

The final option type represents Notes. A series of standard notes can be defined to cover a range of things. Such as testing requirements, packaging, shipping generally, subcontract specifications and instructions, in addition of processing and/or material specifics.

The setup procedure for Notes is the same generally as that for Labour and material type and the final construction for my MANUFACTURED_ITEM is shown below:

Item Configurator - Template Code: MANUFACTURED_ITEM

Template Settings | Create New Item

Description: A Manufactured Item

Base Price: 0.00

Create item selling price based on material price list

List Of Options

#	Option Code	Type	Instructions
1	OPTION_CODE_MATERIAL	Material	Raw Material Options
2	OPTION_CODE_LABOUR	Routing	A Labour or Routing Option
3	OPTION_CODE_NOTE	Note	List of alternative notes

If you wish to edit any of these Option Codes select the required code then select the “edit” Icon (✎) adjacent to the item code.

Item Configurator - Template Code: MANUFACTURED_ITEM

Option Number: 3

Option Code: OPTION_CODE_NOTE ✎

Type: Note

Instructions: List of alternative notes

Delete Move Record Before: 3 - OPTION_COE Move OK Cancel

List Of Options

#	Option Code	Type	Instructions
1	OPTION_CODE_MATERIAL	Material	Raw Material Options
2	OPTION_CODE_LABOUR	Routing	A Labour or Routing Option
3	OPTION_CODE_NOTE	Note	List of alternative notes

This recalls the Option Definition dialog so the notes can be modified by selection a note item in the grid as shown below.

Our MANUFACTURED_ITEM **Template** now has 3 **Option Codes** in it (a material selection, a routing selection and a note selection) and each Option Code has a series of **Options** available to it when selected. We could add many more Options Codes to account for additional material and labour operations but for the purposes of this example we will keep in simple.

Option Definition

Option Code: 

Type: 

Instructions:

List of Selections

#	Selection Value	Comment
1	NOTE_1	Details for Note 1
2	NOTE_2	Details for Note 2

Item #: 1

Value:

Comment:

Move Record Before: 

Using the Configurator

Finally we need to discuss the purpose of doing all of this – that is to create a part that can be quoted or indeed entered directly as a Sales Order. After recalling the Template, select the “Create New Item” tab to begin the process as shown below:

Item Configurator - Template Code:   

Item Code:

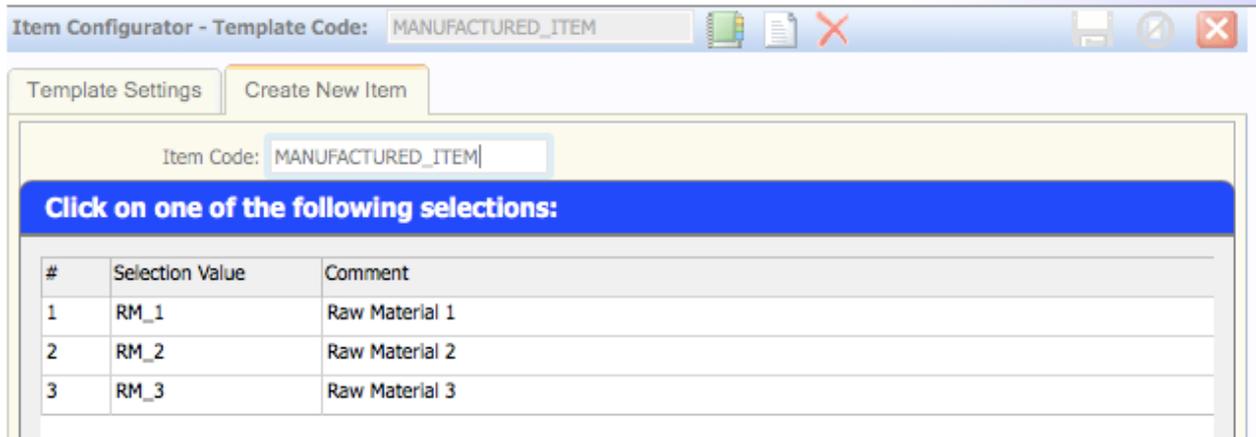
Description:

Units Of Measure: 

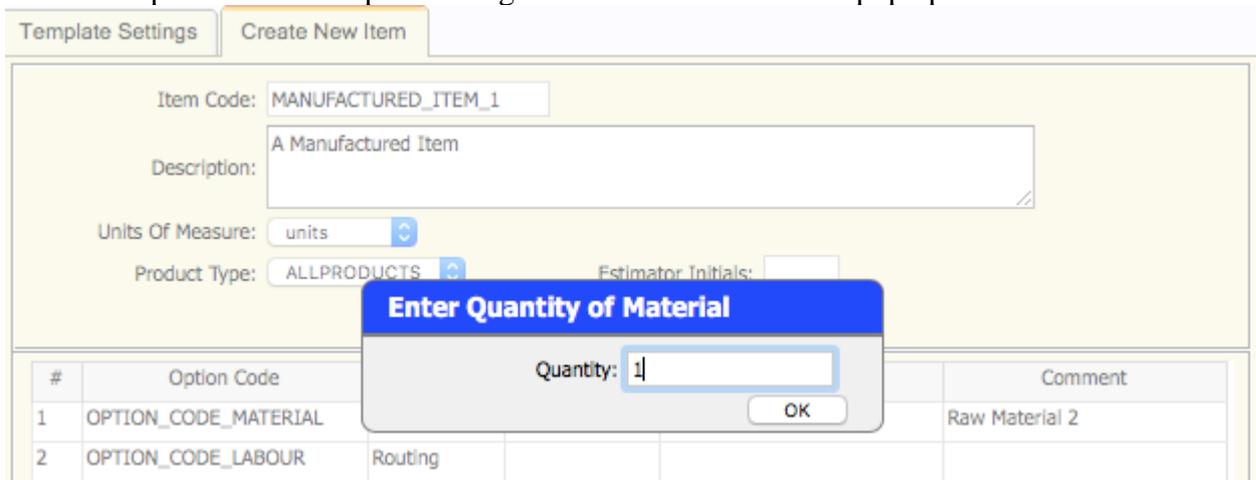
Product Type:  Estimator Initials:

#	Option Code	Type	Quantity	Selection Value	Comment
1	OPTION_CODE_MATERIAL	Material			
2	OPTION_CODE_LABOUR	Routing			
3	OPTION_CODE_NOTE	Note			

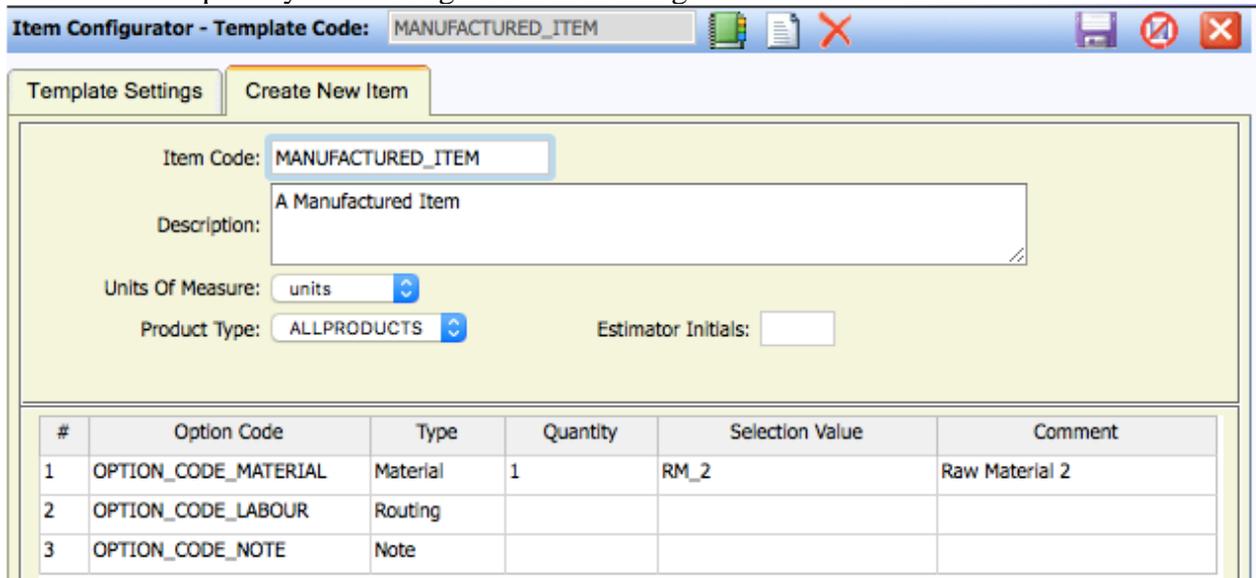
All you have to do is define what the new item is called and then select the options you wish to apply. In this example I have recalled the MANUFACTURED_ITEM template. I will name my item code to MANUFACTURED_ITEM_1 and then select the first option code. This brings up the dialog shown below so I can nominate which of the 3 material options I wish to use for this part. On selecting the OPTION_CODE_MATERIAL item the display would look like this:



If I select option 2 for example a dialog like the one below would pop up.



And when the quantity is entered gives the following result.



Next I would select the Routing and the Note options to which gives following configuration:

The screenshot shows the 'Item Configurator' window with the following configuration:

- Item Code: MANUFACTURED_ITEM_1
- Description: A Manufactured Item
- Units Of Measure: units
- Product Type: ALLPRODUCTS
- Estimator Initials: (empty)

#	Option Code	Type	Quantity	Selection Value	Comment
1	OPTION_CODE_MATERIAL	Material	1	RM_2	Raw Material 2
2	OPTION_CODE_LABOUR	Routing		PUNCH	push 2 holes
3	OPTION_CODE_NOTE	Note		NOTE_1	Details for Note 1

If I now select the OK button to save this Part (MANUFACTURED_ITEM_1), I can recall it from *Database Entry/Manufactured Item* which will show the labour and materials I configured and place the note in the descriptive field of the Part.

This detail is best displayed in the Database Entry/Item Routing Sheet shown below:

The screenshot shows the 'Part Routing- Quote Number' window with the following details:

Material Details:

#	Description	Supplier	Quantity Required	Price
1	RM_2 Raw Material 2 Item Comment: Raw Material 2	BESBUY	1 units	\$.00

Total Material Cost \$.00

Processing Details:

#	Operation Details	Setup Time	Process Time	Process
1	PUNCH	40	0.1	

Total Labour Time: 40.10 Minutes

This Part can now be Quoted and/or Sales Orders raised. There is also a “shot cut” to this process which is much more useful than going through the Configurator to generate the Part.

At both the *Quoting/Quote Entry/Review* (when generating a new quote), and *Sales Orders/Order Management* (entering a new job), and there is an option to select the configurator directly by selecting the New Icon associated with the Item Code.

Item Code 

The dialog recalled when you do this is as follows:

Selecting the Wizard Icon () will recall the configuration dialog as show below:

#	Option Code	Type	Quantity	Selection Value	Comment
1	OPTION_CODE_MATERIAL	Material			
2	OPTION_CODE_LABOUR	Routing			
3	OPTION_CODE_NOTE	Note			

So – as you can see you can create parts quickly “on-the-fly” as to say and this leads to greater system productivity.

Concluding Remarks

The Quoting system in ManuDyn is as you can see a very flexible system. It allows for parts to be created easily and has a strong part building capability to allow you to create parts accurately. It’s worth pointing out one again that it is the accuracy of the Part is what drives the system.

ManuDyn uses the BOM to define the material requirements and the Routing information to drive the Scheduling system. Your success in these functional areas will be directly affected by how you have crated your Parts.