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6. Email ID cpattnaik@yahoo.co.in
7. Nationality Indian
8. Date of Birth 18'th April, 1952

9. Educational Qualification

Engineering Studies: B.Sc. Chem. Engg. (Hons)
(R.E.C.- Rourkela) (Sambalpur University)
1977, Presently NIT Rourkela
M. Tech Chem. Engg. (I.I.T. Kanpur) 1979
Ph.D. Chem. Engg. (I.I.T. KIIT University
Bhubaneswar in year 2024)

10. Membership in Professional Institutions:

- ✓ F.I.E. (India),
- ✓ L.M.I.I.Ch.E.,
- ✓ L.M.I.I.M.
- ✓ L.M.I.S.H.M.T

Currently (1) Executive member, Chemical Engineering Division, The Institution of Engineers (India) Odisha Center.

(2) Chairman, the Indian Institute of Chemical Engineers, Bhubaneswar Regional center, Odisha

B.Sc. Chem. Engg. (Hons) with first class (Hons) from Regional Engg. College Rourkela, Odisha, India. In 1977 (Presently National Institute

of Technology). Secured 81% of marks and awarded third rank in the University in Chem. Engg.

1. **M.Tech** in Chem. Engg. From IIT Kanpur in 1979 securing 87.5% of marks (CPI 8.75 out of 10). Awarded second rank in M.Tech programme in Chemical Engineering
2. PhD (Chemical Engineering), KIIT University, Bhubaneswar.

Scholarships & Fellowship

1. Awarded M.Tech scholarship and additional research assistantship (Merit Basis) at IIT Kanpur.
2. Awarded Monash Graduate scholarship, Australia for furthering higher study leading to Ph.D. degree on "Kinetics and Thermodynamics of Metallurgical reactions and mineral beneficiations in Chemical Engineering Department.
3. Awarded International Post Graduate research scholarship for higher study at university of Queensland, Australia in Chemical Engineering.

Projects & Thesis

B.Sc. Chemical Engg. (Hons) Thesis

Manufacture of Phthalic Anhydride by Oxidation of Othoxylene in "Semi fluidized bed Reactor" Published a paper on "Design of Semi fluidized bed Reactor" in Chemical age of India.

M.Tech. Chem. Engg. Thesis

Equations of state for Polar and Non polar fluids. Thermo dynamic evaluation of Fluid Phase equilibria in Multi component systems. Applications of augmented verial equations of state in unit operations of Chemical and Metallurgical Engg., Ferro alloys and Thermo Dynamics of alloying, Iron and steel making, design of unity operation equipments in chemical Engg.

Ph.D. Chem. Engg. Thesis

Gas - Liquid absorption in packed column with and without pulsed gas phased.

Enhancement of rate of absorption of greenhouse gases (Carbon dioxide and ammonia using the influence of pulsation intensity (amplitude and frequency) along with other operating parameters in simulated packed column regular packed column of different diameters. Optimized the parameters with CFD Technique.

EXPERIENCE

Industrial, Scientific and Management Experience in (Projects, Engineering and Development, Plant Operation, Technology & Research)

Total above 35 years of experience both in Industrial, Scientific / Research and Development and Management experience particularly in the major integrated steel plants in India and abroad. The major steel plants include

1. The TATA Iron and Steel Company, Jamshedpur
2. The ESSAR Steel Ltd. Hazira, Gujrat
3. ISPAT Industries Ltd. Dolvi, Maharashtra
4. The Saudi Iron & Steel Company, Hadeed, Saudi Arabia
5. Ahwaz Iron & Steel Company, Iran
6. Jindal Stainless Ltd. (Overseas Steel Complex)
7. Uttam Galva Steels Ltd.
8. Jindal Steel & Power Ltd., New Delhi
9. Jai Balaji Group Of Industries, Kolkata
10. Council of Scientific & Industrial Research, Bhubaneswar.
11. Delta Steel, Nigeria
12. Balasore Alloys, Odisha, India
13. Gontermann – Peipers (India) Ltd.

Present Position:

Former visiting industry professor in Chemical Engineering at KIIT University, Bhubaneswar

1. Delta Steel Company Plc Nigeria: Executive Director, Operations.

Job Responsibilities

- I. Midrex Direct Reduction Plant
- II. Lurgi Pellet Plant
- III. Oxygen Plant (Linde)
- IV. Lime Plant
- V. Foundry
- VI. Projects and development
- VII. Maintenance of Integrated steel including SMS and Rolling Mill

- VIII. Central Mechanical maintenance
- IX. Central Electrical Maintenance
- X. Heavy Vehicle Equipments
- XI. Civil Maintenance Department
- XII. HR and Administration
- XIII. Fire, Safety and Environment
- XIV. Rolling Mill.
- XV. SMS - Maintenance

2. Balasore Alloys

- I. Capacity enhancement of Balasore Alloys with modification of furnish design and increasing the capacity of transformer.
- II. Reserve valuation of Ferrochrome mines
- III. Revalidation of DPR of SRK (UK) and expansion of mining capacity from 0.35MT PA to 1.2MT PA to supplement the requirement of (1)Balasore Alloys (2)Jabamayee Alloys (3) Rohit Ferro Alloys
- IV. Underground mining project : Ramp up to 1.4MT PA for Band -1 and 2 and 2MT PA from Bank-1 to 6.
- V. Design and EPC contract of open caste conveyer project and execution.
- VI. Design and EPC contract and construction of vertical wall project.
- VII. Setting of off Ferrochrome unit with capacity of 0.3MT PA to 0.5MT PA (site selection, technology selection, process design, construction contract, equipment selection and contracting.

3. Gontermann Peipers (India) Ltd.

- I. Executive Director and Unit management head to improve the productivity in both cast roll and forge roll to meet the National and International demand in Iron and Steel Industries.

4. Executive Director (Projects & Technology)

The Job Assignment – Jai balaji Group Of Industries, Kolkata

- a. Chief of Project & Technology & Unit Head to put 5MTPA Green Field Integrated Steel Plant at Raghunathpur in the district of Purulia of West Bengal.
- b. Project Incharge of expansion projects at present operating plants at Durgapur, Rourkela, Jharkhand, Durg etc.

5. Executive Director (Technology)

The Job Assignment – Jindal Steel & Power Ltd.

Angul-Odisha Project

- a. Co-ordination and Execution of installing 12.5 mTPA (Phase I – 6.00 MT PA and Phase II – 6.5 MT PA) green field integrated steel project at Angul, Odisha, India.

Bolivia Project

- b. Execution of installing 10 mTPA Pelletizing plant, 6.0 mTPA (3 modules) of Gas based (Midrex) DRI plant and 1.75 mTPA integrated Steel plant mostly for long products.

Raigarh Project

- a. Installation of Coal Gasification plants (Lurgi Sasol Technology) and 2 mTPA Gas based DRI (Midrex) plant at Raigarh.
- b. Overall Responsible and head for the JSPL Group projects in India and abroad for Coal Gasification / Natural Gas processing and reforming, Coal based DRI and Gas based DRI (all technologies like MIDRX, DANAREX, HYL), Palletizing plants, Sinter plants, Producer Gas plants & Slurry transportations etc.

Process Route and Units

- The 6 mTPA integrated steel project will follow the route Coal Gasification /DRI – Blast Furnace – Steel Melting Shop (Conarc) – Hot Strip Mill.
- Finished product is HR Coil.
- Units – Coal Gasification – 360,000 NM³/hr, DRI Plant – 4 mTPA, Pellet Plant – 1X5 mTPA, Coal Washery – 2X5.5 mTPY, Blast Furnace – 3.0 mTPY, Sinter Plant – 4.0 mTPA, Coke oven – 1.6 mTPA, SMS Shop – 6.0 mTPA (Twin shell Conarc shop - 3X200 T, Ladle Furnace – 6X200 T, RH Degasser – 2X200 T, Desulphurisation unit 2X200 T), Slab Caster – 4X1 Strand, Hot Strip Mill – 4.5 mTPA, Plate Mill – 1.5 mTPA, Oxygen Plant – 6000 TPD, Lime Plant – 5X350 TPD, Dolo Plant – 2X350 TPA, Power Plant – 1080 MW, all other allied units.

6. Executive Director (Operations & Technology)

The Job Assignment – Uttam Galva Steels Ltd (Projects),

To head as the Chief Executive Officer for installing the integrated green field steel plant project of 3 MTPA capacity producing high value added special steel, HRC at **Parjanpur near Palasapanga in Keonjhar district of Odisha**. Basic function of the position is to lead from the site selection till the plant commissioning and stabilizing the operation of the plant considering the most suitable infrastructure like land, raw material availability, source of water, electricity, railway siding port facilities and connectivity of the roads. The assignment is to bring the plant in the direction of best layout, best technology and best process route and optimized productivity for quality steel at the most competitive lowest operating cost.

7. Executive Director (Operations & Technology)

The Job Assignment – Jindal Stainless Ltd. Overseas Steel Complex

The operational, technological and management functions to carry out the project for design, engineering, execution and commissioning of an integrated steel plant of 10 MT capacity of liquid steel. The green field project starting from site and infrastructure development comprising of

1. Pelletizing plant of four units each of 400 MTPA capacity.

2. Gas based DRI plant of four units of super mega module each of 2.8 MTA capacity (First time in the world) of Midrex U.S.A. technology.
3. Electric Arc furnace of 8 units each having 160 T/hr and 160 MVA furnaces for steel melting.
4. Ladle furnace of 8 units each 160 T/hr and 32 MVA.
5. 1x6 strand billet caster, 2x1 strand thin slab caster, 2x6 stand billet caster, 2x1 strand thin slab caster will be constructed in different phases of project.
6. Rebar mill, Wire rod mill, plate mill UoE/JCO pipe plant, ERW pipe plant and SWPP etc.
7. Oxygen plant 4 units each of 630 T/day capacity.
Lime calcinations plant 8 units each of 600 T/day.
Calcine dolo plant 4 units each of 160 T/day.
Power plants 4 units each of 320 Megawatt

The techno feasibility study and report, financial arrangement, finalization of technology for each unit and selection of vendors are being finalized. The basic and detailed engineering for various units are in progress. The turnkey contracts for executing the project for various sections are in finalization stage and some are already finalized.

8. Jindal Stainless Ltd. Odisha Project

Associated with Ferro Alloys plant (Ferrosilicon, Ferromanganese and Silicomanganies), 850,000 T/year Coke Oven plant, Sinter Plant of 180 M² effective area missing, 1600 M² Blast Furnace with complete material handling Auxiliary & utility system. Cold bricketing unit of Crome ore fines, Electric arc furnace operation.

Offer for Overseas Company at Oman (Director: Steel Complex)

I was offered the position of Director of Steel Complex and Chief Executive Officer for AL GHATH HOLDING Steel company at Suar Oman.

9. Experience in Project & Operation

- Coal based direct Reduction processes like SL/RN Lurgi Germany, TDR (Tisco Direct Reduction), Krupp process Germany, Alis Chalmer USA.

- Starting from Project Engineering Such as Basic and Detailed Engineering, selection of the Technology, selection of the Equipments, Procurement, Construction/Errection, Commissioning(Cold & Hot), Operation and Stabilization of the Coal based, Gas based, Iron and Steel making units.
- Gas based direct reduction process like Midrex USA, HYL Mexico, Corex/Midrex and Fastmet (Iron Bearing Waste treatment), Fast melt Australia (Iron Ore Fines and Coal Fines etc.)
- Design and project engineering of Direct Reduction Plants(Coal based, Coal gasification, Gas based plants and 10Million Tones Integrated Steel Plants).
- Construction and commissioning of Midrex 400 Series(0.6 Million Tone/Anum), 600 series (0.8 Million Tone /Anum), 1000 Series (1.2 Million Tone/Anum) presently for 1.76 Million Ton/Anum and 2.8 Million Tone/Anum capacity Plant. At different companies like ESSAR steel, ISPAT Industries, Saudi Iron and Steel and Ahwaz Iron and Steel Iran.
- Coal gasification (M/s. Lurgi, Germany) and DRI production with synthesis gas by Danarex Technology (Daniely 'AREX') Coal gasification, production of synthesis gas, and Midrex operated shaft furnace technology for iron making.
- Coal gasification for Synthesis gas generation (Carbon Monoxide and Hydrogen) and production of quality DRI in reformer free Midrex shaft furnace Technology.

10. Chief of Operations

- Operations and production of different capacity DR plants both Midrex USA, HYL Mexico and Lurgi Germany (Coal & Gas based).
- Technical development and debottlenecking studies of DR plants, blast fernace iron making (Hot Metal), lime calcinations and DOLO calcinations plant, Oxygen Plants, Deducing Systems and Gas cleaning plant of Electric Arc furnace.
- Incorporation of modification and commissioning of different iron making units in India and abroad.
- Natural gas Processing/Reforming of natural gas to produce Carbon Monoxide and Hydrogen.

- Turbo expander operation(Natural gas Pretreatment plant) to convert rich hydrocarbon to lean hydrocarbon there by protecting the poisoning of the catalyst and increasing the productivity.
- Utilization of LPG and propane as supplement reductant for DRI making.

Coal, Coke and Coal based Process

- Study and characterization of different types of Indian coking and non coking coals best suitable for Spongiran Plants and Blast Furnace operations.
- Testing and characterization of different types of iron ore lump and pellets of India and abroad for DR processes in coal based and gas based plant as well as iron making is blast furnace.
- Cold bricketing of iron or oxide fines to charge heate to the shaft furnace /blast furnace.
- Coal bricketing of DR fines to suitably charged in to EAF and BF for steel making and iron making respectively.

Position and Working Experience in different Organizations

- **Executive Director and unit head, Delta Steel, Nigeria**
- **Executive Director Balasore Alloys and Guntermann- Peiper (India) Ltd.**

- A. Executive Director (Project & Technology)
Jai Balaji Group Of Industries, Kolkata
Since Jan 2008 to till Date
- B. Executive Director (Technology)
Jindal Steel & Power Ltd, New Delhi
 1. Executive Director (Operations & Technology)
Uttam Galva Steels Ltd.
 2. **Jindal Stainless Steel Ltd.(Overseas Steel Complex)**
Executive Director (Operations and Technology)
 3. **Jindal Stainless Steel Ltd.(Orissa Project)**
 4. **Al Ghaith Holdings Steel Company:**

Director, Steel Complex

5. **Ispat Industries Dolvi**

Vice President (Operations), Chief executive and profit center head

- Looking after 1.3 Million Tone capacity sponge iron plant- Operation, maintenance, technical and development, quality assurance, logistics and marketing, HRD and Finance, stores purchase etc related to the plant operation and raw material procurement.
- Operation and maintenance, optimization and stabilization of cold bricketing plant of DRI fines and oxide fines for use in EAF and BF.
- Operation, maintenance and cost optimization of Lime calcining plant for use in Steel melting shop/ BF.
- Oxygen plant operation and handling of about 600 MT of Oxygen deialy.
- Natural gas LNG, Propene, LPG processing and handling plant.
- Research and development activities in DR plant, Oxygen plant, Lime plant, **Hot strip Mill, EAF and BF.**
- All Six initiatives like six sigma, TPM, GAMBA Kaizen, SAP etc.
- Liosoning with local government or sorting out the issues related to local employment law, water supply to the plant,. Gas supply, electricity and transport etc.
- Liosoning with international technology suppliers of sinter plants coke oven. And have constant touch to the top executives for technical and procurement issues.

6. **Mines and Metals Engg., Dusseldorf, GmbH, Germany**

Duration: Jan 2001 Till May 2001

Position: Consultant/Technical Adviser for Problem shooting in iron making like pelletisation, DR plant. Optimization of feed mix for maximizing the production and minimizing cost.

- Natural gas processing and optimization of Stoichiometric reforming performance.
- Debottle necking study of enhancing production capacity by introducing
 - I. Oxygen Injection
 - II. Introduction of thin walled refractory in the shaft furnace to increase the reduction volume to enhance the production
 - III. Double Bustle port installation in Midrex shaft furnace for injection of Bustle gas to have better utilization.

7. Ahwaz Iron and Steel Company, Iran

Position: Plant Manager and Chief of production for Midrex and HYL direct Reduction plants (7 DR plants)

8. Saudi Iron And Steel Company, Hadeed

Duration: 4 Years Jan 1997 To Oct. 2000

Position: Production manager Direct Reduction Plant (Midrex and HYL) - Looking after production/ Operation, Maintenance Egg.

9. Ispat Bahrain-India

Duration: About 2 Years

Position: General Manager (Projects)

- Project in charge and complete technical evaluation, equipment selection and finalization of the project of 1.2 Million Tone capacity HBI plant at Bahrain.

10. Ispat Industries Dolvi

Duration: 1995 to 1997

Position: General Manager (Production and Technical Development)

- Construction, commissioning and stabilization of operation of the 1 Million Tone capacity Mega module of Midrex 1000 Series.
- Debottle necking Phase I incorporated for the Mega module to enhance the production capacity from 133 Tones/Hr to 175

Tones/Hr and Stabilized the plant at 179 Tones/Hr capacity and is operating.

- Study and trial for the characteristics of different Oxide feed(Long and Pallette in the shaft furnace to achieve higher production and better metalised product both Indian and OREs from abroad like South Africa, Brazil, Bahrain and Iran etc.
- Optimization of feed mix to achieve higher production considering the highest yield of the steel making of plant.

11. Project In charge Ispat Bahrain

- Chief and project in charge of Ispat Bahrain DRI Plant of 1.4 Million Tone capacity (Super Mega Module)

12. ESSAR Steel Gujarat

Duration: 1992 To 1995

Position: Joint General Manager
(Operation and Technical Services)

- Production in charge of gas based HBI plant of three 400 series modules, Lime conciling and oxygen plant.
- Project in charge of commissioning of third module.
- Functionally looking after operation, maintenance, technical services and utilities of steel complex.

13. TATA Iron and Steel Company

Duration:1982 To 1992

Position: Manger Production

- In charge of Direct Reduction plant of TATA sponge Iron Ltd.
- Pilot plant commissioning, operation of coal based direct reduction plant, R & D activities of coal based and gas based Sponge iron technology.
- Process evaluation and modernization of coke oven and blast furnace.
- Silicon transfer into hot metal, De sulphurisation of hot metal.

14. Council of Scientific and Industrial Research – India Regional Research Laboratory Bhubaneswar.

Position: Scientist

Duration: 1980 To 1982

- Heat and mass transfer study in shaft furnace, blast furnace and rotary kiln.
- Hydrometallurgy and Pyrometallurgy study of Direct reduction of Iron and Vanadium.
- Hydro metallurgy route of Nickel extraction from Iron cobalt nickel complex ORE.

15. Indian Institute of Technology Kanpur

Duration: 1978 To 1980

Position: Research Assistant

Special Assignments

- 1) Debottlenecking study of TISCO TDR coal based sponge iron plant with M/S Lurgi Germany to eliminate the deficiencies. Leader of the rehabilitation project to upgrade, implement and stabilize the plant from becoming a loss unit to profitability.
- 2) Project in charge to implement debottlenecking study of Phase I and II of Midrex USA to increase the plant capacity from 133 Tones/Hr to 225Tone/Hr
- 3) Project in charge of Saudi Iron & Steel Company to carry out the enhancement project with M/S Lurgi Germany of all three Midrex Plant.
- 4) Process Eng. Study to enhance the capacity of DR plants(7 Plants) of Ahwaz Iron Steel Company Iran.
- 5) Team member for the technical discussion at Midrex USA Charlotte for Mega Module project at Ispat Bahrain.

Execution of the Projects, Erection and Commissioning

- 1) Gas based Midrex project construction & commissioning of Hot Briquetting plant at ESSAR steel Gujarat. Commissioning of plant is in record time of 21 days.
- 2) Construction erection and commissioning of world's first Mega Module of (Midrex Technology) 1.0 Million capacity at Ispat Industries Ltd. Dolvi Maharashtra. The present capacity enhanced to 1.6 Million tone/Anum.

- 3) Construction and commissioning of 0.8 Million tone capacity HYL module of Maxicana Technology at Saudi Iron & Steel Company Hadeed.
- 4) Erection and Commissioning of 1 Million tone capacity Iron making plant (Zam Zam Project) of Khozestan Steel Ahwaz, Iran. Incorporated the major modification of recent development of Midrex technology to enhanced production capacity.
- 5) Associated with project execution of 2500 Sq. Mtr. Blast furnace at Ispat Dolvi.
- 6) Associated with project execution of Lime Plant, Dolo Plant, Oxygen Plant, Blast Furnace, Electric EAF Units and Cold bricketing plants.

Countries Visited for Business development/Seminar/Technical Discussion/Projects

- South Africa
- UK
- USA
- Amsterdam(Netherlands)
- Saudi Arabia
- Bahrain
- Venezuela
- Iran
- Nigeria
- Albania

Positions Held:

1. Executive Director: Delta Steel, Wari, Nigeria – Jan-2011 to Sept. 2012 (1 year 9 months).
2. Executive Director (Projects and Operation): Jai Balaji Group of Industries- March 2008 to Nov 2010 (2 years 8 months)
3. Executive Director (Technology) : Jindal Steel & Power Ltd. March 2007 to March 2008 (1 year)
4. Executive Director : Uttam Galva Steel Ltd.- May 2005 to July 2007 (2 years 6 months)
5. Executive Director : Jindal Stainless Steel Ltd. 2004 to 2005 (1 Year)

6. Vice President and Chief of Operation
Ispat Industries, Dalvi : 2001 – 2004 (3 years)
7. Technical Advisor : AHWAZ Iron & Steel , Iran –
2001 to 2001 (1 year)
8. Chief of Operations : Saudi Iron & Steel Company,
Hadeel – 1997 to 2000 (4 years)
9. General Manager : Ispat Industries Ltd., 1995 to 1997 (2 years)
10. Joint General Manager : Essar Steel, Hazira,
1992 to 1995 (3 years)
11. TISCO, Jamshedpur from 1982 to 1992, Asst. Engineer to
Manager
(10years) Coal based sponge iron technology development,
construction, commissioning, operation and stabilization of
sponge iron plant in TATA Sponge Iron Limited, Orissa.

**Total no. of years experience in steel industries is about 35
years.**