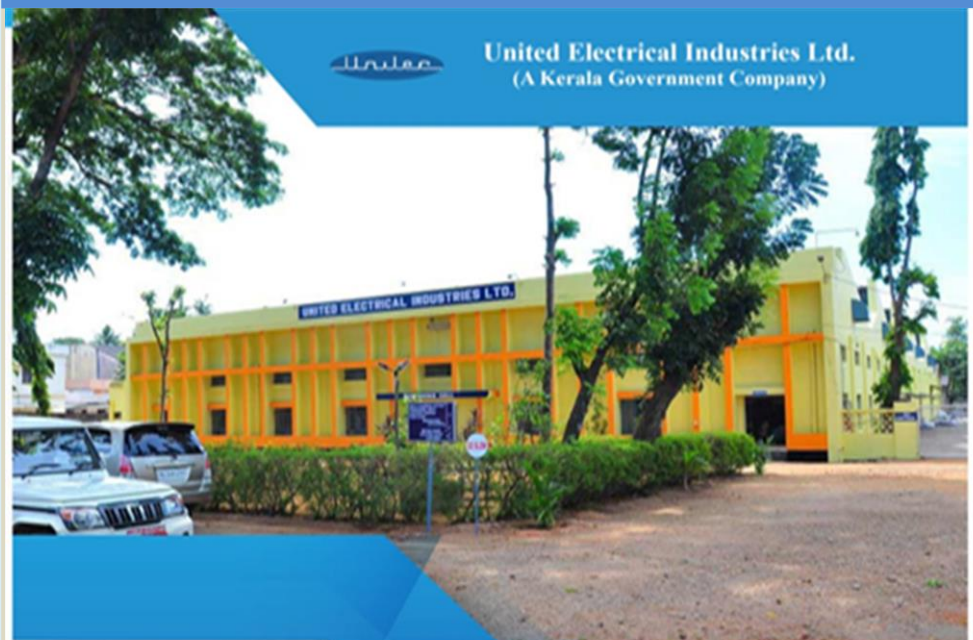


MASTER PLAN 2021-2030

UNITED ELECTRICAL INDUSTRIES LTD

A KERALA GOVT COMPANY



United Electrical Industries Ltd.
(A Kerala Government Company)



UNITED ELECTRICAL INDUSTRIES LTD,
KOLLAM, JULY 2021

INDEX

No	Particulars	Page No
1	IINTRODUCTION OF THE COMPANY	4
2	FRAMEWORK OF FUTURE PERSPECTIVES ON DEMAND FOR THE PRODUCTS AND TRENDS IN INVESTMENTS BY THE COMPETITORS	7
3	TECHNOLOGY ASSESMENT PERTAINING TO THE MANUFACTURING PROCESS OF MAJOR PRODUCTS	10
4	SWOT ANALYSIS	12
5	FUTURE PLANS OF UEIL	16
6	ASSESMENT OF PLANNED PRODUCTS	19
7	HR PLAN	34
8	FINANCIAL PROJECTIONS	35
9	CONCLUSION	36

EXECUTIVE SUMMARY

United Electrical Industries Ltd.(UEIL), a Government of Kerala PSU which is located in Vadakkevila P O, Pallimukku ,Kollam ,Kerala.

The major products currently marketed by UEIL are Air Break Switches, Water Meter , LED Lights , Vehicle Location and Tracking devices(VLTD), Energy Meters and Motor Starters. Under its quest for product diversification, vertical integration of existing products and technology up gradation UEIL proposes through this master plan incorporating diverse products, relevant to the future market trends for coming 10 years so as to overcome its present feeble financial status. The company has at present negative net worth even though it has a lean operating profit of 13 Lakhs.

We are expecting the equity conversion of Govt loan and interest of Rs 76 Crores by the Govt of Kerala. In such case the Company will attain positive net worth and shall indicate sustainable growth henceforth. The proposal is currently under the consideration of the Government.

Based on the immediate market requirements the short term projects are proposed . The profit margin from these projects is expected to drive the medium term and thereafter long term projects. These projects are expected to bring significant improvement in the financial indicatives and stable operation of the Company.

The company is aiming to improve its marketing capability by effective market penetration of these diverse products,and thereby expecting to expand its region of operation. R&D activities shall be strengthened with a dedicated fund allocated at our accounts wing and thereby facilitating timely technology up gradation.

The products proposed are competent in open market and hence can broaden the customer base. The Company plans to meet the additional employment requirement through PSC, Employment Exchange and inviting application from the public

With the successful implementation of this Master Plan, the Company is expected to attain a profit of Rs 40 Crore with Rs 300 Crore annual turnover by the year2030,by which the Company shall stabilise its financial status.

1. INTRODUCTION OF THE COMPANY

1.1 BRIEF PROFILE

United Electrical Industries Ltd., a Kerala Government company, located besides NH66, 4km from kollam railway station, 70 km north of Trivandrum, the capital of Kerala State. The company was incorporated in the year 1950. It is one of the first factories in India to manufacture Electricity House Service Energy Meters. The company had started its manufacturing activity in technical collaboration with the world-renowned meter manufacturer M/s. Aron Meters, England. The major shareholder of the company is the Government of Kerala. '**Unilec**' branded Motor Starters of various rating ranging from 5HP to 330HP are also our major product and is exclusive mainly because of its high quality and durability.

From 1998 onwards the company started manufacturing Static Energy Meters. So far the company has manufactured over 45 lakhs Static Meters and supplied all over India.



We had also supplied Multifunction Static Meters with additional features like display of Maximum Demand of energy consumption, instantaneous voltage and current etc. to other state utility service in India. In addition to this we are also in the field of Water Meters.

A total quantity of 63670 Nos. of various types of Hot Dip Galvanized Cross Arms were supplied to KSEB, worth Rs.153.14 lakhs during the years 2003-2007.

Since 2007 we are supplying 11 KV 400 Amps AB Switches to KSEB, thus became the first public sector in Kerala to manufacture 11KV AB switches and has successfully manufactured around 40000 nos with high quality and confirming to IS standards. As a part of product diversification we started manufacturing ABS with polymer insulator in 2020 and successfully got qualified in KSEB vendor registration and supplied around 7000 Nos in this design

Succeeding this, we started manufacturing of 15mm Single jet water meters and later switched on to multijet water meters of same specification. Both these products are

having ISI certification. As a part of product up gradation we commissioned infrastructure for Smart Water Meter production

In 2019 the company started production of vehicle location and tracking device (VLTD), which was as a part of product diversification. We had started the project with GPS system and later switched on to Indian Regional Navigation Satellite System (IRNSS). We became the one and only public sector in India to manufacture and get empanelled by CDAC for supply and installation of this device in public vehicles. So far around 6000 Nos of our product were installed in various Government and Public Vehicles.

We are also catering Street Light, High mast light system, mini mast lights and its accessories to various LSGD'S. of Kerala Government as well as Solar Power Plant. This accounts to around 50% of our total turnover. We are equipped with all machineries and infrastructure required for calibration and testing of LED lights of various ratings.



UEIL has a strong team of professionally qualified officers and experienced, skilled Technicians in its work force.

The company's quality system is ISO 9001:2015 certified and its products are ISI marked. The company is also having ISO 14001: 2015 certification for environment management.



2. FRAMEWORK OF FUTURE PERSPECTIVES ON DEMAND FOR THE PRODUCTS AND TRENDS IN INVESTMENTS BY THE COMPETITORS.

2.1 DEMAND OUTLOOK FOR EACH MAJOR PRODUCT

- ABS – Air breaker switch of 33KV and 11KV will be having high demand in near future. Since these items are essential for all electricity boards including KSEB, their demand will not be vanished in short term. Nevertheless, UEIL can get orders from Railway as they are using AB switches for power transmission.
- Streetlights- Streetlights category will see an increased demand in future. Governments are planning to implement green policy and replace the existing halogen and sodium vapour lamps with energy efficient LED streetlights.
- Water meters – with state funded projects like “JalJeevan Mission” are on full swing, it is expected that all households will have unique water connection by early 2020s. Thus the demand for water meter is expected to increase.
- VTS – Vehicle tracking system will be mandatory in all public vehicles including school buses and taxis. Presently only a fraction of the targeted vehicles are equipped with VTS. Hence the demand will be in folds of the present demand.
- Energy meters – Energy meter demand will not be skyrocketed in Kerala state since most of the households presently have Electricity connection. However, the advent of smart metering solutions opens a new window of smart meters. It is expected to have higher demands while the conventional meters demand will not go low. Moreover, other states which have low household electric connections are expected to increase the number. Therefore, an increased demand can be foreseen.
- Starters – Conventional starters will face a low demand in future since most of the customers are migrating to advanced technology like VFD. The introduction of soft starters can be a game changer in the field and is expected to have more demand than the present bulky starters.

2.2 OPPORTUNITIES FOR INCREASING MARKETABILITY OF EACH MAJOR PROJECT

- ABS – Presently UEIL is selling ABS to KSEB only. There are potential customers in TSEB, Karnataka EB, Railway etc. All of these parties procure through e-tender system. UEIL needs to be active in e-tender system. Moreover, there are customers who buy ABS from retailers through manual quote. The orders are generally below 5 lakhs. However more number of orders from different parties could be beneficial for UEIL. In order to reach to such parties, UEIL needs to participate in electrical equipments expos pan India. Contacts and opportunities from such exhibitions can be a turning point in marketing. Exporting the ABS to other countries in the subcontinent and Africa/South America is also a possibility.
- LED Streetlights- It's demand keeps on increasing. In spite of the demand, sales may not occur without accessories and service. Therefore, UEIL must be capable of providing the above said to cater the increasing demand. Digital media advertisements as well as face to face meetings with potential customers in various Government Institutions can boost the sales. Tenders and Expos are will play vital role in the marketing.
- VTS – Marketing through testimonials will be an advantage to UEIL since there are a lot of satisfied customers for its state of the art VTS system. Generally, customers are advocates of VTS since it costs recurring charges. Therefore, mandatory laws are the key to sell more products. With the readily available technology and active channel partners , sales can be increased in folds.
- Water meters- There are number of players who can supply quality water meters to water authorities and contractors. However, when it comes to smart meters there are a few. Thus smart meter marketing possibilities are rising while conventional meter market is stagnant and will be declining. With proper digital marketing techniques, we can show the smart metering capabilities and grab orders in low volumes. Conventional e-tender method is utilized for bulk volumes. UEIL needs to be equipped with both marketing strategies to expand its sales volume
- Energy meters- E-tender based sourcing is widely used. UEIL needs to take all certifications like ISI, S MARK etc to be technically qualified in e-tender. Once UEIL is technically qualified, we will start getting a share of tender that will be enough to generate substantial sale volume.
- Starter – Conventional marketing methods like brochures and meetings will help in increasing sales. Also participation in expos will be added advantage.

2.3 TRENDS IN INVESTMENTS OF THE COMPETITOR

- ABS – Competitors are focusing on polymer insulator based ABS since this model has longer life.
- LED Streetlights – Competitors are investing on the R&D side to reduce cost of manufacturing and increase in life.
- VTS- Competitors are investing on the R&D side to reduce cost of manufacturing and increase in life and reliability. Moreover, the software side is also evolving.
- Water meters- Investments are made in R&D to reduce the ultrasonic smart water meter cost to be at par with conventional meters.
- Energy meters- Competitors are investing on the R&D side to reduce cost of manufacturing and increase in life and reliability.
- Starter - Investments are made in R&D to manufacture new compact softstarters and vfd based solutions.

3. TECHNOLOGY ASSESMENT PERTAINING TO THE MANUFACTURING PROCESS OF MAJOR PRODUCTS

i) ABS(Air Break Switch)

UEIL currently produces 11kV Air Break Switches of rating 400 A rating. It is a standard electrical isolation products with all parts conforming to IS.

ii) WATER METER

UEIL currently produces 15 mm multijet class B water meters .The water meters conform to IS standard 779.The body of the watermetersmanufactured by UEIL are of Very high quality brass casting.

UEIL is moving on to smart water meter manufacturing and as a part of this a pilot project for 20 smart meters have been installed in company premises. The smart water meter is of Ultrasound technology.

iii) ENERGY METER

UEIL have developed both three phase and single phase smart energy meters with the technology partnership with CDAC.

iv) VEHICLE LOCATION AND TRACKING DEVICE

The first model of VLTD developed by UEIL in 2018 and was named Phoenix 140 was based solely on the GPS technology. The second more advanced model named UNI-140which supports ISROs IRNSS technology was launched in 2020.

Both the devices are conforming to the technical requirements of AIS 140 standard and both devices have been successfully tested and approved by ICAT and CDAC and is currently being deployed in public vehicles in Kerala under the initiative of KMVD.

v) LED STREET LIGHTS

UEIL produces LED street light of ratings from 20 W to 120 W.The efficiency and durability of LED street lights produced by UEIL are conforming to international standards.

vi) MOTOR STARTERS and CONTROL GEARS

Motor starters was a major business product of UEI Ltd .The starters produced by UEIL are of manually operated mechanical type and are of high quality and reliability but the technology employed are old. So at present starter sales are minimal due to the delay happened with updating to newer automatic type electronic motor controlling technology. So it is imperative for technology updating at the earliest.

4.SWOT ANALYSIS

4.1 STRENGTH

- **Diversified product range:** For years we have an exclusive policy of product diversification owing to the market needs and demand fluctuations of our existing products. We have a large product range which includes energy meter ,water meter, motor starters,11 kv air break switches, LED street lights, etc
- **Availability of space for expansion:** we have sufficient space for future expansion ,around 6 acres land and existing buildings are not yet fully utilized
- **Status of a PSU:** Being a PSU we have the credibility in assuring guarantee, security, and assurance of customer support for long term as well as short term projects. We also get the privilege of utilizing the various Govt policies and preferences supporting PSUs
- **Assured Quality:** We have a well defined quality assurance plan and also follows the quality Management system of ISO 9001:2015.We have BIS certificate for our major products and also strictly adheres to our Quality assurance policy.
- **Experience in the field of its operation:** The company has experience of more than 60 years in the field of energy metering and motor starters and more than 10 years in 11 KV air break switches and water meters. We are well experienced with successful street light projects for more than 5 years
- **A unit coming under the classification of MSME:**we are able to utilize the various exemptions while participating in tenders and also payment terms applicable to MSME since we come under this category
- **Quality Certifications:** our company follow the Quality Management system of ISO and is certified by ISO 9001:2015,ISO 14001and also our product energy meter and water meter are BIS certified.Our product vehicle location tracking device is AIS-140 certified by central agency I-CAT
- **Highly Reputed Brand Name:** the brand name 'UNILEC' is highly reputed and is familiar in the market for more than 6 decades and all of our products are bearing this brand name.
- **Experienced work force:** We have a well experienced work force who are adaptable to any diversified products and are well motivated

- **Prime location:** our company is located just by the side of NH ,4 km south to Kollam railway station and about 70km near to Thiruvananthapuram international airport, which allows easy access and also adds to feasibility for many of our public oriented projects

4.2 WEAKNESS

- **Kerala Centric Operations:** The operations of UEIL was limited to the state of Kerala. In a well-connected global market this limitation is weakness of UEIL.
- **Absence of an effective marketing mechanism:**The marketing procedures traditionally followed by UEIL is not effective in the modern competitive world. This drawback is seriously affecting the growth of the company. This is seen as a weakness.
- **Absence of dedicated fund for R and D:**The expense incurred for Research and Development work of a product contributes to 40-50% of final cost of a product. Without sufficient dedicated R&D fund the development of newer opportunities in product range cannot be realised by the company. So this can be seen as a major weakness of the company.
- **Absence of an effective integrated ERP:**The paper filing system still followed at UEIL is not an efficient way of record keeping. It lags in its operation with the delay in implementing an efficient ERP system to keep up with the modern organisation management.
- **Vacant key positions:**Many key positions ,especially the post of a qualified Finance manager is vacant in the company due to the difficulties faced in new recruitment. The absence of a qualified expert to lead this department can seriously affect the financial situation of the already worsen situation of the company.
- **High cost of operations:** Higher cost of operation faced by the company is another weakness it faces. The major reason being limitations in the productivity and lag in operations due to shortage of funds
- **Narrow clientele:** The customer base of UEIL is limited for its products. The customer base should be expanded to ensure the stability of the company. The absence of a broader clientele is seen as weakness of the co0mpany.

- **Customers are from Government sectors:**The major customers of the company are from government sector PSUs. Absence of major customers in open market is also viewed as a weakness of the company.
- **Poor working capital liquidity:** The limitations in providing working capital liquidity is a major weakness of the company.
- **Lag in Updating Technology:** Due to certain limitations UEIL was not able to update the technology of the existing products. This lag in updating to newer technology is seen as a weakness.
- **Limitation in competing with open market:** Being a PSU, UEIL has got certain limitations to compete with private market effectively like the private firms. This is viewed as a weakness.

4.3 OPPORTUNITY

- **Strengthening of power distribution Infrastructure:** The government policy to strengthen the power distribution infrastructure of the country is seen as an opportunity to increase the sales of the required products produced by UEIL.
- **Gol policy to replace electricity meters with AM based smart Electricity meter in a phased manner:**The government of India policy to replace ordinary energy meters with smart energy meters will bring more marketing options for our product smart energy meters.
- **Central Government policy to extend water connection across the country:** The government of India policy to provide free drinking water connection to all households through JalJeevan project could increase the sales of water meters produced by UEIL.
- **Government policy to ensure safety mechanism in the public transportations:**The Government policy to ensure safety mechanism in the public transportations was the major driving force in developing and marketing of

VLTD(Vehicle Location And Tracking Device) by UEIL.The continuation of this policy we expect ample opportunity in the field.

- **Scope of e-marketing facility:**The scope for marketing the customers of our products through online methods is expected to bring elevated sales.The e-marketing facility is seen as a major growth booster for the company.
- **Scope in exploring Green technology market:**With the replacement of conventional energy sources by environmentally friendly renewable energy sources is seen as a great opportunity for electrical equipment manufacturer like us. Since the non-renewable technology is at its infancy UEIL is expected to receive a 'first movers advantage' by foraying into renewable energy equipment manufacturing at the earliest.

4.4 THREAT

- **Reducing manpower:**The difficulties faced by the company in recruitment against vacancies created by retirement is seen as a great threat to the stability of the company.
- **Being the status of one among the unhealthy PSUs in the context of un mediocre balance sheet:**Even though UEILs annual financial performance is improving each year the financial un healthiness created by accrued debt and interests of previous years is seen as a threat for the company
- **Increasing marketing competitiveness especially from MSMEs:**The threat faced by increasing competitiveness exhibited by MSMEs engaged in similar product field is seen as a threat for the company.
- **Barriers imposed by the customers against the companies having unhealthy balance sheet:**The pre-qualifying criteria's for healthy balance sheet imposed by our customers in their procurement procedures are creating difficulties for UEIL to participate in the procurement procedure.

5.FUTURE PLANS OF UEIL

5.1 SHORT TERM PLANS

SL NO	PROJECT TITLE	COST INDICATIVE	TIME FRAME	BENEFITS
5.1.1	Polymer Insulator	DPR BASED	2021-22	Open new market opportunity, Also vertical integration of existing production line
5.1.2	Motor Starter Upgradation	DPR BASED	2021-22	Effective competition with market
5.1.3	VEHICLE CHARGING STATION	Rs. 50 LAKHS	2021-22	ECO FRIENDLY AND GO GREEN TECHNOLOGY
5.1.4	RMU- RING MAINS UNITS FOR DISTRIBUTION SWITCHGEARS	Rs. 400 Lakhs	2021-22	NEXT GENERATION OF ISOLATION SWITCH IN DISTRIBUTION LINE

5.2 MEDIUM TERM PLANS

SL NO	PROJECT TITLE	COST INDICATIVE	TIME FRAME	BENEFITS
5.2.1	VFD CONTROLLER DESIGN	Rs. 50 Lakhs	2022-25	Product diversification
5.2.2	BLDC (BRUSHLESS DC) MOTORS AND CONTROLLERS	Rs. 40 Lakhs	2022-25	Energy efficient product design
5.2.3	LITHIUM ION BATTERY PACK ASSEMBLING	Rs. 100 Lakhs	2022-25	Explore Huge market potential
5.2.4	LT PIN INSULATOR FOR NEUTRAL	Rs. 50 Lakhs	2022-25	Less Market Competition
5.2.5	NEUTRAL ISOLATOR SWITCH	Rs. 20 Lakhs	2022-25	Less Market Competition
5.2.6	LBS(LOAD BREAK SWITCH)	Rs. 60 Lakhs	2022-25	Less Market Competition

5.3 LONG TERM PLANS

SL NO	PROJECT TITLE	COST INDICATIVE	TIME FRAME	BENEFITS
5.3.3	LOAD SIDE MANAGEMENT DEVICE (LMD)	Rs. 200 Lakhs	2025-30	ENERGY COSERVATION AND GREEN ENERGY
5.3.5	PORTABLE GENERATOR SET	100 lakhs	2025-30	Meet remote power demands and power interruptions

6. ASSESSMENT of PLANNED PRODUCTS

6.1.SHORT TERM PLANS

6.1.1 POLYMER INSULATOR FOR 11 KV AND 33 KV AB SWITCHES

Polymer insulator is one of the critical components of the polymer type ABS that are currently being procured from private parties located in the North East Part of our Country. Each AB switch requires 9 polymer insulators. The non-availability of these insulators at the factory due to various reasons like delay in shipping, unreliable external suppliers, etc have caused extensive delay in the production of ABS multiple times in the previous years. The risk identified is scarcity in suppliers. Hence the proposed project for manufacturing composite polymer insulators at our factory is a much needed project since it will greatly avert a major risk faced by us through vertical integration of ABS production.

The project is sanctioned by the government and it is expected to be completed by the year end 2021.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
1902	159	20	NIL

**The expected turn over and profit of each product in a year is assumed at 100% utilization of resources

MARKET ANALYSIS:

- Currently we UEI Ltd is producing on average 15000 ABS annually.
- Each ABS requires 9 numbers of 11kV post insulators. So around 135000 numbers of insulators are currently in demand for ABS production.
- In addition to this KSEB had a requirement of 725642 numbers of 11kV pin insulator for the year 2020-2021

- For 33 kV composite polymer insulator the requirement is around 7000 Nos by KSEB in 2020-2021.

In addition to this polymer insulator is widely used in railways and other state electricity boards

Also in view of the central Government policies to minimise transmission, distribution losses, we expect a suitable up gradation in infrastructure which requires demand of Polymer insulators and also AB switches. In this manner we expect an annual turnover of around 15 Crores for pin insulator with maximum utilization of resources.

In addition to this around 10% of production cost for 11KV Air Break Switch is expected to be saved by incorporating in house production of Polymer Insulator. There by we can increase the profitability of our existing product.

6.1.2 : UPGRADATION OF MOTOR STARTER MANUFACTURING FACILITY

Product Brief

Another main product of UEI Ltd is Motor Control Gears, mainly motor starters. The current starter design is of conventional mechanical type. The technology is decades older though it is a proven one. The present market trend demands highly sophisticated electronic designs with single switch operation for multiple controls. To cope up with this change we are planning for modernisation of our starter product to compete in the market by developing a technologically advanced and market competent designs. Also we are having a dealer network for starters covering all over India and this can be utilised for this product also and hence the risk of marketability is low.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
937	32	nil	NIL

**The expected turn over and profit of each product in a year is assumed at 100% utilization of resources

Production and there by turnover can be increased based on market demand which may lead to additional job opportunities.

Market Analysis of Soft Starter

- The present market trend demands highly sophisticated electronic designs with single switch operation for multiple controls. To cope up with this change we are planning for modernisation of our starter product to compete in the market by developing a technologically advanced and market competent designs.
- Also we are having a dealer network for starters covering all over India and this can be utilised for this product also and hence the risk of marketability is low.
- Also from our previous experience in this field we have identified a huge market potential for Starters especially for its electronic version for Kerala Water Authority (KWA), Ice Factory, Crusher and Quarry Units Power Mills etc.....

6.1.3. VEHICLE CHARGING STATION

To address the quantum of emissions from the "Transport" sector powered by fossil fuels, "electric vehicle" is considered a viable option for short distance / inter-city trips with adequate "charging stations" available. It is necessary to make provisions for establishing Public Charging Stations (PCS) in the local areas including urban cities for vehicle re-fuelling/ recharging.

As per Guidelines and Standards published by Govt of India,

Public Charging Infrastructure (PCI) shall have the following minimum Requirements:

- Every Public Charging Station (PCS) shall have the following minimum infrastructure:

- An exclusive transformer with all related substation equipment including safety appliance.
- 33/11 KV line/cables with associated equipment including as needed for line termination/metering etc.
- Appropriate civil works.
- Adequate space for Charging and entry/exit of vehicles.
- Public Charging Stations shall have, one or more electric kiosk/boards with installation of all the charger models
- The kiosk/board may have options for installation or additional chargers if required.
- The Public Charging Station Providers are free to create Charging Hubs and to install additional number of Kiosk/Chargers in addition to the minimum number of chargers

The proposed charging station shall be based on the latest technologies of TATA, MG Motors, NISSAN etc so as to assure the quality of the infrastructure for at least 10 years.

Aiming to explore the possibilities during the modernisation of the city, Electric charging station finds a great scope in advancement of the company as per future trends. Kollam district has at present only one charging station available with limited facility while the demand for electric vehicles is showing an increasing trend

Expected revenue from electric charging station

As per guidelines and standards published by Govt of India, The tariff for supply of electricity to EV Public Charging Station shall be determined by the appropriate commission, provided however that the tariff shall not be more than the average cost of supply plus 15 (fifteen) percent, which is fixed by Regulatory commission.

The return of investment is expected after 5 years from installation. An additional income is expected through a refreshment centre/cafeteria including counter sales point of UEIL products associated with this premises.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
As per tariff	As per tariff	6	nil

6.1.4.RMU- RING MAINS UNITS FOR DISTRIBUTION SWITCHGEARS

The RMU or Ring Main Unit is a factory assembled, metal-enclosed set of switchgear used at the load connection points of a ring-type distribution network in an electrical power distribution system.

RMU is functions to install on medium voltage distribution network and mainly used for the protection of transformers in compact substations. It is used for medium voltage distribution in compact substations, small buildings, residential housing complex, large shopping malls, airports, wind power, etc.

○ The Scope of RMU installation-related works

The Installation of 11KV Outdoor SF6 Insulated RMU covering erection, testing and commissioning with associated equipment including civil work, supply & laying of 11kv cable, cable jointing kit etc. of RMU.

Generally, the RMUS should be Modular, extensible type on both sides with the provision of attaching/connecting with SNAP FIT arrangement without External Busbars, additional load break switches and circuit breakers in future whenever required.

However, RMU shall be extensible on both sides however one side is occupied by the metering panel and another side is free for an extension on vice versa is also possible depending on on-site condition.

Alternatively, Extension shall be possible by adding trunking chambers and required accessories or by plug-in bushing type arrangement.

○ Configuration of a 11kV RMU:

Ring Main Unit configuration may various way like- 2 way, 3 way and more; see below an 11kV RMU configuration.

- a) 2-Way - 11KV Gas (SF6) Insulated RMU with One 630A load break switches and One SF6 Insulated VCB of suitable rating.
- b) 3-way - 11KV ,Gas (SF6) Insulated RMU with 2 Nos. 630A load break switch and 1Nos. SF6 insulated VCB of suitable rating or 3 Nos 630A load break switch
- c) 4-way- 11KV Gas (SF6) Insulated RMU with 2Nos 630A Load break switches and 2Nos. SF6 Insulated VCB of suitable rating– or 3 Nos 630A Load break switches and 1Nos, SF6 Insulated VCB of suitable rating.
- d) 5-way -11KV Gas (SF6) Insulated RMU with 2Nos 630A load break switch and 3No. SF6 insulated VCB of suitable rating -
- e) 6-way -11KV Gas (SF6) Insulated RMU with 3Nos 630A Load break switches.

- o Technical Requirement of an 11kV RMU -Ring Main Unit

The Ring Main Unit (RMU) shall be installed at 11kV junction points to have a continuous supply by isolating faulty sections. The RMU shall be extensible on both sides and consists of the following combinations of load break switches and [Circuit breakers](#) for a nominal voltage of 12 kV using SF6 gas as insulating and Vacuum as arc quenching medium.

For better and safe performance RMU shall be enclosed in a single compact metal clad, outdoor enclosure suitable for all weather conditions. The switchgear/steel gas tank shall be filled with SF6 as per IEC/IS Standards relative pressure to ensure the insulation and breaking functions. The steel gas tank must be sealed for life and shall meet the “sealed pressure system” criteria in accordance with the IEC 298 standard. The RMU must be a system for which no handling of gas is required throughout the desired very long service life.

RMU DESIGN FEATURES:

RMU design features of the proposed RMU, as described in the reference design and materials. The key design features include those that relate to:

1. Maintainability, expandability, and life span
2. Ability to operate in severe outdoor environmental condition
3. Immunity to electrical stress and disturbance.
4. Acceptable insulation properties.

RMU may be an indoor type or outdoor type, so the design also is considered the installing place.

Indoor RMU:

- Modular design, Panel type with front cable access.
- RMU must be made of robotically/TIG/MIG welded stainless steel.
- Offered RMU must be extensible.

Outdoor RMU:

- Stainless steel enclosure for OUTDOOR RMU application. The manufacturers shall conform to the normal current ratings mentioned in GTP at 50 deg. Ambient without derating or as per IEC Standard.
- Enclosure with I.P.54 standard protection.
- Offered RMU must be extensible.
- Cable boxes shall be on the front sides.

The RMU outdoor metal-clad, [Switch Gear](#), Load break isolators, Vacuum circuit breakers shall be equipped with an earth bus securely fixed along the base of the RMU.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
3000	390	40	nil

The size of the earth bus shall be made of IEC/IS standards with tinned copper flat for RMU and M.S.Flat for Distribution Transformer, earth spike and neutral earthing. Necessary terminal clamps and connectors shall be included in the scope of supply.

6.2. MEDIUM TERM PLANS

6.2.1.VFD (VARIABLEFREQUENCYDRIVE)

India variable frequency drives market is witnessing a growing trend over the past few years owing to the rising demand for energy & electricity, industrialization, and increasing technological advancement of various machinery. Further, the market is projected to follow the growth trajectory over the coming years as market players are making efforts to innovate and introduce more energy efficient, compact, highly reliable products to meet the

demand for consumers who are looking forward to cost-effective energy saving solutions. Moreover, various government regulations to cut down energy usage, carbon emission, and electricity is likely to result in consumer inclination to uses energy saving variable frequency drives.

If battery pack for an electric car is analogous to heart for a human then VFD controller is its brain. This device acts as the speed controller for the induction machine that acts as the prime mover for the electric vehicle. The demand for these controllers in future is also estimated to increase linearly with the rise in demand for electric mobility.

The India variable frequency drives (VFD) market size is projected to grow at a CAGR of over 6.1% from 2019 to 2025. AC drives captured the majority of the market share in 2018 and is anticipated to contribute significantly in India variable frequency drives market forecast period revenues.

○ Basic technology

Variable frequency drive (VFD) is a power electronic device that is capable of regulating the speed of an alternating current motor, by adjusting the frequency along with the voltage of the electrical power, supplied to that motor. With the help of VFDs the otherwise high power consuming appliances and motors can save energy. VFD is mainly used in high voltage alternating current devices, which do not require continuous flow of current, and there is high requirement for speed control. The main advantages of VFD include, energy savings, low motor starting current, managing devices at various speeds, easy installations, operations at high power factor, and others.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
1500	195	10	nil

MARKET TRENDS:

The key market players of this product are HONEYWELL, SEIMENS, ABB and hence we expect high market especially in south India. UEIL targets mini and micro markets and shall assure high quality services to the customers compared to major players

6.2.2. BLDC (BRUSHLESS DC) MOTORS

BLDC motors are high speed, highly efficient precision motors that is found to be advantageous in many applications like drones due to their light weight and precision control. With acquiring appropriate manufacturing technology UEIL could start manufacturing these simple and powerful machines with its existing infrastructure .BLDC motors can also be used to make high efficiency Fan design

- Market Opportunity:

Transition of global automotive industry toward electric vehicles

The global automotive industry is transitioning toward electric mobility with significant changes in electric vehicle technology. Advancements in battery technologies for lowering costs of batteries and improving their charging speed, as well as increasing government support in the form of tax redemptions and incentives to promote eco-friendly electrical vehicles that use brushless DC motors, are acting as opportunities for the growth of the brushless DC motor market.

Moreover, the proactive measures taken in Europe for the decarbonization of society are also leading to the increased adoption of electrical vehicles that use brushless DC motors

Brushless DC motors are 80 to 90% more efficient than conventional brushed motors. As electrical vehicles are battery-powered and require energy-efficient motors to ensure less energy consumption, it is expected to act as an opportunity for the growth of the brushless DC motor market.

- Advantages of BLDC:

Motor Used in BLDC Fan Prominent advantages of BLDC motor over induction motor is summarized as:

- Lower Electricity Consumption (65% savings)
- Longer backup on Inverters (even on Solar)
- Improved reliability
- Noise reduction
- Longer lifetime

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
600	80	10	nil

6.2.3.LITHIUM - ION BATTERY PACK ASSEMBLING:

The Future of Automobile is electric

The Automotive segment is expected to have significant growth in the Indian lithium-ion battery market during the nearest future- The government of India has set an ambitious target of achieving 30% EV sales by 2030 across all modes. Hence, the process toward mass adoption of electric vehicles in the country is expected to create significant opportunities for India's lithium-ion battery market in the future. - India's plans to boost national battery manufacturing are likely to drive the lithium-ion battery market in India.

Battery packs are an excellent choice for many different projects, such as EV conversions, backup power, solar power storage, RV power, off-grid setups, and more. The energy density of the LI ion/polymer battery pack modules are unmatched by other energy storing systems and can go up to 200Wh/kg. Individual Li-ion cells form the basic building block of modern battery packs. They consists of a parallel combination of strings of series connected individual Li ion cells with each individual cell having voltage =3.7v These battery packs form the power source for most of the modern electric cars .With the future of mobility is expected to be electric with all the encouragement offered from the governments all over the world, by 2030 almost half of the vehicles sold all over the world will be electric. With this scenario coming into fruition the demand for Li ion cells and the battery packs will be enormous.

At present only a few players are in this segment in India and all over the world. Thus if UEIL could start manufacturing of LI ion/polymer cells and in this field then UEIL will definitely get a first movers advantage and ensure its relevance in coming years in the electrical equipment manufacturing segment.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
2400	310	20	Shall be complied

○ **Key Market Trends**

Automotive Segment is Expected to Grow at a Faster Rate

- The automotive segment is expected to grow faster in the market during the coming years owing to the increasing demand for electric vehicles (EV) and favorable government policies related to an EV. For instance, the Government of India Vision 2030, aims to achieve 100% electrification of public transport and 40% of personal mobility by 2030. In 2019, India’s electric car stock has reached 11,200 vehicles from 3,400 vehicles in 2014. Hence, showing a rapid growth rate over the mentioned years.

- To achieve the vision, the Government of India, In July 2019, announced income tax exemptions for prospective EV buyers and reduced goods and services tax (GST) on EVs from 12% to 5%. Hence, this turn is likely to attract more EV manufacturers in the coming years.

- Furthermore, In December 2020, Tata Chemicals has started work on its lithium-ion cell manufacturing project. The company, along with other manufacturers, was waiting for the government to come out with the PLI scheme since it was in the works for some time now. They are expected to seek incentives under the scheme just like some of the other manufacturers. This is expected to aid the growth of the market.

- On the demand side, in Feb 2021, Ather Energy has started the operation of its new two-wheeled electric vehicle and Li-ion battery manufacturing facility located at Hosur. Therefore, factors, such as upcoming Li-ion battery manufacturing plants majorly focused on electric vehicle applications are expected to boost the demand for Li-ion

batteries

- Hence, the factors, such as government support for EV adoption, domestic lithium-ion battery manufacturing, advantages of lithium-ion batteries over lead-acid batteries, and the acquisition of lithium reserves, are expected to boost the growth of lithium-ion batteries in the automotive segment of India.

o **Basic manufacturing method:**

Battery cells are similar in design to cell phone or laptop computer batteries, except that they are much larger. Cells are combined into a cell block using either a serial or parallel connection. Cell blocks are assembled into modules with communication ports to measure temperature and voltage. These modules are then connected within a rack, which provides the serial connection for battery modules. The battery rack will also include an upstream control system known as switchgear, which provides current sensors and communication protocols. It is important to note that this arrangement is based on IEC standard terminology and some may use different terminology.

The manufacturing of a battery can generally be separated into four major steps:

Initial quality control and electrode production Cell stack assembly Drying, electrolyte filling, formatting, ageing, and sorting Assembling cells into a battery

KSEB AND OTHER ELECTRICITY BOARD REQUIREMENTS:

Based on the continuous feedbacks collected from our major customer, KSEB we propose to start production of the following

6.2.4. LT PIN INSULATOR FOR NEUTRAL

In distribution system, the neutral conductor is also stringed along with phase conductors using LT pin insulators. All these pin insulators are of the same colour (normally brown in colour). Discriminating the neutral conductor is not possible as all

conductors used are either Rabbit or Weasel. A neutral conductor is required to be identified for giving a new service connection, for extending an OH line, during maintenance etc. The best solution is to keep a different coloured insulator for neutral

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
100	14	2	nil

6.2.5.NEUTRAL ISOLATOR SWITCH

There is no isolation possible for neutral conductor as available for phase conductors. The personal working in a particular location is required to be put the entire transformer off, creating supply interruptions to the whole are under the DTR. There are several number of section fuses under a transformer. When working under a particular section fuse area, it is not safe to work after removing the fuses available in the phase line, as the neutral line is not isolated. There are chances of neutral current in a distribution system; it is not safe to work without isolation. Fuse isolation cannot be possible for neutral. The only solution is a “Neutral isolator switch with panel” suitable for installing on 9/8m PSC poles at a height of 6 feet from the ground.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
200	28	4	nil

6.2.6.LBS(LOAD BREAK SWITCH)

3.6/7.2kV,200Amps,3-pole

The LBS is an air load break switch with attached power fuses. A striker is incorporated into this unit, a feature which is not found in conventional load break

switches. The striker is a trip mechanism which operates the moment the fuse blows. When this occurs the striker causes all 3-pole to open at the same time. If air load break switches do not have this striker feature it is possible for some of the phases to remain alive after the fuse has blown, so resulting in a dangerous situation. This FUJI feature adds to the safety of the electrical system. As LBS-type air load break switches are provided with a built-in auto trip mechanism the R290B and R293B remote gang operated mechanisms cannot be fitted.

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
500	70	6	nil

6.3. LONG TERM PLANS

6.3.1.LOAD SIDE MANAGEMENT DEVICE(LMD)

(Energy Storage, Voltage Converters, Load Sensing)

. The LMD is intended to be used for home energy storage and stores electricity for solar self-consumption, time of use load shifting, backup power, and off-the-grid use. The larger Power pack is intended for commercial or electric utility grid use and can be used for peak shaving, load shifting, backup power, demand response, micro grids, renewable power integration, frequency regulation, and voltage control.High capacity battery packs acts as the energy storage device for LMDs.

This device consists of load sensing device, grid tie inverter, Lithium – ion battery pack and DC to DC converters.

With proper design and integration of smart inverters with high capacity battery packs a proper LMD can be marketed by UEIL in coming years

EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
30000	4000	50	nil

MARKET REQUIREMENTS:

With the adoption of more and more remote and off grid consumer driven renewable energy generation in coming years a Load side management device is deemed to be an essential consumer product in future

At present there is only one Major company M/STESLAInc which has developed this product all over the world.

6.3.21 KVA PORTABLE GENERATOR SET

A Portable generator is the combination of an engine with an electric generator (often an alternator) to generate electrical energy. An alternator is an electrical generator that converts mechanical energy to electrical energy in the form of alternating current. For reasons of cost and simplicity, most alternators use a rotating magnetic field with a stationary armature.^[3] Occasionally, a linear alternator or a rotating armature with a stationary magnetic field is used. . An internal combustion engine is usually designed to run on diesel/petrol fuel, but some types are adapted for other liquid fuels or natural gas.

1KVA portable generating sets are having high demand in households ,used in places without connection to a power grid, or as emergency power-supply if the grid fails, as well as for more complex applications such as peak-lopping, grid support and export to the power grid.

Proper sizing of diesel generators is critical to avoid low-load or a shortage of power. Sizing is complicated by the characteristics of modern electronics, specifically non-linear loads.

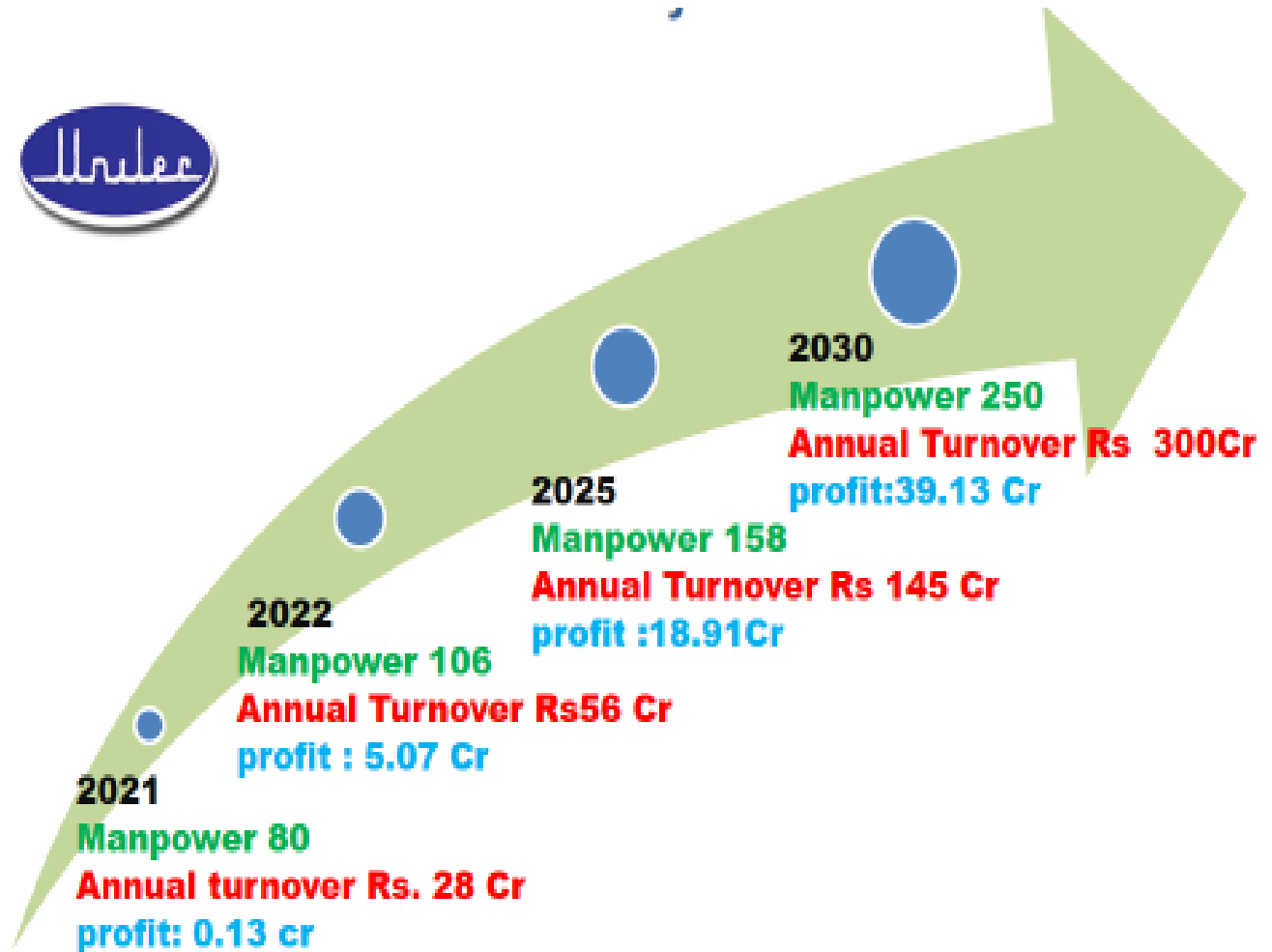
EXPECTED TURN OVER **(Lakhs)	EXPECTED PROFIT(Lakhs)	JOB OPPORTUNITIES (NOS)	ENVIRONMENT /OTHER ISSUES
300	40	15	nil

7. HR PLAN:

Present manpower	No. of retirement cases by 2022	Additional requirements	Total by 2022	Recruited through	Recruitment process
80	5	21	106	PSC, Employment Exchange and invite application from the public	a) Advertise-ment through print media b) Application verification c) Skill Test d) Interview e) Selection
manpower by 2022	No. of retirement cases by 2025	Additional requirements	Total by 2025		
106	12	40	158		
manpower by 2025	No. of retirement cases by 2030	Additional requirements	Total by 2030		
158	15	77	250		

Three employees will retire on this period (2022-2030), their appointment purely from PSC and all other cases recruitment by Employment Exchange or other sources etc...

8. FINANCIAL PROJECTIONS



9. CONCLUSION

- ✓ Company expects profit through the proposed projects to nullify the accumulated losses. The projects are planned as short term, medium term and long term based on the priority of implementation of the same so as to mitigate the present weakness overlaid on it and approach systematically to bring in stable operations in future.
- ✓ Proposal given to Govt to convert Govt loan of Rs 76.22 crores (including interest) into equity is awaiting concurrence which may lead to positive net worth
- ✓ The company plans to conduct detail market analysis of required products near to its implementation so as to assess their latest market feasibility. It also plans mass production of the products to minimize the production cost and also validate the designs before entering into the market
- ✓ To cope up with the limitations of recruiting additional man power on permanent basis ,the Company is planning for short term hiring based on the time to time aptitude requirements
- ✓ The Company shall strive harder taking its full efforts to bring itself financially self-sustaining through its short term projects and thereby upsurge out as a healthy PSU with strong balance sheet.
- ✓ The Company also observes positively the approach from the Government to integrate the public sectors coming under common mode of operations which shall reduce competition among the PSUs themselves.