



Bosch in the Indian growth economy:

For clean, safe and economical

technologies

Statement by Dr Bernd Bohr,

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at Auto Expo in New Delhi, January 11, 2006

Namaste! Ladies and Gentlemen!

India is a country on the move. And it is not only this Auto Expo in Delhi that demonstrates this. It is even more obvious if we look at the Indian government's ambitious road-building program. This year end will see the completion of the "Golden Quadrilateral" – nearly 6,000 kilometers of highways along India's coasts and borders. And in the next few years, this will be followed by a further 7,300 kilometers, from north to south, and from east to west. This huge effort demands the great respect of every European, myself included. At the same time, what we see here is an opportunity for the automotive industry, and especially also for Bosch. Generally speaking, this road-building will further stimulate the motorization of India. More specifically, overland traffic will increase. And it is especially over long distances that diesel drive can prove its unique strengths, notably its fuel economy. After all, a diesel engine consumes on an average 30 percent less fuel than a gasoline engine. Whether for gasoline or diesel engines, injection technology is one of the specialties of Mico, our Indian subsidiary. This technology is making both drives - gasoline and diesel - cleaner and more eco-friendly than ever before. In India, too – and this is something we explicitly welcome – modern emission standards are on their way. This is the reason why, in Bangalore and Nashik, we are starting large-scale series production of our most modern diesel technology, the high-pressure common-rail diesel injection system. This represents a previously announced investment of Rs 555 Cr (100 million euros), which will bring us considerable growth over the next few years – growth coupled with environmental protection. In India, Bosch is on the move.

At the same time, we can look back on a long presence in the country. We founded our first representative office in Calcutta some 80 years ago, and Mico has been our subsidiary for more than 50 years. Today, with some 10,000 associates at four locations, we are the largest Indo-German company. The growth of the Bosch Group in India is due above all to Mico's automotive technology. In total, the sales of our Indian subsidiaries grew by 25 percent in 2005, to nearly Rs. 3,802 Cr (685 million euros). In ten years, the sales growth has quadrupled. These figures alone show the extent to which India has become a growth economy for Bosch. And we have every reason to be confident that the steep upward trend will continue in the future.

Growth in India: more investments, more engineers

We are also making our own contribution to this upward trend. Between 2005 and 2008 we are investing some Rs.1,800 Crores (325 million euros) in India. This represents an extension of our previously announced investment plan of Rs.1,000 Crores (180 million euros) between 2004 and 2007. At the same time, we are increasing our efforts to find new products. This is with the contribution of a dedicated team of currently 360 Mico associates working in research and development, some 100 more than last year. Our regional subsidiary Robert Bosch India also plays a significant role, even if it is not included in our consolidated result. Of its 2,900 associates, a good 2,550 work in research and development – 800 more than a year ago. Why has there been so much expansion here? Robert Bosch India, headquartered in Bangalore like Mico, is more than ever a “brain trust” for our entire automotive technology sector – especially in software development. Solutions made in India not only benefit our business in India. Bosch also relies on its brains in Bangalore in its global automotive development work. Generally, our Indian locations are an integral part of a network which supplies all the world’s major carmakers.

Worldwide, some 250,000 associates worked for the Bosch Group at the beginning of the year, 150,000 of them in the automotive business. And global automotive technology sales totaled some Rs 144,300 Cr (26 billion euros) in 2005. In the Bosch Group as a whole, this figure was between Rs 223,100 Cr and Rs 227,550 Cr (41 and 42 billion euros). In other words, we achieved growth of some four percent in 2005, both in the company as a whole and in our automotive business, and we did so despite only modest global growth in automobile production. In the next few years, we expect growth rates in the automotive industry as a whole to be higher again. The greatest opportunities for growth are to be found above all in the Asian emerging markets – and that includes India.

Tighter emission standards: roll-out of common-rail production

The growth rates recorded here in India are only matched by those in China. In the years up to 2015, we expect to see Indian automobile production increasing by eight percent per year on average. Bosch has the prerequisites to share in this growth: on the one hand, our companies have long-standing and well established contacts to local customers and, on the other, all these local entities are integrated in our global development network. This combination allows us to fulfill the most important expectations of Indian carmakers: quality combined with competitive prices and development times that are as short as possible. The principal technological challenge of the next few years will be to comply with emission legislation, which is being tightened in India, taking European standards as a benchmark. Even now, the "Bharat Stage III" norm applies in eleven Indian cities, and will apply to the country as a whole from 2010. A diesel engine requires an electronic high-pressure fuel-injection system such as common rail in order to comply with Bharat III. We are putting ourselves under pressure to achieve this cost-efficiently.

First of all, we are rapidly establishing local manufacturing capacities in India. At the end of last year, the production of injector components for the common-rail system started in Nashik. The manufacture of complete injectors will follow in 2007. And in Bangalore, the first common-rail high-pressure pumps will come off the production line in mid-2006. This cannot be achieved with heavy investments alone. It also requires local know-how. This is why we have already assigned more than 200 associates from Bangalore and Nashik to plants in Germany, Italy, and Turkey. They return with the knowledge and experience needed to ensure a smooth roll-out of common-rail production in India. We are also grooming our Indian development engineers in a similar way. At the end of 2005, 80 of them were in Germany to exchange experience on common-rail development. At the end of 2006, that number is likely to be twice as high. This clearly shows that we intend to further expand not only the production of common rail in India, but also its development and application. Our forecasts for customer sales give us every reason to do so. In 2005, we delivered roughly 40,000 common-rail systems in India, and in 2010 this figure is likely to be 6,00,000. In the same period, the share of diesel engines in the Indian car and utility vehicle market will rise from 29 to 37 percent.

Bosch is benefiting from this development, but it is driving the market forward, too, with systems that conserve resources.

Cost-effective products – also for the “one-lakh car”

At the same time, and more than in other countries, the Indian automobile market is practically forcing us to keep a keen eye on costs. The market trend here is not just towards diesel, but also towards the low-price vehicle. While it is true that we expect global sales of vehicles costing less than Rs 400,000 (7,000 million euros) to increase by an above-average rate, in India this increase will be especially high. We are working hard to provide systems for low-price vehicles that allow cars of this class to be safe, clean, and economical as well. On this subject, Tata, the largest Indian car maker, has announced its “one-lakh car.” For the European low-price vehicle, the Logan, we already supply a number of products, including antilock braking system, alternator, and car radio.

As it is, our portfolio of automotive products is far more than just injection systems. Significantly, it has been extended still further in 2005 with two major projects in India:

- First, together with Mann+Hummel, we have set up MHB Filter India in Tumkur. In mid-2006, with a workforce of 350, this joint venture will start production of oil, fuel, air, and cabin-air filters for the Indian auto industry. The total invested for this project will be six million euros (Rs 33 Cr).
- Second, we have doubled our stake in Kalyani Brakes in Pune from 40 to 80 percent. This fast-growing brake manufacturer is now known as Bosch Chassis Systems India. In 2005, its 1,900 associates generated sales of approximately Rs 389 Cr (70 million euros). In the past, its growth has mainly been driven by brake equipment for two- and three-wheeler vehicles. In the future, Bosch Chassis Systems India intends to step up its business with brakes for four-wheeler cars.

Accident figures underscore need for more vehicle safety

In the long term, there are indications that Indian cars will have to be equipped with the ABS antilock braking system in addition to conventional brake as we predict a trend towards more vehicle safety in India, too. This is suggested, for example, by a recent study by the Indian Institute of Technology in Delhi. The study shows that there are more than 80,000 road deaths every year in India – twice as many as in Europe, where traffic density and speed are far higher. But the Delhi study gives even more reason for concern: In India, the number of road deaths has doubled in the last 20 years. In Europe, this figure has fallen by 30 percent in the same period – and is expected to fall by a further 50 percent by 2010. This forecast is by all means realistic – especially due to the increasing use of electronic brake systems. In addition to ABS, Bosch has developed ESP, the electronic stability program – a system that reacts to prevent potential skidding accidents.

For the car of tomorrow: our “innovation roadmap”

For accident prevention and environmental protection more than anything else, we are pushing ahead with technological developments. Our Automotive Technology business sector spends roughly 9% of its sales revenue on research and development – far more than the average for the industry. Worldwide, we lead the field in automotive patents. This continually gives rise to high-quality, high-performance products, which also make cars more fun to drive. To name just a few prominent points on our “innovation road map”:

- In mid-2005, we launched an extended version of ESP. Its additional functions allow shorter braking distances to be achieved. This will be followed in mid-2006 by a high-end ESP, which will provide an even more dynamic build-up of braking pressure.
- In early 2005, we entered the predictive safety systems market with a combination of radar sensor and braking system. These systems will be advanced successively, with the launch of automatic emergency braking planned for 2009.
- For the new Mercedes S class, we have succeeded in developing a night vision system which, according to customers, is superior to the other systems available today. The image generated by its video sensor is especially dynamic, with equally good resolution of extremely dark and light areas of the image. Even when there is oncoming traffic, it provides a quality of vision which is comparable to driving with high-beam lights.

- We are developing our injection technology further. The end of this year will see the launch of the second generation of our gasoline direct injection – smaller, lighter, more cost-efficient, and, above all, highly flexible, allowing for a wide variety of combustion processes. In the diesel area, we are working on even higher injection pressures for the common-rail system – thus reducing consumption and improving emission values still further. This will contribute to compliance with the world's strictest emission limits, such as those in the U.S.A.

Whatever product we develop for the worldwide automotive manufacturers, we are committed to bringing to India the latest technologies that are relevant to the local market.

More electronics, with software developers from India

Even if some of our innovations initially only find their way into the Indian market via imported vehicles, they originate at least in part in India. Whether ESP or injection system, airbag or navigation system – all of these feature an electronic control unit. And wherever one of these ECUs is developed at Bosch, our regional subsidiary Robert Bosch India will almost certainly be involved – chiefly in the software, but increasingly also in the hardware. Consequently, it is also thanks to work done in India that electronic diesel injection has been such a great success in Europe. The growth of software development in Bangalore helped us to deal with the many European customer projects resulting from the transition to new diesel systems. Electronics is gradually finding its way into Indian vehicles, too. Robert Bosch India is already advising a major Indian carmaker on an “in-vehicle network.” Our Indian customers can use the know-how of our regional subsidiary – at a competitive cost. Software services from Bangalore will continue to contribute significantly. Just two days ago, Robert Bosch India moved into new premises in Bangalore, which houses 1,400 associates. Here again, we have a current example of our growth.

Of course, we should not forget that the spread of automotive electronics is a challenge as well as an opportunity: the more new systems we develop and manufacture for the Indian market, the more we have to prepare our after sales service for those systems. Together with Mico, we run the Indian car industry's largest aftermarket network: roughly 4,000 sales offices and 770 workshops. This year, as many as 100 car service centres will be able to provide support for electronic systems such as common rail, ABS, and gasoline injection. Their main tool is Esitronic, our diagnostic software. This “electronic spanner” makes

troubleshooting considerably easier for workshops. Anyone driving on India's roads should be able to count on our service being as modern as our systems.

The power of we: the partnership between Mico and Bosch

Behind all of this, there stands an intensive partnership between our Indian companies and our globally operating Automotive Technology business sector. This is what is meant by our Indian slogan: the power of we. At the same time, we are constantly aware of our social responsibility for the country. Not least, this is shown by our programs to train young people. Our subsidiary Mico, for example, runs a vocational center that has been voted the best in India 31 times in its 45 years of existence. And its apprentices have won first place in the All-India competitions 129 times. Above all, Mico gives us both a strong brand and a strong technological base in the country – with the backing of our development locations around the world. We support our Indian companies, just as we are supported by them. In this fruitful interchange, we are confident that our business in India will continue to grow. This commitment is itself an integral part of our growth strategy in Asia-Pacific. Asia-Pacific's share in group sales is expected to increase from 14 to 25 percent in the next ten years. We will achieve this with products that are both innovative and cost-effective, which protect the environment and prevent accidents. This is the meaning behind the global claim of the Bosch Group: Bosch: Invented for life.

Dhaniavad! Thank you for your time!