NIIR PROJECT CONSULTANCY SERVICES

Asia's Leading Industrial Knowledge & Consultancy Ecosystem

C L I E N T C A S E S T U D Y

Strategic Manufacturing Investment Advisory

Establishment of Ferrosilicon Manufacturing Unit

for M/s. Tata Metaliks Limited, Kolkata

"Transforming Industrial Investment Ideas into Profitable, Bankable Ventures"

Industry	Client	Location
Metallurgy & Alloy Manufacturing	**M/s. Tata Metaliks Limited**	**Kolkata, West Bengal, India**

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ABOUT NIIR PROJECT CONSULTANCY SERVICES (NPCS)

Niir Project Consultancy Services (NPCS) is one of Asia's most trusted and comprehensive industrial consultancy organizations, offering end-to-end advisory, feasibility, and project development services to entrepreneurs, MSMEs, corporates, and investors across the globe.

NPCS is part of Asia's leading industrial knowledge ecosystem with thousands of project profiles and global consulting expertise. With a legacy spanning over three decades, NPCS has emerged as the preferred consultancy partner for identifying, evaluating, and implementing profitable manufacturing ventures.

Core Services

✓ Detailed Project Reports (DPRs)	✓ Techno-Economic Feasibility Studies
✓ Market Research & Demand Analysis	✓ Financial Viability Evaluation
✓ Engineering & Technical Advisory	✓ Implementation Strategy & Roadmaps
✓ Plant Layout & Machinery Selection	✓ Investment Risk Assessment

NPCS Authority & Track Record

30,000+ Detailed Project Reports Published	**50+** Countries with Active NPCS Clients
30+ Years Industrial Consulting Expertise	**250,000+** Industrial Projects Delivered

PROJECT SNAPSHOT

Parameter	Details
Client Name	M/s. Tata Metaliks Limited
Location	Kolkata, West Bengal, India
Industry	Large-Scale Industrial Manufacturing
Project Recommended	Establishment of Ferrosilicon Manufacturing Unit
Consultancy Provided	Techno-Economic Feasibility Study, DPR, Market Assessment, Financial Viability Analysis, Strategic Advisory
Implementation Status	Client Reviewed Feasibility and Proceeded with Project Implementation Consideration

CLIENT OVERVIEW

M/s. Tata Metaliks Limited is a respected large-scale industrial enterprise headquartered in Kolkata, West Bengal, with a strong legacy in the Indian metals and manufacturing sector. As part of the Tata Group's broader industrial portfolio, Tata Metaliks is recognized for its operational discipline, long-term investment perspective, and commitment to sustainable manufacturing excellence.

Client's Strategic Investment Objectives

- Identify a manufacturing opportunity with strong long-term commercial viability
- Leverage regional resource availability and supply chain advantages in West Bengal
- Diversify into a high-demand industrial segment with stable customer base
- Establish a scalable manufacturing platform with future expansion potential
- Ensure technical feasibility and financial sustainability before capital deployment

PROBLEM STATEMENT & CHALLENGES

Before engaging with NPCS, M/s. Tata Metaliks Limited faced a complex investment decision landscape characterized by significant uncertainties across technical, financial, and market dimensions. The key challenges included:

Market Complexity

- Limited visibility into domestic and export demand dynamics for specialty alloys
- Difficulty identifying manufacturing sectors aligned with the company's operational strengths
- Need to assess competitive landscape and import substitution opportunities

Technical Uncertainty

- Evaluation of production process complexity and technology requirements for large-scale operations
- Assessment of raw material sourcing reliability and regional supply chain adequacy
- Understanding of infrastructure and utilities requirements for capital-intensive manufacturing

Financial Risk

- Accurate estimation of capital investment requirements across plant, machinery, and civil infrastructure
- Projection of realistic revenue, profitability, and return timelines under market conditions
- Sensitivity analysis for financial performance under varying input cost and demand scenarios

Regulatory & Implementation Complexity

- Navigation of statutory approvals, environmental clearances, and industrial licensing requirements
- Development of a phase-wise implementation roadmap to manage project complexity and capital phasing

NPCS was engaged to resolve these challenges through a structured, data-driven techno-economic feasibility study and comprehensive Detailed Project Report (DPR).

OUR APPROACH & STRATEGY

NPCS deployed its proven five-phase consultancy methodology to deliver a comprehensive, bankable project report for M/s. Tata Metaliks Limited. Each phase was designed to progressively reduce investment risk and enhance decision-making confidence.

Phase 1	**Project Identification & Opportunity Mapping**	• Assessment of client's investment objectives and sector preferences • Screening of viable manufacturing opportunities • Initial shortlisting of Ferrosilicon as priority project
Phase 2	**Market Analysis & Demand Assessment**	• Evaluation of domestic and export demand drivers • Analysis of industry consumption patterns • Competitive landscape assessment
Phase 3	**Technical Feasibility Evaluation**	• Review of manufacturing process and technology requirements • Assessment of raw material availability and logistics • Plant capacity sizing and layout considerations
Phase 4	**Financial Modeling & Viability Assessment**	• Project cost structuring and investment estimation • Revenue projections and profitability analysis • ROI, IRR, and payback period calculation
Phase 5	**DPR Preparation & Strategic Advisory**	• Compilation of comprehensive Detailed Project Report • Implementation roadmap and phasing recommendations • Strategic advisory for investment decision-making

BUSINESS OPPORTUNITY IDENTIFIED: FERROSILICON MANUFACTURING

Following a rigorous technical and market evaluation, NPCS identified the establishment of a Ferrosilicon Manufacturing Unit as the most strategically suitable and commercially viable investment opportunity for M/s. Tata Metaliks Limited.

What is Ferrosilicon?

Ferrosilicon (FeSi) is a critical ferroalloy composed of iron and silicon, produced in electric arc furnaces through the reduction of silica with carbon. It serves as an indispensable material across multiple industrial applications:

- Iron & steel manufacturing — deoxidation agent and strength enhancer
- Alloy steel and stainless steel production — silicon imparting hardness and corrosion resistance
- Foundry and casting industries — inoculant and deoxidant in grey and ductile iron casting
- Magnesium production — silicon reduction process in magnesium manufacturing
- Welding electrode manufacturing — flux formulation component
- Electrical and electronic industries — silicon steel production for transformers and motors

Why Ferrosilicon Was the Right Choice for Tata Metaliks

Raw Material Advantage Favorable regional access to silica (quartz), coke, and iron sources ensures stable supply chain and cost competitiveness.	**Strong Industrial Demand** Consistent demand from steel plants, foundries, and alloy manufacturers ensures recurring revenue and stable customer base.
Import Substitution Opportunity Domestic production can substitute significant import volumes, offering cost advantages and government support incentives.	**Large-Scale Investment Fit** Capital-intensive production with economies of scale aligned with Tata Metaliks' large-scale investment capacity and operational capabilities.

MARKET OPPORTUNITY & DEMAND OUTLOOK

NPCS conducted a comprehensive market analysis to evaluate the demand outlook, industry structure, and commercial potential for Ferrosilicon in domestic and export markets.

Key Market Demand Drivers

Demand Driver	Market Significance
Expanding Steel Industry	India's rapidly growing infrastructure and industrial manufacturing sectors drive strong, continuous demand for Ferrosilicon as a steelmaking input.
Heavy Engineering Growth	Engineering, heavy industry, and capital goods manufacturing growth underpins consistent alloy demand beyond steel alone.
Foundry & Casting Sector	The vast Indian foundry ecosystem — among the world's largest — ensures stable, diversified consumption across product grades.
Export Market Potential	Growing global demand for quality ferroalloys presents significant export market opportunities for cost-competitive Indian producers.
Government Infrastructure Push	National infrastructure programs including roads, railways, and industrial corridors are accelerating steel consumption and Ferrosilicon demand.

TECHNICAL INSIGHTS: MANUFACTURING PROCESS

NPCS conducted a thorough technical evaluation of the Ferrosilicon manufacturing process, covering production technology, machinery requirements, and operational considerations. The following step-by-step process overview was developed as part of the technical feasibility assessment:

Ferrosilicon Production Process — Step-by-Step

01	**Raw Material Procurement**	Silicon dioxide (quartz), carbon reductants (coke/coal), and iron sourced from regional suppliers ensuring supply chain stability.

02	**Raw Material Preparation**	Screening, sizing, and pre-treatment of raw materials to meet furnace feed specifications and optimize reaction efficiency.
03	**Submerged Arc Furnace (SAF) Operation**	Core smelting process where raw materials are charged into the electric arc furnace at temperatures exceeding 1800°C for reduction.
04	**Tapping & Casting**	Molten Ferrosilicon is tapped from the furnace and poured into moulds or granulators for solidification.
05	**Cooling & Crushing**	Solidified Ferrosilicon is cooled, crushed, and screened to produce market-grade lumps and granules of specified sizes.
06	**Quality Control & Testing**	Chemical composition analysis (Si content verification), size grading, and metallurgical testing for product compliance.
07	**Packing & Dispatch**	Finished Ferrosilicon packed in bulk bags, jumbo bags, or drums as per customer specifications, ready for dispatch.

Key Machinery & Equipment

Submerged Arc Furnace (SAF)	Core production equipment for high-temperature smelting of raw materials into Ferrosilicon alloy.
Electrode Paste System	Soderberg electrode system or pre-baked electrodes essential for maintaining arc stability in the furnace.
Raw Material Handling System	Conveyor belts, hoppers, and weighing systems for controlled material feeding into the furnace.
Tapping Equipment	Specialized tap hole drilling machines and casting equipment for safe molten metal handling.
Crushing & Screening Plant	Jaw crushers, cone crushers, and vibrating screens for size reduction and product grading.
Bag Filtration System	Environmental control equipment for dust collection and emission management compliance.
Quality Testing Laboratory	Analytical instruments for chemical composition testing and metallurgical quality assurance.

FINANCIAL & INVESTMENT ANALYSIS

NPCS conducted a comprehensive financial viability assessment encompassing capital investment estimation, revenue projections, and key financial performance metrics. The analysis was structured to provide the client with clear, bankable insights for investment decision-making.

Financial Component	NPCS Approach
Project Cost Estimation	Capital investment structuring with plant, machinery, civil works, and contingencies
Working Capital Assessment	Operating cycle analysis and short-term liquidity requirements
Revenue Projections	Demand-driven revenue modeling over 5-10 year horizon

Profitability Indicators	EBITDA, Net Profit Margins, and Break-even Analysis
Return Metrics	ROI, IRR, and Payback Period evaluation
Financial Sustainability	Sensitivity analysis under varying market and cost scenarios

Financial Viability Assessment Outcome

The NPCS financial analysis demonstrated that the proposed Ferrosilicon Manufacturing Unit offered encouraging long-term commercial prospects under effective operational execution, with favorable capital recovery timelines, strong profitability potential, and defensible return metrics that justified further project development and implementation planning.

SCOPE OF SERVICES DELIVERED BY NPCS

NPCS delivered a comprehensive suite of consultancy services throughout the project evaluation and DPR preparation engagement:

- Identification and evaluation of Ferrosilicon manufacturing as the optimal investment opportunity
- Detailed market research and demand-supply analysis for Ferrosilicon in domestic and export markets
- Technical feasibility evaluation covering production processes, plant capacity, and technology selection
- Raw material availability and supply chain assessment for regional sourcing viability
- Plant layout planning and machinery selection with vendor identification inputs
- Capital cost estimation covering civil works, plant & machinery, utilities, and pre-operative expenses
- Working capital assessment and operational expenditure modeling
- Financial modeling including revenue projections, profitability analysis, and return metrics
- Preparation of comprehensive Detailed Project Report (DPR) as a bankable investment document
- Implementation roadmap development with phase-wise milestones and execution strategy
- Strategic advisory to support informed investment decision-making by the client

RESULTS & OUTCOMES

The NPCS engagement delivered measurable value to M/s. Tata Metaliks Limited across multiple dimensions of investment decision-making and business development:

✓ **Investment Clarity**	Comprehensive techno-economic analysis enabled the client to evaluate risks and returns with full clarity before committing capital.
✓ **Risk Reduction**	Structured feasibility assessment identified key market, technical, and financial risks, enabling proactive mitigation strategies.
✓ **Strategic Positioning**	NPCS positioned Tata Metaliks to enter the Ferrosilicon market with a defensible competitive advantage grounded in regional resource access.
✓ **Business Confidence**	The client expressed confidence in the project's long-term viability, proceeding to implementation planning following the NPCS engagement.
✓ **Market Entry Readiness**	The DPR provided a bankable roadmap encompassing production process, machinery, costs, and revenue potential for project launch.

✓ **Long-Term Sustainability**	NPCS demonstrated Ferrosilicon's recurring industrial demand and strong commercial outlook, underscoring the project's long-term viability.

CLIENT TESTIMONIAL

> *NPCS provided us with valuable techno-economic insights and a well-structured feasibility assessment that helped us evaluate a suitable manufacturing investment opportunity. Their professional guidance and strategic recommendations strengthened our confidence in the decision-making process. The depth of market analysis, technical rigor, and financial clarity delivered through the DPR was instrumental in our decision to proceed toward project implementation.*
>
> **— Management Team, M/s. Tata Metaliks Limited, Kolkata, West Bengal**

WHY CHOOSE NPCS

NPCS has built its reputation as Asia's most trusted industrial consultancy partner through decades of delivering bankable, investor-grade project reports and feasibility studies that translate complex industrial opportunities into executable business ventures.

Proven Industrial Expertise	30+ years of hands-on experience across diverse manufacturing sectors worldwide.
Global Market Intelligence	Comprehensive understanding of international demand dynamics and trade patterns.
Data-Driven Feasibility	Rigorous technical and financial modeling grounded in real industry data.
End-to-End Project Support	From opportunity identification through DPR to implementation advisory.
Risk Mitigation Framework	Proactive identification and management of technical, financial, and market risks.
Bankable Project Reports	Investor-grade documentation accepted by financial institutions and lenders.

CONCLUSION

The successful recommendation and feasibility validation of a Ferrosilicon Manufacturing Unit for M/s. Tata Metaliks Limited exemplifies NPCS's capability to deliver high-impact, investment-grade consultancy that empowers industrial enterprises to make informed, confident manufacturing investment decisions.

Through rigorous techno-economic analysis, comprehensive market research, and structured financial modeling, NPCS provided the client with the clarity, confidence, and actionable roadmap needed to pursue a large-scale industrial investment with reduced risk and enhanced commercial certainty.

The engagement reinforces NPCS's position as a strategic partner of choice for entrepreneurs, corporates, MSMEs, and investors seeking professionally guided, research-driven manufacturing investment advisory — from opportunity identification through to bankable project documentation and implementation support.