

Mankame Automotive

"Our vision is to build the most reliable electric Sport-bike in the world that beats petrol powered motorbikes in their own field"



Short Summary,

We are an Indian start-up, developing what will be India's first electric Superbike named the EP-1, with a top speed of 250 km/h The bike will run more than 500 km on a single charge

We are Solving the Two of the biggest **Problems** Electric motorcycles currently face :

- Low Range Per Charge
- High Cost for less performance

We are Building the “OnePlus” Of the Motorcycle market

Target Market

- Our initial focus will be on South Asian, high-income urban millennials. India alone has more than 30 million* people in this segment, but this number can be greatly expanded to include tech savvy individuals of any age. The segment can be characterized as progressive in many aspects of social and secular life, and the target market are part of the trend of conscious consumption, and are media hungry technophiles. Mankame EP-1 is designed to be perfect for the daily commutes of young professionals, or young families wanting a High Performance Electric Sportbike with low cost, a low environmental impact, and with an enhanced user experience. Shortly after first deliveries are made in India we intend on entering European markets as well as Canada, as this demand will vastly exceed that of Europe in a short period of time, but first relies on Mankame becoming an established Indian brand.

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Introduction to Electric Motorcycles and the Market support

Electric Motorcycles are going to rule the
World!

Lets See Why.

Until a few years ago electric motorcycles seemed to be an idea of science fiction, but today they are a real product of automotive industry. It took decades to embrace this progress.

Technology has made giant steps in the production of two-wheeled vehicles equipped with an electric motor

HOW ELECTRIC MOTORCYCLES WORK

The operating principle of an electric motor is quite similar to that of a gas engine. In both cases motorcycles are powered by mechanical energy, but only in one case are they powered by rechargeable batteries.

Electric vehicles run on electricity, that causes a pole into the motor to spin it. It isn't so much a fuel-powered motor but rather a battery that can travel a range of 40 to 100 miles between charges.

Generally battery life in a motorbike electric ranges from 2 to 10 years, after which it must be replaced. During this time, the battery can be recharged simply by plugging into a household outlet.

Just for the particular operating system, electric motorcycles are perfect for driving in the city: thanks to stop-start nature of urban traffic, the battery could be recharged by regenerative braking, thus allowing it to last longer.

[SKIP](#) -

ADVANTAGES OF ELECTRIC MOTORCYCLES

Like all electric vehicles, even motorcycles boast environmental benefits. We know that electric motors are cleaner than gas engines, because they don't use fuel and emit pollutants into the atmosphere.

This is surely the main reason for buying an electric motorcycle, but we can also recognize other advantages linked with the vehicles.

Electric motorcycles are quieter than others, because they don't produce engine noise, being powered by electricity.

Beyond economic savings and respect for the environment, electric motorcycles are very efficient: the motor manages directly the acceleration so riders don't need to worry about changing gears while they are riding.

INCENTIVES FOR ELECTRIC MOTORCYCLES

In recent years the sale of electric motorcycles has increased considerably.

The possibility to save on fuel consumption and the non-emission of pollutants has made them a widespread mode of transport around the world.

As these vehicles have just been launched on the market, purchase costs are not so low. That's why the governments have decided to offer public incentives to future buyers.

To increase the sale of electric motorcycles, each State intervenes by reducing the prices by 10 or 20%.

There isn't an international financial regulation but every government manages its own incentives.

LITHIUM ION BATTERIES FOR ELECTRIC MOTORCYCLES

Most electric motorcycles now use lithium-ion batteries, which have slowly replaced old lead-acid batteries.

In addition to being lighter than traditional batteries, they also have a higher energy density: we know that a charged battery ensures a journey of up to 100 miles, but also that lithium-ion battery pack can be recharged in 3/4 hours just by plugging it into a power outlet.

But these are just some benefits of these batteries for electric vehicles.

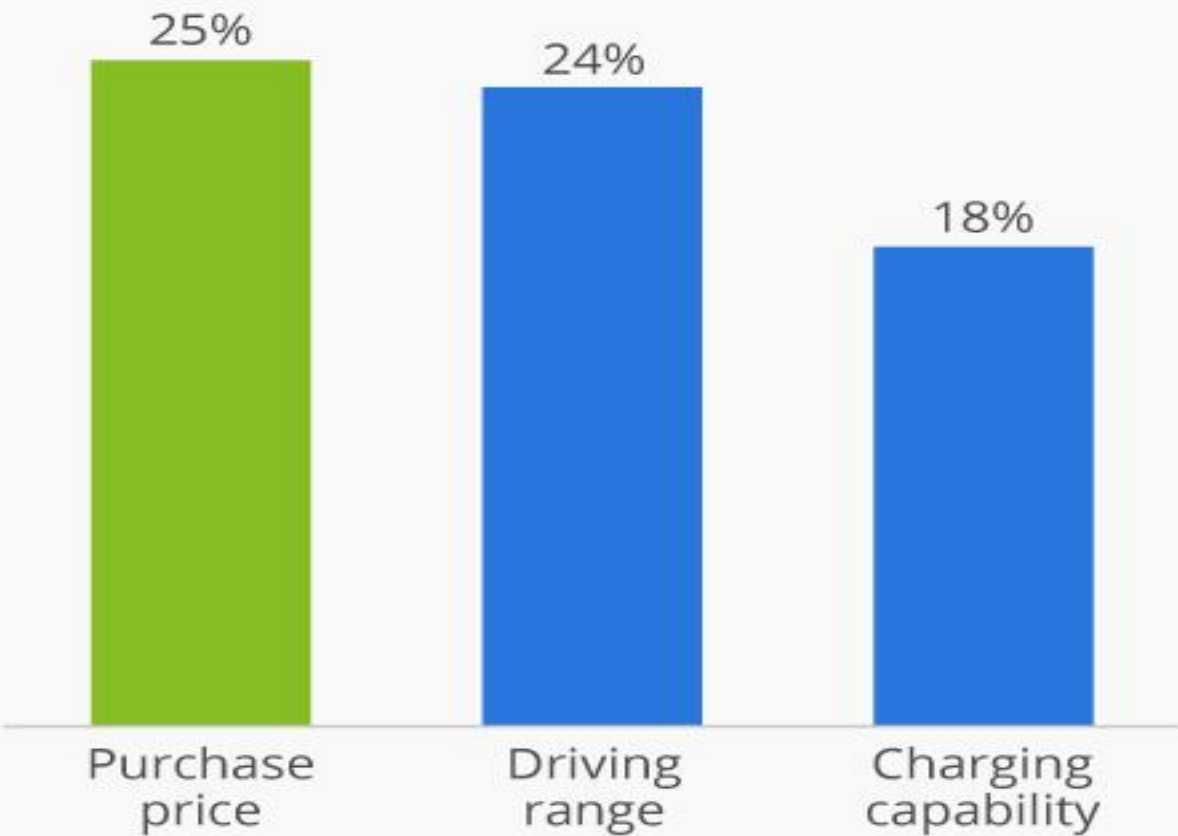
A lithium-ion battery starts an electric moto quicker, because lithium has a lower impedance which allows the transmission of energy in one stroke only.

But lithium is also more environmentally friendly: lead-acid batteries contains harmful acids which could pollute the environment if not properly disposed of.

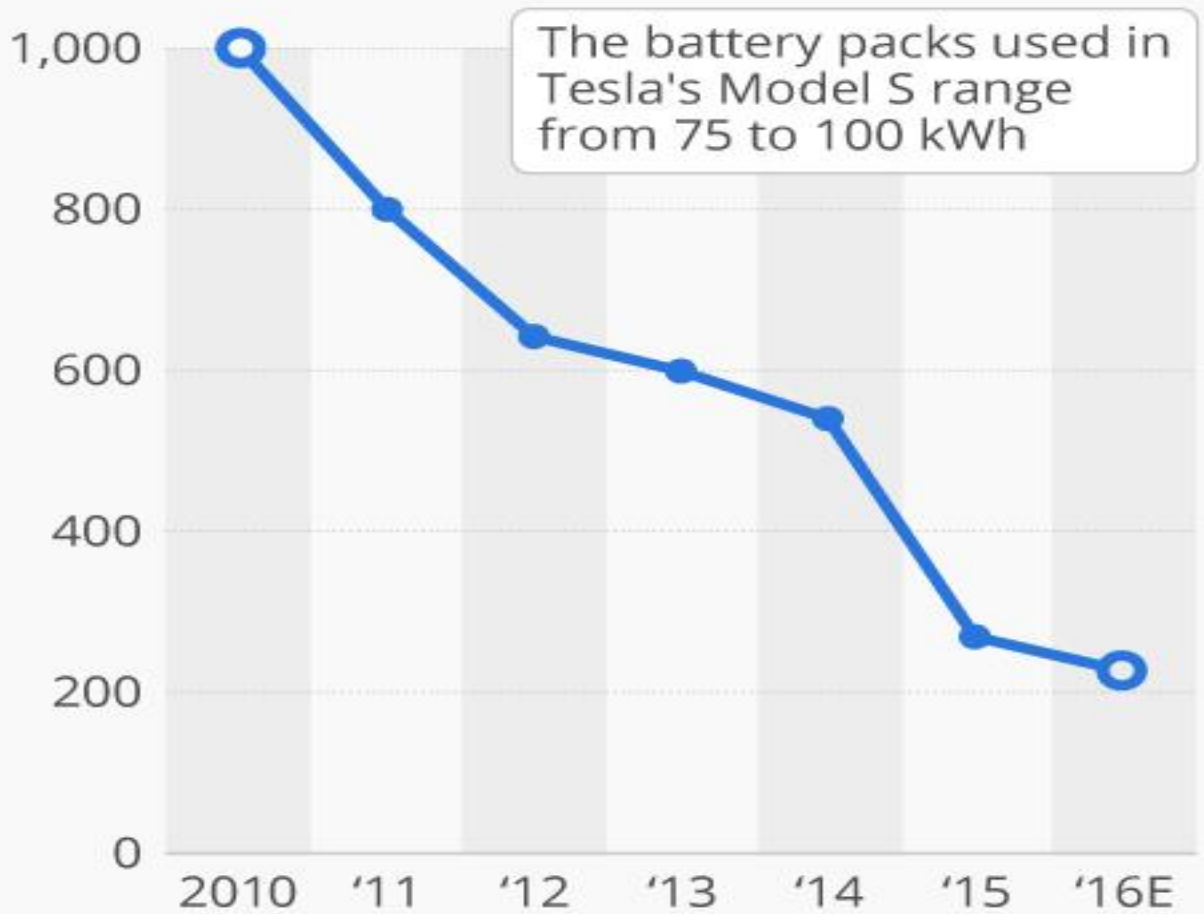
Given all these good features, it's no surprise that lithium-ion batteries are commonplace in the automotive industry today.

Can Falling Battery Prices Push Electric Cars?

Most commonly cited barriers to purchasing an electric vehicle
% of responses from potential EV buyers in the U.S. and Germany



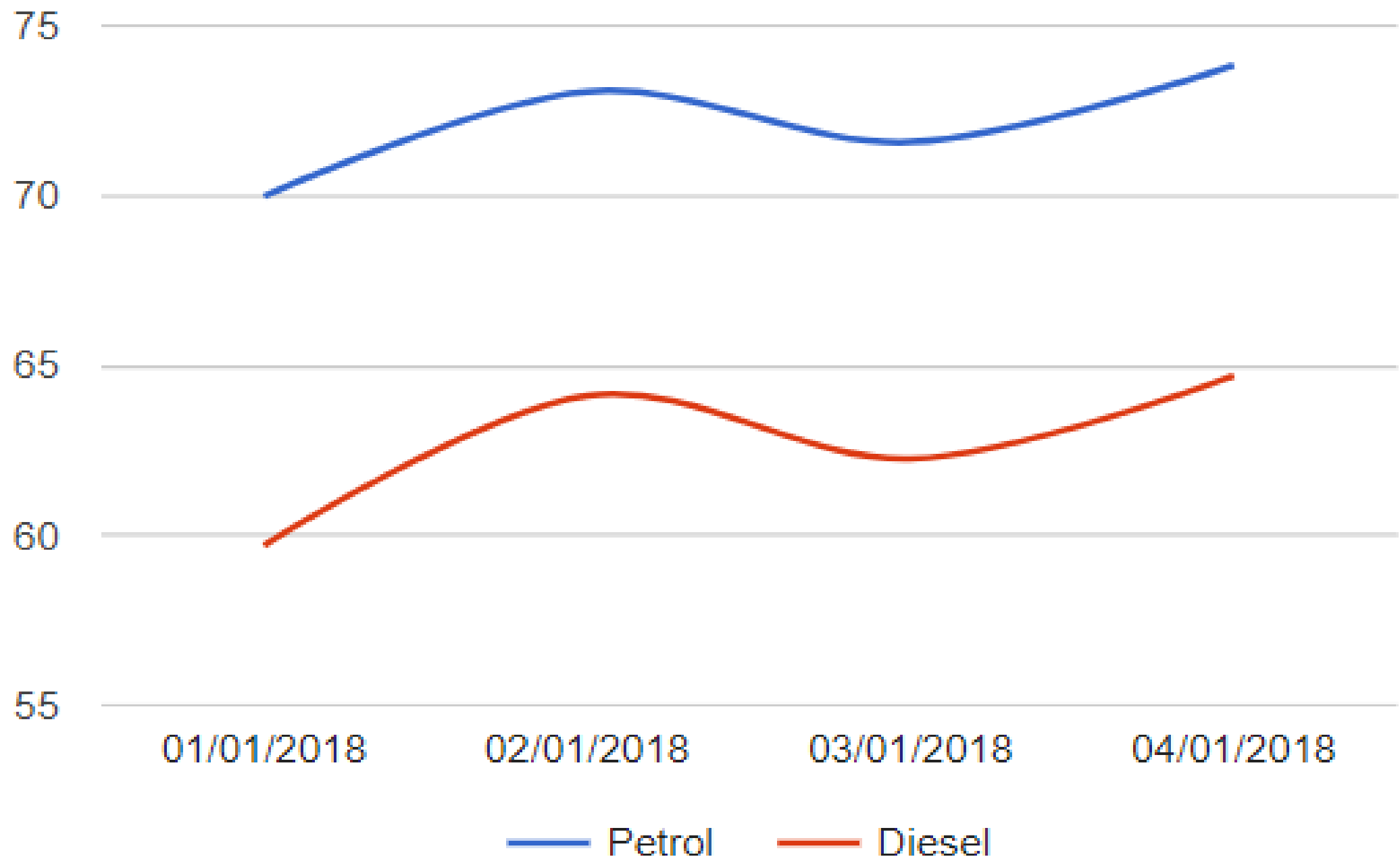
Average battery pack price (\$ per kWh)



Why now is the Right time to join the electric Revolution

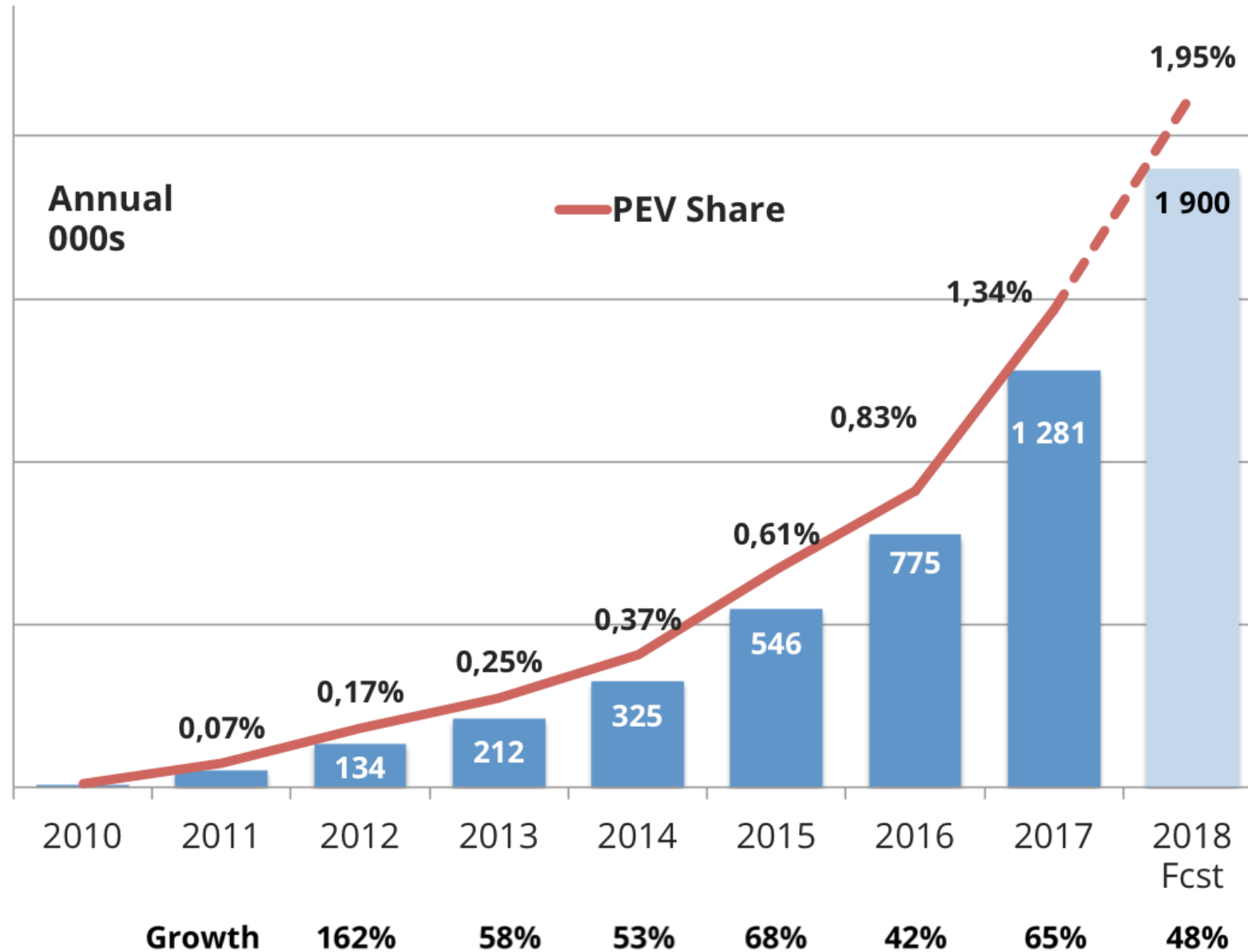
Electric vehicles are becoming more and more popular these days on our roads. A combination of factors, such as an increasing awareness around the subject or climate change environmental preservation and **Increase in Petrol or diesel prices**, as well as technological advances that are making these vehicles more reliable, practical and, of course, cheaper, are truly changing the automotive sector as we know it.

Price trend Of Petrol and Diesel in New Delhi

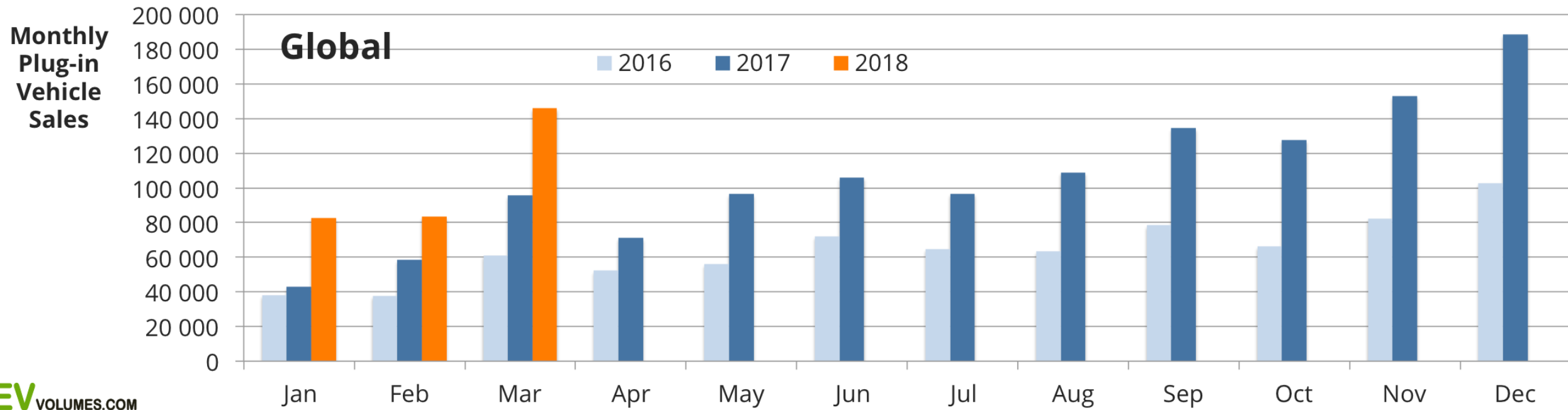


Global Plug-in Vehicle Sales & Share

EV VOLUMES.COM

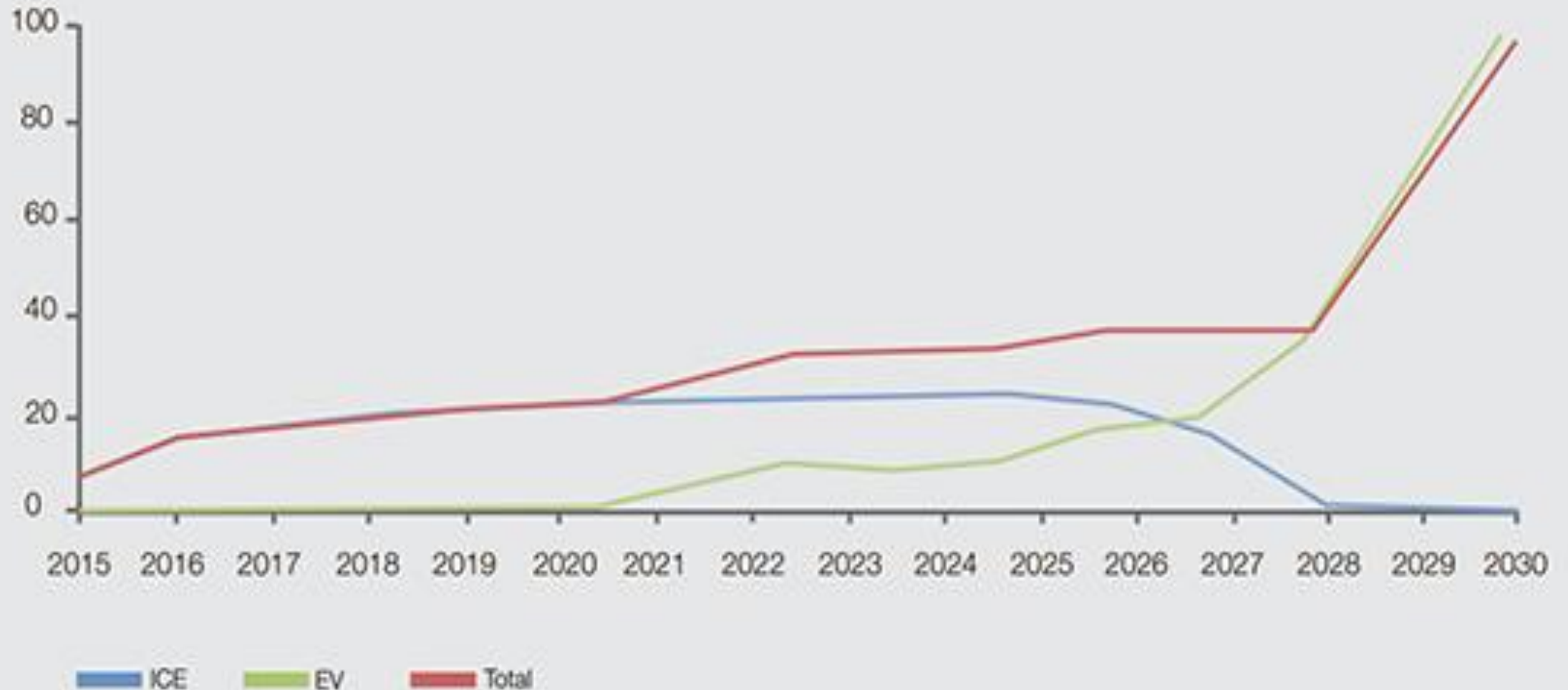


Global Monthly Electric Vehicle sales



- Global electric motorcycles & scooters market is anticipated to exceed USD 22 billion over the forecast timeframe. Shifting trends towards usage of e-vehicles owing to environmental benefits will drive the electric motorcycles & scooters market. Increasing consumer awareness towards e-mobility assisting in reducing carbon emissions over the conventional vehicles will improve the product penetration.
- Governments are offering tax benefits to encourage the adoption of eco-friendly vehicles
- E-motorcycles are estimated to witness strong growth over 10% from 2018 to 2024 owing to new product offerings and reduced price of the product

Annual EV and ICE Vehicle sales in millions between 2016 and 2030 in India



From the prediction given in the chart above, 2023 is the optimal year to release and boost the sales of electric vehicles

Our Solution for the Electric vehicle market in India



THE MANKAME EP - 1
THE WORLDS FIRST 500 KM PER-CHARGE
ELECTRIC SUPERBIKE

——— MADE IN INDIA ———

Problems in the current Electric Motorcycle Market And how we are solving them

1. Low Range and High Charge times : Current production electric motorcycles are not feasible in terms of Range per charge, the maximum range one can get with the current models in the market is ~ 250 km/charge, that is less than a petrol bike with a full tank, and the charge times are very high i.e. 2~4 hours to get it fully charged which just makes it cumbersome to live with on a daily basis without any specialized citywide infrastructure for charging, it is just unrealistic

- **Our Solution :** As charging times are high in electric bikes, it wouldn't make sense to keep the range to 200 kilometers, there would be no actual real world use, there are no charging stations in India and even if someone keeps the motorcycle for charging in someone's home it'll take hours, so we had to choose between getting the range higher, or getting the charge times lower to 15-30 mins. We got the range higher so that the person using the motorbike should charge only once a week for all the weeks commute. And not worry about anything else

2. High Cost : Current Electric Motorbikes on sale are very expensive for the features that they offer, these motorcycles are expensive because of the battery and the battery cooling system that they use and the all the electronics that goes with the cooling, which makes buying electric motorcycles in todays economy unfeasible and unrealistic,

- **Our Solution :** With our Custom battery modular cooling system we can get the price down by 50% and our custom Battery management system handles the battery management very well and protects it from over heating over all thus requiring a low powered cooling system. Thus reducing the price and increasing the safety with it.

3. Belief that electric Bikes are boring and slow : Current mindset of consumers is that electric motorcycles are very slow and powerless, due to the old generation electric scooters currently in the market that give a negative feel about electric vehicles in general , previous gen electric scooters are no fun lifeless and slow, consumers are not attracted by them and that is why they get a lot of bad publicity and low market appeal, people don't buy them.

- **Our Solution :** We are building an electric sport bike as our first product with every feature possible that a motorcycle of this size can hold in the lowest price possible, we are building a “Oneplus one” of the motorcycle world to break all the previous misconceptions and beliefs people have about electric motorcycles

Features

The combination of lightning fast acceleration and aerodynamic bodywork make for a fearsome sport bike.



18.4 kWh	~500 KM	251 km/h	40 kW	180 N.m
BATTERY	RANGE	TOP-SPEED	POWER	TORQUE

Specifications compared to petrol 600 CC Sport bikes



Triumph Daytona 675r

Torque : 70.2 nm @ 9,900 RPM

Power: 49 Kw

Top Speed : 210 Kmph

Range : 20 km/litre & 300 km/Tank

Cost: : \$14,000

**Cost to travel 480 Kilometers
Rs 1776.12**



Kawasaki 650

Torque : 65.70 nm @ 6,500 RPM

Power : 50 Kw

Top Speed : 210 Kmph

Range : 21 km/litre & 315 km/Tank

Cost: : \$7,999

**Cost to travel 480 Kilometers
Rs 1629.1**



Honda CBR 500rr

Torque : 60.50 @ 8,500 RPM

Power: 44.2 Kw

Top Speed : 210Kmph

Range : 20 km/litre & 300Km/Tank

Cost: : \$6,644

**Cost to travel 480 Kilometers
Rs 1800.30**



Mankame EP-1

Torque : 180 nm @ 0 RPM

Power : 40 Kw

Top Speed : 251 Kmph

Range : 480 km/Charge

Cost: : \$13,000 | 8.45 Lakhs

**Cost to travel 480 Kilometers
Rs 92.5**

Electric motorcycle competitors in India

Motorcycle name	Torque	Power	Top speed	Battery	Range	Price	On sale
Menza Lucat	60 Nm	18 kW	120 km/h	-	100 ~ 150 KM	₹ 2,79,999	2020
Tork T6X	27 Nm	6 KW	100 Km/h	3.5 kWh	100 KM	₹ 1,25,000	2020
Emflux 1	84 Nm	53 kW	200 km/h	9.6 kWh	150 ~ 200 KM	₹6,00,000	2020
Mankame EP-1	160 Nm	55 kW	251 km/h	22 kWh	450 ~ 500 KM	~₹ 8,45,000	2023

Electric motorcycle competitors globally

Motorcycle name	Torque	Power	Top speed	Battery	Range	Price	On sale
Brutus V9	375 Nm	93 kW	190 km/h	33 kWh	450 KM	\$32,490	2017
Johammer J1 200	-	16 KW	120 Km/h	8.3 kWh	200 KM	\$30,894	2016
Victory Empulse TT	82 Nm	40 KW	160 km/h	10.4 kWh	225 KM	\$19,999	2016
Zero SR	157 nm	52 KW	164 km/h	14.4 kWh	359 KM	\$19,390	2017
Lightning LS-218	227 Nm	149 KW	350 km/h	20 kWh	250 KM	\$38,888	2014
Energica EGO	195 Nm	100 KW	240 Km/h	11.7 kWh	149 KM	\$35,000	2014
Mankame EP-1	165 Nm	55 kW	251 km/h	22 kWh	450 ~ 500 KM	\$13,500	2023

Company Goals

Short term Goals :

- Build a Prototype and Test by 2019
- Build a Company Motorsports team
- Run a Endurance Race event Starting from Bangalore to Hubli / Goa
- Win Straight line race events Held in Mumbai, Goa and Chennai
- Win Indian **National Motorcycle Racing** Championship 2020 in Chennai
- Set a record in Pikes peak Hill climb
- Participate in Isle of man TT Zero 2020
- Start Low volume production of Performance Motorbikes by first quarter of 2022
- Sell a minimum of 200 motorcycles by the first Quarter

Long Term Goals :

- Build infrastructure across states for charging and servicing
- Build strategic partnership with known electric vehicle charging stations across states
- Increase Revenue by 10% every year
- Release 2 New High range motorcycle models by 2025 for the Commuter market
- Build a Reputable brand
- Build loyal customer base
- Form a MotoE team to take part every season and build a loyal fanbase

Milestones and Timelines

Seed fund Round completion	September 2018
Complete material procurement and Initial Recruitment	December 2018
First Prototype Completion	March 2019
Initial tests done	April 2019
Second Prototype Completion	August 2019
Run Race Tests	September 2019
Electronics Endurance Test	October 2019
Endurance Race event Starting from Bangalore to Hubli / Goa	December 2019
Body Design Finalization	January 2020
Race Version Motorcycle complete (R-Version)	March 2020
Straight line and Stability Race Tests	April 2020
Isle of man TT 2020	May 2020
Pikes peak hill Climb	June 2020
Unveil Final Motorcycle design and Begin Pre-Bookings	December 2020
Intense testing and Final design iterations	January 2021 – July 2021
Send For Homologation and Certification	July 2021
Set up Production line and Final supply chain	~December 2021
Begin Production for first 500 Motorbikes	~January 2022
Begin Deliveries	~March 2023

Current Development Status and Proof

- Team Built
- Conceptual phase completed with detailed Design
- Electronic design Completed
- Company Incorporated
- Working Prototype Of Battery Management System Completed
- Prototype of Main electronics complete and in testing
- Computational Fluid dynamic analysis completed
- Custom Battery Management System Software built and tested
- Dynamic Suspension simulation done
- Aerodynamic analysis complete
- Endurance analysis complete
- Developed partnership with suppliers for electric motor and Controller

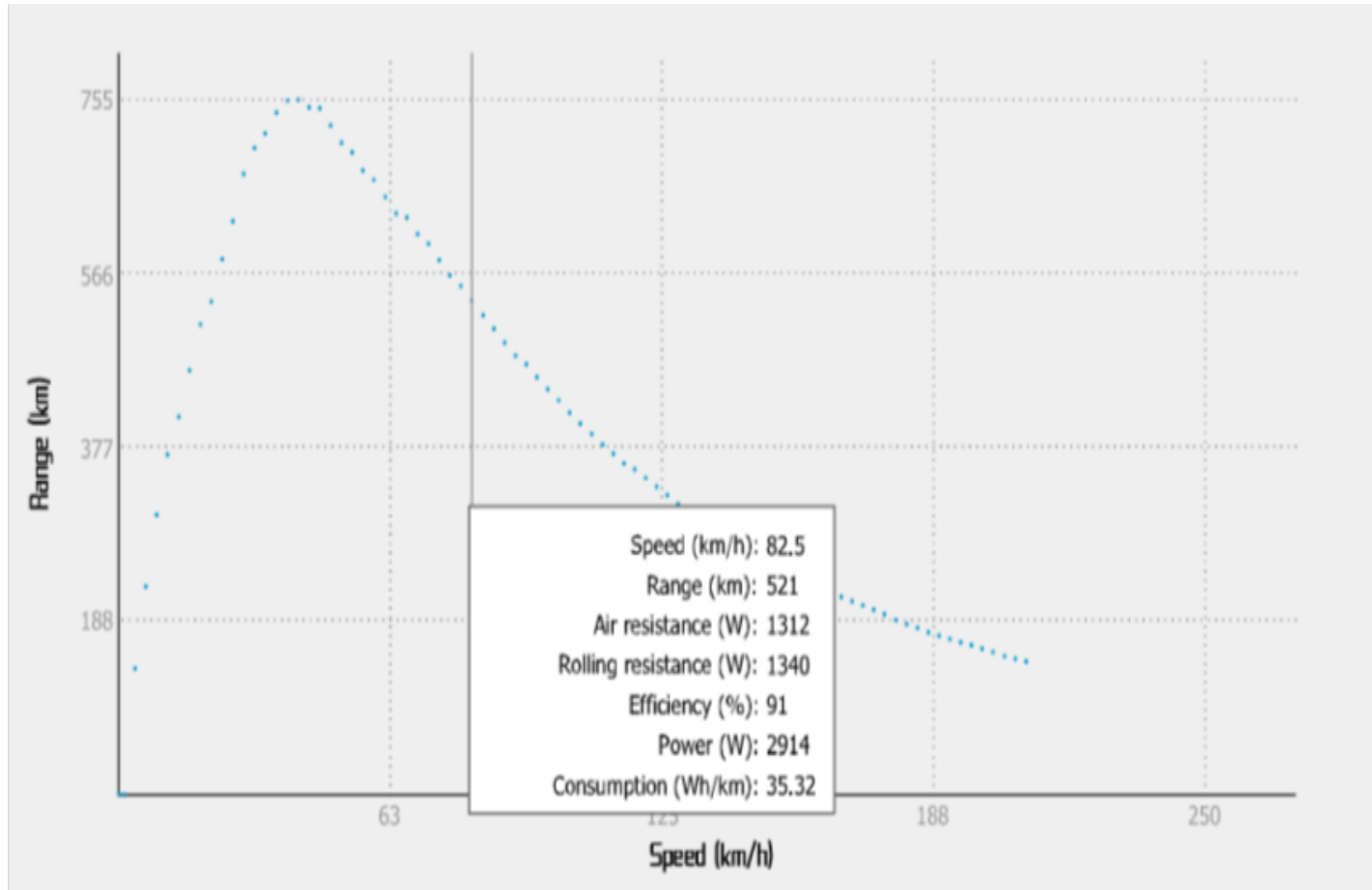
Battery Management system and Electronics



Prototype testing of electric systems Completed

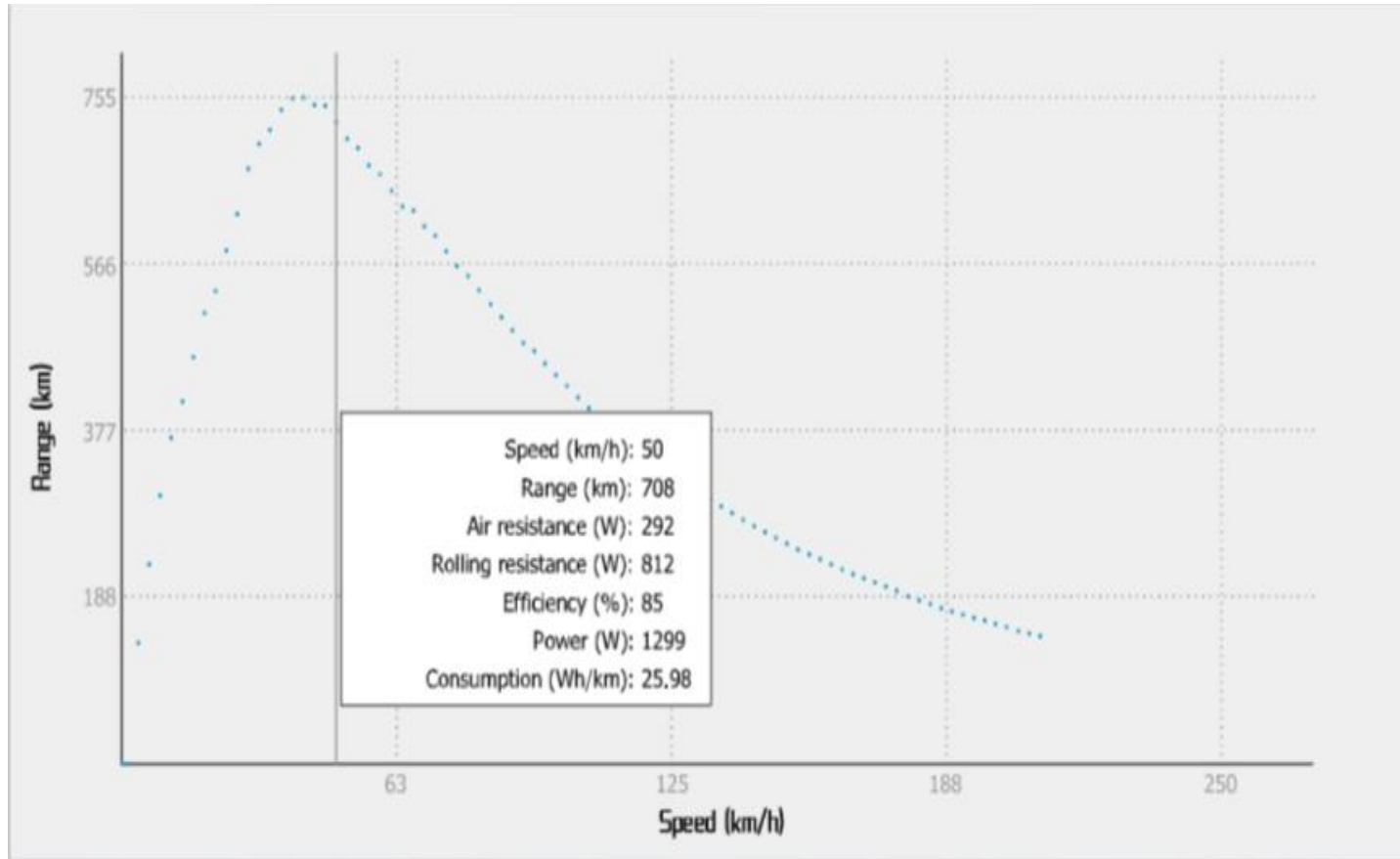
We have completed the design and initial testing of the prototype Electric system consisting of a custom battery management system with proprietary charging and discharging algorithm being tested with a low powered electric motor(Not the motor being used in the bike)

Range Figure Proof for 82.5 km/h



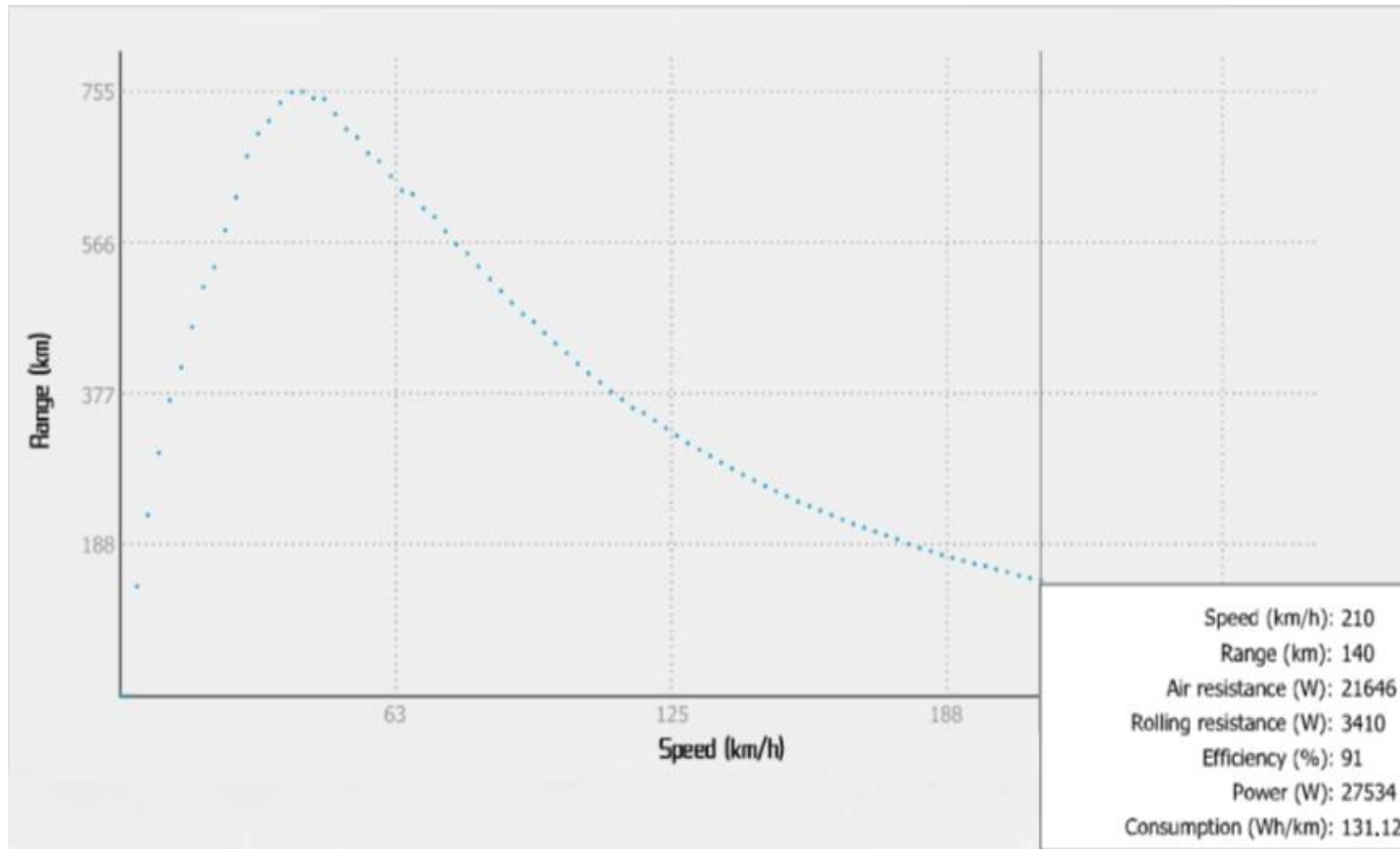
- **Speed 82.5 km/h**
 - **Range 521 Km**
- Power Consumption for**
- Air Resistance : 1312 Watt
 - Rolling Resistance : 1340 Watt
 - Efficiency : 91%
 - Power : 2914 watt
 - Consumption : 35.32 Wh/Km

Range Figure Proof for 50 km/h



- **Speed 50 km/h**
- **Range 708 Km**
- Power Consumption for**
 - Air Resistance : 292 Watt
 - Rolling Resistance : 812 Watt
 - Efficiency : 58%
 - Power : 1299 watt
 - Consumption : 25.98 Wh/Km

Range Figure Proof for 210 km/h



- **Speed 210 km/h**
 - **Range 140 Km**
- Power Consumption for**
- Air Resistance : 21646 Watt
 - Rolling Resistance : 3410 Watt
 - Efficiency : 91%
 - Power : 27534 watt
 - Consumption : 131.12 Wh/Km

Financials

This Section aims to display where Mankame Automotive Pvt Ltd currently stands financially, what potential revenues, costs and profits we expect throughout 2021, 2022, 2023 and 2024 and what areas we plan to devote the funds raised in this campaign to.

In case of questions or demand for further information, we invite you to contact us at any time. For this purpose, please send an E-Mail to swapnil@mankamemotors.com.

Business Model And Marketing Plan

Overall Business Strategy

- Build a Sports Bike
- Use that money to build an affordable Motorbike
- Use that money to build an even more affordable Bike
- While doing above, also provide zero emission electric power generation options
- Build Charging Station Network outside each home and public resting places

Financial History

As Mankame Automotive Pvt Ltd was founded in July 2018, no annual reports exist at this point.

Company Revenue Streams

1. Direct Sales and Service

- Web portal to customize and select preferred configuration of the Motorcycle
- Financial Options directly provided online to remove any confusion and provide entire freedom of selection to the customer
- Removal of middlemen and distributors ensures smooth flow of transactions and control of sales directly to the company
- Showrooms to Showcase and test ride will be placed throughout selected states
- Service stations will be placed in each state and every other prominent location of high sales

Revenue and Net Income Forecast

The current revenue projections aim to cover three years, starting 2021. The given figures do at no point represent a definite sales forecast, but rather attempt to indicate the given market potential for the revenue stream outlined beforehand. The results focus on the two main target markets, India and Europe, assuming a reasonable expansion of business activities each year.

All projections are based on current and projected future development in the areas of electronic mobility combined with urban transportation, growth of income, change in demographics and numerous other variables which will have a potential impact of the sales figures of our products.

We aim to reach an annual production capacity of 5,000 units by 2024. As Mankame Automotive India is focusing on developing core technology we will work with partners and distributors to scale our operations and markets. The price for our first mass production model is aimed to be around ₹ 8,50,000/-.

Revenue and Net Income Forecast

The development of the Final prototype is expected to be finalized by the end of December 2020 and as of that point, we will take deposits on pre-orders. The first Bike is expected to be shipped by March 2023. As no bike is delivered throughout 2020 or 2022, no revenues can be recorded for these years. The European market will only be targeted after 2023.

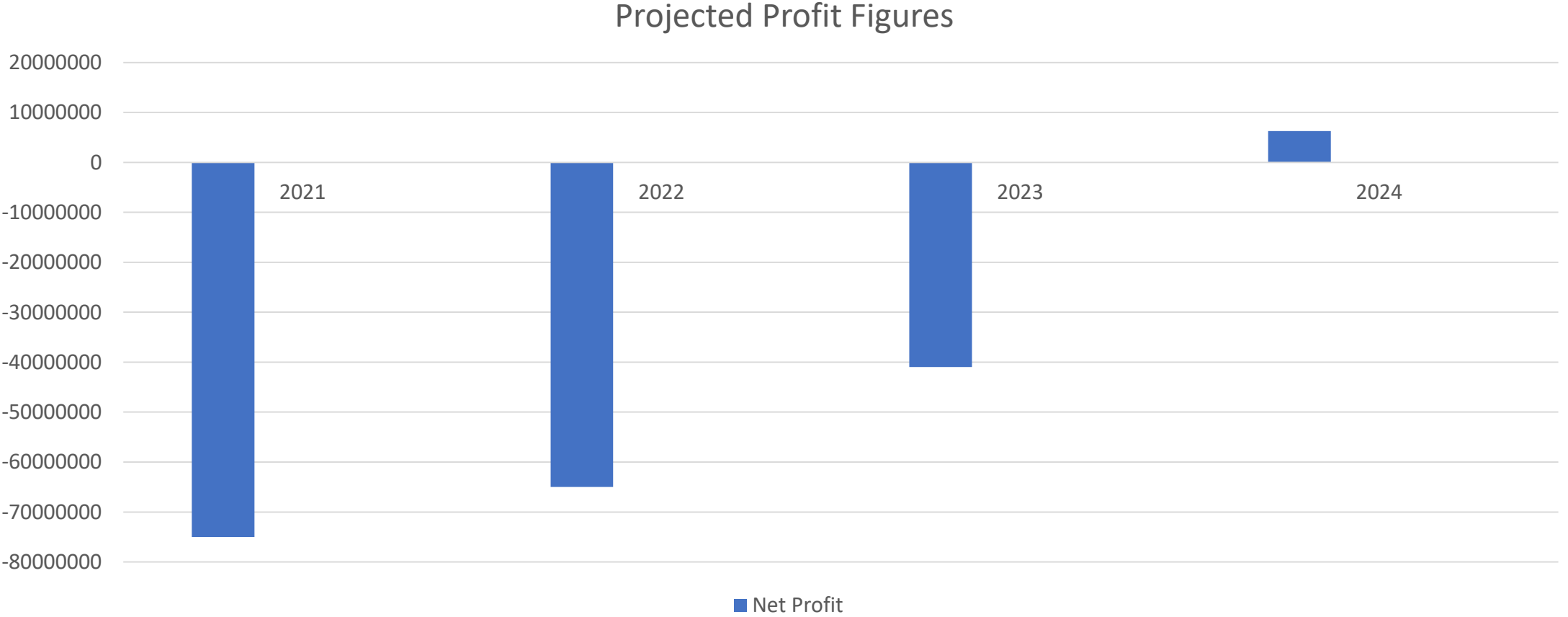
Direct Sales

	2021	2022	2023	2024
Unit Cost	₹ 8,50,000	₹ 8,50,000	₹ 8,50,000	₹ 8,50,000
Unit Sales	0	0	2,000 (Target)	2,500 (Target)
Total Sales	0	0	₹ 170,00,00,000	₹ 212,50,00,000

The projected Sales figures for Mankame Automotive India looks as follows:

	2021	2022	2023	2024
Revenue	0	0	₹ 170,00,00,000	₹ 212,50,00,000
COGS per Unit	0	0	₹ 7,65,485	₹ 7,65,485
COGS Total	0	0	₹ 153,09,70,000	₹ 191,37,12,500
Developmental Cost	₹2,00,00,000	₹1,00,00,000	₹ 5,00,00,000 (approximate)	₹ 3,50,00,000 (approximate)
Labor Cost	₹ 50,00,000	₹ 50,00,000	₹ 8,00,00,000 (approximate)	₹ 8,00,00,000 (approximate)
Other Fixed costs	₹ 5,00,00,000	₹ 5,00,00,000	₹ 8,00,00,000	₹ 9,00,00,000
Total Expenses	₹ 7,50,00,000	₹ 6,50,00,000	₹ 174,09,70,000	₹ 211,87,12,500
Profit	- ₹ 7,50,00,000	- ₹ 6,50,00,000	- ₹ 4,09,70,000	₹ 62,87,500

Revenue and Net Income Forecast



Valuation

The current value of the company is a function of numerous different factors. Currently, Mankame India does not possess a large number of high-valued assets that could have any influence on the current valuation. Additionally, due to the disruptive nature of its technologies, the projected revenues do not allow for an objective calculation of a valuation, using common tools such as a Discounted Cash Flow Model.

Funding

Forecast for Funding Usage

Before Mankame India is capable of generating revenue on its own, it relies the early-stage investor, to help us produce our first prototype. To do so is the sole purpose of this funding round as the prototype will allow Mankame India to fund future development. As we rely on you in order to get to this stage, we believe it is fair and appropriate to be transparent with what the raised funds will be spent on.

Specifically, the following key development areas will be the focus of our investment activities:

1. Recruit and build a strong team

The main focus of Mankame India is on building a team that consists of the optimal mix between experienced leaders from the field of engineering and technological research and development as well as young and ambitious professionals that align their goals with those of the company

The majority of new hires will enter in the Engineering as well as the Research & Development department. We believe that by promoting intrinsic motivation of staff, an energetic and independent work environment can be created in which there is no need for extensive managerial oversight, which reduces the final headcount. Additionally, much of our required activities, such as legal and bookkeeping, can be outsourced to third parties in order to keep fixed costs low

2. Technological development & IP protection

- In order to ensure a timely realization of projected goals, the funds supporting research and development will have to allow for some error margin. In the technological development, the Research & Development department will be allowed to test many different options and find the most optimal solution by refining or reinventing a given procedure or product as often as necessary but as few times as possible
- Furthermore, patents in the key areas of our technology will play a determining role in the success of our business model. At an early stage, we will therefore invest heavily in both the legal support and execution to ensure that relevant patent areas are covered

3. Hardware and Software purchases

In this category, all expenses related to tangible and intangible assets are bundled. Especially in the field of Research & Development a vast number of software packages will be purchased in order to provide sufficient resources for appropriate work to be conducted and to accelerate progress. Hardware purchase mainly relate to machinery and other equipment that is required to provide Engineers with the means required to develop and build a first working prototype.

Funding

Funds required to build the first complete prototype

Particulars	Cost
Motor + Controller	₹ 2,05,485
Frame Building and jig	₹ 30,000
(Test)* Forks, suspension and swingarm	₹ 50,000
Brakes and antilock braking system	₹ 40,000
Batteries	₹ 4,00,000
Battery Enclosure and safety circuits	₹ 50,000
Electronics(High speed Main Board and slave controllers)	₹ 45,000
Charger Development	₹ 1,50,000
Miscellaneous	₹ 4,00,000
Total	₹ 13,70,485

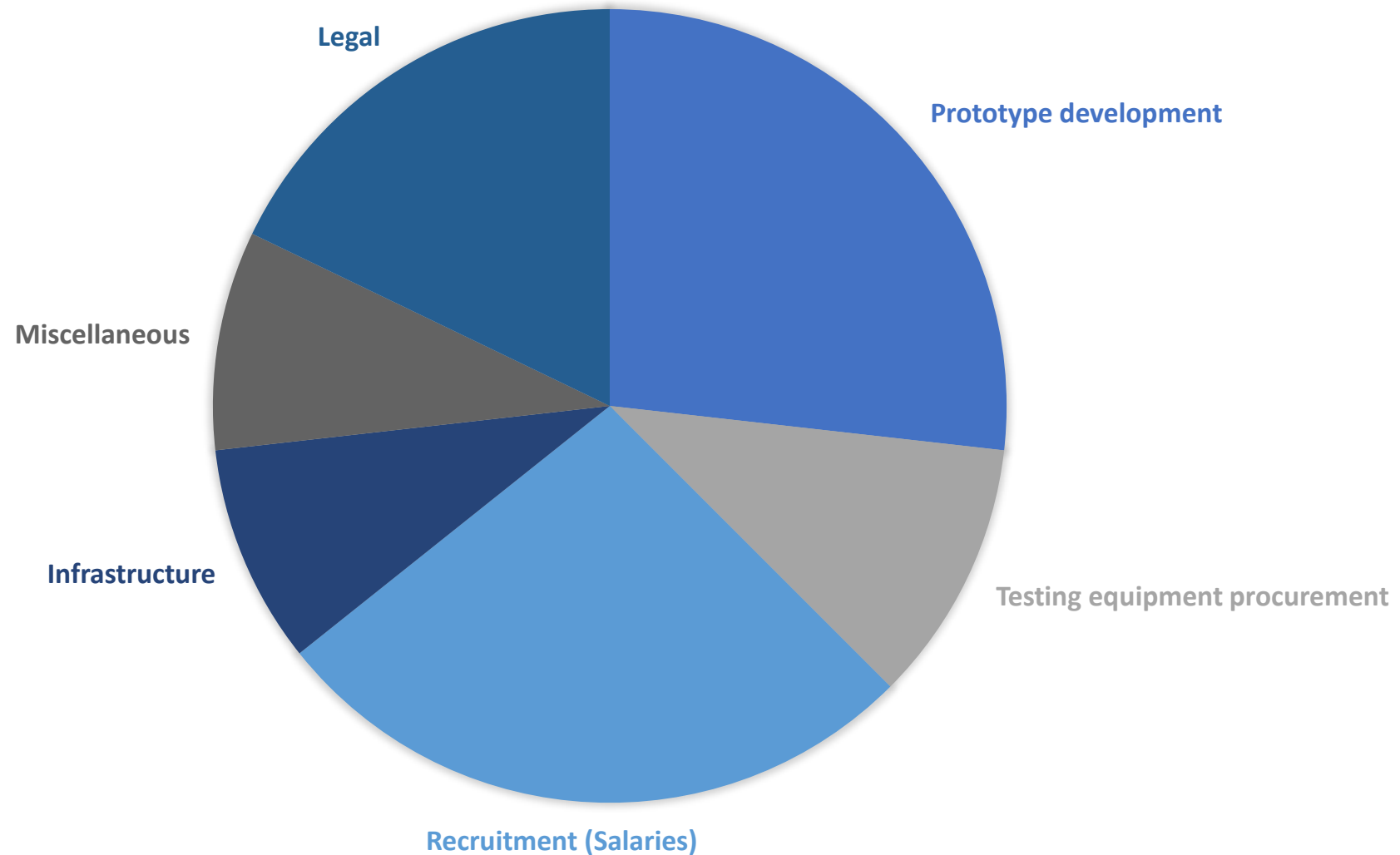
Funding Overall

Funds required to build the first complete prototype with Company Expenses

Particulars	Cost
Motor + Controller	₹ 2,05,485
Frame Building and jig	₹ 30,000
(Test)* Forks, suspension and swingarm	₹ 50,000
Brakes and antilock braking system	₹ 40,000
Batteries	₹ 4,00,000
Battery Enclosure and safety circuits	₹ 50,000
Electronics(High speed Main Board and slave controllers)	₹ 45,000
Charger Development	₹ 1,50,000
Miscellaneous	₹ 4,00,000
Battery Test Equipment (NEWARE Tester)	₹ 2,00,000
Controller and electronics test equipment	₹ 1,50,000
Building and infrastructure(Computers and other machinery)	₹ 10,00,000
Salaries (10 Recruits)	₹ 18,00,000
Legal	₹ 10,00,000
Total	₹ 55,20,485

Fund Proceeds Breakdown

BREAKDOWN OF RS 55,20,485/- BUDGET



About the founder



- An Automation and Robotics Graduate
- Worked as,
 - Head of Battery and Electronics Team in SAE EFFICAR
 - Design Consultant in SAE E-Baja
 - Lead Design Engineer In SAE EFFICAR
 - Lead Design Engineer In ROBOCON 2017
 - Electronics Design and Development, Machine Design and Testing Specialist in KLE Humanoid Robot
 - 3D Print And CNC Consultant In KLE Maker-Space
- Working Full time as Team Lead in Mankame Automotive for the development of a Revolutionary Electric Motorbike

Thank you