

## **Orissa Power Generation Corporation Limited**

### **2.5 Implementation of Enterprise Resource Planning System**

#### **Highlights**

**The Company implemented the Enterprise Resources Planning System only in three areas viz. Purchase, Inventory and Maintenance.**

*(Paragraph 2.5.1)*

**The Company had no formal IT Policy.**

*(Paragraph 2.5.5)*

**The system had not been designed properly resulting in generation of conflicting data.**

*(Paragraphs 2.5.6 and 2.5.7)*

**Inadequate input and validation controls resulted in lack of data integrity and incorrect MIS.**

*(Paragraphs 2.5.9 to 2.5.15)*

**The Company did not explore the utilisation of the facilities though available in the system.**

*(Paragraph 2.5.19)*

#### **Introduction**

**2.5.1** Orissa Power Generation Corporation Limited was incorporated in November 1984 as a wholly owned Government company with the main objectives of establishing, operating and maintaining thermal power generating stations in Orissa. The Company installed (October 1995) a 2 X 210 MW Thermal Power Station at Ib Valley, Banharpali, Jharsuguda.

For an effective asset management strategy, the Company implemented (October 2002) Ramco e-Application, an Enterprise Asset Management System. Initially, the Company implemented only three modules (Maintenance Operation, Purchase and Inventory).

Accordingly, the Company entered into a turnkey contract (February 2000) with Computer Maintenance Corporation Limited (CMCL), a Government of India undertaking, for supply and installation of necessary hardware and software at a total cost of Rs. 1.10 crore (Hardware Rs. 85.50 lakh and Software Rs. 24.50 lakh). The Company implemented Ramco e-Application Software Systems (October 2002) in a Client Server Environment with

Compaq Proliant 3000 Intel P3 Server and Windows NT as the Operating System. SQL Server 7.0 package is used as the backend database software. Out of the total 18 licences of Ramco e-Application supplied by CMCL, the Company is presently using 13 licences among the 16 user departments on 98 nodes. The overall control of the system rests with a Manager (IT).

#### **Scope of audit**

**2.5.2** The audit of the three implemented modules of Ramco e-Application viz. Purchase Module (PM), Inventory Module (IM) and Maintenance Operations Module (MOM) was conducted for the period from 2004-05 to January 2008 during January to March 2008.

#### **Audit objectives**

**2.5.3** The audit was conducted with a view to assess whether:

- the business rules were correctly mapped and the system was customised in conformity with these;
- the implementation of different modules had achieved the desired results; and
- adequate controls existed to ensure complete and reliable data in the system.

#### **Audit methodology**

**2.5.4** The audit analysed the Microsoft Excel Reports generated through queries from the database on 9 January 2008 using computer assisted audit techniques (CAATs). The information as furnished by the Management to the questionnaires issued was also utilised.

#### **Audit findings**

It was observed in audit that the system had deficiencies with respect to system design, codification, input/validation controls etc. which resulted in ineffective and inefficient management of the system. The audit findings are discussed in the succeeding paragraphs.

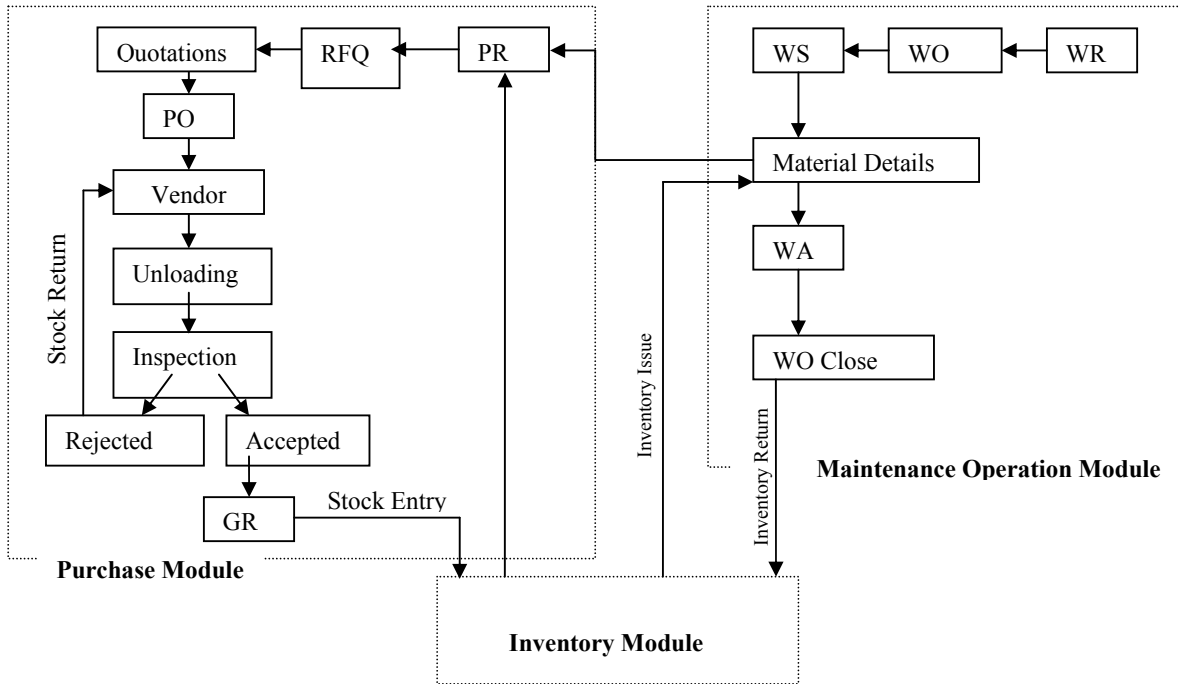
#### **Planning and implementation**

**2.5.5** The Company did not have an Information Technology (IT) policy and any Information System (IS) security policy either. The Company is yet to begin the business reengineering to frame the business blue print. Further, change management policies and business continuity plan were yet to be defined.

The test reports regarding performance guarantee test conducted by CMCL in October 2002 after implementation of the system were not made available.

**System design**

2.5.6 The three modules are integrated with each other as shown below:



Note: PR-Purchase Request, RFQ-Request for Quotation, PO-Purchase Order, GR-Goods Received, WR-Work Request, WO-Work Order, WS-Work Scheduling, WA-Work Actual

Materials issued from the stores are accounted in the Inventory Module against the work order generated based on the work requests from plants. Based on the availability of the material, purchase requests and purchase orders are generated in the system. Goods received are inspected and accounted as stock. After completion of works the consumption of materials is accounted through MOM in the system.

**Design deficiencies**

2.5.7 The issues against work orders were accounted in the system under three different categories i.e. 'inventory', 'maintenance' and 'unplanned' whereas returns were accounted under two categories only i.e. 'inventory' and 'maintenance'. Due to the deficiency in the system design, the items issued under unplanned category were not treated as consumed and returns under inventory category were still treated as consumed. This resulted in mismatch between the issue and consumption details generated through the system.

Data analysis revealed that in 257 cases (115 in 2004-05, 57 in 2005-06, 58 in 2006-07 and 27 in 2007-08) the issues after accounting the returns did not match with the consumption details.

The Management accepted the observation (May 2008) and stated that users accounted *unplanned* issues against closed work orders which should have been done by making sub-work orders. It further stated that users were instructed to return the material before closing the work orders so that actual consumptions could be reflected in the system. The reply substantiates the existence of deficiencies in the system as it could permit further transactions on closed work orders as discussed in paragraph 2.5.15.

#### **Logical access controls**

**2.5.8** The Company implemented Ramco e-Application with 18 concurrent user licenses. Each department was assigned with a user name and password which was being shared by all the authorised users in a particular department. It was observed that access rights could not be defined to a particular user due to limited user licenses resulting in absence of accountability.

Further, it was observed that the audit trail facility though available was also not utilised and as such no record of the transactions performed like adding, modifying and deleting data during a transaction was available.

#### **Input control and validation checks**

Input controls and validation checks ensure that the data entered into the system are complete, authorised, correct and valid. Analysis revealed the following:

##### ***Fixation of inventory levels***

**2.5.9** System provided for effective management through fixation of maximum, minimum and reordering levels. The Company, however, has not fixed any norms. Analysis of 21,291 active inventory items revealed that:

- In respect of 1,108 items, the minimum and maximum stock levels were not fixed.
- In respect of 20,240 items, the re-order level and re-order quantity were not fixed and out of these, minimum stock levels were fixed in respect of 20,183 items. Further, in respect of 84 out of these items, the minimum and maximum stock levels fixed were the same.

Thus, absence of input controls led to inconsistent data wherever it was entered and in some cases the specific levels were not fixed which further weakened the inventory management. The Management accepted (May 2008) the observation and stated that necessary corrective action would be taken in the ensuing year.

### ***Inventory codification***

**2.5.10** As per the codification procedure of the Company, item code consists of nine digits and the first two digits denote the main group to which the item belongs. Data analysis revealed that:

- 1,228 different item codes were used for 435 item descriptions and the multiplicity ranged from 2 to 53, out of these against 69 descriptions were entered as 'blank' and 26 descriptions were entered as "BUSH".
- Out of 26 different item codes indicated against the item "BUSH" only four\* codes were identified as capital spares and the remaining 22 items valued at Rs. 4.21 lakh remained in the stock without issue since October 2002 due to non-assignment of specific item description.

The Management admitted (May 2008) the observations and stated that now the codification is being validated by the Maintenance and Planning department. The fact remains that deficiencies crept in initial period were yet to be rectified.

**2.5.11** Further analysis of data revealed that:

- Inspection status was not standardised and entries like *INSPECTED*, *inspected*, *INSPECTEDD*, *INXSPECTED*, *Inspected* and *inspected* were allowed and the status had not been indicated in 265 cases even though the date of inspection had been mentioned.
- Only 4,943 out of 7,565 items inspected were moved to the stock account.
- Miscellaneous cost incurred against a Work Order (2007-08) was incorrectly indicated as Rs. 9.68 crore instead of Rs. 9.68 lakh and the mistake was not rectified till date (September 2008).

### ***Purchase and receipt of goods***

**2.5.12** Data analysis of purchase, receipt of goods available in the system revealed that:

- In 107 out of 20,968 purchase cases the PO dates were earlier to the purchase request dates by one to 136 days.
- Similarly in 1,602 out of 21,103 cases, the dates of invoices received for the materials purchased were found to be earlier than the purchase order date by one to 2,239 days.

The Management stated (May 2008) that certain POs were placed without waiting for the indents in view of the urgency and in some cases there might be typographical errors. This indicated absence of validation controls. Further,

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\* Item codes: 501916008, 501916032, 501916036 and 501924016.

the system needed to have separate provisions for urgent or emergency purchases.

**2.5.13** Analysis of data relating to goods received and subsequent stock entry revealed the following:

- 1,874 items including 18 rejected items out of 3,122 items yet to be inspected were shown as moved to stock.
- The system accepted the date of inspection and date of goods receipt date as 1899/12/31 in 3,691 and 3,303 cases respectively.
- In one case, system accepted a future date as the inspection date.
- In 951 cases, the inspection date was before unloading of the materials which varied from 1 to 966 days.
- In 239 cases the goods received date was before the inspection date ranging from 1 to 1,094 days.
- In 111 cases the inspection date was indicated after one year from the unloading date. Out of this, in 67 cases, the items were accounted for in the stock account before the inspection.

Thus, there was no validation check on the dates as per the chronology of events. The Management stated (August 2008) that in the absence of provision in the Ramco e-Application to inspect the goods before receipt, a user defined screen was developed to follow the procedure and the user defined process lacked the required validation controls. The necessary controls needed to be provided in the user designed process to avoid such instances.

**Work Orders**

**2.5.14** Analysis of work order status on the 9 January 2008 and the relevant cost details revealed the following:

Sl.No.	WO Status	Number of Records
1.	Cancelled	1,031
2.	Closed	30,099
3.	In Progress	20
4.	Open	2,641
5.	Schedule	492
	<b>Total</b>	<b>34,283</b>

- Out of 30,099 closed work orders the cost of execution was available only for 29,037 work orders.
- In 4,522 cases out of 29,037 cases, the scheduled execution dates were earlier than the work order dates by 1 to 928 days.

- In 3,499 cases out of 29,037 cases, the Work Order Completion dates were earlier than work order dates by 1 to 928 days.

Further review of the status in March 2008 revealed that during the period 2,500 work orders were closed and closure dates were indicated as dates prior to 9 January 2008.

This indicated that the entries were manipulated which resulted in generation of inconsistent Management Information System (MIS) reports through the system over a period.

**2.5.15** As per the outlined procedure relating to a work order, modification was not possible after closure of the work order. The system, however, had provision for allowing transactions on a closed work order by creating a sub-work order for regularising the unaccounted receipt, issue, returns, etc. of the parent work order.

Audit scrutiny revealed the following:

- In 1,898 work orders, material had been issued after (1 to 473 days) of closure of the respective work orders.
- In 15 cases 'sub-work orders' were generated before the date of the parent work order by one to six days.
- In 11 cases, sub-work orders were generated in the subsequent financial years after the closure of the work order.

Management admitted (May 2008) the deficiency regarding creation of sub-WOs prior to parent WO and stated that the matter had been referred to Ramco Systems Limited. The Management further stated that there was time stamping in the database for recording the actual work order closing date after which no further transactions were possible. It was further stated that the WO completion date as mentioned in the WO was the completion date entered by users whereas the system records the system date in the database. However, any supporting documents/evidence was not provided to audit in the absence of which it could not be vouched.

#### **Non-utilisation of system**

**2.5.16** It was noticed that though Coal was the major and high value raw material, the accounting of the same was not done through the system. Vendor details and budget details are not updated in the system.

**2.5.17** The system was equipped with various inventory analysis tools like ABC Analysis, XYZ Analysis, FSN\* Analysis and VED\*\* Analysis. Data analysis revealed that the system was not used for identification of slow/non-moving items of stores/spares.

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\* Fast moving, Slow moving and Non-moving items.

\*\* Vital, Essential and Desirable items.

- 1,466 items valued at Rs. 2.12 crore procured more than one year ago (including 343 items migrated in October 2002) had not been issued so far (9 January 2008).
- Further analysis of the data revealed that 771 inventory items valued at Rs. 2.82 crore were not issued during the last three years.

**Other issues**

***Mismatch of figures of Stores Price Ledger***

**2.5.18** The Stores Price Ledger (SPL) generated through the system contained details of closing stock of inventory including issues, returns and closing balance. Comparison of these details with those available in Inventory Module for the years 2004-07 revealed the following discrepancies:

(Figures are in rupees)

Year	Issue			Return		
	As per IM	As per SPL	Difference	As per IM	As per SPL	Difference
2004-05	14,95,54,547	14,95,54,547	Nil	27,80,068	27,80,068	Nil
2005-06	14,81,64,852	14,81,64,852	Nil	1,01,92,190	1,05,24,335	3,32,145
2006-07	14,77,47,012	14,71,72,298	5,74,714	44,86,556	44,86,556	Nil

Further analysis revealed that certain issues/returns were not taken into account in the SPL. As the closing stock in the financial account was valued on the basis of SPL, this also resulted in overstatement of stock of inventory to the extent of Rs. 3.32 lakh and Rs. 5.75 lakh in the year 2005-06 and 2006-07 respectively.

The Management replied (August 2008) that those material returned under 'unplanned' type (2005-06) and items directly moved to the cost centres were not included in the SPL and hence there was no overstatement of stock. The reply could not be accepted since further checks revealed that the material returned was treated as 'inventory' and the items were issued through stores only and not moved directly to the cost centres.

***Available features of the Ramco e-Application***

**2.5.19** The Company initially purchased and implemented only three modules of the Ramco e-Application System though features like Cash Flow, Accounts Payable, General Ledger, Management Accounting, Fixed Assets etc. were readily available in the off the shelf application. The Company has decided (September 2007) to reengineer and implement an Enterprises Resource Planning (ERP) system using System Application and Products in Data Processing (SAP) at an estimated cost of Rupees five crore (including Rs. 0.35 crore towards development of IT Strategy Roadmap) on account of some drawbacks in the existing system like absence of integration of the existing application with financial accounting, asset accounting, detailed cost accounting etc., and to minimise manual intervention in the business processes. The fact remains that the Company did not explore the possibilities

of implementation of similar facilities already available in the existing ERP System.

The matter was reported to the Management/Government (October 2008); their replies were awaited (November 2008).

### **Conclusion**

**Though the system was in operation for the last six years the Company did not have any documented IT strategy, IT policy, security and backup policy. The computerisation of different activities of the Company suffered from improper business mapping and codification which were vital for assuring effectiveness of the system. The input and validation controls of the system were not adequate for ensuring accuracy and integrity of data. The system did not have adequate logical access control especially due to deficient number of user licenses which led to lack of accountability on part of the users. As a result, the system remained with deficient data without serving as a reliable Management Information System. Due to non-integration of the system with the finance and account activities, the system was also not helpful in preparing the financial statements.**

### **Recommendations**

In order to obviate the shortcomings in the system, the Company should:

- **Frame the IT strategy, security and backup policies;**
- **Map the complete business process in the system;**
- **Codify and fix the levels of inventory;**
- **Strengthen the input and validation control features; and**
- **Strengthen the logical access controls especially by using adequate number of licenses and allocation of specific roles and authorisation rights to ensure accountability.**