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A short memoir of Bosch India

Bosch

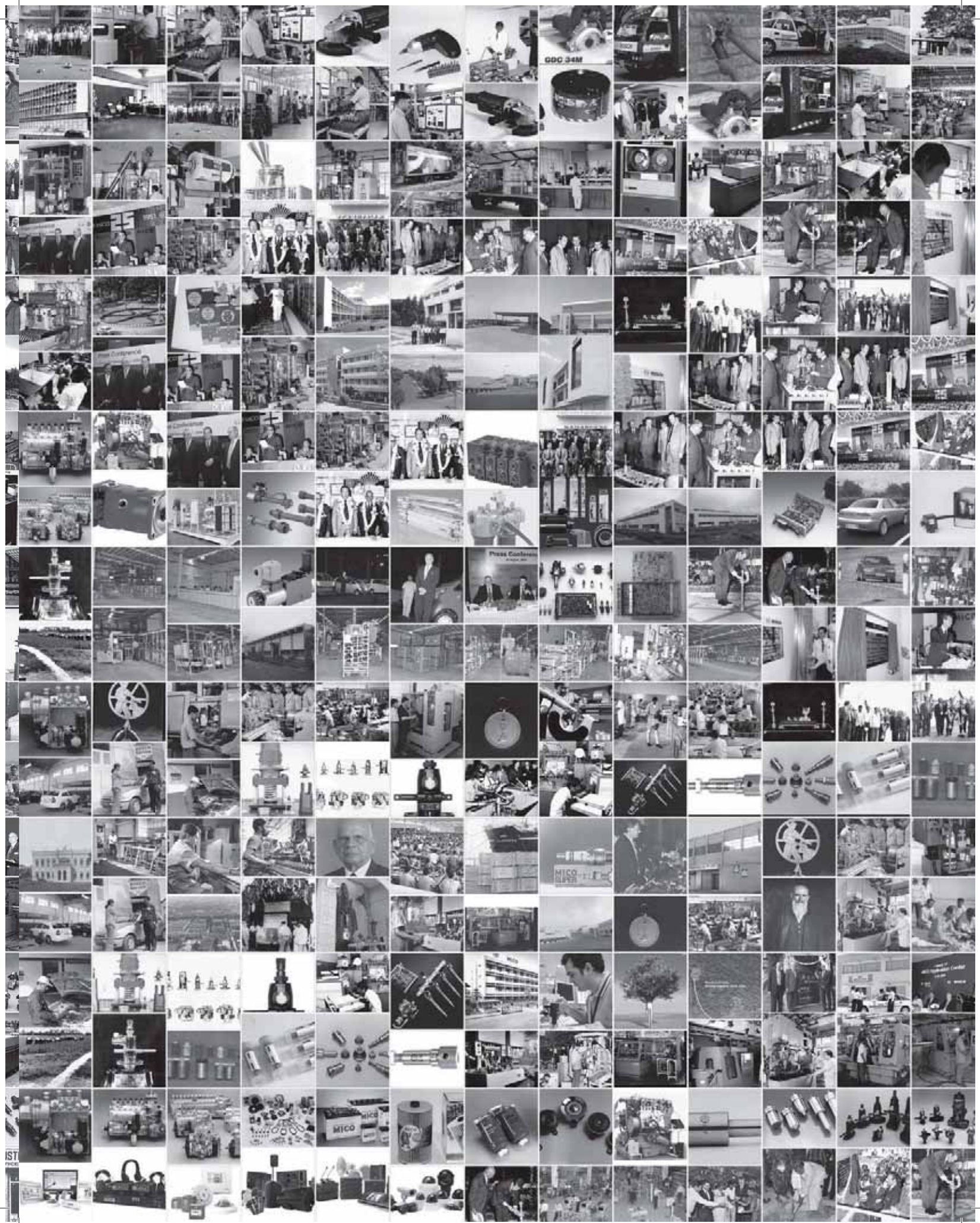


A History of Excellence
A Journey of Progress



BOSCH
Invented for life





A short memoir of Bosch India

A history of excellence

A journey of progress

Author's Note

Dear readers of this book 'A short memoir of Bosch India',

Penning down the history of Bosch in India has been a unique honor for the Bosch India Corporate Communications team. We have endeavored to present the history of Bosch India in a comprehensive manner in this book. To the best of our efforts, we have researched to get hold of the most authentic of reference sources from the archives. These include magazines, annual reports, pictures and oral recordings of internal and external stakeholders, which are invaluable records of the rich history of the Company.

We would also like to bring to your attention that most of the information in this book pertains to Bosch Limited (previously Mico Limited*) – since the history of Bosch India began with it. All other subsidiaries were formed much later. Necessary effort has been made to ensure that the information captured under the year-wise eras pertain to the same. In some places, however, this has not been done so as to ensure continuity of the topics. Every effort has been made by the entire editorial team to ensure that the information presented in this book is as accurate as possible. Even though the city of Bangalore has been renamed to Bengaluru from November 1, 2014 onwards by the Government of Karnataka, we have retained the name 'Bangalore' for the sake of historical charm.

* The company is referred to as 'Mico' and the brand as 'MICO'.

Happy reading!

Sincerely,

Corporate Communications Team, Bosch India.

Message



Dr. Steffen Berns

President and Country Head, Bosch India
Managing Director, Bosch Limited

Bosch set foot in India as early as in 1922, with a representative office in Calcutta (now Kolkata).

The journey of Bosch in India has been one of sustained commitment. With the founding of the first regional subsidiary Mico in 1951, Bosch became a major contributor to the much-needed agrarian, economic and auto industry development in India. Based on its long and international experience and true to the Bosch tradition of innovation to enhance the 'quality of life' with pioneering products and excellence in quality, the company emerged as a technology leader in the Indian automotive industry as well.

This journey has been marked by consistent high performance and reflects in the expansion of both automotive and non-automotive businesses. Bosch has always introduced ground-breaking technology products which have set benchmarks in the industry. Today, Bosch India is a world-class organisation with highest international standards in manufacturing, cutting-edge research & development, product and service quality, and human resource development.

With the ever growing and changing market demand, Bosch India is geared up to introduce new technologies that meet the specific needs of Indian consumers by focusing on indigenous, cost-effective innovative products and solutions.

The future will witness Bosch India making continued advancements on all fronts, and thus sustaining its leadership position in the country. Our greatest strengths are our 'values' and our 'people'. As a value-driven organisation since inception, our ideals are reflected in the way we do business and deal with our business partners, investors, associates and society at large.

The history of our company is an invaluable part of its existence. For over 60 years, Bosch India has traversed a remarkable journey in the Indian automotive industry. Punctuated with several milestones of path-breaking achievements, the journey so far is a landmark in itself.

We are pleased to bring to you the memories of this remarkable history. As you turn the pages, you will discover 'a history of excellence and a journey of progress'. And for the journey ahead, we wish all our associates, business partners and other stakeholders the very best and greater success.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Steffen Berns', written in a cursive style.

Steffen Berns

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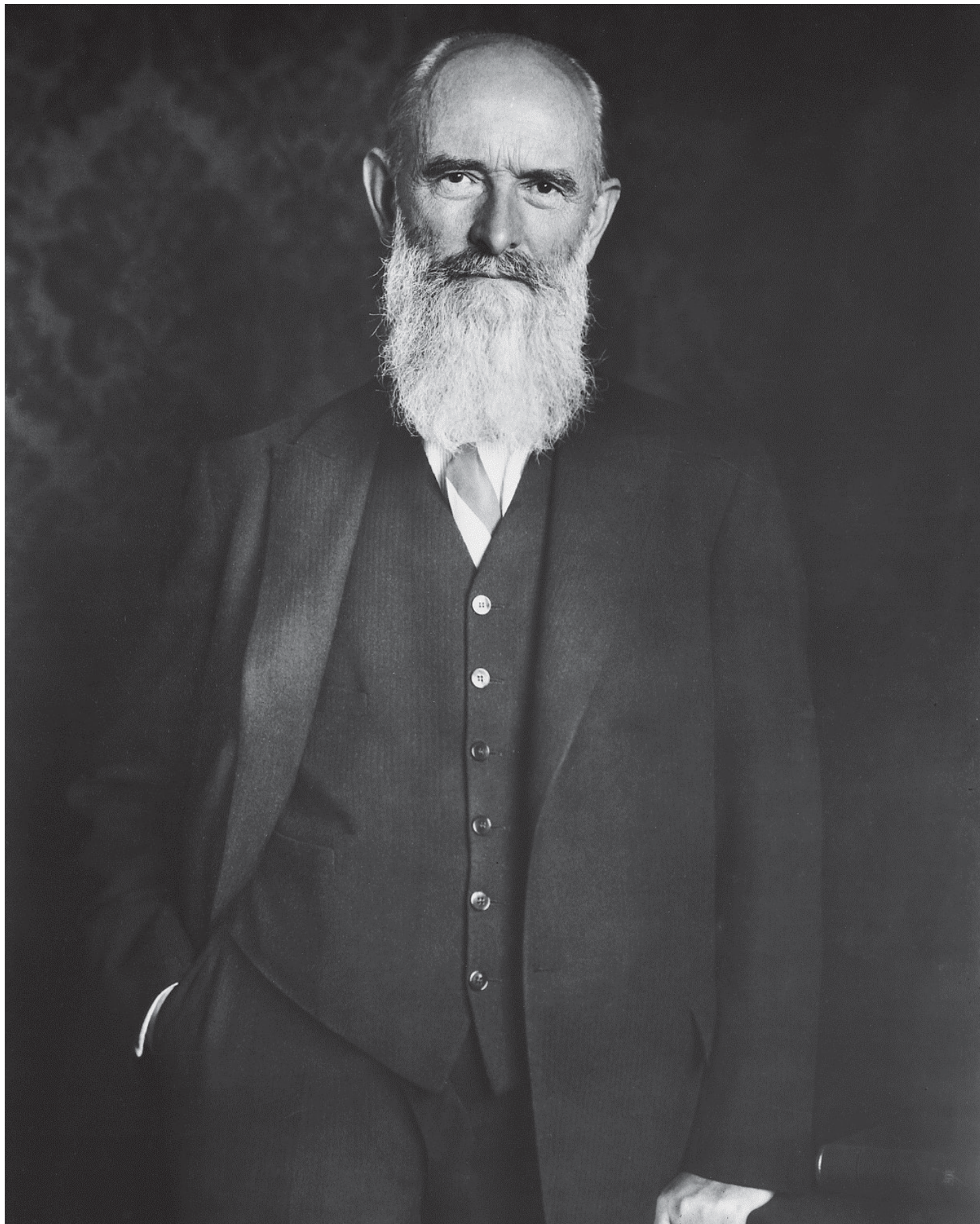
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Preface

The journey of Bosch in India is an experience filled with mileposts that reflect the developments of the Indian auto component industry itself.

The Bosch Group is more than 128 years old. What started in 1886 as a humble workshop by founder Robert Bosch, with only two employees, has grown to a large conglomerate with presence in more than 150 countries. The worldwide presence and industry prowess of Bosch is well acknowledged across the globe. The corporate principle – ‘Invented for life’ – which Bosch stands for, sums up to eminence in its innovations.

The arrival of Bosch in India, and its growth, reflects India’s own economic challenges. Through its first subsidiary – Mico, Bosch played an influential role in the emergence and development

of the Indian auto component industry since 1951.

The Bosch strategy of being able to customize world-class technologies for specific regional needs of businesses and consumers has worked wonders and has shown that it is not possible for countries to work in isolation. Mutual cooperation is the only progressive way ahead - this insight led founder Robert Bosch to think global, especially after experiencing the damages of the First World War. In those days, the word ‘globalisation’ did not even exist.

Bosch set up its first agency in India in 1922. Today, six subsidiaries in India carry out functions in both automotive and non-automotive businesses through several manufacturing sites. The activities of Bosch in India are further empowered

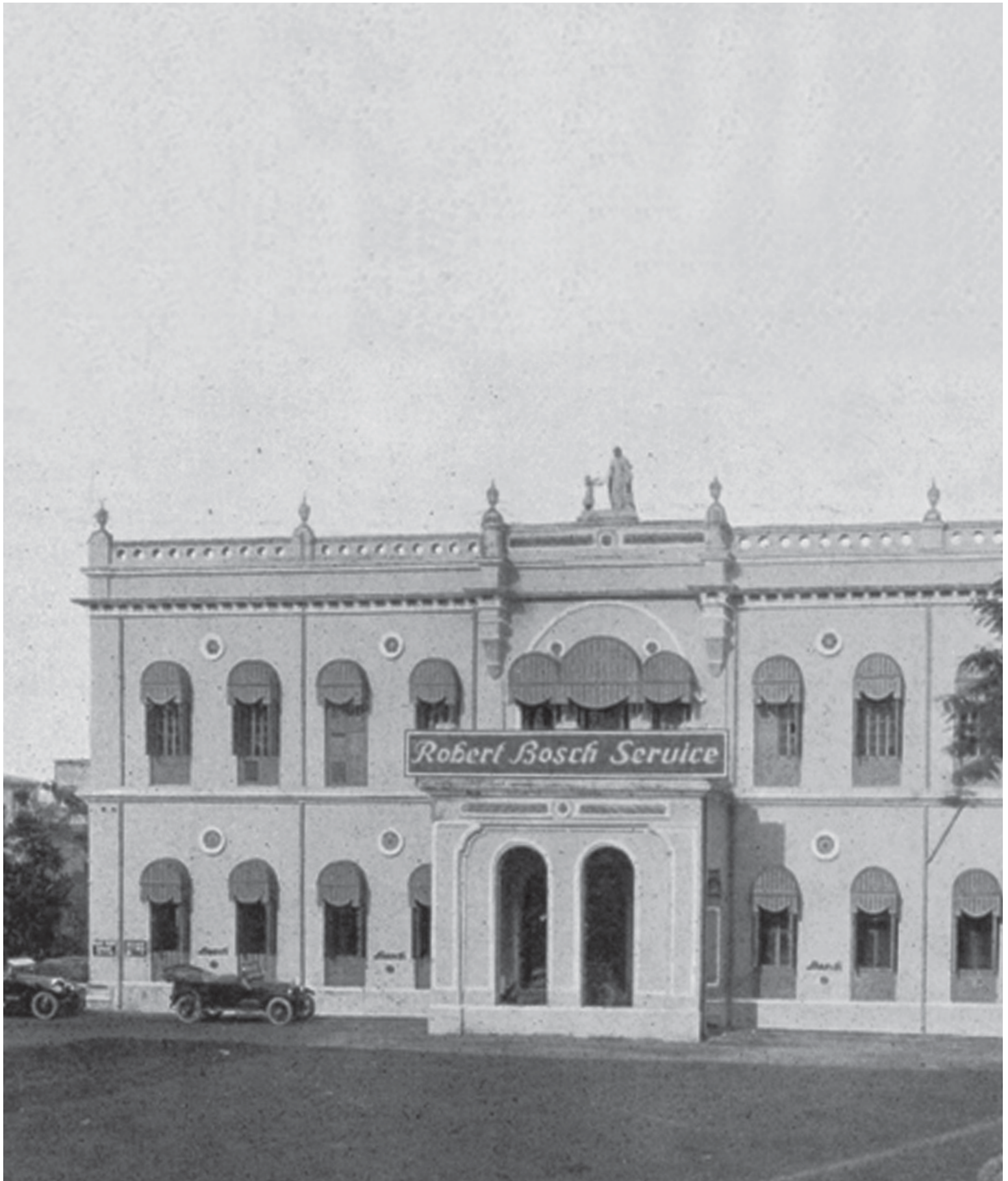
with established R&D centres, and nationwide service and support networks.

This special book - ‘A short memoir of Bosch India’ is, in a way, the latest compendium of the Bosch saga in India. The intention is to make available all the important mileposts experienced so far – especially those that were impactful. Through the pages that follow, we aspire to show the reader how Bosch managed to sustain its distinct quality and proclivity for innovation in the geographically diverse and multi-cultural sub-continent of India. The monumental progress of Bosch in India brings together the best of both the worlds - German engineering and Indian entrepreneurial mindset.

So, how did Bosch begin its journey in India? Where does one start? Read on....

“It has always been an unbearable thought to me, that someone could prove, on testing one of my products, that I produce anything of inferior quality. I have, therefore, always tried to let only such work go out, that would stand any objective test, work that was of the very best quality.”

*- Robert Bosch
(1861-1942)*

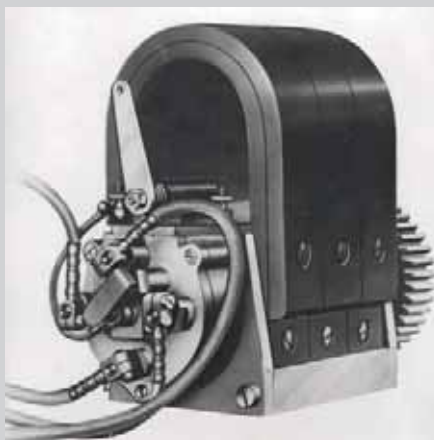




1922 – 1951

Colonial era and Independence

Founded in 1886, the Bosch Group is more than 128 years old today. By 1922, the humble workshop founded by Robert Bosch had expanded considerably, initially by manufacturing and marketing their trademark invention – the high-voltage Bosch magneto ignition device. After the damage wrought by World War I, Bosch established agencies in the U.K., France, Argentina, South Africa, Japan and China. India was also in the plan.



Left: The first Bosch agency in India was set up in partnership with Illies & Co. at Calcutta as early as in 1922. With Illies, Bosch had started a sales office in Japan too in 1920.

Above: The initial magneto designed by Robert Bosch was suitable only for low-speed stationary engines. His master craftsman, Arnold Zahring, ingeniously came up with a simple solution which used a smaller oscillating sleeve inside the magneto instead of the armature. From then onwards, the magneto ignition device achieved commercial success. This happened during the mid-1890s.



The first milepost is the year 1922

The Hamburg-based C. Illies & Co. set up a Bosch agency in Kolkata (then Calcutta) in 1922. The agency was engaged in supplying automotive parts in India. Two years later, it also founded a service workshop. Over the years, this partnership was moved to three more agencies. Mousell & Co. traded Bosch products in India in 1949.

By 1939, Bosch had truly become famous in five continents, as a popular poster then proclaimed. But this was not so in India, even after the country had won its independence in 1947. The imported British and American cars driving on Indian roads also used components from the same countries. Bosch never achieved any real sales.

Above: An advertising poster featuring a spark plug extolled Bosch as an international company focused on quality, with the 'famous in five continents' slogan. Seen in the picture is the poster in a Bosch service garage in Manila, the capital city of Philippines, in 1939.

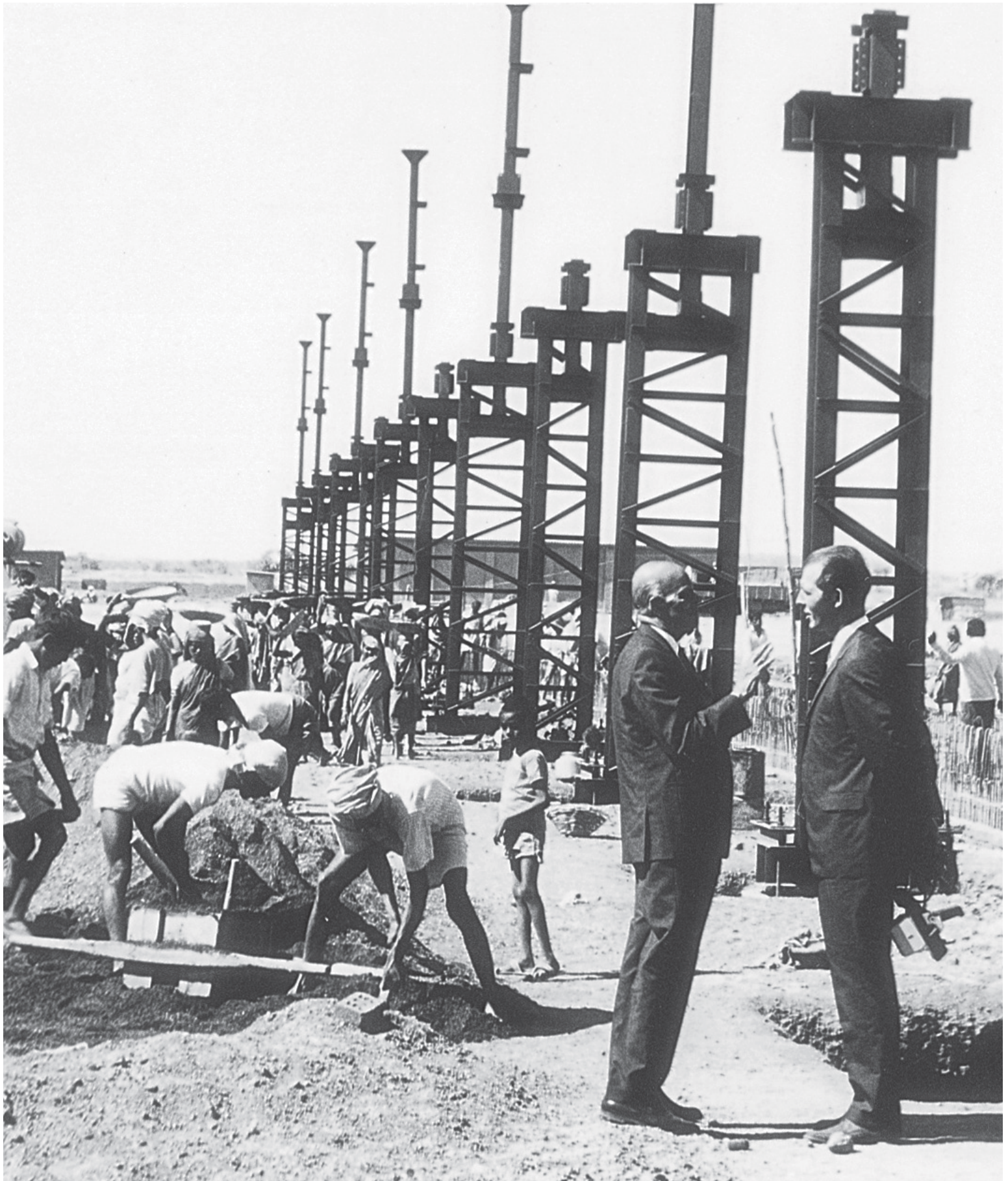
Above Right: The Ghaziabad Engineering Co. became the sole supplier of Bosch automotive parts in India in 1949. Even after these rights moved to Mico in 1952, it continued to undertake distributorship of auto components for Mico in several territories in North India.



Ghaziabad Engineering Co. becomes the sole supplier of Bosch auto parts

Unhappy with the trading ways of Mousell & Co., Bosch severed ties with them in 1949. This partnership moved to the Ghaziabad Engineering Co. (GEC), owned by the Saran brothers. This Delhi-based company became the sole supplier of Bosch automotive parts in India.

After India won its independence in 1947, the young nation was grappling with several economic challenges and social problems. The Government announced the First Five Year Plan in 1951, which included ambitious steps to modernise agriculture and develop the infrastructure of the vast and populated country. The plan called for some 50,000 stationary diesel engines for irrigating fields to be built by 1956. At the same time, they had to be made in India itself – the national sentiment was strong and loud. But, how would Bosch, by then a well-known global manufacturer of diesel injection, make use of this opportunity?



1951 – 1954

The beginnings

Three individuals help establish Bosch in India

Three individuals whose names are lesser known these days have to be reminisced here. It was their foresight and business acumen which paved the way for Bosch to substantiate its presence in India, and to play an important role in India's development.

In the Germany headquarters, Bosch considered revisiting its strategy of growing with local partners, especially in the aftermath of the Second World War. They were approached by Bhailal C. Patel, who had a long stint with Kino-Bauer (a company belonging to the Bosch Group) during the pre-war years. He envisioned a great partnership between India and Germany on the technological front, and so urged Bosch to set up a base in India as soon as India had won independence in 1947.

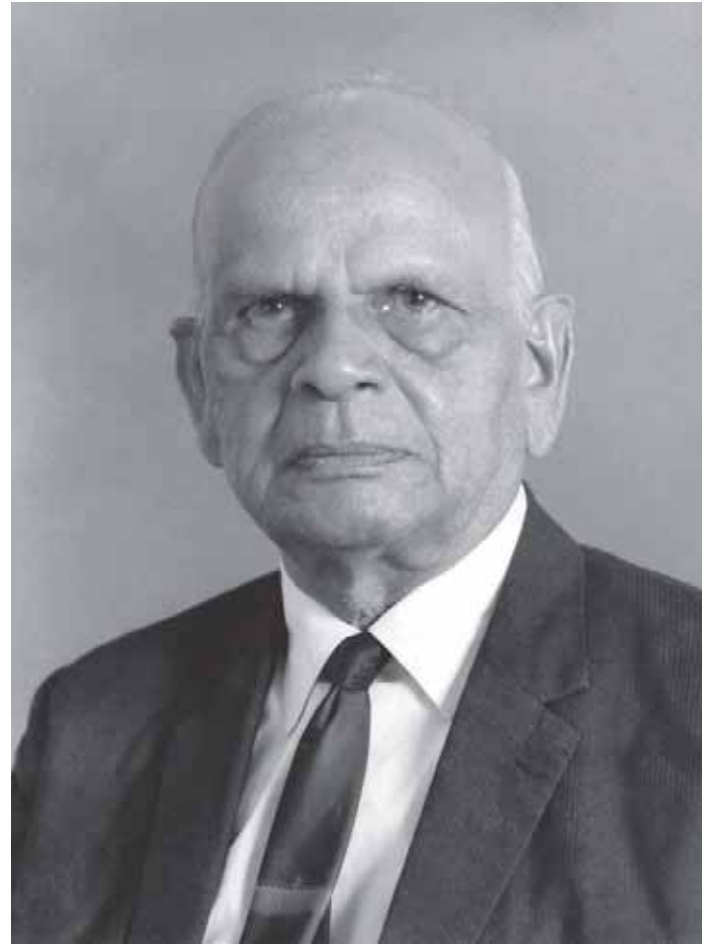
Raghunandan Saran was the youngest son of the owner of Ghaziabad Engineering Co. (GEC) – Pyare Lal (fondly known as *Motorwale*). Saran was more of a freedom movement supporter than someone who intended to carry forward the legacy of his family's business. However, after India won

independence, his close friend and the then Prime Minister, Jawaharlal Nehru, urged Saran to help in the industrial development of India. Saran had realised that the importing of automotive parts had to be replaced with manufacturing to industrialise India. He approached Bosch to help expand automotive operations beyond sales in India. Together with Bhailal Patel, negotiations with Bosch were started in 1950.

On December 11, 1951, a company named Motor Industries Company Limited (Mico) was founded in Chennai (then Madras). It had a capital of over Rs. 2.8 million held by 21 shareholders and only 2 employees, Raghunandan Saran himself and K. C. Varma – who obtained financial backing from Khan Bahadur Taraporevala (then a shareholder in Mico). Saran's residence became the office and remained so until it was shifted to Bangalore in July 1954.

Raghunandan Saran is indeed the forerunner of the auto industry in India. Apart from Mico, he also founded one of India's leading commercial vehicle manufacturer - Ashok Leyland - in 1948 at Chennai.

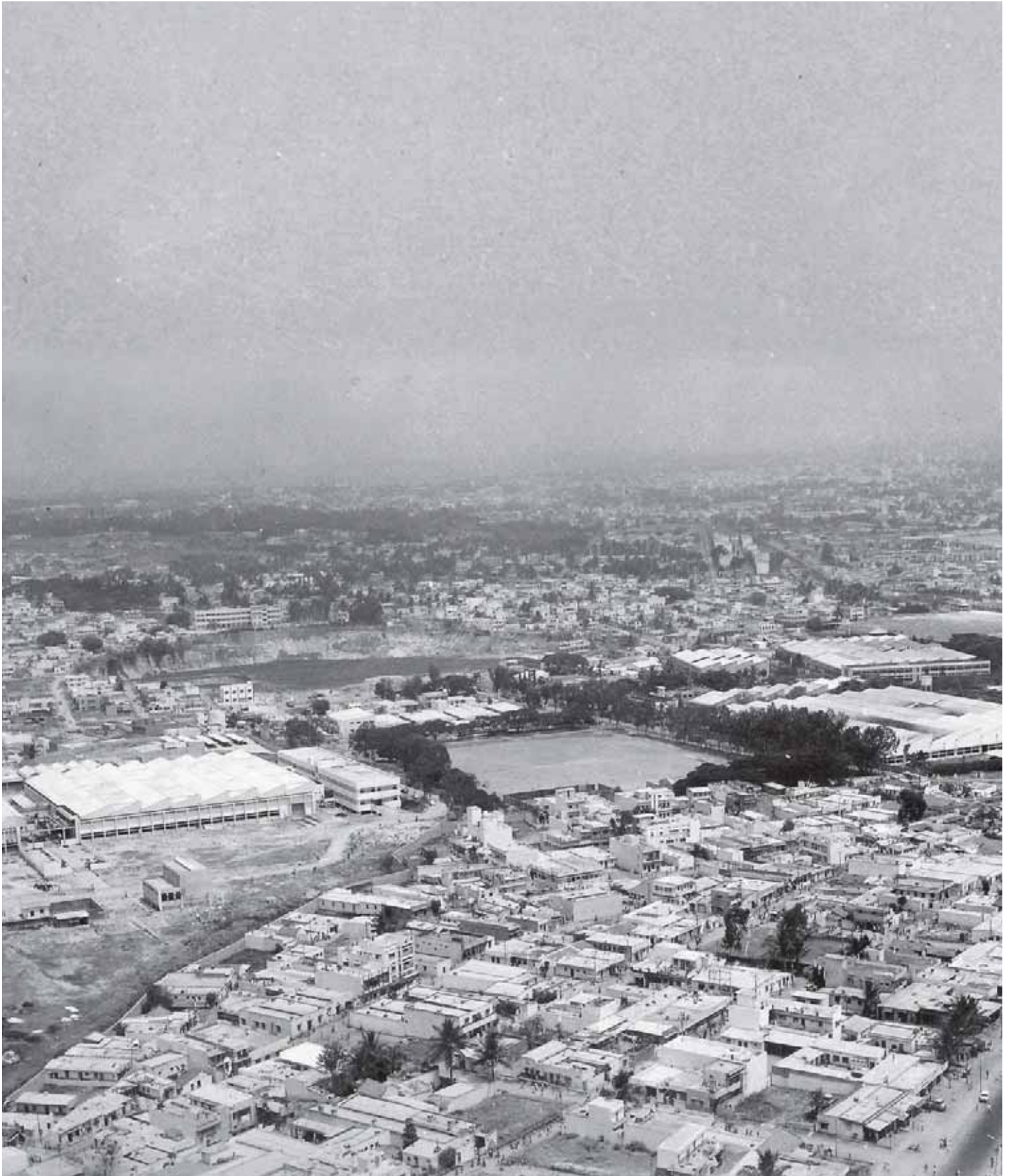
Left: Construction activities in full swing at the Bangalore plant site. The city was chosen for its ideal temperature and humidity-free climate, considered perfect for storing high-precision engineering products.



Above Left: Raghunandan Saran's love for India prompted him to invest his time and efforts towards indigenising the Indian auto industry soon after India won freedom. His family's business connections and ownership of Ghaziabad Engineering Co. helped him achieve this. His dream was to manufacture products in India itself instead of importing them.

Above Right: Bhailal C. Patel was a visionary. His long-term experience with Kino-Bauer (a Bosch company) during the pre-war years led him to envision a great partnership between India and Germany at the technological front. He was the first to approach Bosch, urging them to set up a base in India.

Left: K. C. Varma worked on the project to manufacture spark plugs and fuel-injection equipment with Raghunandan Saran, seeking technical help from Robert Bosch GmbH. He also played a role in obtaining financial backing for Mico from Khan Bahadur Taraporewala.



Above: An aerial view of the plant at Aduvodi in the city of Bangalore, during the 1960s.



The Mico logo

The visual representation of Mico was a wheel with six spokes, inspired by the Bosch symbol of an ignition device. It symbolised dynamism and also resembled the design on the Indian national flag. As the years rolled by, the Mico wheel became a symbol of progress, reflecting the dramatic changes in the Indian socio-economic scene.

The opening up of the original equipment sector further boosted the sales and production of spark plugs. Soon, the MICO brand became synonymous with spark plugs. In the following years, the name became omnipresent and a household reference.

The company's fuel injection equipment found wide application in agriculture such as tractors, power tillers and stationary diesel engines (which also helped in lift-irrigation for borewells thus helping cultivate arid lands). Mico also helped in mechanising transport used for distributing agricultural products.



Above: A spark plug testing bench at the Bangalore plant during the 1970s.



BOSCH

Invented for life

Magneto and the Bosch logo

The design of the Bosch logo was derived from an invention way back in 1897. Robert Bosch and his master craftsman, Arnold Zahring, successfully installed a magneto ignition device in a motor vehicle for the first time.

This development became a challenge when Frederick Simms, member of Daimler's supervisory board, asked Robert Bosch to install a magneto ignition device in a De Dion-Bouton three-wheeler, whose engine required 900 ignition sparks/minute. The magneto developed by Bosch was capable of only 200 sparks/minute. Zahring persisted and

came up with an ingenious solution which was startlingly simple – an oscillating sleeve inside the magneto. This new innovation solved a major problem for the young automotive industry – ignition in high-speed internal-combustion engine.

In 1918, Gottlob Honold was 'fired' by a great idea. The paperweight on his desk was a sectional model of a magneto. This inspired him to sketch out the symbol of the armature within a circle. This became the logo of Bosch, together with the Bosch logotype. To this day, the logo designed by Honold stands for quality and innovation the world over.

Top Left: Arnold Zahring, together with Robert Bosch, successfully equipped a De Dion-Bouton 3-wheeler motor vehicle with a low-voltage magneto ignition device for the first time. His ingenious idea enabled ignition in high-speed internal combustion engine. This innovation solved a major problem for the young automotive industry at that time.

Top Centre: Gottlob Honold's legacy remains not just with his original design of the Bosch logo which stands for quality and innovation the world over. Honold also developed the Bosch automotive lighting system and the Bosch horn. He made vehicles efficient and safer too.

Top Right: Magneto cross-section. The sectional visual of the magneto is the inspiration for the Bosch logo – armature within a circle together with the Bosch logotype. The logo design evolved since 1907 and the newest design was copyrighted internationally in 1920.

Above: The Bosch logo stands for quality and innovation the world over.



Early challenges

The earliest activity of Mico was to import and market Bosch automotive products; these rights had been moved to Mico from the Ghaziabad Engineering Company. But there was unfair competition from local importers who had links with Bosch distributors in Germany. This was eliminated when Bosch initiated action against them.

During this time, the Indian government decided to regulate profits on the sale of imported replacement parts. While this affected business initially, the company responded quickly by taking the decision to establish a plant in Bangalore. Bosch had to decide whether to use its extremely limited financial resources for the reconstruction of war-damaged factories in Germany, or whether to invest in new countries. However, Bosch decided to not lose the opportunity of setting up a base in India, and agreed to provide full technical support.

In 1953, the new plant at Aduvodi in Bangalore started the assembly of spark plugs and the manufacture of single-cylinder fuel-injection pumps,

nozzle holders and filters. The majority of the customers were from the rapidly growing irrigation pump industry in Western India. The first single-cylinder pump or the PF Pump was supplied to Kirloskar Oil Engines Ltd. in Pune.

The PF Pump played a significant role in revolutionising Indian agriculture, and the newly developing railway and industrial sectors. Nearly 4,000 pumps were manufactured by 1954. The same year, Mico took initiatives to expand its network with the opening of a sales office in Mumbai (then Bombay) followed by centres in Delhi, Kolkata and Chennai.

As early as in 1953, following the importance laid by Robert Bosch on providing the right kind of training, a tool-room apprenticeship scheme was introduced at the Bangalore plant.

Above: Production of single-cylinder pumps at the Bangalore plant in the 1950s.

Import difficulties

A little later, the government of India increased import duties on some goods in a bid to encourage indigenous manufacturing industries. This prompted the company to request the government to expand the ambit of the import duties to include fuel injection equipment as well. So, with a virtual monopoly in the market, Mico was able to grow exponentially in India.

Import restrictions and difficulties in local procurement led the company to embark on a policy of self-sufficiency. There was the usual skepticism and doubt about the feasibility of manufacturing precision equipment in India, especially as the products required advanced technology. The skepticism evaporated as Mico prepared for its own growth and self-reliance.

Robert Bosch GmbH obtained 49 percent holding of the subscribed capital of Rs. 12.5 million. By 1954, products manufactured in India accounted for a quarter of the turnover, while imports from Germany accounted for the rest. The utilisation of scarce funds for investments made it inevitable for Mico to declare a loss that year.

The company followed the Bosch practice of financing growth and development largely from saved money. Strict financial discipline and austerity measures such as using packing cases as furniture, helped. Despite financial difficulties, the company did not hesitate to introduce free meals for employees. Everyone was excited by the prospect of building an organisation that would set new standards of excellence in the country.



Above: A replica of the 2-millionth single-cylinder fuel injection pump which was presented to Kirloskar Oil Engines Ltd., Pune, in 1971 (also the first customer of the pump in 1954).



Above: A picture of lunch hour at Mico canteen during the 1970s. Free meals for employees continue to be served till date.



Photo courtesy: Tata Central Archives, Pune, India

A strong hold in the OEM business

Daimler-Benz, a major original equipment customer of Bosch in Germany was planning to collaborate with the Tata Engineering and Locomotive Company (TELCO)*, Jamshedpur, to manufacture diesel vehicles in India such as Mercedes trucks. Those were the times when the Tatas led the development of road transport in India. With the help of Daimler-Benz, production of diesel-engined truck chassis commenced at the Tatanagar plant of TELCO in October 1954.

Mico continued to expand activities by beginning to manufacture multi-cylinder fuel injection pumps as well. In 1956, the first multi-cylinder fuel-injection pump was supplied to Simpson & Co., Chennai – the makers of Perkins diesel engines. Further, this demand was boosted by the large-scale manufacturing of trucks at TELCO.

*TELCO was the earlier name of Tata Motors Limited.



Left: Launched in the year 1954, the first Tata Mercedes-Benz truck was a 5-ton L312/42 165 wheel-based load carrier assembled at TELCO's Tatanagar plant. The vehicle marked a starting point in the road transport industry of India, yet another significant contribution to India's industrialisation by the Tata visionaries. Mico supplied multi-cylinder fuel injection pumps to TELCO since 1958.

Top: A multi-cylinder pump. These pumps initially found application in tractor engines.

Above: Assembling of multi-cylinder pumps at the Bangalore plant.





1955 – 1965

Vocational Centre,
momentum with
SPMs, and the quality
movement lead the way

The next challenge was to market products more strongly, to win customer confidence and to strengthen the brand image. Customers were pursued by what was an aggressive, grassroots-level marketing effort. Marketing personnel would stand by the roadside and manually note down the numbers of vehicles plying on the roads. Owners would be then traced, and sales and service pitches made. Mico was soon accepted as the original equipment supplier for petrol and diesel engine manufacturers.

Left: A picture of the 1970s. Apprentices keenly observe the demonstration of a lathe machine to perfect their skills.



“A company like mine, which strives for perfection, must, in its own interests, make great efforts to train its people. In certain respects, anyone who wants to produce good work as a company must – whether they want to or not – also perform the role of educator in the positive sense of the word, and hence for the good of the economy as a whole.”

- Robert Bosch, in his memoir

Above: This picture of 1961 shows apprentices getting a strong foundation for their future with hands-on training and practice. They were trained in various industry trades, with focus on skill development.

Apprentices first

As we have seen already, a tool-room apprenticeship scheme was introduced as early as in 1953. Next, the Mico Vocational Centre (MVC) was set up in 1960, which became one of the best establishments of its kind in India.

MVC was so ahead of its time that the government of India used it as a model and consulted the company when enacting the Apprentices Act in 1961. The Centre expanded and introduced a number of courses in diverse fields. Various trainees, apprentices, employees, representatives of the company's customers, dealers and even other government

corporations continue to benefit from the training opportunities.

MVC also became one of the few to be recognised by the Federal Ministry for Economic Cooperation and Development, Germany. MVC was renamed to Bosch Vocational Centre (BVC) in 2008. By 2014, it had won 216 gold medals (Best Trade Apprentices) for best performance in the All-India Competitions held by the Directorate General of Employment and Training (DGET), Ministry of Labour and Employment, Government of India; and claimed the Best Establishment Award (by the President of India) 47 times.

Manufacture of Special Purpose Machines

India's economy went from bad to worse in the 1960s due to the Indo-Pakistan war in 1965 and severe drought conditions. Foreign exchange became scarce.

Due to increasing difficulty in importing Special Purpose Machines (SPM), Mico began manufacturing them in-house in 1965. The SPM department was made official in 1969. It branched into commercial production, besides meeting in-house requirements. This was a positive move as SPMs helped in the mass production of high-precision products. During the next decade, SPMs were exported to Bosch locations in Europe and Latin America.

During the second half of the decade, the company received permission to market SPMs and machine tool accessories. This helped the company to increase revenue and achieve self-sufficiency in yet another area of manufacturing.

The company obtained the industrial licence for the commercial sale of SPMs in 1985. It also entered into several technical collaborations - with M/s Gehring for manufacturing honing machines, in 1990 with M/s Witzig & Frank for making of Turmat machines, in 1991 with M/s Supfina for manufacturing super finishing machines. All these were renowned machine tool manufacturers from Germany and suppliers of machine tools to Bosch globally. These collaborations led to substantial reduction in capital investment and savings in foreign exchange.

By the year 2000, Mico had made 1800 machines for fuel injection pump components and had supplied them to



customers in automotive, railway and defence sectors. Customisation projects were undertaken for Bajaj Auto, Bharat Dynamics, Bharat Earth Movers, Kinetic Engineering, Mahindra & Mahindra, Hindustan Motors, Eicher Tractors and several Bosch Group companies abroad.



Above: A pre-honing machine used for fine-tuning element barrels (components used in fuel injection pumps).

Left: Miniature of MVC emblem created to commemorate 25 years of completion in 1985.



Foray into exports

Mico started exporting in a small way in 1962. The first consignment was sent to Africa. In the years that followed, turnover from exports gradually grew, almost doubling every year. Single- and multi-cylinder pumps, elements, delivery valves, nozzles and spark plug insulators were exported.

When the manufacture of SPMs exceeded in-house demand, Mico started the commercial production and marketing as well as the export of lapping machines to other Bosch locations abroad. Aided by the worldwide Bosch sales and service network, the volume of exports stabilised and grew further more. Bosch, Germany also began to source fuel-injection equipment from Mico, thus helping reduce the trade gap between the two countries.

The devaluation of the Indian rupee in 1966 helped boost exports but made essential imports dearer, thereby squeezing margins. A concentrated drive to improve productivity and cut costs was initiated. This momentum was kept alive in order to conserve funds for future expansion.

As an exporter, it was mandatory for Mico to adhere to the strict quality requirements in developed countries. During the 1970s, the company exported products successfully to competitive markets in the South-Eastern and Middle-Eastern regions where Japanese, Italian and East-European suppliers competed. Mico stood out due to its distinct focus on 'quality'. Exports touched Rs. 8 million in 1970 and soared to Rs. 73.3 million in 1974. In 1976, exports grew to a phenomenal Rs. 117.6 million! Thus, Mico contributed towards easing the country's tight foreign exchange situation.

Above: A Mico consignment at the Madras Harbour ready for getting exported to West Germany during the 1970s.

Strengthened quality, customer focus and supplier network

Mico faced newer challenges. Related technologies did not keep pace with one another due to differences in locations. For instance, products which were readily available off-the-shelf in developed countries were either not available in India or were of inferior quality. This was more so since Mico sourced all its raw materials from local suppliers. Also, the Government insisted that companies like Mico help develop the small-scale industry by sourcing materials locally.

Do it right the first time and every time

A special cell was set up to identify reliable suppliers. They were given complete technical assistance in all aspects. The performance of suppliers was constantly monitored and evaluated. Exhibitions organised at different locations helped establish new suppliers from the small-scale sector. With encouragement from Mico,

some of the small industries did so well that they grew to become medium-scale industries. Soon, suppliers regarded their association with the company as a key to their own success and an index of their own capabilities!

The Bosch passion for quality was sufficiently realised. Mico's pioneering efforts made it the leader of the 'quality' movement in India. By 1970, company's turnover increased manifold to Rs. 160 million and the number of employees to 6,500. Mico was now listed in the Mumbai Stock Exchange, a visible sign of the company's pervasiveness in the corporate scenario.

In 1976, the value of components made by small industries for Mico increased to Rs. 36 million, a five-fold rise in eight years; and the total number of suppliers trebled to 261. The company contributed in the overall role of India's development by maximising utilisation of the talents and skills of small-scale entrepreneurs.



Above: Shown here is the picture of a special trophy which was meant to be awarded to the most quality conscious dept. within the company, as part of an internal 'Do It Right' campaign which purported to increase high quality standards and to improve productivity. The first such competition was held in Feb. 1975.



Above: The quality movement which took off in the 1960s became a compulsory activity in the company's calendar. In one such event, Dr. H. Kubeth, then Technical Director, is seen felicitating local suppliers from Bangalore with quality awards. C. L. Manohar of Durga Works was one among the many recipients in the year 1984.



1966 – 1976

New plant at Nashik helps boost exports

Though the revenue from exports increased, import costs continued to be higher. Mico initiated a concentrated drive to boost productivity and cut costs, in order to conserve funds for future expansions.

Second plant at Nashik

The Bangalore factory had already reached an optimum level. In order to further expand production, a second factory in another location was envisaged.

Nashik in Maharashtra, situated on the banks of the river Godavari and with a dry climate, was chosen as the second manufacturing site. The in-depth manufacturing experience gained at Bangalore helped to set up a pilot plant in 1969. In August 1971, the government gave its approval and granted an industrial licence. The construction of the main building was started the next year. The production of the classical series of nozzles and nozzle holders began within two years. In the years to come, the company played an important role in Nashik's transformation from a predominantly agricultural region into a modern industrial centre.

Left: Mico's plant at Nashik was the first such industrial set-up in the town. Nashik has transformed into India's auto and electronic hub today.



Mico becomes a major exporter

As Nashik was achieving full capacity in production, the company placed an increased thrust on exports. With the help of Bosch, Mico began to supply fuel-injection equipment as original equipment to engine manufacturers in Europe and the United States. The Soviet Union became a major importer of spark plugs from India.

Exports touched Rs. 147 million in 1978, exceeding the stipulation made by the government while approving the expansion plans. This consolidated the company's position as a net foreign exchange earner. The company won several awards for outstanding achievements in exports from the Exports Promotion Council, the Government of India and the Indo-German Chamber of Commerce.

In 1982, Bosch's share in Mico was brought down to 51 percent in line with the government's policy of bringing down foreign holdings. Bosch, however, retained a majority stake, in view of the high level of technology required for the manufacture of fuel-injection equipment and to maintain the high quality of exports.



Top: Franz Prussakowsky, Technical Director of Nashik plant, performs the ground breaking ceremony at the construction site of the plant, while other colleagues look on. He gracefully participated in the land worship rituals which are followed as part of the Hindu tradition.

Above: The production of nozzles and nozzle holders at the Nashik plant boosted Mico's exports significantly. These components were sent to the Bangalore plant for assembly.



Silver Jubilee

By 1972, more than one million Mico-equipped diesel-driven pumpsets helped in irrigating a total area of about five million acres of agricultural land in India. Nearly 70,000 Mico-equipped tractors were engaged in agricultural production. More than one and half million Mico-equipped vehicles hauled goods and passengers in road transport. Tens of thousands of Mico-equipped industrial, locomotive and marine engines operated in the country.

Mico celebrated its Silver Jubilee in the year 1976. Including associates* from the Bangalore and Nashik plants, and from sales offices at Mumbai, Delhi, Kolkata, Chennai and other locations, the total employee strength was 9,000. Additionally, there was the network of Mico authorised agents, distributors and partners. "Mico is one of the biggest subsidiary companies of Bosch outside Europe, and in terms of the number of its employees, easily the biggest. Mico's growth and performance is something of which one can be justifiably proud," remarked Hans L. Merkle, then Chairman, Board of Management, Robert Bosch GmbH, on the eve of the celebration.

*In the Bosch world, employees are referred to as 'associates'.

Above Left: "The losses caused by World War II, both in material terms as well as in spiritual values, led to the realisation that in the future countries could not live in isolation, but would have to come much more close to each other. What applies to countries applies to companies. Working together leads to mutual understanding and provides benefits to many instead of a few."

- Hans L. Merkle expressed the foundation of the Indo-German relationship in his speech during the Silver Jubilee commemoration event.

Above Right: A legacy follows as N. Shankar, foreman of single-cylinder pump assembly section, garlands S. L. Kirloskar, Chairman of Kirloskar Oil Engines Ltd., Pune, before presenting him with the 2-millionth single-cylinder pump in 1971. The first such pump was supplied to Kirloskar Oil Engines Ltd. in 1954. D. N. Vatcha, Commercial Director, is seen on the right.



1977 – 1990

Naganathapura plant expands company's role in the Indian automotive industry

Ambitious plans

Having completed 25 years in India, Mico had become a forerunner in the auto component industry. The company made ambitious plans in 1981. But this attracted the attention of the Monopolies and Restrictive Trade Practices Commission (MRTPC), which opposed the company's expansion programme. This was because the company had an enormous 90 percent share of the markets in which it operated.

However, by 1985, the demand from the industry itself forced the government to grant the licence for substantial expansion. By then, thanks to the government's permission for automatic expansion of production capacity to specific industries, Mico was able to expand to keep pace with the market. In the same year, Mico received an award for outstanding product quality and reliability from the Indian Society of Mechanical Engineers (ISME).

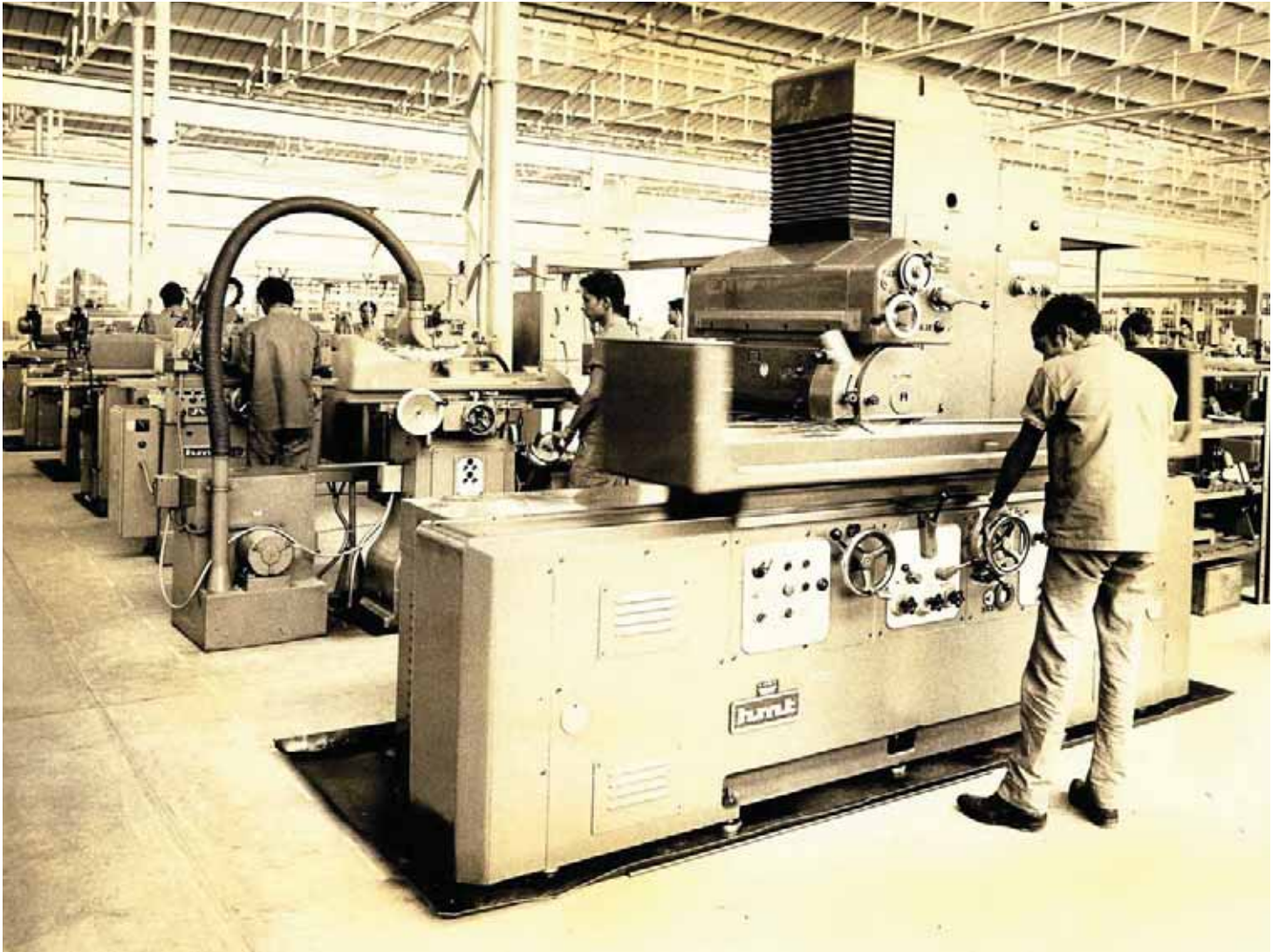
From the second half of the 1980s, a range of initiatives were taken to modernise the plants. Commercial licence for the sale of special purpose machines was obtained in 1985. The three-millionth multi-cylinder pump for diesel engines rolled off production lines in 1987, and the ten-millionth single-cylinder pump was made in the year after.



Above: Starter Motor and Alternator

Left: An aerial view of the Naganathapura plant which is located 11 km away from the Bangalore plant.





New plant at Naganathapura helps diversify product range

The Indian automobile industry had entered a period of accelerated growth. In 1988, Mico took the decision to diversify by manufacturing auto electricals to match developments in the market. The foundation stone of the third manufacturing site was inaugurated in the village of Naganathapura in April 1988. In the first phase, glow plug and spark plug lines were shifted from the Bangalore plant to the new Naganathapura plant. Additionally, production of starter motors and alternators was started. A little later, the manufacture of single-cylinder diesel injection

pumps, delivery valves and elements followed.

The plant soon became the centre of Mico's spark plug production. From 1989 onwards, other diversification projects included the manufacture of components for hydraulic systems such as gear pumps, automatic draft and depth-control valves, directional control/proportional control/cartridge valves and radial piston pumps, which found potential applications in tractors, excavators, earth moving equipment, machine tools, process industries and steel industries.



Even though most of the technological know-how came from Bosch, Germany, the company also developed in-house capabilities. The product development activities were originally taken up for adapting fuel-injection systems for applications in India and for indigenising production. Over the years, considerable success had been achieved in technical improvements, contributing to reduced pollution and fuel consumption. And products developed in India began to be used as references for production in other Bosch units abroad.

Above: Inside view of the Naganathapura plant during the 1990s.

Left: Manufacturing of K1 (TopF) Generators at Naganathapura plant which were used in commercial and off-highway vehicles.



1991 – 2000

Liberalisation spells
a promising future,
Jaipur plant and
non-automotive
businesses begin

The 1990s proved transformative for the Indian economy and consequently, for the auto industry as well. The economy was liberalised to buffer the severe financial crisis India faced at that time. The New Economic Reforms of 1991 opened the country to foreign direct investments (FDI). Importantly, the auto industry was freed from licencing, giving it the much needed momentum. These reforms created a very different competitive environment for India's industrial sectors. The increased presence of foreign-owned companies, their products and the new technologies they brought, made 'quality' and 'choice' important elements in the psyche of the Indian consumer.

With the influx of fresh foreign investments in India, the scope of product offerings and new technologies increased. For Bosch in India, it became necessary to make use of this opportunity by introducing innovative products for the evolving market. It was also a period of expansion and diversification in non-automotive business areas as well.

Left: K. P. Murthy - Head (Marketing), Bosch Power Tools, demonstrates the application of an Angle Grinder during the inauguration of their office at New Delhi in 1992.



Automotive Aftermarket gains opportunity

Of the many benefits brought forth by the liberalisation of the Indian economy, one of the most significant was that the Automotive Aftermarket division gained the opportunity to enlarge the scope, volume and sales of automotive accessories. In addition to marketing a range of automotive products by other companies in India such as halogen lamps for headlights and horns, Mico also

undertook to market imported Bosch products such as workshop test equipment, hydraulics, pneumatics, etc. This was like coming full circle, as the earliest activity of Mico when it was founded, was to import and sell Bosch goods in India, and it was now doing so again in a bigger way.

Production of Blaupunkt in-car entertainment systems

In 1996, Bosch decided to enter the consumer electronics segment in India. The Naganathapura plant started the production of world-renowned car audio systems of the Blaupunkt brand, owned by the Bosch Group.

To start with, three car audio systems – Arizona, Munich and Jackson – were made in India mainly for aftermarket sales. Shortly, Radio 620 was supplied to General Motors,

India, for their Opel Astra cars. Blaupunkt was a symbol of quality audio and innovation, the guarantee for best sound in entertainment electronics. Blaupunkt systems were also considered as original equipment for all leading automobiles of the world.

Soon in India, Blaupunkt* became the original equipment supplier to Tata Motors, Mahindra Renault, Hindustan Motors and Reva Electric Car Co., in addition to being a genuine accessory provider to General Motors India, Ford India and Mahindra & Mahindra.

*However, as the years went by, Bosch Car Multimedia GmbH – which owned the aftermarket business of the Blaupunkt brand – sold the trade components under the Blaupunkt brand to Munich-based industrial holding company AURELIUS in 2008. This strategic realignment was necessary in order to concentrate on core OEM business.



Above: The Automotive Accessories business received a clear boost after the liberalisation of Indian economy.

Left: Quality testing of a Blaupunkt recorder



Bosch Packaging technology for the Indian market

The packaging technology business in India commenced at the Bangalore plant in 1995. Processing and packaging machines for confectionaries and pharmaceuticals have formed the core of the business since then.

In 1997, Mico launched the first product – TW100 NEL - a machine which enabled packing large fill volumes of corrosive products, ranging from salt to detergents, in a reliable and cost-efficient way. Two years later, Terra 25 – then the latest 'form, fill and seal' machine – was launched to meet the demands of customers from Netherlands, Brazil and India. Aiming to further

expand product offerings, the packaging technology operations were shifted from Bangalore to Goa in 2007.

With an aim to increase localisation of new packaging machines and make world-class German technology available in the Indian market, a new plant was established in Verna, Goa in 2012. Built with an investment of Rs. 34 crores, this new facility houses the latest testing infrastructure, sophisticated test rooms, and equipment to test packaging products and parts.

Above Left: The TW100 NEL – the first Bosch packaging machine launched in India for the salt industry.

Above Right: A specially-designed van, 'Bosch Mobile Agro Pack', travelled to the interior parts of rural India to demonstrate the advantages of Bosch packaging machines. Farmers were provided with bank loans so they could purchase the machines to pack common spices and grains.



India gets ready for Bosch Power Tools

In 1989, the Naganathapura plant was expanded to accommodate the production of Bosch power tools. Full-scale manufacturing of drills, grinders and blowers began in 1993. In 2012, the hammer series was added. The plant roughly produces 35 percent of the marketed products, while the rest are imported from Germany, Malaysia, China, Switzerland and the United States. Bosch also owns and markets few other popular international power tools brands such as Dremel and Skil in India.

QS 9000 Certification

The Bangalore, Nashik and Naganathapura plants were certified as QS 9000 compliant in 1997. The Jaipur plant received its QS 9000 certification in 2000. Bosch was the first company in India to get these certificates. It was also the largest company in terms of turnover and the number of employees to achieve this distinction.



Above: A marble cutter manufactured by Bosch Power Tools.

Left: An Angle Grinder power tool being tested for quality compliance.



New plant at Jaipur

A decade after opening the Naganathapura plant, the company looked up north. A new plant at Jaipur in the state of Rajasthan was set up in 1999 to manufacture distributor-type diesel fuel injection pumps in line with the Euro emission norms. This helped the company stay in line with the emerging trends in automobile technology, thus meeting the new needs of the Indian market promptly.

The state-of-the-art plant is located in the Sitapura industrial area developed by the Rajasthan State Industrial Development & Investment Corporation (RIICO). The plant caters to both the Indian market and the international Bosch manufacturing network.



Leveraging IT talent

In the 1990s, Robert Bosch GmbH had started using Indian expertise for captive software development purposes through Mico. In 1998, a 100 percent subsidiary called Robert Bosch India Ltd. started operating in the IT (Information Technology) sphere, fully leveraging the expertise available in the country's Silicon Valley – Bangalore. The new subsidiary, situated initially in the campus of the Bangalore plant, engaged in engineering services and software development for the Bosch Group businesses worldwide. During the years that followed, this subsidiary turned out to be the largest software development centre of Bosch outside Germany, transforming itself into a technology powerhouse for Bosch in India.

Above: The Jaipur plant

Left: The distributor-type diesel fuel injection pumps from Jaipur helped the company to meet the demands of the Indian market.



2001 – 2005

R&D enables
technological edge,
growth with acquisitions

In the decade after the economic reforms of 1991, a wave of relief followed. 'Licence Raj' (the practice of licences, regulations and red tape required to set up and run businesses in India) was abolished. Tariffs, duties and taxes were lowered and the economy opened to foreign trade and investments. The Indian consumer was exposed to new opportunities, high-technology products and plenty of choice. Liberalisation led to new job opportunities and higher disposable income resulting in increased purchasing power of the average middle-class Indian.



Above: At the research facility, a climate test chamber designed for cold startability optimisation of vehicle engines. This is done with special arctic fuel that enables cold start testing at the lowest ambient temperatures.

Left: Mico Application Center (renamed to Technical Center India in 2008), Bangalore. It evolved to become an advanced facility for local and global vehicle/engine manufacturers.



R&D facility enables technological edge

A fully-fledged application centre had become necessary for testing prototypes of petrol-injection systems, electronic diesel control and auto electricals, which were hiving off from the production lines. An in-house R&D facility was necessary to perfect the components, and also to be able to innovate to stay on par with the dynamics of the competitive market.

April 19, 2000, marks an important milestone for Bosch in India. One of the country's foremost automotive research and development facility - Mico Application Center (MAC) - was set up as part of the Diesel Systems division in the verdant green campus of the Bangalore plant.

MAC played a critical role as many of the OE customers of the company did not have testing facilities with them.

A first-of-its-kind, the facility was built to house the latest application and testing tools to test engines for various performances and their compliance with the latest exhaust gas emission norms. It performed reliability, durability and climatic tests for injection components, and enabled optimisation of fuel-injection equipment. This helped decrease time frames and development costs.

MAC was renamed as Technical Center India (TCI) in 2008. TCI has evolved to become an advanced facility for local and global vehicle/engine manufacturers, for the latest diesel common rail systems, and for advanced engineering concepts in powertrain technologies. It has also progressed into a global Centre of Competence (CoC) in the Bosch world.



Acquisition of Rexroth in Germany reflects in India

In 2001, the Automation Technology business unit of Robert Bosch GmbH acquired the global business of Mannesmann Rexroth AG. It became a wholly-owned subsidiary of the Bosch Group. The Indian subsidiary, Mannesmann Rexroth India Ltd. – which was already operational at Ahmedabad, also came under the Bosch management. Bosch Rexroth India Ltd. became its new name.

Above: Bosch Rexroth at Ahmedabad, Gujarat.

Far Left Top: (From left) Prof. B. K. Chandrashekar (then Minister for Information, Govt. of Karnataka), Franz Fehrenbach (then Member, Board of Management, Robert Bosch GmbH) and Hubert Zimmerer (then Chairman, Board of Directors, Mico) are seated as Andreas Nobis (then Managing Director, Mico) delivers a speech during the inauguration event of MAC.

Far Left Bottom: The first demo car at MAC imported from Germany meant for EDC (electronic diesel control) customer training purpose.

Left: The Emission Test Lab at MAC for testing vehicle engines for their compliance with the latest exhaust gas emission norms.

Bosch Rexroth India specialises in automation technology solutions for driving, controlling and moving, as an offshoot of its global counterpart which is one of the leading specialists in drive and control technology.

Bosch Rexroth India further strengthened its presence by commissioning a new state-of-the-art manufacturing plant in 2013 at Sanand, Gujarat replacing the previously rented facility. The products designed and manufactured in Sanand are hydraulic valves, manifold blocks, cylinders and power units, used in a wide variety of fields such as machinery applications, factory automation and mobile applications. The company also owns a 100 percent stake in its subsidiary, Mivin Engineering Technologies Pvt. Ltd., which manufactures hydraulic gear pumps for tractors.

Bosch Security Systems acquires Philips CSI business



Like the many other expansion efforts of Bosch, the decision to internationalise its Security Systems business was in the plan. In one such opportunity, Security Systems division of Robert Bosch GmbH, Germany acquired the CSI (Communications, Security and Imaging) business of Philips, Netherlands in 2002. Consequently in India, Mico purchased the business of communication products and closed circuit television products from Philips India Limited. With this, Bosch gained an entry in the nascent security systems market of India.

The Security Systems business in India comprises of integrated solutions for safety, security and communications. Since 2003, products such as fire detection systems, hi-tech video surveillance systems, public address systems, web-based access control systems and many more have been launched for the growing market in India. Bosch security products guard malls, airports, metro rail, sensitive high-profile government buildings, hotels and top corporate houses. City/market surveillance and traffic management solutions are being used in many metros and cities.

The Security Systems business division also runs a modern demo-cum-training academy at Bangalore with the aim of imparting the highest level of manufacturer-training to the industry, and of building product knowledge and competencies.



Top: State-of-the-art Bosch surveillance systems

Above: St. Joseph's Church in Kerala uses the public announcement system and electro-voice speakers from Bosch.



Increased stakes in Kalyani Brakes

Bosch increased its stakes in Kalyani Brakes from 40 percent to 80 percent, leading to the formation of Bosch Chassis Systems India Ltd. on December 31, 2005, with the aspiration to become a global manufacturing base for modern braking systems. Also, a new joint venture between Brembo and Bosch Chassis Systems India led to the formation of KBX Motorbike Products Pvt. Ltd. for the production and commercialisation of motorcycle braking systems*.

The business areas of the new subsidiary, Bosch Chassis Systems India Ltd., include actuation, foundation and modulation of the braking system. In 2010, Bosch built a new manufacturing site for ABS Generation 8 (Antilock Braking System) at Chakan, with an investment of Rs. 60 crores. Chakan is already well-known as an automotive manufacturing hub. The company manufactures world-class safety brake system components that comply with the stringent requirements of leading OEMs in the automobile industry for passenger cars, tractors, three-wheelers and two-wheelers. It has manufacturing and assembly locations at Chakan (near Pune) and Manesar (near Gurgaon). The in-house R&D unit was recognised in 2009 by the Dept. of Science & Industrial Research, Government of India.

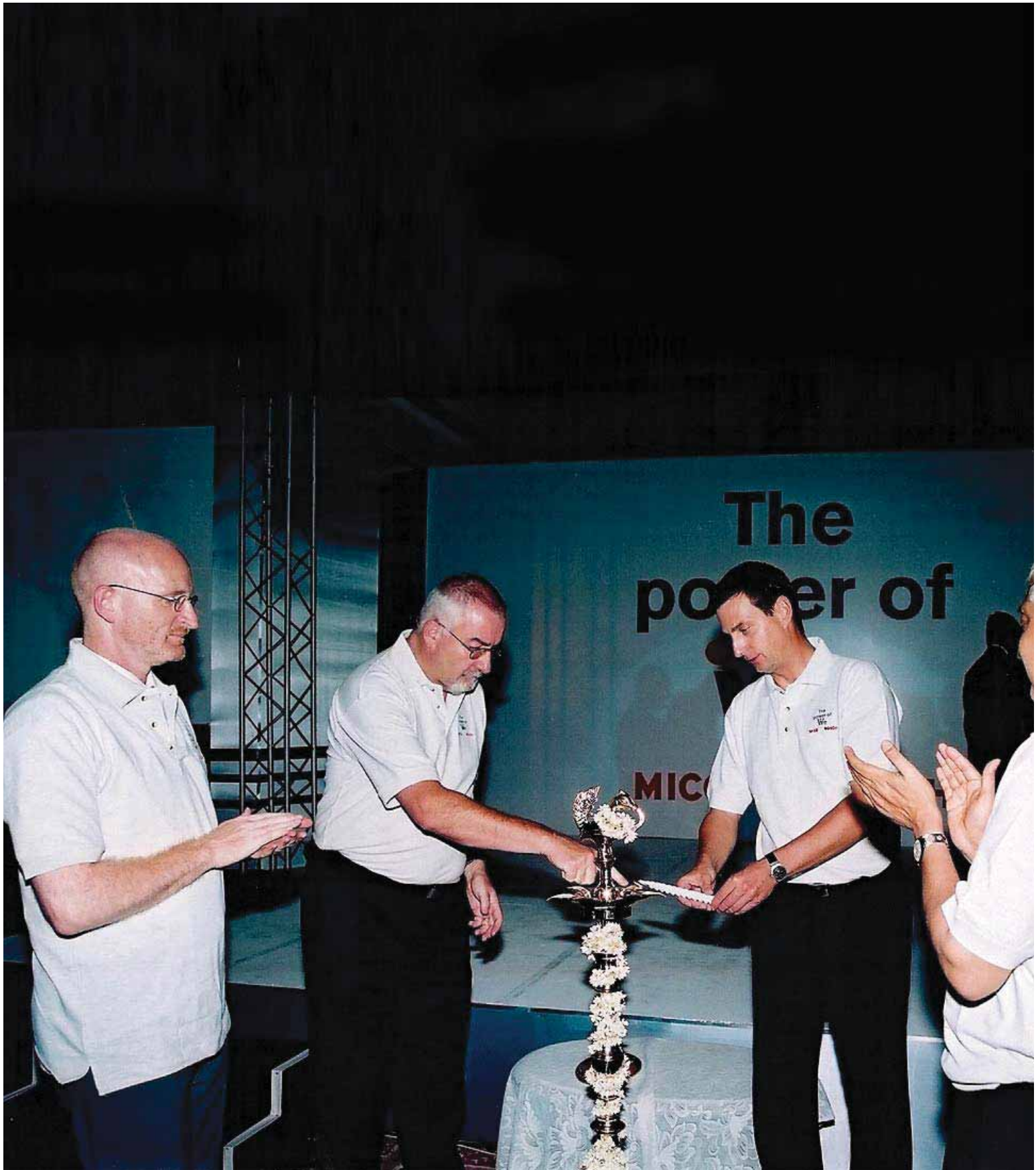
In 2013, Bosch was the only automotive supplier to manufacture ABS and ESP® (Electronic Stability Program) in India. The Chakan plant also added ESP® Generation 9 and ABS Generation 9 (for motorcycles) to its production portfolio. Thus, Bosch became instrumental in introducing active safety systems in India, ushering in an era of safer driving.

New owners of the foundation business: In January 2012, KPS Capital Partners completed the purchase of the foundation business of Bosch Chassis Systems India Ltd. The foundation business operations in India and its production sites at Jalgaon, Manesar and Sitarganj were completely transferred to Foundation Brake Manufacturing Ltd. (FBML) on October 31, 2012. FBML is an Indian subsidiary of Chassis Brakes International (CBI), a company owned by KPS Capital Partners, USA.

*In 2009, the Brembo Group acquired KBX Motorbike Products Pvt. Ltd. from Bosch Chassis Systems India Ltd., renaming it to Brembo Brake India Pvt. Ltd.

Above Left: Bosch Chassis Systems India's plant at Chakan, near Pune.

Above Right: The Bosch ABS (Antilock Braking System) is an iconic product well-known the world over as a powerful active safety solution with the potential to help avoid accidents.



Above: Inauguration of a special B3 (Bosch Brand Building) project in August 2004 launched an exhaustive exercise to prepare for the consolidation of the Bosch brand in India.

2004 – 2008

Heavy investments, India's first Common Rail system, expansion of IT operations

A period of impending change – Mico steers in a new direction

Post the liberalisation of Indian economy, significant changes occurred in the Indian industrial, economic and consumer scenarios. 'Globalisation' had set in, harnessing the immense intellectual capital and a large workforce available in India, when compared to the West. Competition increased as several global players entered the Indian market. Plenty of job opportunities were created, and the ambitious middle-class Indian aspired for a better quality of living.

In the West, with the saturation of the auto component industry, the focus shifted particularly to India and China, which were emerging as the manufacturing hubs for the next millennium due to the availability of skilled engineers and robust domestic demand. At the same time, a new market emerged – that of low-priced vehicles (LPV). The Indian market was a growing urban market with a large number of first-time car owners and mixed demographics.

It became increasingly clear that greater opportunity awaited for Bosch in India. This was exciting as well as challenging. Challenging, because the needs of the LPV market had to be met at low costs without compromising on quality for the

'price conscious' Indian market. Exciting, because the robust domestic demand had great business potential. Bosch in India was prepared to meet the challenge by developing newer customised products, best manufactured locally to utilise the beckoning potential.

At the same time, it was realised that MICO was a local brand with no international brand equity. Bosch was a global brand, but lesser known in India. These two worlds had to come together. Mico needed global credibility and recognition, especially if it were to export more products. At the headquarters, Bosch decided that a changeover was necessary to strengthen its business interests in India. The Bosch brand architecture in India was also not in line with its global counterpart. Considering these factors, the decision was taken to tackle these issues with a brand-building project.

The roadmap for the transformation of brand identity from MICO to BOSCH in India spanned the years 2004 to 2008, and comprised of stages during which the brand was carefully changed from MICO to BOSCH, addressing all the stakeholders and target audiences involved.



Heavy investments

On August 23, 2004, Dr. Bernd Bohr, then Chairman, Automotive Group, Robert Bosch GmbH, announced an investment of Rs. 1,000 crore (10 billion) over the next four years in India, out of which Rs. 550 crore would be towards the development of common rail and diesel injection systems, including application, testing and manufacturing. Amongst the latest and most advanced auto technologies, common rail systems would roll out from the production lines during early 2006.

Bosch also planned to promote its interests in the non-automotive spheres – power tools, security technology and packaging machinery. Plans were on to further expand software development capacities in India through the IT subsidiary, Robert Bosch India Ltd., with an additional investment of Rs. 85 crore for expansion.

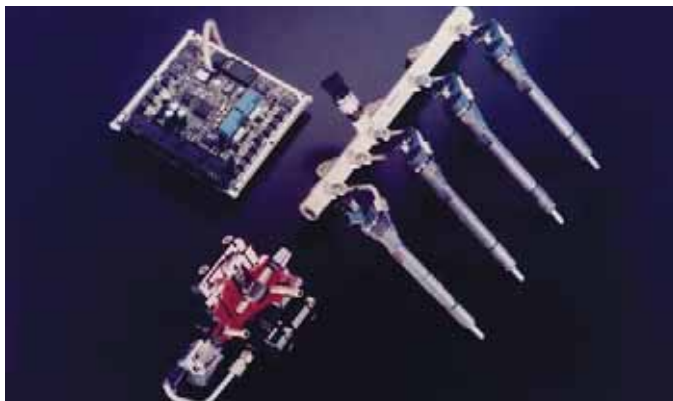


Above: "Mico is already a leader in the Indian automotive market. We will introduce new products and technologies from the global portfolio of Bosch over the next few years to strengthen this position and respond to the rapidly changing and challenging environment." - Dr. Albert Hieronimus

From left: Lakshminarayan M. (then Joint Managing Director, Mico), Dr. Albert Hieronimus (then Managing Director, Mico), Dr. Bernd Bohr (then member of Board of Management and Chairman, Automotive Group, Robert Bosch GmbH), V. K. Viswanathan (then Joint Managing Director, Mico) jointly presided over the press conference.

Common Rail Technology for diesel – A first in India

Decades ago, focus on environmental protection had led Bosch to foresee the advantages of a less polluting diesel engine, which compared to a modern gasoline engine, uses 30 percent less fuel and reduces CO₂ emissions by 25 percent. Bosch was already a pioneer of the common rail technology and had achieved considerable success worldwide.



The name 'Common Rail' refers to the rail (an accumulator) from which fuel is injected into cylinders through filters under high pressure. The pump – the heart of the engine – draws in fuel from the tank and sends it to a high-pressure pump through filters that clean the fuel further. The fuel is transferred to the Rail, and then to injectors which spray the correct amount directly into the engine's combustion chamber. Since diesel is under high pressure, it burns easily, more efficiently and almost completely, at both low and high speeds, making engines more fuel-economic. The greater the injection pressure, the more finely the injection system atomises the fuel, enabling more efficient combustion.

Left: The entire unit of a common rail system - the rail, pump and ECU.



The Bosch Diesel Systems management announced the Common Rail Pump (CRP) project for the Bangalore plant in late 2003 and the Common Rail Injector (CRI) project for Nashik in June 2004. The focus was to manufacture products consistent with global standards. To begin with, Mico successfully applicated India's first common rail system in Mahindra & Mahindra's Scorpio 2.6 Turbo in February 2005.

India's first Common Rail Pump and Injector were launched in June 2006. The company sold 40,000 common rail systems in India that year. Local production of common rail lowered manufacturing costs. This was a technological edge achieved by Bosch.

Another important reason for the success was the timeliness with which Bosch introduced innovations in the market. "Whereas in other markets, we take three years to bring a product to the market, the first common rail system with Mahindra was developed between 12 and 15 months from project acquisition to production", said Dr. Bernd Bohr.

Bosch Common Rail (CR) components were fitted in Mahindra Scorpio, Maruti Swift, Hyundai Verna and Chevrolet Optra Magnum. With Bosch CR components fitted in their cars, customers enjoyed smooth mobility, good engine performance and mileage – especially on highways. Good pickup, less vibrations and noise, higher torque and easier overtaking were other advantages. The CR technology complied with the then Bharat Stage II and III emission norms and was also capable of meeting the Euro III emission norms.

IT operations increase with new facilities at Bangalore and Coimbatore



Top: Dr. Bernd Bohr, then Chairman, Automotive Group, Robert Bosch GmbH, and Dr. Pawan K Goenka, then President - Automotive, Mahindra & Mahindra, launched India's first common rail pump in Bangalore.

Above: The Bosch software facility at Coimbatore also houses a state-of-the-art EMC (Electromagnetic Compatibility) lab for enhancing quality and reliability of automotive components, and an ECU Reliability Testing Centre which conducts tests for optimum performance of ECUs.

To meet the growing demand for the development of high-end technology from India, the IT subsidiary inaugurated a new facility in Bangalore in January 2006. The new facility has been used for both engineering and non-engineering activities since then. This new investment was part of the overall investment plan of the Bosch Group in India. The same year, another new facility commenced activities at Coimbatore. The centre began operations in the areas of industrial automation, mechanical engineering and shared services for high-end technology products and services.

Focus at Coimbatore was intensified by signing an agreement in August 2007 with Coimbatore Hi-tech Infrastructure Private Limited (CHIL)* for 21.88 acres of land in their Special Economic Zone (SEZ) at Saravanampatti, Tamil Nadu.

*The CHIL is promoted by KG Information Systems Pvt. Ltd., owned by the KG Group headquartered at Coimbatore.



“In future, all the subsidiaries in India will bear the Bosch name. As much as we are keen to promote awareness of the Bosch name in India, Mico remains a valuable brand for us. It is so well-established in the local market that we will continue to use it, particularly for our well-established products for the automotive aftermarket”.

- Bernd Bohr, in an announcement in 2008 when Mico was renamed to Bosch Limited.



2008 onwards

A new identity, new subsidiaries for emerging markets, increased research activities, new regional subsidiary at Bangladesh

MICO becomes BOSCH

February 1, 2008, is a historical milestone in the company's annals. Motor Industries Co. Ltd. – the flagship subsidiary of the Bosch Group in India – was renamed as Bosch Limited. Also the software arm, Robert Bosch India Limited, was renamed Robert Bosch Engineering and Business Solutions Limited.

This new identity marked the transformation of the company as well as the brand. The journey towards this new identity hadn't been easy. It involved over 10,000 associates in a multicultural set-up and geographically diverse customer segments.

Except in the automotive aftermarket business which would use the brand MICO and dual branding MICO BOSCH for strategic reasons, all other businesses and products were consolidated under the BOSCH brand. Bosch became known in its truest sense as a global leader with technological superiority in India. Bosch was indeed the forerunner of innovative products not just in automotive, but also in power tools, packaging and security technologies.

Left: The Management team at the entrance of the corporate office of the largest subsidiary of Bosch in India, unveiled the renaming of Mico to Bosch Limited in February 2008.

You hold the key to the future of the planet.

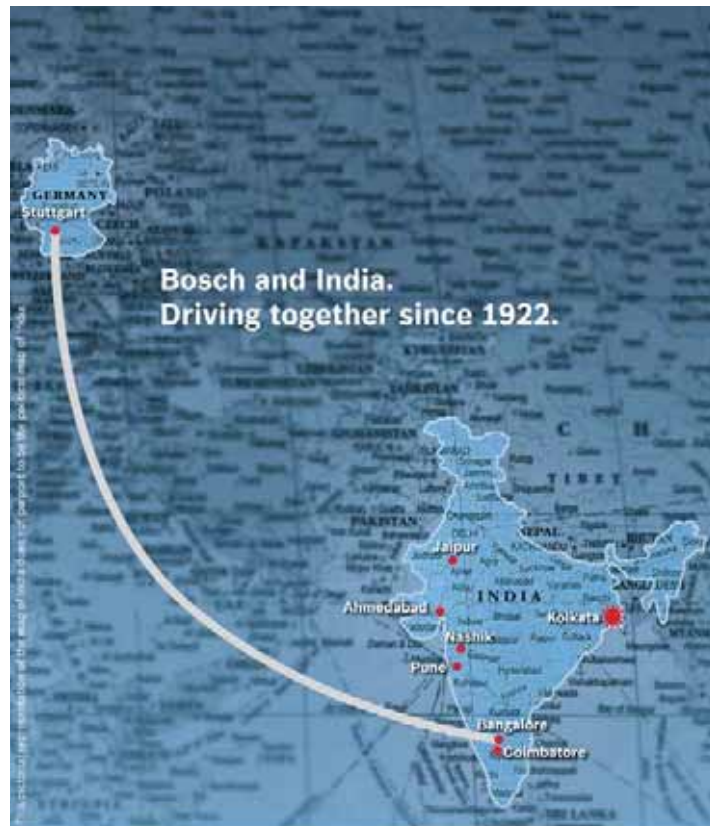


On World Environment Day, Bosch and Mico rededicate their commitment to making mobility clean, safe and economical. And urge you to show concern for the environment.

MICO The power of We **BOSCH**

www.boschindia.com

Bosch and India. Driving together since 1922.



Stuttgart, the birth place of Bosch, started its business venture in India with the arrival of Bosch at Kolkata in 1922. What began as a maiden venture is now a Rs. 40 billion group in India operating in automotive, power tools, security systems, car multimedia, packaging, special purpose machines and software development, with over 18000 associates spread across all major cities in the country. Motor Industries Company Limited, flagship of the Bosch group in India, is leading the automotive technology revolution in the country through its common rail project. With the recent announcement of Rs 1800 crores investment in India, Bosch has further strengthened the bond between Stuttgart and India. India on the move - better with Bosch.

www.boschindia.com

 **BOSCH**
Invented for life

Motor Industries Company Limited
is now
Bosch Limited.

 **BOSCH**
Invented for life

As part of the Bosch Brand Building (B3) communication campaign, advertisements such as these during the period 2004-08 heralded the transformation of Mico to Bosch.



Joint venture establishes Electrical Drives subsidiary

Bosch soon extended its electrical drives and automotive electronics businesses in India to stay in pace with the requirements of the OE customers and their future plans.

A 51:49 joint venture led to the formation of Bosch Electrical Drives India Pvt. Ltd. in April 2008, signed between Robert Bosch Investment Nederland B. V. and Igarashi Motors India Ltd. The new subsidiary initially carried out operations at a rented facility in Guduvanchery, Chennai.

The sole objective was to engage in dealing with electrical drives products from Robert Bosch GmbH, Germany, and also from its affiliated and subsidiary companies in the rest of the world. The company engaged in sales, manufacturing, development and application of wiper systems (including wiper motors, arm and blades for front and rear), HVAC blower motors and window lift motors for both local and global OEMs in India.

In May 2013, Bosch Electrical Drives India moved to a new plant at Oragadam, near Chennai. Built with an investment of Rs. 35 crore, this new plant replaced the previously rented facility. The subsidiary was to widen its product portfolio in

India to meet the growing demands of rapid localisation and technology-conscious Indian car makers and consumers. It was prepared to meet the strict timeline to launch its operations and fulfil the expected levels of technology, quality and cost levels of the OE customers.



Top: Bosch Electrical Drives India, Oragadam, near Chennai.

Above: A wiper motor manufactured at the electrical drives subsidiary.



Automotive Electronics subsidiary is next

The Indian car market was ready to explore more options in electronically-controlled diesel-injection systems.

Bosch Automotive Electronics India Private Limited, a 100 percent subsidiary of the Bosch Group, started manufacturing Electronic Control Units (ECUs) for diesel and gasoline fuel injection systems from 2009 onwards at a new plant in Naganathapura, Bangalore. The software for the ECU was specifically developed to fulfil the requirements of emerging markets. The first batch of ECUs was supplied for Tata's Nano.

In the next two years, the subsidiary further added body electronics such as immobilizers, body control modules, radio frequency (RF) and remote keyless entry systems, and park pilot (PP) systems to its portfolio. In April 2013, Phase II of the existing hangar was expanded to stay on par with the demands of the market.

Bosch Automotive Electronics India became the first company in India to be awarded the approval for incentives for the planned investment of Rs. 550 crore under M-SIPS* from the Govt. of India.

* The Modified Special Incentive Package Scheme (M-SIPS) introduced by the government aims to attract investments in India's electronics manufacturing sector by lowering the investment threshold.



Top: The Automotive Electronics subsidiary is located next to Bosch Limited's Naganathapura plant.

Above: An Electronic Control Unit (ECU).



Bosch achieves innovative success by developing components for Tata Nano

With the emergence of the LPV market and locally-designed automobiles in India, Tata's idea of presenting consumers with the world's cheapest car – Tata Nano – was a path-breaking milestone achieved in the history of the automobile industry.

The Tata Nano was launched on March 24, 2009. Bosch was one of Tata's proprietary suppliers of design components, and it contributed immensely by developing critical components which were among the first ever to be made. The first Nano was powered by the Bosch gasoline-injection technology developed in Bangalore. The challenge to develop components at the lowest cost possible was an opportunity for radical innovation.

Bosch re-engineered a special gasoline Engine Management System (EMS) for the Nano gasoline variant,

consisting of an electronic control unit, fuel injectors, sensors, ignition coil, tank vent valve and throttle body assembly. Further, a customised starter motor and generator were designed with a whole new electrical layout and passenger car mechanics.

For production, the Bosch Value Motronic System was chosen. Bosch and Tata worked closely to calibrate the software. The braking system, consisting of a Tandem Master Cylinder adapted to the Nano, was developed.

Tata boasts of using more than 95 percent locally-sourced content for the Nano. This collaboration proved that Bosch is not just a manufacturer of superior-quality products, but also a dependable partner who can rise to the occasion and support customer strategy.

Above: (Left) Ratan Tata, then Chairman, Tata Group and Dr. Bernd Bohr, then Chairman, Automotive Group, Robert Bosch GmbH, and (Right) Ravi Kant, then Managing Director, Tata Motors and Dr. Albert Hieronimus, then Managing Director, Mico - together represent the perfect Tata-Bosch collaboration in New Delhi, 2008.

Innovative A4000 Pump

Since the beginning, the A-Pump (Inline Pump) was the mainline product of Bosch Limited. These in-line fuel injection pumps could cater to the full spectrum of diesel engines, and were of use in a range of engines starting from small fixed installations to large earth movers.

The legacy of the A-Pump was further extended with the launch of the A4000 variant. This new pump – an example of innovation – conformed to all the then latest norms: Bharat Stage (BS) III and TREM (tractor emission) standards for agricultural tractors.

The production of the A4000 pump for HCVs (Heavy Commercial Vehicles) and MCVs (Medium Commercial Vehicles) began in 2010. The A4000 significantly changed the scene for commercial vehicles and the off-highway segment in India. By increasing pressure capability and improving timing control, along with combustion optimisation, the in-line pump helped reduce carbon monoxide (CO) emissions by 50 percent.

Below: The A4000 Pump is another example of innovation in India that met the local emission requirements optimally for commercial and off-highway vehicles.





Engineering & Software subsidiary makes big strides in research

The Engineering and IT services subsidiary – Robert Bosch Engineering and Business Solutions Ltd., headquartered at Bangalore – made several efforts towards expanding operations and research activities. These initiatives place the software activities of Bosch in India in an enviable position:

The first-of-its-kind ECU Reliability Testing Centre was built in 2009, beside the ECU production facility of the Bosch Automotive Electricals India subsidiary in Naganathapura, Bangalore. In this facility, local domain experts and the worldwide network of Bosch reliability test engineers together influence the standards that cover the local applications for 2- and 3-wheelers as well as passenger cars and commercial vehicles.

In 2010, a high-tech Electromagnetic Compatibility (EMC) Lab was set up in the Coimbatore facility to help enhance the quality and reliability of automotive components like Electronic Control Units (ECUs). The lab was set up to meet the EMC test needs of Bosch units worldwide and of local projects.

In 2011, activities were extended to South-East Asia by establishing the first software and engineering centre at Vietnam – Robert Bosch Engineering and Business Solutions Vietnam Company Ltd. This new unit aims to

offer IT/IT-enabled services for Vietnam and South-East Asian region. Plans are on to make Vietnam the R&D and manufacturing hub for Bosch in South-East Asia along with India.



Top: In his speech, Dr. Kalam (former President of India) advised Bosch to work towards developing a fuel injection for a future where all vehicles run on biofuel. "Think globally, act locally," he concluded.

Above: ECU Lab at Naganathapura.



Flagship subsidiary adds Thermotechnology to its operations

Globally, Bosch is a major supplier of high quality water heating and comfort heating systems in the thermotechnology space. Bosch Limited established a new business division – Thermotechnology – in 2011. The division has a manufacturing base of flat-plate collectors at Kumbalgodu, near Bangalore.

The Thermotechnology division mainly markets various series of water-tube/fire-tube industrial boilers, solar/gas water heaters, heat pumps, boilers and HVAC (heating, ventilation, and air conditioning) systems.

Fully-owned subsidiary in Bangladesh

The Bosch Group established a fully-owned subsidiary, Robert Bosch (Bangladesh) Ltd., on October 4, 2012, at the capital city in Dhaka. The operational control is vested with the Indian flagship Bosch Limited. Bosch Group had been present in Bangladesh for over two decades through automotive aftermarket and power tools distributors. Strengthening the local presence was the next step.

The Bangladesh subsidiary has been built with an initial investment of 100 million Bangladeshi Takas (968,000 Euros). A sales and marketing office was set up to market, and to provide trading support and repair services to the automotive aftermarket, security systems, power tools and thermotechnology divisions of Bosch.

Bosch sees immense potential in the Bangladesh market and plans to grow significantly in the years to come. This confidence is bolstered by the emphasis of the Bangladesh Government on key infrastructure projects.

Bangladesh is one of the Next Eleven (N-11)* countries with high potential to become, along with the BRIC nations (Brazil, Russia, India and China), the world's largest economies in the 21st century. A nation of 164 million people, it is the second largest exporter of garments worldwide. Favourable demographics – a median age of just 23.6 years and a large working class – place this nation in the future list of potential emerging markets.

* The N-11 countries have been identified by Goldman Sachs investment bank and economist Jim O'Neill in a research paper as having a high potential of becoming the world's largest economies in the 21st century.

In November 2011, an MoU was signed with the Indian Institute of Science (IISc), Bangalore, to establish the Robert Bosch Centre for Research in Cyber Physical Systems at the IISc campus. Built with an investment of around Rs. 140 crore, the Centre was formally inaugurated by the former President of India, Dr. A. P. J. Abdul Kalam. This was in line with the global "Bosch InterCampus Program" which aims to achieve lasting improvements in research conditions for undergraduates and scientists in the university sphere.

In 2012, the second Electronics Control Unit Reliability Testing Centre was inaugurated at Coimbatore. This new facility conducts reliability tests, including accelerated lifetime tests on both automotive and non-automotive products and components. Products from industrial, building and consumer goods domains are also tested here.

Another high-tech Automotive Systems Lab was inceptioned in 2012 at Bangalore, to increase the fold of innovation capabilities by ramping up the competence of the organisation's automotive researchers and developers. Solutions developed here further help reduce carbon emissions in automobiles.

Top: Krieger Ruediger, Technical Plant Manager of Bosch Solarthermie GmbH, Wettringen, Germany, explains the ultrasonic welding operation of the absorber sheet at the Bosch Thermotechnology plant, Bangalore.

Above: Dr. Steffen Berns - Managing Director, Bosch Limited & President, Bosch Group India - addresses the gathering at Dhaka.



From Adu Kodi to Bidadi - the Bangalore plant moves towards a new horizon

For more than 60 years, the plant located at Adu Kodi, Bangalore led the journey of Bosch in India predominantly in the auto component sphere, alongside special purpose machines, power tools, packaging machines and security systems. Foreseeing the demands of the growing market and in pursuit of larger space for better infrastructure support for expansions, it was decided that a new manufacturing site be identified and the plant activities shifted.

Bidadi was identified as the alternate manufacturing site. As part of the Ramanagara district, the town is developing

into an industrial belt. It is situated on the Bangalore-Mysore highway, 32 km from Bangalore. Bosch Limited acquired 97 acres of land here for the construction of its new manufacturing facility. Some of the leading companies such as Toyota Kirloskar have already started manufacturing activities in the vicinity.

The vacant space at the Bangalore plant would be utilised to expand the high-tech R&D centre and to support the activities of the software subsidiary - Robert Bosch Engineering & Business Solutions Ltd.

Above: Chief guest, Hon'ble Chief Minister of Karnataka, Shri. Siddaramaiah (in white attire, in the centre) along with Bosch Limited's management team performing the groundbreaking ceremony at the new plant site in Bidadi on September 18, 2013. Also present on the occasion were the Guests of Honour - Shri D.K. Suresh, Member of Parliament, Bangalore Rural and Shri H.C. Balakrishna Member of the Legislative Assembly, Magadi.



1970: The dispensary building at Adegodi, Bangalore, was the first-of-its-kind in the city built in a record time of four months by Mico for the benefit of local people.

1922

Bosch begins sale of automobile parts through Illies Company – a Bosch agency in Calcutta

1924

First Bosch Service Workshop established in India

1949

Ownership of trading Bosch products moves to Delhi-based Ghaziabad Engineering Co. (GEC) from Mousell & Company.

1951

Motor Industries Co. Ltd. (Mico) is founded, signs agreements with Bosch for manufacture of spark plugs and single-cylinder diesel injection pumps under licence from Bosch

1952

Ownership of importing and selling Bosch products transferred to Mico from GEC

1953

Mico-Adegodi plant, Bangalore, begins production of spark plugs and single-cylinder diesel injection pumps

Apprenticeship scheme set up

1954

Mico moves head office from Madras to Bangalore

First single-cylinder fuel injection pump supplied to Kirloskar Oil Engines Ltd., Pune

1956

First multi-cylinder diesel injection pump supplied to Simpson & Co. in Chennai

1960

Apprenticeship scheme formalised as Mico Vocational Centre (MVC)

1962

Mico begins exports



Hans L. Merkle and Bhailal C Patel (in the centre, garlanded) amongst Hubert Zimmerer, D. N. Vatcha and members of Mico management team when Mico celebrated its Silver Jubilee in 1976.

1965

Manufacture of Special Purpose Machines

1969

Pilot plant set up in Nashik for the manufacture of nozzles and nozzle holders

1974

Rexroth Maneklal Industries Ltd., (today Bosch Rexroth India Ltd.) begins operations at Ahmedabad

1988

10-millionth single-cylinder pump produced

1989

New plant at Naganathapura, near Bangalore, manufactures auto electricals

1993

Manufacture of Bosch electric power tools at the Naganathapura plant

1995

Packaging technology business begins at Bangalore

1996

Production of Blaupunkt brand of car audio systems at the Naganathapura plant

1998

Robert Bosch India Ltd., 100% owned subsidiary of Robert Bosch GmbH begins software activities

20-millionth single-cylinder pump produced

1999

New plant at Jaipur manufactures distributor-type diesel-injection pumps

2000

First-of-its-kind automotive R&D centre – Technical Center India (previously Mico Application Center) set up in Bangalore



The newly-built administrative block of Mico (today Bosch Limited), Bangalore, in the year 1967.

2001

Robert Bosch GmbH acquires Mannesmann Rexroth in Germany. Regional unit's name changes to Bosch Rexroth India Ltd.

2003

Security Systems business begins in India with the acquisition of Philips CSI India Ltd. by the Security Technology division of Robert Bosch GmbH

2005

Bosch increases its stake in Kalyani Brakes Ltd. to 80 percent and renames it to Bosch Chassis Systems India Ltd.

2006

India's first Common Rail Pump and Injector launched at Bangalore and Nashik plants respectively

2007

Packaging technology business shifted to Verna, Goa

2008

Mico renamed as Bosch Limited

Software arm Robert Bosch India Limited renamed as Robert Bosch Engineering and Business Solutions Limited (RBEI)

A 51:49 joint venture between Robert Bosch Investment Nederland B. V. and Igarashi Motors India leads to the formation of Bosch Electrical Drives India Pvt. Ltd.

2009

Nashik plant rolls out one millionth common rail injector for direct diesel injection

Production of Electronic Control Units (ECUs) by new subsidiary - Bosch Automotive Electronics India Pvt. Ltd. at Naganathapura

2010

Bangalore plant launches A4000 Pump

RBEI opens EMI/EMC lab at Coimbatore

Assembly of Antilock Braking System (ABS 8) for passenger cars and LCVs begins at Bosch Chassis Systems India Ltd. at its Chakan plant



**Khan Bahadur
C. R. Taraporevala**

1954 to 1969



Bhailal Patel

1969 to 1977
(Chairman-Emeritus
1977-1983)



**Dorab Nowroji
Vatcha**

1977 to 1986



Dr. Paul A. Stein

1987 to 1989



Dr. Hermann Eisele

1989 to 1996



Hubert Zimmerer

1996 to 2010



**Dr. Albert
Hieronimus**

2010 to 2013



V. K. Viswanathan

2013 July onwards

Chairmen of Bosch Limited (earlier Mico).

* As in December 2014

2011

Second ECU Reliability Testing Centre inaugurated at Coimbatore by the software subsidiary Robert Bosch Engineering and Business Solutions Ltd.

RBEI signs MoU with Indian Institute of Science (IISc), Bangalore, to establish the Robert Bosch Centre for Research in Cyber Physical Systems

Robert Bosch Engineering and Business Solutions Vietnam Company Ltd. formally inaugurated in Ho Chi Minh City

2012

Inauguration of new manufacturing facility of Bosch Packaging Technology division at Verna, Goa

First Thermotechnology plant at Kumbalgodu, Bangalore

Fully-owned subsidiary of Robert Bosch GmbH, Robert Bosch (Bangladesh) Ltd., established in the capital city, Dhaka

2013

Bosch Rexroth India Ltd. inaugurates new plant at Sanand, Ahmedabad

Bosch Electrical Drives India Pvt. Ltd. moves to new facility at Oragadam, Chennai.

Bosch Chassis Systems India Ltd. manufactures ESP® Generation 9 and ABS Generation 9 for motorcycles in its Chakan plant

2014

Robert Bosch Engineering and Business Solutions Ltd. inaugurates Research & Technology Centre (RTC) in Bangalore

New non-automotive businesses - Bosch Energy & Building Solutions and Eye Care launched by Bosch Limited

Every drop of diesel oil counts. Get the best out of it.

The shortage and high price of fuel oil make it imperative to achieve economy wherever possible. You can save scarce fuel by following these simple tips.

Do

- * maintain an optimum speed of 40 to 55 km/hr
- * minimise use of brakes
- * avoid untimely shifting of gears

Don't

- * ride on brake and clutch pedals
- * accelerate suddenly
- * let the engine idle unnecessarily

Guard Against

- * under-inflated tyres
- * incorrect wheel alignment
- * slipping clutch
- * dragging brakes
- * leaking fuel lines
- * clogged air cleaner and exhaust systems

Ensure That

- * the fuel injection pump is calibrated correctly and the injectors work smoothly with the right opening pressure
- * the fuel filter inserts are replaced at recommended intervals
- * only genuine spares are used to replace worn-out parts—reconditioned parts can cause serious and costly damage to the system
- * your vehicle and fuel injection equipment are serviced only at authorised service centres

Help the nation conserve limited fuel resources. Save fuel.



TATA

ENGINEERING AND LOCOMOTIVE
COMPANY LIMITED
Sales Department
148 Mahatma Gandhi Road
Bombay 400 001



MICO

LICENCE BOSCH

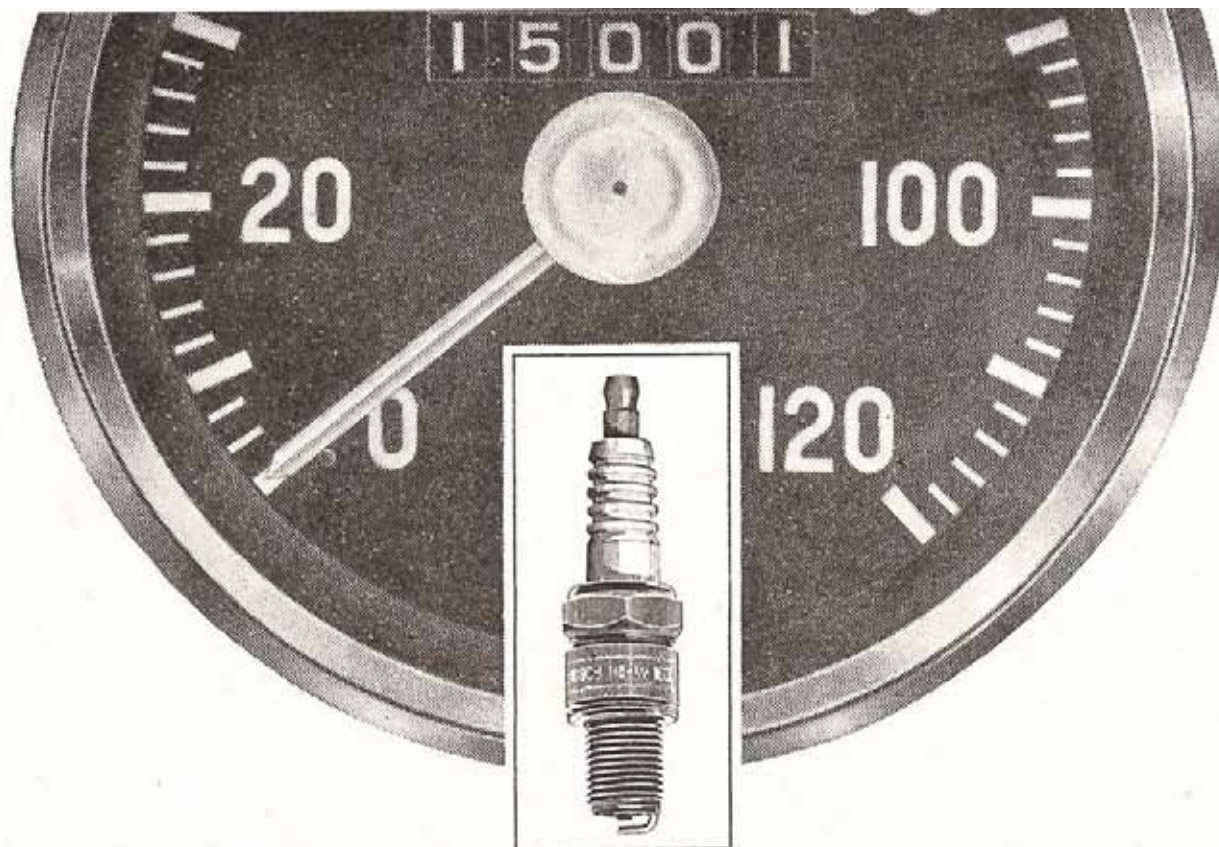
Motor Industries Company Limited

SAVE FUEL



MICO-7845

Even way back in the 1970s, Mico (today Bosch Limited) propagated messages on how to save fuel in India through mass media advertisements such as the one shown here. This advertisement which appeared in Mico's corporate magazine *Mico Wheel* in 1974 also reflects company's partnership with one of the big industry players.



A MICO spark plug never gives up, so you don't know when it needs changing

The MICO Spark Plug works better in four ways—instant starting, smooth running in heavy traffic, greater speed for long distance travel and more kilometres per litre.

MICO Spark Plug never gives up. Even beyond the prescribed kilometres the MICO plug keeps on gallantly sparking. But, these

sparks may not be so powerful anymore; the performance of the engine may come down which also means that your fuel consumption may go up. MICO, therefore, recommends that you change the spark plug every 15,000 km for cars, jeeps and 7,500 km for 2-wheelers, 3-wheelers.

The cost? ...Just Rs. 3.95 per plug—Excise duty and tax extra.

Pick the correct type of high efficiency MICO Spark Plug for your vehicle from the chart below.

MOTOR INDUSTRIES CO. LTD.,
Bangalore

TYPE OF VEHICLE	Ambassador (OHV) Mark II Standard Super 10 Herold Mark II & III Companion Lambretta LI	Hindustan Ten Landmaster Ambassador (Side Valve) Royal Enfield Bullet	Fiat (1961 model onwards) Royal Enfield Sherpa Fantabulus Vespa	Fiat (up to 1960 model) Lambretta LD Rajdoot Pearl Yamaha Atalante	Jeeps and Jeep Station Wagons	Ideal Jawa
RECOMMENDED TYPE OF MICO SPARK PLUG	HB-W160 T2	HB-W145 T1	HB-W225 T1	HB-W175 T1	HB-W145 T3	HB-W145 Z1

MICO — triggers the wheels of progress



MICO

LICENCE BOSCH

Especially in the earlier decades, many advertisements of Mico such as the one shown here centered around Spark Plugs. The company's name became synonymous with Spark Plugs, although there were many more automotive products in the portfolio. This advertisement appeared in *Mico Wheel* in 1978.



