



MANAV GROUP

DELIVERING RELIABLE TOMORROW

Issue 2021-22



# Corporate Profile



**Delivering  
Reliable  
Tomorrow**



# CHAIRMAN'S MESSAGE

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Manav Group was established in the year 2003, with firm focus on delivering engineering excellence to our clients. Our vision to uphold the best engineering practices and to provide outstanding products and services remains undimmed. Our sustained growth over the years represents the trust placed in our solutions by our clients and partners.

The COVID conditions we are living through are being discussed in forums across the world as a biological struggle which has necessitated commercial constraints across the globe. The conflicts and concerns of tomorrow, always pressing and always multiplying, will feature similar non-conventional chemical, biological, radiological, and nuclear (CBRN) challenges around the world. Manav Group recognizes the possible complexities our clients and the rest of the world are likely to face during such a prolonged emergency due to global climate change and CBRN. In this 'New Normal', free movement, availability of trained manpower and specialized equipment will continue to remain restricted.

The constraints of CBRN were clearly visible in the pandemic year 20-21. Expectations changed

across the industry, and the need for efficient operation & maintenance (O&M) increased dependence on remotely available expert support, with an emphasis on technologies requiring minimum on-site intervention. Electrical safety and reliability is a key part of O&M, and ensures continuity of production, unhindered availability of utility, maintenance of optimal stock and, above all, the safety of life, livestock and assets. Our agile team, dealing with safety and reliability issues, rose to the challenge and surpassed all expectations of our clients. It accomplished an annual order booking of USD 3.49 Million and Revenue of USD 3.33 Million this year.

This year, against all odds, this team was not only objective driven but an exemplar of engineering ethics; understanding its obligation to the profession, society, and client while being a shining example of innovation, excellence, transparency, and team spirit.

"To raise new question, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance of time" – Albert Einstein.

Though 2020-21 was unpredictable and challenging, whether we worked from home, remotely or on-site, Manav Group was able to proactively identify and mitigate risk. To 'Deliver a Reliable Tomorrow', its R&D team accelerated pre-emptive innovation. Our team pushed itself beyond the boundaries of known science in the field of electrical safety and reliability by obtaining the patent for the world's first Remotely monitored Fault-time Earth Resistance Monitoring (R-FERM.)

It gives me great pleasure to share that despite the daunting restrictions of the COVID pandemic, Manav Group's team successfully devised a COVID-compliant comprehensive





tuning and testing routine to replenish the excitation system of the 800MW machine at NTPC LARA (which is one of the largest machines in the country). This routine involved a complex interplay of remote guidance and on-the-spot monitoring to support the 72-hour trial period which resulted in the completion of NTPC's capacity enhancement in July '20.

Large-scale projects are difficult to execute at any time. Doing so at sub-zero temperatures at high altitudes, in punishing mountainous terrain, during the Indo-China dispute, complicates it on several levels. Manav Group team's knowledge base and its competence in design, supply, and the supervision of earthing systems was an invaluable contribution in the completion of Atal Tunnel at Rohtang Pass. Working shoulder to shoulder with the Indian army's Border Road Organization, Manav Group's team answered its nation's call of emergency service.

India's Dedicated Freight Container Corridor project aims to enable the high-speed mobilization of goods - from industrial hubs and mines to utilization center and ports. A heavy duty diesel traction system would have released approximately 579 million tons of greenhouse gases in 30 years. But this new electrical traction system will reduce the greenhouse gas emissions to approximately 125 million tons in 30 years. Manav Group's design team was entrusted to ensure the safety of life, livestock and assets from the return currents flowing through the rail tracks and the dangerous effects of electromagnetic fields produced due to high voltage in the shared corridor. This commendable feat – which included survey, design, supply, installation, and testing - was successfully executed.

Our Honorable Prime Minister of India, Narendra Modi, mentioned the commissioning of this project during his Independence Day speech at the Red Fort on 15<sup>th</sup> August 2020.

Armed with a passionate team of subject matter experts and highly trained executives along with our futuristic technology, Manav Group embarked on one daunting execution after another with a record of zero incidence and zero downtime. We catered to multiple sectors - ranging over Power, Telecom, Process plants, Refinery & Petrochemical, Smart cities, Transport, Utilities, Infrastructure, and Defense. Our team strives to achieve customer satisfaction and delight by fusing foresight with ethics. Our engineering solutions conformed to the IEEE, IS, BS EN, NFPA, NEC, NFC and other relevant national & international standards. The execution and support teams adhere to DQS certified ISO 9001 systems.

In 2020-21, we successfully began the commercial production of R-FERM (the world's 1st IoT solution for fault-time earth resistance monitoring). Our product development and R&D team conducted detailed market research, designed, developed and created a strong proof of concept so that over the next 5 years, a range of IoT products will be launched, disrupting and transforming the field of electrical safety & reliability sciences.

Year 2021-22 is about strengthening systems by implementing the environmental management system (EMS) conforming to ISO 14001, the occupational health and safety assessment (OSHA) conforming to ISO 45001, and the information security management system (ISMS) conforming to ISO 27001 to safeguard the security of assets such as financial information,

intellectual property, employee details or any information entrusted by third parties

The field of electrical safety and reliability frequently deals with transient and obscure challenges which mar operational efficiency and lead to extensive consequential damage. Manav Group's R&D is involved in investigating new approaches by using machine learning enabled IoT solutions that can be upgraded to artificially intelligent and future-proof protection systems. Our rigorous, continuous monitoring and trending of critical parameters will identify incipient anomalies that may develop into chronic or acute problems. These future technologies will involve hardware and software installations with periodic upgradations.

My chair is at a loss for words to describe all the countless national and international achievements accomplished by the ingenious and dedicated workforce of Manav Group. Any congratulations or messages of thanks cannot fully appreciate their stupendous contributions in this challenging year. Manav Group is grateful to all its clients and well-wishers. Thank you for believing in our mission and allowing us to participate in and facilitate your success story.

All the best to all. Please keep safe and healthy.

A handwritten signature in black ink, appearing to read "Sonjib Banerjee".

Sonjib Banerjee  
Chairman  
Manav Group Pvt. Ltd.



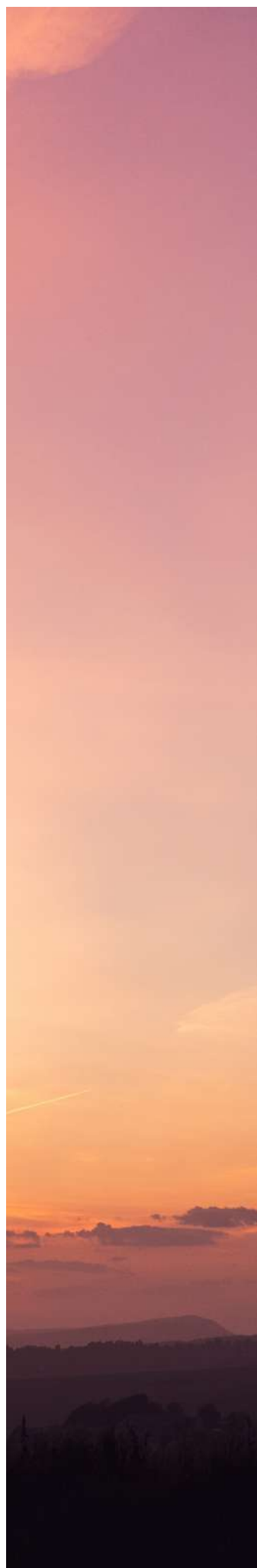


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# Business Profile

We started our journey in 2003 and have completed many prestigious and mission-critical projects world wide, backed by leading global alliances, ISO certifications and unmatched credentials. Our presence can be felt in many esteemed projects in and around the world. Some of the best projects are shown below.



**Burj Khalifa**

World's Highest Man-made Tower

Project Type : Design, Supply and Install  
Lightning Protection System



**Dedicated  
Freight  
Corridor**

Heavy Weight High Speed Rail & Metro

Project Type : Earthing and Bonding Systems



**Atal Tunnel  
Rohtang  
Pass**

Longest Tunnel above 10,000 feet in the world

Project Type : Design, Supply, Install Test, and  
Commission Earthing and Bonding systems



**Avaada  
Energy**

600 MW Solar Plant

Project Type : Earthing & Lightning Protection  
System Supply, Install, Test & Commission

With innovative solutions, Manav Group aims to save lives, livestock and assets through best-in-class products and services in this domain.



**RIL JIO**

Telecom Giants

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Project Type : Supply of 250000 Earthing System kits



**RIL JMD**

World's Largest Refinery

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Project Type : Earthing & Lightning Protection Audit (Entire plant)



**Power Grid India**

Largest Government Project

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Project Type : Substation Earthing Health Assessment



**NTPC**

Thermal Power Plant

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Project Type : Earthing and Lightning Protection Health Assessment



# OUR MISSION AND VISION

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## Mission

Deliver disruptive & affordable technologies to serve mankind

## Vision

Develop innovative solutions and state-of-art products using ethical engineering to deliver a safe and reliable tomorrow



# OUR CORE VALUES

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1

**Customer Focus**

2

**Listen & Envisage**

3

**Know Why Attitude**

4

**Innovation and Design**

5

**Integrity and Excellence**



## Investors Profile

MEPL's Board of Directors comprises of members possessing relevant skills, expertise, and competence for effective functioning of the Company. Our directors provide a strong balance between technology guidance and ensuring highest levels of corporate governance through risk control and regulatory compliance. They also act as mentors for the management in value creation and value enhancement, whilst upholding our firm commitment to ethics and values.



**Sonjib Banerjee**

Chairman

Mr. Sonjib Banerjee is the Chairman of Manav Group. As member of various electrical forums such as CIGRE, IEEE, NFPA, with an overall experience of 27 years developing innovative products and designing customized solutions for Electrical Safety & Reliability for all segments of the industry, he is an expert in root cause analysis of electrical failures. He also has applied patents for remote monitoring solutions in earthing, power quality and electro-magnetics as well as for other new ideas and innovation in the area of electrical safety and reliability.

Recognition :

Visiting Faculty to Higher College of Technology, UAE for IEEE Forum.

Vice-president for Indian Lightning Protection System

Committee Member for making the Code of Earthing & Bonding.

He received "MAN OF THE YEAR for Infrastructure Safety" by US-Asia Business Forum in Los Angeles. - 2010

"Certificate of Recognition" from US Congressman, Mr. Brad Sherman - 2010

Member of the Expert Group for Earthing of AC Power Systems in CBIP Manual 311.



**Savitha Banerjee**

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Managing Director

Ms. Savitha Banerjee started her career as an Electronics Engineer in 1991, working as Technical Documentation Expert in the Center of Development of Telematics (C-DOT), a Government of India undertaking. Moving on to become a Senior Technical Writer in various software industries before working at INTEL India as Technical Publication Lead for 10 years, Savitha brings over 26 years of experience to her role.



**Sharada Banerjee**

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Director

Ms. Sharada Banerjee is a young Professional who finished her electrical and electronics engineering from Christ University. She holds a Master's diploma in interior design from Florence Design Academy, Italy and a Master's degree in Design, Innovation and Technology, RMIT University, Australia. She specializes in trans-disciplinary design practice and applies their principles in her role. She is presently overseeing the Advertising, Branding and Business Design at Manav Group.

## Leadership Team

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**Pankaj Dixit**

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Chief Operation Officer

Mr. Pankaj Dixit is an Aeronautical Engineer with over 25 years of proven ability, developing and leading teams. He brings a wide range of experience in the industrial and service sectors, having worked in Bharat & the GCC (Gulf Cooperation Council) for several industries such as MEP, Automobile, & Heavy Equipment. Pankaj also led the team which installed the lightning protection system on the world's tallest tower, the Burj Khalifa.



**Munish Mishra**

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Chief Marketing Officer

Mr. Munish Mishra, an Electrical Graduate, and a Marketing Post Graduate started his business career journey with the Power Majors of India "NTPC Limited". Having worked in many capacities and across multiple sites, Munish brings more than 33-years of experience in the Energy Sector and is proficient in analyzing business needs and devising winning strategies that align program goals with overreaching organizational objectives.



**Sanjay Kumar Udgirkar**

Chief Risk & Contracts Officer

Sanjay Udgirkar is an Electrical graduate with a Management Diploma, has an industry experience of 35 years, with large conglomerates like BHEL and GE on Installation & after-market services associated with power generation equipment. He also has extensive field experience in Steam, Gas & Hydropower plants and expertise in rotor dynamics, advanced diagnostics on turbine & generator vibrations, and repair solutions. He has led sales & commercial operations teams and managed field service operations for over 15 years building teams, developing operational metrics, and implementing ERP transitions. He has supported customers in India, South Asia & the Middle East.



**Vijayanand Krishnan**

Chief HR Officer

Mr. Vijayanand Krishnan is the Global Head of HRD for Manav Group. He is a Leader with a distinct style and proven approach to maximizing organizational performance with over 30+ years of HR leadership experience in overall Human Resource Development and Talent Management. Apart from leading small to large HR teams, he has specialized in conducting Coaching sessions, Behavioral and Leadership workshops across India, US, Europe, Asia & Australia. His expertise in HRD is studded with multicultural exposure and exceptional people skills

## Cross Functional Team



**Dharanidharan  
Jagadeesan**

General Manager-  
Finance



**Raja K**

Manager - Design &  
Consulting



**Dr. Diksha Rohra**

Lead Strategic  
Development



**Sameed Ahmed**

Assistant General  
Manager - Marketing







**Pranao Bokade**

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Manager - Supply



**Prashanth Kumar**

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Product Manager



# Project Portfolio

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Manav Group has executed many medium and large-scale projects across Africa, Asia and Middle East. Our team is trained to perform precision audits and installations in various geographies including deep-sea, dessert, sub-zero and high-altitude environments. Our team is capable of handling complex projects that demands continuous project management and optimum delivery. Some of our major limelight projects other than 1200+ projects are highlighted here.





## Burj Khalifa



**Project Type:** Design, supply and installation of lighting protection system

**Location Of Project:** Dubai

**Project Time:** 7680 h

**Project Value:** USD 40839

The Burj Khalifa, with a total height of 829.8m (2,722 ft) is the tallest structure in the world. Manav Group is the system integrator to supply and install the Lightning Protection System at the tip of this iconic structure.

## Reliance Industries Limited - Jamnagar Refinery



**Project Type:** Electrical & lightning protection health assessment

**Location Of Project:** India

**Project Time:** 25920 h

**Project Value:** USD 544,515

This Refinery is a private sector crude oil refinery owned by Reliance Industries Limited in Jamnagar, Gujarat, India. It is currently the largest refinery in the world. The entire complex consists of manufacturing and allied facilities, utilities, off-sites, port facilities and a township (415 acres) with housing for its 2,500 employees, on over 7,500 acres (3,000 ha; 11.7 sq mi) of land.

We have experience over 15 refineries worldwide.



## Dedicated Freight Corridor Corporation of India Limited



**Project Type:** Over 360 KM of pre and post EM management study along with installation & commissioning of 560 TKM overhead electrification and installing of earthing safety systems

**Location Of Project:** India

**Project Time:** 57600 h

**Project Value:** USD 333,500

This is a double track railway line that is built by Govt. of India to carry freight across India. Manav Group's technology and products allowed safe exchange of high energy hence reducing the carbon footprint by 75%.

## Indorama Eleme Petrochemicals Limited (IEPL)



**Project Type: RCA & electrical health assessment audit**

**Location Of Project: India**

**Project Time: 3840 h**

**Project Value: USD 266,000**

Indorama Eleme Petrochemical Limited (IEPL), located in Port Harcourt, Rivers State, Nigeria, a Group Company of Indorama Corporation, is a Poly-Olefins producer of a range of Polyethylene and Polypropylene products. Manav Group performed root cause analysis and electrical health assessment audits in a few plants. Manav Group has also supplied its OEM products as per the audit recommendation to enable quick corrections across the plant.



## Reliance Jio Infocomm Limited



**Project Type: Supply of 250000 Earthing system kits**

**Location Of Project: India**

**Project Time: 173,000 h**

**Project Value: USD 8000,000**

Reliance Jio Infocomm Limited (Jio) is the largest mobile network operator in India and the third largest in the world. Manav Group's self-sufficient manufacturing facility has provided the electrical safety kits for 2 million cell sites. It has also used third-party freight and transportation system to distribute these kits across the length and breadth of India.

Similar supplies were done for UAE telecom major Etisalat, a multinational telecommunications services provider, currently operating in 16 countries across Asia, the Middle East and Africa. It is the 18th largest mobile network operator in the world.

## Power Grid Corporation of India Limited



**Project Type: Substation electrical safety health assessment**

**Location Of Project: India**

**Project Time: 14400 h**

**Project Value: USD 1,357,976**

Power Grid Corporation of India Limited (POWERGRID), is an Indian state-owned electric utility company and engaged mainly in transmission of bulk power across different states of India. Power Grid transmits about 50% of the total power generated in India on its transmission network. Power Grid's interregional capacity is 75,050 MW. Company owns and operates about 1,45,400 ckt kms of transmission lines at 800/765kV, 400kV, 220kV & 132kV EHVAC & +500kV HVDC levels and 230 sub-stations. Manav Group has completed approximately 15 to 20 PGCIL substation electrical safety health assessment.

## National Thermal Power Corporation Limited (NTPC)



**Project Type:** Country-wide validation and correction of electrical and instrumentation assets

**Location Of Project:** India

**Project Time:** 10000 h

**Project Value:** USD 217,218

Thermal power generation is over 35% and is key to India's power generation. Total thermal power generation in India is approximately 100 GW. Manav Group has validated and rectified electrical and instrumentation system of over 50% of India's thermal power generation. These Power companies have signed up with Manav Group to have its engineers deputed permanently to provide relevant advices in their respective plants.

## Avaada Power Private Limited



**Project Type:** Substation electrical safety health assessment

**Location Of Project:** India

**Project Time:** 14400 h

**Project Value:** USD 543,046

Avaada Power has developed some of the world's largest and highly efficient grid-connected wind and solar power plants in India. They have a 680 MW capacity, which is one of the largest renewable energy portfolios in India. They are setting up more 5000 MW capacities in the next few years. Manav Group is the chosen system integrator for their projects to supply and install earthing and lightning protection systems to address their requirement of safe and reliable operations.



## Savronik Sistem India Private Limited



**Project Type:** Design, supply and install earthing systems

**Location Of Project:** India

**Project Time:** 9600 h

**Project Value:** USD 515,894

SAVRONIK SISTEM INDIA PRIVATE LIMITED is located in India and is part of the Highway, Street, and Bridge Construction Industry. The electro-mechanical work at Atal Tunnel (Rohtang Pass) with 9.02 Km length situated at 10,000 ft above sea level, was undertaken by Savronik.

Manav Group designed, supplied, and installed the complete earthing system for that electro-mechanical work at the world's longest tunnel.

## Benban Solar Park



**Project Type:** Earthing design

**Location Of Project:** Egypt

**Project Time:** 200 h

**Project Value:** USD 27,152

Benban is the largest solar park in Egypt. This project is made in one of the world's highest soil resistivity areas with loose sand dunes. Manav Group designed the earthing system to fulfil the engineering requirements of EPC contractor.

## Offshore Platforms



**Project Type:** Design, validation, and rectification of electrical and instrumentation assets to various offshore platforms

**Location Of Project:** Worldwide

**Project Time:** 8600 h

**Project Value:** USD 101,804

Few of our offshore projects :

- Qatargas is the world's largest liquefied natural gas company. Manav Group performed electrical safety validation in 4 well heads connected by undersea umbilical cord to main platform.
- Krishna Godavari Dhirubhai 6 (KG-D6) was Reliance's first offshore gas field development and its first underwater discovery. It was also India's largest deposit of natural gas and the largest such discovery in the world in 2002. Manav Group performed validation of the electrical and electromagnetic safety and reliability of above sea and undersea electrical assets.



## Monorail and Metros



**Project Type:** Earthing & bonding, and electromagnetic, power system study

**Location Of Project:** Worldwide

**Project Time:** 2200 h

**Project Value:** USD 108,591

Urban rail transit in India plays an important role in intracity transportation in the major cities which are highly populated. Manav Group has provided various electrical safety and reliability solutions that includes design, supply, test & measurements, EM validation and product supply for various metro projects worldwide. Some of the metro projects we have worked on are listed below.

- Mumbai Metro (India)
- Bangalore Metro (India)
- Jaipur Metro (India)
- Delhi Metro (India)
- Pune Metro (India)
- Dhaka Metro (Bangladesh)
- Riyadh Metro (Kingdom of Saudi Arabia)
- Queensland Metro (Australia)

## Large Public Congregation Centers



**Project Type:** Earthing and lightning protection solutions

**Location Of Project:** UAE & India

**Project Time:** 2000 h

**Project Value:** USD 567,360

Iconic and mission critical buildings call for the best electrical safety and reliability solutions. Some of those structures that have adopted our solutions are:

- Presidential palace of Abudhabi (UAE)
- Bait Al Barka (Oman)
- Jabel Hafeed (UAE)
- Global Vipassana Pagoda (India)
- World cup football stadium (UAE)
- Al Ain Stadium (Qatar)

## Iconic Structures



**Project Type: Solutions and products provided to iconic structures**

**Location Of Project: UAE & India**

**Project Time: 1599 h**

**Project Value: USD 420,682**

Electrical safety design and validation performed for:

- The Dubai Creek : The tallest observation tower under construction located in Dubai
- Ain Dubai : The world's largest observation wheel
- World trade center of Abu Dhabi
- Many Data centers in India



# Collaborative Workplace

Manav Group as a brand attracts top talents from electrical field especially from Master's and PhDs along with diverse leadership talent from top-tier technical and management institutes. A brief snapshot of present talent profile is given below.

## Exceptional Workforce



## Learning and Development

Manav Group has embarked on a journey to deliver a bold vision of safe and reliable electrical operations. Hence, it is imperative to create a culture of know why environment. The workforce must be 'willing' and 'able' to innovate, design and implement safe

and reliable products and services keeping the future in mind. We directed our learning efforts towards enhancing technical and leadership skills through digital learning and soft-skill programs.





## Performance Management Process

We have a defined goal set and performance management processes to review employee's growth as they move towards impacting organizational goals

and objectives. Going forward, we plan to strengthen our appraisal process by tightly aligning it with the strategic initiatives.

## Employee Engagement

At Manav Group, we strive to enable our employees to pursue their passion while excelling at work. We address physical, mental and emotional health issues through counselling. Customized annual health check-ups are conducted for all employees. We promote hygiene and cleanliness in the workplace.

Employees are regularly rewarded for their exceptional performances at various stages of the employee life-cycle as well as the departments they belong to, through a well structured employee reward and recognition (R&R) program. There are also several other engagement initiatives conducted throughout the year for the employees.

## Prevention Of Workplace Harassment

The Company has a Policy on Prevention of Sexual Harassment at Workplace in line with the requirements of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 and rules framed thereunder,

and internal complaints committee has also been set up to redress complaints received regarding sexual harassment.

## Vigil Mechanism

The Company has an established vigil mechanism for leadership and employees to report genuine concerns. The Company has a policy for prevention, detection, and investigation of frauds in place. There is an online grievance redressal system (GRS) made available for all employees.

# Business Excellence

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Business excellence is about developing and strengthening the management systems and processes of an organization to improve performance and create value for stakeholders. At Manav Group we uphold ethical business principles and thrive to achieve the best, through continuous research for innovative technologies and execution thereof, to be above any competition in our field. It is the sheer perseverance of our team that we have excelled in various ventures in the domestic as well as the global market.

## Service During Pandemic

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Amidst the current crisis of pandemic, supporting our client was more important. Manav Group ensured to continue delivery of products and services without interruption. Team members nationwide were forging ahead to safely connect with our clients and completed the projects with minimum delay.

Looking at the pandemic condition that has put immense stress on O&M of utilities, industries, and infrastructures, our R&D team developed a range of IIoT electrical safety and reliability solutions that provide remote monitoring assistance to O&M.

## Care For The Environment

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Manav Group strives to conserve natural resources, reduce emissions, and prevent pollution through innovative processes and continuous improvement. The objective is to reduce, reuse and identify environmentally safe material substitutes for all operations. Our ground enhancing compounds are RoHS-certified and organic in nature. As our OEM products are complying to IEEE 14.5 (d) clause, the use of conductors is reduced exponentially thus decreasing the cost and metallic contamination below earth during installing earthing grids.

Dedicated freight corridor of India (DFCCL) is one of the largest savers of greenhouse gases (GHG). Greenhouse gas emission reduction analysis for dedicated freight corridor conducted by Ernst and Young in 2011 shows a total reduction of GHG from 579 million tons to 125 million tons over a period of 30 years. Manav Group was instrumental implemented, designed, supplied, and installed earthing and

bonding system for this project. Our design ensured minimal use of underground material to provide maximum efficacy of grounding systems for this project. Similar electrical and electromagnetic safety and reliability objectives were achieved in many city metro projects.

The carbon emission of solar to fossil fuel is 40-80 g/kW to 1200-1800g/kW respectively. Manav Group has designed, supplied and installed electrical and lightning protection systems for over 1000 MW of solar projects around the globe.

Thus, Manav Group ensures to develop and install environmentally friendly products that cause minimal environmental degradation and their production is linked to a product development process that impacts environment throughout their life cycle.



## Health, Safety & Reliability

Manav Group is committed to foster positive safety culture where all employees are trained for site safety and are committed to being actively engaged in reliable actions. We provide a safe and healthy work environment through risk management policy and through health & safety training to all workers. The responsibilities they hold should be incorporated into daily business decisions and processes.

Our project teams perform online audits for power and refinery areas. They perform audit from 11 kV to 750 kV systems without rendering system shut down. They are equipped with best-in-class personal protective equipment, commonly referred to as “PPE”. This equipment is worn to minimize exposure to hazards that cause serious workplace injuries. For example, we ensure to use IFR suit cover that protects the site audit team from industrial flash fires

in refinery projects as per hazard area classification.

Manav Group believes in using highest standards of safety for all its employees and ensures zero incident project closures.

It drives continuous improvements in employee safety through establishing measurable safety, health, environmental objectives & targets, and annually review performance against them.

Manav Group reports its safety health, and environmental objective goals and metrics as part of its corporate responsibility and commitment for continuous improvement process.





# Operational Efficiency

## Supply, Design & Expert Services

On getting a substantial supply order, Manav Group doubled its production capacity of earth enhancement compound from 1600 MT/ Annum to 3200 MT/ Annum. Savings in import and local cost of raw material was 26% and 15% respectively due to annual projection of purchases. This allowed the company to be competitive and break into market and use hi-tech products.

The company invested significantly in electrical simulation platforms to undertake various safety and reliability study. Company has employed specialists in the field of ETAP, EMTP-RV, PSCAD, CDEG, Open

Track and Open Power net softwares.

Company has invested heavily to buy state-of-the-art equipment from Europe and USA for conducting testing and validation services. The company also owns substation testing equipments along with power analyzers to validate the practicality of design on field. Electromagnetic antennas and spectrum analyzers are used to conduct root cause analysis and validate electrical reliability of various process plants like refineries and power stations.

## R&D Contribution

Significant R&D was done to develop, test and certify various products in addition to existing ones such as, earthing and bonding, lighting protection products and accessories, copper and brass based electrical safety and reliability components. R&D contribution effects company's operation performance. Their

initiatives of sourcing effective component providers played a vital role to bring efficient output and get better performance of developed products economically.

## Risk Management Policy

Manav Group Risk Management (MGRM) is a company-wide framework of methods and processes used to identify, assess, monitor and mitigate risks.

The MGRM approach is based on the globally accepted ISO 9001 framework. This framework

provides a generic concept which has been customized to meet company's requirements.

The macro-economic environment became challenging during the past year. While capital expenditure was already muted prior to the onset

of the Covid-19 due to many strikes and severe environmental conditions, the COVID-19 pandemic accelerated the slowdown further. Following the nation-wide lockdown announced in March 2020, the company's operations were temporarily halted and project sites closed. The priority of the company at that time was to complete existing services at customer locations by ensuring safety and health of its employees. With significant changes in business environment during the last year, our

company's business faced new risks that required implementation of effective risk management framework.

Being a research oriented organization, the company produces patented products and there is a risk of loss of intellectual property. However, company has several strict processes like Non-Disclosure Agreements with employees, partners, etc. to mitigate such risks

#### Risk Assessment matrix

Risk	Impact
Operational Risk	High
Strategic Risk	Low
Reputational Risk	High
Compliance Risk	Medium
Financial Risk	Medium

#### Risk Mitigation

Manav Group addresses project-based risk during project management. These risks are assessed and mitigated on a project-to-project basis. All other major risks identified are systematically addressed through mitigating actions on a continuous basis. The Board of Directors of the company reviews the Risk Assessment and Mitigation Report annually.

# What Do We Do

Electrical safety and reliability plays an important role in today’s technological environment. With evolving technologies, asset management & risk mitigation for electrical and electronic systems in various environments is becoming more complex. These complex systems are susceptible to electromagnetic interference and prone to electrical faults resulting in accidents, service disruptions and escalated costs in operations and maintenance.

Safe & reliable electrical systems can be achieved with, proper design and application of equipment, correct installation, appropriate maintenance for the life of the equipment, and good operating practices.

## Our Experts

A passionate team of trained and subject matter experts in the area of electrical engineering, along with futuristic technology addresses multiple industries to make them incident free and with zero down-time.

Our expertise spans from Survey, Study, Measurement, Design, Audit, Testing, Commissioning, Validation, RCA, O&M Expert Services in the field of Earthing Management, Lightning Management, EM

Management, Power Quality Management, Power system Studies, Control Systems & Instrumentation. We strive to exceed customer expectations by harmonizing experienced foresight and ethical engineering solutions. We follow IEEE, IS, BS EN, NFPA, NEC, NFC and other relevant national & international standards for all our services. Our tests and measurements are performed at site in live condition (no-shutdown) with a record of zero incidences & zero down-time.

## Benefits Of Our Business

Cost-effective products & services	Customized implementation as per the environment	Advanced design & simulation software
Techno-commercial excellence		Reduced incidents and fatal accidents

## Solutions We Offer



**Power System Study**



**Root Cause Analysis**



**Electromagnetic Management**



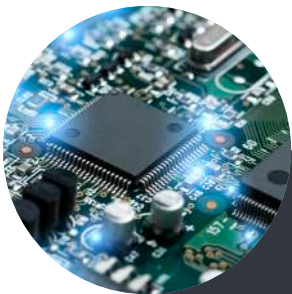
**Power Quality Adequacy**



**Earthing & Bonding**



**Lightning Protection**



**Control & Instrumentation**



**Excitation System Management**

## Services We Offer

### Survey and Measurement

This is a unique service given by Manav Group for all greenfield and brownfield projects before starting other services such as Audit, Testing, Installation, and Measurements. This service helps to identify the site's present condition for new or existing installations and systems. During this service, the team visits the site to measure various criteria such as soil resistivity, terrain condition, existing grounding conditions, equipment aging, system deterioration, and assess the effect of the shared corridor on the project site. We conduct a visual inspection and perform various measurements as per national and international standards. The measured data is simulated using software such as CORRCAD, EMTP-RV, etc., to arrive at recommendations for safe electrical systems.

### Design, Model & Simulate

The electrical system and protection designs are developed to protect lives and livestock from incidents or accidents during operations. Accurate system designs also aim to protect assets from excess electrical stress and accelerated aging. Minimizing spurious trips and unnecessary load shedding can be achieved through proper system design, which reduces huge O&M costs and plays a vital role in reducing carbon footprint by ensuring intended equipment life without any breakdown.

Manav Group design experts also develop various algorithms and modeling methods, simulating and designing the electric power system for all sectors. This includes Steady-state, Dynamic-state, and Transient-state design and performance evaluations. In addition, our capability to handle transient design and study gives an in-depth analysis of the stress caused during high energy discharge, causing heavy flash-over and fatal incidents and accidents.

### Design Validation

Electrical design validation is generally performed to validate existing design specifications for prevailing system conditions and operations. This service provides a design that meets customer requirements and assures fault-free operations. We at Manav Group perform design validation and provide implementable solutions to ensure safe and reliable electrical and instrumentation system operations based on the present condition.

### Audit & Study

This specialized service is used not only for compliance with applicable safety standards and regulations but also to determine pre-emptive safety measures during operation and contingency conditions. These services have been instrumental in eliminating spurious trips, breakdowns, and unplanned shutdowns. It improves profit and shareholder value by minimizing operation and maintenance costs, decreasing downtime, and increasing revenue. The audit also validates inadequacies or anomalies due



to design, Installation, and aging. Electrical safety and reliability audits comprehensively ascertain the healthiness of systems. Our experts follow a systematic approach to evaluate the present condition. Based on the audit inference Manav Group recommends various implementable solutions as per national and international standards.

### Root Cause Analysis

Manav Group specialist team are experts in performing root cause analysis (RCA). We use the 5-Why method for problem-solving in electrical systems. Spurious trips, unplanned shutdowns, unknown reasons for electronic card failures are some of the RCA worked by our team. RCA generally serves as input to a redress process to take corrective actions and prevent the problem from reoccurring. Our Power system studies consultancy plays a vital role in resolving these issues.

### Supply Install Test & Commission (SITC)/(SSTC)

With its dedicated ISO 9001 certified manufacturing and product development facility, Manav Group is a pioneer in developing various electrical safety and reliability products. We also play a vital role in procuring project-specific requirements through various quality checks and best-in-class supply chain management.

Our project engineers are well trained and equipped to install various safety and reliability-related electrical equipment or system that performs at their best in the intended environment. We are proficient and have completed underground and overhead equipment installations for tunnels, power stations, railway infrastructure, and telecommunication networks. The in-house specialized tools and equipment trained, dedicated manpower, systems, project planning & management give us the competitive advantage to execute large and complex installations. We also have trained experts who provide IIoT services for safe and reliable electrical and instrumentation operations. In addition, our testing and commissioning team ensure high-value equipment and structures are installed and tested according to the operational requirements as per defined objectives and criteria.

### Contracting & Project Management

Our project engineers are well trained and equipped to install various safety and reliability-related electrical equipment or system that performs at their best in the intended environment. We are certified and approved by significant PMC (project management companies) to undertake the installation. We are proficient and have completed underground and overhead equipment installations for tunnels, power stations, railway infrastructure, and telecommunication networks. The in-house specialized tools and equipment trained and dedicated manpower, systems, and project planning & management give us the competitive advantage to execute large and complex installations. We also have trained experts for our patented IIoT products.

## Products We Offer

Earthing Enhancement Compounds

Earthing & Bonding Accessories

Lightning Protection, Prediction & Management Systems

Lightning Protection Accessories

IIoT Products



# Research and Development

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Manav Group R&D facility housed at Bangalore (INDIA) has a hi-tech measuring and analytical platform suitable for fundamental and applicative research. It employs experts in software development, embedded system, hardware integration, mechatronic, and theoreticians to develop products as per futuristic needs from concept to packaging .

## IIoT Product Launch

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### REMOTE FAULT-TIME EARTH RESISTANCE MONITORING SYSTEM (R-FERM)

World 1st IIoT system is the only product in the world that can detect and alert earthing conditions during electrical faults or lightning strikes. The electrical system inspectors were unaware of the tool's changes in the earthing system during a fault such as short circuit and lightning strike etc., which led to unplanned shutdowns, load shedding, electrical accidents, incidents, and fire. This product has enabled the electrical system auditors to understand the electrical conditions of the ground and make informed design and operational changes to achieve a high degree of safety and reliability.

Additionally, it has changed the manual process of monitoring the healthiness of earthing systems. It provides online monitoring that enables detection, recording, trend analysis, annunciation, and condition-based maintenance for the earthing system. More importantly, it performs fault time health analysis, such that necessary corrections can be executed to save lives and assets during future faults.



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# Sectors We Influence

**Petrochemical**



**Telecom**



**Renewable**



**Infrastructure**



**Utilities**





## Rail & Metro



## Air & Water Ways



## Power



## Defense

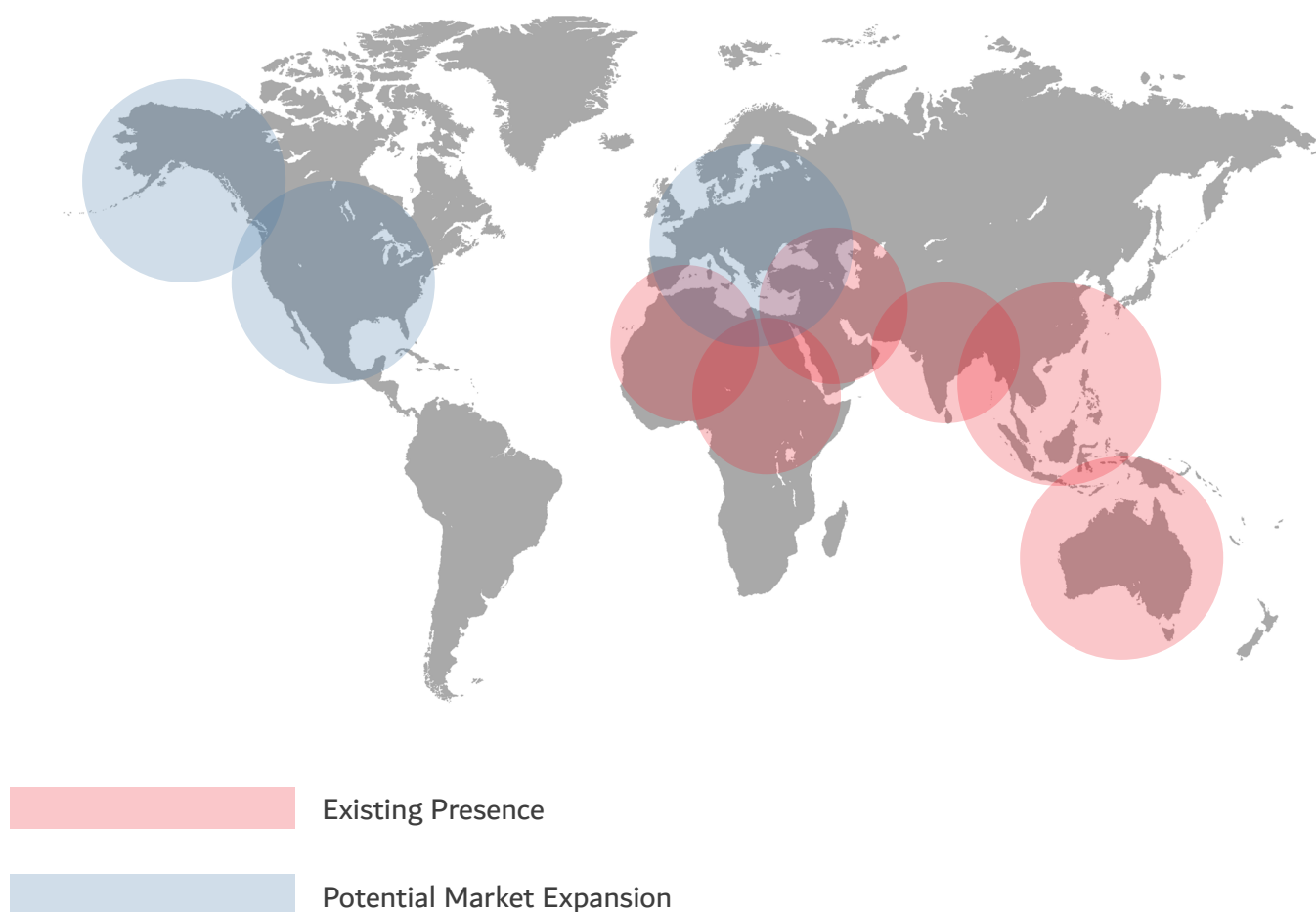


## Smart Cities

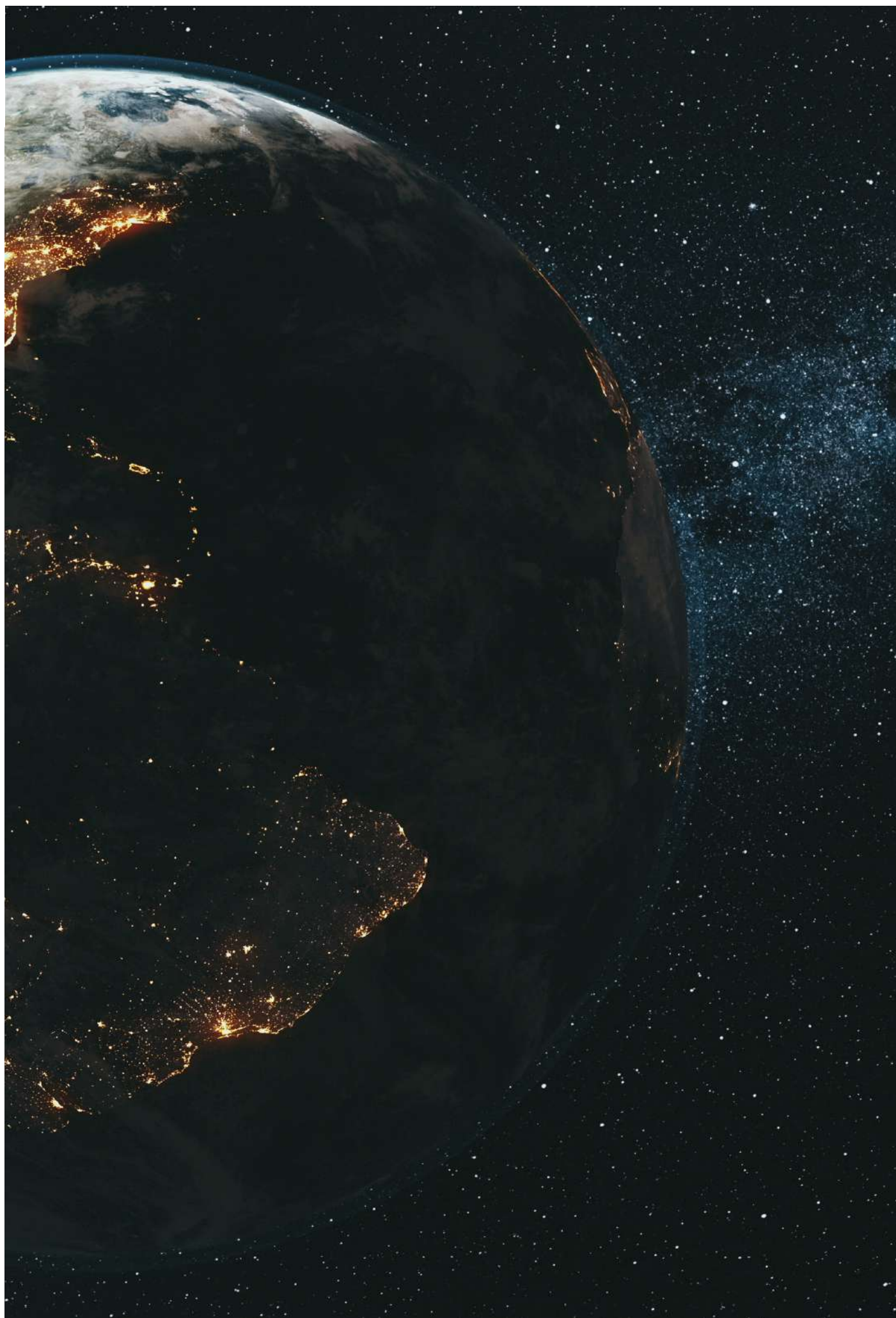
# Commercial Footprint

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Manav Group's is expanding global footprint to support high risk & complex, integrated projects that follow highest standards of regulatory norms.









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