

Directors' Report

TO THE MEMBERS,

The Directors hereby present their Ninety-seventh annual report on the business and operations of the Company and the financial accounts for the year ended 31st March, 2004.

| | Rupees Crores | <i>Previous Year Rupees Crores</i> |
|--|--------------------------|--|
| 1. (a) Net Sales/Income | 11920.96 | 9793.27 |
| (b) Total Expenditure | 8425.55 | 7491.29 |
| (c) Operating Profit | 3495.41 | 2301.98 |
| (d) <i>Add</i> : Dividend and Other Income | 140.51 | 50.39 |
| (e) Profit before Interest, Depreciation, Exceptional items and Taxes | 3635.92 | 2352.37 |
| (f) <i>Less</i> : Interest..... | 122.17 | 304.82 |
| (g) Profit before Depreciation, Exceptional items and Taxes | 3513.75 | 2047.55 |
| (h) <i>Less</i> : Depreciation | 625.11 | 555.48 |
| (i) Profit before Exceptional items and Taxes | 2888.64 | 1492.07 |
| (j) <i>Less</i> : Exceptional items | 222.68 | 229.57 |
| (k) Profit before Taxes | 2665.96 | 1262.50 |
| (l) <i>Less</i> : Provision for Current Taxation | 920.00 | 261.88 |
| (m) <i>Less</i> : Provision for Deferred Taxation | (0.26) | (11.69) |
| (n) Profit after Taxes | 1746.22 | 1012.31 |
| (o) <i>Add</i> : Balance brought forward from the previous year | 307.45 | 215.82 |
| (p) <i>Add</i> : Balance brought forward on Amalgamation of erstwhile Tata SSL Limited | — | 2.33 |
| (q) Balance | 2053.67 | 1230.46 |
| Which the Directors have appropriated as under, to : | | |
| (i) Proposed Dividend | 368.98 | 295.19 |
| (ii) Tax on Dividend | 47.27 | 37.82 |
| (iii) General Reserve | 1000.00 | 590.00 |
| TOTAL | 1416.25 | 923.01 |
| Leaving a balance of | 637.42 | 307.45 |
| to be carried forward | | |

BUSINESS RESULTS

The global consumption of finished steel increased by about 50 million tonnes for the second consecutive year in 2003-04. Much of this growth has been in china, which recorded a growth rate of over 20% in steel consumption in 2002 and 2003. The emergence of China as a powerhouse and world leader in steel, the scrapping of safeguard tariffs under Section 201 by the U.S., rapid increase of raw material and steel prices world over, characterised the steel industry in 2003-04. Countries in Western Europe, North America and Japan have passed through their era of infrastructure creation and much of their current steel consumption goes towards meeting replacement demand, especially in consumer durables. China is currently executing a major program of infrastructure development, which has resulted in a surge in steel demand. Other countries in the CIS, Eastern Europe, Middle East, South East Asia, and South America are beginning to grow at a faster pace. Growth of steel consumption in the world is expected to continue over the next few years, though the geographical mix could change.

The buoyancy in the Indian economy as a whole, and the steel industry in particular, gained momentum during the year under review. India's GDP is estimated to have doubled to 8.1%, as compared to 4.0% in the previous year. The strong domestic economy, a resurgent capital market and

the improved foreign exchange reserves have instilled a new found confidence in the Indian corporate sector. In the Manufacturing sector, the steel industry has shown the highest growth in sales and profits in the first two quarters of the year. Steel consumption in India has grown at a steady rate of about 5-6% over the last decade, to a level of about 28 million tonnes per annum in 2003-04. This growth rate is likely to accelerate, with consistent and rapid growth in the Indian economy.

The general economic well-being, the strong steel demand and the continuing efforts of the Company in improving its product-mix, contain cost, initiatives in adding value to its customers, resulted in another year of record performance. The shareholders may recall that the Company became EVA positive in the previous year. During the year, the financial position improved significantly with an incremental EVA of Rs. 516 crores.

The Company's operational and financial performance continued on a growth path. Steel sales increased by 1% to 3.958 million tonnes (2002-03 : 3.905 mil. tonnes) over the previous year. Though the Company's steel exports was lower by 7% at 0.609 million tonnes (2002-03 : 0.653 mil. tonnes), it was more than made up by higher exports of ferro alloys. Export turnover increased by 14% to Rs. 1,496.56 crores (2002-03 : Rs. 1,313.23 crores). The firm trend in steel prices, higher volumes, better product mix

and several improvement initiatives by the Company resulted in total revenues increasing by 22.5% from Rs. 9,843.66 crores to Rs. 12,061.47 crores. All other businesses turned in record performances.

Gross profit increased by 54.6% to Rs. 3,635.92 crores as against Rs. 2,352.37 crores in the previous year. Operating profit improved from Rs. 2,301.98 crores in the previous year to Rs. 3,495.41 crores. Lower levels of debt and lower average interest rates contributed to a reduction in gross interest charges at Rs. 230.56 crores (2002-03 : Rs. 352.17 crores). Net interest charges were also correspondingly lower at Rs. 122.17 crores (2002-03 : Rs. 304.82 crores). Provision for depreciation was Rs. 625.11 crores (2002-2003 : Rs. 555.48 crores). After providing Rs. 230.83 crores towards expenses for employee separation compensation (2002-2003 : Rs. 229.57 crores), profit before taxes increased to Rs. 2,665.96 crores (2002-2003 : Rs. 1,262.50 crores). Profit after taxes increased by 72.5% to Rs. 1,746.22 crores from Rs. 1,012.31 crores in the previous year.

Pursuant to the Accounting Standard AS – 21 issued by the Institute of Chartered Accountants of India, consolidated financial statements presented by the Company includes financial information of its subsidiaries. The Company has made an application to the Government of India seeking exemption under Section 212(8) of the

Companies Act, 1956 from attaching the Balance sheet, Profit and Loss Account and other documents of the subsidiary companies to the Balance Sheet of the Company. In case the exemption is granted by the Government of India, the aforesaid documents relating to the subsidiaries of the Company will not be included in the Annual Report. The Company will make available these documents/details upon request by any member of the Company.

DIVIDEND

The Board has declared a dividend on Ordinary Shares @ 100% (Rs. 10 per share) for the year ended 31st March, 2004, subject to approval by the Shareholders. The dividend will be paid on 368,981,904 Ordinary Shares at Rs. 10 per share (2002-03 : On 368,981,904 Ordinary Shares at Rs. 8.00 per share).

ISSUE OF BONUS SHARES

Your Directors recommend an issue of bonus shares in the ratio of one Ordinary share for every two existing Ordinary Shares of the Company held by the members on a date to be fixed by the Board, by capitalising a part of the Securities Premium Account to the extent of Rs. 184.49 crores. The proposed issue of bonus shares is subject to the consent of the shareholders at the forthcoming Annual General Meeting. The bonus shares shall rank pari passu in all respects with the existing fully paid up Ordinary Shares of the Company, including any dividend that may be declared for

the financial year in which the bonus shares are allotted.

INCREASE IN AUTHORISED SHARE CAPITAL

In order to facilitate the capitalisation of Securities Premium Account to the extent of issue of bonus shares, the authorised share capital of the Company is being increased from Rs. 690 crores to Rs. 850 crores by creation of 160,000,000 Ordinary Shares of Rs. 10 each.

FINANCE

The Company's strong operational performance during the past two years has significantly improved its liquidity position. Better credit management has resulted in sundry debtors being brought down from an average of 48 days in the previous year to 31 days in the current year, despite a substantial increase in total sales as well as sales to value added segments. Average inventory holding period has been better at 39 days as compared to 46 days in the previous year. Total working capital requirement has reduced from 94 days in the previous year to 70 days.

During the year, interest rates continued the previous year's declining trend and dropped to historic lows. Considering the current level of inflation rate, further reduction in interest rates would seem difficult. The Company has progressively reduced its debt exposure and interest burden during the year, and has repaid debt aggregating Rs. 1,036 crores. Consequently, the debt:equity ratio has come down from 1.33:1 at the beginning of the year under review to 0.77:1.

Lower debt and reduction in the average interest rate contributed to lower gross interest charges at Rs. 230.56 crores, as compared to Rs. 352.17 crores in the previous year.

There has been a substantial net reduction in the long-term outstanding borrowings by Rs. 826 crores. Short-term borrowings have gone down by Rs. 27 crores over the previous year. Overall borrowings have, therefore, decreased by Rs. 853 crores to Rs. 3,373 crores as compared to Rs. 4,226 crores at the end of the previous fiscal year.

Surplus funds generated out of operations have been invested in liquid assets. Such investments have increased to Rs. 1,539 crores as on 31st March, 2004 from Rs. 434 crores at the beginning of the year. These temporary investments will be liquidated to meet the capital expenditure and other requirements, as and when required.

CAPITAL PROJECTS

The expansion programme, to increase the crude steel making capacity of the Company to 5 million tonnes, is well under way. All the facilities are expected to be completed by September 2005. The financial year 2005-06 will be the first year of operation of the new facilities.

The Company has received three Prospecting Licences covering 80 sq. kms of mineral sands in Tamil Nadu for the Titania Project. Environment clearance for the project has also been received. A consortium comprising Outokumpu, PAH and L&T has been appointed to conduct Phase I of

the Feasibility Study, upto mining, mineral separation and preliminary study for Ilmenite upgradation.

The Company incurred capital expenditure of Rs. 960 crores during the year. The electrolytic cleaning line in the Cold Rolling Mill, Jamshedpur, to improve the surface quality of the cold rolled coils supplied to the Automobile and Appliance sectors, was one major facility commissioned during the year.

SUBSIDIARIES

During the year under review, a 100% subsidiary, Jamshedpur Utilities and Services Co. Ltd. (JUSCO) was incorporated with the objective to provide services in the area of housekeeping & hospitality, town planning & engineering, civil construction and maintenance, public health, education, horticulture, fleet management, water and waste water management, power distribution and many other similar activities. The Town Division of the Company hitherto, carried out much of these activities. It is expected that JUSCO, as a separate organisation, will bring a sharper focus and improvement in the quality of these services, thus permitting the Company to focus on its core businesses.

The Company has invested an amount of Sri Lankan Rupees 2.5 crores in the equity capital of a new company, Lanka Special Steels Ltd., registered in Sri Lanka, which has been formed as a 100% Subsidiary of the Company, to take over the assets of Mascons Wire Industries Ltd.

(Mascons). Mascons has wire drawing and galvanising plants with annual capacities of 8,400 tonnes and 12,000 tonnes respectively. The Company believes that there is a strong synergy between its Wire Division (acquired earlier through merger of the erstwhile Tata SSL Ltd.) and the new unit, which can harness the growing market in Sri Lanka.

A new company, M/s Tata Steel KZN (PTY) Ltd., registered in South Africa, has been formed as a subsidiary of Tata Africa, to implement the 120,000 tonne ferro chrome project at Richards Bay, South Africa. The Company expects to become a majority shareholder in the new company. Detailed trials on alternative technologies are being conducted. Substantial progress has been made in the Environment Impact Assessment.

Pursuant to an Order by the Bureau for Industrial Finance and Reconstruction (BIFR) in December 2003, the Company has become the beneficial owner of 91.36% of the equity in the Jamshedpur based company, Indian Steel and Wire Products Ltd. (ISWP). The shares were acquired through purchase of the stake held by the erstwhile promoters and conversion of a part of the unsecured loans outstanding. ISWP has, therefore, become a subsidiary of the Company. ISWP has a Wire Rod Mill, Wire Drawing Unit, Rolling Mill Roll Manufacturing Plant and a Fastener Plant.

The other Subsidiary Companies, as on 31st March, 2004, were Tata Refractories Ltd., The Tata Pigments Ltd., Kalimati Investment

Company Limited, Tata Korf Engineering Services Ltd., Tata Incorporated, U.S.A., Stewarts and Lloyds of India Ltd., TM International Logistics Ltd. and its 100% subsidiary, International Shipping Logistics FZE.

FORMATION OF A NEW ASSOCIATE COMPANY

Limestone, which is an important raw material in steel manufacturing, is sourced from the market. However, since the supply from the existing sources has become somewhat uncertain, the Company has identified Thailand as a reliable source having good reserves of high quality limestone. The Company has, therefore, entered into a shareholders' agreement with M/s Unistrech Ltd., a Thai company, as a long-term solution to procuring limestone. The project is being implemented through a new company called Sila Eastern Company Limited, in which the Company has a 49% share holding, the balance being held by M/s Unistrech Ltd. The Company will, however, have management control over M/s Sila Eastern Company Ltd.

ENERGY, TECHNOLOGY & FOREIGN EXCHANGE

Details of energy conservation and research and development activities undertaken by the Company along with the information in accordance with the provisions of Section 217(1)(e) of the Companies Act, 1956, read with the Companies (Disclosure of Particulars in the Report of Board of Directors)

Rules, 1988, are given in Annexure 'A' to the Directors' Report.

DIRECTORS

In accordance with the provisions of the Companies Act, 1956, and the Company's Articles of Association, Mr. Keshub Mahindra, Mr. Nusli N. Wadia, Dr. T. Mukherjee and Mr. A.N. Singh retire by rotation and are eligible for re-appointment.

PARTICULARS OF EMPLOYEES

Information in accordance with the provisions of Section 217 (2A) of the Companies Act, 1956, read with the Companies (Particulars of Employees) Rules, 1975, as amended, regarding employees is given in Annexure 'B' to the Directors' Report.

CORPORATE GOVERNANCE

Pursuant to Clause 49 of the Listing Agreements with the Stock Exchanges, a Management Discussion and Analysis, Corporate Governance Report and Auditors' Certificate regarding compliance of conditions of Corporate Governance are made a part of the Annual Report. A note on the Company's corporate sustainability initiatives is also included.

VOLUNTARY DELISTING OF THE COMPANY'S ORDINARY SHARES FROM CERTAIN STOCK EXCHANGES

The Ordinary Shares of the Company have been delisted from the Stock Exchanges of Pune, Cochin, New Delhi, Kanpur, Patna and

Ahmedabad. The shares of the Company are now compulsorily traded in dematerialised form only in the Mumbai Stock Exchange, the National Stock Exchange and the Kolkata Stock Exchange. The Company's application for delisting is pending with the Kolkata Stock Exchange.

DIRECTORS' RESPONSIBILITY STATEMENT

Pursuant to Section 217 (2AA) of the Companies Act, 1956, the Directors, based on the representations received from the Operating Management, confirm that -

1. in the preparation of the annual accounts, the applicable accounting standards have been followed and that there are no material departures;
2. they have, in the selection of the Accounting Policies, consulted the Statutory Auditors and have applied them consistently and made judgments and estimates that are reasonable

and prudent so as to give a true and fair view of the state of affairs of the Company at the end of the financial year and of the profit of the Company for that period;

3. they have taken proper and sufficient care to the best of their knowledge and ability for the maintenance of adequate accounting records in accordance with the provisions of the Companies Act, 1956, for safeguarding the assets of the Company and for preventing and detecting fraud and other irregularities;
4. they have prepared the annual accounts on a going concern basis.

On behalf of the Board of Directors

Mumbai, 7th June, 2004

RATAN N. TATA
Chairman

Annexure 'A' to Directors' Report

PARTICULARS REQUIRED UNDER THE COMPANIES (DISCLOSURE OF PARTICULARS IN THE REPORT OF THE BOARD OF DIRECTORS) RULES, 1988.

A. CONSERVATION OF ENERGY

a) ENERGY CONSERVATION MEASURES TAKEN :

- i) Installation of waste heat recovery system at 'G' blast furnace hot stoves for pre-heating the combustion air and BF gas. This has helped in reducing specific BF gas consumption in the hot stoves and this gas was diverted to steam and power generation resulting in saving of 4,570 tonnes of coal for steam and power generation.
- ii) Installation of V/F drive in the ID fan motors at PH # 4 resulting in saving of electrical power for steam and power generation.
- iii) Replacement of industrial unit shade by transparent sheet helped in harnessing natural light resulting in saving of electrical energy.
- iv) Efficient utilisation of by-product gases in the west Plant boilers to reduce middling coal and LDO consumption.
- v) Improved insulation of steam lines, maintenance practices and re-engineering of process steam line to reduce losses on account of condensation and leakages.
- vi) Reduction in process steam consumption at turbo blowers of blast furnaces, coke plants and various canteens of the steel works, by improving the efficiency of turbo blowers, utilisation of waste steam at by-product plant of coke plant and installation of pressure reducing station at canteens.
- vii) Modification in oxygen supply network between A-F blast furnaces and 'G' blast furnace to reduce vent loss of oxygen and improved oxygen supply in blast furnaces leading to higher productivity.

b) ADDITIONAL INVESTMENTS AND PROPOSALS FOR REDUCTION OF CONSUMPTION OF ENERGY :

- i) Recovery of sensible heat of coke by installing coke dry quenching system at Coke Plant.
- ii) Modification of stoker fired boilers for by-product gases firing at BH no. 1 and PH no. 3 to reduce middling coal consumption and enhance by-product gases.
- iii) Enhance LD gas recovery by installing new Gas Holder and evacuation system.
- iv) Installation of 30 MW back pressure turbine.

c) IMPACT OF THE ABOVE MEASURES :

- i) Energy conservation measures during 2003-2004 have resulted in achieving :
- ii) Plant specific energy consumption of 7.065 Gcal/tcs.
- iii) Lower coal (middlings) consumption of 0.734 million tonnes for steam and power generation – a reduction of 10.49%.
- iv) Lower condensate and other losses of 24.51 t/h in the process steam supply network – a reduction of 7.30%.
- v) Lowest ever oxygen vent loss of 9.60 t/day – a reduction of 14.13%.

d) TOTAL ENERGY CONSUMPTION AND ENERGY CONSUMPTION PER UNIT OF PRODUCTION :

Form - A enclosed.

B. TECHNOLOGY ABSORPTION

- e) Efforts made in technology absorption as per Form B: Form B enclosed.

C) FOREIGN EXCHANGE EARNINGS AND OUTGO

- | | | |
|---|---|-------------------------------------|
| f) Activities relating to exports, initiatives taken to increase exports; development of new export markets for products and services; and export plans | } | Mentioned in the Directors' Report. |
| g) Total foreign exchange used and earned (2003-04). | | |

| | Rs. in Crores |
|--|---------------|
| i) CIF value of imports | 806.06 |
| ii) Expenditure in foreign currency | 163.41 |
| iii) Foreign exchange earned (includes deemed exports) | 1501.31 |

Form - A

Form for disclosure of particulars with respect to Conservation of Energy : 2003-2004

| Particulars | 2003-2004 | 2002-2003 |
|---|-----------|-----------|
| A. POWER AND FUEL CONSUMPTION | | |
| 1. Electricity | | |
| a) Purchased | | |
| Units (M. KWH) | 1,497.06 | 1,540.92 |
| Total Amount (Rs.Lakhs) # | 42,605.00 | 44,075.26 |
| Average Rate/Unit (Rs./KWH) | 2.85 | 2.86 |
| b) Own Generation | | |
| i) Through Diesel Generator | | |
| Units (M. KWH) | 5.32 | 8.18 |
| Units per litre of Diesel Oil (KWH) | 3.65 | 3.76 |
| Average Cost/Unit (Rs./KWH) | 12.23 | 9.27 |
| ii) Through Steam Turbine/Generator | | |
| Units (M. KWH) | 1,033.66 | 992.73 |
| Units per tonne of Coal (KWH) | 1,170 | 1,029 |
| Average Cost/Unit (Rs./KWH) | 1.58 | 1.64 |
| (*This includes generation of PH #4 in MKwh which is operated on by-product gases upto 95%) | 345.38 | 309.47 |
| 2. COAL | | |
| i) Coking Coal | | |
| Quantity (Million Tonnes) | 3.50 | 3.36 |
| Total Cost (Rs.Lakhs) | 73,578.09 | 69,243.06 |
| Average rate (Rs./Tonne) | 2,100.12 | 2,057.90 |
| ii) Blast Furnace Injection Coal | | |
| Quantity (Million Tonnes) | 0.24 | 0.20 |
| Total Cost (Rs.Lakhs) | 3,622.10 | 3,919.16 |
| Average rate (Rs./Tonne) | 1,491.49 | 1,999.35 |
| iii) Middling Coal and ROM | | |
| Quantity (Million Tonnes) | 0.73 | 0.83 |
| Total Cost (Rs.Lakhs) | 6,144.95 | 6,059.01 |
| Average rate (Rs./Tonne) | 840.71 | 732.56 |
| 3. FURNACE OIL | | |
| Quantity (Kilo Litres) | 13,491.51 | 13,415.62 |
| Total Amount (Rs.Lakhs) | 1,593.06 | 1,553.75 |
| Average rate (Rs./KL) | 11,807.83 | 11,581.64 |
| 4. OTHERS | | |
| L.D.O. | | |
| Quantity (Kilo Litres) | 2,682.11 | 3,533.54 |
| Total Cost (Rs.Lakhs) | 420.22 | 522.93 |
| Average rate (Rs./KL) | 15,667.59 | 14,799.12 |
| L.P.G. | | |
| Quantity (Tonnes) | 2,785.52 | 2,445.56 |
| Total Cost (Rs. Lakhs) | 541.15 | 410.70 |
| Average Rate (Rs./Tonne) | 19,427.25 | 16,793.70 |
| NG | | |
| Quantity (Tonnes) | 3,821.00 | 4,811.00 |
| Total Cost (Rs. Lakhs) | 332.35 | 444.42 |
| Average Rate (Rs./ Tonne) | 8,697.98 | 9,237.58 |

Excludes electricity duty paid on purchases

Form for disclosure of particulars with respect to conservation of energy : 2003-2004

B. CONSUMPTION PER UNIT OF PRODUCTION

| Particulars | Steel (per tonne) | Tubes (per tonne) | Bearings (per no.) | Ferro Alloys (per tonne) | Rings & Agrico (per no.) | Growth Shop (per tonne) | CRC West (per tonne) | SSL West (per tonne) |
|---------------------------|----------------------|----------------------|-----------------------|-----------------------------|-----------------------------|----------------------------|-------------------------|-------------------------|
| Electricity (KWH) | 418.00 (437.00) | 116.00 (116.00) | 0.87 (1.08) | 3767.40 (3726.44) | 0.82 (0.85) | 831.41 (996.70) | 179.29 (178.93) | 213.21 (269.22) |
| Furnace Oil (Litres) | | | | | 0.11 (0.23) | 20.24 (11.36) | | 27.23 (24.87) |
| Coking Coal (Tonnes) | 0.88 (0.89) | | | | | | | |
| Others : | | | | | | | | |
| Light Diesel Oil (Litres) | 0.32 (0.55) | 0.01 (0.05) | | | | | 12.06 (12.50) | |
| L.P.G.(Kgs.) | | | | | | | 13.67 (12.80) | 6.82 (6.29) |
| N.G. (Kgs.) | | | | | | | | 30.96 (42.63) |

(Previous year's figures have been given in brackets and modified wherever necessary)

Form - B

Form for disclosure of particulars with respect to Technology Absorption : 2003-2004.

RESEARCH AND DEVELOPMENT

1. SPECIFIC AREAS IN WHICH R & D WAS CARRIED OUT BY THE COMPANY

Research was carried out in the areas of raw materials including coal, coke, energy utilisation, energy conservation, waste utilisation, sintering, blast furnace productivity, product development and improvement in life of plant and machinery.

2. BENEFITS DERIVED

Identified enablers for increase in clean coal yield in coarse and fine circuit at West Bokaro washeries; Coke strength and coke microstructure and texture correlated; Developed an enhanced insight in understanding the quality of mineral sand, Ilmenite, Sillimanite and their metallurgical performance; identified chemical grade chromite concentrates production possibility from Sukinda; Identified organic reductant to reduce Cr6+ to Cr3+ from Chromite mines from Sukinda; Noamundi, Joda and Khandbond ore fines were characterised for sinter making; Effect of ore size and effect of different combinations of iron ore fines on sintering were investigated. Use of -8mm ore size was found to improve strength; Effect of FeO on sinter properties was analysed in order to find an optimum FeO; High temperature properties of sinter were investigated esp. with varying MgO levels in sinter; Plant scale trial with 1.2% MgO in sinter is recommended; Use of anthracite as a replacement of coke breeze was evaluated. Less than 30% anthracite usage in sintering is suggested; Use of ferro-nickel slag and Vietnam anthracite in sinter making were investigated. Plant trial is recommended; Low temperature sintering of chromite ore was investigated; Effect of casting parameters on lower part permeability of 'G' blast furnace was analysed; To improve efficiency of cored wire injection at LD#1, reduction in injection speed and modification in wire dimensions were suggested based on mathematical modelling. It was possible to improve the process efficiency and reduction in wire consumption by 335 in case of EWNR heats in actual plant trials; Water model study carried out for LD#2 vessel showed it was possible to improve mixing in the vessel by 30 – 35% by changing the existing practice of bottom purging of uniform flow through each tuyere to new practice of differential flow. Trials are being planned at LD#2; ERW tubes with properties comparable to existing FM tubes have been developed; BH-180/210 GI produced through CGL#2 on trial basis; BH-210 with 40 Mpa bake hardening value has been press formed at customer end; Semi-processed electrical steel conforming to 65-SP-520-E5 developed for M/s GE, Faridabad; Off line model for reducing shape defects of CR coils developed; wire Rod Rolling Simulation system implemented in WRM developed to predict mechanical properties of TMT wire rod; Off line model developed to optimise flatness error of TMBP grade HR coil; A high chromated coating developed for fuel tank applications; Spot welding behaviour of GA sheet evaluated for auto application; A poly phosphated coating on CRCA sheet developed for improved corrosion resistance.

3. FUTURE PLAN OF ACTION

Estimation of theoretical clean coal ash and yield from captive coals; Improvement of dense media cyclone and feed coal distributor performance through CFD technique; Development of efficient gravity separation process for treating fine coals (-6 +0.25 or -3 +0.25 mm); Development of improved flotation process (Column/Jameson/Microcell etc) for treating ultra fines (-0.5/-0.25 mm); Improvement of dewatering techniques for reducing moisture in the fine clean coal; understanding ferro alloy processes; Dephosphorisation in the BOF vessel; Design of top lance and studies on jet characteristics; Hydrodynamics of bottom gas stirring: a numerical modelling approach; Enhancing phosphorous partition ratio in BOF – Thermodynamic assessment of existing slag systems; Optimisation of annealing, reheating to improve furnace efficiency; optimisation of galvanising processes to produce ExtraGal; Data and process modelling.

4. EXPENDITURE ON R & D

(Rs. Crores)

| | |
|---|-------|
| (a) Capital | 1.04 |
| (b) Recurring | 23.22 |
| (c) Total | 24.26 |
| (d) Total R&D expenditure as a percentage of total turnover (%) | 0.20 |

TECHNOLOGY ABSORPTION, ADAPTATION AND INNOVATION

1. Efforts made :

Process:

Infrared Camera for slag detection at LD#2: IR cameras have been installed at LD#2 to reduce slag carry over and improve product quality.

Tube change device: At slab caster, tube change device has been put in place. This has resulted in significant improvement in tundish life from 6-7 to 11-12 heats.

Scarfig Manipulator: Scarfig manipulator has been commissioned at LD#2 and SC for scarfig of slabs meant for surface critical automotive grades.

Electrolytic Cleaning Line : Electrolytic cleaning line with 0.5 mtpa capacity has been commissioned at CRM for guaranteed surface cleanliness of cold rolled products for auto and white goods.

NSC Technical Assistance Programme: The programme has stepped into third year. The scope of the technical assistance includes a) improvement in strike rate of automotive steel, b) approval from auto majors, c) development of high strength auto grades.

Technology agreement with Arcelor: An agreement with arcelor has been signed. The scope includes a) transfer of knowhow for manufacturing of extragal and Galvannealed, b) to help adapt Extragal in the processes of three automotive customers, c) assistance in operational and customer related problems.

Modification of anchoring arrangement of ID bead trimmer in 6” HFIW Mill: With the existing anchoring arrangement, ID bead trimming was not as per standard. Trimming tools used to break very frequently. To overcome this problem, anchoring arrangement was modified to incorporate two point support for the trimmer body. With the modified arrangement, ID trimming is now as per standard and tool breakage is eliminated.

Inhouse design and manufacturing of grab arrangement for drossing of galvy baths: A bucket was used for drossing. This bucket was dragged with the help of EOT crane. This resulted in agitation of the galvy pot resulting in more formation of dross. Moreover, this process was very unsafe. Grab operated with pneumatic cylinders has been designed and manufactured in house and is being successfully used. Application for patent of this design has been processed.

Inhouse design and manufacturing of rolls for 100.6 mm pipes for cold draw application: Marketing wanted 90 mm OD cold drawn pipes. In the existing PT mills, mother hollow for this size was not possible as mill can roll up to 76.2 mm OD pipes. It was decided to roll these hollows in 6” HFIW mill. Rolls for mother hollow of 100.6 mm was designed and manufactured in house.

Installation of dot matrix printers in ST Finishing for on line printing of Tata Logo on all galvanised pipes: Customers wanted some different visual identity for our pipes. Four dot matrix printers were installed on line in the existing K & A machines.

Installation of thermal printers in ST and PT finishing: Tube bundles are manually searched and located during stock taking. Many times, bundles could not be located due to lack of information. This search resulted in multiple handling also. Quarterly stock taking details are noted and fed into Avalon manually. To overcome these problems, thermal printers have been installed. Using bar coded labels from thermal printer will enable bar code scanning for stock taking.

2. Benefits :

Efforts have led to improved efficiencies, cost competitiveness and enhanced product range.

3. Particulars of technology imported during the last five years :

| Innovation/Technology | <u>Year of Import/ Absorption</u> | <u>Status of Implementation</u> |
|--|---------------------------------------|-------------------------------------|
| a) Stamp Charge Battery No. 9 (Saarberg Interplan, Germany) | 2000 | Commissioned |
| b) Ladle Furnace at LD 1 (GHH,MDH, Germany) | 2000 | Commissioned |
| c) Capacity increase at WRM (Morgan, USA) | 2000 | Commissioned |
| d) Continuous galvanising line no. 2 at CRM (CMI, Belgium) | 2001 | Commissioned |
| e) Utilisation of sensible heat from blast furnace hot stove waste gas at ‘G’ blast furnace in association with NEDO, Japan | 2002 | Commissioned |
| f) Installation of electromagnetic stirrer and submerged entry nozzle in the billet caster of LD #1 (Concast, Switzerland) | 2002 | Commissioned |
| g) Installation of probes in ‘G’ blast furnace to monitor various parameters to carry out intensive R & D activities and thereby acquiring in-depth knowledge of in-furnace phenomena (Paul Wurth, Luxembourg) | 2002 | Commissioned |
| h) Electrolytic cleaning line (SMS Demag, Germany) | 2003 | Under implementation |
| i) Upgradation of ‘G’ blast furnace (SMS Demag, Germany) | 2004 | Under implementation |
| j) Upgradation of HSM | 2004 | Under implementation |
| k) Upgradation of billet caster-1 at LD1 (Concast, Zurich) | 2004 | Under implementation |
| l) Ladle furnace-2 at LD1 (SMS Demag, Germany) | 2004 | Under implementation |
| m) New Rebar Mill (Morgan, USA) | 2004 | Under implementation |
| n) Upgradation of caster at LD2 (Voest Alpine, Austria) | 2004 | Under implementation |

Annexure 'B' to Directors' Report

Statement pursuant to Section 217(2A) of the Companies Act, 1956 and the Companies (Particulars of Employees) Rules, 1975

| Sr. No. | Name | Age (Years) | Designation/ Nature of Duties | Gross Remuneration | Net Remuneration | Qualifications | Total Experience (Years) | Date of Commencement of Employment | Last employment held Designation – Period for which post held |
|---------|----------------------|-------------|---|--------------------|------------------|--|--------------------------|------------------------------------|---|
| | | | | Rs. | Rs. | | | | |
| 1. | Baijal A.D. | 56 | Vice President (Raw Material & Iron Making) | 34,35,526 | 16,85,205 | B.Sc. Engg. (Met.), P.G.D.B.M. | 34 | 13-12-69 | — |
| 2. | Chaturvedi U.K. | 54 | Vice President (Long Products) | 32,55,687 | 16,78,754 | B.Sc. | 34 | 25-10-69 | — |
| 3. | Mahanty Niroop Kumar | 54 | Vice President (Human Resources Management) | 32,68,608 | 16,56,190 | B.A. (Hons.), M. B. A. | 28 | 18-12-75 | — |
| 4. | Mukherjee Dr. T. | 61 | Deputy Managing Director (Steel) | 74,27,413 | 38,22,726 | B.E. (Met.), M. Met. (Sheffield), Ph. D. (Sheffield) | 36 | 17-05-71 | British Steel Corpn., Asst. Manager, New Products Dev., — 1 year – 6 months |
| 5. | Muthuraman B. | 60 | Managing Director | 82,16,759 | 41,54,778 | B. Tech. (Met.), P.G.D.B.M. | 37 | 14-11-66 | — |
| 6. | Nandrajog R.C. | 59 | Vice President (Finance) | 37,44,000 | 21,56,745 | B.Sc. Engg. (Mech.), A.I.C.W.A M.B.A. | 37 | 12-11-66 | — |
| 7. | Nerurkar H.M. | 55 | Vice President (Flat Products) | 38,49,477 | 19,84,172 | B. Tech. (Met.) | 32 | 01-02-82 | Tata Steel, Asst. Research Engg., — 5 years U.M.I. Ltd. Manager (QC) — 5 years |
| 8. | Sengupta D. | 58 | Vice President (Shared Services) | 34,25,697 | 16,86,615 | B.E. (Electrical) | 36 | 30-12-67 | — |
| 9. | Singh A.N. | 57 | Deputy Managing Director (Corporate Services) | 65,14,047 | 32,73,672 | B.A. (Hons) Pol. Science | 33 | 05-10-90 | Deputy Inspector General of Police, Bihar — 6 years |
| 10. | Singh R.P. | 59 | Vice President (Engg. Services & Products) | 34,38,564 | 16,47,686 | B.Sc. Engg. (Mech.) | 38 | 01-03-96 | SAIL & RINL, General Manager (Projects) — 30 years |

- Notes :
- (1) Gross remuneration comprises salary, allowances, monetary value of perquisites, commission to the Directors and the Company's contribution to Provident and Superannuation Funds but excludes contribution to Gratuity Fund on the basis of actuarial valuation as separate figures are not available.
 - (2) Net remuneration is after tax and is exclusive of Company's contribution to Provident and Superannuation Funds and monetary value of non-cash perquisites.
 - (3) The nature of employment in all cases is contractual.
 - (4) None of the employees mentioned above is a relative of any Director of the Company.

On behalf of the Board of Directors

RATAN N. TATA
Chairman

Mumbai, 20th May, 2004.