SPONSORSHIP BROCHURE 2013
Welcome to the Team
A Tough Competition

SAE BAJA: What it is?

THE SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) IS A 100-YEAR OLD INTERNATIONAL ORGANIZATION FOR MOBILITY ENGINEERING PROFESSIONALS. SAE HOLDS AN ANNUAL “BAJA” DESIGN COMPETITION AT BOTH INTERNATIONAL AND NATIONAL LEVEL. THE AIM OF THE PARTICIPANTS IS TO DESIGN, FABRICATE, TEST, MARKET AND RACE A SINGLE SEAT OFF-ROAD CAR PROTOTYPE THAT CAN WITHSTAND STRINGENT TEST CONDITIONS LAID DOWN BY THE SAE. EVERY YEAR, ABOUT 100 TEAMS FROM ACROSS THE WORLD CONVERGE AT THE SAE BAJA USA COMPETITION TO SHOWCASE THEIR PLANNING, MARKETING AND MANUFACTURING SKILLS. THE OFF-ROADERS ARE JUDGED ON THE ABILITY OF THE VEHICLE TO TRAVERSE A HARSH OFF-ROAD COURSE WITHOUT Succumbing TO THE RIGORS OF IT. TEAMS ALSO COMPETE TO HAVE THEIR DESIGN ACCEPTED FOR MANUFACTURING BY A FICTITIOUS FIRM. IN ADDITION TO THIS, THE STUDENTS THEMSELVES ARE RESPONSIBLE FOR RAISING ALL OF THE FUNDS NECESSARY TO COMPETE, WHICH ADDS A SIGNIFICANT CHALLENGE AND MAKES FOR A VALUABLE LEARNING EXPERIENCE.

“Team Manipal Racing has marked the advent of Manipal Institute of Technology in this prestigious and coveted competition. I wish all the best to the team members for their future endeavours.”

Dr. Ramamohan Pai B.
Team Principal
H.O.D Automobile Engineering, MIT
Where it all began...

SPATTERING MUD ALL AROUND WITH THE SOUND OF THE MEAN ENGINE REVERBERATING, PUTTING ALL ITS EFFORT TO SCALE AND OVERCOME THE THICK, ROCKY, ODDLY COALESCE TERRAIN OF DIRTY BROWN TRACK, SOUNDS QUITE GRUESOMELY EXCITING? DOESN’T IT? HOWEVER, THE TASK OF MAKING SUCH A MACHINE IS MUCH MORE CHALLENGING THAN WHAT APPEARS IN THE PINNACLE OF DISPLAY. THREE YEARS AGO, IN THE UNIVERSITY TOWN OF MANIPAL, THIS IS WHAT SOME TECHNICALLY INSPIRED GROUP OF PEOPLE DARED TO DREAM OF, THUS BRINGING INTO EXISTENCE TEAM MANIPAL RACING. THEIR DREAM CARRIES FORWARD TO THIS DAY, WITH THE BATON IN OUR HANDS, WITH INFLATED ZEAL TO RUN THE NEXT LEG OF THE RACE, THRUST FROM THE SUPPORT WE HAVE RECEIVED FROM ALL CORNERS AND LOOKING FORWARD TO PUT THE UNIVERSITY AND THE NATION TO A POSITION WHERE PEOPLE LOOK UP TO US AS TECHNICAL INNOVATORS ON A GLOBAL SCALE.

Mission 2013

An Update

SHIPPING OFF V3 BY AIRLIFT ON THE 27TH OF MAY, THE TEAM LANDED AT CHICAGO’S O’HARE INTERNATIONAL ON THE 1ST OF JUNE VIA FRANKFURT. WE WERE LOCATED IN MOUNT PROSPECT, A SUBURB IN THE CITY OF CHICAGO. WHILE WE WAITED FOR THE CAR TO ARRIVE, WE PROCURED THE SAFETY EQUIPMENT THAT COULD BE FOUND THERE. ON THE 3RD, WE WERE FINALLY ABLE TO SEE OUR VEHICLE, ARRIVED SAFE AND SOUND AT THE AMERICAN CARGO EXPRESS FACILITY IN THE CITY. FINALLY ON THE 6TH WITH THE CAR LOADED ON ITS TRAILER, THEY SHIPPED TO THE COMPETITION SITE IN THE NORTHERN STATE OF WISCONSIN. 7TH MORNING, THE FIRST MORNING OF THE COMPETITION, WE WERE ABLE TO GET INTO THE COMPETITION PIT CAMP WILL IN TIME FOR REGISTRATION. GOING FOR AN EARLY START THE NEXT MORNING, WE WERE ON OF THE FIRST ARRIVALS AT THE CAMP AROUND 6 AM AND GOT OUR FIRST TECH APPROVAL STICKER. THE MOMENTOUS TIME THAT DAY CAME LATE AFTERNOON AS WE BECAME THE FIRST INDIAN TEAM TO CLEAR TECHNICAL EVALUATION IN OUR FIRST ATTEMPT. IMMEDIATELY WE WENT ABOUT QUESTING FOR THE VARIOUS DYNAMIC EVENTS; ACCELERATION, SLEDGE-PULL, MANEUVERABILITY AND SUSPENSION & TRACTION. WE ENDED THE DAY ON A HIGH NOTE WITH A REMARKABLE POSITIONING OF 45TH IN THE MANEUVERABILITY EVENT GIVING US A GOOD STARTING POSITION FOR THE ENDURANCE EVENT THE NEXT DAY. AT AROUND 10, THE RACE FINALLY STARTED, V3 FORGED AHEAD OF MANY OTHER TEAMS AT THE START, AROUND 30 CARS BECAME VICTIMS OF THE CARNAGE IN THE FIRST LAP ITSELF, V3 SUFRED A BALL-JOINT FAILURE ON THE THIRD LAP AND WE WERE BROUGHT OUT FOR REPAIRS, AS WE WENT BACK IN, THERE WAS ANOTHER SETBACK WHEN THE SAME SUB-SYSTEM FAILED AFTER A SHORT WHILE. WE FLEDDGED TO DO OUR BEST AND THE CAR WENT BACK IN TO STAY IN THE COMPETITION, BUT AS IF BY FATE THE SAME PAIL FAILED AGAIN AND WE COULD NO LONGER REPAIR IT. THE TEAM WAS BITTERLY DISAPPOINTED FOR THE MEN HAD WORKED LONG AND HARD. WE SET ABOUT PACKING OUR CAR UP, IT HAD BROKEN DOWN BUT NEVER CRASHED INTO PIECES. THE CAR HAD ACHIEVED THINGS NEVER BEFORE ACCOMPLISHED BY AN ASIAN TEAM. WE REFLECTED ON THE LONG NIGHTS IN OUR WORKSHOP AND THE LONG AND ARDUOUS JOURNEY THAT HAD BROUGHT US TO THE CITY OF MACON, WISCONSIN, USA. WE COULD GO BACK WITH OUR HEADS HIGH, KNOWING WE HAD STEPPED INTO A NEW DIMENSION AND PAID THE WAY FOR THE TEAM’S FUTURE.
Team Manipal Racing

TMR at SAE BAJA Wisconsin 2009.
- Only Indian Team.
- One of the 2 teams from Asia.
- Secured the 14th position in its debut race design report.

TMR at SAE BAJA Rochester 2010
- One of 3 Indian Teams
- One of the 4 teams from Asia.
- Finished 62nd out of 94 teams, making it again the best Indian finish ever, beating our own finish of 97th from 2009.
TMR at BAJA SAE WISCONSIN 2012

• Passed Tech Inspection at the first attempt.
• Competed in all dynamic events, a first for an Indian BAJA Team.
• Very good performance in manoeuvrability.
• Participated in Endurance Race.
• Scored 287/1000, highest by any Asian team till date.

Will take part in SAE BAJE India in February 2013.
• Testing is being done rigorously.
• Virtual Baja has been cleared.
**TMR V4 SPECIFICATIONS**

**STRUCTURES**
- **4130 STEEL TIG WELDED**
- **HIGHER TORSIONAL RIGIDITY (AROUND 1000 LBS PER DEGREE)**
- **INTENDED WEIGHT – AROUND 30KGS**
- **SELF MANUFACTURED BODYWORKS OF CARBON FIBER**

**SUSPENSION**
- **SLA DOUBLE WISHBONE IN FRONT & 3 LINK SUSPENSION IN REAR**
- **FOX EVOL AIR SHOCKS IN FRONT AND PODIUM X IN REAR**
- **WHEEL TRAVEL AND RIDE HEIGHT OF 14”**
- **ANTI ROLL BAR IN REAR**
- **CAMBER : 1.5°, CASTER : 6° AND KPI 10°**
- **CHROMOLY USED FOR MANUFACTURE OF A ARMS ALONG WITH ROD ENDS**

**TRANSMISSION**
- **POLARIS P90 CVT**
- **SELF MANUFACTURED HIGH AND LOW CHAIN BOX**
- **SELF MANUFACTURED SPOOL DIFFERENTIAL POLARIS HALF SHAFTS**
- **MAXIMUM SPEED OF 55 KMPH AND ACCELERATION OF AROUND 1G**

**BRAKES**
- **INDEPENDENT HYDRAULIC CIRCUITS FOR FRONT AND REAR**
- **SELF MANUFACTURED ALUMINUM PEDAL ASSEMBLY**
- **WILWOOD MASTER CYLINDERS AND CALIPERS**
- **POLARIS ROTORS 7” IN FRONT AND REAR**
- **FLEXIBLE STEEL BRAKE LINES, CUTTING BREAKS IN THE REAR**
- **STOPPING DISTANCE FROM TOP SPEED OF 4 FEET**

**STEERING**
- **60% ACKERMAN GEOMETRY WITH 1° TOE OUT**
- **FAST RACK WITH RATIO AROUND 6:1**
- **SELF MANUFACTURED CARBON FIBER STEERING WHEEL & EN8 TIE RODS WITH ROD ENDS**
- **TURNING CIRCLE OF AROUND 6 FEET**
For 2013

• TO IMPROVE TRANSMISSION DESIGN TO OBTAIN FASTER SPEED ACCOMMODATION
• TO IMPROVE PEDAL MOUNTINGS
• TO MANUFACTURE A TORSIONALLY RIGID CHASSIS
• TO DESIGN SUSPENSION FOR THE BETTER HANDLING AND ROAD HOLDING
• ERGONOMIC COCK PIT DESIGN
• WEIGHT BELOW 450 POUNDS

How to achieve?

• TUNE THE CVT PROPERLY BY EXTENSIVE TESTING
• MANUFACTURE A NEW GEARBOX AND SPOOL
• USE DURALUMIN AND CNC MACHINING FOR ACCURACY
• LIGHT WEIGHT CARBON FIBER COMPONENT
• USE OF ROBUST ROD ENDS AND SPHERICAL BEARINGS
• MECHANICALLY ACTUATED CUTTING BRAKES AND SELF MANUFACTURED ALUMINUM BRAKE PEDAL ASSEMBLY

Vision

INNOVATE. INITIATE. INCARNATE. THESE THREE WORDS COVER EVERYTHING DONE AT TMR. NOT ONLY DO WE WANT TO CONCEPTUALIZE IDEAS BUT ALSO SUBSTANTIATE THEM INTO REALITY. BY IMPLEMENTING CONCEPTS PRACTICALLY AND COMPETING AT BAJA COMPETITIONS WORLDWIDE, WE ARE NOT ONLY BUILDING RACE CARS, WE ARE CREATING REAL ENGINEERS, MAKING OUR UNIVERSITY AND OUR NATION PROUD...
The Opportunity

Why get involved?

Sponsorship Benefits

TMR: The Best Choice for Sponsors
# Team Manipal hoping for a better show at U.S. off-road competition

**Staff Correspondent**

**MANIPAL** Team Manipal Racing (TMR) is all set for the Burlington, Wisconsin off-road competition, SAE Baja Wisconsin, to be held from June 7 to 10. Their vehicle, TMR V3, was formally launched by the Chancellor of Manipal University, Dr. Ramdas M Pai, on Monday. This is the third time that the students of Manipal Institute of Technology (MIT) have been selected to compete in the USA Baja Wisconsin competition.

**Team Manipal to showcase its talent at Wisconsin**

**MANIPAL** Team Manipal Racing (TMR) will again compete at the Burlington, Wisconsin off-road competition, SAE Baja Wisconsin, to be held from June 7 to 10. Their vehicle, TMR V3, was formally launched by Chancellor of Manipal University, Dr. Ramdas M Pai, on Monday. This is the third time that the students of Manipal Institute of Technology (MIT) have been selected to compete in the USA Baja Wisconsin competition.

## Budget 2013

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**GRAND TOTAL = Rs 43,30,000**
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Siddharth Singh
Team Leader 2011-12

It’s been a long time indeed since we embarked on this journey, culminating into the third vehicle from Team Manipal Racing, christened “V3”. TMR has come a long way from humble beginnings by 9 students in 2009 to a strength in excess of 35 as of 2012, a number that will only grow in the future. We have moved from strength to strength, broadening the scope and magnitude of the project each time, trying to incorporate new technologies and better components, improving our infrastructure and capabilities as well as setting high standards for professionalism from team members.

SAE BAJA Wisconsin 2012 will go down as a huge breakthrough in the team’s history as we became the first Indian team to clear technical inspection on first attempt and compete in all static and dynamic events earning respectable rankings throughout. We have opened the doors towards broader horizons, spearheading Indian participation at the coveted SAE BAJA International competition. Its been a pleasure, an utterly enthralling experience throughout, as the challenges involved in building an internationally competitive ATV are great, not to forego the logistical challenges faced in transit over such a long mile, members of the team have risen to the call and delivered through long and arduous hours to make this far dream a reality. Today, TMR alumni are spread all over the world, associated with some of the leading names in the automotive field, a testament to their work as part of the team in years gone by.

The venture has involved a tremendous and unprecedented amount of finance and material handling which would not have been possible without the support of our multitude of sponsors, showing unflinching belief in the team’s capabilities and mission. A special mention goes to our Title Sponsors Sahara India Parivar and Manipal University, our logistical partners, LeTrans Logistics for a superb job at handling all our cargo on a tight schedule and our profound gratitude to the guys at American Cargo Express Chicago. As we pass on the reins to the next generation, it has been a privilege to have played a part in the team and I take pride in all that has been accomplished in season 2012 by my colleagues, we wish godspeed to the members of project V4 with these words

Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.

Rudrarth Vatsa
Team Manager 2012-13

2012-2013 promises to be a fantastic year for TMR. This year will see implementation of the design principles put forward through the whole of the degree, ‘Conceive’, ‘Design’, ‘Implement’ & ‘Operate’, resulting into TMR V4.

Using the success of the previous year’s car as the test bed for new ideas and development, the 2013 entry is sure to be the most competitive BAJA vehicle to roll out of the Team Manipal Racing’s Workshop.

Planned Future Competitions

SAE BAJA India - Feb 2013
SAE BAJA USA - June 2013
Contact US

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Tel: +91-820-2922323

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Manipal Institute of Technology
Karnataka, India

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Rudrarth Vatsa
Team Manager
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Management Team

LOGISTICS – SUMEEN GARG
PUBLIC RELATIONS – ZINIA SINGH
WORKSHOP MANAGEMENT – HEENA SHAH
FINANCE – PRABHAT HEGDE
SPONSORSHIP – APOORV MOHAN SHRIVASTAV, PRANAV AGARWAL, VAMSHI
MOTHUKURI, SIDDHA PANIGRAHI
WEB AND GRAPHICS DESIGN – www.dzynvzyn.in

visit us at www.teammanipalracing.com