Title: Use of Average Costing in Oracle R12 EBS Suite.

Abstract: This paper will guides users on how average costing works in the Oracle R12 EBS suite. Average costing calculates a moving average item cost, which approximates the direct one-for-one cost of items. Average Costing performs the average calculation of the onhand quantities, based upon the incoming cost of purchase order receipts, inter-org receipts, WIP completions, and depending on your setup, for miscellaneous account and account alias receipts. All transactions then use average cost of the item for the respective accounting transactions.

Executive Summary: Following are the key highlights addressed in the document.

- How costing happens in organization using costing method as Average.
- Miscellaneous Transaction impacts the cost of the item
- Purchase order receiving changes the cost of the item and the average based on the PO list price and onhand inventory cost of the item.
- WIP Job completion alters the cost of the finished assembly as it averages the WIP job assembly completion cost with the current inventory cost of the finished assembly.
- Outside processing service is charged based on the list or PO price maintained for an OSP item and is incurred at the time you perform the WIP OSP receipt. The timing of the OSP receipt depends on your WIP charge type controls (manual, PO move or PO receipt)

Business requirements of each of above transactions are discussed below as we illustrate each transaction in detail.

Key Setups

Following are the key Setups done at Organization level:

1) Defining Costing details under Inventory

Responsibility: Inventory Super User

Navigation: Setup \rightarrow Organizations \rightarrow Organizations \rightarrow Costing Information (Tab)

Same setups can be done using Cost Management responsibility

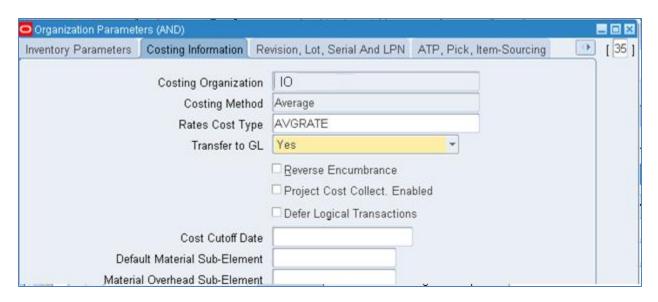
Responsibility: Cost Management

Navigation: Setup → Account Assignment → Organization Parameters

Define the Costing Organization.

Set Costing Method: Average

Set Rates Cost Type: AVGRATE



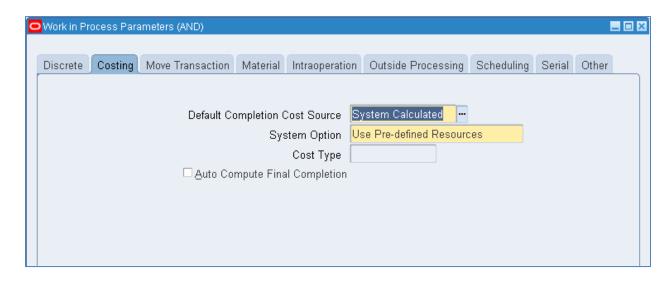
2) Defining the Costing details under work in process

Responsibility: Work In Process Super User

Navigation: Setup → Parameters → Costing (Tab)

Set Default Completion Cost Source: System Calculated (This ensures the cost charges are applied on completion of WIP job based on system calculated details which does not have user entry)

System Option: Use Pre-Defined Resources (This ensures resources are charged based on pre-defined details)



Prerequisite setup:

■ Purchased Item is created and assigned to Master Org and Inventory Org.

Consider Item 1000317205 whose cost history details are as shown below:



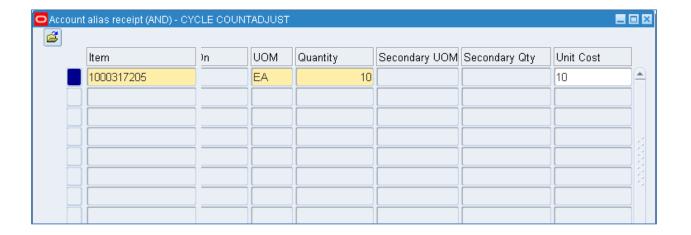
MISCELLANEOUS RECEIPT:

Miscellaneous adjustments are made whenever a part is received by Engineering research department, projects, individuals. In Manufacturing industry miscellaneous receipt transactions are done so as to make the inventory onhand adjustments same as present at physical location.

Also miscellaneous receipt transactions are done when Oracle inventory is freshly implemented and onhand is moved in Oracle.

Below steps will guide on how a miscellaneous receipt transaction with cost will be averaged out with current onhand cost.

Step 1: Miscellaneous Receipt for item 1000317205 10 pcs with cost as 10, and later will check the Item cost history



Schedule the cost manager program so as items cost are updated.

After the program is complete check the Item 1000317205 cost history



System will calculate the new cost of item 1000317205 in the form of average cost as explained below.

Initial Onhand = 56 Initial Unit cost = 14.35

Transaction Onhand = 10 Transaction Unit Cost = 10

New Unit Cost of Item (Average)

= (Initial Onhand * Initial Unit Cost) + (Transaction Onhand + Transaction Unit Cost) / (Initial Onhand + Transaction Onhand)

$$= (56 * 14.35) + (10*10) / (56 + 10)$$

= 13.69091

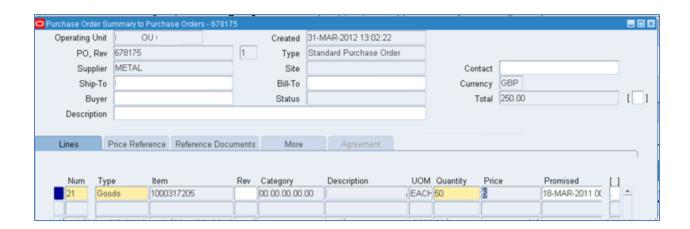
PO RECEIVING:

Manufacturing plants need raw material, components so as to be build into a finished assembly. These goods and services are purchased from the supplier and vendors. Supplier delivers the goods based on the Purchase order raised by the manufacturing plant. Goods inward are received and a PO receiving transaction is completed in Oracle.

Below steps will guide how PO receipt will impact the cost of Item based on PO list price and current onhand cost of Item.

Step 2: Perform a PO receipt transaction for the above purchased item and check the new unit cost of item

Pre-requisite setup: Item is attached to a Standard Purchase order along with list price or purchase order price of 5. PO is approved and has a quantity to be received.



Complete receiving quantity 4 pcs as shown below



Once the PO receipt is complete check the Item cost History details for Item 1000317205

We can see that the system has calculated the new unit cost after doing an average of current onhand quantity and cost with the transaction onhand quantity and cost.

New Unit Cost of Item (Average)

= (Initial Onhand * Initial Unit Cost) + (Transaction Onhand + Transaction Unit Cost) / (Initial Onhand + Transaction Onhand)



WORK ORDER COMPLETION:

Discrete manufacturing Standard WIP Jobs are created to manufacture and build a finished assembly which is sold to end customer. Finished assembly will have its bill of material which list all the components need to make the assembly. Finished assembly has routing setup which will list the operations and machining (resource) activity which it will go through to complete the finished assembly.

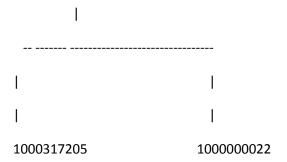
Overhead cost is also accumulated as the finished assembly is build which can be a resource overhead and a material overhead.

Below steps will guide us how a finished assembly cost is accumulated as the WIP job gets completed and gets averaged based on the assembly job completion cost and the current onhand cost of finished assembly.

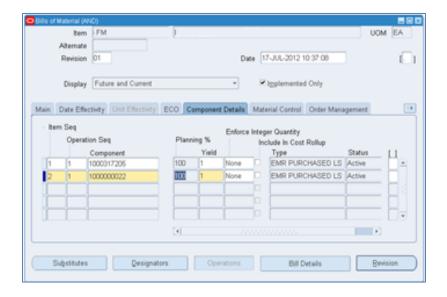
Step 3: Work order completion of a finished assembly and average cost calculation for the finished assembly.

Consider a Finished Assembly (FM) which has a BOM structure as below:

FM (Finished Assembly)



Below is the screenshot showing the BOM for finished assembly FM with 2 purchased part as a component each having a yield as 1



Let's define the Resource and overheads

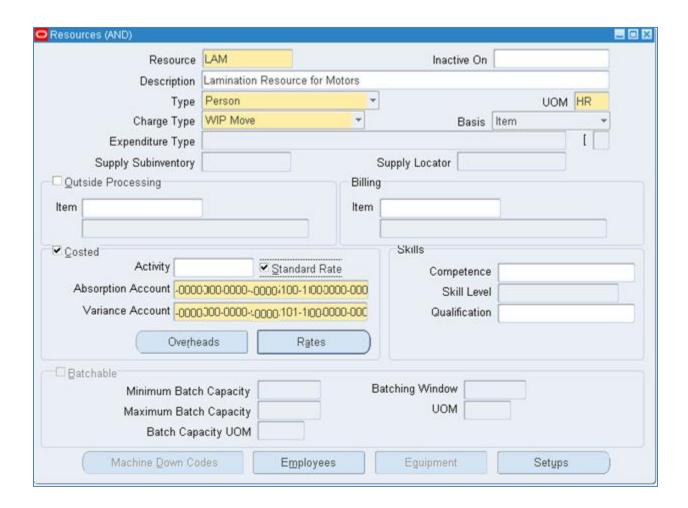
Resources

Responsibility: Bills of Material

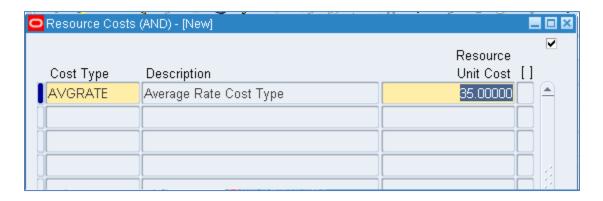
Navigation: Routings → Resources

Define the Lamination resource "LAM" as shown in below screen

Standard Rate: This is checked so that the resource is charged at the standard rate. If you were charging labor hours at actual rate, you would leave the standard rate flag unchecked, so that the actual rate is used (it comes from a separate setup of employees rates in WIP).



Click on the Rates Button and define the hourly rates as below:



Close the Resource cost screen.

OUTSIDE PROCESSING:

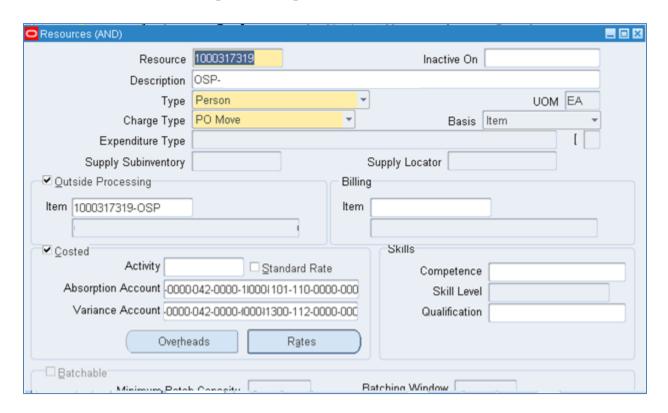
During build of a finished assembly job we need some activity done by outside services provided by the vendor. This is achieved by defining an OSP operation in the finished assembly routing. OSP Resource is defined to which OSP item is attached. OSP Item will have approved PO and PO unit price maintained.

Let's define OSP resource (1000317319) to which we have an OSP item (1000317319-OSP) attached.

Charge Type: PO Move (This ensures the WIP job moves to next operation on PO receipt, or gets completed if this is the last operation)

Costed: Checked and proper absorption and variance account are setup

Standard Rate: This is unchecked so that the OSP item list price or PO unit price as maintained on PO will be captured as the outside processing cost and included in the finished assembly cost.

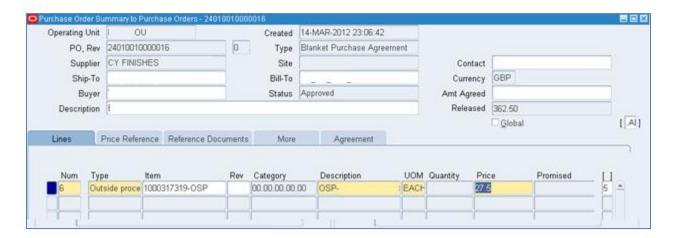


Click on Rates button and attach the Average rate as the cost type with rate as 0 since we are getting the cost from OSP item list price maintained on PO as mentioned below.



Both the above resources "LAM" and "1000317319" are attached to "CTD" department.

Below is the Blanket PO which has an OSP Item 1000317319-OSP with the list price maintained as 27.5

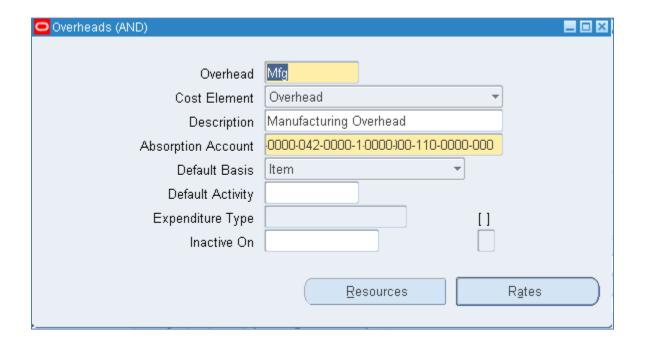


Overheads

Let's define a Resource Overhead "Mfg" with basis as Item.

Responsibility: Cost Management

Navigation: Cost → Setup → Overhead

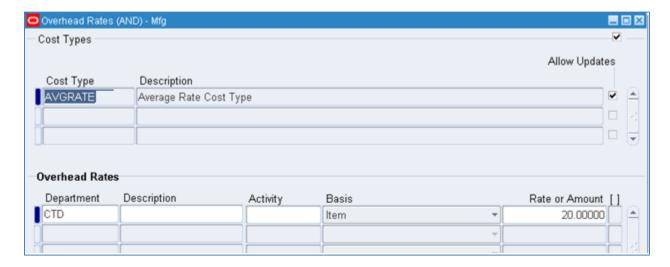


Click on Rates button to attach the Cost Type and Department as shown in below screen.

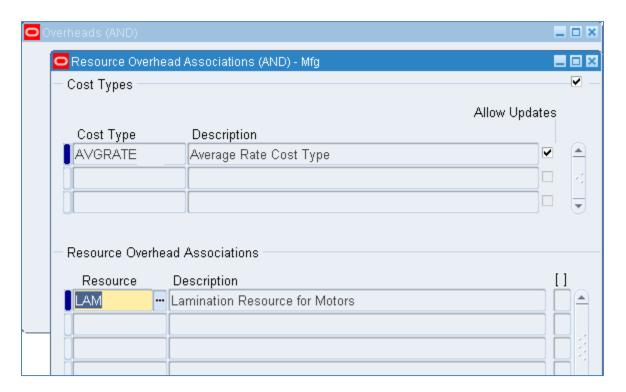
Cost Type: AVGRATE

Department: CTD (Consider this department where all resources are attached)

Set the Rate as 20 as shown below.



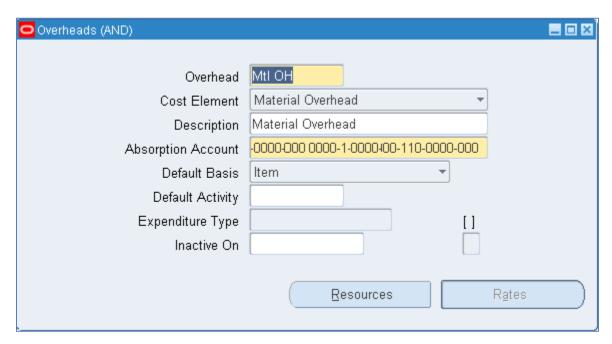
We will attach this overhead to "LAM" resource first, then close above rates screen. In the Main Resource screen Click on Resources button and attach the "Mfg" overhead to resource "LAM" as shown in below screen



Define the Material Overhead "Mtl OH" as described in below screen with basis as

Responsibility: Cost Management

Navigation: Cost → Setup → Overhead



Define a rule for Material Overhead absorption as given below.

Transaction: Assembly Completion / Return

Item Type: Make Items

This will ensure all make items on completion of WIP job will have a material overhead incurred.



Now that the material overhead is setup, there are two ways to get the material overhead costs on the onhand quantities.

First, if the material overheads were set up before the assemblies were completed form the WIP into onhand inventory, you would earn the material overhead upon WIP completion. Secondly, assuming the material overhead was defined after the WIP completion transaction, you would implement this new cost using the Average Cost Update transaction.

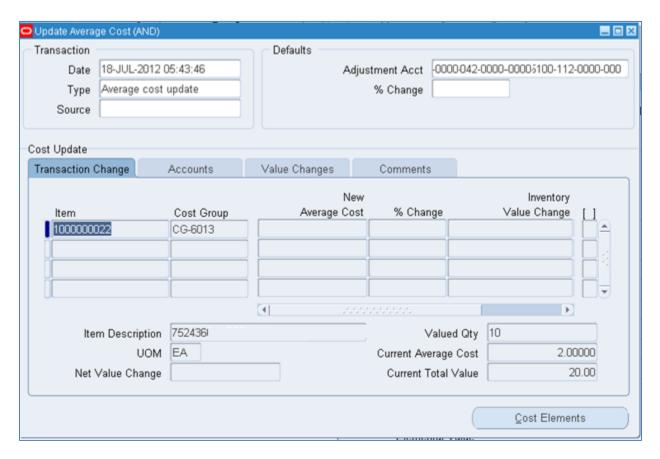
Define the rate for the material overhead.

Responsibility: Cost Management

Navigation: Cost Management → Item Cost → Average Cost update → Update Costs

Enter the Type: Average Cost Update and select appropriate absorption account as shown in below screen.

In Transaction Change Tab enter the item: 1000000022 for which we will attach the material ovhead cost.



Click on Cost Elements button.

Enter the level as this and Cost Element as material overhead with New Average Cost as 4

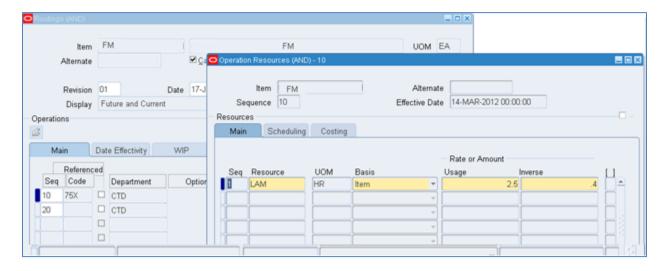


Routings:

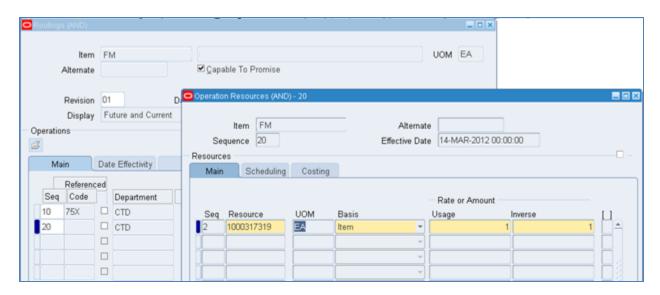
Let's define the Routings for a finished assembly FM as shown in below screen.

We have 2 operation defined,

Operation 10 will have the resource "LAM" attached with basis as Item and usage 2.5 hrs. Note we are earning labor hours at standard and also charging the labor rate at standard.



Operation 20 will have an OSP resource attached



We will quickly summarize all the unit cost we have setup for each entity

Material Cost:

In the BOM below is the unit cost for the purchased part component

Item 1000317205 Unit Cost = 13.19429 (As obtained from step 2)

Item 1000000022 Material Cost = 2

Material Overhead Cost:

Overhead: Mtl OH Item 1000000022 Material Overhead Cost = 4

Resource:

Resource: 1000317319 attached OSP Item 1000317319-OSP with PO List price = 27.5

Resource: LAM Basis: Item Rate = 35

Resource Overhead Cost:

Resource Overhead: Mfg attached Resource: LAM Basis: Item Rate: 20

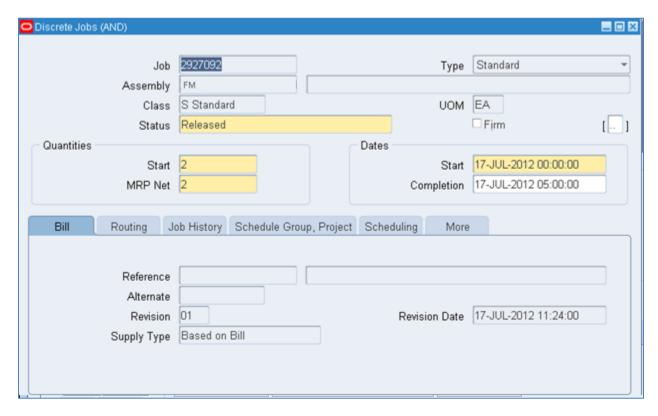
Current we have onhand quantity for Finished Assembly (FM) with the unit cost as 250 given below:





We will create a WIP Job for the finished assembly and complete and then check how system calculates the average cost.

Create a WIP Job for the Finished assembly (FM) as below release the WIP Job and save.

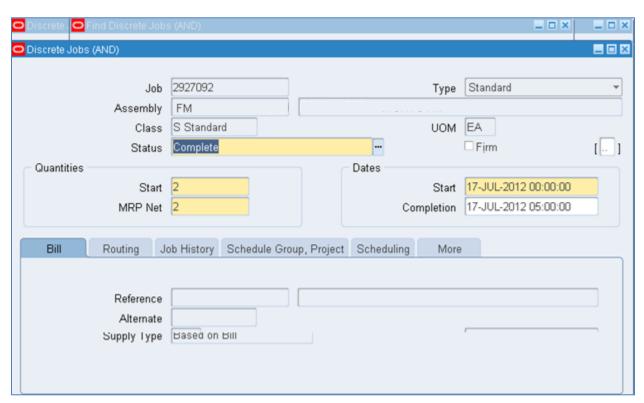


Complete Move operation from 10 to 20 so that outside services are done on the Job at operation 20.

At operation 20 PR-PO release is created for the OSP item 1000317319-OSP. Complete PO receiving for the OSP item as shown below.



Complete the WIP Job 2927092.

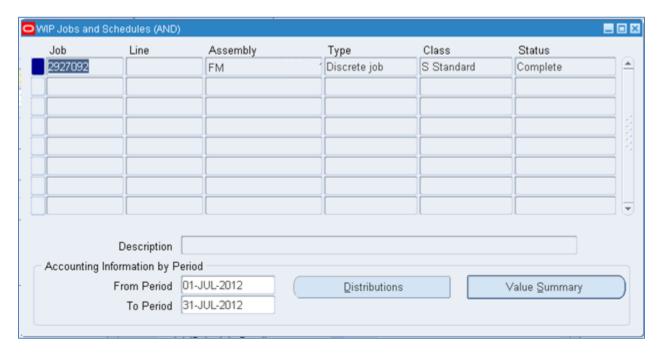


Now we will see the WIP value summary to verify each cost element costed.

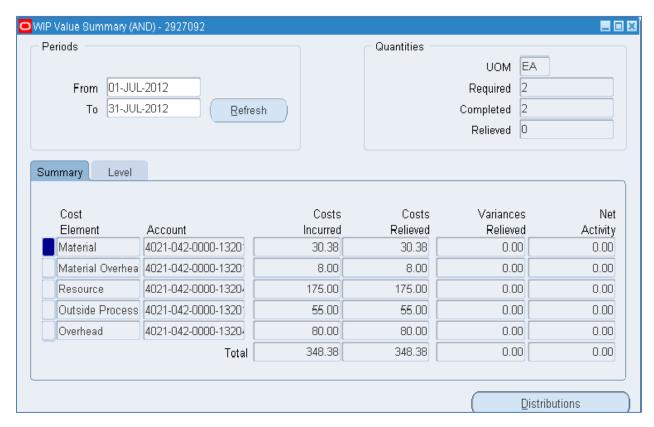
Responsibility: Work IN Process or Cost Management

Navigation: Discrete → WIP Value Summary

Enter Job Name: 2927092



Click on Value Summary button and see how each of the cost elements are costed



We will explain each of the cost elements as below:

We have a WIP Job for quantity = 2

Material Cost:

Material Costed:

In the BOM below is the unit cost for the purchased part component

Item 1000317205 Unit Cost = 13.19429 Total Cost = 13.19429 * 2 = 26.38858

Item 1000000022 Material Cost = 2 Total Cost = 2 *2 = 4

Total Material Cost = 26.38 +4 = 30.38 (Same is shown in above Material element)

Material Overhead Cost:

Total Material Overhead Cost: 4 *2 units = 8 (Same is shown in above Material Overhead element)

Resource:

Resource: LAM Basis: Item Rate = 35 Number of Hrs: 2.5

Total LAM Resource Cost = 35 * 2 units made * 2.5 hours/unit = 175 (Same shown in Resource element)

OSP Resource: 1000317319 attached OSP Item 1000317319-OSP with PO List price = 27.5

Total OSP Resource cost = 27.5 * 2 = 55 (Same shown in Outside Processing element)

Resource Overhead Cost:

Resource Overhead: Mfg attached Resource: LAM Basis: Item Rate: 20

Resource Overhead for LAM resource = 20 * 2 units made = 40

Resource overhead for CTD department (Same overhead is attached to CTD department at operation 20) = 20 * 2 units made = 40

Total Resource Overhead = 40 + 40 = 80 (Same shown in Resource Overhead element)

So the Finished Assembly unit cost completed through WIP Job = 348.38 / 2 = 174.19

Material: 30.38

Material Overhead: 8.00

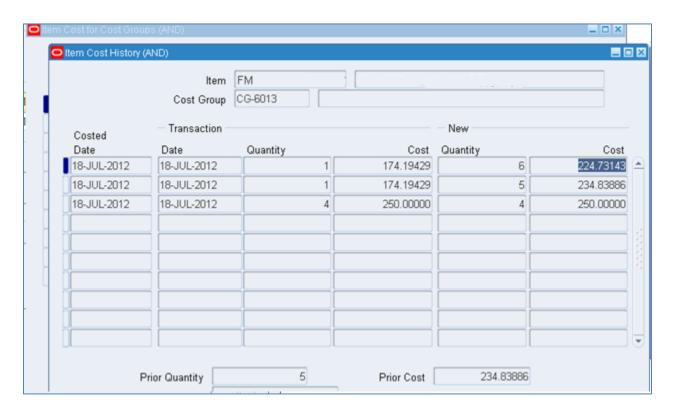
<u>Resource:</u> 175.00

OSP: 55.00

Overhead: 80.00

Total: 348.38

Now we will see the final step of how the system calculates the finished assembly (FM) unit cost based on WIP Job completion transaction and current onhand quantity.



We had initial onhand quantity for the finished assembly 4 pcs with unit cost = 250

As we see we have complete 2 quantities for wip Job, let's see how the average cost is calculated.

Average unit cost on completion of first quantity

New Unit Cost of Item (Average)

= (Initial Onhand * Initial Unit Cost) + (Transaction Onhand + Transaction Unit Cost) / (Initial Onhand + Transaction Onhand)

Final Average unit cost on completion second quantity

$$= (5 * 234.83886) + (1 * 174.19429) / (5 + 1)$$

= 224.73143

About Author: Suvivek Vasant Kadam has 11 years of experience in Manufacturing and Distribution area working for Infosys Limited. He has worked on Oracle R12 implementation, support and enhancement projects. He has worked for manufacturing clients which uses Average costing environment. Suvivek holds a Bachelor of Engineering degree (Electrical).

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About Company: Infosys Limited is an Indian provider of business consulting, technology, engineering and outsourcing services. It's headquartered in Bangalore, India.

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1.0	23-Jul-2012	Initial Document	
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