Oracle 12 E-Business Suite Implementation in Steel & Cement Divisions of

ABUL KHAIR GROUP, Bangladesh

ENVISIONED END-STATE DOCUMENT

Oracle Process Manufacturing for Cement Unit
v1.1

IBCS-PRiMAX

DOCUMENT RELEASE NOTICE
ENVISIONED END-STATE DOCUMENT **FINAL RELEASE V1.1** **DATE OF RELEASE: 26-SEP-2010**

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Table of Contents

1   Introduction

1.1   Document Structure

This document covers the envisioned solution for the Cement and its allied units of Abul Khair Group through Oracle Applications. The document is organized in the following manner:

Section 1 covers the document structure along with a high-level overview of the Process Manufacturing, Inventory and a brief description of the processes.

Section 2 covers the Envisioned Business processes. In this section, the key Business Scenarios are mapped to Process Manufacturing functionality.

Section 3 covers Open / Closed Issues responses.

1.2 Envisioned Module Overview

1.2.1 Process Overview – Production Process

OPM Production Process Overview

Formula — Routing

Recipe

Operation

Create Production Batch

Release

Activity

Book Actual RM Consumption qty

Resource

Book actual production quantity

Complete

Specification defined for each item code → Quality Sampling and Capture QC Results

Close

LEGEND

	Setup
	Transaction
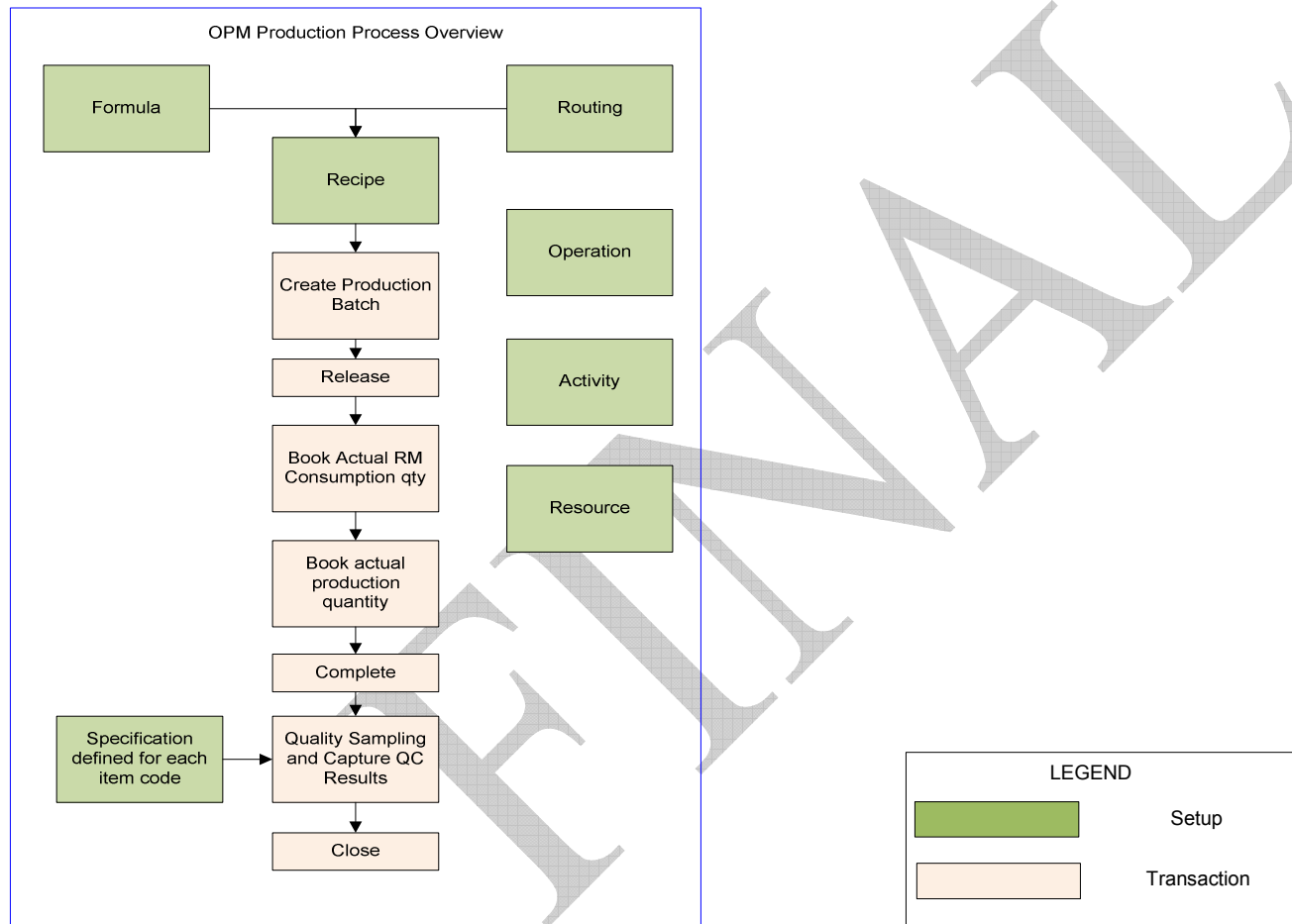
Process Overview – Production

To manufacture any item, that item needs to have Recipe in the system. Recipe contains Formula and routing. So for that item Formula should be defined in the system and routing which we plan to use should also be defined in the system.

Formula contains material information whereas routing contains the resource/machine which we are going to use for manufacturing. So whenever new item is defined in the system, It is mandatory that recipe should be defined for that item in the system.

Formulas: Formulas are lists of ingredients and products with their associated quantities and processing instructions. In some cases, you can refer to a formula as a process manufacturing parts list. Production batches are based on formulas defined in Product Development. Formulas are also used for planning, managing costs, and scheduling.

Routing: A routing is a sequenced set of operations to perform to complete a production batch. The operations are presented in a series of steps that organize these operations into an orderly set of activities that have individual resources associated to them.

Operation: An operation is an ordered set of activities that have to be completed for a predetermined step in a production batch. Resource requirements that are needed to perform these activities are usually specified. You build operations from activities that require resources

Resources: Resources are the assets to produce batches, including production equipment, and employee labor. You can define each resource generally, for example, Labor, or specifically Operator, Supervisor etc. For each resource, assign a classification code for cost management purposes. You can group resources into resource classifications.

Recipes: Recipes standardize the structure of all information that describes production of one or more products. Recipes have:
- Formulas that define the relationship of material resources, including products, Ingredients and byproducts
- Routings that define the relationships of nonmaterial resources, including labor and equipment operations with activities and their associated resource. Routings are optional.
- Processing instructions that encompass the work instructions needed to produce the products

To provide the greatest flexibility to process manufacturers, formulas and routings are built independently. They are linked using a Recipe that has validity rules. Different formulas can use the same routing, or one formula can be associated to several different routings.

For routing, recipes and formulas, different versions can be maintained in the system.

Production Process:

A production batch would be created using a recipe and its version. Once the recipe is selected and the quantity of the product is mentioned, a production batch creation would be complete. Capture the Mill number / Equipment number where the production would be initiated in the Production batch headers DFF. The batch would then be released by appropriate authority. The actual material consumption quantities and actual production quantities can be entered in the system before completing the same.

The frequency at which the production batches are completed in the system is for each shift. However based on PLC reported quantities, the production batch would be updated per every hour using incremental back-flushing.

The user can create a production batch once a shift and update the same once a shift or update once every hour. The system would not restrict the user from following any frequency of updating the batch.

The actual quantities of materials would be entered as against the standard quantities of the materials as defined in the formula.
The actual resource usage quantities (e.g. number of actual labour hours used, number of machine hours used etc) needs to be entered by the user before completing the batch.

For product costing two options available to the customer are as follows:
 1)   Take standard cost of resources and overheads and attribute to the product cost as follows:
Once the batch is completed, the accounting engine would generate accounting entries as per the actual quantities entered in the batch. The costing would happen as below:
     Per unit product cost = (Materials cost would be average cost of materials * actual quantities per unit of product) + (standard overhead costs per unit of product) + (standard resource per hour cost * number of hours of usage per unit of product)

 2)   Take actual costs of resources and overheads and attribute to the product cost as follows:
Once the batch is completed, the accounting engine would generate accounting entries as per the actual quantities entered in the batch. The costing would happen as below:
     Per unit product cost = (Materials cost would be average cost of materials * actual quantities per unit of product) + (Actual overhead costs per unit of product) + (Actual resource per hour cost * number of hours of usage per unit of product)

Item Lots: All the items which share a common property or characteristic such as same date of production or same source of supply or same purchase

order or material received in one GRN, etc. The item lot property can be used for both purchasable items and production items.

The product when completed shall be captured in Lots. For e.g. 100 MT of finished product in bags is produced across three different days. Each day can be taken into single lot or each lot can be created with a specified quantity.

Quality results would be entered against each and every production batch output Lot.

1.2.2 Process Overview – Planning Process

```
OPM Planning Process

                    ┌─────────────────────┐
                    │   Enter Monthly     │
                    │  Forecast for each  │
                    │  item / organization│
                    └─────────────────────┘
                              │
┌───────────┐                 ▼
│           │       ┌─────────────────────┐
│  Formula  │       │  Run the Planning   │
│           │       │      Engine         │
└───────────┘       └─────────────────────┘
                              │
┌───────────────┐            ▼
│ Trigger Purchase│     ┌─────────────────────┐
│  Requisition    │◄────│ Segregate the Actionable│
│  (Optional)     │     │  Suggestions into   │
└───────────────┘      │ Production / Purchasing│
┌───────────────┐      └─────────────────────┘
│Trigger Production│◄───         │
│ Order (Optional)│             ▼
└───────────────┘      ┌─────────────────────┐
                       │  Communicate the    │
                       │     expected        │
                       │  Production and     │
                       │ Purchasing activity │
                       └─────────────────────┘
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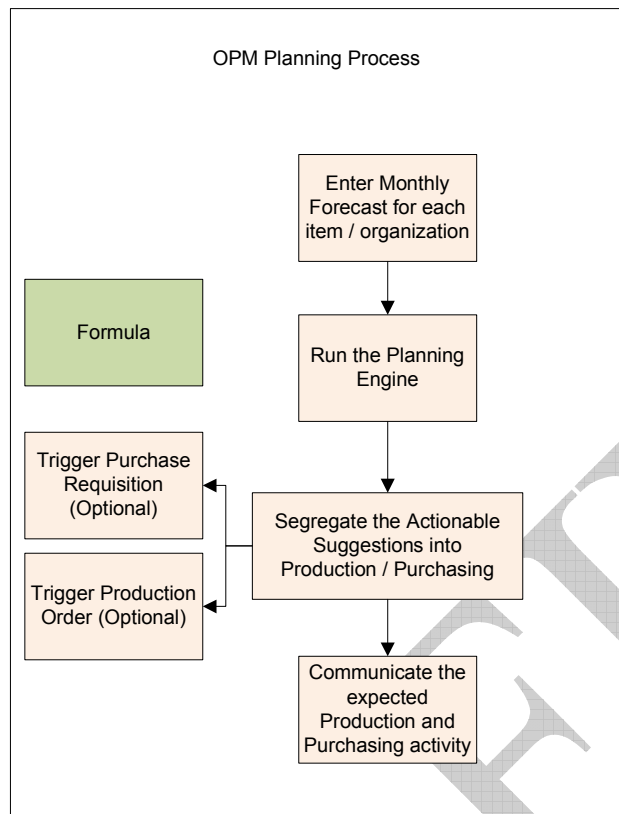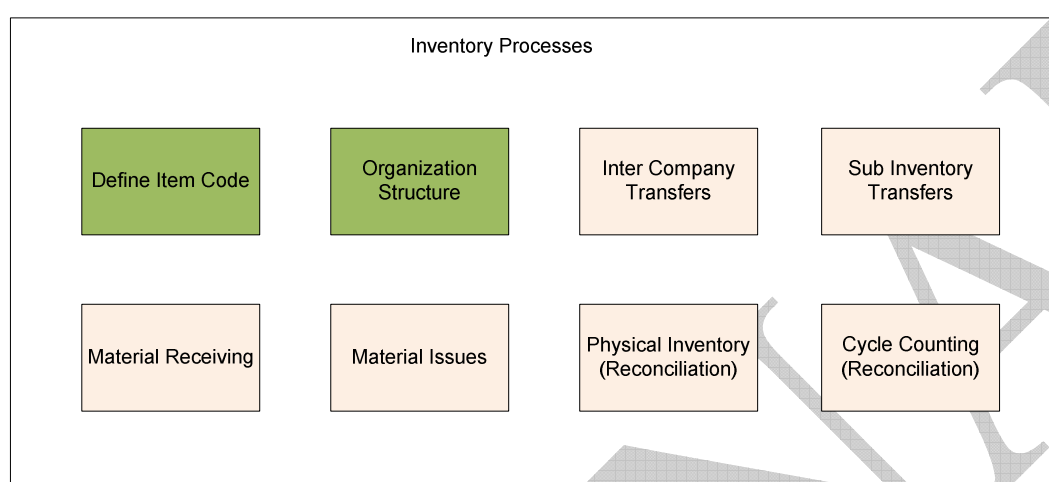
Process Overview Planning

Description: The standard functionality as provided by the Oracle for planning is as follows:

- User can enter the forecast for different item codes (products) on different dates in future (with in the planning time zone)

- Once the planning engine is run, the system would provide various suggestions on purchase and production activities. These suggestions are provided after considering the following:

    o Supply: Inventory on hand balance of the item

    o Supply: Pending Production Batches on the item

    o Supply: Pending material transfers

    o Supply: Pending purchase requisitions (in case of purchasable item)

    o Demand: Sales orders on the item

    o Demand: Forecast on the item

    o Lead times of the purchasable items (in case of purchasable materials)

    o Lead time for production of the item (in case of production item)

- These suggestions once approved, can be converted into purchase requisition / production orders. However the user has the option not to convert these suggestions into any document.

- Standard applications also provide the time buckets based view of the expected materials activity.

1.2.3 Process Overview – Inventory Process

Inventory Processes

Define Item Code	Organization Structure	Inter Company Transfers	Sub Inventory Transfers
Material Receiving	Material Issues	Physical Inventory (Reconciliation)	Cycle Counting (Reconciliation)

Process Overview Inventory Processes
• Item Master: The format for creating item code is to be created before the item codes are defined in the item master. Each item can then be assigned to individual inventory organization based on where the items can be used. This provides an additional control to the users to prevent transacting on items which do not belong to that organization. For each item, the user shall define the unit of measure, min, max quantities, re order levels, Lot controls, Locator controls, item categories etc. Also, manufacturer's part numbers can also be captured at each item level.
• The organization structure is also defined in inventory application which forms the basic structure for creating transactions on different items. Each item stored will be identified with the inventory organization, sub inventory, locator and lot details.
• The other transactions that the inventory application provides are as follows:
o Material Receipts: Inventory application has functionalities to receive the material against the purchase order or without a purchase

order by using miscellaneous receipts into the inventory organization. Material Inspection functionality is available before accepting the materials into inventory.

o Material Issues: Various kinds of Material Issues can be done in Inventory application using different transaction types. User would have to select the charge account on which the material is to be issued. The material issue would have one level approval mechanism before the actual material is issued.

o Physical inventory reconciliation: All the items in the inventory can be reconciled against the system on hand balances at any frequency the client needs. There is also second option to use ABC grading and set different counting frequency for different items belonging to each grade. In both the cases, items whose difference of actual on hand balances with system on hand balances is beyond the tolerance limits needs to be approved. Adjustment entries to Inventory value would automatically be created upon approval.

o Material Transfers: There are two types of material transfers available in Inventory application. Material transfer between two sub inventories and material transfers between two inventory organizations. Accounting entries would not be generated by default for sub inventory transfers, but in inter organization transfers, accounting entries would be generated.

o Material Transfers across business units: Material transfers between steel and cement units shall be treated as sale and purchase transactions and shall be covered under the internal sales order process in Order to Cash and Purchase to Pay To-Be documents.
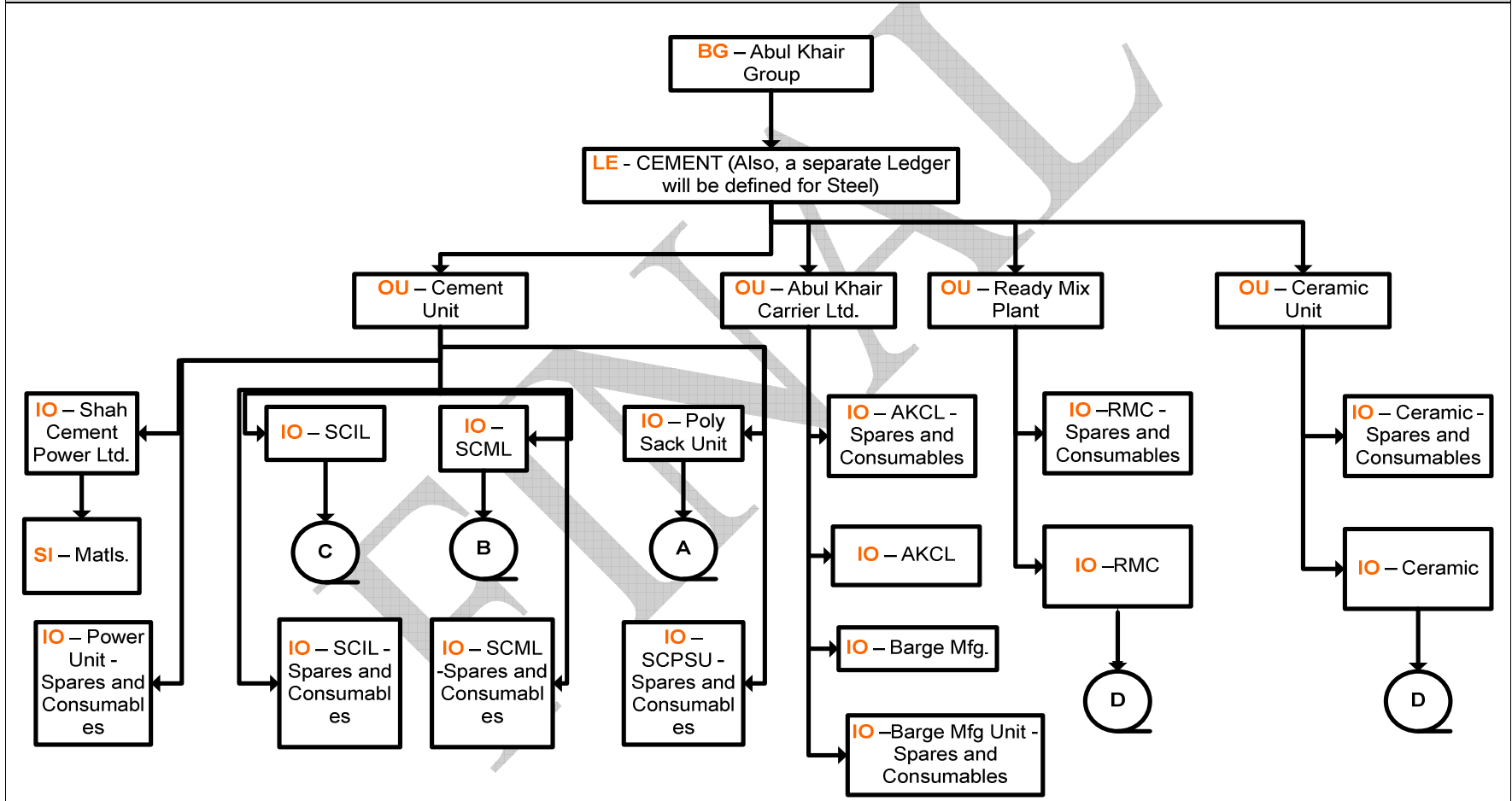
2 Envisioned Business Processes

Key Business Scenarios

SL.	BUSINESS SCENARIOS
1.	Organization Structure
2.	Item Master
3.	Inventory Receipts
4.	Inventory Issues
5.	Inter Organization Transfers.
6.	Physical and Cycle Inventory Reconciliation
7.	Planning Process
8.	Production Processing
9.	Quality Process
10.	Auxiliary Production Processes
11.	Outside Processing
12.	Scrap Processing
13.	Costing for Intermediate, Finished and Co-Products
14.	Reporting

2.1 Organization Structure

Organization Structure

BG – Abul Khair Group

LE - CEMENT (Also, a separate Ledger will be defined for Steel)

OU – Cement Unit

OU – Abul Khair Carrier Ltd.

OU – Ready Mix Plant

OU – Ceramic Unit

IO – Shah Cement Power Ltd.

SI – Matls.

IO – Power Unit - Spares and Consumables

IO – SCIL

IO – SCML

C

B

IO – SCIL - Spares and Consumables

IO – SCML -Spares and Consumables

IO – Poly Sack Unit

A

IO – SCPSU - Spares and Consumables

IO – AKCL - Spares and Consumables

IO – AKCL

IO – Barge Mfg.

IO –Barge Mfg Unit - Spares and Consumables

IO –RMC - Spares and Consumables

IO –RMC

D

IO – Ceramic - Spares and Consumables

IO – Ceramic

D

```
SI – Raw          SI –              SI – Scrap              SI – RM
Matl. Silo        Cement
                  Store
                                                    A       SI – FG
SI – Raw Matl.              B      SI – Raw Matl.
– Misc. Storage                    Store
                                                D           SI – Indirect Mtls
SI – Silo         SI – Raw          SI – FG Store
Cement    C       Matl. Store
                                                            SI – Scrap
SI – Bag                            SI – Shopfloor
Cement            SI – Scrap

SI – Scrap
```

In addition, each ghat/ warehouse will be defined as a separate Inventory Organization under Cement Unit Organization Unit.

```
IO – Ghat 1      IO – Ghat 2      …………..      IO – Ghat N
```
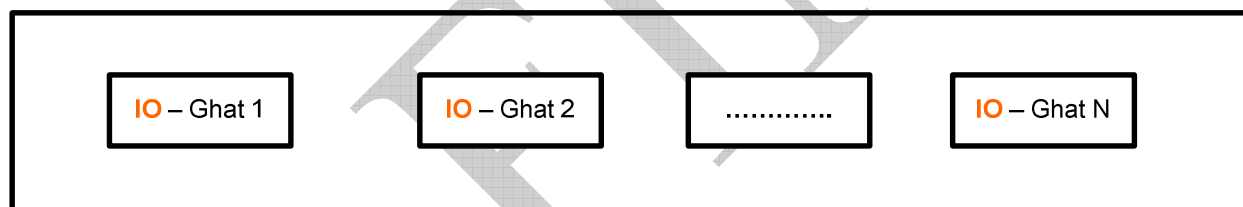
Abbreviations Used:
BG – Business Group
LE – Legal Entity
OU – Operating Unit
IO – Inventory Organization (or Warehouse)

Process Overview

Description

- Inventory Organizations: The levels at which inventory transactions are performed, e.g., material receipts and material issues.

- Organization access is also controlled at Inventory organization level itself. i.e., a user transacting in one inventory organization shall not be able to transact in another inventory organization unless specific access is provided to the user.

- Sub Inventories are meant to further categorize the storage locations. The sub-inventories would have to be selected for all inventory related transactions. Sub inventories are further classified into Locators to identify the rack / shelf where the item is stored. This functionality would be used specifically for the spares.

- Please note that there shall be a separate inventory organization for item master which is different from the warehouses which are meant for transactions. This item master organization would not be allowed to for any transactions. It shall only store the item definitions.

- For Barge Manufacturing, the inventory organization is a discrete manufacturing organization and is a project based inventory organization. The materials from this inventory organization shall be issued on a specific project and Task.

- Each inventory organization shall be defined for each location where material shall be stored. Each mother vessel when anchored at a port and then feeder vessels transfer the material from the port to the production facilities / another locations, the same is captured using inter organization transfers. Each feeder vessel shall be mapped to a specific sub inventory.

- A separate inventory organization shall exists for each registered entity for storing the asset spares which shall be EAM enabled. The material account in the inventory parameters shall be assigned to the consumable account.

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (If any)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS

Process Improvements:

- Real time accounting entries would be created without the manual intervention. All accounting entries can be drilled down to individual transaction.

Problems Addressed:	Applications Features Leveraged
Gaps as Identified in Oracle	**Suggested Resolution In Oracle**
Forward Looking Practices Introduced	**Other Enablers Proposed**

Customizations suggested (if any)

SL	PARTICULARS	TYPE	Level of Customization
1			

Interfaces, if any (Only custom interfaces)

SL	PARTICULARS	SYSTEM	BUSINESS LOGIC

2.2 Item Master

Process Overview

Description

- All items would be codified with the 3 segment item code format:

    XXXX: Item Sub Group (independent value set with predefined values)

    XXXX: Item Class (Dependent Value set – dependent on item sub group value)

    9999: Specification number (Validation Type: None)

- For direct raw material items used in RMC unit, usage of multiple UOM's like CFT and CM shall be enabled. For other items the system provides flexibility to measure the same item in multiple UOM's belonging to the same class of UOM's (e.g. an item with UOM of Kilogram (KG) can also be measured in Grams, Quintals, Tons etc as all these UOM's belong to the same class 'Weight'). For those items which are measured in UOM's across different UOM Classes, Inventory provides the flexibility to create multiple UOM's and provide the conversion for individual item code.

- The third segment should be auto-derived. When a user is about to create a new item code, the sub group and item class would have to be selected from a list of values by the user and the third segment should be auto generated based on the last used serial number under the same sub group and class.

- AKG Item Category would be captured under Oracle Item Category field. The item category KFF would be defined as two segment field with the values provided by AKG. The second segment classified the items as Assets / Material / Spare/Service Item/Scrap/ Raw material / HR Coil / Zinc items etc. The second segment would contain the AKG item category values as provided. Based on this item category the natural account shall be derived.

- Additional attributes of items that would have to be captured in DFF during item creation are as follows:

    o Locator (pre defined locator value) where the item would be stored. This value has to be captured at organizational items level, as the locator would be different for each inventory org. This must be an optional field as it is not applicable for all items. Also, another field would. The list of values should contain all valid locators defined in that Inventory organization.

    o Asset item code: The asset item code for which the current item code can be issued to. The list of values should contain only asset item

codes. The asset would be identified using the first segment of the item category.

- All finished product item codes (for Bulk items) would have UOM as MT (Metric Ton). For Bag Cement item codes, Bags shall be defined as UOM. Appropriate conversion for bag item codes shall be provided with the MT / KG.

- Locator Control: All the spares and consumables sub inventories would be locator control. However the locator control should be configured at item level itself. For spares alone, Locators are predefined and any new locators should be pre-defined before using them. The item subinventories functionality is to be used to implement this functionality where the locators can be related to the item code.

- For Spares and consumables, reorder level, min max controls are to be enabled. Re-Order level report should identify the item codes and the warehouses where the stock is about to go below the reorder stock level. Auto trigger of purchase requisitions has to be enabled for items which go below the minimum stock level.

- All items which are raw materials or intermediate items or finished goods are Lot Controlled and lot status controlled. The lot statuses would be discussed in detail in the quality process section.

- Raw material item codes and reprocessed raw material item codes (e.g. PP granules and reprocessed PP granules) are two different item codes. Both the items should be allowed to be issued to the production batches. The user should be allowed to insert the reprocessed item code dynamically in the production batch before issuing the same to the production.

- Manufacturer's Part Numbers: For each item code, the manufacturer and their part numbers as available must be captured in the item master

- Serial Control: All the asset item codes shall also be defined as serial controlled items.

- Item Lot Control:

    o Most of the Spares and few material item codes shall be lot controlled. The lot numbering for all items would be generic (except for poly sacks which shall be based on the month for which the production is to happen). The items

    o In poly sack unit, the Lot numbering mechanism for the poly sacks produced shall follow the following method:

        ▪ Lot Number shall be named after the month of production. E.g. if the poly sack is being produced for the month of October, the lot number shall be OCT-0001, OCT-0002 and so on. The user shall have to enter the lot name manually.

- Locator Segments: Two segments have to be configured for Locators. One segment is to track the location and is mandatory. The second segment would track the employee name in case the material is to be issued to employee. (Note: employee issue would be treated as sub inventory transfer with locator segment capturing the employee name to whom the material was issued). This field would remain optional.

- Item List price: The item list price initially would be defined as1 by default. However, with each new approved purchase order on the item coed, the list price would be updated by the custom concurrent request which shall be run periodically to update the same. This has to be updated at organization level (inventory organization).

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (If any)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.				

Process Improvements

Problems Addressed:	**Applications Features Leveraged**
	- Items Codification with multiple segments - Min Max functionality in inventory

Gaps as Identified in Oracle	**Suggested Resolution In Oracle**
- Automatic serial number generation for item codes. - Updating item list price in the item master (Organization items form) using custom concurrent request which is to be scheduled to be run on periodical basis. - Report on spares issued to a specific machine	- Using form personalization, this can be achieved.

Forward Looking Practices Introduced	**Other Enablers Proposed**
- Single item master	

Customizations suggested (if any)

SL	PARTICULARS	TYPE	Level of Customization
1	Using form personalization to default the highest serial number + 1 under the same sub group and item class. This is required to automate the population of the item serial number in the last segment.	Form Personalization	This is a personalization and the level of effort is comparatively less.

Interfaces, if any (Only custom interfaces)		
SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
1			
2			

2.3 Inventory Receipts

Process Overview

Description

There are two kinds of material receipts: Material Receipt without Purchase Order and Material Receipt with Purchase order.

The material received into inventory without the purchase order is done using miscellaneous receipt. The charge account is to be selected manually and the quantity is to be received into inventory against the item code. The item per unit cost also has to be mentioned during the transaction. However this must be restricted to few users.

The material when received against the purchase order or against the sales order (customer returns) would undergo the quality control process to identify the status of the material. The results of the quality control process would identify the lot status that shall be attributed to the lot received.

For Material GRNs, the material would be received first, followed by inspection (quality control process) and then would be accepted into the inventory. Only after material acceptance into inventory, it would be available for material issues. Material receipts, inspection and acceptance can be made on partial quantities also. As long as the Purchase order is completely received the PO remains open unless manually closed / cancelled.

During Inspection, the quality inspectors would have facility to capture the values of individual material specification parameters. For each specification parameter, the standard values and the actual values shall also be maintained in the system.

Oracle Quality would be configured for this purpose. [More details in Quality Process section]

Spares Receiving: When spares are received, the Locator value should be automatically default in the locator field based on the locator entered in the Organization item mater form DFF. This must happen only when there is a locator setup for the organizational item DFF. The default material status once received shall be 'QC Awaited'. The users shall have to be change the lot status after QC inspection is made.

Raw Materials Receiving: As all RM item codes are lot enabled, RM received at once is taken into a separate Lot and the weight of the RM in the lot would be entered in the system.

Certain items (e.g. certain spares) which can be sourced from different countries would be taken into different lots, each lot for each of the country of origin. The country of origin needs to be captured in the GRN Line DFF.

If the material received is termed as Reject by the quality control processes, then the material should be returned back to the vendor without allowing any user to transact the material for any other purposes.

Material Losses In Transit: When the material received is less than the LC quantity, the actual quantity only is received into the inventory. However when the invoice is booked against the PO/GRN, it is booked for the entire LC quantity. The material cost shall be derived from the invoice cost.

Receiving of Spares Requiring Life Time Analysis:

All the spares which require life time analysis shall be defined as lot and serial controlled items in item master. When these items are received, the expected life time shall be captured specifically for each lot in DFF fields during GRN.

When the spare is issued to a specific equipment, the asset number of the equipment shall be captured in the DFF during the move order transaction. A new report shall be made to extract the details of the spares issued to a specific asset code along with the dates. This report shall display the expected life time, life time consumed and the quantity of spares / amount and item codes of the spares issued to the equipment.

Receipt of Materials from Mother Vessel:

The material received at the Chittagong port in mother vessel can be against one or multiple LC's (Each LC has one to many purchase orders mapping). Each time the information on the mother vessel arrival is received, Entire material receipt (Delivery into stores) is made at the inventory organization (specific to the location at which the mother vessel has arrived). The material account associated with this inventory organization shall be Material in Transit account. Each feeder vessel shall be defined as sub inventory. When material is transferred from mother vessel to feeder vessel, the sub inventory transfer is made to represent the transaction. The presence of any on hand quantity in the sub inventory indicates that the material is in-transit. When the material is received at the cement production unit, then inter organization transfer shall be done to move the material to the cement unit inventory organization. This shall enable the tracking of in-transit quantity / material as well as the transfer of material from mother vessel to the cement unit via the

==feeder vessels.==

Note: The precision for RMC materials should be 3 digits after the decimal.

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (E.g. Upon Material Receipt into SCIL Inventory. 'xx' refers to the landed cost of the item)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.	SCIL.Receiving Inventory Account	xx		
	SCIL.AP Accrual Account		xx	
2.	SCIL.Inventory Account	xx		
	SCIL.Receiving Inventory Account		xx	

Process Improvements

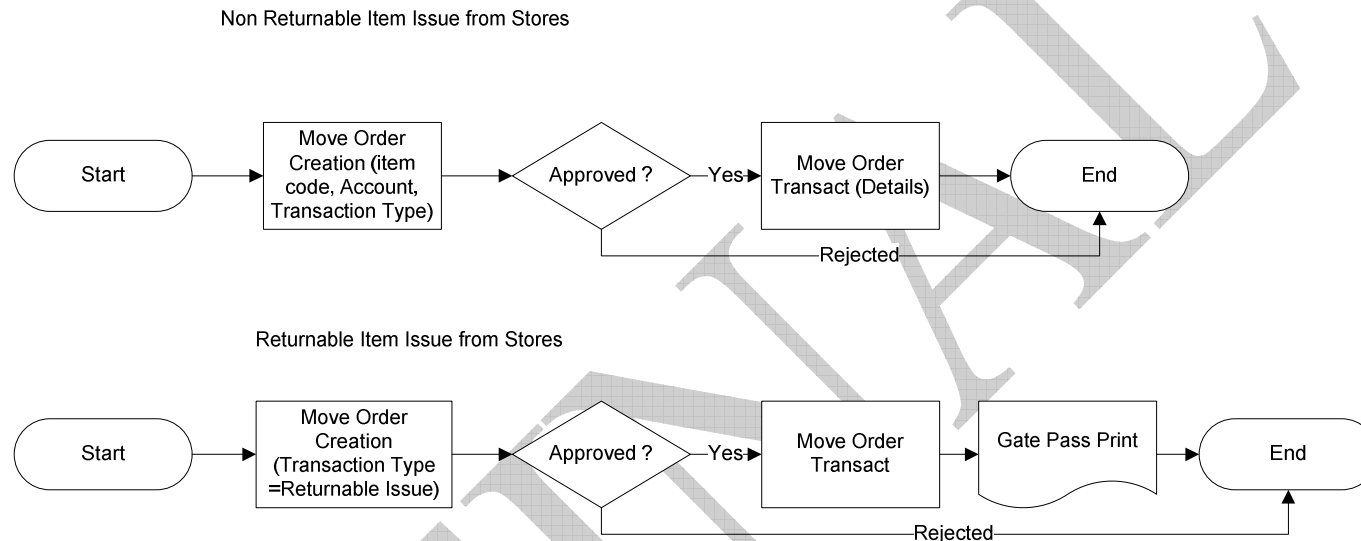| **Problems Addressed**:	**Applications Features Leveraged**
Gaps as Identified in Oracle • Automatic population of Locator value for spares during receipts and issues. • ==Asset spares life time analysis report==	**Suggested Resolution In Oracle** • Using form personalization, this can be achieved.
Forward Looking Practices Introduced	**Other Enablers Proposed**

Customizations suggested (if any)

SL	PARTICULARS	TYPE	REASON

1	The Locator for certain items like Spares should be defaulted from the organizational item master form DFF wherever available.	Form Personalization	This is a personalization and the level of effort is comparatively less.
	The Locator where the material is to be received must be the same locator which was setup in the organizational item master form.		

Interfaces, if any (Only custom interfaces)

SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
1			
2			

2.4   Inventory Issues

Process Overview
Non Returnable Item Issue from Stores Start → Move Order Creation (item code, Account, Transaction Type) → Approved ? —Yes→ Move Order Transact (Details) → End Approved ? —Rejected→ End Returnable Item Issue from Stores Start → Move Order Creation (Transaction Type =Returnable Issue) → Approved ? —Yes→ Move Order Transact → Gate Pass Print → End Approved ? —Rejected→ End

Description

- The material issue is made based on the transaction type. The following are the transaction types which would be required by the Cement unit.

  o Material Issue to Production (Indirect material issue to production- Using Issue from Stores)

  o Transfer Order (Sub Inventory Transfer)

  o Spares issue to Equipment (Issue from store)

  o Returnable Tools issue to Employee (A separate DFF field at Line level for capturing the Employee name) – Gate Pass is required (Sub Inventory Transfer)

- o Non Returnable Material Issue – Non Returnable Gate Pass is required (Issue from store)

- o Material Issue to Contractor (It's a sub inventory transfer to a non asset sub inventory) (Issue from store)

- o Materials Lost in Transit (Material issue made to reconcile the materials lost in transit on a specific account) (Issue from store)

- o Material Issue to Project and Task

- Please note that the direct material issue to production would happen during the production batch processing. There shall be no separate Move order created for direct material issue to production. The Move order would be created inherently for the production batch.

- The material issue (Returnable or Non Returnable) whenever requires a gate pass would be identified with the DFF fields in Move Order Headers. One field should identify if the Gate Pass is required or not, another field should identify if this is returnable or non returnable. A Custom Report would have to be submitted by user to extract the Gate Pass from the system.

- The approver of the Move order would be provided access to the Move Order Approve function. The approvers shall be identified with a separate responsibility.

- The natural account segment in the consumption account for the material issue shall be derived based on the item category. The user would have to edit the destination charge account to which the material is issued.

- **Material Returns from Shop Floor / Material Issues for which the exact quantity of consumption is known later:** When a store requisition is created on materials whose exact quantity consumption is not known in advance, the stores user shall have to transfer the adequate quantity into a separate sub inventory ('SI-Mtls Issued ') with the locator second segment capturing the name of the person for whom the material is issued. Once the confirmation of the consumption quantities is acknowledged by the person, material issue from the 'SI-Mtls Issued' is made. The remaining material quantities shall be transferred back to the original sub inventory.

  If the materials consumption is not reported back after a certain period of time (As considered appropriate by the stores user), then all the material quantities available in 'SI-Mtls Issued' should be issued on the corresponding charge accounts itself.

  Note: A separate transaction type (for sub inventory transfer to 'SI-Mtls Issued') is to be created. Use the same transaction type for materials transfer using Move order and also capture charge account in the move order itself.

- **Barge Manufacturing Dry docking Process:** The materials issued to the vendor shall be put into 'SI-Mtls Issued' sub inventory using sub inventory transfer. Once the confirmation on the exact quantities of consumption is known, the same shall be issued from the SI-Mtls Issued sub inventory on appropriate charge account. The remaining material quantities shall be returned back to the main sub inventory. (This process is same

as Material returns from shopfloor)

- For Barge Manufacturing unit, the material issues shall be done on individual project (individual barge) and the corresponding activity which shall consume the item. The quantity of the item to be issued to individual task shall be controlled based on the work break down structure and the budgeted item quantity against the task. The user shall not be allowed to issue more quantity than budgeted unless the budgeted quantity itself is modified in oracle project management module.

Note: The precision for RMC materials should be 3 digits after the decimal.

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (In Case of Material Issue in SCIL on a charge Account)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.	SCIL.Inventory Account	xx		
	SCIL.Charge Account		xx	

Process Improvements

Problems Addressed:	**Applications Features Leveraged**
Gaps as Identified in Oracle	**Suggested Resolution In Oracle**
- Gate Pass Report (Returnable / Non Returnable) - On hand quantity available in terms of number of days - Barge Manufacturing unit: Material Issue quantity should not exceed the budgeted quantity.	- A custom report shall be developed to cater to this requirement - A Custom report based on the average consumption quantities of the items in the previous month, the on hand available quantities can be forecasted in terms of number of days available. - Form personalization to restrict the quantity to be issued. This shall prevent excess quantities than budgeted quantities to be

		issued against every task.	
Forward Looking Practices Introduced		**Other Enablers Proposed**	

Customizations suggested (if any)			
SL	**PARTICULARS**	**TYPE**	**Level of Customization**
1	Gate Pass Report This is a custom report with AKG details appearing on the gate pass. The same report should be utilized for returnable / non returnable gate passes.	Report	Low
2	Custom report on on hand quantities in remaining days: based on the average consumption quantities of the items in the past one month, the on hand available quantities can be forecasted in terms of number of days available.	Report	Low
3	Prevent excess material quantities than budgeted quantities to be issued to individual project task.	Form Personalization	Low

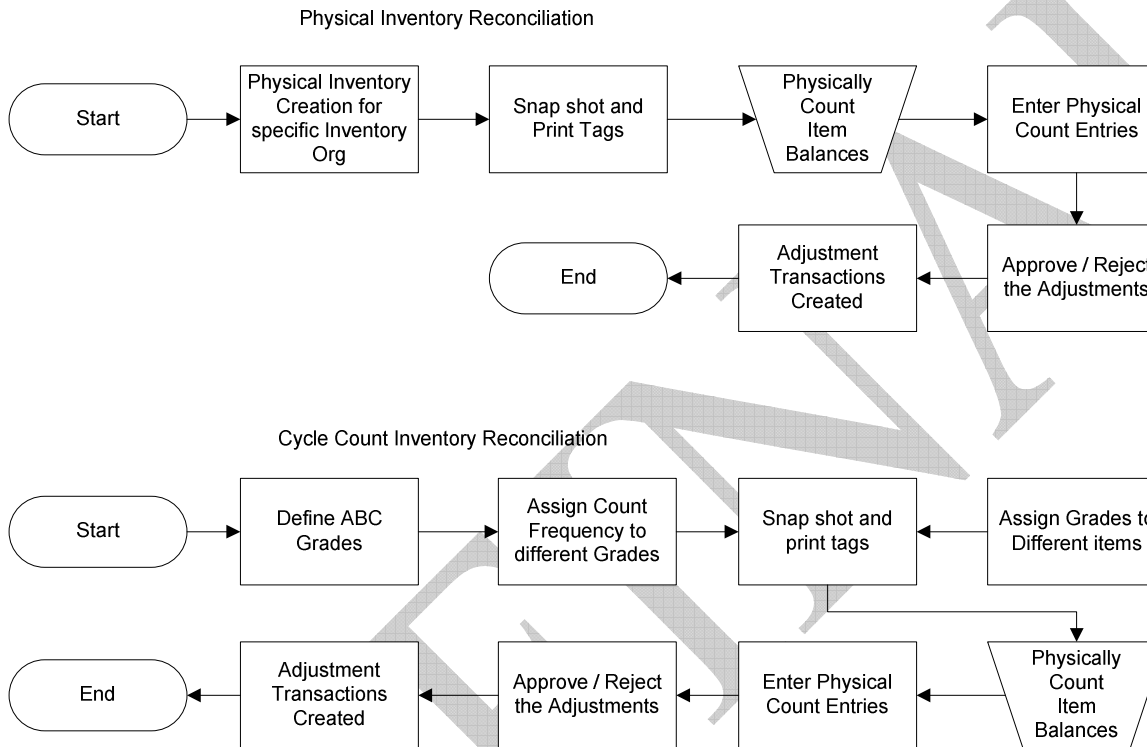| Interfaces, if any (Only custom interfaces)			
SL	**PARTICULARS**	**SYSTEM**	**BUSINESS LOGIC**
1			
2			

2.5   Material Transfers

Process Overview

Description

- There are two kinds of material transfers : Sub inventory transfer / Material transfers across registered entities

- Sub inventory transfers are the material transfers within the inventory organization from one sub inventory to another sub inventory.

- Material Transfers across Registered entities, i.e between SCIL to SCML shall result in movement of material across inventory organizations. However if there is any material transfer across cement and steel units, it shall be treated as internal sales order and would be covered in detail in purchase to pay and order to cash To-Be documents.

- For sub inventory transfers between the Silos / stock piles to the shop floor, the asset code used in transferring the material also has to be captured in the sub inventory transfer lines DFF.

- For material transfers between poly sack unit and cement unit, profit is to be booked by using the mark up amount. This shall be treated as profit and has to be accounted in a separate account.

Note: The process of capturing the asset code used for material transfers shall be overridden whenever eAM is implemente

- **Material Loan to Outside Companies:** The material is received inside the inventory organization using GRN process. In order to loan the material to outside companies, inter organization transfer of material is made into a separate sub inventory (non-asset sub inventory) which shall be defined to capture the loaned material. When the material is returned from the outside company, reverse inter organization transfer is made from this non-asset sub inventory back to the main sub inventory. During this transfer the average cost of the item as on that date shall be defaulted onto the transfer form. This requires customization to default the average item cost.

- **Material Loan from Outside Companies:** When the material is loaned from other companies, miscellaneous receipt with appropriate unit rate has to be performed to receive the loan material into the inventory using a separate transaction type. The other company name shall be captured in the DFF fields in Misc Receipt. The same material when returned back to the contractor, Move order (with transaction type 'Loan Material Return to outside company') shall be performed with the contractor details captured in the Move order DFF fields. The authority to perform these transactions shall be restricted to specific users only and not to all stores users.

| Volume of Transaction for this process | |
| Frequency of occurrence of this process | |

Accounting (E.g Material transfer between SCIL and SCML)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1	SCIL. Inter-Proj-SCML-Receivable	xx		
	SCIL.Inventory Account		xx	
2	SCML.Inventory Account	xx		
	SCML.Inter-Proj-SCIL-Payable		xx	

Process Improvements

Problems Addressed:	Applications Features Leveraged
Gaps as Identified in Oracle • **Gaps as Identified in Oracle** Material loaned to other companies: While doing reverse inter organization transfer, the average cost of the item should be defaulted to the inter organization transfer form.	**Suggested Resolution In Oracle**
Forward Looking Practices Introduced	**Other Enablers Proposed**

Customizations suggested (if any)

SL	PARTICULARS	TYPE	Level of Customization

2.6   Inventory Reconciliation

Process Overview

Physical Inventory Reconciliation

Start → Physical Inventory Creation for specific Inventory Org → Snap shot and Print Tags → Physically Count Item Balances → Enter Physical Count Entries

Enter Physical Count Entries → Approve / Reject the Adjustments → Adjustment Transactions Created → End

Cycle Count Inventory Reconciliation

Start → Define ABC Grades → Assign Count Frequency to different Grades → Snap shot and print tags ← Assign Grades to Different items

Snap shot and print tags → Physically Count Item Balances → Enter Physical Count Entries → Approve / Reject the Adjustments → Adjustment Transactions Created → End

Description

Physical Inventory Reconciliation: To be performed whenever all 100% of the material is to be reconciled with the actual on hand balances.

- The Process involves creation of physical inventory, for reconciliation purposes along with setting the approval tolerances for adjustments.

- Once the snapshot is taken, the system remembers the on hand balances of all the items at that point of time.

- Tags are generated and a print out from a standard report is taken and is issued to the stores personnel who actually counts the material available in the store. The details of all the items quantities are taken in the report.

- The actual counts are entered against each of the Tags.

- The items requiring approval (difference between actual and system on hand balance is beyond approval tolerance) would have to undergo the approval process before the adjustment entries are automatically created in the system.

- Scrap sub inventory would undergo physical inventory reconciliation once every month. The scrap generated during the production processes would be captured at standard quantities, however once every fortnight or once every month, when actual weight of the scrap is available, Physical inventory reconciliation would be done to adjust the system on hand balances of the scrap. The sales of the scrap shall happen only after the scrap reconciliation is done.

Cycle Counting Reconciliation: To be performed whenever items requiring different frequency of counting is to be performed.

- The ABC grading is done in the system before cycle counting is to be performed. Individual grade wise frequency count is to be specified.

- All items are identified with the each of the ABC grade in the warehouse rules form.

- The Process involves creation of cycle count inventory, for reconciliation purposes along with setting the approval tolerances for adjustments.

- If any additional item codes are to be counted, they can be added or any specific items which have to be removed from the cycle count can also be removed.

- Once the snapshot is taken, the system remembers the on hand balances of all the items at that point of time

- Tags are generated and a print out from a standard report is taken and is issued to the stores personnel who actually counts the material available in the store. The details of all the items quantities are taken in the report.

- The actual counts are entered against each of the Tags.

- The items requiring approval (difference between actual and system on hand balance is beyond approval tolerance) would have to undergo the approval process before the adjustment entries are automatically created in the system.

The store users shall have to create the physical inventory / cycle count at a frequency of once per month. Oracle Inventory would make it mandatory to

approve / reject the reconciliation actual counts which would create adjustment entries automatically.

Access Controls

Store users: Enter the actual counts

Management Users: Can initiate reconciliation count, Approve / Reject the counts resulting in adjustment entries.

Restricted Management Users: To cancel the reconciliation count.

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (E.g. SCIL Inventory negative adjustment)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.	SCIL.Inventory Adjustment	xx		
	SCIL.Inventory		xx	

Process Improvements

Problems Addressed:	**Applications Features Leveraged**
Gaps as Identified in Oracle	**Suggested Resolution In Oracle**
Forward Looking Practices Introduced	**Other Enablers Proposed**

Customizations suggested (if any)

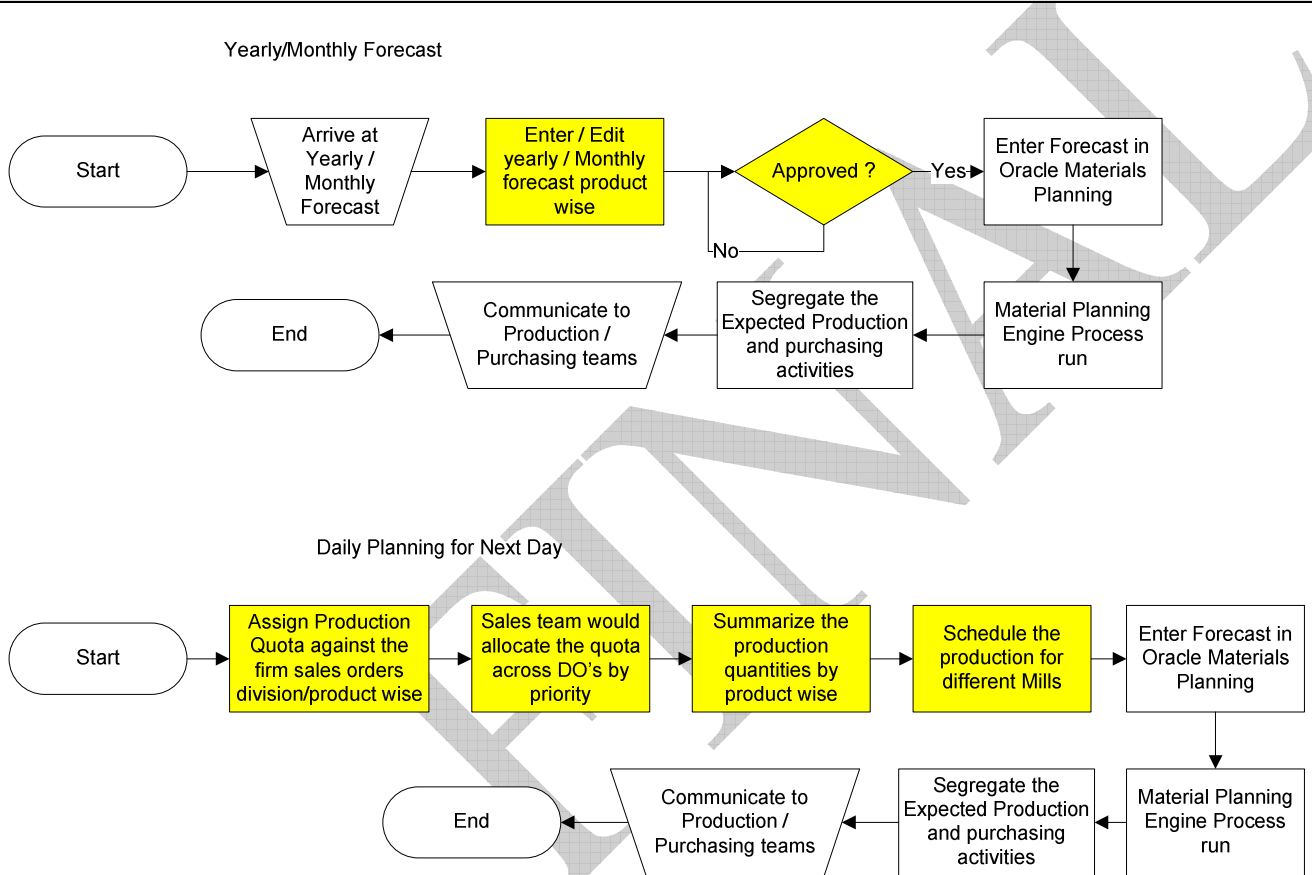| SL	PARTICULARS	TYPE	REASON

1			
2			

Interfaces, if any (Only custom interfaces)			
SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
1			
2			

2.7 Planning

Process Overview

Yearly/Monthly Forecast

Start → Arrive at Yearly / Monthly Forecast → Enter / Edit yearly / Monthly forecast product wise → Approved ? —Yes→ Enter Forecast in Oracle Materials Planning

Approved ? —No→ Segregate the Expected Production and purchasing activities

Enter Forecast in Oracle Materials Planning → Material Planning Engine Process run → Segregate the Expected Production and purchasing activities → Communicate to Production / Purchasing teams → End

Daily Planning for Next Day

Start → Assign Production Quota against the firm sales orders division/product wise → Sales team would allocate the quota across DO's by priority → Summarize the production quantities by product wise → Schedule the production for different Mills → Enter Forecast in Oracle Materials Planning

Enter Forecast in Oracle Materials Planning → Material Planning Engine Process run → Segregate the Expected Production and purchasing activities → Communicate to Production / Purchasing teams → End

Note: All yellow colored process blocks are gaps identified in the system.

Description

- Arriving at the yearly forecast would be done manually based on the market trends and historical data. This is done outside the system.

- Yearly Plan: Once a year, the monthly targets are set and the same gets approved from the management. The forecast would then be entered in the Oracle to extract the planning engine suggestions. The expected purchasing and production activity reports would be separately be distributed to the purchasing and production teams respectively.

- Month Wise Plan: Once every month, based on the most recent information, forecasting is made for the entire month for each day. The forecast would then be entered in the Oracle to extract the planning engine suggestions. The expected purchasing and production activity reports would be separately be distributed to the purchasing and production teams respectively.

- Day Wise planning: The expected transfer orders and delivery orders the next day would be summarized division wise/ product wise and presented to the planning team. The planning team would allocate the production quota for each of the product separately for deliveries and transfers separately. The sales team by each division would select the sales orders which have to be serviced with the allocated quota of production for delivery orders.

- The planning team would be presented with the selected delivery order items and their summarized quantities item code wise. The planning team can select different production line for each item where the production can be made. The planning team should be able to add additional production quantity for each production line. Once the production line is selected, the number of hours loaded onto each of the production line should be calculated and shown in different field.

- Apart from the firm sales orders quantities, the pending transfer order quantities shall also be presented by item code wise. The planning team shall select the cement mill onto which the production is to be loaded. Once the production line is selected, the number of hours loaded onto each of the production line should be calculated and shown in different field.

- A separate form is required to capture the individual product wise production line capacities. This information would be used to calculate the number of loaded hours on individual machine in the Day wise planning form.

- Access Controls:

  o Division wise sales personnel only should have access to the form where they select the sales orders which have to be services with the allocated quota for production.

  o Planning team only should have access to edit the sales orders selected by division wise sales personnel.

- o The edit access to day wise planning form should be restricted once it is frozen. The day wise planning form should be frozen at 12:00 mid night when the day begins for which the planning was made.

- o Production users would need view access control on the Day wise planning form.

- **Transfer Orders Processing:**

  - o The planning team would create transfer orders in the system using Move Orders (Meant for transferring the material from Cement unit to the ghats). The move orders shall get approved by the authorized person. Production team extracts a report on the pending move orders (sub inventory transfers on cement bags) and then creates production batches for the same, completes it. Inventory users shall transact the move orders to transfer the produced cement bags to the delivery sub inventory location (to Ghats).
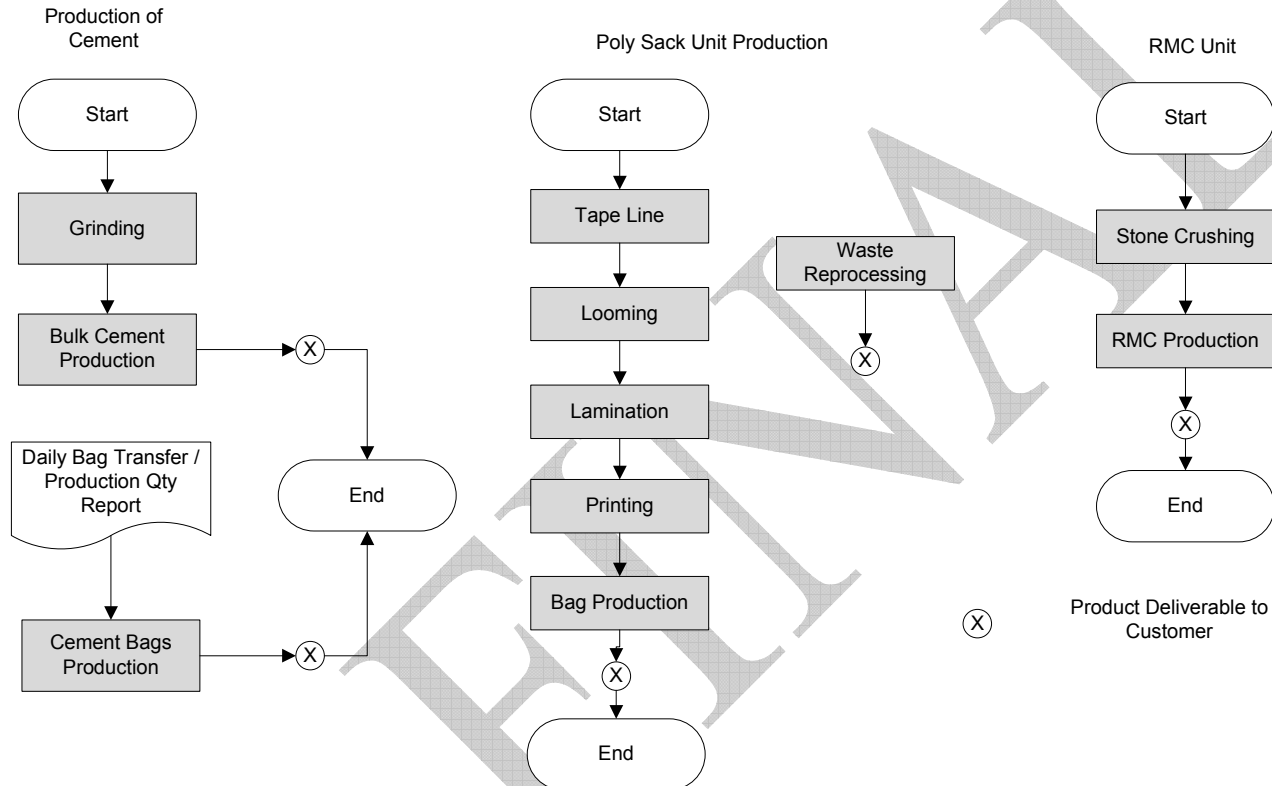
Note: RMC unit shall not use the planning process as mentioned above, as it is make to order scenario. However the forecasting cycle (Forecasting, running the MRP engine and arriving at estimated production and procurement activities) shall be used to arrive at the estimated procurement and production activities of future.

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (If any)				
SL	**PARTICULARS**	**DEBIT**	**CREDIT**	**REMARKS**
1.				
2.				

Process Improvements

Problems Addressed:	**Applications Features Leveraged**
	•
Gaps as Identified in Oracle	**Suggested Resolution In Oracle**
• Day wise planning is not a standard functionality in OPM MRP.	

• Entering, editing and approving the yearly and monthly forecasts at division wise, product wise.			

Forward Looking Practices Introduced		**Other Enablers Proposed**	

Customizations suggested (if any)

SL	PARTICULARS	TYPE	Level of Customization
1	Entire Day Wise planning functionality Day wise planning is not a standard functionality in OPM MRP. Data entered in the form will be derived in the form of a report in the format required and used to manually in the forecasting screen	Forms	Medium.
2	Custom form to enter the yearly / monthly forecast division wise / product wise. Data entered in the form will be derived in the form of a report in the format required and used to manually in the forecasting screen	Forms	Medium
3	Report on Planned Vs Actual Production quantities between two dates.	Report	Low

Interfaces, if any (Only custom interfaces)

SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
1			
2			

2.8   Production Process

Process Overview

Production of Cement

```
   Start
     │
     ▼
 Grinding
     │
     ▼
Bulk Cement ──────► (X) ─────┐
Production                   │
                             │
Daily Bag Transfer /         │
Production Qty        End ◄───┤
Report                       │
     │                       │
     ▼                       │
Cement Bags ──────► (X) ─────┘
Production
```

Poly Sack Unit Production

```
   Start
     │
     ▼
 Tape Line            Waste
     │            Reprocessing
     ▼                  │
 Looming                ▼
     │                 (X)
     ▼
Lamination
     │
     ▼
 Printing
     │
     ▼
Bag Production
     │
     ▼
    (X)
     │
     ▼
    End
```

RMC Unit

```
   Start
     │
     ▼
Stone Crushing
     │
     ▼
RMC Production
     │
     ▼
    (X)
     │
     ▼
    End
```

(X)   Product Deliverable to Customer

(X) => indicates that the produce can directly be sold to customer.

All gray blocks refer to each production batch.

Description

Production batch would be created for every phase of manufacturing (as portrayed by each gray block in the above flow chart). The arrows represent the flow of materials.

Cement Unit

In Cement unit, only two production processes exists i.e., production of bulk cement and cement bags processes. Production of bulk cement is a make to stock scenario. Production batches shall be created for every mill / once for every day/ for each cement type. This is required to track the production coming from individual cement mill.

Production of cement bags would happen based on the confirmed sales orders or transfer orders. This shall be provided as report to the packing team.

The reports to be extracted by the packing team based on which the production of cement bags would happen would be obtained as follows:

- The planning team would create transfer orders in the system using Move Orders (Meant for transferring the material from Cement unit to the ghats). The move orders shall get approved by the authorized person. Production team extracts a report on the pending move orders (sub inventory transfers on cement bags) and then creates production batches for the same, completes it. Inventory users shall transact the move orders to transfer the produced cement bags to the delivery sub inventory location (to Ghats)

- The sales/marketing team would also create confirmed sales orders in the system. Based on the confirmed sales order, everyday a report shall be derived and by the production team.

Based on the two reports mentioned above, the production team would begin production batches for packing cement in bags.

For bulk cement production, there shall be one production batch. For each registered entity (SCIL, SCML) there shall be separate production batches created. In order to track the production quantities from individual cement mill within each registered entity, the users have to do the following:

Each production batch for individual mill. This would help the management to find out the production of individual machine. i.e., for each of the cement mill from the 4 mills, there would be 4 production batches created in one day.

SCIL / SCML Operations:

All the materials are stored under SCIL only. Production of the bulk cement happens in both SCIL and SCML. However packing happens only SCIL. To implement the same, shall involve the material transfers between SCIL and SCML.

Cement Bag Unit

For the cement bag unit, there shall be different production batches for each of the production phase. Within each phase, there are several individual machines. There are three options for creating production batches in this case:

1) Each production batch would capture the entire production quantity from all these machines (e.g all looming machines). This shall not help the management in getting production quantities by individual looming machine.

2) Each production batch for individual machine. This would help the management to find out the production of individual machine. However considering that the number of machines is more than 30 in certain phases, it is difficult to create so many batches and update the production quantities.

3) Create one batch for all the machines in one day and update the output from individual machine as individual lot. The lot number would follow the machine number as follows:

Loom produced from looming machine 1 on 8-Aug would be named as 08H10L01-01 / 08H10L01-02 etc where 08 represents Date, H – represents the month of August, 10 – represents the year, L01 – represents the looming machine number, 01, 02 at the end represents the loom serial number.

Similar notation shall be followed for all the production equipment used in different phases.

The user team has selected the 3rd option for capturing the production quantities.

RMC Unit

For RMC unit, one production batch shall be created for every sales order as it is make to order scenario. The production batch creation frequency shall be as per the customer order.

General Production Batch Processing Procedures

The following procedures shall be followed in general for all production processes:

- Production batch would be created on the finished product item code along with the expected quantity of production. The recipe and its version which has to be used for production shall be selected by the user. E.g. Special and Popular cement bags are two different item codes, Bulk cement for special and popular are another set of two different item codes.

- Frequency of production (This is not applicable for RMC): The production batch is created once every day and the production data shall be entered in the system once every hour. This shall update the on hand balances of the product every hour. The updated product quantity every hour shall be

available to be viewed by the management. The possibility of integrating with PLC would be a customization as it involves a third party software to be configured and used.

- The actual material quantities consumed and the actual production quantities shall be captured against the standard quantities by the user before completing each production batch. The final product can be taken into inventory in specific lots. A report can be extracted from the system with the lot details.

- The user shall also enter the actual resource quantities (labor hours, equipment hours etc) before completing the batch.

- Once the production batch is completed, the quality results have to be captured in the system. Oracle Quality is to be configured by defining individual for capturing the quality results against each product item code. Whenever the same lot is being issued to customer, a report on the quality results can be printed and can be issued to the customer.

- **Process Specifications:** For every production batch, the process specifications can to be presented to the user. This functionality is meant for reminding the user with a check list of conditions

Per Hour Electricity Available and Consumption Entries:

A custom form shall be made for entering the per hour electricity available and consumed based on the meter readings. The data entered shall be saved against the Date, Hour for which the data is being entered. The actual power consumption is to be entered for individual mill.

Also, at the end of the day, there shall be actual power consumption units entered against the production batch for individual mill.

A Custom report in the following format shall be required between any two dates entered by the user as input parameters.

[Date | Hour | Available Power in KWH | Power Consumed in KWH | Standard Production Qty | Actual Production Qty]

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (e.g. Production in SCML)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.	SCML.WIP	xx		
	SCML.Inventory (RM)		xx	

2.	SCML.WIP	rr		
	SCML. Resource		rr	
3.	SCML.Inventory (FG)	xx+rr+oh		
	SCML.WIP		xx+rr	
	SCML.Overhead		oh	

Process Improvements	

Problems Addressed:	**Applications Features Leveraged**

Gaps as Identified in Oracle	**Suggested Resolution In Oracle**

• Integration with PLC software to pick up the production quantities for creating production batches.
 	
• To capture the hour wise power available and hour wise power consumption entries.
	• Custom process would be required to map this requirement into oracle with the following assumptions
	
	   o PLC software can be modified to provide the data in the format as required by oracle.
	
	   o The third party software shall be purchased and configured
	
	   o to integrate the data between PLC and Oracle in the format required by Oracle.
	
	• Using a custom form this can be captured. This form does not impact any accounting and is restricted to capture information for reporting purposes only.

Forward Looking Practices Introduced	**Other Enablers Proposed**

Customizations suggested (if any)			
SL	**PARTICULARS**	**TYPE**	**Level of Customization**

1	Report on Pending orders for bag cement.	Report	Low
2	PLC integration custom process to pick up the data as provided by the integration software on the production quantities.	Concurrent process	Highly Complex.
3	To create custom process whenever material transfer across registered entities is made. This process shall create appropriate inventory and accounting transactions in either registered entities.	Concurrent process	Moderate
4	Custom form to capture the available power in KWH and actual power consumption by individual mill every hour.	Custom Form	This form shall be used to capture the power availability per hour Vs power consumed by individual mill on hourly basis.
5	Custom report on the hour wise power availability and consumption along with standard and actual production quantities.	Report	Low

Interfaces, if any (Only custom interfaces)			
SL	**PARTICULARS**	**SYSTEM**	**BUSINESS LOGIC**
1			
2			

2.9   Quality Process

Process Overview

Quality Process during Material
Receipts

```
Materials GRN  →  Quality Checks  →  Enter Quality Results against each specification

Start  →  Materials GRN

End  ←  Update Status of Lots  ←  Enter Quality Results against each specification
```

Quality Process on In-Process Items

```
Every Hour Production Qty enetered  →  Quality Checks  →  Enter Quality Results against each specification

Start  →  Every Hour Production Qty enetered

End  ←  Update Status of Lots  ←  Enter Quality Results against each specification
```

Quality Process on Products

```
Production Complete  →  Quality Checks  →  Enter Quality Results against each specification

Start  →  Production Complete

End  ←  Update Status of Lots  ←  Enter Quality Results against each specification
```

Description

The various statuses that are allowed for the input raw materials are as follows:

- Accept (All materials are accepted into the inventory and can be transacted from inventory)

- Reject (All materials rejected and cannot be transacted upon from inventory. These materials can only be returned back to supplier)

For all the direct raw materials, the quality results shall be captured against each received item lot.

Note: The GRN received material lot status by default should be "QC Awaited" and in this status, no inventory operations should be allowed. Unless the quality inspector changes the lot status to 'Accept' (after the quality results are entered) no transactions should be allowed.

The various statuses that are allowed for the output products (Bulk SP cement, Bag SP cement, Bulk PO Cement, Bag PO Cement) are as follows:

- Prime

- Secondary

The quality results shall be captured on every hour based on the samples generated from the production. The results shall be captured against the production batch lot generated at the end of every hour. There shall be no rejections based on the quality results. All the production item Lot status codes should be defined in such a way that it allows all the transactions on the lots.

The quartering and Cone tests shall be performed once in a day (i.e., once for every 24 hours production batch). These results should be captured against the production batch. These results have to be entered apart from the hourly tests performed.

The individual test parameters of quarter and cone tests shall be configured as provided by the user. The actual value for each test parameter shall be captured as against the standard values (range) for each parameter.

At the end of every production batch quality results have to be entered including the auxiliary production batches.

Access Controls:

Quality users: Enter / Edit access rights are to be provided.

Production Users: No access to edit / view the production results.

PLC Users: Access to view the quality results on every hour In-Process quality results as well as the finished product quality results.

Volume of Transaction for this process	

Frequency of occurrence of this process	

Process Improvements		
Problems Addressed:	**Applications Features Leveraged**	
Gaps as Identified in Oracle	**Suggested Resolution In Oracle**	
Forward Looking Practices Introduced	**Other Enablers Proposed**	

Customizations suggested (if any)			
SL	PARTICULARS	TYPE	REASON
1		Report	
2			

Interfaces, if any (Only custom interfaces)			
SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
1			
2			

2.10 Auxiliary Production Processes

Process Overview				
Description				
1) Power Production Plant: The production process cannot be mapped in OPM. However the inventory transactions (material receipts, material issues, reconciliation processes) shall be available to the users. The equipment utilization details cannot be captured in the system as it is a standard functionality of eAM which is not currently implemented. All the financial transactions also shall be captured in the oracle financial modules.				
Volume of Transaction for this process				
Frequency of occurrence of this process				
Accounting (If any)				
SL	**PARTICULARS**	**DEBIT**	**CREDIT**	**REMARKS**
1.				
Process Improvements				
Problems Addressed:		**Applications Features Leveraged**		
Gaps as Identified in Oracle		**Suggested Resolution In Oracle**		
Forward Looking Practices Introduced		**Other Enablers Proposed**		
Customizations suggested (if any)				

SL	PARTICULARS	TYPE	Level of Customization
1			
2			

Interfaces, if any (Only custom interfaces)			
SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
1			
2			

2.11 Outside Processing

Process Overview

Description

The items which are taken out of AKG premises for re-processing by a sub contractor, would be processed as follows:

The original spare item, worn out item and the reprocessed item would be defined as three different item codes. These shall be related as substitute item codes.

The worn out item would be taken into inventory using Misc Receipt at Zero cost. (item code used = workout item code)

The worn out item code is issued (move order with transaction type = 'Returnable Material Issue to outside contractor') out of inventory. Capture the details of the contractor to whom the item is issued. Also, print the Returnable Gate Pass and issue it along with the worn out item code.

A purchase order would be created on the Reprocessed item code on the sub contractor and the same would be received into the inventory against the purchase order. Capture the Move order number of the above step in DFF.

The Reprocessed item code would be issued (using Move Order) from the inventory to the equipment.

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (e.g. Spare which is issued from SCIL to outside contractor, and is received back into inventory. 'xx' is the service charge by the contractor)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.	SCIL.Inventory	xx		
2.	SCIL.AP Accrual Account		xx	
3.	SCIL. AP Accrual Account	xx		

| 4. | SCIL.Contractor Liability Account | | xx | |

Process Improvements

Problems Addressed:	Applications Features Leveraged
Gaps as Identified in Oracle	Suggested Resolution In Oracle
Forward Looking Practices Introduced	Other Enablers Proposed

Customizations suggested (if any)

SL	PARTICULARS	TYPE	REASON
1		Report	
2			

Interfaces, if any (Only custom interfaces)

SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
1			
2			

2.12 Scrap Processing

Process Overview

Description

At every stage of production, scrap generated would be captured against individual scrap item code. The scrap generated would be taken into inventory at zero cost.

All the scrap item codes would have the item category (one segment out of two) as scrap.

The scrap due to process loss generated at the end of each production batch would be created based on standard quantities. However on a periodic basis, the actual scrap weight once known would be adjusted in the inventory using inventory adjustments.

The scrap would be sold out using sales order. The sales order shipment can only be done after the inventory adjustments. The scrap item quantity shall be shipped from the scrap sub inventory against the sales order.

Any additional scrap which cannot be identified with the production batch, shall require miscellaneous receipts into the inventory organizations.

The difference between the input materials weight and output materials weight shall be attributed to two reasons: Loss due to moisture and loss due to material handling (material lost in air, lost in material movement which cannot be calculated directly).

Assume the total input quantity = I and output quantity = O

The loss due to moisture is calculated as follows: The moisture of the input materials is entered by the user (after confirming from the quality team) against the input material quantities in production batch. The overall moisture percentage of input material is averaged out to arrive at overall % of moisture in input materials. Let us say this % is P%.

If M represents materials loss due to handling, then the following equation always holds good for scrap calculations:

$M = (O - I) - (P\% \text{ of } I)$

Wastage report shall be derived based on the above details captured in the production batch

Busted Cement Bags:

There shall be a separate item code for busted bags and the number of busted bags shall be entered against the production batch once in a day. The scrap

items are taken into a separate sub inventory at Zero cost. These quantities at the end of every month (or at any periodic interval as considered appropriate by the management) shall be removed from the system using a misc issue. (Typically done when the busted bags are sold as scrap)

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (E.g. Scrap sales accounting from SCIL)

SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.	SCIL.Receivable Account	xx		
	SCIL. Revenue Account		xx	
2.	SCIL. Bank or Cash Account	xx		
	SCIL.Receivable Account		xx	

Process Improvements

Problems Addressed:	Applications Features Leveraged
Gaps as Identified in Oracle • <mark>Report on the wastage report using the moisture % in input materials</mark>	**Suggested Resolution In Oracle**
Forward Looking Practices Introduced	**Other Enablers Proposed**

Customizations suggested (if any)

SL	PARTICULARS	TYPE	REASON
1		Report	

2			
Interfaces, if any (Only custom interfaces)			
SL	**PARTICULARS**	**SYSTEM**	**BUSINESS LOGIC**
1			
2			

2.13 Item Costing and Accounting Process

Process Overview

Description

The costing method to be used is Average costing method.

The raw material item cost would be derived as follows:

- Total cost as mentioned on the PO Line + Acquisition Costs would be taken as the total landed cost of the raw material

- The moment GRN is made, the cost of the raw material would be averaged with the existing items in inventory.

Note: All the expenses incurred during the material receipt are entered in the purchase order either using actual amount or using provisional amount. All these amounts shall contribute to the inventory landed cost of the item. Certain actual landed cost components shall be known after 4-5 days of GRN. However, for these cost elements provisional amount at the time of purchase order is to be used instead of actual amounts for deriving the item landed cost.

The cost of the finished product / Intermediate product would be aggregation of the following elements:

- Total cost of the raw materials based on the actual quantities consumed (as entered in the production batches)

- Total Resources cost consumed during the production at actual resource rate and usage quantities.

- Overheads calculated based on the actual rates per unit of production (production units at actual quantities)

The basis of actual cost allocation to different products shall be made as follows:

- The cumulative overheads and resource costs shall be allocated based on the Tonnage of the different products produced during that month.

- The user shall be provided with the ratio (calculated using the production quantities in that month – A custom report to be developed) of allocation across different products. User shall have to enter the same ratio (modified as required) in the expense allocation forms.

The resource and overhead costs shall be booked on different expense accounts on provisional basis throughout the month which shall be allocated during the month end before arriving at the item costs and hence the accounting entries for the transactions during that month. When the actual expenses are

The resource and overheads cost would be added to the finished product at the end of the month before accounting entries are created (in final mode) and interfaced to GL. However during the month the estimated cost of the product can be obtained by entering the resource and overheads rate (standard rate) and rolling up the cost of the product. This is only meant for estimating the costs. But this cost should not be used for generating the accounting entries.

To-Be Configuration: Need to configure a different cost type where the resource and overhead cost elements can be entered and costing of the product is done on this cost type. This way, the estimated costs (based on standard resource and overhead rates) would not be used for generating accounting entries.

Costing of reprocessed waste:

The re-processes item codes (e.g. reprocessed PP granules in Poly sack unit) shall have different cost (= reprocessing cost + the overheads as allocated) than the originally purchased PP granules.

Cost Management SLA:

The following are to be remembered while configuring the SLA

- For Cement, all raw materials, finished products shall have same INV accounts. If the individual inventory value of each item has to be known, the same can be extracted using a oracle provided standard report.

Volume of Transaction for this process	
Frequency of occurrence of this process	

Accounting (If any)				
SL	PARTICULARS	DEBIT	CREDIT	REMARKS
1.				

Process Improvements

Problems Addressed:	Applications Features Leveraged

Gaps as Identified in Oracle			Suggested Resolution In Oracle	
Forward Looking Practices Introduced			**Other Enablers Proposed**	
Customizations suggested (if any)				
SL	**PARTICULARS**	**TYPE**	**REASON**	
1	Report to calculate the tonnage of different products produced in the month and to calculate the ratio in which the overheads and resource costs have to be allocated.	Report	This is required for presenting to the user the system calculated ratio's for allocating the overheads and resource costs.	
2				
Interfaces, if any (Only custom interfaces)				
SL	**PARTICULARS**	**SYSTEM**	**BUSINESS LOGIC**	
1				
2				

2.14 Inventory / Production and Quality Reports

SL	PARTICULARS	TYPE	REASON
Customizations suggested (if any)			
1	Daily / Hourly report on Electricity available | electricity consumed | Standard production qty | Actual Production Qty	Report	For reporting the daily / hourly / weekly/ monthly production quantities against the electricity available and electricity consumed.
2	Overall Scrap generated by individual scrap type. Standard Vs Actuals	Report	For reporting the overall scrap quantities.
3	Report on indirect materials consumed by each equipment	Report	Month wise report on the indirect materials which are consumed by each mill / equipment is to be reported.
4	Standard Vs Actual production quantities at each production phase	Report	Report on production quantities
5	Gate Pass Report	Report	Returnable / Non Returnable Gate Pass report on Material movements requiring gate pass
6	Monthly Performance Report	Report	Total production, actuals vs standard.
7	Planned Production quantities Vs Actual production quantities month wise report	Report	Month wise report on planned production quantities Vs actual production quantities along with the actual overheads, resource costs incurred.

SL	PARTICULARS	SYSTEM	BUSINESS LOGIC
Interfaces, if any (Only custom interfaces)			
1			

2.15 Major To-Be Decisions Taken

Major Decisions Taken during To-Be		
SL	Decision Context	Particulars
1	Costing Method	Average Costing
2	Product Costing	Raw Materials @ Actual Cost, Resources @ Actual cost, Overheads @ actual Cost.
		Actual accounting entries to be generated at the end of the month.
		Assumption: all expenses would be booked once every month before the costing and accounting processes are run.
		In case the month expenses and depreciations are not booked within the same month, then the costing process shall consider the last month actual amounts for product costing this month.
3	Scrap Processing	At every production batch, the scrap would be generated at standard quantities (wherever applicable). This shall be adjusted after the scrap actual weight is known. The adjustments is done using physical inventory reconciliation for only the scrap sub inventory.

2.16 To-Be Exclusions

SL	Process Details	Remarks
Processes Excluded from To-Be		
1	PLC Integration: Data from the automated system to be integrated with Oracle ERP for automatic data entry against the production batch instead of any manual intervention.	Currently excluded from the scope. It is dependent on the PLC modifications and the integration software implementation.
2	Power Production Process	The expenses incurred in power production unit and the purchases made shall be captured, but production process cannot be mapped to OPM.
3	Barge Manufacturing Process	As the barge manufacturing process is owned by outside contractors and the operations are not captured using OPM. However the purchasing and inventory activities along with the related financial activities shall be captured using appropriate oracle modules.
4	Future manufacturing processes	As the operations have not commenced, the To-Be process cannot be mapped. However adequate placeholders shall be provided wherever applicable for future manufacturing plants.
6	Equipment Log Book	Equipment log book shall be covered in eAM which is not under the current scope of implementation. Hence this is not covered under the current To-Be document.

3. Open / Closed Issues

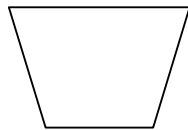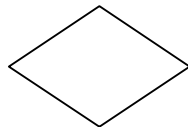| No	Open Issues	Response

ANNEXURE I

Legend for Process Maps

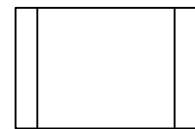Terminator to denote Start and End of a process
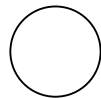
Oracle or Oracle Assisted Process

Manual Process

Decision Point

Process external to Oracle or Oracle assisted process

Connector within the same process.

Customized process