NIIR PROJECT CONSULTANCY SERVICES

CLIENT CASE STUDY

Manufacturing of Methanol from Biowaste

Strategic Advisory for M/s. Nuberg Engineering Limited

"Transforming Biowaste into Commercial Opportunity — From Feasibility to Bankable Investment."

CLIENT	SECTOR	STATUS
Nuberg Engineering Ltd.	Green Chemical Manufacturing	Proceeding to Implementation

About Niir Project Consultancy Services (NPCS)

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

With a legacy of excellence spanning over three decades, NPCS has built an unmatched knowledge ecosystem that encompasses techno-economic feasibility studies, Detailed Project Reports (DPRs), market research, engineering advisory, and strategic investment guidance across virtually every industrial sector.

"NPCS is part of Asia's leading industrial knowledge ecosystem with thousands of project profiles and global consulting expertise."

Core Services

- Detailed Project Reports (DPRs) — Bankable, investor-grade reports covering every dimension of project viability
- Techno-Economic Feasibility Studies — Rigorous technical and financial assessment of industrial opportunities
- Market Research & Demand Analysis — Comprehensive market intelligence to support investment decisions
- Engineering Advisory — Plant layout, machinery selection, process design, and technology guidance
- Financial Modeling & Viability Evaluation — ROI, IRR, payback analysis, and funding strategy support
- Strategic Industrial Consultancy — End-to-end advisory from opportunity identification to implementation

Our Authority & Track Record

85	150K+	30+	150K+
Countries Served	Clients Served	Years in Consulting	Successful Projects Delivered

SECTION 01

Project Snapshot

Client Name	M/s. Nuberg Engineering Limited
Location	Noida, Uttar Pradesh, India
Industry	Large-Scale Manufacturing Investment
Project Recommended	Manufacturing of Methanol from Biowaste
Consultancy Scope	Techno-Economic Feasibility Study, DPR, Market Assessment, Financial Viability Analysis, Strategic Advisory
Implementation Status	Client Agreed to Proceed with Full Implementation

SECTION 02

Client Overview & Investment Objectives

M/s. Nuberg Engineering Limited is a well-established industrial engineering enterprise headquartered in Noida, Uttar Pradesh. With a strong foundation in engineering systems and industrial infrastructure, the client sought to diversify into a new manufacturing segment aligned with sustainability-driven industry trends and long-term growth potential.

Recognizing the global shift toward circular economy principles and renewable industrial inputs, Nuberg Engineering approached NPCS with a clear mandate: identify a commercially viable, technically feasible, and environmentally responsible manufacturing opportunity that could deliver sustainable competitive advantage.

Client Investment Objectives

- Long-term profitability and sustainable revenue growth
- Alignment with renewable and sustainable industrial practices
- Access to regionally available and affordable raw materials
- Strong and growing market demand with future commercial relevance
- Moderate-to-large capital investment with structured financial feasibility
- Operational scalability and long-term production viability
- Entry into future-oriented green chemical manufacturing sectors

SECTION 03

Problem Statement & Business Challenges

Before engaging NPCS, M/s. Nuberg Engineering Limited faced a common challenge confronting large-scale industrial investors: identifying the right manufacturing opportunity from a vast and complex industrial landscape, while managing technical, financial, and market risks with precision.

Market Uncertainty

Difficulty assessing which industrial segments offer genuine long-term demand vs. short-lived trends in an evolving market.

Technical Feasibility Gaps

Limited in-house expertise to evaluate complex biomass conversion technologies, plant configurations, and process viability at an industrial scale.

Financial Risk Assessment

No structured framework for evaluating investment costs, return projections, or financial sustainability of a greenfield manufacturing facility.

Regulatory & Compliance Complexity

Navigating environmental regulations, renewable energy compliance, and state-level industrial policies required specialized consultancy expertise.

Supply Chain Uncertainty

Uncertainty around consistent availability, pricing stability, and logistics feasibility of biowaste feedstock sourcing across agricultural regions.

Strategic Positioning

Need for expert strategic framing to position the new venture effectively within the competitive green chemicals and renewable fuels landscape.

NPCS Approach & Consulting Methodology

NPCS deployed a structured, research-driven methodology to guide M/s. Nuberg Engineering Limited through a comprehensive project identification, evaluation, and validation process.

01 Opportunity Identification & Screening

NPCS conducted a broad industrial opportunity scan across sustainable manufacturing sectors, identifying multiple candidate projects aligned with the client's investment vision. Methanol from Biowaste emerged as the top-ranked opportunity.

02 Market Analysis & Demand Validation

A comprehensive market intelligence assessment was conducted, covering domestic demand patterns, industrial consumption trends, import-export dynamics, and long-term growth projections for bio-methanol and related chemical products.

03 Technical Feasibility Evaluation

NPCS assessed biomass conversion technologies, gasification and syngas-to-methanol processes, equipment specifications, plant layout requirements, and utility needs. Operational practicality and technical scalability were rigorously evaluated.

04 Raw Material & Supply Chain Analysis

Feedstock availability, pricing, and logistics across agricultural waste-generating regions surrounding Noida were mapped to confirm supply chain feasibility and cost competitiveness.

05 Financial Modeling & Viability Assessment

NPCS developed detailed financial projections covering capital expenditure, operating costs, revenue forecasts, profitability indicators, ROI, IRR, and payback period analysis to confirm investment attractiveness.

06 Strategic Advisory & Implementation Roadmap

Based on validated findings, NPCS provided strategic advisory inputs covering project execution phasing, regulatory compliance, stakeholder engagement, and a structured implementation roadmap.

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Technical Insights: Methanol from Biowaste

Methanol produced from biowaste is an environmentally sustainable chemical and fuel product manufactured through advanced biomass conversion technologies. The process converts agricultural waste, organic residues, and other renewable feedstocks into commercially valuable methanol — a versatile industrial chemical with broad downstream applications.

Manufacturing Process Overview

1. Biowaste Feedstock Collection & Preparation

Agricultural residues, organic municipal waste, and biomass are collected, sorted, and pre-processed. Feedstock is dried and size-reduced to optimize gasification performance.

2. Gasification Process

Pre-treated biomass undergoes high-temperature thermochemical gasification in a controlled environment, converting solid organic matter into syngas — a mixture primarily comprising CO, H_2, and CO_2.

3. Syngas Cleaning & Conditioning

Raw syngas is purified through scrubbing and filtration systems to remove tar, particulates, sulfur compounds, and other contaminants to meet methanol synthesis specifications.

4. Methanol Synthesis

Cleaned and conditioned syngas is fed into a methanol synthesis reactor operating under high pressure and temperature with catalytic conversion, producing crude methanol.

5. Distillation & Purification

Crude methanol undergoes multi-stage distillation to achieve commercial-grade purity standards, removing water, by-products, and trace impurities.

6. Storage, Quality Control & Dispatch

Finished methanol is stored in certified containment systems, subjected to quality assurance testing, and dispatched to industrial buyers or distribution networks.

Key End-Use Applications of Bio-Methanol

- Chemical manufacturing — formaldehyde, acetic acid, and specialty chemicals
- Fuel blending — methanol fuel blends for transportation and industrial energy
- Biodiesel production — transesterification processes for renewable diesel
- Pharmaceutical manufacturing — solvent and synthesis applications
- Alternative fuel systems — direct methanol fuel cells and marine fuel applications
- Industrial solvents — wide-ranging solvent applications across manufacturing sectors

SECTION 06

Financial & Market Analysis

Market Opportunity & Demand Outlook

The global market for bio-based methanol is experiencing accelerating growth, driven by increasing environmental consciousness, government renewable energy mandates, and expanding industrial applications for cleaner chemical inputs. India's growing chemical manufacturing sector and ambitious renewable fuel targets create a particularly compelling domestic demand environment.

COMPETITIVE ADVANTAGES

- → Import substitution opportunity for industrial methanol
- → Agricultural waste feedstock abundance in northern India
- → Proximity to chemical manufacturing hubs in Noida/NCR
- → Lower carbon footprint vs. fossil-fuel-based methanol
- → Premium positioning in ESG-compliant supply chains

MARKET GROWTH DRIVERS

- → Rising demand for green and bio-based chemicals
- → Methanol fuel blending mandates in transport sector
- → Expansion of formaldehyde and downstream chemical markets
- → Marine fuel switchover from heavy fuel oil to methanol
- → Government bioenergy and waste-to-energy policy support

Investment Framework & Financial Viability

NPCS conducted a thorough financial viability evaluation covering capital expenditure components, operating cost structures, revenue projections, and key return metrics. The analysis confirmed encouraging financial performance indicators supporting a well-structured investment case.

Capital Investment

Land, civil infrastructure, plant & machinery, utilities setup, and working capital allocation for full-scale manufacturing operations.

Revenue Model

Diversified revenue from methanol supply to chemical manufacturers, fuel blenders, pharmaceutical producers, and solvent distributors.

Return Metrics

Positive ROI, competitive IRR, and structured payback period validated through detailed financial modeling and sensitivity analysis.

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Scope of Services Delivered by NPCS

NPCS delivered a comprehensive suite of consultancy services to M/s. Nuberg Engineering Limited, covering every dimension of the project from initial opportunity identification through to implementation readiness.

✓ **Detailed Project Report (DPR)**

Comprehensive, bankable project documentation covering all technical, financial, and commercial dimensions for investment decision-making.

✓ **Market Potential Assessment**

Full demand analysis including industrial applications, competitive landscape, pricing trends, and import-export opportunity mapping.

✓ **Raw Material Availability Study**

Feedstock sourcing map covering agricultural waste streams, supplier identification, pricing benchmarks, and logistics feasibility.

✓ **Technical Feasibility Report**

Evaluation of gasification technologies, methanol synthesis processes, equipment selection, plant layout, and operational systems.

✓ **Financial Viability Evaluation**

Detailed financial model covering capex, opex, revenue projections, profitability analysis, ROI, IRR, payback period, and funding strategy inputs.

✓ **Project Cost Estimation**

Itemized investment assessment covering land, civil works, machinery, utilities, pre-operative expenses, and working capital requirements.

✓ **Implementation Planning Inputs**

Phase-wise project execution framework covering site preparation, procurement, commissioning, and operational readiness milestones.

✓ **Strategic Advisory Support**

Ongoing expert guidance on market positioning, risk mitigation, regulatory navigation, and investment structuring throughout the engagement.

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Results & Business Outcomes

Following NPCS's comprehensive techno-economic feasibility study, market demand validation, and strategic advisory engagement, M/s. Nuberg Engineering Limited gained complete investment clarity and expressed strong confidence in the project's commercial and strategic potential.

Key Business Outcomes Delivered

✓ **Investment Decision Clarity:** The client moved from initial uncertainty to a fully informed investment position, supported by validated technical, commercial, and financial evidence.

✓ **Risk Reduction:** Potential technical, market, and financial risks were identified, quantified, and addressed through structured feasibility analysis and expert advisory inputs.

✓ **Commercial Validation:** The bio-methanol market opportunity was independently validated, confirming strong demand potential and competitive positioning for the proposed venture.

✓ **Bankable Documentation:** NPCS delivered investor-grade documentation suitable for financial institution submissions, equity investor presentations, and regulatory approvals.

✓ **Strategic Positioning:** The client was positioned to enter the green chemical manufacturing segment from a position of strength, with clear differentiation and market entry strategy.

✓ **Implementation Readiness:** A structured implementation roadmap provided the client with a clear path from project approval through to operational commissioning.

M/s. Nuberg Engineering Limited formally agreed to proceed with full implementation planning for the Manufacturing of Methanol from Biowaste project — a direct outcome of the rigorous consultancy support delivered by NPCS.

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Client Testimonial

> *NPCS provided us with valuable strategic insights and a highly structured techno-economic feasibility assessment that enabled us to evaluate a sustainable manufacturing opportunity with confidence. Their technical expertise and market understanding supported our investment planning process significantly.*

— M/s. Nuberg Engineering Limited

Noida, Uttar Pradesh, India

SECTION 10

Why Choose NPCS?

Choosing the right industrial consultancy partner is one of the most consequential decisions an investor or enterprise can make. NPCS brings a unique combination of industrial depth, research rigor, and strategic expertise that consistently delivers confident, investment-ready outcomes.

Proven Industrial Expertise

Three decades of deep, cross-sector industrial knowledge spanning chemicals, manufacturing, renewable energy, and process industries — giving clients access to battle-tested insights.

End-to-End Project Support

From initial opportunity screening through DPR preparation, financial modeling, regulatory guidance, and implementation planning — NPCS manages the full project lifecycle.

Risk Mitigation Approach

Proactive identification and management of technical, financial, market, and regulatory risks ensures clients invest from a position of clarity and confidence.

Global Market Intelligence

Comprehensive market research capabilities covering 85 countries, with in-depth demand analysis, competitive mapping, and emerging opportunity identification.

Data-Driven Feasibility

All recommendations are grounded in quantitative analysis, validated market data, and rigorous financial modeling — not assumptions or approximations.

Investor-Grade Deliverables

All documentation is prepared to the highest professional standards — suitable for bank submissions, equity fundraising, regulatory filings, and board presentations.

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Conclusion: Strategic Value Delivered

The engagement between NPCS and M/s. Nuberg Engineering Limited exemplifies how professionally structured industrial consultancy transforms investment ambiguity into strategic clarity. By delivering a rigorous, data-driven feasibility framework, NPCS enabled the client to identify, evaluate, and commit to a future-ready manufacturing opportunity with full confidence.

The recommendation to establish a Methanol from Biowaste Manufacturing Unit reflects NPCS's core strength: identifying technically feasible, economically viable, and sustainability-driven manufacturing opportunities — backed by deep industrial expertise and institutional-quality research.

This engagement also demonstrates the long-term value of partnering with a consultancy that combines analytical rigor with strategic foresight, ensuring every investment decision is grounded in validated evidence and commercial intelligence.

READY TO BUILD YOUR NEXT INDUSTRIAL PROJECT?

Partner with Niir Project Consultancy Services (NPCS) to transform your investment idea into a profitable industrial venture.

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