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Pl	ac	e:

Date:

MANOHARA C K USN: 1VA11MBA28

<u>CHAPTER - 1</u> INDUSTRY PROFILE:

Heavy industry in India comprises of heavy engineering industry, machine tool industry, industrial machinery and auto industry. These industries provide goods and services for almost all sectors of the economy, including power, rail and road transport. The machine building industry caters to the requirements of equipment for basic industries such as steel, non-ferrous metals, fertilizers, refineries, petrochemicals, shipping, paper, cement, sugar etc.

> <u>HEAVY ELECTRICAL INDUSTRY</u>:

Heavy Electrical Industry covers power generation, transmission, and tiltheution and utilization equipment's. These include turbo generators, bollers various types of turbines, transformers, switchgears and other allied items that only of the products manufactured by heavy electrical industry in the count?, which includes items items is avoid to be avoid by all sectors of indian economy. Combining areas where these are used are the much complexes, chemical plants integrated steel plants, non-ferrous metal units, etc...

<u>GENERATOR SETS</u>:

AC generators manufactured in India are on par with international AC Generators and consistently deliver high quality power with high performance. Domestic manufactures are capable of manufacturing AC generator right from 0.5 KVA to 25000 KVA and above with specified voltagerating.

> <u>TRANSFORMERS</u>:

The industry has the capacity of manufacture whole range of power and distribution transformers including the REC rating of 25, 53, and 100 KVA and also the extra high voltage range of 400 KV,600 KVA.

Ravindra L. Kirloskar



Ravindra L. Kirloskar was the youngest son of Laxmanrao and RadhabhaiKirloskar, who later headed KEC operations. Having a degree in electrical engineering from the Worcester Polytechnic Institute, U.S.A. he began his professional career in Kirlos 2 Brothers. In 1942 he designed and built India's first electric motor is Kirloskarwadi with his colleague N.K.Joshi. He guided us with the highest level of quality.



The business carried by the KSL is production of industrial goods viz., A.C motors, D.C motors, generators etc. The KSL produces the motors, generators and transformers in nations as well as export to many foreign countries. The KSL Company mainly manufactures heavy volt motors and a generator as per the customer requirements. The company has no competitors for the kind manufacturing. It only faces competition from foreign companies. The company has established 5 offices as global center, which are situated at

- Singapore.
- Malaysia.
- Michigan.
- Germany.
- Sharjah.

turbines, water turbines, steam turbines and variety of makes of diesel engines. The products quality based on world class technology and state-of-the-art infrastructure makes leading consultants specify Kirloskar Electric AC Generators again and again. Kirloskar Electric offers AC Generators from 1kVA to 20MVA, right from low voltage of 220V to high voltage of 11000 volts, for synchronous speeds as high as 3000 rpm to as low as 375 rpm, for standard frequencies of 50hz or 60hz or even special 200hz and 400hz.In alternatives of open construction or closed construction air cooled or water cooled, mechanical construction of single bearing or double bearing and variety of excitations system both brushless and brush type, with class 'F' or class 'H' insulation, meeting the performance requirements of national and international standards. In the aspect of dimensions, size, weight, aesthetics and performance they are comparable to the best in the world. Industries: Telecom, Textile, Agriculture. Notesale.co.uk Military: Battle

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Utilities: Fuel Stations, Milk Dairies, Cinema Houses, Nursing Homes, Construction, Hospital

DCMOTORS:



Kirloskar Electric from its fabled stable of DC Motors has put into international use more than 0.1 million motors since 1969. The wide product range in capacity and variety satisfies the needs of a multitude of applications. The Industrial Laminated Yoke range starting from frame 80 to 1250 with outputs of 0.75 to 3750 kW caters to the industry requirement of torques up to 1500K-Nm. The rugged and reliable higher range of motors are specifically designed for exacting duties in a hot and cold metal rolling mill drive, the sticky rubber mixer drive and continues duty cement kiln drive. These products come from an in house developed technology based on the best of world class international design and manufacturing concepts. Kirloskar Electric has a history of excelling in special application and customization. It is this spirit that saw us develop complete electric for 5 & 10 cubic meter Electric Shovels for coal mines. Today, there are more than 150 Electric Rope working in Indian coal mines, completely powered by Kirloskar Electrics. In the premier aircraft manufacturing facility in Bangalore houses one of the world's few high power and outdoor duty vertical DC motors, for beiro have load testing made by Kirloskar the lean & efficient of the power to the environment .Continuing our efforts in sup d friendly electric material handling equipment, it is only natural that KEC moves on to electric pasen e vehicles. The pissigned ERN Super Particle Accelerator project in Geneva uses Kirloskar Electric Super Conducting DC Corrector Magnets in very large numbers. This is a high precision product of extreme reliability and has to work in a cryogenic environment. The constant pursuit of newer applications has pushed KEC to enter space applications. Our space duty Brush less DC Servo Motors will provide the Rocket Nozzle control force in Indian space launch vehicle for the future. The fully equipped and highly quality manufacturing facility backed by a strong force of dedicated and skilled design, marketing and service team with a focus on quality brings in great levels of reliability to the product that is trusted in India and abroad.

APPLICATIONS

Industries: Cement, Sugar, Rubber, Plastic, Steel, Textiles, Paper, and Printing

facility set out in the eighties to indigenize electric equipment which was, until then, imported at great cost. The Traction Division was started in 1990 to cater to mainline electric and diesel locomotives. Today KEC is one of the major suppliers of electrical equipment to the railways. Beginning with the first DC Motors for compressor application in AC coaches, KEC went on to develop dynamic braking resistors for goods train. Since then it has been a series of firsts, with the development of Alsthom design of 3900 hp traction motors and Hitachi design of 5400 hp for electric locomotives. With the association of Indian Railways and ABB, KEC was selected as a partner and has successfully developed and supplied 850 KW AC mainline traction motors for highly speed electric locomotives. Prestigious Indian trains like Rajadhani Express, Shatapthi and Palace on Wheels have 500 KVA AC generators for power car applications. With diesel locomotives going in for GM technology, KEC was the first Indian company to make radiator cooling fans, dust hin blow motors to international standards. With its successful contribution or modernizing of Indian railways KEC has now been approached by leaders in traction for strategic tie ups which will ensure the presence of the traction products bioglobal arena.

: Railway. Industries

Types:

- **Dynamic Braking Resistors**
- DC-90 Traction Moto
- DC Traction Motor KTM-15250
- DC Traction Motor KTM-659
- AC Traction Motor WAG-9



Quality assurance process of QMS:



2. Resource Management:

- Provision of resource
- Determination of Competency
- Identification of training needs.

3. Product Realization:

- Planning of measuring instruments/ requirements •
- Product status identification and traceability. •
- Prevention of Product during inspection and testing. •
- Calibration of Measuring devices

Board or director and Chief Executive of the company give decisions about the management relating problems of the company. The decision taken is flow from top to down, (To middle level and lower level management).

Staff:

Classification/duties and responsibilities of Staff.

Unit chief is the overall in charge, responsible for:

- a) To plan, arrange and develop business.
- b) To provide resources as required.
- c) To define, document and maintain quality management system in the division.
- d) To participate in corporate management committee meetings for formulating business strategies and policies at corporate level.

department: Of 96 Functioning of 🔄 ign/enginee 🔨

Engineering department plays a major role in giving shape to the products i.e. electric motors, according to the preference of customers. Highly technical background employees will work together to ensure maximum satisfaction to the customers. This department consists of one senior general manager, general manager and a manager.

• Production department:

If performs the functions of converting raw-materials into finished products. They receive plan/design of the products to be manufactured by the design department. Then the Start planning for the actions and here they schedule for a month where a products pas though 3 stages and they work in 3 shifts. The products they manufacture in these units are AC motors, DC motors and AC generators.

Importance of Inventory:

Inventory constitutes the largest component of current assets in many organizations. Poor management of inventories therefore may result in business failures.

A stock out creates an unpleasant situation for the organization in case of a manufacturing organization (in stock out ability to supply an item from inventory) could, in extreme cases, bring production process to a half, conversely, if a firm carries excessive inventories the added carrying cost may represent the difference between profit and loss. Efficient inventory control therefore, can significantly contribute to the overall profit-position of the organizations.

Benefits of Holding Inventory:

- It enables the firm to undertake continuous production and could the setup costs associated with the state of production.
- It enables the firm to avoid losses anxies on account of losing the customers for nonsupply of goods in time.
- It enables the firm to reduce enable costs associated with planning small orders frequently.

• It enables the firm to derive the advantages of bulk buying such as competitive price, higher rates of discount, benefit of lower prices against anticipated or announced price-rise avoidance of unexpected shortages etc.

• It enables the firm to avoid scarcity of goods meant for either production or sale.

Major Dangers of Over-Investments in Inventory:

- Block of firm's funds in Inventory
- Excessive carrying costs
- Risk of Liquidity

• The excessive level of inventories consumes the funds of the firm and cannot be used for any other purpose. The carrying cost such as the cost of storage, handling, insurance,

4. Danger level:

It is the level below the minimum level. When the stock reaches this danger level, urgent purchase action is necessary. As the normal lead-time is not available, it is necessary to resort to unorthodox purchase procedure resulting in higher purchase cost.

Danger level=Minimum consumption*Emergency reorder period.

5. Average stock level:

It is the stock level between the Minimum level and Maximum level of stock.

Avg. Stock level=Maximum level + Minimum level

2

E.<u>Economic Order Quantity (EOQ):</u>

e, co.uk oldest and most widely known It can be described as the basis for how much to buy 1950 purpose of using EOQ model is to find that inventory model. It dates back to 1915. particular quantity of order vib minimum total in entory costs. EOQ is the order size at deing ost and carrying cost, is the least. EOQ will be which the tota comprising fixed at a level where the total of ordering cost will be less.

EOQ can be calculated by a mathematical formula:-

EOQ = $\sqrt{2AO}$

С Where, A = annual consumption of units

- O = ordering cost per order
- C = carrying cost per unit per annum

F. Just-In-Time (JIT):

The concept JIT means that, virtually no inventories are held at any stage of production and the exact numbers of units are brought to each successive stages of production at the right time. It is also called, 'Zero inventories'. The concept JIT was started in the 'Motto Machi' plant of Toyota Corporation, Japan, where the system has been

Secondary Sources

- The data are collected from the annual reports maintained by the company for the past 3 years viz., 2009-2012
- Data are collected from the company's website and records.
- Books and journals pertaining to the topic.

LIMITATIONS OF THE STUDY:

- The entire analysis applies only to KEC limited, Bangalore.
- The study takes into account only the quantitative data and the qualitative aspects were not taken into account.
- The study was limited to be the information available in the published financial statement.
- The present financial position can't find out because of its confidentiality.
- Unavailability of confidential data was a one contation of the study.
- Ratios are only post mortem of viat nappened in the part of the page 60
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No. 2.2: Percentage of Inventory in Current Assets.

Interpretation:

Current assets and inventory form a major part of the company's working and balance sheet. In these graph, we can see that a level of 30% change is maintained, which is a good sign, as it has increased at an increasing level in the above mentioned years and it is well balanced, which shows that the company's performance is healthy.

6. Finished goods turnover ratio:

Formula

Finished	goods turnover ratio= Net sales/Avg
finished	goods

Table No. 6:

Table showing the turnover of the finished goods Inventory for the period 2009-12(Rs in 000's)

YEAR	NET SALES	AVERAGE	TURN OVER
		FINISHED	RATIO
		GOODS	10.CO.U.
2009-10	8,407,330	166,1885	50.58
2010-11	8,238,754	159,274	5 1.72
2011-12	8717,397	155,022	56.23
blea	Page		

Analysis:

The above table shows the Finished goods turnover ratio. 50.58 is the turnover ratio in the year 20009-10. 51.72 in 2010-11 and then turnover ratio is 56.23 in 2011-12.

7. Inventory conversion period:

This represents the number of days of which inventories remain before they are issued for production.

Formulae:

Gr: Inventory Conversion period = <u>No. of days in a year</u> **Inventory Turnover Ratio**

Table No. 7

Table showing the Inventory turnover Conversion in number of days

for the period 2009-12			Lo CO.Un
YEAR	NO OF DAYS	INVENTOPY	OVENTORY
	IN YEAR	NIRNOVER	CONVERSION
	from	RATIC 9	Q ERIOD DAYS
2009-10	³⁶⁵ 1	10.20	36
2010-11	365	7.95	46
2011-12	365	7.03	52

Analysis:

The above table shows the Inventory conversion period. 36 days is required for the inventory conversion in the year 2009-10, 46 days is the change during the year 2010-11 and then there is a change of 52 in 2011-12.

9. Work in progress conversion period:

This represents the number of days for which work in process remain in inventory

Formulae:



Table No. 9

Table showing the Duration of Work in progress Conversion period for the period 2009-12

from Noto 96			
YEAR Pre'	YEAIP 3	WORK IN PROGRESS JURN OVER RATIO	WORK IN PROGRESS CONVERSION PERIOD
2009-10	365	18.18	20
2010-11	365	14.45	25
2011-12	365	12.99	28

Analysis:

The above table shows the Work in progress conversion period. 20days is required for the Work in progress conversion in the year 20009-10. 25days is the change during the year 2010-11 and then there is a change of 28days in 2011-12.

C. Conclusion:

The study reveals the policies, procedures, and techniques implemented by Kirloskar electric ltd in order to maintain efficient inventory management.

Inventory is one area where the organizations have ample room to reduce the cost. "INVENTORY MANGAGEMENT" started off with this motive and today has expected leaps and bounds.

The inventory management should aim at procuring the raw material when the requirement arises most economical way. There is still scope for its improvement.

The company has adopted very effective inventory control techniques and also has taken many measures to reduce the cost of it production. If the company adopts even more measures it would be better and they will have good scope to compete their competitors more effectively and efficient.