

Chapter 1

Introduction to Factory Sector and Diesel Engine Industry

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Chapter 1

Introduction to Factory Sector and Diesel Engine Industry

1.1 Introduction:

The Industrial Revolution of 1760 to 1830 has given the rise to the “Factory”. This is also not a rigid fact but it is just the approximation. In reality, there are several such events that precedent the industrial revolution. But there can be no doubt that what the Industrial Revolution meant was the ever-growing physical separation of the unit of consumption (household) from the unit of production (plant)¹. The rise of factory is the consequence of two economic phenomena i. e. concentration of former artisans and domestic workers under one roof and in this change they were doing the same work but away from home. The other consequence was that there was an increase in investment in fixed capital. Besides that there was a strict control and discipline over the workers so that the production was done in the controlled manner and without the wastage of resources. This new system was sometimes known as “manufactories”. But this system did not hold for good time and there seemed the decline in “manufactories”. The new system of ideal plant, known as “mills” was started.

Traditional industry that is, manufacturing before the Industrial Revolution was an industry without industrialists². This was true because, in such industries, the workers worked on their own account with their family members and with some help of apprentice in the household. The workers worked predominantly from their home and as a result there was no sign of industrialism at that time. According to Max Weber, “the modern factories

¹ Weber, M., 1961, “General Economic History”, New York, Collier Books (translated from German ed., published in 1923)

² Crouzet, F., 1985, “The First Industrialists: The Problems of Origins”, Cambridge University Press

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were different from the traditional factories in two manners. The first one is that the labor was combined with the technical specialization and co-ordination. And the second is that the non-human power was firstly used for the manufacturing activities for the first time.

As a result of these two changes, there was a rise of modern factories in the world. These changes gave birth to the industrialization in the world.

1.2 Definition of Factory:

"Factory" means any premises including the precincts thereof-

(i) whereon ten or more workers are working, or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on with the aid of power, or is ordinarily so carried on, or

(ii) whereon twenty or more workers are working, or were working on any day of the preceding twelve months, and in any part of which a manufacturing process is being carried on without the aid of power, or is ordinarily so carried on, but does not include a mine subject to the operation of the Mines Act, 1952 (XXXV of 1952) or a mobile unit belonging to the armed forces of the Union, a railway running shed or a hotel, restaurant or eating place;

Explanation I- For computing the number of workers for the purposes of this clause all the workers in different groups and relays in a day shall be taken into account;

Explanation II- For the purposes of this clause, the mere fact that an Electronic Data Processing Unit or a Computer Unit is installed in any premises or part thereof, shall not be construed to make it a factory if no manufacturing process is being carried on in such premises or part thereof;³

³ Factories Act, 1948

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1.3 Evolution of Manufacturing – Global Perspective and Indian Perspective:

There can be seen the development of industrialization in the world in phased manner. The first phase of industrialization was proposed by the Russian Economist, Nikolai Kondratieff in 1920s. As noted by him, the first phase of industrialization started in 18th century in England. During this time, there were inventions of various technologies related to textiles industry and printing industry and steam engines. With the advent of these technologies, the industrial sector started becoming broad based and modernized⁴.

The second phase of industrialization started in 19th century. This time the center of industrial development was America. These developments comprised of the evolution of automobile, rail road and telephones⁵.

The third phase of industrialization started in 20th century. Now the center for industrial development was changed to Japan. This time, the industrial revolution was led by automation and electronics. Japan invented the electronic machines to be helpful in bulk and automatic production. Japan sowed the seeds of modernization in industrial production system.

Now when we look at these three phases of industrialization, we can see that each phase started developing in the country where there was a supportive environment including physical, intellectual and economic supports. Besides that, there were social needs and willingness to exploit the opportunities. It can also be noted that each phase gave birth to the new products and services.

The first phase of industrialization was meant to cater to the local needs, but soon after that the production started increasing and as a result the surplus

⁴ Brown, J., C., 1990, “The Condition of England and the Standard of Living: Cotton Textiles in the Northwest, 1806-1850”, Journal of Economic History, 50, PP., 591-615

⁵ Lamoureaux, Naomi, Raff, Daniel, and Temin, P., 2000, “Beyond Markets and Hierarchies: Towards a New Synthesis of American Business History”, Presented to the Annual Meeting of the Economic History Association, Los Angeles

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production was exported to the other countries. This sowed the seeds of international trade. There was a rapid growth in the size and number of industrial units. There was a rapid development in the manufacturing and services. As a result of this, the standard of living of the people was improved. This, in turn, led to urbanization as the people from rural and underdeveloped areas migrated towards the urban and developed areas. For the further development of industrialization, there were three requirements that were needed to be complied with. These requirements being, appropriate manpower, good quality products and efficient production system. To fulfill these requirements, there were developments of universities and laboratories that provoked the improvement of human skills and led to the research and development. These universities and laboratories were located in the centers where the industrial development took place the most. Thus, the above description shows how manufacturing sector evolved in the world.

1.3.1 Evolution of Manufacturing in India:

As in the world, the evolution of manufacturing in India is very ancient. The development of science and technology took place in ancient India. Here, for the convenience in the understanding of the evolution of manufacturing in India, the researcher has gathered the information from various sources and this information is presented into three parts viz. Ancient India, Medieval India, and Post Independence India.

1.3.1.1 Ancient India:

India, the nation that can be proud of its rich heritage of wisdom and knowledge contained in *Vedas, Upavedas, Vedangas and Upanishads*. The word *Vedas* implies that it is the source of all the knowledge required by mankind for spiritual as well as worldly requirements. This knowledge was recognized by the sages through the observation of the world, study and meditation of the physical requirements of the world around them. Indeed, *Vigyana* implies insight or perception or freedom thought. There are four *Vedas* – *Rigveda, Samaveda, Yajurveda and Atharvaveda*. The scholars claim

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that they existed in India 25,000 to 10,000 years B.C. These *Vedas* are further developed into *Upavedas* and they are full of knowledge about science, arts and engineering. In these *Upavedas*, *Arthaveda* includes the knowledge of economics and statecrafts; *Ayurveda* for medicine and health; *Dhanurveda* for military science; *Gandharvaveda* for music and arts; and *Sthapatyaveda* for architecture and engineering.

Vedangas which means the limb of *Vedas*, are full of knowledge about laws, codes and rituals for grammars, astronomy, righteous living, etc.

In Indian subcontinent, the evidences of manufacturing activities are found in the Harappan Civilization i.e. 4000 B.C. to 3000 B.C. They had found very accurate means for measurements and weights. They used Kilns for melting copper ingots and casting tools. They had developed metal tools such as circular saw, pierced needle, bronze drills with twisted grooves, etc.

They had developed technologies for lifting, loading and transportation of construction material. They had developed construction ramps, scaffolding and related tools for creating monumental architecture⁶. Ports were developed as export centers of early manufactured products from smelted copper and bronze. Lothal in Gujarat is an example of such ports. Kautilya's *Arthashastra*, which was written in 300 B. C., mentions the process of metal extraction and alloying. There are several Sanskrit texts that talk about assessing and achieving metal purity. The *Rasvatnakar* written by Nagarjuna in 50 BC mentions the distillation of Zinc in Zawar, Rajasthan, and excavations by the M.S. University of Vadodara verify the existence of kilns used in the distillation of the metal⁷.

During those days, the trade was well organized and supervised by the local heads of the city. Under the leadership of a president in the city, there

⁶ Antonelli, C., 1999, "The Evolution of the Industrial Organization of the Production of Knowledge", Cambridge Journal of Economics, Vol., 23, PP., 243-260

⁷ Nayyar, D., 1994, "Industrial Growth and Stagnation- The Debate in India", Oxford University Press, Delhi

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developed several guilds like carpenters, smiths, leather workers, painters, etc. The evidences show that there was enough development of corporate commercial activities and partnership trade. The government control on the trade was very little. There was sufficient development of good roads to connect the industrial cities. The evidences found from Alexander's record give information that a road was developed from Penkelaotis (Pushkalavati) near the modern Attock and passed through Takshashila to Pataliputra (Patna) after crossing river Bias. Another road was developed to join Pushkalavati and Indraprastha (Delhi) which connected Ujjayini (Ujjain) and Vindhya Range and went into Deccan through Pratisthana after crossing the Narmada and the Tapti River.

Greek literature shows that India exported a variety of spices, aromatics, quality textile like muslin and cotton, ivory, high quality iron and gems, etc. Indian import from Rome included cut-gems, coral, wine, perfumes, papyrus, copper, tin and lead ingots. However, the trade balance was in the favor of India.

1.3.1.2 Medieval India:

In the medieval India, there were several scholars who played an active role in the development of science and technology. They supported arts and science by providing grant from royal treasure. An example of such scholar king is Raja Bhoj. (1018-1060). He was well educated in science and arts and a great engineer. He was the architect of Bhojsagar. It was one of the largest artificial lakes for irrigation. He also started a university called *Bhoj Shala*. He provided a complete network of roads connecting villages and towns in his area. The Iron Pillar of Delhi, which stands 23 feet, made of wrought iron with iron content of 99.72%, without showing any signs of rust is a remarkable example of the level of metallurgical science in ancient India. By the middle age, India was having the technology to produce very high quality of steel and with that technology we could produce zinc from its ore⁸. Abul Fazal in *Aini*

⁸ Metcalf, B., D., and Metcalf, T., R., 2006, "A concise history of Modern India", Cambridge University Press

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Akbari has mentioned that coating of copper on tin vessel was also done during that time. *Bidari*, which was an alloy of copper, lead and tin was developed in the Deccan. Several writers have mentioned the development of technology for producing iron bar.

Several texts mention that the techniques of water-management, light, airy clothes, food and clothing preservation techniques. Cotton industry was the second largest employer after agriculture. By the year 1700, India was the largest manufacturer of cotton textile in the world. In India, there was a development of perfection in manufacturing and simplicity in manufacturing tools. In India, it was difficult to find a village or a town in which a man, a woman and a child is not engaged in the manufacturing of cloth. In spite of all such developments in India, we missed the opportunity of Industrial Revolution which was taking place in Europe. The main problem for that was orthodox education system of *Gurukuls and Madrasas*. This kind of education system became resistance to change. After the British Colonization, the education became limited and the freedom for innovation was in the clutches of British. As a result, the industrial development became stagnant during that time.

1.3.1.3 Post Independence India:

At the time of independence in 1947, India was an agrarian economy. There was a very little development of industries in India. There were very few industries and that too was confined to some cities. India could not adopt a good export strategy because, the British Government had a strategy of exporting raw material to England and importing finished goods to India. This made the industrial revolution successful in England but destruction of industries in India. The immediate task for the government of independent India was to create a conducive environment for the industries in India.

But, even after six and half decades of independence and adoption of planning in India, the industrial activities are not developed much in various regions. During the time period of 1959 and 1998, Gujarat and Maharashtra have

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continued to be the principal states where the industrial development has taken place. There can be seen the regional imbalance in all the states of India. Out of these two states also, Gujarat is the leading state in terms of industrial development. The economic performance of Gujarat state has been higher than the national average. Gujarat has very limited base of minerals and water. Despite these limitations, the entrepreneurial nature of the people and contribution to the globalization has created strong base industrial development of in Gujarat. The long coastline is also a contributor to the industrial development of Gujarat.

It is not possible to study the growth of industrial development of the whole state for the research work. Hence, the researcher has selected one of the most developing districts of Gujarat i.e. Rajkot District.

1.3.1.4 Arrival of Diesel Engine Industry in India⁹:

Diesel Engines are considered as the life line for the water scarce areas of India. Until 1930s Diesel Engines were imported from abroad. India was not the manufacturer of diesel engines. During the Second World War there was a problem of importing the diesel engines and spare parts. Due to that the users of diesel engines had to face the difficulties. To overcome the problem, the Indian entrepreneurs started manufacturing the spare parts of diesel engines in 1940s. Later in that time, they started manufacturing the whole diesel engines. Shri Laxman Rao Kirloskar was the first Indian person to manufacture diesel engines in India. So, Kirloskar brand is still popular in India. Later, other entrepreneurs also joined this business and started manufacturing diesel engines and spare parts in India. This gave birth to the diesel engine industry in India. Later on the whole industry was concentrated to Rajkot District of Saurashtra region in Gujarat State. There were several reasons of concentration of this industry in Rajkot. The principal reason is the entrepreneurial atmosphere of Gujarat and availability of material in Rajkot

⁹ www.clusterobservatory.in

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District. In the further section of this chapter, the researcher has given the details of Rajkot as a hub of Diesel Engine Industry.

1.4 History of Rajkot:¹⁰

History of Rajkot is more than 400 years old. Jadeja family of Jamnagar had established Rajkot State after separation before years. In terms of educational development also, Rajkot is taking pride. Carnal Catties, during the British rule, had established Rajkumar College in 187 to provide the Cambridge education to the princes of the state. For the development of irrigation scheme, Lalpari irrigation plant was established in 1895. Motor service from Rajkot to Jasdhan was started in 1920 and the railway service between these two places started in 1922. Rajkot got electricity in 1924 and post office and telephone office in 1925. When India got independence, Rajkot was the capital of Saurashtra region. Hon'ble Uchchangrai Dhebar was the first chief minister of the state.

1.4.1 Foundation:

Rajkot was founded in 1612 AD, by Thakur Saheb Vibhaji Ajoji Jadeja of Jadeja Clan and Sunni Muslim Raju Sandhi. Rajkot is in the middle of Saurashtra. Vibhaji Ajoji was the grandson of Jam Sataji of Nawanagar. Nawanagar is presently known as Jamnagar. The name of Rajkot is derived from the name of co-founder Raju Sandhi.

1.4.2 Nawab Rule:

Masum Khan was the deputy Faujdar of Junagadh's Nawab. He conquered Rajkot in 1720 AD. He changed Rajkot's name to Masumabad. He built fortresses around Rajkot in the 4 to 5 kilometers perimeter. These walls were 8 feet wide. He created eight gates for the access to Masumabad. Each gate was studded with the iron spikes on their outer side. These gates are known as Kotharia Naka, Nava Naka, Bedi Naka, Bhichari Naka, Sardhar Naka and Pal no Darwajo. There was also one gate which was without spikes. It was called

¹⁰ <http://www.rajkotcity.info/history-of-rajkot-city.php>

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Khadaki Naka near Nakalank Temple. The ruin of all the fort wall can be seen at Ramnath Para area. The gates of Raiya Naka and Bedi Naka were modified by the British rulers. In 1892, the Raiya Naka and Bedi Naka gates were modified by the chief engineer of British Government, Sir Robert Bell Booth. He created three storied Clock towers there.

1.4.3 Jadeja Rule:

Masumabad was again conquered by Jadeja Clan and it was renamed as Rajkot by them. Bavajiraj Jadeja of Jadeja Clan built Darbargadh. This was the first princely palace of the state. Sir Lakhajiraj Jadeja, the son of Bavajiraj was the next ruler of Rajkot. He was the most prominent ruler of that time. He created Lalpari and Randarda Lake for irrigation. After him, Dharmendrasinhji Jadeja was the next ruler of Rajkot. But he died while hunting lion in Sasan Gir. So, Pradyumansinhji Jadeja, Sir Lakhajiraj Jadeja's second son came as ruler of Rajkot. Rajkot was merged into Republic of India during Pradyumansinh Jadeja's reign.

1.4.4 British Rule:

The British East India Company started its intervention in Rajkot and founded Saurashtra Agency in Rajkot to moderate all princely states. The regional headquarters and residency of this agency was at the Kothi Compound. During the British Rule, there was the development of many colonial buildings and educational institutes such as Connaught Hall and the Rajkumar College. Mahatma Gandhi passed the early years of his life in Rajkot. His father, Karamchand Gandhi, was a Diwan to the king of Rajkot.

1.4.5 Post Independence:

After independence, Rajkot was considered as a capital of Saurashtra. Sir U. N. Dhebar sir was the first chief minister. Rajkot was merged into newly created Gujarat State when it was separated from Bombay State on 1st May, 1960. Pradyumansinhji Jadeja died in 1973. His son, Thakore Sahib Manoharsinhji Jadeja succeeded him. He had a very good political career at

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provincial states. He served as a member of Gujarat Legislative Assembly for several years. He served as a minister of health and finance in Gujarat. His son, Yuvraj Sahib Mandattasinhji has created his career as a businessman and environmentalist.

1.5 Profile of Rajkot:¹¹

The average growth rate of Rajkot is around 50% since 1961. There was a drastic increase in the population of Rajkot in 1941 to 1951 due to the establishment of large number of government offices creating a large scale employment opportunities. Since then, its decadal growth rate is fluctuating between 41 and 54%. Initially, Rajkot was developed in 150 hectares area in 1901, but it has grown to 10,404 hectares in 1998 and still growing in area. It has grown around 70% in area from its original size.

Due to European influences, Rajkot has got the modern post and telegraph offices, railway, theatres, etc. Rajkot has also a well developed art, folk and traditions and culture. There is a great heritage of artifacts, handicrafts, folklore rites and rituals, festive events, etc. Janmashtami Lok Mela, Ras-Garba, Haveli Sangit, Literature, languages, dialects, etc. from Rajkot is world famous. Rajkot is famous for its Bandhani Saris, Patola Saris, Mirror work, patch work; bead work, gold and silver jewelry, and silk embroidery, etc. In modern days, Rajkot has the development of machine tools industry, oil engine, auto spare parts manufacturing industry, foundry and metal forging, etc.

1.5.1 Geography and Climate:

Rajkot is situated in the middle of the peninsular Saurashtra in the central plains of Gujarat State. Rajkot is situated in the Western side of India and it is located at the height of 138 meters of the average sea level. It is situated between latitude 20.18 N and longitude 70.51 E. It has total area of 104.86

¹¹ Preparation of Second Generation City Development Plan for RMC as well as RUDA, Final white paper, June 2012, CRISIL Risk and Infrastructure Solutions Limited

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Square Kilometers. According to the census 2011, there is a total population of 12,86,995. If we talk about the climate of Rajkot, it has semi-arid climate with hot and dry summer starting from mid of March to mid of June. It has wet monsoon starting from mid of June to October. The city receives 500 mm of average rain fall. The city enjoys winter in the months of November to February with the average temperature of 20°C. The city at times experiences cyclones or thunderstorms in the months of June and July. The cyclones generally occur in the Arabian Sea in the months after the rainy season. During summer, the temperature ranges between 24°C and 42°C. In the months of winter, Rajkot temperature varies between 10°C and 22°C; on the whole, winters are pleasant.

1.5.2 Linkages and Connectivity:

Rajkot city is the headquarters of Rajkot district. It is connected with the other cities and states by rail, road and air. Rajkot has two railway stations, one is in Junction plot and another in Bhaktinagar. Rajkot has broad gauge railway line between Viramgam-Okha and Porbandar. It has meter gauge railway line between Jetulsar-Veraval-Bhavnagar. Rajkot is also connected with Delhi and Bombay by broad gauge railway line.

The major roads in Rajkot are NH-08A which links Rajkot to Kandla and NH-08B which links to Porbandar and Gandhinagar. Other state highways connect Rajkot to the regions like Surendranagar, Porbandar, Veraval, Bhavnagar, Amreli, Bhuj, Kandla, Ahmedabad and Baroda. Rajkot has the air linkage with Baroda, Bhuj, Bombay, Delhi and Ahmedabad.

1.5.3 Economic Activity:

Rajkot is an industrial town. There is a development of industries like foundry, metal base, and machine tools. There was a National Textile Mill, a government based textile mill in Rajkot. However it is closed down now. There are a numbers of small scale industries in Rajkot. Besides industrial development, there is a development of trade also. Rajkot is the center of trade for the agricultural commodities produced in the villages around the city. The

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Saurashtra Kutch Stock Exchange was established in 1989. It is linked with Bombay Stock Exchange and National Stock Exchange. There are two major industrial estates namely, Aji Industrial Estate and Bhaktinagar Industrial Estate. The major industrial sectors in Rajkot are given below.

1.5.3.1 Diesel Engine & Machine Tools:

Rajkot is the center of production of diesel engine. There are two types of diesel engines viz., low-speed diesel engines-Lister Type and high-speed diesel engines-Petter Type. The production of both these types of engines is increasing.

In the machine tools industry, units are manufacturing lathes, pillar and radial drills, shaping machines, wire nail machines, sheet metal machineries, gear hobbling machines and gear shaping machineries.

There have been many units working and dealing in mini steel projectors, steel castings, rolling mills, paper plant, rubber mills, plastic products & machineries, vehicle body building units, safety razors, agricultural equipment, tin making machineries, kerosene stoves, and domestic pressure cookers & other domestic appliances.

1.5.3.2 Foundry industry:

In Rajkot, about 400 foundries and forging units exist. These have been primarily engaged in casting and forging activities. On the export front, the requirement of foundry items is growing.

1.5.3.3 Engineering and automobile industries:

The engineering and automobile industries of Rajkot are involved in manufacturing ball bearings, ball pens, refills, and ink. There are big forging plants as well, which are engaged in the production of wheels, railway carriages, and defense equipment on a large scale.

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1.5.3.4 Castor oil industries:

Rajkot markets and exports groundnuts, castor seeds, dehydrate garlic and onion powder, and de-oiled cakes, which are manufactured in the entire Saurashtra area. All major trading houses of India, engaged in the export of these items, source their products from the Saurashtra region.

1.5.3.5 Gold and silver jewelry:

Rajkot has been a large manufacturing base for gold and silver jewelry which has been supported by a large exporter market of Mumbai. Rajkot has a sizable contribution to the total export of jewelry from India.

1.5.3.6 Handicrafts:

The textile industry for readymade garments in women's wear is growing at a high rate. The ethnic dresses of Kathiavadi style and Punjabi style are very much prominent.

In addition, the spices industries, viz., turmeric, coriander, fenugreek, black pepper, cardamom, dry ginger and chili powder, etc. are also developing at an eye-catching rate. Ayurvedic medicine is gaining ground and popularity; there is a tremendous scope for its development.

1.5.3.7 Agricultural and allied industries:

In Rajkot, there are five big and 25 small edible oil mills (popularly known as Lok Pal Mills). These mills are producing remarkable quantities of edible oils like ground nut, til, and cotton seed oils.

1.6 Profile of Diesel Engine Industry of Rajkot District:

It is seen in the above section that, the seeds of Diesel Engine Industry were sown in India in 1940s. After independence, the diesel engine business was set up in Saurashtra region especially in Rajkot. The industrial estates like G.I.D.C. were established to provide basic facilities to the entrepreneurs. The farmers were given subsidies on the purchase of diesel engines. This also gave

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boost to the industry. The import substitution policy of the government was also the factor that gave rise to this industry. Gradually, Rajkot became the center of production of diesel engines. Slow speed and low horse power engines were manufactured by the small scale industries. As the enterprises grew older, they turned to the production of more sophisticated engines. During 1970s, the diesel engines produced in Rajkot were popular in the whole country. Lister and peter were the two types of diesel engines manufactured in Rajkot. Diesel engines were included in the national schemes of development also. NABARD gave promotional schemes to the state level funding agencies to promote the production of diesel engines. After 1970s, the entrepreneurs realized the importance of quality and as a result they started getting ISI marks for the engines. This helped them to enter the Middle East market. Rajkot became the exporter of the diesel engines¹².

As it can be seen from the above discussion, Rajkot is the center of industrial activities in the Saurashtra region. Several industries are developed in this region. But it is not possible to study the aspects of welfare activities in all the industries. Hence, the researcher has selected the major industry of this region i.e. Diesel Engine Industry. The researcher will study the employees' welfare activities in the Diesel Engine Factories in the Rajkot District. For this purpose, here, the researcher has presented the industrial profile of the Diesel Engine Sector of the District.

Table- 1.1

Profile of Diesel Engine Industry of Rajkot District

No.	Particulars	Particulars
1	Principal Products Manufactured in this segment	Diesel Engine/Pumps
2	Name of the Association	Rajkot Engineering Association. Bhaktinagar Industrial Area, Rajkot.

¹² www.clusterobservatory.in

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3	Total Functional Units in this Segment	375
4	Turnover of the Segment	Rs. 200 Crores
5	Value of Exports from this Segment	Rs. 40 Crores
6	Employment in this Segment	7500
7	Average investment in Plant & Machinery	Rs. 48 Lac per Unit
8	Major issues	<ul style="list-style-type: none"> • Lack of innovation capabilities • Sever hit after the farmers were forced to switch over to the alternatives such as submersible pumps due to the falling ground water level in the region • Uncertainty in the export market • High competition from China with light weight and low cost machine
9	Access to Export Market	African Countries, Middle East Countries, Saudi Arabia

(Source: District Industrial Profile of Rajkot District, MSME, Ministry of MSME, Government of India)

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1.6.1 Explanation of the Table:

- As it can be seen from the above table, the main product of the Diesel Engine segment is the Diesel Engines and Pumps.
- The Diesel Engine segment of the Rajkot District is controlled by the Rajkot Engineering Association.
- There are around 375 functional units in this segment. Out of that around 150 are engaged purely in Diesel Engine Manufacturing, which are considered as population for the present study.
- The total turnover of this segment is Rs. 200 Crores and out of it around Rs. 40 Crores is the export. Export from this segment goes to African Countries, Middle East Countries and Saudi Arabia.
- Around 7500 people get employment in this segment.
- In this segment, the major issues are lack of innovation, competition from the other products such as submersible pumps, competition from China, Uncertainty in Export market, etc.
- A developmental program for the Diesel Engine Segment of this area was initiated by EDI, Ahmedabad in 2003. Under this program, several initiatives were undertaken such as seminars on modernization, technological up-gradation, Buyers-sellers Meet, quality up-gradation, etc.
- Since 2011, this segment is included in the Innovation Cluster.
- Due to shrinking market of the Diesel Engine, the units in this segment are diversifying.

Chapter 2

Labor Welfare: An Overview

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