MGM ACCELLORS

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ABOUT SAE

SOCIETY OF AUTOMOTIVE ENGINEERING

- SAEINDIA is an affiliate society of SAE International, registered as an Indian non profit engineering and scientific society dedicated to the advancement of mobility community in India.
- SAEINDIA was formed in India in 1994-95 with Dr. Pawan Goenka, appointed as advisor for India.
- Principal emphasis is placed on transport industries such as automotive, aerospace, and commercial vehicles.
- In 2007 Baja SAEINDIA was launched which proved to be the growing crop of engineers from colleges across the country to showcase their talent and fuel the growth of the Indian automotive industry.
- In 2008, Formula SAEINDIA was launched with the name of SUPRA SAEINDIA.

SUPRA SAEINDIA
Student Formula

Event Stages

Static Events Includes:

- Marketing Presentation
- Engineering Design
- Cost Evaluation

Dynamic Events Includes:

- Acceleration Event
- Skid-Pad Event
- Autocross Event

Endurance

The SUPRA SAEINDIA events consists a total of 1000 points distributed evenly in the different static and dynamic events.

SAE SUPRA 2018 EVENT SUMMARY

- Day 1: ON spot Team Registration.
- Day 2: Technical Inspection Round.
- Day 3: Tilt test, noise test. Technical Inspection and static events (Business presentation, cost , design reports)
- *Day 4: Brake tests*
- Day 5: Dynamic Events (Acceleration, Skid pad test)
- Day 6: Endurance Run.

2015 Team

Strengths:

1. Coordination
2. Chassis Design
3. Virtual round, static events
4. Paper work, accounts

Weakness:

1. Lack of guidance.
2. Unaware of location of brake light.
3. Incorrect mounting points for seat belts.
4. Change of location of catch tank.
5. Scheduling
6. Springs used for suspension has low stiffness due to which there was over travel.

2016 Team

2 Inspection Stickers Bagged

Strengths:

1. Experience
2. Proper design, fabrication & assembly of brake lights, mounting points for seat belt.
3. Placement of components.
4. Good implementation of time management.
5. Software skills.
6. They had self-confidence and consolidating.
7. Team had a good overall technical progress

Weakness:

1. Improper calculations of brake test leading to failure in brake test.
2. Ground clearance was high as per requirements of SAE rules.
3. Improper design of steering mechanism.
4. Team faced economic problems while fabrication.
5. Improper maintenance of account and bills & Shortcomings in overall presentation of the car.
6. Welding of components was not precise.
7. Mounting of brake hoses were tangled.

2017 Team

Strengths:

1. Proper manual calculations of all engine components.
2. They overcome the Ground clearance than the previous team.
3. Team member had a good knowledge about mechanism used vehicle.
4. Team had maintained the accounts and bills.
5. This team had a good overall presentation in the event.
6. This team had a proper design and neat maintenance.
7. Reports were presented in proper manner.

Weakness:

1. Team lacked proper design of vehicle.
2. Team had faced problem due to utilization of old components from the previous year vehicle.
3. Team had improper location for fuel tank.
4. Faced problems in suspension geometry.

2018 Team

Strengths:

- Differential Design Was Proper.
- Business Report Was Properly Presented.
- Welding Of Chassis Was Good.
- Got Sufficient Sponsors To Built The Car.
- Primary Structure Of Chassis Was Accurate.
- Proper budget of 4,25,000 rupees were sanctioned and new standard parts were procured.
- Proper presentation of cost report.

Weakness:

- Weight & length of the car was exceed.
- Some parts were not properly optimized in their weight like sprocket design of chassis.
- Bleeding problems in callipers due to transportation from Mumbai to Delhi.
- Wiring and chain was loose.
- ECU mounting was not proper.
- Fuel lines were not proper.
- Safety wire was not properly wounded on the callipers as per their design rules.
- Design and machining of hubs and uprights gone wrong.
- Due to excess load axle was broken.

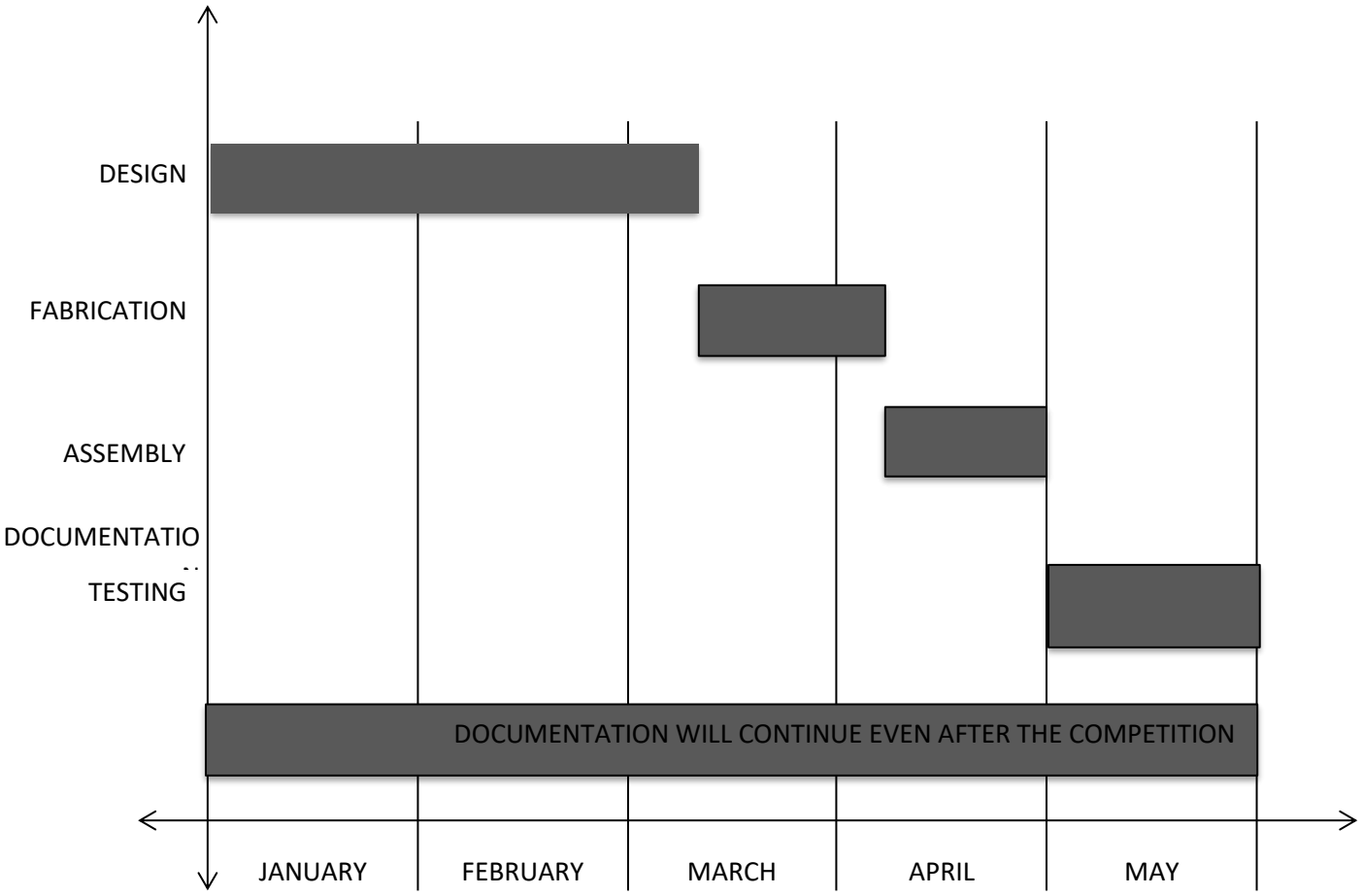
2019 Team

Meet The –

DESIGN/ CHASSIS	SUSPENSION	BRAKES	STEERING	ENGINE
VISHAL SHENDGE	ANIKET SURYAWANSHI	HRISHIKESH WABLE	ANURAG TALEKAR	SIDDHESH PAWAR
SHAGUFTA SHAIKH	NILESH SALUNKHE	RAKSHEET CHAWATHE	DEVENDRA KATDARE	JAYESH MANE
VISMAY RAUL	AMOL VHANMANE	NAMITA NEMAN	ADESH KORDE	SHUBHAM KARKAR
KSHITIJ PAWASHE		VARUN SHENOY		PRATISH PATIL
SHRUTI KHARE		NITIN KOKARE		JIGAR AMRAVAT
		PARTH KASAR		VIDULA JADHAV
				SUBODH POTDAR

GRAPHICAL REPRESENTATION OF COURSE PLAN

EACH MONTH IS DISTRIBUTED BETWEEN FIRST AND SECOND HALF



OVERALL PLAN

DESIGN CONSIDERATIONS:

We have followed all rules as per SAE-INDIA SUPRA rulebook such as standard values of track width and wheelbase, types of tubes used for fabricating a chassis with its dimensions, tubing material etc.

DESIGN PARAMETERS:

Here we can take a look at following points which are mentioned below:

- Suspension system
- Brake system
- Steering system
- Design and installation of impact attenuator
- Roll cage

RESEARCH:

This phase includes entire methodology for making a racing car. Main objective of this competition is to reduce the weight of the car so we have focussed on this aim to make a car of minimum weight by modifying design several times.

COMPETITION PROJECTIONS:

SAEINDIA is an open platform where any Engg. college from India can participate to gain knowledge regarding automobile, mechanical field.This competition generally schedules two main events such as static and dynamic. Most important is technical inspection part which comes under dynamic events where judges from several countries come together to check faults in design and fabrication of car and give suggestions to overcome this difficulties. Also, last but not least is endurance test where we are competing with other colleges by means of car racing on track.

COMPETITIVE SCORING AND STRATEGY ANALYSIS:

Scoring maximum points can be easily achieved by focussing on static events where we are representing reports(i.e. cost,design,business report) as well as explaining to industry people.Team members with good communication skills will be the better choice for scoring more points. Besides that if car goes to endurance event then good driver can gain sufficient points to improve the rank.

A. FRAME CONFIGURATION, DESIGN AND MATERIAL SELECTION

1. FRAME CONFIGURATION

Name of structure	Dimension: outer diameter(mm) x thickness(mm)
Main hoop and front hoop	25.4 x2.5 Round tube
Remaining structure	25.4 x1.7Roundtube

2. DESIGN

Design of chassis is done considering strength, weight reduction, driver's safety and packaging of all components. Also focus is given to grounding of vibrations of engine to suspension points using proper triangulation & vibration isolators used to reduced vibrations.

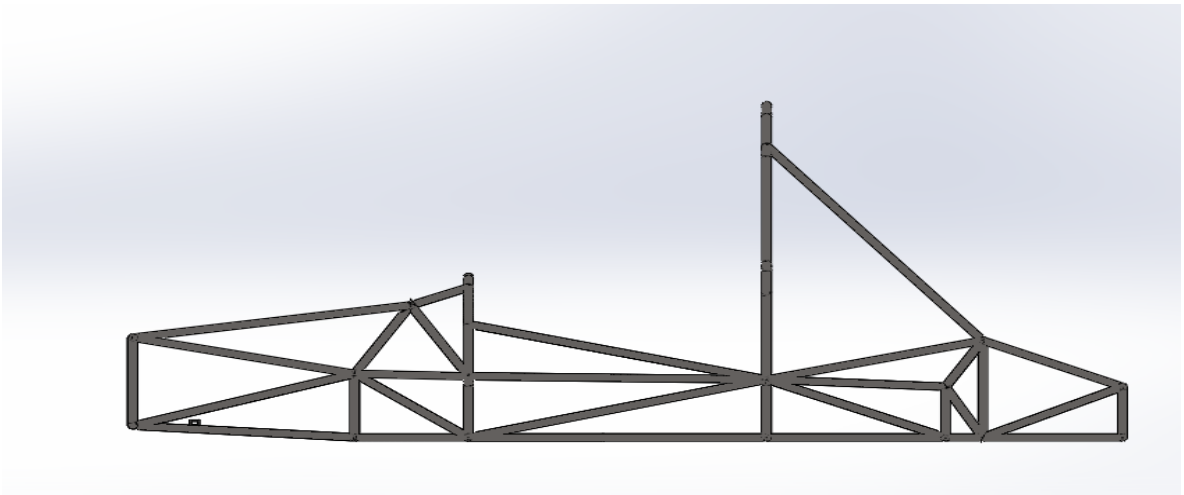
3. MATERIAL USED

According to properties of material prescribed by SAESUPRA, we have shortlisted three material viz. AISI 1020, AISI 1018 and chromoly4130.Aftermarketsurvey, depending upon availability we took AISI1018. TIG welding types used for fabrication of chassis.

Material properties: Ultimate Tensile strength= 440 Mpa, Yield strength = 370 MPa

B. IMPACT ANALYSIS AND CALCULATIONS

i. Front Impact



B. Engine

1. Engine Selection

For SUPRA 2018, we are using KTM DUKE 390.

Engine is the heart of vehicle. Optimum pumping of the heart defines engine performance.

Type of Engine (Combination or Single)

- Combination of engines brings more complications in assembly and end output.
- Use of combined engine increases space, cost as well as weight of vehicle.
- Mounting of single engine is easy.
- Due to the easy availability and locally repairable spares of KTM 390. The stock gearbox has optimum gear ratio for high speed and torque even at higher engine rpm. Due to its dual characteristic functionality the fuel injection can be switched between EFI and Carbureted type compared toother types. The decision to gowith the KTM390engine as opposed to the standard 600cc engine that it is light weight and still havedecent power output. The smaller KTM390engine can fit much more compactly in the chassis resulting in a lower centre of gravity and smaller wheelbase.
- So we selected KTM 390 as per our vehicle requirement.

2. Specifications :

Layout	Single cylinder , water cooled , 4 stroke
Capacity	373.3cc
Bore Diameter	89 mm (3.5 in.)
Stroke Length	60 mm (2.4 in.)
Compression Ratio	12.6:1
Injection System	E.F.I/M.P.F.I
Power	43 bhp@9000
Torque	35Nm@7250

3. Drive Train

To complete the caron time and keep the costs low we have decided to use the stock gear box. We have used open-type differential as per availability and ease of use. The driving sprocket has 15 teeth and the driven sprocket has 52 teeth.

Driving sprocket	15
Driven Sprocket	52
Centre Distance	12.2inch
Chain Pitch	0.625 inch
No. Oflinks	131
Chain Length	866

Sprocket reduction ratio	3.46

4. Gear Ratio

Gear	Gear Ratio
First Gear	12:32
Second Gear	14:26
Third gear	19:27
Fourth Gear	21:24
Fifth Gear	23:22

5. Electronics:

- The instrument panel will be equipped with speedometer or meter console, tachometer, and heat/oil indicator.
- All the readings will be driven from the Engine Control Unit. Brake lights of red colour would be commissioned on the rear part of the vehicle as mentioned in the rulebook.
- Primary master switch would be installed on the right side of the vehicle, in proximity to the Main Hoop, at shoulder height such that it can be easily actuated from outside the car.
- Cockpit master switch would be located on the instrument panel within easy reach of driver.
- Brake over travel switch is placed just after the brake pedal such that if the brake fails, the switch would cut supply to ignition and fuel pump. Power for the components would be driven from Exide Lead acid based battery pack.

6. Intake and Exhaust

According to Rulebook a restrictor of minimum diameter 20mm is to be used, hence, a plenum and runner model have been designed to prevent engine under feed and maintain performance. The Plenum and runner volume are roughly twice the volume of cylinder. The exhaust is self-constructed usin gold bent pipes and muffler. As stated in Rulebook the sound from exhaust is sufficiently less than 110db.

C. Fuel Tank

The goals for newly designed and fabricated fuel tank are strength, space optimization and stability. Hence, 2mm thick GI sheet has been used for utmost strength. Baffle plates have been in corporate to prevent fuel froms plashing during cornering and trapezoidal structure is chosen for lower surface area to volume ratio. A pressure relief valve is placed at the centre of filler cap to release any extra vapour pressure developed in the tank. Fuel tank has been placed on right side of the engine.

D. ERGONOMICS AND ASTHETICS

Outer body is manufactured with Al sheet. Aesthetic and aerodynamic stability were the main aspects considered for the design. Flow analysis is done and results show that there

is very low turbulence along the body, hence successful. Low resistance means greater performance of car. The fabrication has been done keeping in mind the ease of quick mount and removal of FRP.

E. BRAKES

The design criteria for the brake system are it must lockup all the wheels and comply with all the rules. Also the system consists of four wheel disc brake actuated by master cylinder. The brake pedal uses pedal ratio 7:1 to multiply the input force applied by the driver. Two separate master cylinder network is used for front and rear tyres with 9inch disc brakes at all four wheels. Master cylinder used is having bore diameter 19.05mm so that it meet all the requirements. The brake calipers chosen can apply enough pressure on brake pads to lock up all four wheels as required by the rules.

1. Calculations-

STATIC WEIGHT
CALCULATIONS

1) w_f = % w_f * w_t/100= 0.4*350/100=140kg

2)w_r = % w_r * w_t/100=0.6*350/100=210kg

T_{if} = Torque due to moment of

Dynamic force calculation

F_d = c.g*w_t*A_x/L=190*10-3*350*24.116/(1730*10-3)

F_d = 927.0023N

Total normal loads on axle

L_f= Mg + F_d =140*9.81+927.002=2300.402N

L_r= Mg-F_d = 210*9.81-927.002=1133.0098N

Braking force on tyre

F_{bf}= U_{road}*L_f/2= 0.5*2300.402/2=575.1005

F_{br}= U_{road}*L_r/2=0.5*1133.0098=283.2745

T_{if}= Torque due to moment of

Total Braking Torque to overcome

T_{tf}= F_{bf}*R_{eff}=575.1005*270*10-3=155.2771Nm

T_{tr}= F_{br}*R_{eff}=283.27*270*10-3=76.489Nm

Torque due to moment inertia

I for wheels

I = MR_1^2+MR_2^2/2=0.5*7.2(0.27^2+0.165^2)=0.36045

For 2 wheels (front)

I= 2*0.36045=0.7209kgm2

T_{if} =I*α= 0.7209* 89.318Nm

Similarly for rear wheels

T_{ir}=64.38972Nm

Total braking torque to overcome on axle

T_{bf} = (2*T_{tf})+ T_{if}= 2*155.2771+64.38972=374.9439Nm

T_{br} = (2*T_{fr})+T_{ir} = 2*76.4829 +64.38972=217.355

Total torque acting on the entire torque

T_{bf} + T_{br}= 874.945+217.355=592.2989

Pressure acting on the master cylinder outlet

Force exerted by average person on the pedal

F=500N

Pedal ratio=7:1

Therefore, Force transmitted to the master cylinder piston=pedal ration* force=7*500=3500N

Pressure acting on the single master cylinder=F/2A

A=2*π/ (4*19.05^2) = 6.139N/mm^2

Now, P $_{master}$= P $_{calliper}$= 6.139N/mm^2 (Pascal's Law)

F_{cp}= P_{cal}*A_{piston}

A_p= Area of piston * No. of piston

$= \frac{\pi}{4} * d^2 = \frac{\pi}{4} * [25 * 10^{-3}]^2 * 4 = 1.9634 * 10^{-3}$

Force on caliper (F_{cp})

F_{cp}=3.139*10^6*1.9634*10^{-3}= 6163.4120 force on one tyre

Torque on each tyre= μ*F_{cp}* R_{eff}

μ = coefficient of friction

R_{eff} = effective radius of brake disc

Torque on each tyre= 0.6*6163*0.2/2 = 369.804 Nm

For torque on all tyres = torque * 4 = 369.804*4= 1479.218901 Nm

Condition for successive breaking

Torque caliper > torque on entire car

1479 >592.298

Hence we can apply breaks successfully.

F. SUSPENSION

1. Type of tyres used

Normal passenger vehicle's radial tyres are used considering cost and market availability. Alloy rims used to lowe run-sprung mass. Tyre size decided considering many factors. Low profile and wide tyres are used to reduce spring effect and for more traction. Wearegoingwith13'' rims at the front as well as rear for proper balance of the vehicle.

2. Suspension

We have decided to go with Independent double wishbone unequal unparallel suspension with pull rod at front and rear. Suspension geometry is designed and analyzed in Optimum-G software. Track width 1300 mm at front and 1350mm at rear chosen from our past experience and the length of cv axel. Wider track at the front helps in diagonal weight transfer during cornering also helps to reduce turning radius. Suspension is designed for minimum roll and maximum tyre contact with track during cornering.

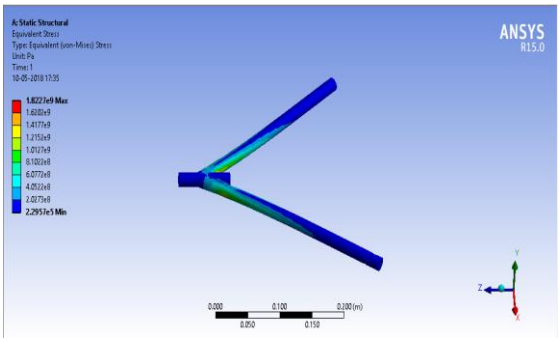
3. Suspension parameters:

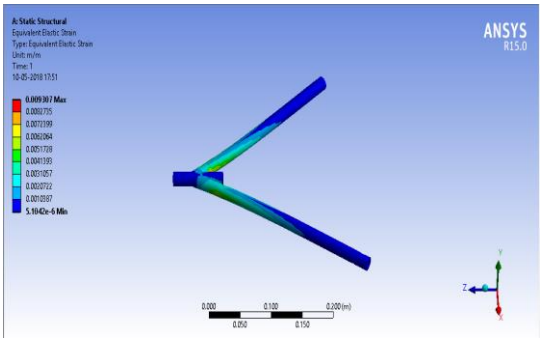
Parameter	Rear	Front
Actuation	Upper a-arm	lowerA-arm
Static camber	-2°	-2°
Static Caster	-4.289°	4.339°
KPI	0	2.203°
Mechanical trail	-20.250mm	20.769 mm
Rollcentre height	67.3102mm	56.337 mm

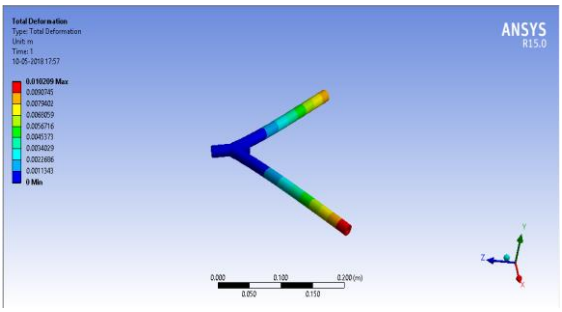
A-arms:

A-arms are made using AISI1018 tubes of size 17mm OD X 4mm thickness tubes. Tapping is done to fix rod end inside the tube. This material selected considering the size of rod ends, market availability, cost and force calculation. Front A-arms are designed for quick camber change.

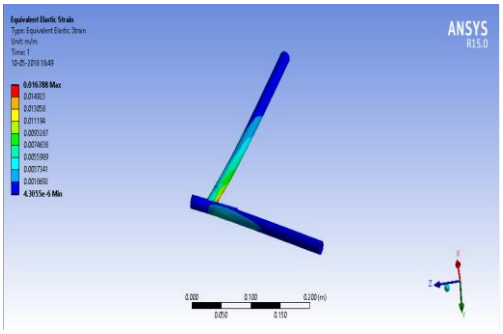
1.Front A arm –

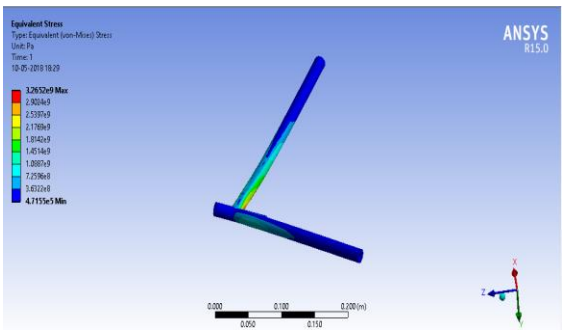


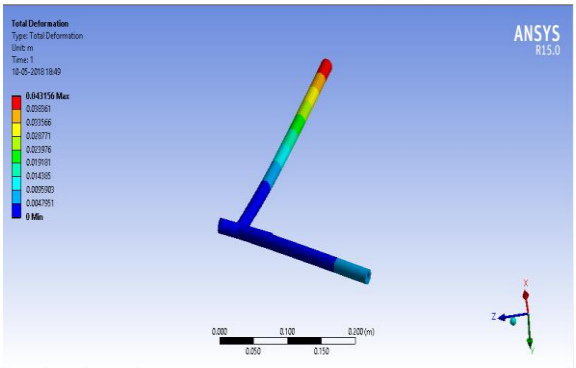




2- Rear A arm-



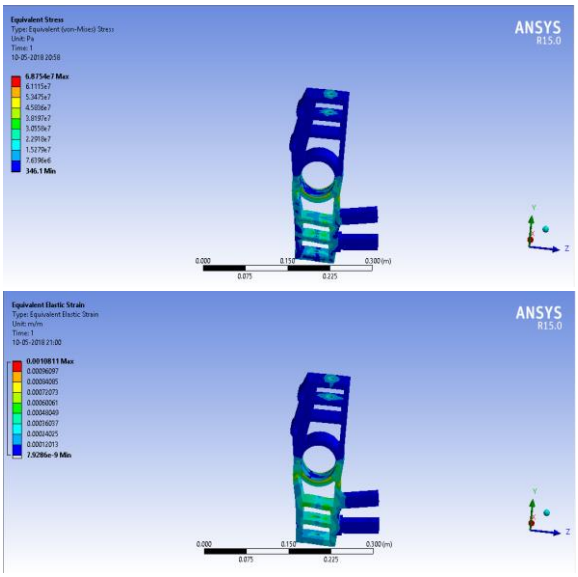


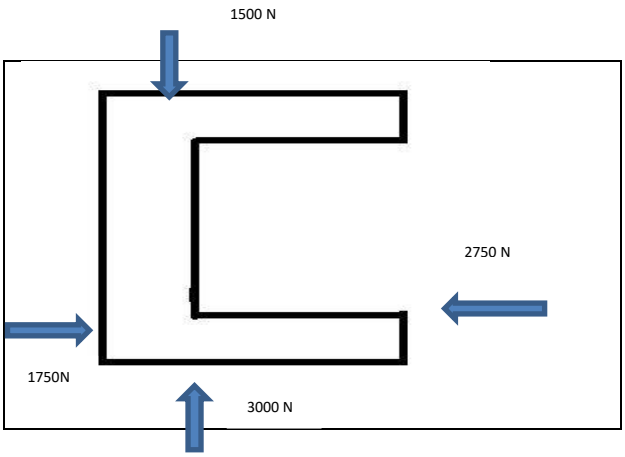


4. Upright:

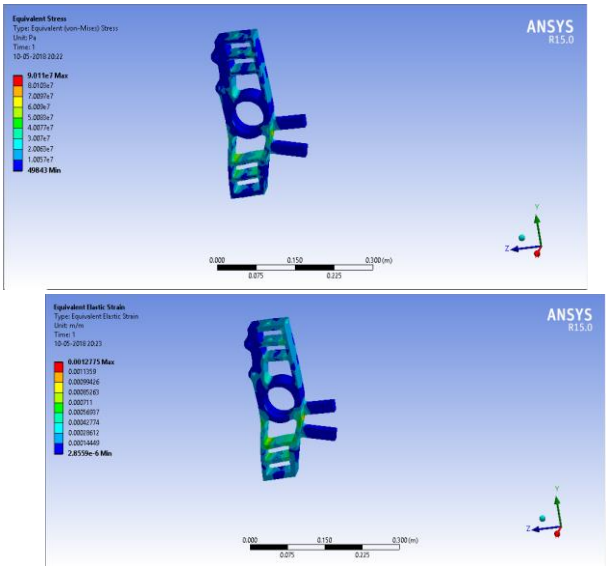
Uprights are designed considering cost of manufacturing and market availability of other parts. Aluminum (Al6063T6) is used instead of steel to reduce weight. CNC machining is used for manufacturing. For finite element analysis, 1.3g cornering and 1.5g braking force is applied according to the calculation.

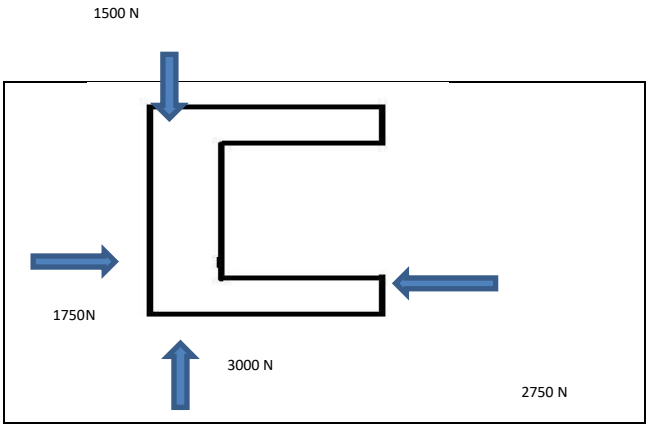
i. Rear upright cornering force





ii. Front upright cornering force





5. SPRING

We are using fluid shocks at the rear and air shocks at the front considering the size of damper available in market. Springs are designed and manufactured according to force calculation and size of dampers. Spring parameters are as follows:

PARAMETERS	FRONT	REAR
Eye to Eye distance	190 mm	210 mm
Free length	80 mm	116 mm
No. of Active Coils	4	6
Wire Diameter (d)	8 mm	8 mm
Outer Diameter (D)	51 mm	61 mm

Stiffness	121.84 N/mm	81.227 N/mm
Spring Index (D/d)	6.375	7.625

4. STEERING SYSTEM

Goals for steering team are to improve steering mechanism compared to last year's. New compact and light weight rack and pinion assembly is designed. Reverse Ackermann geometry is employed.

1. Rack and Pinion

From all manual steering systems, the more suitable is rack and pinion steering. Its simple construction, cheap and readily available, high mechanical efficiency. The steering ratio is 4:1. The lower ratio which gives the steering a quicker response you don't have to turn the steering wheel as much to get the wheels to turn a given distance and also possible to driver to turn the steering wheel without removing his hand.

STEERINGAND WHEEL GEOMETRY

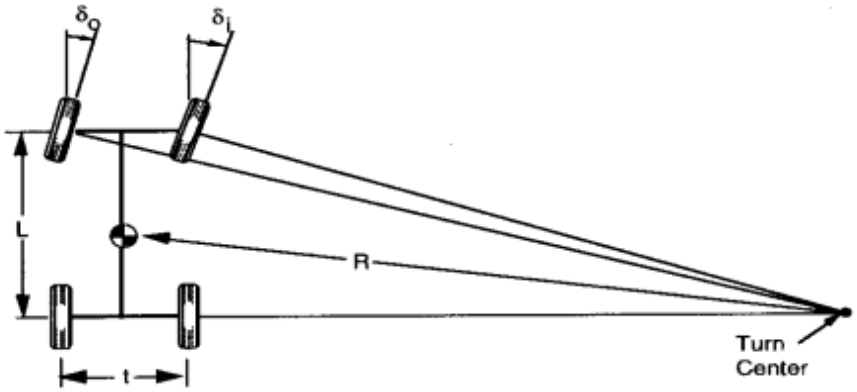


Fig.1.Steering

Ackerman condition

$\theta i=29.66°$, $\theta_o=33.164°$

$1/\tan\theta_o - 1/\tan\theta i = B/LR = 3.6m$

These steering ranges were thus made a goal for designing the steering arm and magnitude of rack travel distance by iteration method on optimum kinematics. After sever alliterations we get required result as follows:

Steering arm length	81 mm
Steering ratio	4:1
C-factor	100mm:360°
Steering wheel range	240°lockto lock
Steer angle of inside wheel	29.234°

Steer angle of outside wheel	33.164°
Turning radius	3525mm

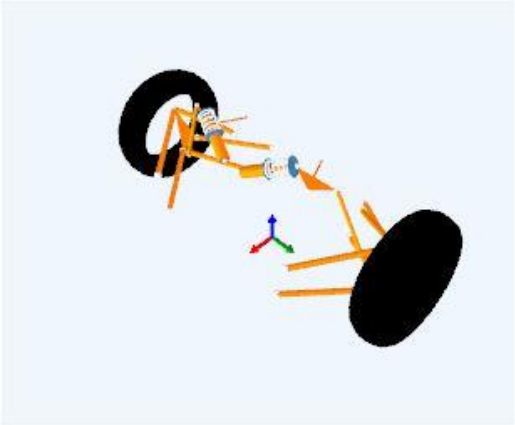
After deciding all the parameter of steering elements then we can calculate the steering effort. All the force calculation is based on static condition or car just to start the movement of wheel.

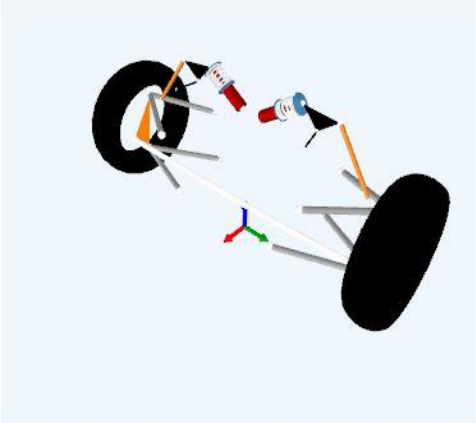
Wheel scrub radius	44 mm
Torque to rotate front wheels	50240 N mm
Steering arm length	81 mm
Force on the rack	625 N
Torque on pinion	10045.4 N mm
Steering wheel diameter	125mm
Steering Effort	95 N

As per force calculation, availability and cost. We have selected mild steel for fabrication of rack and pinion. Knowing the height of the rack, by selecting appropriate rack length to minimize the bump steer. The circular steering wheel with quick release steering hub is provided for quick egress in case of emergency.

Pinion	
Module	3
Number of teeth	11
Pitch diameter	32 mm
Pressure angle	20°
Face Width	10 mm
Rack	
Module	3
Number of teeth	16
Rack height, length	30 m, 440 mm

3. PICTORIAL REPRESENTATION





Front Suspension Geometry **Rear Suspension Geometry**

4.CONCLUSION

Structural components of vehicle are analyzed for various forces acting on vehicle using basic principles of mechanics and it is validated by modeling it in finite element software ANSYS. Fluid flow analysis is done for intake manifold nose of vehicle which shows minimum air resistance. Structure is safe and the vehicle is equipped with safety equipment. Engine can deliver optimum speed and power. Team has worked to make vehicle satisfy all the rules and perform well on race track.

Sponsorship

- Set Of Wet Tyres Acquired From JK Tyres.
- FRP Material And Fabrication Acquired From Dolphin Fibreglass, Rabale. Chassis Fabrication Sponsored By Titan Anthony(Rasayani).
- Travel and Commute Partner Drivezy India.
- Powder Coating Sponsor Tech-edge Powder Coating.
- Received Laser Profiling And CNC Tube Bending At Subsidised Rate In Chakan And Bhosari Midc.
- Chassis Material Received At 50% Rate From Siddhigiri Tubes.
- Engine Serviced At Subsidised Rate.
- The team successfully bagged sponsorship from Monster energy as a refreshment sponsors.

SUPRA Ranks /Certificates

- The Team MGM ACCELLORS was founded in the year 2015.
- The team first participated in SUPRA SAEINDIA 2015 which was then held at Kari Speedway (Chennai).
- Ever since the team participated in the event, it bought laurels to the college.
- The team bagged outstanding sets of achievements in cost, brakes and designs.

TEAM	YEAR	OVERALL RANK	RANK IN MUMBAI ZONE
SUPRA 2015	2014-15	36/65	3RD
SUPRA 2016	2015-16	60/125	2ND
SUPRA 2017	2016-17	30/120	2nd
SUPRA 2018	2017-18	80/140	3RD

Smart India Hackathon 2018: A Phenomenal Vision

Smart India Hackathon – 2018 was a software coding competition which involved around 2183 engineering and management colleges and universities from across India. 29 departments of Government of India participated in this event.

To envisage and promote Hon.Prime Minister Shri. Narendra Modi's Digital Literacy vision, this initiative aims to institutionalize a model for harnessing the creativity and technical expertise of almost 1,00,000 students for direct benefit of our nation.

About 27 Central Government Ministries and 18 State Governments have come together and posted 408 problem statements to the students participating in this grand initiative. More than 105234 students registered. With 17539 ideas are received from technical institutions in India, this surely has been a fantastic response!

Students from Department of Information Technology and Computer engineering represented Mahatma Gandhi Mission's College of Engineering & Technology (MGMCET), Kamothe, Navi Mumbai by participating in Hackathon event.

Under the guidance of **Prof. P Manivannan,** Department of Information Technology, students from both the disciplines constituted the Team BugSquashers and represented **Mahatma Gandhi mission's College of Engineering & Technology (MGMCET), Kamothe, Navi Mumbai** by participating the **'Grand Finale of Smart India Hackathon – 2018** organised by **AICTE and MHRD**, which was scheduled on 30th and 31st March 2018 at **Banaras Hindu University, Uttar Pradesh.**

The grand event commenced by the arrival of various team from all over India and HigherOfficials from BHU institute. The problem statement for the team **BugSquashers** was**,"Collection of information regarding discharge of untreated affluent in river."**

Out of 48 teams participating in the event, "BugSquashers stood **1st runner up** by coding forcontinuous 36 hours and bagging the **cash prize of 75,000/-** ". It was extremely great moment for the entire team and college. The young innovative minds could explore the horizons of technology which is tantamount to the latest technological applications and win Runner- up Trophy.

Team **BugSquashers (1ST Runner up) at BHU, Varanasi**

The students of Computer Engineering and Information Technology had participated in another event under the mentorship of **Prof. Sachin Chavan**, Dept of Computer Engineering and represented Mahatma Gandhi Mission's College of Engineering & Technology (MGMCET), Kamothe, Navi Mumbai. The team **'Techvist'** got selected for the **'Grand Finale of Smart India Hackathon – 2018'**, which was conducted on 30th and 31st March 2018 at Sri Krishna College of Engineering and Technology, Coimbatore, Tamil Nadu. The problem statement of our team was **'Integrated Call Numbers and Prediction Of Wildfires and Earthquake'**. **Team Techvist got selected among the 41 teams and received Deloitte Innovation Award and prize amount of 10,000/- INR.**

Team TECHVIST(**Deloitte Innovation Award)**

Under the guidance of **Prof. Venkat Raman**, students of Information Technology constituted the team **'Techminions'** and got selected for the 'Grand Finale of Smart India Hackathon – 2018', which was held on 30st and 31st March 2018 at Panipat Institute of Engineering and Technology.

Out of total 195 ideas received under the **Department of Post, Ministry of State(IC)** of **Communications,** 39 teams were shortlisted for the Grand Finale. The problem statement of our team was '**Design and demonstrate a digital addressing system as an extension of the existing PIN code**'. (Problem Code: #DOP6)

The efforts and the approach of the team was appreciated by ministry officials of Department of Post.

Team TECHMINION

MAHATMA GANDHI MISSION

MGM's College of Engineering and Technology

Kamothe, Navi Mumbai – 410 209

Our Hon'ble Prime Minister Shri. Narendra Modi, envisages a Digital India to bridge the digital divide in our country and further promote digital literacy in order to make development a comprehensive mass movement and put governance with everyone's reach in India. This initiative aims to institutionalize a model for harnessing the creativity and technical expertise of 45000 students for direct benefit of our nation.

Smart India Hackathon – 2017 was a computer programming competition which involved around 2183 engineering and management colleges and universities from across India. 29 departments of Government of India participated in this event.

The students of Department of Information Technology had participated in this event under the guidance of Prof. Venkat Raman and Prof. P Manivannan, Dept of Information Technology and represented Mahatma Gandhi Mission's College of Engineering & Technology (MGMCET), Kamothe, Navi Mumbai. The team 'TechNOBI' got selected for the '**Grand Finale of Smart India Hackathon – 2017', which was scheduled on 1st and 2nd April 2017 at C. V. Raman's College of Engineering, Bhubaneswar, Odisha.**

Out of total 120 ideas received under the Department of Biotechnology, 30 teams were shortlisted for the Grand Finale. The problem statement of this team was 'Online Feedback of Post-graduate students in Biotechnology'.

Team TechNOBI got selected among the top 15 innovative ideas under the Department of Biotechnology and received prize amount of 10,000/- INR.

The details of the team members are as follows:

Team Leader	Survase Deepak
Team Member 1	Jarhad Kalyani
Team Member 2	Mohd. Harun Ali
Team Member 3	Sayed Rahil
Team Member 4	Sandeep Dubey
Team Member 5	Pratik Joshi
Mentor 1	Prof. P Manivannan
Mentor 2	Prof. Venkat Raman

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Team TechNOBI’s leader Deepak Survase, along with all the team members, are very thankful to Dr. S. K. Narayankhedkar, Principal of MGMCET, for his continued support during the preparation of Smart India Hackathon from 20th Jan, 2017.