MASTER PLAN

(2022-23 to 2031-32)

KELTRON ELECTRO CERAMICS LIMITED (KECL)
KUTTIPPURAM

(A Subsidiary of Kerala State Electronics Development Corp. Limited)

COMPANY PROFILE

KECL is a subsidiary unit of Kerala State Electronics Development Corporation Limited (KSEDC). Company started functioning in the year 1974. Production of Ceramic capacitors was started in 1978.During 1990s due to globalization and liberalisation, cheap imports captured the market and hence company find hard to compete. As a part of diversification, company has entered into the manufacturing of underwater Transducers / Hydrophones with technical know-how from NPOL (Naval Physical and Oceanographic Laboratory), Kochi.Since then company has already executed transducer orders around 90Crores for major customers like NPOL – Kochi, BEL – Bangalore, NIOT – Chennai, BDL – Vizag, NSTL – Vizag, IIT – Delhi, NIT – Calicut, CUSAT, and so on. The company is expanding its manufacturing capacity with new equipment and test facilities.

FINANCIAL POSITION

The financial position as on 31.03.2021 of the company is given below,

All figures in lakhs

AUTHORIZED CAPITAL	800.00
PAID-UP CAPITAL	589.45
NET WORTH	137.49
ACCUMULATED LOSS	461.83
PROFIT / LOSS FOR 2020-21 (Provisional)	48.43

Company has completed statutory audit up to 2019-20.

PAST PERFORMANCE

The comparison of Business Performances of the company for the last 5 years from 2016-17 to 2020-21 is given below,

All figures are in lakhs

	2016-17	2017-18	2018-19	2019-20	2020-21 (Provisional)
Turnover (Without GST)	1148.10	1427.94	1482.15	1025.79	1128.45
Profit / Loss (PBT)	8.89	14.20	(128.91)	(62.16)	48.43

PRESENT MANPOWER POSITION

The present manpower strength of the company is as follows,

All figures are in nos.

Category	Permanent	Contract	Total
Top Level Executives	0	2	2
Middle Level Executives	9	11	20
Supervisors	6	12	18
Workmen	9	3	12
Total	24	28	52

PRESENT PRODUCTS

The present product line of the company includes the following items,

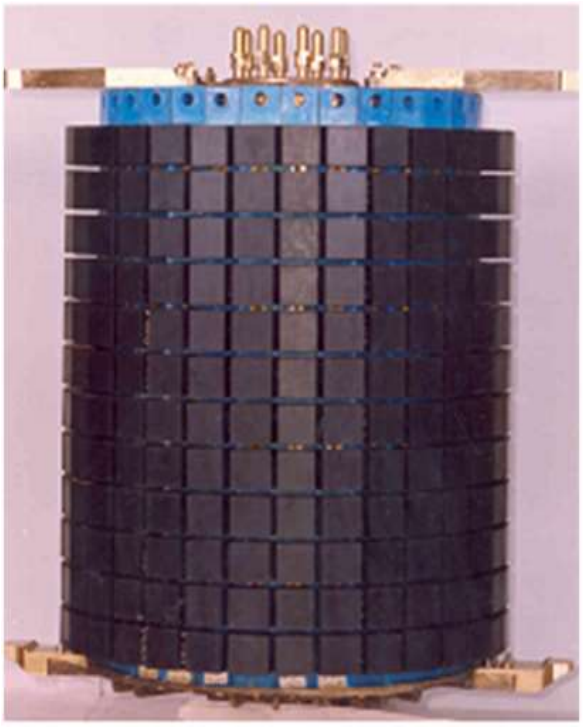
1) Transducers
2) Hydrophones
3) Underwater sensors

1) Transducers:-

Company manufactures wide range of underwater transducers specifically designed for the underwater applications. Underwater Transducers are the core component of sonar detection equipment, which undertakes the task of signal generation and reception for sonar detection. Transducers produce underwater acoustic signals from Hz. to KHz. and their working principle is based on piezoelectric effect. These underwater transducers are being manufactured with technical know-how from DRDO labs viz. Naval Physical & Oceanographic Laboratory (NPOL), Kochi and Naval Science and Technological Laboratory (NSTL), Vizag.

Some of the major underwater transducers are given below,

a) Stave Assy. HF Transducer
b) Flextensional Transducer
c) ATDS Transducer
d) Echosounder
e) LF Transducer
f) OAS Transducer
g) UCS Transducer
h) UWT Transducer
i) ABHAY Transducer
j) Distress Sonar
k) TONPILZ Transducer and so on.



HF Transducer ArrayEchosounder Transducer

OAS Transducer Array ATDS Transducer

2. Hydrophones & Underwater sensors:

Company manufactures wide range of hydrophones and underwater microphones for underwater and ultrasonic applications. They are completely water proof, corrosion resistant and withstand high levels of salinity. These hydrophones deliver a flat frequency response over a wide frequency range.This equipment is used for recording and listening underwater sound and signals.The ceramic Piezo-electric sensing element and its internal supporting structure are permanently bonded sound transparent.

Some of the widely used underwater hydrophones / sensors are given below,

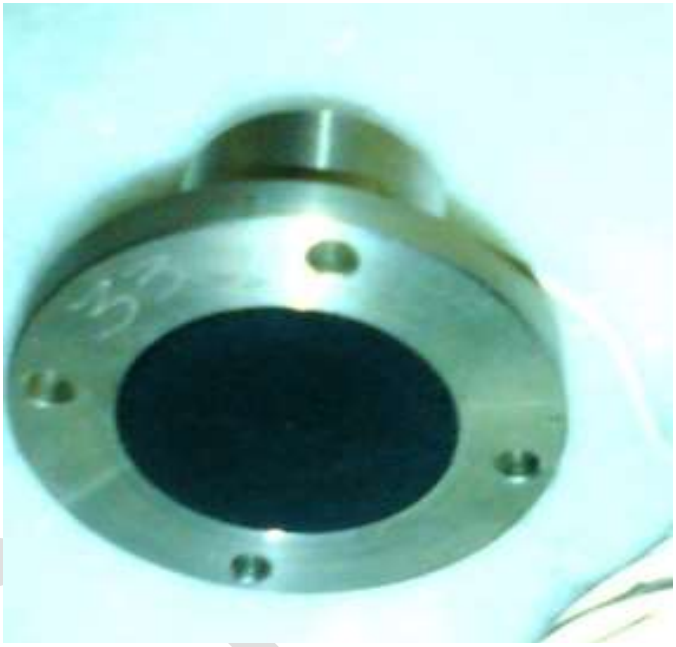
a) Radially Polarized Cylindrical Hydrophone, Type A
b) Radially Polarized Cylindrical Hydrophone, Type D
c) Radially Polarized Cylindrical Hydrophone, Type E
d) STA Hydrophone
e) Passive Sonar Array Hydrophone
f) LF Hydrophone
g) Standard Hydrophone
h) Intercept Hydrophone
i) Throat Hydrophone and so on.

Applications of Transducers & Hydrophones:

Underwater Transducers and Hydrophones/Sensors are widely used for the following applications,

- Underwater Communications
- Depth Measurement
- Ocean Surveillance

Type E Hydrophone



LF Hydrophone

PSA Hydrophone

Throat Hydrophone

CUSTOMERS

1. Naval Physical & Oceanographic Lab (NPOL), Kochi
2. Naval Science & Technological Lab (NSTL), Vizag
3. National Institute of Ocean Technology (NIOT), Chennai
4. Bharath Electronics Ltd., Bangalore
5. Bharath Dynamics Ltd., Vizag
6. KELTRON group of companies
7. Naval Armament Depot. (NAD), Vizag
8. Apollo Micro systems, Hyderabad
9. Larsen & Toubro Ltd., Mumbai
10. National Institute of Technology (NIT), Calicut
11. CUSAT
12. Indian Institute of Technology (IIT), Delhi

SWOT ANALYSIS

STRENGTH:

Company has identified its strength in the following areas,

- Skilled technical manpower
- Reputed brand name
- Advanced production & testing facility
- Technology partner – DRDO labs
- Company is situated along NH and near to Railway station

WEAKNESS:

Company has observed its weaknesses as follows,

- Increased overheads
- Manpower shortage
- Lack of R&D wing

OPPORTUNITY:

Company is making use of the following opportunities for its growth,

- Major role in defence sector
- Company has enough land for expansion
- Export market
- Apart from defence applications, potential for commercial applications are unlimited

THREAT:

The major threats of the company are as given below,

- Company is facing competition due to opening of defence purchase sector to private parties.
- Any adverse change in Govt. policy like customs duty & other taxes may impact the business of the company

PROPOSED PROJECTS

As part of diversification, company has decided to expand its products range by virtue of the following technologies,

I. Transducers using Piezo-composite.

II. Transducers using Fiber Optic Elements

I. Transducers using Piezo-composite:

Technologically upgraded transducers using Piezo-composite materials have better performance and can be used for a wide variety of applications. The company has already started working on this technology in association with NPOL, Kochi and fewer products are developed on trial basis. Hopefully company can streamline the manufacturing process using this technology by 2022-24.

II. Transducers using Fiber Optic elements:

Transducer using Fiber Optic element is an advanced technology and can improve the performance of the system over a wide range of frequency band.

Transducers using Fiber optic sensors shall make the system more compact and increase durability of the system. Systems using this technology are under development at NPOL, Kochi and can start the manufacturingonce all the research and developmental activities are over and found feasible for mass production.

GOALS

SHORT-TERM GOALS:

Company is mainly focused on the production of underwater Transducers using Piezo-Ceramic crystals. The end user of this type of transducers is Indian Navy used for the purpose of naval applications. The company has a successful track record of completing various defence projects and sonar systems so far.

Company already bagged huge orders worth 20Crores from major customers like M/s. Bharath Electronics Ltd., Bangalore, M/s. Bharath Dynamics Ltd., Vizag and Naval Physical & Oceanographic Laboratory, Kochi. To ensure the timely execution of all the existing orders, company already formulated time bound production plans.

In order to make more profits in the short run, company has the plan of introducing some potential products in the market as mentioned below,

a) Vibration Isolator
b) Small capacity UPS (600VA to 3KVA)

a) VIBRATION ISOLATOR (SHOCK MOUNT):

Vibration isolators are designed to reduce the transmitted structure borne vibrations which are undesirable in many domains. The purpose of this system is to control unwanted vibration so that its adverse effects are kept within acceptable limits.

b) Small capacity UPS (600VA to 3KVA):

The increased demand of UPS and inverters in the market prompted the company to enter into the business of this sector. Company can make use of its technological expertise and skills for the manufacturing of inverters and UPS.

For the expansion of basic infrastructural set up and production / test facilities, an additional investment of Rs. 1.50 Crores is required by 2022-23. The source of funding can be from plan fund of GoK or from Govt. of India schemes or from financial institutions depending upon the situation.

MEDIUM-TERM GOALS:

Apart from the production of Transducers using Piezo-ceramic crystals, company will be given more attention on the diversification of its product line using the invention of following technologies in association with NPOL, Kochi,

a) **Transducers using Piezo-composite**
b) **Rubber moulding**

a) Transducers using Piezo-composite:

Improved performance of underwater Transducers over a wide range of frequency band can be obtained by replacing Piezo-ceramic crystals with Piezo-composite materials. Company has already developed few transducers using this technology with assistance from NPOL, Kochi and hopefully can add this item in its product portfolio by 2025-26. The proposed customers for this product are NPOL, Kochi and BEL, Bangalore.

b) Rubber Moulded Components:

Nowadays rubber products are found everywhere in the universe and inevitable for sectors like Defence, Marine, Aerospace, Military, Automotive industry and so on. Company can effectively use its vast experience in rubber moulding process for the manufacture of certain rubber components suitable for the application in defence sector.

An additional investment of Rs. 2.00 Crores is required by 2025-26 for the technology upgradation using Piezo-composite in the factory. The source of funding can be from plan fund of GoK or from Govt. of India schemes or from financial institutions depending upon the situation

LONG-TERM GOALS:

As part of diversification, company will be associating more with the DRDO lab, Naval Physical &Oceanographical Lab (NPOL), Kochi for the development of underwater Transducers, Hydrophones / underwater microphones using better technologies. Eventually company can manufacture underwater Transducers using Fiber-optic elements by 2027-28. Adoption of this technology can make the system more accurate and compact and thereby improve the performance of the entire system. By the end of 2026-27 company will be paying more attention to the development and manufacturing activities of Transducers using Fiber-optic elements. The proposed customers for this type of Transducers are NPOL, BEL and Indian Navy.

In the long run, company shall be hopeful of making increased sales and more profit using a variety of different underwater products, electronic systems and rubber moulding components.

For the set-up of advanced and sophisticated production and testing equipment especially for the latest technology using Fiber-optic elements, an additional investment of Rs. 3.00 Crores will be required by 2027-28. The source of funding can be from plan fund of GoK or from Govt. of India schemes or from financial institutions depending upon the situation

FUTURE SCOPE OF TRANSDUCERS

Apart from the Defence sector, Transducers / Hydrophones have vast applications in the following commercial segments too,

a) Fish finding transducers - Presently these are imported from abroad.

b) Medical electronics –For dental applications, Laboratory & diagnostic test equipment.

c) Ocean surveillance – Presently KECL is meeting limited requirements from NIOT, Chennai. Requirement can be extended to other ocean research institutions / organizations.

d) KECL has supplied Hydrophones to ONGC, Mumbai for oil exploration purpose.But later they have switched to geophones and we have not ventured in that direction.

e) For educational purpose – KECL has already supplied Hydrophones to NIT – Calicut, CUSAT – Kochi & IIT – Delhi. This area can be widened.

Since realistic market survey has not conducted, those areas not included in this master plan.

WAY FORWARD TO 2030

Company's final objective is to meet a revenue target of Rs. 40.00 Crores by 2030-32.

The detailed plan is given below,

YEAR	TARGET	HYDROPHONES/TRANSDUCERS				EXPECTED PROFIT
		Based on PZT	Based on Piezo-compo	Based on Fiber-optic	TOTAL	
2022-24	20	15	5		20	1.25
2024-26	25	10	15		25	1.60
2026-28	30	10	20		30	2.00
2028-30	35	10	20	5	35	2.50
2030-32	40	10	20	10	40	3.10

For the entire plan of organisational development for the next 10 years, the total investment required is Rs. 6.50 Crores.

Eventually company can generate an employment of total 42 nos.