

FURTHER ALONG THE ROAD —

*Supply Chain Management*

*At*

*Jindal Iron and Steel Company Limited*

**PRAGATI ▶▶**

**P** : *Proactive*

**R** : *Result*

**A** : *Achievement*

*thru*

**G** : *Global mindset*

**A** : *Adopting*

**T** : *Technology*

*nurturing*

**I** : *Innovation*

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# Further Along The Road –

## *Supply Chain Management*

### At

## *Jindal Iron and Steel Company Limited*

P K Richardson and Raman Madhok

### 1. About The Company -

Jindal Iron and Steel Company Ltd. (JISCO) was incorporated on April 12, 1983. The Company's registered office is at Mumbai and it has manufacturing facilities at Tarapur and Vasind, both in Maharashtra.

The Company's business lies in the *flat steel segment* of the Steel Industry – it manufactures *hot rolled plates (HR), cold rolled coils and sheets (CR)* and galvanised steel i.e. *galvanised plain sheets/coils and galvanised corrugated sheets (GP/GC)* [*Galvanising is the process by which steel is coated with Zinc, thereby imparting corrosion resistance properties to steel*]. The Company procures HR Coils, which are converted into CR Coils / Sheets, which are then further converted into GP/GC. GP/GC is a value added product in the steel industry and is used mainly in construction, white goods and the auto sectors.

JISCO is an ISO 9001 : 2000 certified Company.

*Exports, which is a major thrust area for the Company, accounted for about 78% of the Company's net sales in FY 2003-04. The Company is the largest exporter of galvanised products from India, currently accounting for about 30% of the country's total exports.*

JISCO's net sales aggregated to **Rs. 2190 crores** with net profit at **Rs. 242 crores** in FY 2003-04. The Company is listed on the Mumbai, National and Delhi Stock Exchanges.

The Company has a pool of competent, dedicated, and enthusiastic people (head count: 1546 as on March 31, 2004), which is the driving force behind its phenomenal growth.

### 2. Industry Profile -

The total domestic installed capacity for GP/GC is estimated at about *5.07 million tons* per annum. *JISCO is the largest producer of GP/GC in India, with an installed capacity (GP/GC) of about 850000 tons per annum, accounting for roughly 17% of the total domestic industry.* The other major suppliers are Bhushan, Ispat, National, SAIL, TISCO and Uttam.

The total sales in FY 2003–04 (galvanising industry) are estimated at about *2.85 million tons*, of which domestic sales were about *1.25 million tons* and exports were about *1.60 million tons*, with an aggregate *capacity utilisation* of about 56 %.

### 3. Our Vision, Mission & Core Business Values -

JISCO's *Strategic Intent* is articulated in its Vision, Mission and Core Business Values. These are elucidated below:

#### **Our Vision:**

To be a *globally competitive steel company*, preferred by customers, suppliers, investors and employees.

#### **Our Mission is:**

##### **Business Leadership –**

- ✓ To maintain our position as the **largest producers and exporters** of galvanised steel in India.
- ✓ Value creation in Core Manufacturing business through a continuous process of upgrading and enhancing our processing capabilities.
- ✓ To benchmark on a periodic basis with global Steel giants in order to align with best

of breed practices.

- ✓ To ensure overall cost leadership by harnessing productivity improvement measures and other bottom line enhancing techniques on a continuous basis.

**Customer Leadership –**

- ✓ To be the **preferred choice** of customers for products of **world-class quality** that emerge as industry benchmarks, with on time delivery.

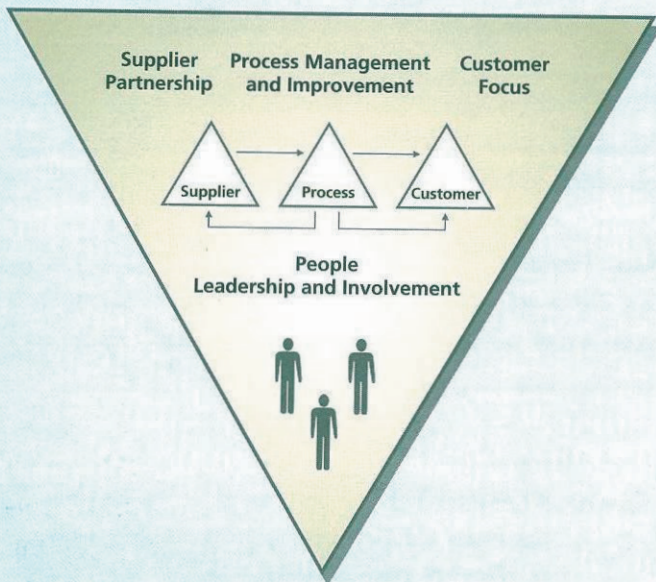
**Building Shareholder Value –**

- ✓ To create, nurture, sustain and add to shareholder value on a continuous basis.

**People Leadership –**

- ✓ To ensure that JISCO is the employer of choice through *empowerment of employees to act within their sphere of influence.*
- ✓ To encourage employees to come out with great ideas and a passion to execute such ideas flawlessly in the shortest possible time.
- ✓ To create a culture of shared values, ownership and knowledge across all levels of the organisation.

**Our Core Business Values: JISCO's Total Quality Paradigm :**



JISCO's *Total Quality Paradigm* permeates all its business processes and is based on the following postulates :

- ✓ *Customers* are our driving force,
- ✓ Results happen *through people*,

- ✓ Every *function* is a part of a process,
- ✓ *Suppliers* are partners in our business,
- ✓ *Strategic planning* is of key importance,
- ✓ *Quality improvement* is an ongoing process.

**4. The Company's Organisational Paradigm -**

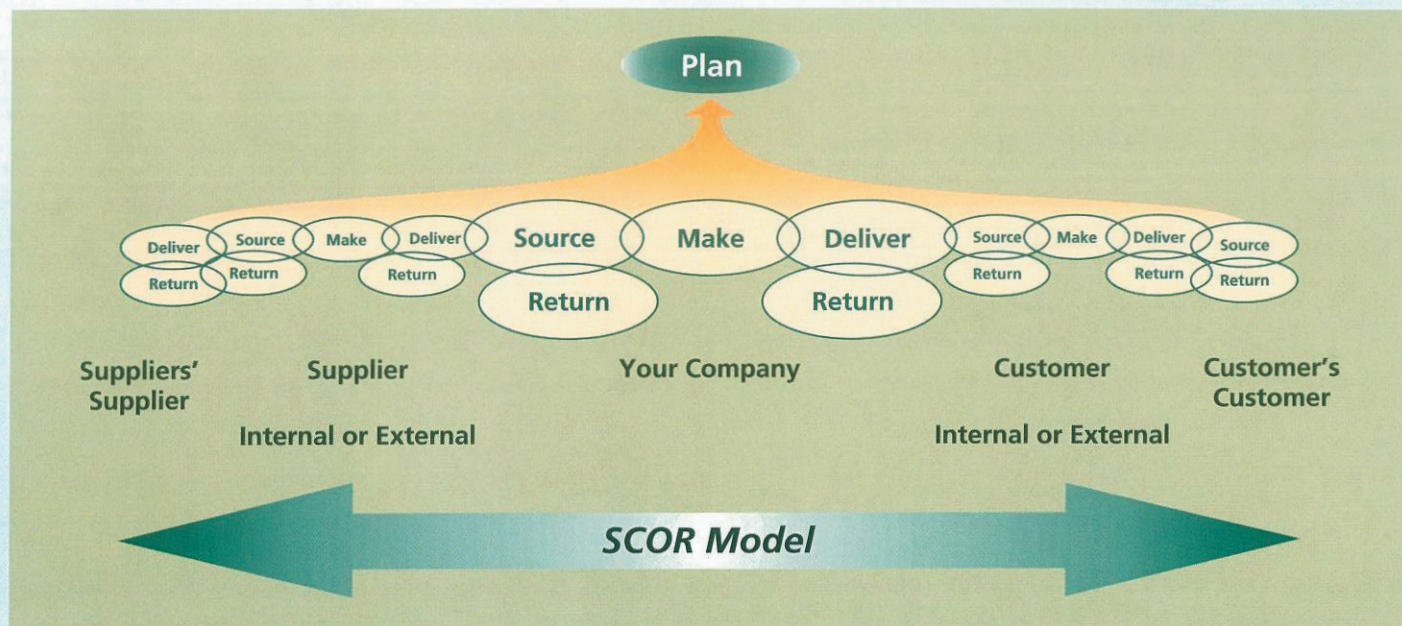
Our Company's Vision and Mission Statements and Core Business Values are the *basic building blocks* adopted for preparation of the *Annual Corporate Goals / Key Results Areas* and the *Annual Business Plan*.

**5. Supply Chain Management Initiatives at JISCO – An Overview -**

Several years ago, JISCO made the shift from a divisional / functional unit orientation to a process orientation. Also, in 1995, to automate the management and operational processes into a network that provided *real time responsiveness*, JISCO deployed an ERP application, which went through upgrades in subsequent years. Subsequently, in 1999 and in the phase of an industry downturn, JISCO adopted the *SCOR Model* i.e. Supply Chain Operations Reference Model developed by the *Supply Chain Council* for its supply chain processes.

Around this time, various software applications were developed in-house and interfaced with the ERP application in respect of planning / scheduling (i.e. planning systems balance materials and plant resources in line with customer demand while scheduling systems handle the task of creating a production schedule for the shop floor), demand planning / forecasting (i.e. demand planning estimates what products are needed where, when and in what quantities, whereas forecasts of end user demand are used to create production forecasts throughout the supply network; demand forecasts help lower inventories while at the same time ensuring customer demand can be met).

In house *software applications* were also put in place for supply chain performance management (i.e. measures and analysis of vendor performance over time) and supply chain event management



(which provides ongoing information about orders and inventory levels as well as other supply chain events such as shipments, production and supply; the *software applications* also provide features such as real time notification of exceptions or problems).

Some of the aforesaid initiatives were co-terminus with JISCO's major foray into exports in 1999-2000 onwards.

Information technology enablement / automation of supply chain processes became a major priority, to enable JISCO compete better in the market place. Automation of Supply Chain Processes and adoption of the *SCOR Model* also *helped JISCO to build its exports even in the face of an inherent disadvantage of not having geographical proximity to its principal markets i.e. US and Europe.*

As a consequence of the above initiatives, *effective order execution capability – both in the export and domestic sectors became a USP for JISCO.* This coupled with *strong product quality attributes*, distinguished JISCO from its competitors. In exports, *JISCO is the preferred supplier as it meets delivery commitments* (the lead time between order acceptance and order execution for exports could be as little as two weeks) and *has the flexibility to accommodate small order sizes* as well.

With this background, we will now explain a key

*dis-intermediation initiative* undertaken in FY 2002 in the domestic market. Strictly speaking this was a continuum of two sub initiatives i.e. *discontinuation of sales through consignment agents* and *e-selling*.

**6. A major supply chain initiative which made a significant difference to the performance of JISCO – dis-intermediation in the Domestic Market -**  
**i.e. i) discontinuation of sales through consignment agents and ii) e-selling**

*i) Dis-continuation of sales through consignment agents:*

JISCO realized that in order to compete more effectively in the market place, it would have to take a hard look at all its supply chain costs. Until early 2001, JISCO marketed its cold rolled as well as galvanized products *in the trade segment* through an *all India Network of agents*. In fact, the model of selling through intermediaries worked so well that *JISCO's competitors tried to replicate for themselves the JISCO selling model.* However, selling through intermediaries meant that JISCO incurred a *cost of about Rs. 3 crores per annum* on *agency commission and inventory holding cost.* Also, freight incurred for transportation of goods from the Company to agent premises was part of assessable value, on which *excise duty was payable*, resulting in an *out flow of Rs. 1.25 crores annually.*

Effective *April 2001* for prime as well as secondaries (and for Maharashtra sales effective November 2001) the *Company discontinued sales through consignment agents and switched to a direct sales model with its dealers*, where by the *annual recurring saving aggregated to Rs. 4.25 crores*.

Cost was not the sole driver for changing over to a direct sales model. *From a long term perspective*, the transition has helped us have a *better pulse of the trade market* and has also given a *boost to volumes* – to illustrate, domestic sales for FY 2004 *increased by 38%* to Rs.552 crores vis-à-vis the preceding period [the fall in domestic sales in FY 2003 vis-à-vis FY 2002 was primarily on account of overriding emphasis on exports ; exports in FY 2003 were about 101% higher vis-à-vis the preceding period].

It also bears mention here that the *Company exercised a great degree of sensitivity* at the time of discontinuing the agency arrangements. Individual letters were sent out to each agent explaining the Company's rationale for such a decision, which was followed up by top management visits to each of the agents to explain the Company's position.

#### ii) e – selling:

The subsequent initiative towards dis-intermediation was to resort to e selling – with the primary objectives of *improving transparency, extending market reach and significantly improving the average sales realization*.

SteeleMart.com, promoted by JISCO, is one of the

few surviving profit-making steel portals and it has added a new dimension to the conduct of the Company's business.

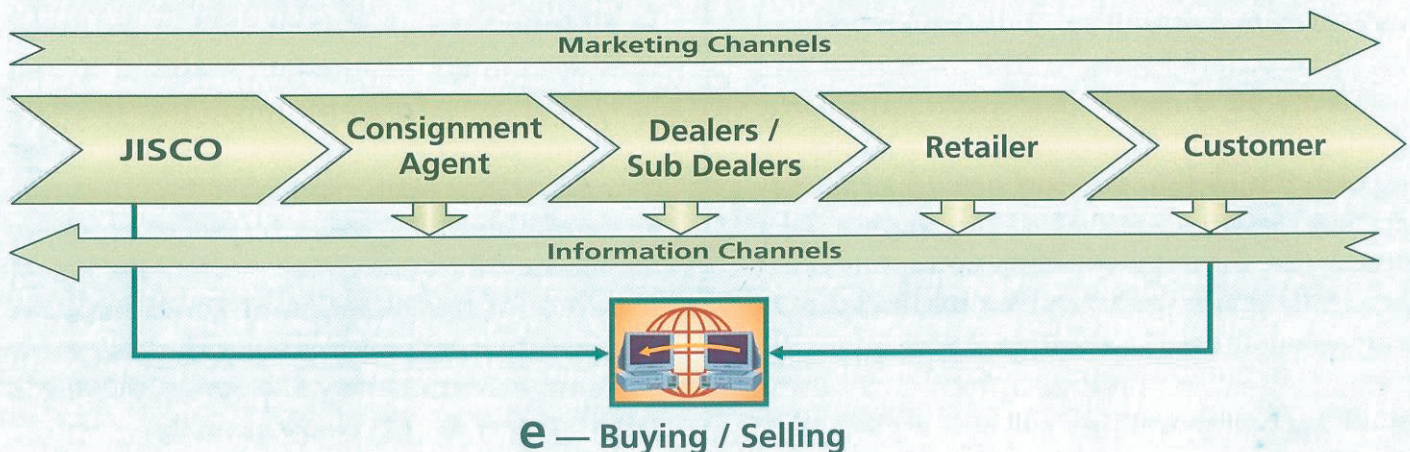
JISCO launched its steel portal i.e. *SteeleMart* in *September 2000*. SteeleMart has achieved a sale of about *1.31 lac MTS since its inception* on September 28, 2000 with *71450 MTS* of sales made in *FY 2003-04 alone*. The total transacted value of material sold during FY 2004 is pegged at about *Rs. 154crores*, which accounts for about *30% of total domestic sales*.

As against the conventional mode of selling through intermediaries, SteeleMart has, while reducing transaction time and cost, helped in achieving the following objectives:

- Penetration down the value chain with more end user participation, translating into higher price realisation.
- Cost effective channel to disseminate product information.
- Transparency in the selling process.
- Freedom of sales force from non-value-added activities.

The *improved price realization (reckoned vis-à-vis a reserve price fixed on a monthly basis by Corporate Management)* in FY 2004 realized through sale on SteeleMart, for JISCO stands at *Rs. 335 lacs*.

JISCO's foray into online steel trading has given a new dimension to its increasing net realisation. The ensuing paragraphs give a brief account of this along with graphs, which depict that this has been an ongoing process.

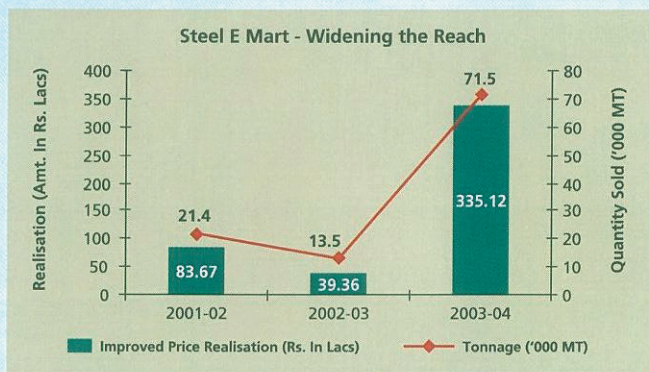


**Improved price realization on total tonnage sold:**

The graphs appended below highlight that significant improvement in price realization can be achieved if the tonnages sold through the e selling route are increased.

Year	Tonnage Sold (MT)	Transaction Value (Rs. Crores)	Registered Users
2001-2002	21400	27	300
2002-2003	13500	21	450
2003-2004	71500	155	650+

SteeleMart in FY 2001-02 sold 21,400 MTS of material and earned for JISCO Rs. 84 lacs. Subsequently, in FY 2002-03, JISCO sold 13,500 MTS of material and earned Rs. 39 lacs for JISCO. Commendably, in FY 2003-04, JISCO's earnings have significantly risen to Rs.335 lacs, which is ten times more than the previous year's earnings. To a large extent, this absolute increase in earnings can be attributed to the increase in the tonnage sold (71,500 MTS).

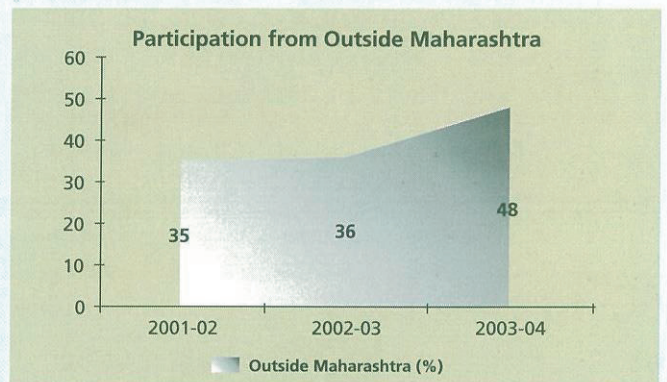
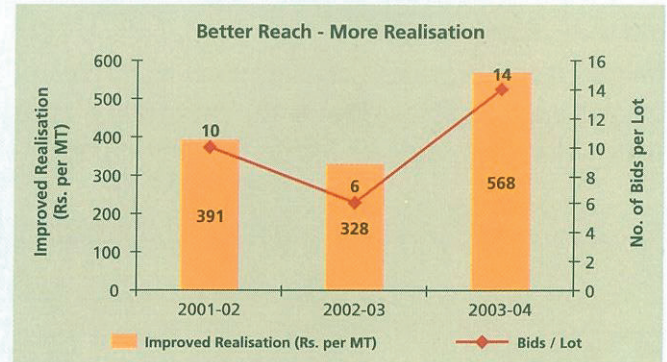


With the growing participation of bidders across the country, we have witnessed a manifold increase in the number of bids per lot. Increase in the number of bids has lead to improvement in the price realization. Last year, the numbers of bids per lot have increased from a meager 6 bids (in the preceding period) to 14 bids per lot, which has resulted in an improvement in sales realization by Rs. 240 PMT.

**More the bids, the better the sales realisation:**

In the first two years, the participation in auctions on SteeleMart was predominantly from Maharashtra region. In the financial year FY 2003 – 04, SteeleMart

witnessed a steady growth in the number of bidders outside Maharashtra. Today, SteeleMart gets regular participation from across the country. We have seen expanding boundaries of the market place, in the last one year, as is evident from the participation of the bidders from the following destinations, which were hitherto not considered as potential markets:



**North**

Charkhi dadri, Shahjahanpur, Kanpur, Varanasi, Saharanpur, Muzzafarnagar.

**South**

Kochi, Quilon, Trichur, Hubli, Belgaum.

**East**

Patna.

**North**

Udaipur, Sumerpur, Jodhpur, Bikaner.

**7. JISCO's Supply Chain – a detailed perspective -**

**7.1 Planning – Source, Make and Deliver**

JISCO is a process centred Company - this has enabled the Company to move towards near real time responsiveness. JISCO now has the ability to reconfigure processes rapidly when needed. JISCO

is also in a position to reconfigure the relationships between its own processes and those of suppliers and partners with equal agility. In fact, the Supply Chain Process at JISCO is treated as an integrated whole and managed accordingly.

Hitherto, Business Process Change emphasised operational processes – how materials or products flow through an organization. In recent years however, there has been an equal emphasis on the management processes that plan, monitor and control operational processes. This is the perspective from which planning processes are undertaken at JISCO.

The Company's planning process mainly consists of:

- Annual Plan – A broad futuristic document of the Company's annual business plan.
- Monthly Operating plan – this is the Annual Plan which is broken down by month, to factor in the sensitivity in demand, raw material availability, shut downs etc.
- Weekly Production plan – to communicate the precise customer requirements & schedules.

#### 7.1.1 Annual Business Plan

The Annual business plan is prepared on the basis of forecasts/projections from both domestic as well as International marketing on the basis of qualitative and quantitative requirements of the customers classified into grade, size, month and destination wise requirements for the financial year. The Production Planning & Control (PPC) and Operations Dept. evolve the Production Plan considering the following aspects:

- i. Equipment wise balancing of capacities.
- ii. Annual Shut down Planning.
- iii. Raw Material availability.

To ensure precision in the availability of raw material (mainly HR Coils), PPC department shares the tentative requisition plan with the principal raw material vendor i.e. Jindal Vijayanagar Steel Ltd. (JVSL hereinafter). The procurement plan of HR coils is finalized after setting off for the annual shut downs planned by JVSL. This information is shared

back with marketing departments to carry out due corrections in the Annual Sales plan.

The Production Plan prepared by Operations and PPC is then forwarded to Costing Dept. for working of cost and financial impact. Costing dept. based on various inputs from other key functions of the organisation, works out EBIDTA (Earning Before Interest, Depreciation, Taxes and Amortisation).

Impact of Union Finance Budget, EXIM policy of the Government, Customs and Sales Tax legislations and other statutory matters relevant to the Company's business operations are considered in the business plan of the Company.

Financial risks of the domestic market are covered through Credit Policy, which regulates the quantum of exposure with each customer. Financial risks of the export business are covered through secured credit (Letters of Credit) and spreading the overall risk (financial, currency, market) by widening the customer base.

Before preparing the draft plan, the requirements of the principal raw material viz., HR Coils are conveyed to the supplier (i.e. JVSL) giving detailed month-wise, size and thickness wise requirements in order to enable them to comply with the requirements and also plan their operations. Based on their feedback the draft plan is crystallised.

A few alternative options of business plans are prepared considering various possible changes in the Domestic and International Business scenario. The most practical and feasible option, with the requisite element of stretch, is reviewed by the Executive Committee and adopted as the Annual Business Plan of the Company for the next financial year.

#### 7.1.2 Monthly Operating Plan

Annual Business plan is prepared before the start of each financial year. Month wise details are projected in this annual plan. However, on monthly basis all the principal supply chain partners are revisited in order to confirm whether their respective performance will be coinciding with the plans.



Following issues are considered while making monthly plans.

- Change in delivery priorities by the customers.
- Supply of principal raw materials i.e. HRC and zinc.
- Shut downs / Break downs, if any, of any production facility.
- Change in market situations such as price and demand.
- Changes in logistics.

Necessary course corrections are also made in the monthly plans based on day-to-day monitoring.

### 7.1.3 Weekly Production Plan

On the basis of sales orders received from marketing departments and the sales forecast given in the monthly plan, PPC department prepares the production plan detailing the various parameters of the end product. Following concerns are addressed while making the production plan.

- Availability of stocks.
- Optimal capacity utilization of available facilities.
- Various lead times involved in the production process.

The Company has deployed homegrown software for capacity optimization and scheduling which is integrated with the Company's ERP application. This software helps PPC department in allocation of sales order on mills & Galvanising lines and also facilitates production scheduling as well as scenario building.

#### 7.1.3.1 Production plan

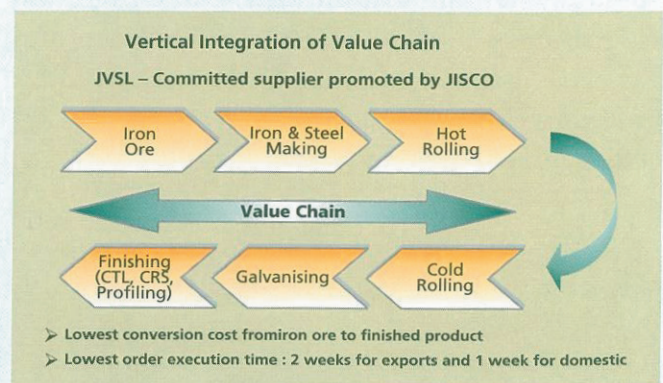
The detailed production plan is forwarded to production department for execution. All the allied departments such as engineering are also taken in the loop so as to streamline the maintenance activities planned for the month and to ensure the uptime of facilities. Production schedule is prepared for each process unit and tracking is carried out by PPC department on daily basis.

#### 7.1.3.2 Raw material Sourcing plan

Detailed production schedules are further cascaded into procurement schedules for raw material as well as vital consumables. These schedules are shared with various sources ensuring the availability of the material. These plans are also shared with various allied departments such as finance as well as stores.

### 7.2 Sourcing – Making right inputs available

#### 7.2.1 Development of Strategic Partners



The main raw materials used are HRC, CRC and Zinc. The Company has its own facilities to convert HRC into CRC. The Company has a *Strategic Alliance* with *Jindal Vijayanagar Steel Ltd (JVSL)* for *HR Coils* – the main raw material. *Jindal Vijayanagar Steel Ltd (JVSL)*, promoted by JISCO, is reckoned to be one of the world's most modern, efficient, and eco-friendly integrated steel plants. This reputation is built from the use of revolutionary new iron-making *COREX technology*, which gives a competitive edge over suppliers, which are dependent on older technologies.

Zinc is procured from another strategic partner *Hindustan Zinc Ltd.*, the main producer in the country.

#### 7.2.2 Sharing the Information: Confidentiality and Security issues

A *key success factor* of any supply chain model is the *quick & open sharing of information* with supply chain partners. Higher ratio of 'reveal to conceal' business information with supply chain partners allows the entire chain to take proactive

steps in line with market changes, thereby safeguarding the interests of collaborators. The Company's policy for information sharing with its supply chain partners ensures the *smooth exchange of vital information strictly on a need to know basis* while, at the same time, maintaining the desired level of confidentiality.

Providing an access to the Company's databases also raises issues relating to information security. To hedge the potential security risk, the Company engaged an IT security consultant for *detailed vulnerability assessment and hardening* as well as *developing an Information System Security Policy & Procedures* for the Company. The Company also has since, implemented the IT Security Policy & Procedures and has planned to avail the *BS7799* certification in the near future.

### 7.2.3 Raw Material Sourcing

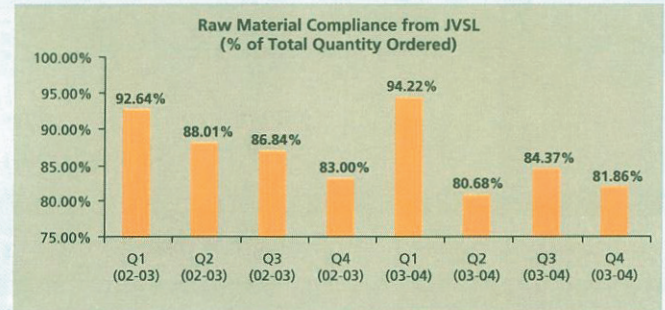
#### 7.2.3.1 HR coils

The major raw material used in the cold rolling / galvanising processes viz. HR Coils contributes nearly 60% of the end product cost. Also, the operating cost is largely dependent of input parameters of HR coils viz. thickness, width etc. Availability of HR coils with right physical as well as chemical parameters, has been a critical concern area for all re-rolling and galvanising units. To address this concern, the Company promoted an integrated steel plant viz. Jindal Vijayanagar Steel Ltd. at Bellary, Karnataka. This backward integration is further extended by promoting the facilities for supply of vital inputs (viz. Power, Oxygen, iron Ore etc.) to JVSL. *The aforesaid initiatives towards backward integration have strengthened the supply part of JISCO's supply chain.*

#### a. Delivery Compliance

JVSL, being a unique source of HR coils for the Company, plays a vital role in the preparation of annual as well as monthly sales plan of JISCO. Uptime of JVSL facilities along with its annual shutdown plans are shared with the Company for finalising the annual business plans. For avoiding

any probable gaps in communication, the *PPC departments of both the companies interact virtually on an on-line basis* – each of them have a window into key report features of the other, particularly the Executive Summary Report on Operations.



PPC department at JISCO works closely with their counterparts at JVSL before finalising any sales / production plan. A continuous exchange of information is maintained on an ongoing basis. For the monthly plan which is finalized and operational at the beginning of the month, requirements are re-confirmed on a weekly basis, to plug in changes in the sales plan (mainly due to change in customer priorities).

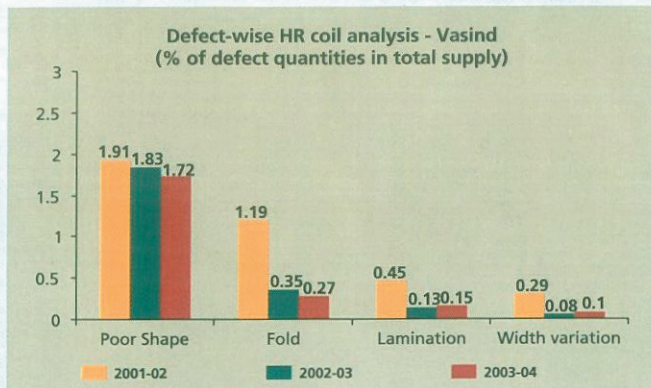
JVSL, on daily basis updates PPC (JISCO) with the details of HR coils despatched from its facilities. This information enables PPC (JISCO) to fine tune the material availability schedule and for updating the production plan whenever necessary.

#### b. Product Quality

The inspection procedures for HR coils have been set up jointly by the Quality Control departments of both the companies. The inspection of HR coils is carried out only at JVSL before despatching the same from its works.

Details of Chemical as well as Physical properties of HR coils are provided to Quality Control department of the Company by JVSL – this is directly uploaded into JISCO's database.

This collaboration has enabled the quality control department (of JISCO) to focus on the processing carried out at JISCO by eliminating the need for re-inspection of material sourced from JVSL at JISCO.



The Company's quality assurance and process team jointly works with JVSL toward improvement in quality of HR Coils. During the last three years, the Company has identified various defects which lead to rejection / diversion in the finished goods i.e. galvanised material and made every attempt to zero it down jointly with JVSL. The pictorial above projects quantities under defects, which have reduced as a percentage of total receipts over a period of time.

*c. Return Procedure*

In spite of applying stringent quality checks for the incoming HR coils, few of the defects are evidenced only at the cold rolling stage. As in most of the cases these defects are only in the part of material which has already been consumed, raising quality claims instead of returning the defective material is the commonly accepted practice. Quality Control department on monthly basis prepares documents highlighting waste generated or loss to the Company due to defects in raw material. The same document is considered as the basis for quality claims which are then settled through debit notes / credit notes.

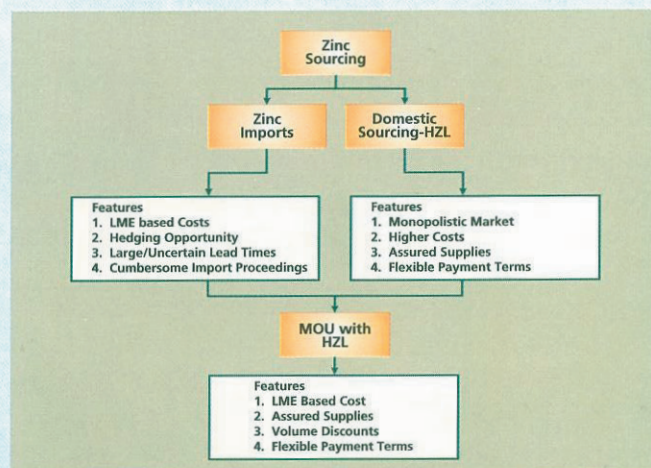
**7.2.3.2 Zinc**

Zinc is another important raw material used in the Galvanising process which accounts for approximately 10% of the end product cost. JISCO currently sources its entire requirement of zinc from Hindustan Zinc Ltd.

*a. Pricing & delivery*

Zinc is the other major raw material for the galvanising industry. Hindustan Zinc Ltd. (HZL)

is the major source of Zinc in India. Till very recently HZL was a PSU and its pricing policies tended to be monopolistic in nature. In order to insulate itself from such monopolistic pricing policies the Company used to import a substantial portion of its requirements of Zinc. As prices of imports were linked to the indices of London Metal Exchange, a good match between the Zinc requirement and variation in the LME index used to give substantial benefits in the cost of zinc procurement. However,



large and uncertain lead time as well as cumbersome import procedures meant holding of substantial quantity of Zinc at any given point of time, thereby adding to inventory costs. The Company saw a good opportunity when HZL was privatised and consequently became more market-driven. In order to reduce the extra cost of imports while at the same time retaining the cost advantage, the Company has entered into an annual MOU with Hindustan Zinc Ltd. whereby zinc prices of HZL are linked with the LME index. From April 2003, the Company has eliminated the import of Zinc entirely.

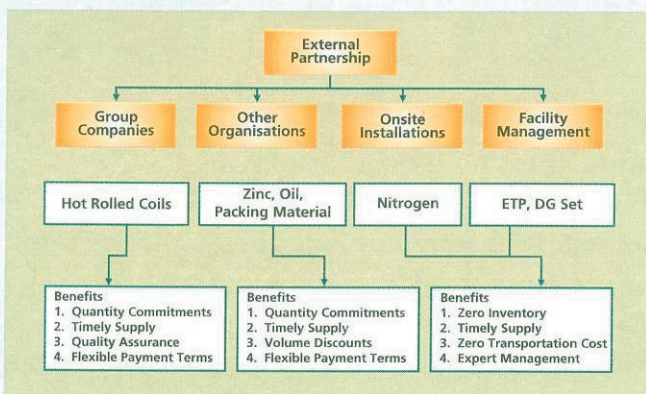
*b. Joint Efforts to reduce tedious activities*

Usually, Zinc is supplied in the small ingots form with weight of around 25 kgs. Galvanising is a continuous process and requires continuous feeding of Zinc ingots in Zinc bath - handling number of ingots (unloading at Stores, shifting near Zinc bath and manual insertion into the bath) was always seen as a tedious job. In recent years, JISCO is jointly working with Hindustan Zinc for supply of Jumbo ingots (weighing approximately 500 Kgs to 1 ton). Trials have already been taken in this regard and

this initiative is expected to reduce Zinc handling concerns to a large extent.

### 7.2.4 Vendor Development

Although, JISCO has set up facilities at two different locations, the close proximity of both the plants and similar nature of production facilities has enabled the Company to centralise the sourcing of all the spares & consumables. Requirements pertaining to both the plants have been clubbed together to achieve volume purchases and thus avail the economies of scale. Annual requirements which are recurring in nature are met by establishing rate contracts with the premium suppliers. This system assures minimum guaranteed business for the suppliers and provides the Company a hedge against market fluctuations, eliminating the duplication of work.



Every vendor before qualifying as an approved source has to undergo a technical evaluation carried out by the user. A team from the related department visits the supplier facilities to ensure whether it has right facilities, right inspection practices and right people to work on the indented assignments.

Ongoing performance analysis of the vendor has been enabled through ERP. Every transaction carried out with the vendor (viz. purchase order raised, delivery schedules adhered, acceptance / rejection of supply and services obtained) are tracked by the ERP to give an overall rating against the four predetermined macro parameters namely price, delivery, product quality and service quality. Based on periodical evaluation on these parameters all the vendors are given feedback regarding their performance with JISCO and the areas of opportunity.

Further, vendor meets are organized every year for key suppliers for understanding each other's perspectives and also to inform the vendors about the Company's plans. This has resulted in development of healthy and cordial relationship between JISCO and its suppliers. This has led to better and assured delivery times, competitive prices, consistent quality and mutual trust and confidence.

*(Some of the suppliers have even taken up studies to improve certain processes e.g. Castrol has worked with our team to control the consumption of DG set lubricating Oil, Spareage has improved on the design of some of the mill seals which have resulted in oil saving, Timken /Torrington has also worked for better bearing maintenance practices which have resulted in improved life of bearings.)*

### 7.2.5 E Procurement

To reduce the cumbersome procedures for sending request for quotations and receiving quotations from the suppliers, JISCO has promoted an E - Procurement initiative on its web site [www.jisco.com](http://www.jisco.com). All the indents authorised for procurement are directly posted on the Company's web site. All the registered vendors on the approved list are provided with access to this site. Vendors can quote against the indents which have been uploaded on the Company's site - these are then brought into the Company's data base for evaluation and order placement.

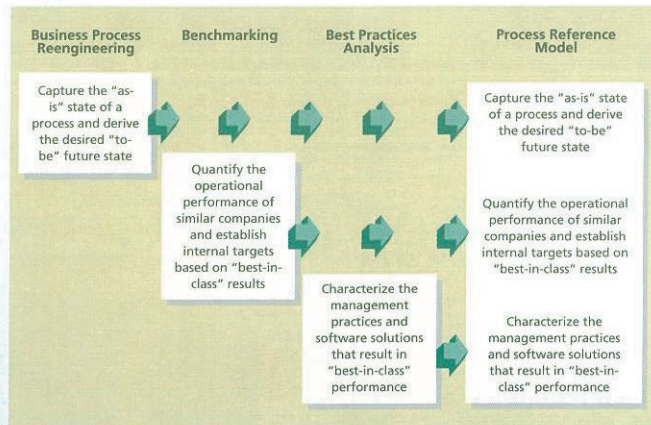
### 7.3 Make - it right first time

Process management at JISCO is centred on the Customer and ensures that customer requirements are identified, understood, worked upon and translated into desired products, which are served to delight him.

#### 7.3.1 Process Reference Model

JISCO's process management is largely based on the "Process Reference Model", which starts with the mapping of process capabilities ("actual as-is") and takes you to adoption of best practices through

the benchmarking process. The end result of this model is to achieve "desired to-be" status.



Thus the model adopted by the Company has inherent integration of Business Process Re-engineering, Benchmarking and Adoption of best practices.

### 7.3.2 Business Process Re-engineering

In FY 1997, the Company undertook a major process re-engineering drive with the acronym **CORE (Cost & Operation Re-Engineering)** jointly with *Andersen Consulting* (now Accenture). On an overall basis, 52 opportunities (mainly from operations and engineering functions) were identified with potential annualised *cost savings of Rs. 12.72 Crores*. Most of the opportunities were implemented till the year 1999.

This drive was continued by the Company in subsequent years. Details of annual efficiency improvement projects, undertaken since 2001-02, which substantially contributed to the survival of the Company in the global recessionary period (FY 2000 to 2002) are tabulated below:

Year	Re-engineering Project	Acronym	Cost Savings (in Rs. Cr.)
2001-02	EARN	<u>E</u> mpowerment, <u>A</u> ccountability, <u>R</u> esults, <u>N</u> o to decisions being pushed up	29.37
2002-03	TURNAROUND	<u>T</u> arget orientation, <u>U</u> rge integrity, <u>R</u> espond quickly, <u>N</u> ever panic, <u>A</u> ssertive behavior, <u>R</u> espect individuals, <u>O</u> pen minded, <u>U</u> niform Excellence, <u>N</u> urture Meritocracy, <u>D</u> isplay energy	29.07
2003-04	FOCUS	<u>F</u> ind opportunities, <u>O</u> vercome obstacles, <u>C</u> are for customers, <u>U</u> nique approach, <u>S</u> haping the change	28.84
2004-05	PRAGATI	<u>P</u> roactive, <u>R</u> esult, <u>A</u> chievement thru <u>G</u> lobal mindset <u>A</u> dopting <u>T</u> echnology, <u>I</u> nnovation	Under implementation

### 7.3.3 Benchmarking

In its quest to become a global Company, JISCO went through a *comprehensive benchmarking exercise* in various areas such as operations, finance and human resources with *British Steel plc* of UK as part of Project **PACE**. (**P**lanned **A**ction for **C**ontinued **E**xcellence).

Another round of benchmarking was undertaken with *CORUS plc* in the year 2003-04. Over 30 executives representing different functions visited Corus's plant facilities at the Netherlands and identified *over sixty improvement opportunities*. These opportunities were mainly classified in three areas i.e. Projects based on opportunities observed, good practices observed at Corus and End results observed (i.e. awareness, attitude, motivation levels etc.). A time bound action plan with accountabilities has been prepared and adopted for implementation.

### 7.3.4 Adoption of Best Practices

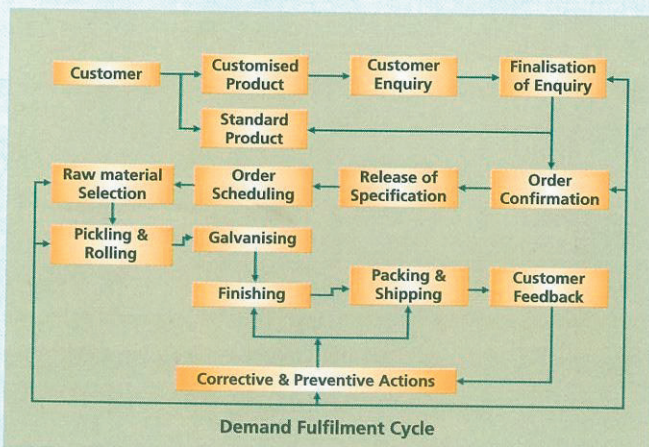
To sustain a high performance work culture, Leadership and Management Development Programs are initiated for identifying, developing and nurturing managerial & leadership talent. There have been two editions so far, **BRACE** (**B**usiness **R**esults **A**chievement through **C**ompetencies & **E**thics) in 1999-2000 and **ADP** (**A**ccelerated **D**evelopment **P**rogram) in 2002-2003.

One such program i.e. PSP (**P**arivartan **S**e **P**ragati) also was arranged specifically for the workers in Hindi language in the year 2003-04.

### 7.3.5 Designing a System which seldom fails

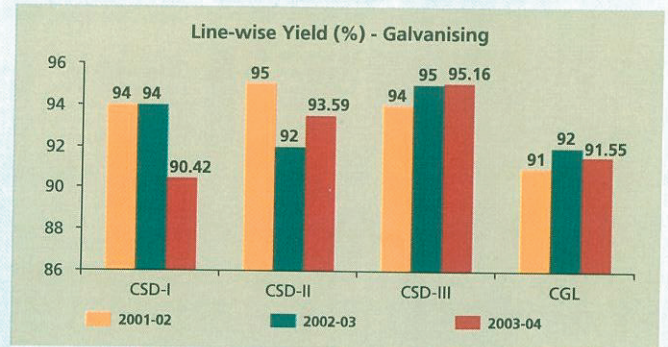
#### 7.3.5.1 Understanding Customer Requirements

Large number of product parameters such as (thickness, width, coating, tensile as well as yield strength etc.) has introduced complications in understanding the exact requirements of the customer and complying with the same. To overcome the gaps between the communication between customer & marketing as well as further between marketing & operations department, the Company has designed the system of **ICR** (**I**dentification of **C**ustomer **R**equirements), which is tightly integrated with the ERP package. ICR does not only talk about the product specifications but also guides the desired raw material specifications, process routing and end product inspection specifications. Every order catered to Export and OEM customers are attached with corresponding ICRs, which has largely attributed in controlling the rejections / sales return due to specification mismatch.

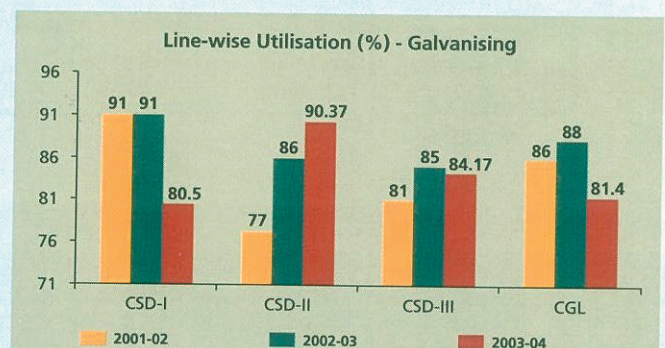


To ease the communication between Marketing and Customers and to help customer in selection of the right product, JISCO has designed **Standard Product Category Chart (SPCC)**, which describes all the physical as well as chemical specifications of the product along with desired end use.

#### 7.3.5.2 Technology for processing right products



Automated process control system and measures are instituted where required and appropriate. The production processes and equipment controls are programmable and logically controlled (PLC), with computer human machine interface systems (HMS). Most of the controls are in closed loop, wherein continuous feedback from the field elements is fed back to the master controllers to trigger required machine responses. The system has built in safety and operational alarms & alerts to attract required response of process operators. Use of automated control systems like auto gauge control systems in the cold rolling mills and temperature control systems in the Galvanizing lines have resulted in consistently meeting stringent quality requirements of the customer.



Support processes are automated to the extent possible by implementation of organization wide enterprise resource planning (ERP) package. Required checks and validations are incorporated to eliminate erroneous data punching and

information processing. To ensure consistency in the operational controls, wherever required and to the extent possible, standard operating instructions are established, documented and distributed and displayed in a controlled manner. This helps in achieving consistent employee behaviour in effecting process controls wherever automatic controls and checks are not present.

7.3.5.3 Inspecting Process Quality

Inspection and testing sampling plan for all the processes, from receipt of raw material to the final delivery of finished products to the customer, is documented under the established quality management system. The frequency and extent of inspection and testing depends on the level of confidence in process control in the preceding processes and is commensurate with the requirements of the customers. Following Table shows the sampling plan for some of the critical process parameters and product characteristics.

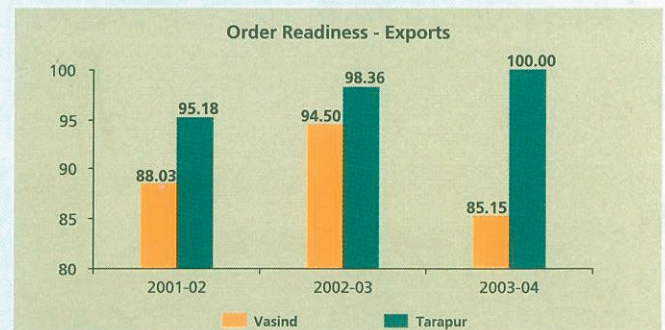
Galvanising		Cold rolling	
Parameters	Frequency	Parameters	Frequency
Adherence	Every coil	Roll mark	Every coil
Lock forming quality	Every coil	Emulsion carry over	Every coil
Panelling	Every coil	Coiling tension	Every coil
Coating	Every coil	Surface check	Every coil
Bath analysis	Daily	Thickness	Every coil
Top dross analysis	Daily	Shape	Every coil
Chromic analysis	Shift wise	Hardness	Based on requirement
Degreasing analysis	Shift wise	Roughness	Based on requirement
D.M. Water analysis	Daily	% Elongation	Based on requirement
Humidity test	Daily	ECV	Based on requirement
Stack test	Daily	YS/TS/ELN'	Based on requirement
Salt Spray test	Daily		
YS/TS/ELN'/ECV	Based on requirement		

7.3.5.4 Product Identification & Despatch



Integration of Bar code techniques with ERP was another major step undertaken by the Company to avoid erroneous movement of the material across the supply chain. The Code 128 technology was adopted for codification of product information (viz. physical & chemical properties). As for every coil / packet, Barcode is generated from ERP (based on the product attributes entered by quality control department) and process of packslip generation is carried out through scanning the bar code, possibility of wrong material shipment or erroneous invoicing has been completely avoided. Further, extensive product information can be passed on to

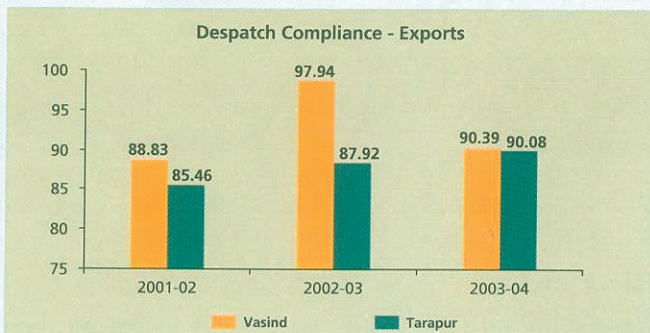
the supply chain partners for further use as this technology supports alphanumeric characters. The same technology is also being used for codification of EAN (European Article Number) number in case of export despatches.



The Code 128 character set includes the digits 0-9, the letters A-Z (upper and lower case), and all standard ASCII symbols and control codes. The codes are divided into three subsets A, B, and C. There are three separate start codes to indicate

which subset will be used; in addition, each subset includes control characters to switch to another subset in the middle of a barcode. Subset A includes the standard ASCII symbols, digits, upper case letters, and control codes. Subset B includes standard ASCII symbols, digits, upper and lower case letters. Subset C compresses two numeric digits into each character, providing excellent density.

7.3.5.5 Product Despatch



A tentative order readiness schedule is prepared from the production plan and the same is forwarded to logistics department for planning outbound logistics.

The Company has developed a Credit policy specifically for domestic market and the same has been enabled through the ERP. Marketing department, after ensuring all the commercial terms are fulfilled and the logistics arrangements are well in place, gives lot wise clearance for despatch. As this software is integrated with ERP, no despatch can be made without seeking clearance from the Marketing department in the first instance.

7.4 Sales, Delivery & Return

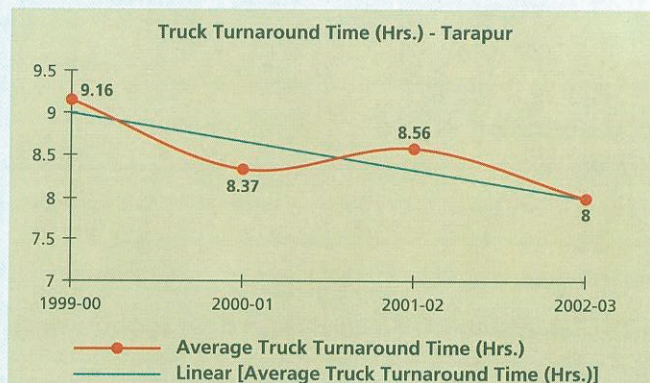
JISCO is the largest exporter of galvanized products from India. *Nearly 78% of its production is being exported to about 45 countries spread over the*



*globe. The major markets are North America, South America, Africa and Europe.*

Based on end applications, international business has been segmented into markets for soft and hard quality applications. Hard quality material is used mainly in roofing applications in corrugated sheet form. It is exported mainly to Africa, Latin America, S.E. Asia, China and also to Italian markets. Soft quality application material has two applications, namely: Auto Sector and Commercial Sector. JISCO's current focus is Commercial Grade material where end application is mainly air-conditioning, false roofing, flooring, panels, heat ventilation air-conditioning and tubes and white goods industries.

The major markets in Commercial Grade material are North America, Europe, Middle East, S.E. Asia and African countries.



Domestic market comprises of Original Equipment Manufacturers (OEM) and the Trade segment. The Company caters to white goods and non-white goods manufacturers, in the OEM segment. The non-white goods category includes Auto sector, Building and Structures, Drums and Barrels and the General Engineering application customers. OEM segment is characterized by specific quality and service requirements, awareness in terms of information and knowledge, high involvement, lower sensitivity to price, large chain of purchase decision makers and preference for long term supply contracts. On the other hand, in the Trade segment, the market is sensitive to price and availability and customers exhibit low brand loyalty.

7.4.1 Branding

*In the International market JISCO sells its material*



under the brand name "Galvplus and currently, JISCO's material is the most sought after galvanised material in the US market.

Having launched JINDAL VISHWAS as the brand name for GC sheets on November 18, 2002 at Ahmednagar (the branding exercise was facilitated by *Publicis India*), the major focus in Domestic Marketing for fiscal 2003 / 2004 would be towards promotion and establishment of JINDAL VISHWAS as a premium brand in the country with clearly defined new competencies to generate long term value for GC sheets. In other words, an all round effort will be made to create a **strong brand personality** for the JINDAL VISHWAS brand name.

#### 7.4.2 Outbound logistics

JISCO, along with providing quality material, has also been *proactive in identifying avenues for cost savings by its customers*. One such initiative was to eliminate shipping agents from the clearing and forwarding processes.

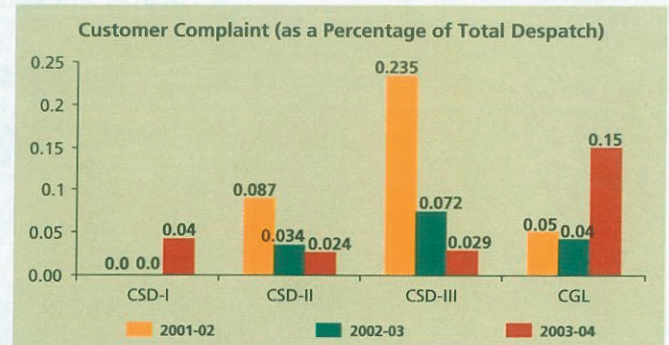
JISCO has also signed COA's (Contract of Affreightment) with reputed shipping lines for its principal overseas destinations, thereby optimizing the ocean freight rates and at the same time ensuring better reliability in the shipping time to various global destinations. These long term arrangements relating to ocean freight have virtually eliminated any handling losses of goods en-route to their destinations.

For shipment in the domestic market, JISCO has entered into rate contracts with major transporters. Along with the destination wise transport charges, destination wise transit time has also been agreed upon at the time of contract. Actual transit time is tracked by Logistics department on invoice to invoice basis and corrective actions are taken for any transit delays, if observed.

JISCO has developed software to track the truck turnaround time for loading & despatches. The time required at each loading point and in between two loading points is screened by Logistics department with the objective of reducing the detention time of trucks. The graph under para 7.4 above shows

the result of a three year analysis on truck turnaround time carried out at our Tarapur Plant.

#### 7.4.3 Management of Customer Complaints



JISCO is an ISO 9001 : 2000 certified Company. Customer complaints are evaluated objectively and resolved appropriately, as per the ISO procedure. A goal has been taken to *resolve all the complaints within 15 days* reckoned from date of receipt.

Concerns expressed in informal or formal ways by the customer, are given equal importance by us. All the details regarding complaints are captured in the ERP system by marketing personnel, in case of domestic complaints. In case of International markets, as and when the complaints are received, the details are captured in the ERP system and thoroughly analyzed jointly by the marketing personnel and plant personnel. The complaints are settled amicably, at the earliest. We have implemented a *Customer adoption plan* through which every individual from Marketing department has been made responsible for handling a group of customer accounts. All communication with a customer is routed through a person who is responsible for the respective customer account. Thus, establishing a single point contact for customer communications enhances the effectiveness of communication as well as response to customer queries. For establishing a formal channel for complaints, a specific format is sent to customers and business associates on a periodical basis.

*Technical experts from plants visit customers on a periodic basis to understand their needs and concerns.* We have a well-qualified and experienced team in R & D, Operations and Quality Control department to handle all such

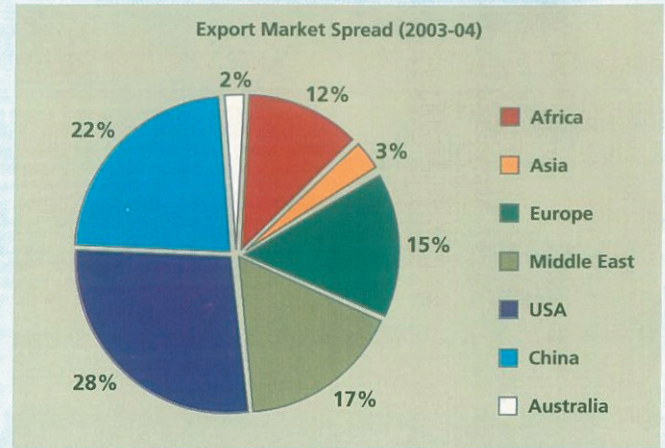
cases till customer satisfaction. In cases where technical inputs are needed, complaints are forwarded to process control committee to carry out the *root cause analysis* of the problem. Corrective and preventive actions drawn-up by the process control committee, for elimination of such problems, is then forwarded to the *Steering Committee* for implementation.

#### 8. JISCO's Leadership Position in Exports – The end result of a responsive Supply Chain -

*JISCO is currently the largest producer of GP / GC in India* with an installed capacity of about 850000 tons per annum, making up roughly 17% of the total domestic industry. Over the last two years i.e. FY 2003 and FY 2004, JISCO has consistently maintained its leadership position as the *largest exporter of galvanized products from India*. JISCO's exports accounted for about 78% of net sales in FY 2004 and about 30% of India's total exports of galvanized products. *We believe that this performance has been sustained in large measure on account of JISCO's superior supply chain efficiencies vis-à-vis its peers and automated supply chain processes.*

*JISCO's emphasis on exports has been more in the nature of a strategic initiative*, keeping in view the emerging realities in the global market place. In fact, *our surmise is that companies which do not meet global standards will not only lose their share in the domestic market but will not find a viable market outside the country either.* Also, considering that the world is seeing a continual breakdown of trade barriers and the move towards one global market under the auspices of WTO, Indian Companies are, of late, finding themselves competing on International standards and *exports is virtually becoming a blue print for survival.*

JISCO established a robust platform in FY 2003-04 and thereby *further consolidated its existing markets and market presence in 45 countries and all 5 continents* – which helped to build resilience against fall in demand / slow down in any particular market.

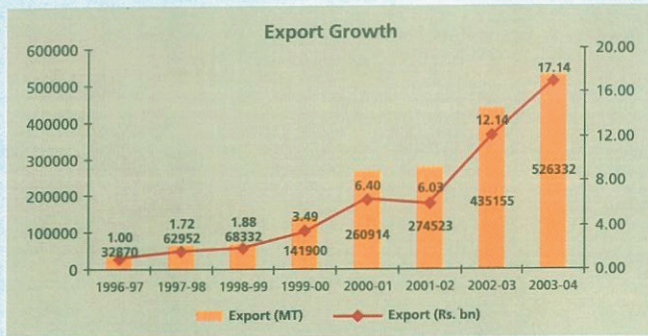


*JISCO has pioneered the entry of Indian galvanized products in the US market* and has consistently built on that first mover advantage. Interestingly, although JISCO markets its Galvanized product internationally under the brand name *GALVPLUS*, the brand personality of the product is so strong that currently the US market (which is the world's largest market for galvanized steel) perceives imports from India in two categories - JISCO material and other Indian material. In a survey, carried out in the United States market by The Fox School of Business and Management – Temple University, USA on behalf of JISCO, the Company was found to be ahead of the competition in major performance metrics i.e. Quality, On time delivery and Competitive pricing.

In fact, Customer feedback is extremely high on JISCO's priorities – hence visits are made by the CEO and other senior members of management to major international customers to gauge the satisfaction level of customers and understand their concerns on a one to one basis. The Company also keeps a close tab on changing customer preferences, new product opportunities etc. through periodic customer surveys.

From a strategic perspective, in addition to growing export volumes, there has been a co – terminus initiative towards *broad basing of the market spread*, to reduce dependence on any one particular market, even while consistently catering to the requirements of existing customers - please see the pictorials.

A major selling point with JISCO is its *effective order execution capability* in the export market. This, coupled with strong product quality attributes, distinguishes it from the competition. In exports however, *JISCO is the preferred supplier as it meets delivery commitments*



(the lead time between order acceptance and order execution for exports could be as little as two weeks) and has the flexibility to accommodate small order sizes as well.

In the case of exports, in addition to quality control which is 'on line' (i.e carried out on the galvanising line itself) there is a supplementary pre-despatch check by an internationally reputed quality certification agency, which precludes any major complaints from overseas customers.

## 9. Postscript -

We would like to conclude this submission by providing an overview of the Steel Industry and recent developments.

The year just gone by was a turbulent phase for the steel industry. The upward spiral in prices was primarily driven by strong demand from China. The demand from Asia as well as from the US in the latter part of the year also lead to buoyancy in prices – demand from Europe however remained sluggish through the last year.

The surge in steel demand also impacted the prices of primary input raw materials i.e. Iron Ore, Coking Coal / Metallurgical Coke and Scrap, which became scarce with rising demand. In a manner of speaking, this development drove home the point that steel producers need to necessarily have long term strategic tie - ups for their primary input raw materials.

The current steel capacity in India is of the order of 38-40 million tons per annum. Crude steel production is estimated currently at 34 million tons per annum and apparent steel consumption at 32 million tons per annum. Given this backdrop, The *National Steel Policy 2003*, which is in its final draft, targets 100 million tons per annum of steel consumption by 2018.

This is not a stiff target when it is realised that the per capita steel consumption in India at 31kgs is one of the lowest in the world, as compared with the global per capita steel consumption average of 150kgs and developed world average of 450 kgs.

*The challenge before the Industry* therefore is to leverage steel for development of infrastructure facilities in India. Further, Indian Economic policies will need to facilitate building of additional capacities in steel as well as enabling Indian steel companies to compete globally, both in terms of cost of borrowings and inputs as well as state of the art infrastructure facilities. Also, considering that Indian Iron Ore is qualitatively one of the best the world over with an iron content in excess of 60%, there should be some level of prioritisation of iron ore for the domestic industry.

World GDP is predicted to improve from 2.6% in 2003 to 3.8% in 2004 and approximately 3.5% for 2005.

The outlook for Japan has improved significantly, having emerged from long recession. Growth in Japan is anticipated around 3% during 2004. The growth in EU-25 is projected to improve substantially in the coming years. China continues to remain stable at 8.2% during the current year. China has the fastest growing global economy.

Global steel production crossed one billion tons. Global demand continues to remain firm. Global consumption of finished steel is predicted to increase by 6.2% to 53 million MTS in 2004.

As the eighth largest steel producer globally, India will continue to be a net exporter with growing acceptability of its products in the international market.

In view of the foregoing, our surmise is that from a global standpoint, *the steel industry is at a turning point* – perhaps unprecedented. We believe that in future, successful steel companies, irrespective of national boundaries, will need to continuously reinvent themselves to compete effectively in the market place – and a critical success factor for the market leaders would be their supply chain efficiencies as also the degree of automation in their supply chain processes vis-a-vis their peers.

## **Afterword : About the Contributors**

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Dr. P K Richardson is Fellow in Business Economics and Strategy and Director of the Indian Research and Development Unit at the Manchester Business School, Manchester, UK.

### **Mr. Raman Madhok:**

Raman is an alumnus of IIT Delhi, XLRI Jamshedpur and Manchester Business School. He is currently the Joint Managing Director & CEO of Jindal Iron and Steel Company Ltd. He has earlier worked with Taj Group of Hotels, Pfizer, Parke-Davis, and Cyanamid (Now Wyeth Lederle).

## **References :**

JISCO Annual Reports.

Interviews with key company personnel.

## Glossary of terms & abbreviations

Terms	Description
CGL	Continuous Galvanizing Line
CRM 1, 3, 4	Cold Rolling Mills 1, 3 and 4 at Vasind
CSD	Coated Strips Division
CSD 1,2,3	Galvanizing Lines 1, 2 and 3 at Tarapur
CSG	Customer Service Group
EBIDTA	Earnings before Interest, Depreciation, Tax & Amortisation
EC	Executive Committee
GC	Galvanized Corrugated
GP	Galvanized Plain
HRC	Hot Rolled Coils
HRM	Hot Rolling Mill
ICR	Identification Of Customer's Requirements
JISCO	Jindal Iron and Steel Company Limited
JMD & CEO	Joint Managing Director & Chief Executive Officer
JVSL	Jindal Vijayanagar Steel Limited
MANCOM	Management Committee
OPCOM	Operating Committee
PPC	Production Planning and Control
QMS	Quality Management System
SPCC	Standard Product Category Charts
TM 1, 2, 3, 4, 5	Tarapur Cold Rolling Mills 1, 2, 3 , 4 and 5
R & D	Research & Development

## JISCO's Financial Performance for Seven Years

Figures are Rs. in million

Sr. Particulars	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
<b>A) INCOME</b>							
1 Gross Sales	10,433.76	11,298.80	11,861.28	15,366.39	11,141.04	16,122.58	22,658.44
Excise Duty	(1,090.43)	(1,223.47)	(1,031.60)	(1,248.15)	(705.55)	(555.56)	(756.69)
Net Sales	9,343.33	10,075.32	10,829.69	14,118.24	10,435.49	15,567.02	21,901.75
2 Other Income	226.27	68.60	98.10	61.47	76.17	67.31	104.70
<b>Total (1 to 2)</b>	<b>9,569.60</b>	<b>10,143.92</b>	<b>10,927.79</b>	<b>14,179.71</b>	<b>10,511.65</b>	<b>15,634.34</b>	<b>22,006.45</b>
<b>B) EXPENDITURE</b>							
1 Consumption of Materials	7,174.95	7,238.53	7,481.65	10,912.83	7,584.12	10,294.00	14,506.56
2 Increase / Decrease in Stock	(147.30)	235.25	200.16	46.70	129.70	(458.41)	(43.98)
3 Manufacturing Expenses	579.45	591.17	839.08	1,069.42	678.96	1,018.62	1,034.51
4 Employees' Remuneration & Benefits	147.05	155.72	182.29	219.29	212.94	218.98	311.81
5 Administration Cost	131.10	191.24	181.15	185.23	164.34	345.69	(95.12)
6 Selling Expenses	473.57	616.76	688.16	1,104.39	705.92	909.58	1,498.22
7 Interest & Finance Expenses	468.80	567.49	795.32	1,124.45	1,193.85	1,035.99	809.12
8 Depreciation	386.25	416.07	439.62	447.97	448.19	421.06	478.93
9 Miscellaneous Expenditure written off	15.40	27.08	29.36	33.58	128.63	125.21	135.60
10 Transferred to Capital Asset Accounts	(4.06)	(14.90)	(1.95)	(0.49)	-	(2.48)	-
<b>Total (1 to 10)</b>	<b>9,225.20</b>	<b>10,024.42</b>	<b>10,834.83</b>	<b>15,143.37</b>	<b>11,246.65</b>	<b>13,908.23</b>	<b>18,635.63</b>
<b>C) Profit / (Loss) before exceptional items</b>	<b>344.40</b>	<b>119.50</b>	<b>92.96</b>	<b>(963.66)</b>	<b>(735.00)</b>	<b>1,726.10</b>	<b>3,370.82</b>
<b>D) Exceptional items</b>	-	-	-	-	(242.84)	67.69	-
<b>E) Profit / (Loss) before Tax</b>	<b>344.40</b>	<b>119.50</b>	<b>92.96</b>	<b>(963.66)</b>	<b>(977.84)</b>	<b>1,793.79</b>	<b>3,370.82</b>
<b>F) Provision for Tax - Current</b>	<b>(32.00)</b>	<b>(11.50)</b>	<b>(6.00)</b>	<b>(1.50)</b>	<b>(1.50)</b>	<b>(37.00)</b>	<b>(950.40)</b>
- Deferred	-	-	-	-	293.96	(547.00)	6.60
<b>G) Profit / (Loss) after Tax</b>	<b>312.40</b>	<b>108.00</b>	<b>86.96</b>	<b>(965.16)</b>	<b>(685.38)</b>	<b>1,209.79</b>	<b>2,427.02</b>
<b>H) Earnings Per Share - Basic</b>	<b>7.30</b>	<b>2.52</b>	<b>2.03</b>	<b>(22.49)</b>	<b>(15.97)</b>	<b>28.19</b>	<b>55.77</b>