



Patent Portfolio  
of  
Major Indian  
Automobile  
Companies



(Two wheeler Segment)

An Indicative Measure of Innovation

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*This report provides an insight into the importance of innovation by analyzing the Patent Portfolio of five major Indian Automobile Companies in the two wheeler segment – Bajaj Auto Limited, Hero MotoCorp, Mahindra Two wheelers, LML Limited and TVS Motor Company.*



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(Two Wheeler Segment)

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2011

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“ Look at the richest men a hundred years ago, they all made their money extracting natural resources or moving them around. All today’s richest men make their money out of Intellectual Property. ”

- Mark Getty  
Founder of Getty Images



# Patent Portfolio of Major Indian Automobile Companies

(Two Wheeler Segment)  
-An Indicative Measure of Innovation

## Executive Summary

The purpose of this study is to analyze the importance given by selected major automobile companies in the two wheeler segment to innovation, based on their Patent Portfolios. Apart from providing an account of innovation and technological development taking place in the two-wheeler automobile industry, the analysis of the patenting activity provides an insight into current trends in the intellectual property generation activity. The study summarizes results of the research that was conducted on Bajaj Auto Limited, Hero MotoCorp, Mahindra Two-wheelers, LML Limited and TVS Motor Company Limited.

This report covers filing trends of the above mentioned companies along with status of Patents, International Patent Classification and Priority Date. The study also provides the filing trends and status in the field of engineering to which they belong, along with details of all Patents filed by these companies since their inception.

Our research suggests that the automobile sector is actively looking for Intellectual Property (IP) creation and protection since 2000-2001 when distinct results of the opening up of the economy in the previous decade started showing up. There is a spurt in IP activity in the sector which is a clear departure from the lukewarm approach in the previous decades. Increasingly companies are finding that IP is the clear differentiator in terms of market share and bottom-line in the forthcoming decades and the R&D portfolio is viewed not just as another cost center but as fruitful investment to bolster the prospects of retaining and improving their standing on the global scene.

Though the companies are at present confined largely to the Indian market in terms of patent filing, it is significant that they are actively making a foray across geographies, with China being the area of focus outside of India. Bajaj Auto Limited has already opened its IP account in several countries and it is a clear indicator of its global plans. TVS Motor Company has a very significant domestic IP portfolio indicating robust innovation activity but its global IP strategies need much appreciation through its global filings. Hero Honda, LML and Mahindra has a smaller presence in the IP arena though its global strides are impressive in terms of sales and market capitalization along with the privilege of being the largest two wheeler manufacturer in the world for the ninth year in row.

The year 2009-2010 was a watershed in the two-wheeler automobile market. The year made a sharp turn- around shaking off the after-effects of recession, which were enough to cast a shadow of uncertainty, though not enough to scuttle the growth path in the Indian scenario. The sector grew by 24% as compared with a tepid 5% the previous year and most of the automobile companies had never had it so good. In the next phase it is expected that they would have to look for global positioning to retain this advantage. Constant innovation and IP creation will be the cornerstone in the next growth phase, much the same way the technology companies expanded their portfolios in the past.

## Introduction

The automobile sector in India was identified as the new 'sunrise sector' in the Indian industry and economy by the government in its Automotive Mission Plan 2006-16, a ten year blue print for the auto industry developed by the Ministry of Heavy Industries and Public Enterprises, Government of India.<sup>1</sup> At that time the sector was poised for a major take off and the mission statement envisages an output of USD 145 billion contributing to 10% of the GDP by 2016. Now with outstanding growth in the sector during 2009-10 and expectations of an even higher performance in the current fiscal, the take off can surely be said to have taken place. The sector easily elbowed out the sluggishness of the economy due to the global economic crisis and emerged as a strong contender for the main driver of the economy in the post recession era.

With strong backward and forward linkages with other key segments of the economy, the automotive sector has a strong multiplier effect. The backward linkage sectors like metals, plastics, paints, glass, electronics and automotive components and forward linkage sectors like dealership, retail, finance, petroleum, logistics and services get stimulated by the automotive sector contributing to the overall economic landscape of the country. The sector is one of the biggest contributors to the national exchequer with a contribution of 17% to indirect taxes' kitty in 2008-2009. It is one of the biggest employers, both directly and indirectly, employing over 13 million people.<sup>2</sup>

One of the great spin offs of the economic liberalization has been the empowerment of the lower middle class in India in recent years. Rising industrial and agricultural output, increase in per capita income, higher disposable incomes and higher employment opportunities have given them economic choices as never before. This empowerment explains the spurt in vehicle sales in India in the last few years. Two -wheeler industry in particular has seen exponential growth in the last decade and constitutes 76% of market share of the automobile industry.<sup>3</sup> India has the enviable position of being the second largest producer of two wheelers and is embarking on a major drive in making its presence felt in the international market. Coupled with this, the other factors like being the lowest cost producer of steel in the world, well established R&D infrastructure and availability of skilled and trained manpower are about to catapult India as the major manufacturing hub of automobiles in the near future.

As more and more people move up the economic ladder, the lower middle class is going to define the market for vehicles in a more pronounced way than did the middle class in this decade, veering the balance towards more number of two wheeler sales in the next decade. The premium segment of two wheelers has seen a marked growth while the basic segment has seen a decline indicating a consumer preference for innovative features and better performance. So the next decade is going to be age of innovation in the automobile market.

There is a clear trend in favor of filing of patents and safeguarding Intellectual Property after 2001 with more than 86% of all patents filed in India by the companies under study coming after 2001.<sup>4</sup>

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<sup>1</sup> Automotive mission plan 2006-2016, Ministry of Heavy Industries and Public Enterprises, Govt. of India.

<sup>2</sup> India in Business, Industry and Services, Ministry of External Affairs, Govt. of India.

<sup>3</sup> Society of Indian Automobile Manufacturers ( SIAM), Market Share.

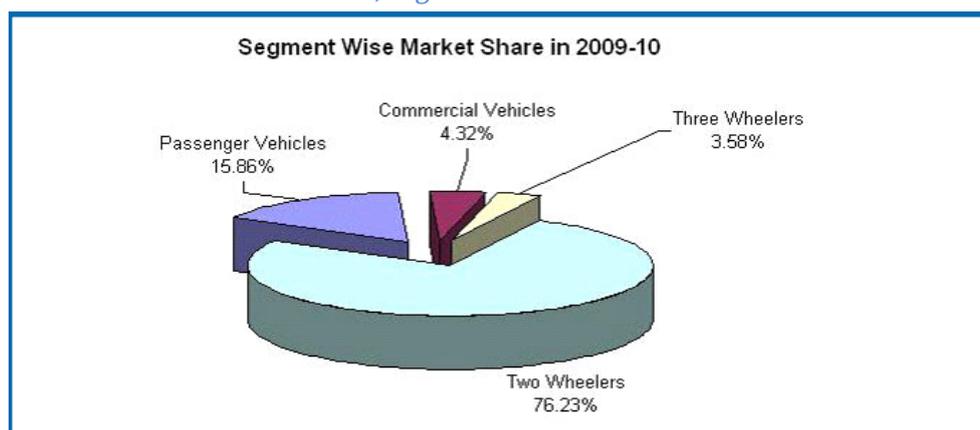
<sup>4</sup> Innomantra, present study.

The major areas are the Engines and Transport, together accounting for 65% of all patents filed indicating an emphasis in improving engine technology and conforming to stricter environmental norms. This trend is only going to increase with environmental concern becoming not only an obligation and responsibility but a value statement in itself.

## The Automobile Sector- Segment wise Market Share<sup>5</sup>

Two wheelers segment accounts for the bulk of the automobile sector in India followed by passenger vehicles (comprising of passenger cars and multi-utility vehicles), and commercial vehicles (comprising of light commercial vehicles and medium and heavy commercial vehicles). India is the largest producer of Three Wheelers in the world with 71% global market share<sup>6</sup> and is the second largest manufacturer of two wheelers. The two wheeler market has led the way in the growth of the automotive sector in India largely due to the need for personalized transport and due to the lower middle class being empowered in a large way after the economic liberalization.

*Exhibit 1: Automobile sector, segment wise market share*



## Scope of the Study & Research Methodology

This study provides an insight into the Patent Portfolio of key two-wheeler Automobile companies in India, namely *Bajaj Auto Limited*, *Hero MotoCorp*, *Mahindra Two-wheelers*, *LML Limited* and *TVS Motor Company Limited*.

<sup>5</sup>Society of Indian Automobile Manufacturers, Market Share

<sup>6</sup>Bajaj Auto Annual report 2009-10

The analysis looks at all the Patents applied by the above mentioned companies in USA, European Union, India, Canada and other relevant geographies. This includes Patents at all stages – application, publication and granted - of their lifecycle. For each company, the following data is presented in addition to the complete list of patents filed:

- Geographical Distribution of Patent Filings
- International Patent Classification (IPC) category wise Status
- Granted Patents and Pending Applications
- Timeline of Patent filings, year wise

Apart from a comparative look at these five Automobile companies and an insight into the areas of possible patent generation, this report also highlights certain key aspects of Patenting for Automobile companies in India.

Patent databases such as Thomson Reuter's Delphion and several other Patent information sites mentioned below were searched for Patents filed by companies indicated. As on 11<sup>th</sup> March 2011, records of all the Patent documents filed by above mentioned companies were extracted and analyzed. The results of the search have been tabulated in Exhibits. The entire process was verified using multiple Patent databases to ensure accuracy of the results. The Patent Databases of United States Patent and Trademarks Office (USPTO), European Patent Office (EPO), Canada intellectual Property Office (CIPO) and Indian Patent Office (IPO) were searched for 'Live Patents', and these results were also recorded in the report.

It is important to note that Patent applications filed during the last 18 months are not reflected in the report since Patent databases only include patents in the publication phase. In most cases, patent applications get published 18 months after the date of filing as per the Patent filing norms except in the case of early publications, where they may appear in the patent databases a little sooner. For this reason, all graphs indicate data until and including the year 2008 only, to ensure uniform comparison across companies.

## Databases and Tools

- *United States Patent and Trademarks Office (USPTO)*
- *European Patent Office (EPO)*
- *Canada intellectual Property Office (CIPO)*
- *Intellectual Property Office, INDIA (IPO)*
- *World Intellectual Property Organization (WIPO)*
- *Boliven Patent Database*
- *Google Patent Database*
- *ThomsonReuter's Delphion*



## Organizations Considered for the Study<sup>7</sup>

### Bajaj Auto Limited (BAL)

Founded: 1945

Managing Director: Mr. Rajiv Bajaj

Market Share in India: 20.52%

Bajaj Auto Limited (BAL) is the flagship company of the well known Bajaj Group and is ranked the fourth largest manufacturer of two wheelers and three wheelers in the world. Besides being the second largest two wheeler manufacturer in India, it has a significant export portfolio with the brand being well known in over 50 countries in Latin America, Africa, Middle East, South and South East Asia.

BAL has shown better than average performance in the year 2009-10. The year has turned out to be very good for the auto industry in general and two wheeler industry in particular. BAL sold over 2.5 million motorcycles during the year and grew by 31% by volume as against the industry average of 24% in the country. It has been a record year for the company in terms of highest ever sales, exports, profits and margins with net sales and other operating income showing an increase of 35% and PBT( Profit Before Tax) and PAT ( Profit After Tax) showing a growth of 170% and 160% respectively.

In early March 2010 BAL became the first company in the country to achieve Bharat Stage-III norm compliance for its entire range of two wheelers, thus demonstrating its commitment to green technology. In fact its patented technologies like DTSi, which is the mother technology for DTS-Si and DTS-Fi engines, are aimed towards reduction of emission and enhancing fuel efficiency. Over the last few years BAL has been concentrating on brand centered strategy which combines the 'front end' of brand positioning with the 'back end' of innovation, production efficiency and quality.

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<sup>7</sup>Respective Websites and annual reports , SIAM ;Market share between Apr.2010 and Feb.2011



Hero MotoCorp Limited  
(Formerly Hero Honda Motors Limited)

Founded: 1984  
Chairman: Mr.Pawan Munjal  
Market Share in India: 44.56%

Hero MotoCorp Ltd. (Formerly Hero Honda Motors Ltd.) is the world's largest manufacturer of two - wheelers, based in India.

In 2001, the company achieved the coveted position of being the largest two-wheeler manufacturing company in India and also, the 'World No.1' two-wheeler company in terms of unit volume sales in a calendar year. Hero MotoCorp Ltd. continues to maintain this position till date. Formerly Hero Honda is a joint venture between India's Hero group and Japan's Honda Motor Company which was set up in 1984. Hero Honda pioneered the four stroke engine technology in the two wheeler segment in India in the '80s and introduced the fuel injection technology into the motor cycle segment in 2006. Now it is the world's largest two wheeler manufacturing company with a market share of 48% in India and a total customer share of 30 million worldwide.

Riding on the wave of two wheeler industry growth in 2009-10 which notched 24% as against a mere 5% the previous fiscal, Hero Honda sold over 4.6 million units and achieved a pole position in the industry. With a growth of 23.6% by volume, 74% in net PAT and a 28% increase in total turnover, Hero Honda had its best year yet.

It has seen the potential of India's huge hinterland market and embarked on a unique rural marketing initiative through a rural connect program that was rolled out across the country in the last financial year.

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<sup>8</sup> Hero Group and Honda Motor Company split up in Dec 2010 ending a long association, with Honda divesting its stake in the Joint venture company. However the entity can retain the name Hero Honda till 2014 by which time it is obligated to rebrand itself.



## Mahindra Two-Wheelers

(Kinetic Motor Company Limited, KMCL, before 2008)

Founded : 1972

Managing Director : Mr.Anand Mahindra

Market Share in India : 1.41%

Kinetic Motor Company Limited, founded by Mr. H.K Firodia as part of the Kinetic Group, revolutionized the personal mode of transport in India with the launch of the sleek 'Kinetic Luna' in 1972, ushering in the era of mopeds in the country. Later the company brought out the first gearless scooter in the country, the hugely popular Kinetic Honda which became a rage in the 'comfort scootering' segment especially with women riders. It blended technology and looks and was synonymous with the company's name in the '80s and '90s. The company was in the forefront of innovation and was the first in India to introduce auto fuel cork and auto choke features in the scooter segment.

The two wheeler branch of the company was taken over by Mahindra Group in July 2008 with 80% stake and is now known as Mahindra Two-Wheelers. Consequently the Mahindra Two-wheelers stopped selling scooters and concentrated on Auto parts as its core area.

The new entity has now launched a variety of scooters brands to name few Rodeo, Duro, Flyte and Kine and two up-market bikes Stallio and Mojo, the latter one a 300cc bike that is targeted at the premier biking segment. Looking at the turn around and the thrust given to new product launches, Mahindra 2 Wheelers appears to fill the niche market of power two-wheelers as much as it seeks to fill the demand gap in the Indian two wheeler market.



## LML Limited

Founded : 1978

Chairman : Mr.Deepak Singhania

Market Share in India : NA

Incorporated as Lohia Machinery Tools Private Limited. In 1978, the company was engaged in the manufacture of synthetic yarn manufacturing machines. In 1984 it signed a technical collaboration with Piaggio of Italy and started a scooter project. This collaboration resulted in some of the very successful models in the two stroke scooter segment in India like LML-NV and LML-Select under the Vespa brand. However the joint venture ended in 1999 and an agreement was signed with Daelim Motor Company of South Korea to manufacture 4-stroke motor cycles. This brought about some successful models like Freedom and LML Graptor before the company faced some financial difficulties.

As of October 2009 the company has started production of a four stroke variant of the erstwhile Vespa NV and has started marketing in the north and central parts of India with a focus to expand markets in the East like Uttar Pradesh, Bihar and Assam. It has a smaller presence in the Two wheeler automotive sector in India and most of its monthly production of 5000 units are exported to countries like Italy, UK, France, Nigeria, Sudan, Japan, South Korea, Australia and Egypt under the Stella brand.



## TVS Motors Company Limited

(TVS Motor Company)

Founded : 1982

Chairman & MD : Mr.Venu Srinivasan

Market Share in India : 15.10%

TVS Motor Company is the flagship company of the USD 4 billion TVS group and is the third largest manufacturer of two wheelers in India. It has a significant chunk of exports out of its sales and has made its presence felt in 57 countries. It embraced techno-dynamism where style and technology meet to create fuel efficient vehicles and is in the forefront of innovation and indigenization in the two-wheeler segment in India.

When it won the Deming prize for quality back in 2002 it was a first for any two wheeler company in the world. The company has consistently followed it up with the release of seven products at the same time in 2007 and the release of first auto clutch bike in India in 2010 – TVS Jive. The company recorded a growth of 13.1% by volume by selling 1.52 million units and showed an impressive growth of 144% and 183% in PBT and PAT respectively.

Innovation and quality lie at the core of TVS' credo and it has been enabled by a robust TQM culture and a total employee involvement program within the company. The patent portfolio of the company is an indication of the various initiatives bearing fruit in the area of quality and innovation. The mainstay of its product differentiation is amply demonstrated by the release of 7 products on a single day in the year 2007.



## Company Speak on Innovation and Intellectual Property

The companies included in this study speak of Innovation and Intellectual Property in their Annual Reports for Financial Year 2009-10.

### Bajaj Auto Limited

*Bajaj Auto's core competencies rest on its values of innovation, perfection and speed. The Prime Mover Initiative (TPM) of the company is expected to build and continuously improve its core competencies.*

### TVS Motor Company Limited

*India's first motorcycle with auto clutch technology, a motorcycle which runs on ethanol blended fuel for Brazilian market, a two wheeler with music system for ASEAN market are the innovations in the current year.*

“ IP Management is the Cinderella of the modern organization,  
whose value has long been unrecognized, but  
is now being swept into prominence.”  
- Anonymous

## Patent Portfolio Analysis

### Bajaj Auto Limited (BAL)

Exhibit 2 represents the number of Patents filed by Bajaj Auto Limited in India and abroad. Our research indicates that BAL has 93 Patent filings in India. Outside of India, the Patent filing records were also found in United States, China, Egypt and Singapore. BAL has made significant foray into filing of patents in China compared to other countries like USA, Egypt and Singapore- an indication of its eyeing the Chinese market with a huge potential in terms of operations. Bajaj has clearly sought wide geographical protection for its IP.

**Exhibit 2: Geographical Distribution of Patent Filings- Bajaj Auto Limited**

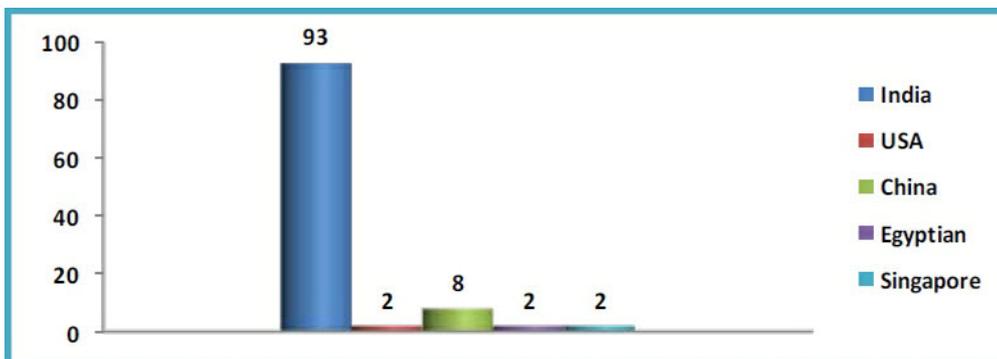


Exhibit 3 gives details about IPC category wise status of Bajaj Auto Limited patent filings in India. Of its 93 Patent filings, 34 are in the area of transport, 28 filings are in the area of engines and 7 in Mechanical Elements. A wide spread of IPC category indicates a robust innovation activity and the concern for IP protection.

**Exhibit 3: IPC category-wise Distribution – Bajaj Auto Limited**

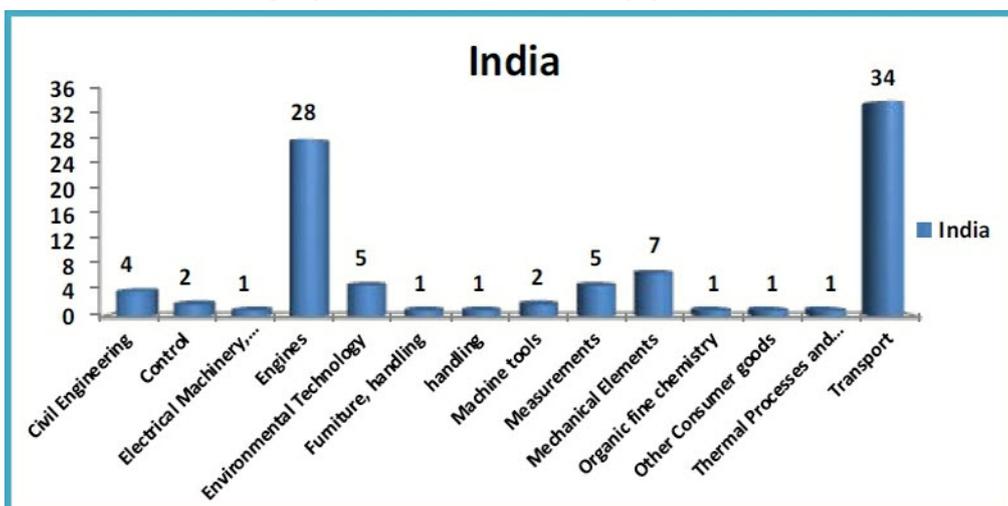


Exhibit 4 provides details about the Granted Patents and Pending applications for Bajaj Auto Limited in India. Of 93 filings, thirty eight (38) patents have been granted and the rest are published and in Patent pending status.

**Exhibit 4: Granted Patents and Pending Applications-Bajaj Auto Limited**

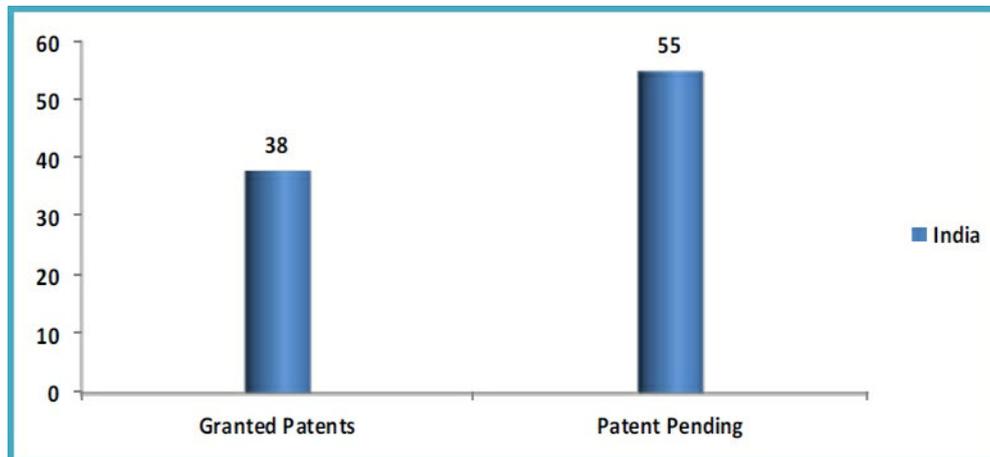
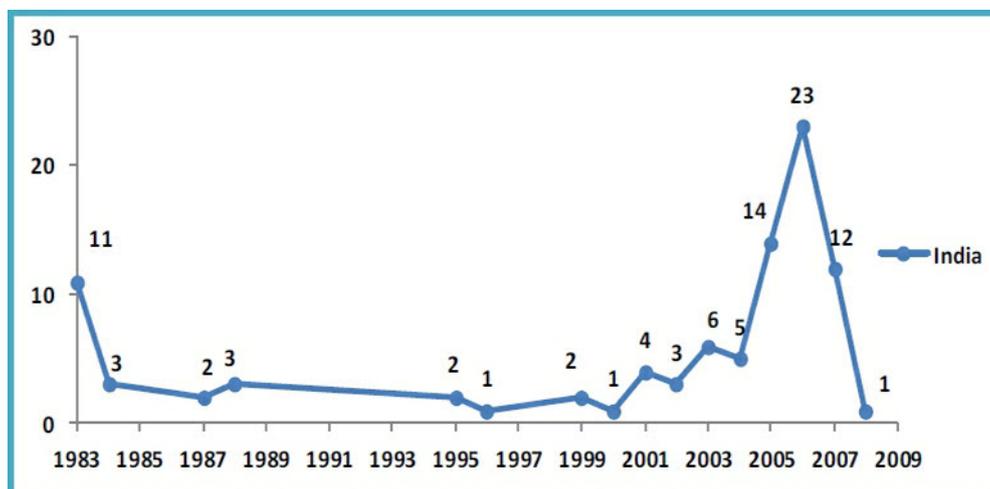


Exhibit 5 indicates the timeline of the patent filing activity of BAL. The activity picked up significantly from 2003 peaking in 2006 before falling drastically in 2008. The global financial crisis and the concomitant uncertainty could be the reason for the marked decrease in the innovation activity during the period.

**Exhibit 5: Timeline of Patent filings – Bajaj Auto Limited**



## Comments

- Currently BAL's Patent activity is focused mainly in India. However it has made an important foray into the overseas market, with China being the area of spotlight.
- Considering the size of its operations in India, Bajaj has strong Patent Portfolio. Potential reasons for this could be the sensitization to IP development and its investments into Innovation and IP activities.
- Bajaj Auto has limited filing activity in the last two years, indicating that efforts for IP generation have shown a declining trend.

## Capsule

- Bajaj Auto Limited has 93 Patent filings in India. It has fewer records of Patent filings overseas (USA, China, Egypt and Singapore).

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- Bajaj Auto Limited has filed majority of patents in the category of Transport and Engines.

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- Bajaj Auto Limited has thirty eight (38) granted patents while rest of the applications (55) are in Patent Pending status.

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- The years 2007 & 2008 have seen a sharp slump in patent filing activities. This could be due to overall sluggishness in the market and the resulting uncertainties due to economic slowdown.

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- Bajaj Auto Limited has been filing patents in India and abroad since 1983. It has ramped up its patent applications over the years.

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## Hero MotoCorp Limited (Hero Honda)

Exhibit 6 represents the number of Patents filed by Hero Honda in India. There is only one patent application in India and our research did not find any applications by the company in any other geographies.

**Exhibit 6: Geographical Distribution of Patent Filings – Hero MotoCorp (Hero Honda)**

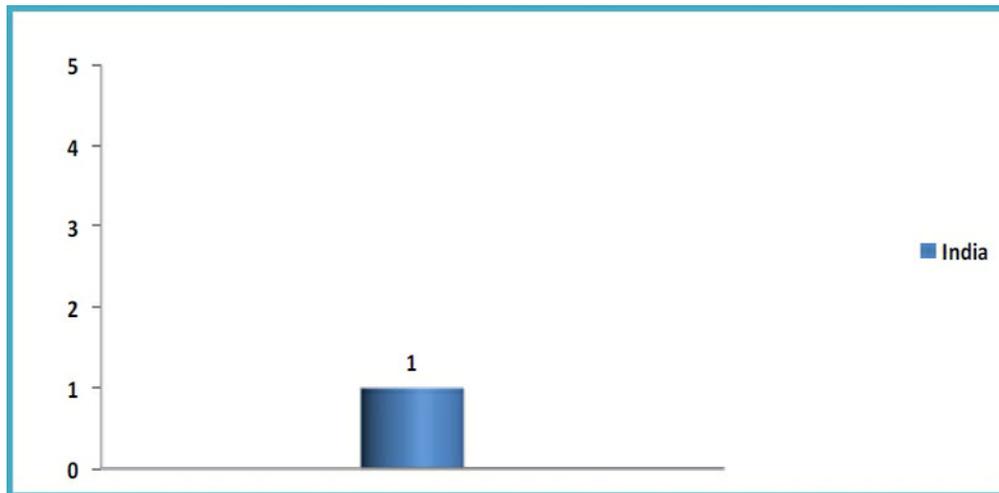


Exhibit 7 provides the International Patent Classification -wise status for Patent filed by Hero Honda. The sole patent filing is in the area of transport.

**Exhibit 7: IPC category-wise Distribution – Hero MotoCorp (Hero Honda)**

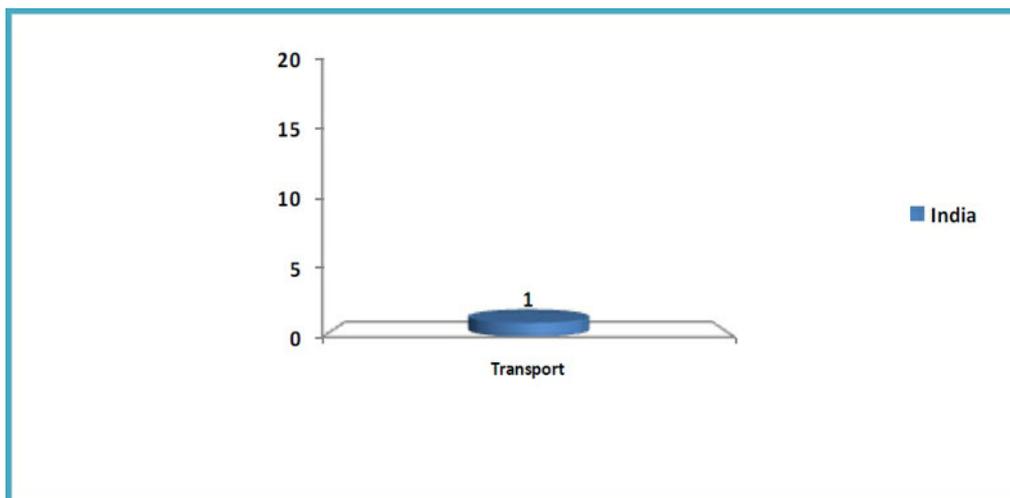


Exhibit 8 provides details about status of Patent filings of Hero Honda. Hero Honda has one (1) Patent filing in India and it is in Patent pending status.

**Exhibit 8: Granted Patents and Pending Applications – Hero MotoCorp (Hero Honda)**

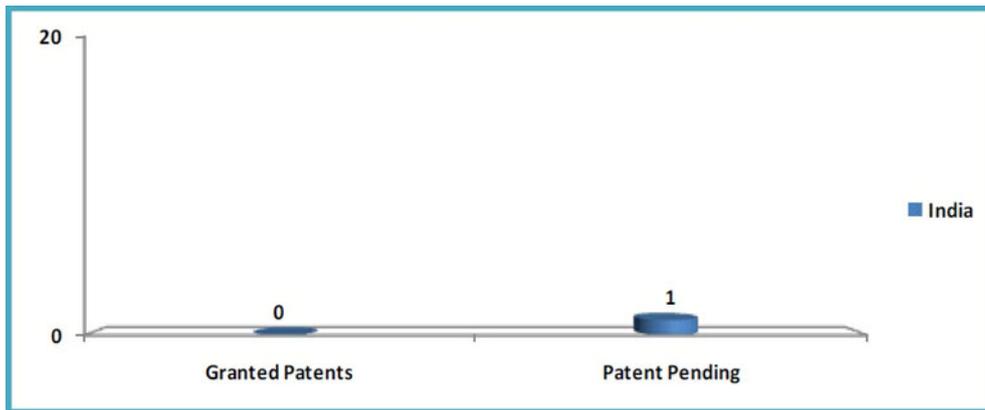
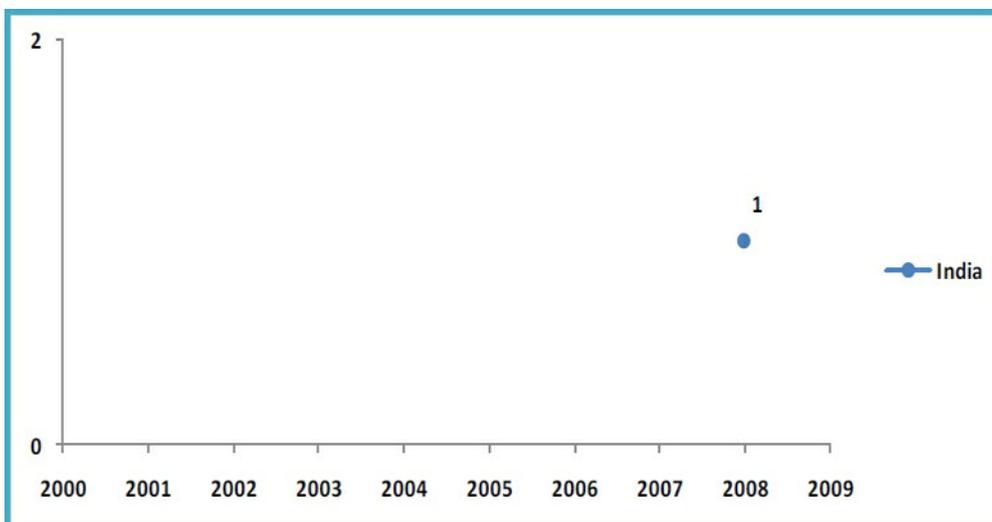


Exhibit 9 indicates the single patent filing has been made in the year 2008. Hero Honda has no history of any patent filings other than this.

**Exhibit 9: Timeline of Patent filings – Hero MotoCorp (Hero Honda)**



## Comments

- Hero Honda has only one (1) Patent application filed in India.
- This Patent application has been in the area of "Transport". The patent application suggests that its in-house IP development is limited and this indicates that it is largely dependent on its partner Honda's technology.
- The graph indicates that Patent activity has been initiated at Hero Honda very recently, in the year 2008.

## Capsule

- *Hero Honda has one (1) Patent filings record in India.*
- *The patent filing has been in the category of "Transport".*
- *Its IP development seems to be constrained as Technology is primarily supplied by its JV partner.*

## Mahindra Two-Wheelers Ltd.

Exhibit 10 depicts the number of Patents filed by Mahindra Two-wheelers in India. There are only four patent applications.

**Exhibit 10: Geographical Distribution of Patent Filings – Mahindra Two-wheelers**

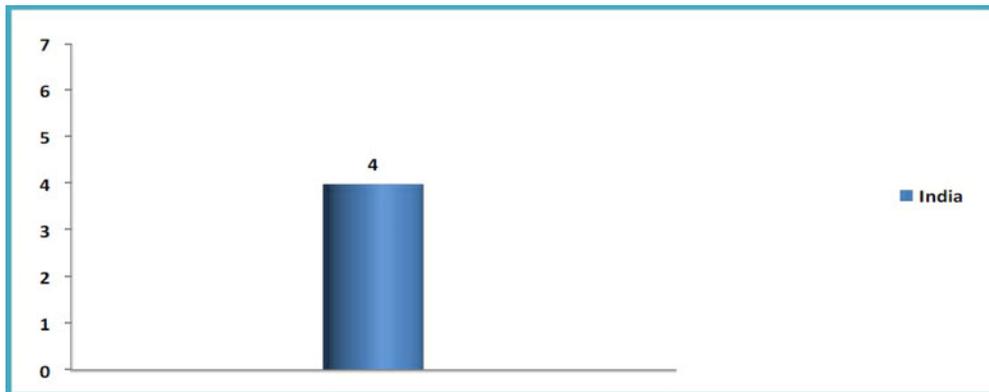


Exhibit 11 depicts the number of Patents filed by Mahindra Two-wheelers across various technological domains based on International Patent Classification (IPC) categories.

**Exhibit 11: IPC category-wise Distribution – Mahindra Two-wheelers**

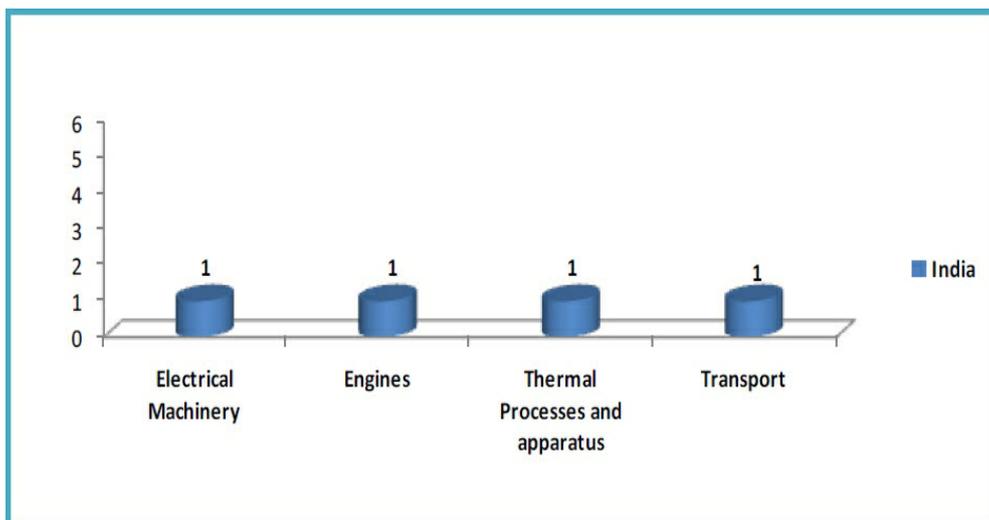


Exhibit 12 provides details about the status of Mahindra Two-wheelers Patent applications in India. Of the 4 Patent filings in India, 2 have been granted and the rest are in Patent pending status.

**Exhibit 12: Granted Patents and Patent Pending-Mahindra Two-wheelers**

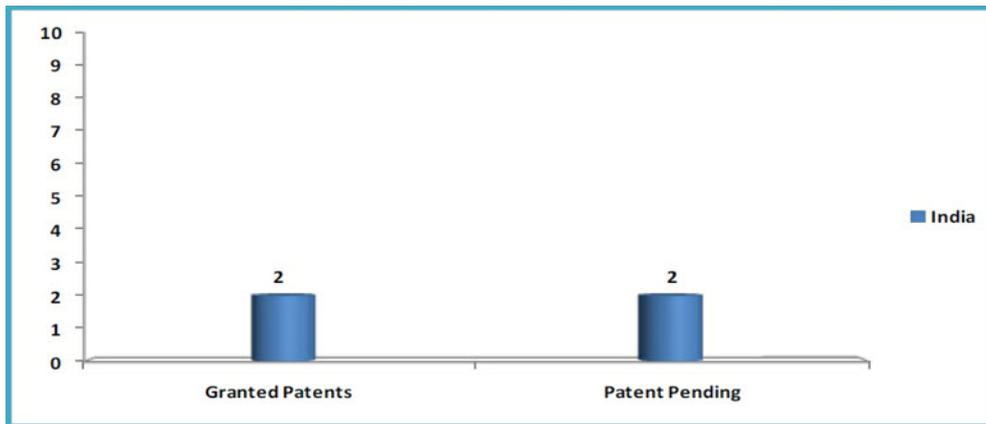
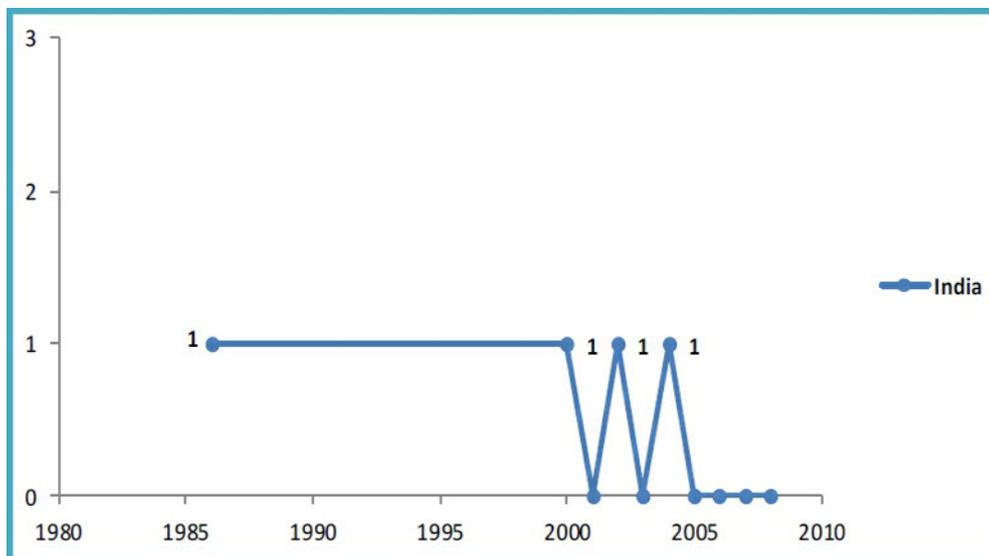


Exhibit 13 provides the details about the year-on-year Patent filing trend of Mahindra Two-wheelers.

**Exhibit 13: Patent Filing Trend – Mahindra Two-wheelers**



## Comments

- Mahindra Two-Wheelers has a limited patent portfolio in India with only 4 patents so far.
- These are spread out across the technology domains and two are granted with the remaining two in being in Patent pending status.

## Capsule

- *Mahindra Two-wheelers has four (4) Patent filing records in India.*

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- *Mahindra Two-wheelers patents have been filed one each in the category of Electrical Machinery, Engines, Thermal Process & Apparatus and Transport respectively.*

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- *It has been building its patent portfolio albeit at a slow rate.*

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- *Mahindra Two-wheelers has started Patent filing activity since the year 2000.*

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## LML Limited

Exhibit 14 depicts the number of Patent filings by LML Limited. It has seven (7) filings in India but has not filed any applications overseas.

**Exhibit 14: Geographical Distribution of Patent Filings – LML Limited**

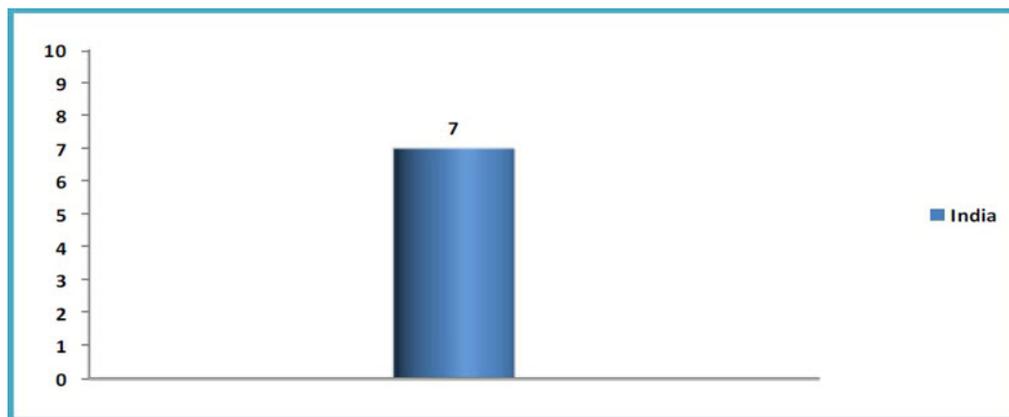


Exhibit 15 depicts the number of Patents filed by LML Limited across various technological domains. Major filings are in the category of Engines and the others are in Electrical Machinery, Furniture and Transport areas.

**Exhibit 15: IPC category-wise Distribution – LML Limited**

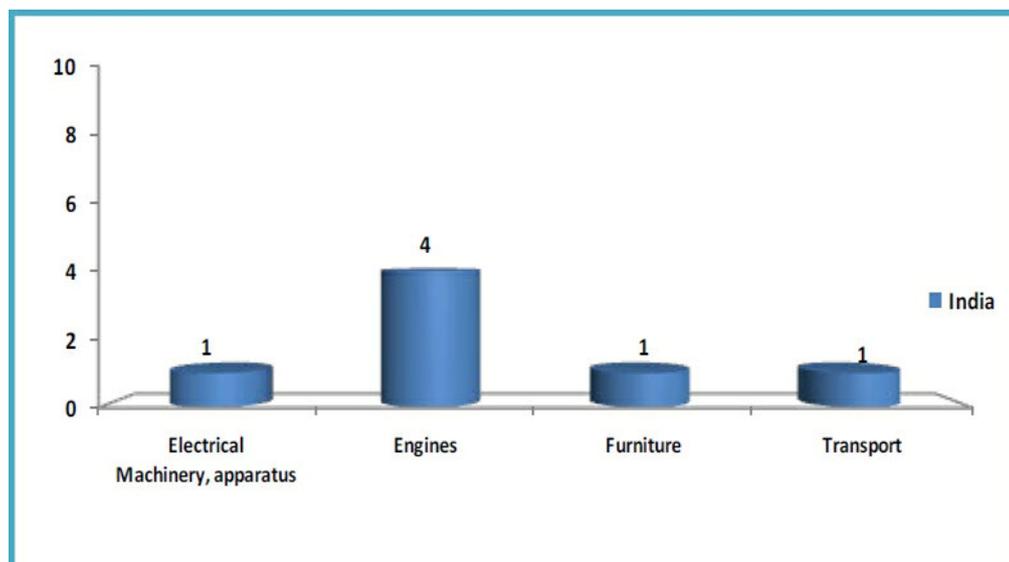


Exhibit 16 depicts the granted Patents and Patents Pending for LML limited. It has been fairly successful in getting the patents granted out of its filed applications.

**Exhibit 16: Granted Patents and Patent Pending – LML Limited**

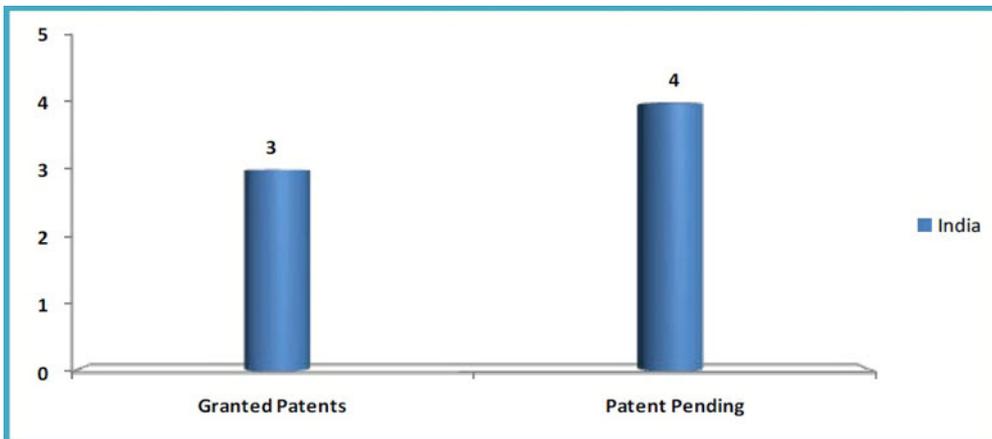
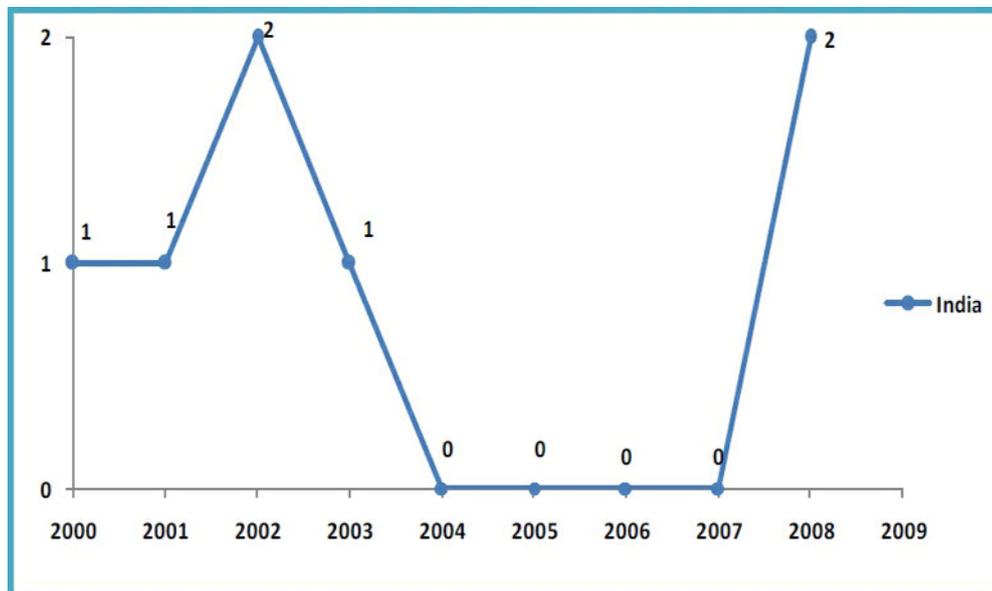


Exhibit 17 shows the patent filing trend of LML Limited. Starting with the year 2000 the activity continued till 2003 and has seen a lull till 2007 before starting again.

**Exhibit 17: Timeline of Patent filings – LML Limited**



## Comment

- LML Limited has patent filings in India only. Our study did not find any filings in other parts of the world.
- LML has four patent applications in the area of engines compared with one each in the areas of electrical machinery, furniture and transport.

## Capsule

- *LML has 7 patent filings in India. Our study did not find any filings in other parts of the world.*

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- *While LML has filed patents in a wide variety of areas, most of its applications have been in the "Engines" category.*

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- *3 patent applications in India have been granted and rest are in Patent pending status.*

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## TVS Motor Company Limited

Exhibit 18 depicts the patent portfolio of TVS Motors Company Limited. It has filed 179 Patent applications in India which is a very significant portfolio in the two wheeler segment. In our research, we did not find any instances where TVS Motor Company has sought patent protection in any other part of the world. The large number of patent filings indicates the importance the company has attached to innovation activity.

**Exhibit 18: Geographical Distribution of Patent Filings – TVS Motors Company Limited**



Exhibit 19 shows the number of Patents filed by TVS Motor Company across various technological domains. This distribution indicates that TVS Motor Company is actively generating and protecting its inventions in different areas of technology, mainly “Engines”, “Mechanical Elements” and “Transport”.

**Exhibit 19: IPC category-wise Distribution – TVS Motor Company Limited**

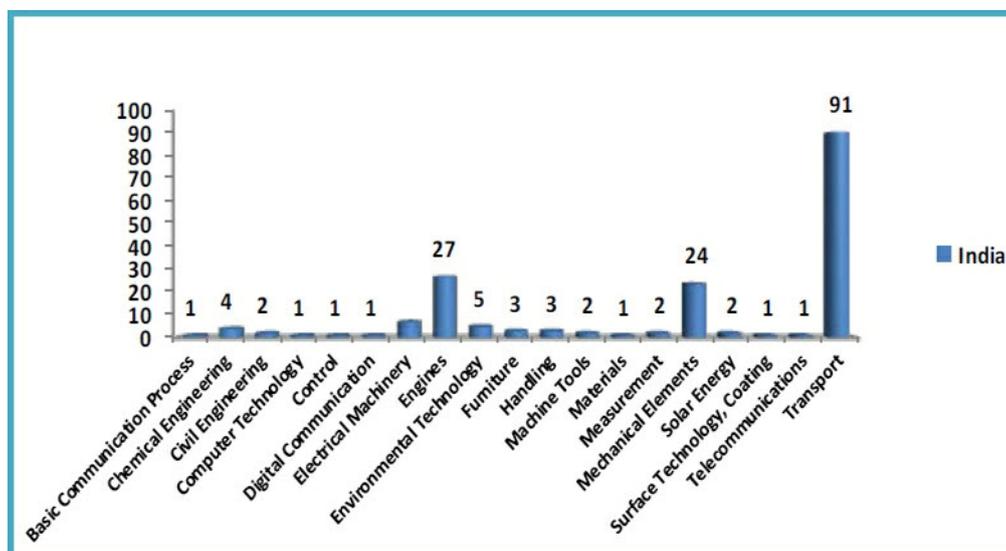


Exhibit 20 depicts the number of Granted Patents and Patent Pending for TVS Motor Company Limited. Of its 179 filings in India, the company has Seventy five (75) granted patents and rest of the applications are published and in Patent pending status. It is a significant achievement considering the fact that IP activity has taken on added importance in India only recently.

**Exhibit 20: Granted Patents and Patent Pending – TVS Motor Company Limited**

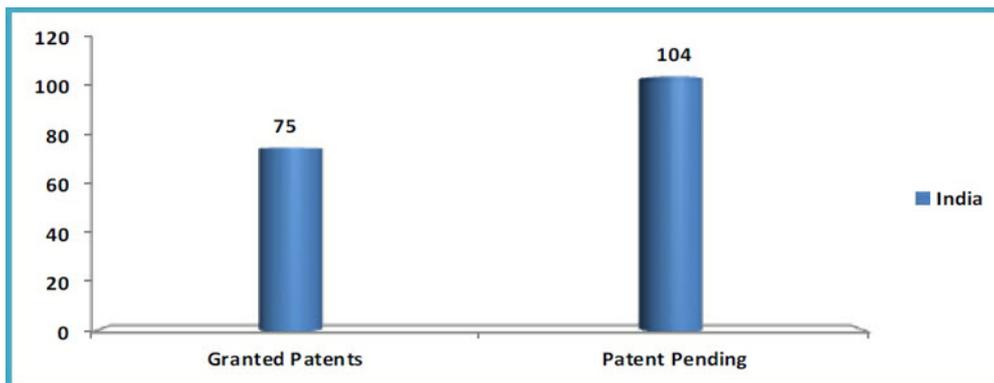
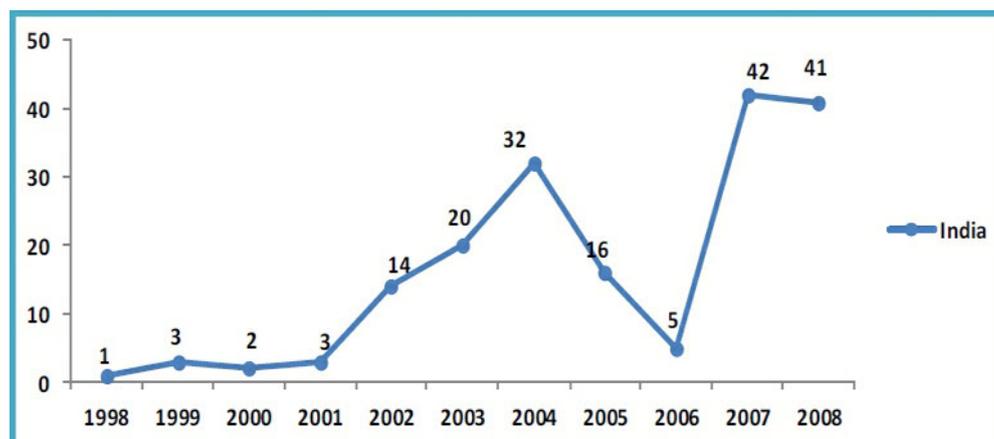
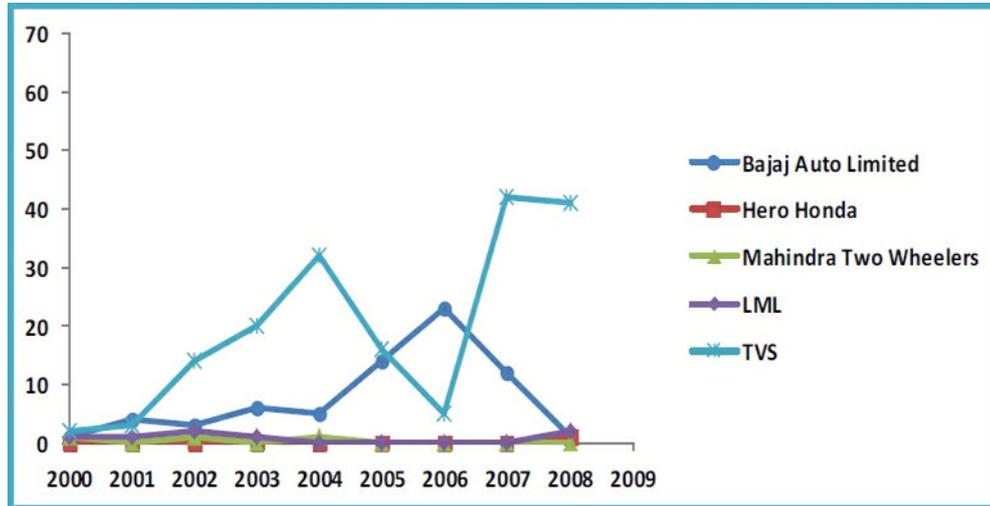


Exhibit 21 provides the yearly details of Patent filings. From the year 1988, TVS Motor Company has been consistently filing Patents. Patent activity of the company has witnessed a steady growth over the years until 2007-2008, when the total number of patents almost doubled from the earlier peak of 2003-2004. The history and consistency of patent filings has given an edge for the company in having a large portfolio of patents.

**Exhibit 21: Timeline of Patent filings – TVS Motor Company Limited**



*Exhibit 22: Filing Trends of Bajaj Auto Limited, Hero MotoCorp(Hero Honda), Mahindra Two-wheelers, LML Limited and TVS Motor Company Limited in India*



## Comment

- The methods used for filing suggest that TVS Motor Company is using various patent filing options very effectively.
- The filings in diverse classifications suggest that TVS Motor Company is exploring and encouraging research and development in several areas of technology.
- The Patents granted so far in India signify that TVS Motor Company's efforts to protect its IP are being fruitful.
- The yearly trend suggests that TVS Motor Company is building up its Patent portfolio. This also means the company is investing in its in-house IP development activities to enrich and showcase its technological capability through increased number of Patent filings.
- Most of the patent applications have been filed in the last two years. As it takes about three to five years from the date of filing for the patent to be granted, a large number of the filed applications are probably close to being granted. This will cause a dramatic increase in the number of patents granted to TVS Motors Company in the near future.

## Capsule

- *TVS Motor Company has 179 Patent filings in India. Among these, the company has used the PCT route for 22 patent applications.*

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- *TVS Motor Company has filed patents in a diverse range of categories with "Engines", "Mechanical Elements" and "Transport" being the major categories. 15% of its applications in India are in the category of "Engines"; 14% are in the category of "Mechanical Elements" and 50% are in the category of "Transport".*

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- *TVS Motor Company has 75 granted patents while 104 applications are in Patent Pending status.*

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- *The company has long understood the importance of IP creation and protection and has consistently followed it up with vigorous activity on the ground. The IP creation activity has kept pace with higher volumes and market demands of the two wheeler sector in the liberalised Indian economy.*

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## General Comments

- The above trends indicate that TVS Motor Company is very active in its Intellectual Property creation and protection in India. This is an indication of its thrust on promoting in-house research activity within the company.
- In the past two years, TVS Motors Company has clearly been focusing on innovation and on creating IP wealth with a remarkable increase in the number of Patent filings. It is also using various patent filing options including the PCT route.
- Bajaj Auto Limited has a robust patent portfolio in India. It has made significant beginnings in other countries too with China being the second important market after India. However considering the growth both in terms of volume and turnover, a more focused IP activity would be a great boost in expanding its operations geographically.
- The other companies in this report - Hero Honda, Mahindra Two-wheelers and LML Limited – are lagging behind TVS Motor Company as well as Bajaj Auto Limited and need to urgently ramp up on Innovation and IP development. Hero Honda, being the largest two wheeler manufacturer in the world, needs to create a focus on IP development and protection to sustain its growth momentum and its consistent leadership position in future. It first has to think of innovation locally and that would give it an opportunity to think of basic IP awareness starting to put into place. Now that the company is on its own in its innovation efforts due to the split in partnership with the Honda group, it is both a challenge as well as an opportunity for the number one two wheeler company in the world to summon its strengths in creating new IP and innovation to cater to a global market.
- None of the companies considered had 'Triadic patents'. The 'Triadic patents' are a series of corresponding patents filed at the European Patent Office (EPO), the United States Patent and Trademark Office (USPTO) and the Japan Patent Office (JPO), for the same invention, by the same applicant or inventor. Triadic patents form a special type of patent family.



## Conclusion

The study concludes that major Indian Automobile companies have started focusing on Innovation and Intellectual Property creation. However the number of patents filed is rather limited and needs to accelerate.

This study has brought out the insights of Patent portfolio of top five Indian Automobile companies which would pave the way for understanding their respective technological advancements and their Intellectual Property enforcement capabilities related to Patents. TVS Motor Company is leading the way in IP creation and protection with a greater awareness of the importance of IP in the globalised business scenario. But the Patent Portfolio is confined to the domestic market. Bajaj Auto Limited has a robust Patent Portfolio and has started spreading it beyond the domestic market with an important presence in China followed by USA, Egypt and Singapore. Other companies have a thin presence in the Patent filing area and may need to focus on this important area as technology will be the chief driver of performance in the future.

“ *Necessity is the mother of all inventions, but  
Patent Right is the father.* ”

- Josh Billings

Travel Writer, Poet, Essayist, Lecturer, Journalist



## Appendix

1. Royalty Payment in Automotive Sector - A Snapshot
2. International Trends in Two-wheeler Innovation
3. An Insight on TVS v. Bajaj Patent Dispute

## Royalty Payment in Automotive Sector - A Snapshot

Technology transfer and royalty payments are one of the most important issues under patent strategy. On the one hand innovations are driving change in the automobile sector and on the other technology transfer and licensing are becoming thornier, resulting in the break-up of collaborations and joint ventures. The trend is decidedly shifting towards having in-house R&D set ups in lieu of having a technology transfer agreement with a technology leader.

Royalty payments generally comprise of two components: one covering the basic license fee which could run into millions of dollars and the other, for annual royalty amount that is generally in the range from 0.5% to 5% and varies depending upon the agreement up-to an unsettling 10% or even higher.<sup>9</sup> They can exert a recurring pressure on the bottom-line of any company and any disputes regarding the new technology between partners can have repercussions on the share price value of the licensee. A case in point is the recent break- up of the partnership between Hero group and Honda Motor Corporation who were the partners in Hero Honda. Despite being partners for over a quarter century and a revised agreement on technology transfer till 2014, the two partners could not get along any longer mainly on account of royalty payment issues. Royalty at 2.6% of total revenues which Hero Honda had to pay to the technology provider Honda Motor Corporation was seen as the most impelling factor in the break up combined with the reluctance of the technology leader in sharing the latest technology. The near total dependence of Hero Honda for technology on the overseas partner and the moratorium on expanding sales in countries where Honda had a presence prevented Hero Honda from leveraging its position as the largest Two- wheeler company in the world in terms of geographical expansion and export earnings. The two wheeler segment has come a full circle in terms of its development. Starting as joint ventures, all the leading two wheelers were present in India till mid 90's. JVs' include Bajaj – Kawasaki, Hero-Honda, TVS-Suzuki, LML-Vespa, Escorts – Yamaha and the rest. In the current state, excepting for Hero-Honda collaboration, rest of the competitors had become free long while back. All the competitors are independent and have grown up to have their own core technology being developed. This is one primary reason for a skewed approach to the role of patents in the Indian two wheeler segment.

Even in the other important segment of automobile sector, the passenger car segment, Maruti Udyog Limited has similar near total dependence on the overseas technology major, Suzuki Motor Corporation. The royalty Maruti has to pay Suzuki is increasing year by year mainly on account of the new models that are being released by the most popular auto maker in India. Maruti Udyog Limited paid Rs. 1018 crores in royalty in 2009-2010 as against Rs. 680 crores in 2008-2009 an increase of 50%. This resulted in a flat reduction in Profit After Tax (PAT) of 20% for Maruti and the amount was more than 5% of all its sales. Maruti's latest strategy is to have a state of the art innovation centre where over 1000 engineers would be engaged not only to cater to the home requirement in R&D but to become the innovation hub for Suzuki itself in the entire world.<sup>10</sup>

Looking into the future, it appears that though the Indian companies now might have the cash reserves to buy up technology, with the recession hit western world on the road to fast recovery, they would be subject to severe competition in terms of technology. So the surplus may run out in this new level playing field quickly and technology might determine the edge with which the auto companies fare in the global market place.

Further there is a new found awakening in the rest of the world as to the R&D potential of India and off-shoring the R&D to India is the newest cost saving device among the technology companies. According to a survey, the world saved \$14 billion in 2009-10 by off-shoring R&D to India.<sup>11</sup> With its ample technical manpower and global competitive edge, India is poised to become the hub for R&D for various sectors, and not only for the Automobile sector. It seems we are past the age of royalty payment to the technology partner in a joint venture company but in the new age of in-house innovation activity on a vigorous pitch.

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<sup>9</sup> Intellectual Property Research Associates Inc. USA. Royalty Rates for Technology, 4<sup>th</sup> Edition.

<sup>10</sup> The Economic Times, 27<sup>th</sup> Dec 2010, R&D spending, Searching For Scale

<sup>11</sup> Zinnov Management Consulting, R&D Operating Costs in India 2010 study

## International Trends in Two-wheeler Innovation

*"Harley-Davidson is committed to protecting its intellectual property rights in China and the rest of the world," Steve Wasser, Managing Director of Harley-Davidson Asia Inc. (Source: SIPO 2009-04-07)*

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Innovation in the two wheeler segment in India so far is largely confined to traditional lines with consumer needs alone being the area of large number of innovation efforts. It is yet to take off on the international lines which are where looks, performance, fuel efficiency and futuristic needs are being taken care of. The following trends can be discerned broadly in the two wheeler segment on a global level.

1. Electrically driven motor bikes or e-bikes are the next big thing to happen in the two wheeler landscape. They are believed to have the same revolutionary impact on the market that the four stroke technology had in terms of noise and pollution reduction. Whereas the four stroke engines reduced the emission levels to a large extent, electrical two wheelers are going to eliminate it altogether. Developed countries like the USA and Japan have found them to be very popular. China is the biggest market for the indigenous electrical variety of two wheelers with over 20 million sold every year.<sup>12</sup> The number of electric two wheelers is going to increase rapidly in future because of the environmental reasons as also the easy maneuverability they provide. A study puts the total sales of electrical two wheelers' demand at 466 million between 2010 and 2016 worldwide.<sup>13</sup>
2. Alternative fuels like propane (the main ingredient of LPG, Liquefied Natural Gas), ethanol that can be extracted from grain, methanol that can be manufactured from renewable sources and biodiesel that can be produced from plant sources are the areas of alternative fuels that are being worked upon. Brazil leads the way in this area of research and is becoming a hub of innovation in this area. Oil majors like British Petroleum, Shell etc. are concentrating on Brazil in a big way.
3. Engine technology is another area where large number of innovations can take place mainly because of the need for higher fuel efficiency as well as adapting to newer alternative fuels. Addition of superbikes as a distinct category of emerging bike segment requires newer engine design.
4. Fancy PTWs (Powered Two Wheelers) are the next emerging trend with the developed world taking a lead in innovation of these new designs. Some of these are bare boned motor bikes, shell covered motor bikes, foldable bikes etc.
5. High performance power bikes are the in- thing in India too, with Suzuki's Hayabusa being a prominent player. This segment is concentrated upon the leisure and fun segment and is targeted at the youth.

6. Another important area of two wheeler innovation is the safety and comfort segment, with systems like ADAS (Advanced Driver Assistance System) and IVIS (In Vehicle Information System). ADAS can alert the rider with speed alerts, curve speed warning, Frontal collision warning etc. IVIS applications are e-call; the system that can call helpline in case of a crash, tele-diagnostics that can monitor vehicle functioning, navigation and route planning applications. Both ADAS and IVIS were given a lot of importance during the last decade in the four wheeler segment but yet to be applied to the two wheeler segment opening up new avenues for innovation in Two-wheelers.

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<sup>12</sup> University of California Transportation Centre, Fall 2010, ACCESS #37

<sup>13</sup> [www.pikereaserch.com](http://www.pikereaserch.com)

## An Insight on TVS v. Bajaj Patent Dispute

### Case Introduction:

The TVS-Bajaj imbroglio that started in September 2007 and still not completely resolved is one of the most interesting in the IP case law in the recent years.

In August 2007, TVS Motors unveiled *TVS Flame*, a bike that promised to satisfy both the fuel efficiency & power delivery conscientious consumers, thanks to its two spark plugs and CCVTI engine technology. This triggered a response from its competitor Bajaj Auto, who came out in public describing the technology to be a direct infringement of its already patented DTS-i technology and said that it will proceed with legal action to restrain TVS from manufacturing the engine. Following this, TVS Motor under Section 105/106 of Patents Act, 1970, filed for a decree of declaration of non-infringement, groundless threat and consequential injunction from Bajaj Auto and also claimed for compensation due to defamation caused by Bajaj's remarks. Bajaj Auto filed for a dismissing of the suit, under Section 108 of Patents Act on the basis that TVS did not abide by the pre conditions before filing for a suit of declaration of non-infringement and hence holds no right to question the validity of the patent. Following this, in February 2008, Madras High Court granted an injunction against TVS Motors restraining it from manufacturing, marketing & retailing TVS Flame until the dispute is resolved. This judgment was based on the fact that, novelty in Bajaj Auto's patented technology is proven considering it has marketed successfully its product[Pulsar brand of motorcycles] in large extent without any objection and for long duration of time. Hence, at this point TVS Motor has a prima facie infringement of Bajaj Auto's patent.

### Case Discussion:

Let us consider the case through the following questions:

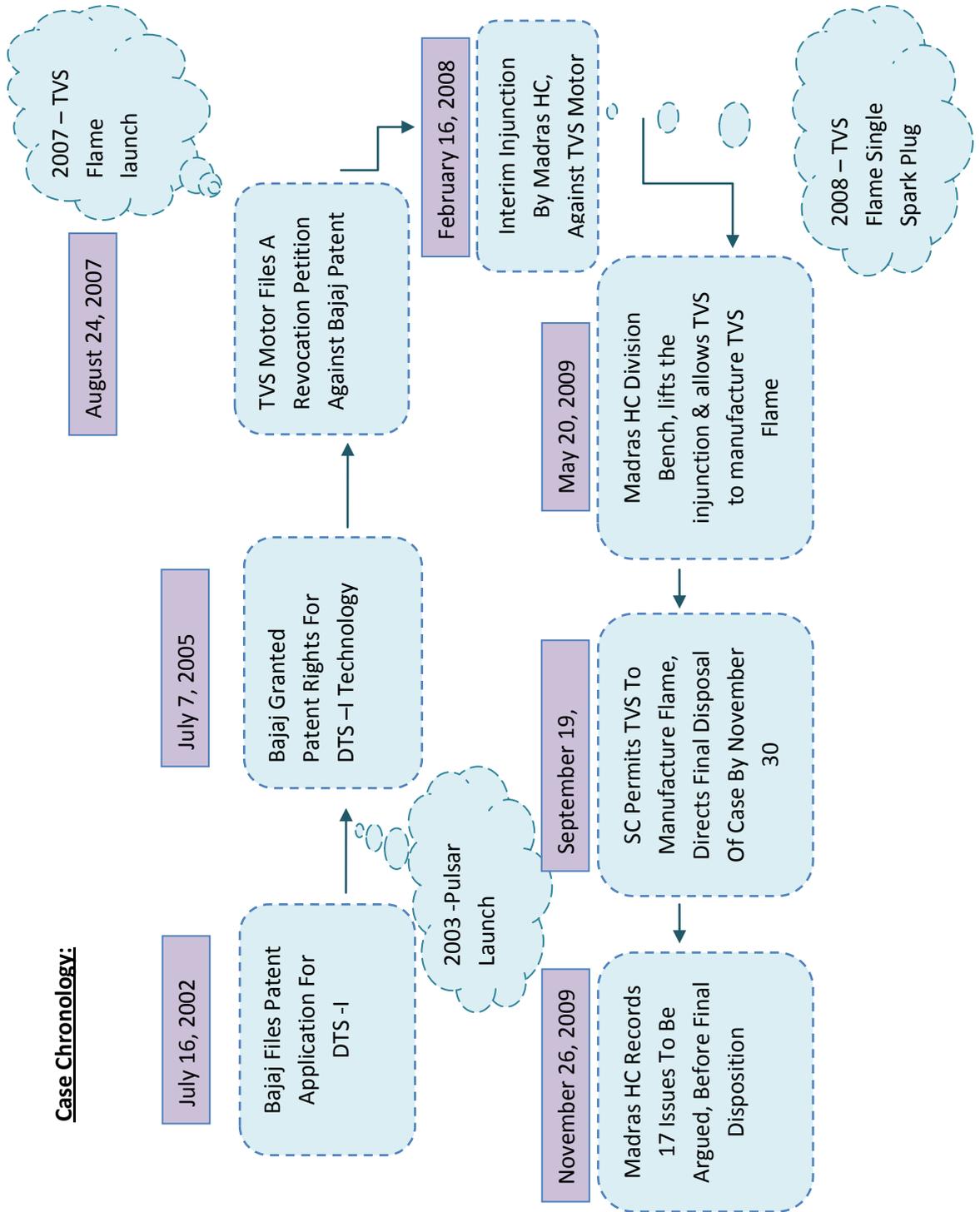
- a) Did TVS Motor prima facie infringe upon Bajaj Auto's patent [US 195904]  
Also, as a pre-requisite to prove infringement, the next question arises
- b) Whether Bajaj Auto have a valid patent claim on dual spark plug technology

The Court first made an attempt to understand the Internal Combustion[IC] engine technology and concluded that the following features as claimed by Bajaj in its patent are infringed upon directly by TVS Motor

- i) Small displacement engine, viz a viz cylinder bore diameter of 45-70mm
- ii) Combustion of lean air fuel mixture
- iii) Using a combination of two spark plugs to ignite the lean air fuel mixture at a pre determined instant

A direct infringement was cited, since TVS engine was a small displacement engine attempting to burn lean air fuel mixture using two spark plugs.

**Case Chronology:**



TVS Motor took defence by citing the following documents, challenging the novelty of Bajaj's patent claim:

- a. US 4534322 – Patent held by HONDA till August 2005 for “Arrangement for insertion of spark plugs in cylinder head”.

This patent granted on 13.08.1985, was on a combination of two spark plugs in a three valved cylinder which is exactly the construction of TVS Flame engine. This patent went into public domain on 13.08.2005. It is to be noted that, but for the third valve, the Bajaj patent filed on 16.07.2002 [period when Honda patent was still in force] was a replica of the Honda technology. TVS pointed out here, the amendment Bajaj had made in its claim regarding the complete specification. The original claim in the patent application filed “*An improved internal combustion engine for efficient burning of lean air fuel mixture used in engines working in four stroke principle, characterized in that said IC Engine comprising a pair of spark plugs....*”

was reduced to

*“An improved Internal Combustion Engine working on four stroke principle, having two valves per cylinder for efficient burning of lean air fuel mixture used in engines where the diameter of cylinder bore ranges between 45 mm and 70 mm characterized in that said Internal Combustion Engine comprises a pair of spark plugs”*

In general terms, the original specification was plug-centric but the amended specification was valve-centric. This leads to a conclusion that Bajaj had made the amendments after realizing the restriction imposed by the Honda patent and restricted itself to a two valve cylinder. Thus, this amounted to inconsistency in subject matter claimed. The Court although dealt this by stating what Bajaj had done was only a refinement of construction and not a change in patentable subject matter, which is in accordance with Section 11, Patents Act.

Bajaj Auto in its defense argued, Honda patent did not have any limitation on the bore diameter of the cylinder and since their claim was more specific [restricted to bore diameter of 45mm-70mm], it did not infringe on the Honda patent. Now the question here is, whether a patent granted earlier to a technology with no limited scope of specification excludes patentable subject matter with smaller specifications in a similar/same technology. This in my opinion is very subjective.

- b. US 5320075 – Patent held by Chrysler for “Internal combustion engine with dual ignition for a lean burn”.

This patent filed on March 10, 1993 also does not have any clear indication of the bore size in which the dual spark ignition is used. This however substantiates that use of two spark plugs to burn a lean air fuel mixture existed prior to Bajaj's claim for the same.

- c. US 6250146 – Patent held by AVL, Austria for “Four-stroke internal combustion engine with at least two inlet valves”.

This patent held by AVL was licensed to TVS, proves that the third valve in the cylinder is not a mere ornamental addition. In fact we can understand the implication of the third valve and how the two technologies [CCVTI and DTS-i] differ considerably if we understand the engineering fundamental involved in them.

In general, there are several ways to improve combustion characteristics in an IC engine. Both the technologies discussed here are aimed at achieving the same, to burn the fuel more efficiently and reduce exhaust emissions. Bajaj in its patent application has clearly explained the advantage of using two spark plugs located preferably diametrically opposite to each other to enable better controlled ignition and lesser time for spark travel during combustion. Also, the merits of using a twin spark plug to burn a lean mixture of fuel and air is listed as an advantage. The novelty also lies in the usage of sleeve to protect the spark plug which will have exposure to lubricating oil. It is important to note here that, out of the four patents cited in the International Search

Report in the PCT application, three talk about inventions in the sleeve and only one about the use of two spark plugs. On the other hand, CC-VTI developed by AVL, which is used by TVS in its engine is about even combustion of fuel by altering the air-fuel mixture received from the 2 intake ports. Normally, there is one intake and one exhaust port in a small displacement IC engine. The technology of using two intake ports enables swirl [circumferential motion of charge within the cylinder] and tumble [charge movement directed towards axis of the cylinder] to take place simultaneously, such that the combustion is efficient for both lean and rich air-fuel mixtures. Thus, it is clear that the point of emphases is different in the two technologies.

Nevertheless, the Single Judge bench ruled in favor of Bajaj Auto relying primarily on the market value gained by Bajaj Auto's product [Bajaj Pulsar DTS-i] to substantiate prima facie infringement. The court was satisfied with the fact that Bajaj Auto's product has gained significant market presence, and under section 48 enjoys the right to prevent third parties from using the patented technology. The court recorded that prima facie infringement was proved owing to the success of the product for over a period of five years in the domestic and export market. The fact that TVS Motor had been silent on the patent issue for over four years and had filed for a revocation under section 64 only six days prior to launch of its product went against them. Also, it was recorded that the balance of convenience is in favor of Bajaj Auto. An interim injunction was ordered against TVS Motor, to stop the manufacture, marketing and sales of its product TVS Flame.

Following this, TVS appealed before a Division Bench of Madras High Court. The Division Bench considered all the arguments and established that Bajaj Auto has not been successful in proving prima facie infringement of its patented DTS-i technology. The Division bench, citing the technological background behind the products observed that while Bajaj Auto's invention is plug-centric in nature, TVS Motor has been valve centric in developing its technology. The Division bench overruled the Single Judge order and reversed the injunction granted against TVS Motor.

Bajaj Auto aggrieved by this, appealed in the Supreme Court on the withdrawal of the injunction. The Supreme Court reiterated the stand of Division Bench, citing that TVS Motor is entitled to the sale of TVS Flame in its original form but shall maintain an accurate record of the domestic and international sales of the product. The Supreme Court also asked the Madras High Court to appoint a receiver in this connection.

Additionally, the Supreme Court cited provision to Order XVII, Rule 1(2) of the C.P.C which states that when the hearing of the suit has commenced, it shall be continued from day-to-day until all the witnesses in attendance have been examined, unless the Court finds that, for exceptional reasons to be recorded by it, the adjournment of the hearing beyond the following day is necessary. It asked the Madras High Court to settle the suit on or before November 30<sup>th</sup>, 2009.

In accordance to Supreme Court, on 25 November 2009, the Madras High Court recorded 17 issues (9 moved by TVS, 8 moved by Bajaj) to be heard for the final settlement of the dispute. The case then was at a standstill, over the "Right To Begin" issue. In October 2010, the Madras High Court division bench observed that asking Bajaj Auto to lead the evidence to prove infringement would be prejudicial. In an elaborate judgement the Court reasoned out that TVS Motor who had filed for declaration of non-infringement should "begin first". The key observations of Court's judgement are as follows:

The Patents Act does not indicate that the burden of proof is on the defendant to prove infringement, in case of a suit for declaration of non-infringement. Hence, the plaintiff [TVS Motor] should produce evidence first.

TVS had filed a suit against Bajaj in the Bombay High Court and then followed with a suit in Madras High Court. The Court recorded that TVS admitted to filing the earlier Bombay High Court suit, and hence it was their duty to establish the cause of action in Madras Court. Asking Bajaj to lead evidence would be pre-judicial.

In case of two suits with inextricably inter-linked claims, a joint trial is justified. In such a joint trial, the trial court has the discretion to order who should lead evidence first. The normal practice is to open the case by plaintiff.

To quote the judgement on per se

*"The primary burden was on the plaintiff to prove their case. It is true that the defendant has subsequently filed a suit praying for a decree of injunction based on their patent. When the plaintiff has taken a substantial contention that their new product has nothing to do with the patent obtained by the defendant, it was for the plaintiff to produce materials so as to enable the Court to grant a decree in their favor. The fact that the defendant has filed a subsequent suit would not absolve the plaintiff from proving their plaint averments. In fact, the learned Judge has stated that the very issue relates to infringement. It was only the plaintiff who has come to the Court at the first instance with an action that the threat originated from the defendant, was a groundless threat, and that their product has nothing to do with the patent obtained by the defendant.*

*Therefore, the plaintiff should have been directed to lead evidence at the first instance. In case the defendant wants to get a decree as prayed for in C.S.No.1111/2007 they have to show that the vehicle manufactured by the plaintiff under the brand name TVS Flame was an infringement of their patent. Therefore, the burden lies on both the parties to prove their respective contentions. However, we are concerned only with the limited issue as to who should begin first. Since the suit filed by the plaintiff was a suit for declaration, consequential injunction and damages and in the absence of an order for joint trial, the learned Single Judge should have directed the plaintiff to lead evidence at the first instance. The direction to the defendant to begin was therefore, contrary to the scheme of civil jurisprudence. Hence, we are constrained to set aside the order passed by the learned Single Judge." The final disposition of the case is still awaited, with the case still at Madras High Court. Both Bajaj Auto and TVS Motor are yet to conclude their arguments, with the court directing TVS Motor to let in the evidence first (Right to Begin).*

### Effect on Market Dynamics:

Considering the business implications of the case, it is believed that TVS Motor incurred a severe sales loss to the tune of 1 billion US \$ for the year 2008-2009, in addition to the non repayment of the product development costs incurred. The stock price of TVS Motor also witnessed a steady decline during the calendar year 2008 witnessing a record low of 11.10INR in Dec 2008 followed by 7.52 INR in January 2009. The stock prices post January 2009 increased steadily, ending the year with 41.08 INR [on March 2010]. We should note here that TVS Motor also suffered a loss of goodwill in the market, reflected by the subsequent failure of TVS Flame [the single spark plug version] in the market. The company also took a major hit in its market presence since TVS Flame was considered to be its prime product in the executive segment [125cc-150cc]. In the highly competitive two wheeler market in India, it is very clear that failure of a single product especially in the high volume executive segment is highly detrimental to a company's business results.

### Conclusion:

In conclusion, this case highlights the importance from an Original Equipment Manufacturer (OEM) perspective to carefully analyze and protect its technology before its launch. The legislative system should keep in mind, as highlighted by the Supreme Court, that in cases involving IP it is important that once the hearing of the suit is commenced, it shall be continued on a day-to-day basis until all the witnesses have been examined, unless for exception all reasons where an adjournment is necessary. The apex court's observation is highly notable in this regard, considering the absence of exclusive IP courts in the country.

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2. Article "Bajaj-TVS Feud-The Judgement" dt March 22, 2008 ; "Bajaj – TVS Patent Dispute" dt February 10,2008 from [www.spicyipindia.blogspot.com](http://www.spicyipindia.blogspot.com)
3. News Bulletin on [www.psalegal.com](http://www.psalegal.com) titled "The Bajaj Auto-TVS Motors patent controversy" dt January 2010
4. News article references as below :  
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<http://www.thehindubusinessline.in/2008/02/17/stories/2008021751350100.htm>

## Bajaj Auto Limited List of Filings

### India

#### Civil Engineering

Sl No	Patent/Application No	Title of Invention	Status
1	1406/CHE/2008	Method of Applying Graphics To Vehicles And Vehicle Accessories	Published
2	157587	Locking Arrangement For Seat And Side Cowls In Two Wheeler Vehicles Particularly For Motor Scooters	Granted
3	158394	A Locking Arrangement For Locking Components Such As Spare Wheel, Oil Tank, Fuse Box, Petrol Tank, Battery And Tool Box of A Two Wheeler Motor Vehicle.	Granted
4	158755	Combined Locking Devices For Steering And Ignition Systems of Motor Vehicles	Granted

#### Control

Sl No	Patent/Application No	Title of Invention	Status
1	159082	An Improved Power Transmission System For Motor Vehicles	Granted
2	48/MUM/2006	Control Switches For Automotive Vehicles	Published

#### Electrical machinery, apparatus

Sl No	Patent/Application No	Title of Invention	Status
1	288/MUM/2006	A System For Protecting Voltage Sensitive Vehicle Components	Published

## Engines

Sl No	Patent/Application No	Title of Invention	Status
1	00822/MUM/2003	An Improved Integrated Drive System Used In Electrically Operated Road Vehicle	Published
2	1015/MUM/2005	An Improved Regulator For Automotive Vehicles Using Gaseous Fuels	Published
3	223577	Throttle Opening Sensing System	Granted
4	1352/MUM/2005	Choke Control Device For Vehicles Using Handle Bar As Steering Control	Published
5	1354/CHE/2006	An Electric Circuit In An Automotive Vehicle	Published
6	1494/MUM/2005	Engine Safety Control Switch Circuit	Published
7	1582/MUM/2005	Fuel Supply Systems For Gas Powered Vehicles	Published
8	1756/CHE/2007	An Improved Internal Combustion Engine	Published
9	1847/CHE/2006	Method And System For Sensing Oil Level	Published
10	1986/MUM/2006	Method And Unit For Controlling An Engine Pump	Published
11	157582	A Magnetic Pickup For An Electronic Ignition In Internal Combustion Engine	Granted
12	157821	Two Wheeler And Three Wheeler Motor Vehicles Having An Engine Located Within The Body of The Motor Vehicle	Granted
13	307/MUM/2006	An Internal Combustion Engine Having Dual Fuel Supply	Published
14	316/MUM/2005	A Locking Mechanism For The Choke Lever of A 2 Or 3 Wheeled Vehicle	Published
15	33/MUM/2006	An Improved Internal Combustion Engine	Published
16	34/MUM/2006	Rocker Arm Assembly For An Internal Combustion Engine	Published
17	157826	Improvements In Or Relating To The Charge Intake Device of Two Stroke Petrol And Like Engines Having Electric Spark Ignition Systems	Granted

18	39/MUM/2006	Internal Combustion Engine With Continuously Variable Transmission	Published
19	40/MUM/2006	Internal Combustion Engine With Improved Forced Air Cooling	Published
20	196486	An Improved Oil Gear Pump For Lubrication of Parts of Internal Combustion Engine	Granted
21	196488	A Fuel Delivery System For Petrol Driven IC. Engine	Granted
22	195904	Internal Combustion Engine With Improved Combustion Characteristics	Granted
23	730/CHE/2007	An Improved Throttle	Published
24	784/MUM/2005	Internal Combustion Engine With Improved Ignition Characteristics	Published
25	822/MUM/2003	Compact Drive System For Electrically Operated Road Vehicles	Published
26	828/CHE/2007	Engine Oil Filter	Published
27	166903	A Two Stroke Internal Composition Engine	Granted
28	970/MUM/2006	Variable Valve Timing Assembly For A 4-Stroke Internal Combustion Engine	Published

### Environmental Technology

Sl No	Patent/Application No	Title of Invention	Status
1	1279/CHE/2006	An Exhaust Chamber And Method of Assembly	Published
2	2625/CHE/2007	A Silencer	Published
3	183452	An Integrated Sintered Light Weight Wear Resistance Cashaft For Use In Small Engine	Granted
4	204575	Protection Device For Bendix Drive of Stater Motor For 2 And 3 Wheeled Vehicles	Granted
5	231498	An Exhaust System For Improving Torque Characteristics of A Single Cylinder Four Stroke Spark Ignition Engine	Granted

### Furniture

Sl No	Patent/Application No	Title of Invention	Status
1	413/MUM/2005	Storage Box Illuminating Device For Vehicles	Published

### Handling

Sl No	Patent/Application No	Title of Invention	Status
1	965/MUM/2005	Mounting Structure For LPG Cylinder On Rear Engine Three Wheeled Passenger Vehicle	Published

### Machine Tools

Sl No	Patent/Application No	Title of Invention	Status
1	729/CHE/2007	Fuel Tank With Storage Compartment In A Motorcycle	Published
2	945/CHE/2007	Method of Manufacturing Gear	Published

### Measurement

Sl No	Patent/Application No	Title of Invention	Status
1	1692/CHE/2006	An Automotive Sensor	Published
2	208578	An Improve Ignition System For 2 or 3 Wheeled Vehicles	Granted
3	241/CHE/2007	Method And Apparatus For Measuring Dimensions of Components	Published
4	184623	Deceleration Fuel Cut-Off System	Granted
5	791/MUM/2004	A Device For Determination of Axial Tension In Wheel Spokes of Vehicles	Published

### Mechanical Elements

Sl No	Application number	Title of Invention	Status
1	159084	Improvements In or Relating To The Clutch of A Motor Vehicle, Particularly In Two Wheeled Motor Vehicles And Three Wheeled Motor Vehicles	Granted
2	198171	An Improved Positive Lubrication System For Clutch Plates	Granted
3	185676	Alternator Mounted on Crank Shaft of A Spark Ignition Engine	Granted
4	204963	Device for improvement in performance of gear train	Granted
5	234044	A multi spring vehicle shock absorber	Granted
6	227113	A gear shifting device for a two wheeled vehicle	Granted
7	236095/US7363832	Improved transmission system for scooters	Granted

### Organic fine Chemistry

Sl No	Patent/Application No	Title of Invention	Status
1	1540/CHE/2007	Method of boring and burnishing	Published

### Other Consumer Goods

Sl No	Patent/Application No	Title of Invention	Status
1	166077	Cover For Seats of Two Wheeler Motor Vehicles And Such Seats Fitted With Said Cover	Granted

### Thermal Processes and Apparatus

Sl No	Patent/Application No	Title of Invention	Status
1	1540/CHE/2007	Method of Boring And Burnishing	Published

## Transport

Sl No	Patent/Application No	Title of Invention	Status
1	00672/MUM/2003	Improved Gear Shifting System of Two or Three Wheeled Vehicles	Published
2	103/MUM/2005	Moving Structure For Fuel Tank And Oil Tank In Passenger Body of Automotive Vehicles Operating On Gaseous	Published
3	1280/CHE/2006	Auto Cancelling System of Turn Signal Indicators	Published
4	224219	An Electrically Operated Automotive Vehicle	Granted
5	221192	Pillion Footrest Actuating System For Two Wheeled Vehicles	Granted
6	1506/CHE/2006	A Flexible Loading Surface In A Two Wheel Vehicle	Published
7	166764	Flasher Unit For Flasher Direction Indicator of Motor Vehicles	Granted
8	2189/CHE/2006	Mounting Arrangement of Number Plate In A Motorcycle	Published
9	2238/CHE/2006	An Indication System In A Vehicle	Published
10	2345/CHE/2006	Torsional Vibration Damper For A Transmission System	Published
11	2446/CHE/2006	A Shock Absorber For A Motor Vehicle	Published
12	157822	An Improved Seat For Two Wheeler Vehicle.	Granted
13	166767	A Two Wheeler Motor Vehicle With Box At Front For Spare Wheel	Granted
14	2976/CHE/2007	A Transmission System	Published
15	322/MUM/2006	Method of Controlling Idling Speed In Vehicles With Dual Fuel Supply	Published
16	161597	A Split Handle Bar For two Wheeler And Three Wheeler Motor Vehicles	Granted
17	157824	Improvements In or Relating To A Concealed Arrangement For Securing A Spare Wheel In A Two Wheeler Such As A Scooter	Granted
18	157825	Improvements In or Relating To Front Wheel Suspension of Two Wheeler And Three Wheeler Motor Vehicles	Granted

19	361/MUM/2005	Turn Signal Indicator System For An Automotive Vehicle	Published
20	157827	Means For Mounting The Spare Wheel In Two Wheeler Motor Vehicles	Granted
21	157828	Front Mudguard of Motor Vehicles Having Single Steerable Front Wheels	Granted
22	414/CHE/2007	Fuel Supply For Dual Fuelled Vehicles	Published
23	54/MUM/2006	Storage Compartment For A Motor Scooter	Published
24	203646	An Improved Hand Operated Gear Shifting System In 2 or 3 Wheeled Vehicles	Granted
25	569/MUM/2006	A Vehicle Seat	Published
26	57/CHE/2007	Improved Cap For Fluid Tank In A Vehicle	Published
27	168782	Improved Lamp Circuit For Motor Scooters Motor Cycles And Three Wheeler Motor Vehicles	Granted
28	620/MUM/2006	Vehicle Frame And Method of Assembly	Published
29	204615	Improved In Steering System of 2 Wheeled Vehicles	Granted
30	740/MUM/2004	Electrically Operated Center Stand For Two Wheeled Vehicles	Published
31	802/MUM/2005	A Starter System of A Two or Three Wheeled Vehicle	Published
32	924/MUM/2005	A Split Frame of A Motor Cycle	Published
33	944/CHE/2007	Vehicle Frame Assembly And Engine Mounting Arrangement	Published
34	1034/MUM/2005	Mounting Structure for Fuel Tank and Oil Tank in Passenger Body of Automotive Vehicles Operating On Gaseous Fuels	Published

## USA

### Mechanical Elements

Sl No	Patent/Application No	Title of Invention	Status
1	236095/US7363832	Improved transmission system for scooters	Granted

### Environmental Technology

SI No	Patent/Application No	Title of Invention	Status
1	200580025898	An exhaust system for improving torque characteristics of a single cylinder four stroke spark ignition engine	Published

### USA Design Patent

SI No	Patent/Application No	Title of Invention	Status
1	USD533117	Motorcycle	Granted

### China

#### Engines

SI No	Patent/Application No	Title of Invention	Status
1	200780002230	An improved internal combustion engine	Published
2	200780000225	Internal combustion engine with continuously variable transmission	Published
3	200780000227	Internal combustion engine with improved forced air cooling	Published
4	200680024158	Internal combustion engine with improved ignition characteristics	Published

#### Mechanical Elements

SI No	Patent/Application No	Title of Invention	Status
1	200680020358	A multi spring vehicle shock absorber	Published
2	200380102566	Improved transmission system for scooters	Published

## Transport

Sl No	Patent/Application No	Title of Invention	Status
1	200680028890	A split frame of a motor cycle	Published



## Hero MotoCorp Limited List of Filings

### India

#### Transport

Sl No	Patent/Application No	Title of Invention	Status
1	1836/DEL/2008	Storage and Shipping System for Two Wheeled Vehicles	Published

## Mahindra Two-wheelers List of Filings

### India

#### Electrical machinery, apparatus

Sl No	Patent/Application No	Title of Invention	Status
1	452/MUM/2002	A new system, millage maximizer for use in variomatic driven two or more wheeled automobiles for optimum fuel economy	Published

#### Engines

Sl No	Patent/Application No	Title of Invention	Status
1	1030/MUM/2000	A new auto choke for carburetor for two or more wheeled automobiles	Published

#### Thermal processes and apparatus

Sl No	Patent/Application No	Title of Invention	Status
1	164926	A valve type device for reducing carbon monoxide content in exhaust gases from a spark-ignition petrol engine during idling and part throttle operation	Granted

#### Transport

Sl No	Patent/Application No	Title of Invention	Status
1	216023	Auto retractable type side stand for use in two wheeler automobile for safety	Granted

## LML Limited List of Filings

### India

#### Electrical machinery, apparatus

Sl No	Patent/Application No	Title of Invention	Status
1	222424	Interlocking side stand and gear change device for a two wheeler	Granted

#### Engines

Sl No	Patent/Application No	Title of Invention	Status
1	2279/DEL/2008	A device for lubricating clutch assembly of two wheeler vehicle	Published
2	2280/DEL/2008	Valve timing chain arrangement using an idler gear sprocket assembly in a four stroke engine for two wheeler application	Published
3	226075	"Air intake device for 4-stroke multi-valve spark ignition engine"	Granted
4	1082/DEL/2002	Air intake device for internal combustion engine	Published

#### Furniture

Sl No	Patent/Application No	Title of Invention	Status
1	217583	seating for two-wheeled vehicles	Granted

#### Transport

Sl No	Patent/Application No	Title of Invention	Status
1	1586/DEL/2003	Two wheeler leg guard with position lamp or direction indicators	Published

## TVS Motor Company Limited List of Filings

### India

#### Basic Communication Processes

Sl No	Patent/Application No	Title	Status
1	1093/CHE/2008	Electromechanical device	Published

#### Chemical Engineering

Sl No	Patent/Application No	Title	Status
1	242304	A method of manufacture of an electrostatically painted electrically non-conductive object	Granted
2	242303	A method of manufacture of an electrostatically painted electrically non-conductive object	Granted
3	242301	A method of manufacture of an electrostatically painted electrically non-conductive object	Granted
4	245777	Method of Simultaneously Painting, In the Same Batch, Steel, Aluminium and Plastic Components of Automobiles	Granted

#### Civil Engineering

Sl No	Patent/Application No	Title	Status
1	1120/CHE/2007	Shock absorber with helper spring	Published
2	784/CHE/2008	Adjustable control lever	Published

### Computer Technology

Sl No	Patent/Application No	Title	Status
1	2774/CHE/2008	A vibration generator system for fault indication in a motor vehicle	Published

### Control

Sl No	Patent/Application No	Title	Status
1	2758/CHE/2008	A device for indicating the state of activity of pre-selected equipment installed in a motor vehicle	Published

### Digital Communication

Sl No	Patent/Application No	Title	Status
1	504/CHE/2008	Cell phone ring detecting device	Published

### Electrical machinery, apparatus

Sl No	Patent/Application No	Title	Status
1	120/CHE/2007	Headlamp mounting arrangement	Published
2	1911/CHE/2008	A device for providing backlight of various colours on the instrument panel display of a motor vehicle	Published
3	716/CHE/2007	Method of packing battery pack in two wheelers	Published
4	246251	A vent valve for a bipolar battery	Granted
5	873/CHE/2007	A bipolar battery and a method of manufacture thereof	Published
6	888/CHE/2007	Protection of electrical drive system of a hybrid electric vehicle using relay	Published
7	241502	Dual power train for a motor vehicle	Granted

## Engines

Sl No	Patent/Application No	Title	Status
1	1457/CHE/2004	Engine for motorcycles	Published
2	1910/CHE/2008	A fuel tank with air vent provision for a motor vehicle	Published
3	2238/CHE/2008	A cam chain tensioner for a motor vehicle	Published
4	2312/CHE/2008	A device for removing the slack in cables used for the throttle hand grip, the throttle position switch and the carburetor in a motor vehicle	Published
5	2320/CHE/2007	Cylinder head assembly	Published
6	2446/CHE/2008	An automatic brake adjuster system for a motor vehicle	Published
7	2447/CHE/2008	A device for preventing the entry of water into the driver-area of a motor vehicle	Published
8	2820/CHE/2007	Gaseous fuel supply system	Published
9	295/CHE/2008	Power propulsion system for a hybrid two wheeler	Published
10	3118/CHE/2007	Engine for a three wheeler	Published
11	552/CHE/2008	Controlled ignition system	Published
12	661/CHE/2007	Lubrication system for an engine	Published
13	730/CHE/2008	A device for the utilization of exhaust gas energy of an IC engine	Published
14	731/CHE/2008	A device for the utilization of exhaust gas energy of an IC engine	Published
15	732/CHE/2008	A device for the utilization of exhaust gas energy of an IC engine	Published
16	733/CHE/2008	A device for the utilization of exhaust gas energy of an IC engine	Published
17	240792	A device for inspecting the keyway symmetry in the crankshaft of a motor cycle.	Granted
18	198636	A camshaft axial stopper with lubricating mechanism	Granted
19	201359	A lubricating system for the engine of a motor vehicle	Granted

20	216491	A cylinder head	Granted
21	242792	An auto decompression actuating mechanism for IC engines	Granted
22	242810	Auto decompression actuating mechanism	Granted
23	202144	A cowl fan the continuous variable transmission drive system of a motor vehicle	Granted
24	216700	An automatic device for providing a lean air fuel mixture to the engine of an automobile during deceleration	Granted
25	200994	An alternate system of throttle operated ignition control and display units for a two-wheeler	Granted
26	217002	An automatic choke system for an automobile	Granted
27	243872	Drive Arrangement of A Pump On A Variator Engine For Scooter Type Motorcycle	Granted

### Environmental Technology

Sl No	Patent/Application No	Title	Status
1	503/CHE/2008	Exhaust system	Published
2	677/CHE/2007	Chain slider for motorcycle	Published
3	241606	A process for the conversion of waste paint sludge into compost suitable for soil enrichment through micro-biological degradation	Granted
4	201639	An oil filter for the oil sump of the lubricating system of an automobile engine	Granted
5	207544	A detachable mounting arrangement for catalytic converter for all two-wheelers	Granted

### Furniture

Sl No	Patent/Application No	Title	Status
1	1753/CHE/2007	A mobile tea stall	Published
2	2773/CHE/2008	An adjustable backrest for a motor vehicle	Published

<b>3</b>	989/MAS/2002	A scooter type motor vehicle provided with a device for suspending articles below the control panel assembly of the vehicle	Published
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### Handling

Sl No	Patent/Application No	Title	Status
<b>1</b>	126/CHE/2007	Resting member for fuel tank cap	Published
<b>2</b>	659/CHE/2007	Mounting arrangement of torque link for the year swing-arm type two-wheelers	Published
<b>3</b>	210274	A motorcycle with storage compartment	Granted

### Machine tools

Sl No	Patent/Application No	Title	Status
<b>1</b>	240700	Arbor for machining operation	Granted
<b>2</b>	210704	A boring bar	Granted

### Materials

Sl No	Patent/Application No	Title	Status
<b>1</b>	2239/CHE/2008	A device for determining the reduced co2 emission from an electric vehicle as against the co2 emission from an electric vehicle as against the co2 emission from a standard petrol vehicle	Published

## Measurements

SI No	Patent/Application No	Title	Status
1	1441/CHE/2007	Balancer wheels for a motorcycle	Published
2	741/CHE/2004	Inertia brake dynamometer	Granted

## Mechanical Elements

SI No	Patent/Application No	Title	Status
1	1069/CHE/2007	A Gear Shifting Device For An Automotive Transmission System	Published
2	1208/CHE/2007	An Automated Manual Transmission System For A Motorcycle	Published
3	1211/CHE/2004	A Shock Absorber Mounting Structure On A Motor Cycle	Published
4	128/CHE/2007	Clutch Transmission Mechanism of A Two-Sheeler	Published
5	1368/CHE/2004	New Method of Inspecting The Keyways Symmetry In Crankshaft of Motor Cycle.	Published
6	1428/CHE/2004	Gear Shifting Arrangement	Published
7	1576/CHE/2008	Frame Structure of Two-Wheeled Vehicle	Published
8	2237/CHE/2008	A Mechanical Power Transmission System	Published
9	2311/CHE/2008	A Mobile charging Unit For A Motor Vehicle	Published
10	2445/CHE/2008	An Automatic Brake Adjuster System For A Motor Vehicle	Published
11	2925/CHE/2008	A Cone Clutch Operated With A Torque Ramp For Generating The Necessary Clamping Force Used In A V-Belt Based Continuously Variable Transmission System	Published
12	613/CHE/2007	Centrifugal Clutch	Published
13	78/CHE/2008	Vibration Damper Weights On Handle Bar	Published
14	217236	A Drive Mechanism For A Motor Vehicle	Granted
15	240803	A Gear Shifting Device For An Automotive Constant Mesh Transmission System	Granted

16	236594	A Synchro Gear And Synchro Ring For An Automotive Synchronmesh Transmission	Granted
17	198684	An Improved Clutch For An Automobile	Granted
18	200797	A Lock-Nut Washer With Metering-Hole	Granted
19	210227	Self-Spigotting Silent Gears For 2 & 3 Wheller Gearboxes	Granted
20	198829	A Stud Having A Spin Riveted Nut On One Side Thereof For The Wheel-Axle of Any Two-Wheeler And The Link	Granted
21	218894	A Dual Centrifugal Clutch System	Granted
22	1360/CHE/2004	A Drive Mechanism For A Motor Vehicle	Published
23	244461	A Shock Absorber Mounting Structure For A Motorcycle	Granted
24	245228	Stopper Gear Shift Cam	Granted

### Solar Energy

SI No	Patent/Application No	Title	Status
1	685/CHE/2008	A Device For Saving Fuel During Deceleration of A Motor Vehicle	Published
2	990/CHE/2004	"Secured Arrangement For Charging Connectors"	Published

### Surface Technology, Coating

SI No	Patent/Application No	Title	Status
1	214/MAS/2002	An Improved Surface Treatment	Granted

### Telecommunication

SI No	Patent/Application No	Title	Status
1	1208/CHE/2005	Remote Controlled System For Opening And Closing The Lid of Fuel Tank of Motor Vehicle	Published

## Transport

Sl No	Patent/Application No	Title	Status
1	1021/CHE/2005	Footrest Sleeve For A Motorcycle	Published
2	1084/CHE/2005	Combined Fuel And Oil Tanks For A Motor Vehicle	Published
3	1092/CHE/2008	Straddle Type Vehicle	Published
4	119/CHE/2007	Rear Cover of Handlebar	Published
5	121/CHE/2007	Shock Absorber For A Motorcycle	Published
6	122/CHE/2007	Frame Structure For A Motorcycle	Published
7	123/CHE/2007	Pillion Footrest Assembly	Published
8	124/CHE/2007	Handlebar Mounting Arrangement	Published
9	1247/CHE/2008	An Improved Control Circuit System For Electrical Devices And Actuation In Automobiles	Published
10	125/CHE/2007	Utility Box	Published
11	127/CHE/2007	Electrical Box For A Motorcycle	Published
12	127/CHE/2008	Throttle Position Sensing Module	Published
13	1283/CHE/2005	Hybrid Power System	Published
14	1429/CHE/2004	Illuminating Device Arrangement For A Scooter Type Vehicle With Storage Box Below The Seat.	Published
15	1459/CHE/2004	Ignition Lock Assembly	Published
16	1681/CHE/2008	A Continuously Variable Transmission System	Published
17	1687/CHE/2005	Cover Frame Locking Arrangement For A Motorcycle	Published
18	1707/CHE/2005	Motorcycle Headlight With Fairing	Published

19	1747/CHE/2005	Cover Frame For A Motorcycle	Published
20	1752/CHE/2007	A Tea Stall Mounted On A Vehicle	Published
21	1783/CHE/2005	Motorcycle Frame Structure	Published
22	1912/CHE/2008	A Clutch Actuation System For A Motor Vehicle	Published
23	215/CHE/2006	A Differential Lock System For An Automobile	Published
24	2236/CHE/2008	An Air Injection System Operative During Deceleration of An Automobile Engine	Published
25	2309/CHE/2007	A Device For Selecting The Range And Speed of An Electric Vehicle	Published
26	255/CHE/2005	A Gear shifting Mechanism For Automotive Synchromesh Transmission	Published
27	276/CHE/2007	Vibration Damper	Published
28	2821/CHE/2007	Power Train of A Hybrid Two-Wheeler	Published
29	2888/CHE/2008	A Pillion Footrest Assembly For A Motor Vehicle	Published
30	2889/CHE/2008	A Removable And Adjustable Backrest For A Motorcycle	Published
31	296/CHE/2008	Mounting Assembly For A Fuel Tank In A Three-Wheeler	Published
32	3074/CHE/2007	A Hands Free Footrest System For A Motorcycle	Published
33	343/CHE/2008	Hands Bar Assembly For A Vehicle	Published
34	433/CHE/2007	A Centre Stand For A Two Wheeler Motor Vehicle	Published
35	447/CHE/2008	Telescopic Front Fork of A Motor Cycle	Published
36	555/CHE/2008	A Trailing Arm With Anti Roll Bar Suspension For A Three Wheeler Motor Vehicle	Published
37	611/CHE/2007	Frame Structure of A Motorcycle	Published
38	612/CHE/2007	Pillion Handle of Motorcycle	Published

39	623/CHE/2007	Handle Bar For A Motorcycle	Published
40	628/CHE/2007	A Device For Securely Suspending An Article From A Vehicle	Published
41	645/CHE/2007	Mounting Arrangement of A Torque Link In A Motorcycle	Published
42	660/CHE/2007	Stand Mounting For Motorcycle	Published
43	664/CHE/2007	A Mechanical Anti-Lock Brake System For Front Wheel Application of Motor Vehicles, More Particularly, Two And Three Wheeler Motor Vehicle Application	Published
44	665/CHE/2007	A Mechanical Anti-Lock Brake System For Rear Wheel Application of Motor Vehicles, More Particularly ,Two And Three-Wheeler Motor Vehicle Application	Published
45	761/CHE/2004	Cone Clutch For Continuously Variable Transmission	Published
46	77/CHE/2008	Cover For An Engine	Published
47	806/CHE/2007	Decoupling Motor In A Hybrid Vehicle	Published
48	838/CHE/2008	Telescopic Front Fork For A Two-Wheeled Vehicle	Published
49	889/CHE/2007	Battery Charging System of An Automobile	Published
50	205193	A Gear Shift Interlock Mechanism For A Multispeed Synchromesh Transmission System	Granted
51	205199	A Gear Shift Device For A Synchromesh Transmission System	Granted
52	217234	A Drive Mechanism For A Motor Cycle	Granted
53	242788	Speedometer Assembly	Granted
54	240794	A Method of Manufacture of Fuel Tanks of Motorcycle	Granted
55	229700	Audible Warning Device For Side Stand Assembly For Two Wheelers	Granted
56	238506	A Foot Rest Bracket For A Motor Cycle	Granted

57	238939	Storage Facility For A Motorcycle	Granted
58	196308	Front Fork Outer Tube of Motor Cycle And A Method of Manufacture The Reof	Granted
59	200404	A Dual Purpose Accessory For A Two Wheeler Vehicle Serving As A Sari Guard And Also As A Carry Box	Granted
60	222301	A Theft Proof Alarm System For A Two-Wheeler Against Any Illegal Mobilization Thereof By Retracting The Centre-Stand And Comprising The Same For The Two-Wheelers	Granted
61	221867	A Theft Proof Alarm System For A Two-Wheeler Against Any Illegal Mobilization Thereof By Retracting The Parking-Stand And Comprising The Same For The Two-Wheelers	Granted
62	221865	An Integrated End Mould System Comprising Combined Ac Flasher & Regulator Units	Granted
63	200601	A Device For Strapping Articles To A Part of An Automobile For Securely Fastening Such Articles Thereto	Granted
64	201347	A Dual Purpose Accessory For A Two Wheeler Vehicle Serving As A Sari Guard And Also As A Carry Box	Granted
65	196282	An Automatic Mechanical Wear-Adjuster	Granted
66	242789	Adjustable Motorcycle Headlamp Fairing Assembly	Granted
67	201788	A Bag Rack	Granted
68	201633	A Toggle Link Device For Mounting The Engine of A Scooter Type Vehicle On The Frame Assembly	Granted
69	201642	A Front Panel Mounting Member For A Scooter Type of Motor Vehicle	Granted
70	210637	An Automatic Device For Boost Charging The Battery of An Automobile During Deceleration	Granted
71	206496	An Improved Seat-Ejector System For Hinge Type Seat of Two-Wheelers And Comprising The Same In Seat Assembly of Two-Wheelers	Granted
72	242791	Headlamp Fairing Assembly of A Motorcycle	Granted

73	201852	A Sub Frame Assembly For The Main Frame of A Scooter Type Motor Vehicle	Granted
74	216679	A Motorcycle With Protected Fuel Tank	Granted
75	202190	A Retractable Footrest Device For A Motorcycle	Granted
76	216643	An Oil Pump And Cam Chain Mounting Arrangement For Four Stroke Engine of A Scooter Type Motor Vehicle	Granted
77	216678	A Seat Latch Assembly For Scooter Type Vehicle	Granted
78	217203	A Constant Mesh Gearing System For An Automobile	Granted
79	221684	A Side Stand For A Motor Cycle	Granted
80	221862	An Automatic Device For Switching off The Ignition System of An Automobile Whenever It Comes To A Halt Over A Continuous Predetermined Period of Time	Granted
81	222497	A Storage Container For A Scooter Type Motor Vehicle	Granted
82	223254	A Motorcycle Incorporating A Device For Mounting An End Portion of A Fender Thereof	Granted
83	198397	A Scooter Having A Centrally Mounted Engine With An All Gear Transmission Means	Granted
84	221361	A Handle Bar Control Lever Assembly For A Motor Vehicle	Granted
85	1203/CHE/2004	A Foot Rest Bracket For A Motor Cycle	Published
86	1359/CHE/2004	A Drive Mechanism For A Motor Vehicle	Published
87	243394	Stand Device For A Motorcycle	Granted
88	243562	A Fuel Tank Inlet Cap Assembly For A Motorcycle	Granted
89	243983	Centre Stand For Two Wheelers	Granted
90	243985	Audible Warning System For A Side Stand Assembly On Two Wheelers	Granted
91	244258	Automatic Side Stand Retractor For A Motorcycle	Granted



## About Us

Innomantra Consulting Private Limited is a one-stop hub for full range of innovation solutions. Innomantra provides end-to-end solutions for clients focused on building a competitive position through innovation. We assist our clients in nurturing and managing product innovations and intellectual property in a systematic and effective manner. Our offerings span the entire spectrum ranging from promoting a climate and culture of innovation to the phase where commercialization of products/Intellectual property takes place. Innomantra™ actively leverages its global partners, with vast experience in the field of innovation, for its client engagements in India.

Our main areas of expertise are;

- (a) Innovation Management
- (b) Intellectual Property Management
- (c) Strategic Business Incubation

We develop processes and build specific interventions based on client requirements that are centered on innovation. In all three areas, Innomantra actively participates with the client right from the conceptualization stage to the implementation stage.

### What we believe

We believe that organizations can establish a sustainable competitive position through continuous innovation. This can be achieved through effective management of intellectual property, a customer focused product development approach, and a work environment that nurtures creativity.

Innomantra™ is closely working in collaboration projects with the finest innovation and Intellectual property organizations:

- Finnegan, USA, ([www.finnegan.com](http://www.finnegan.com))
- Cognistreamer, Belgium ( [www.innovationportal.com](http://www.innovationportal.com))
- Inpaqt, Netherlands ([www.inpaqt.com](http://www.inpaqt.com))
- The Desai Consultants, USA, ([www.desai.com](http://www.desai.com))
- Knowledge Dialogues-Hongkong ([www.knowledgedialogues.com](http://www.knowledgedialogues.com))
- S. Majumdar & Co, India ([www.Patentindia.com](http://www.Patentindia.com))



## Notes

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