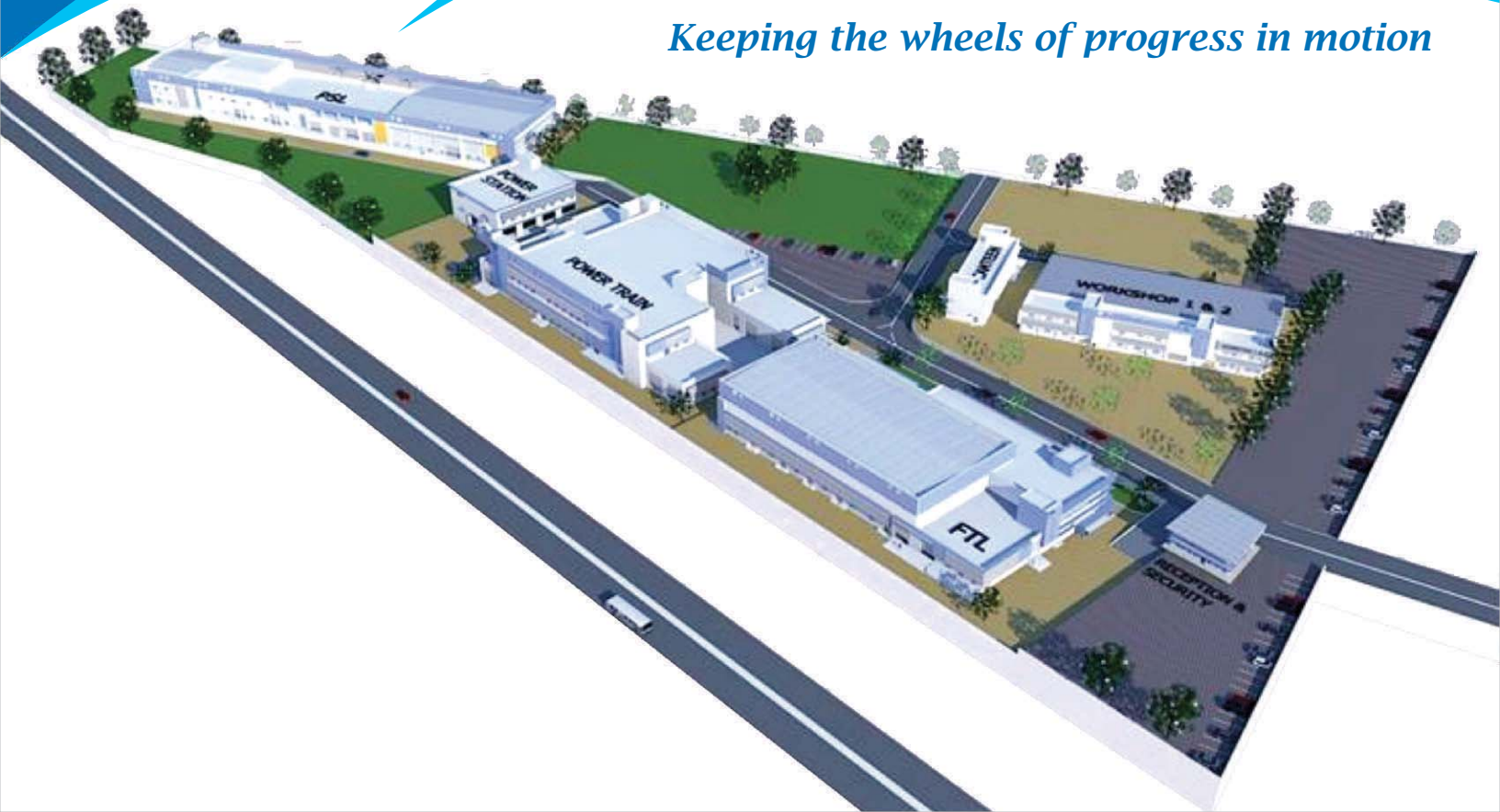
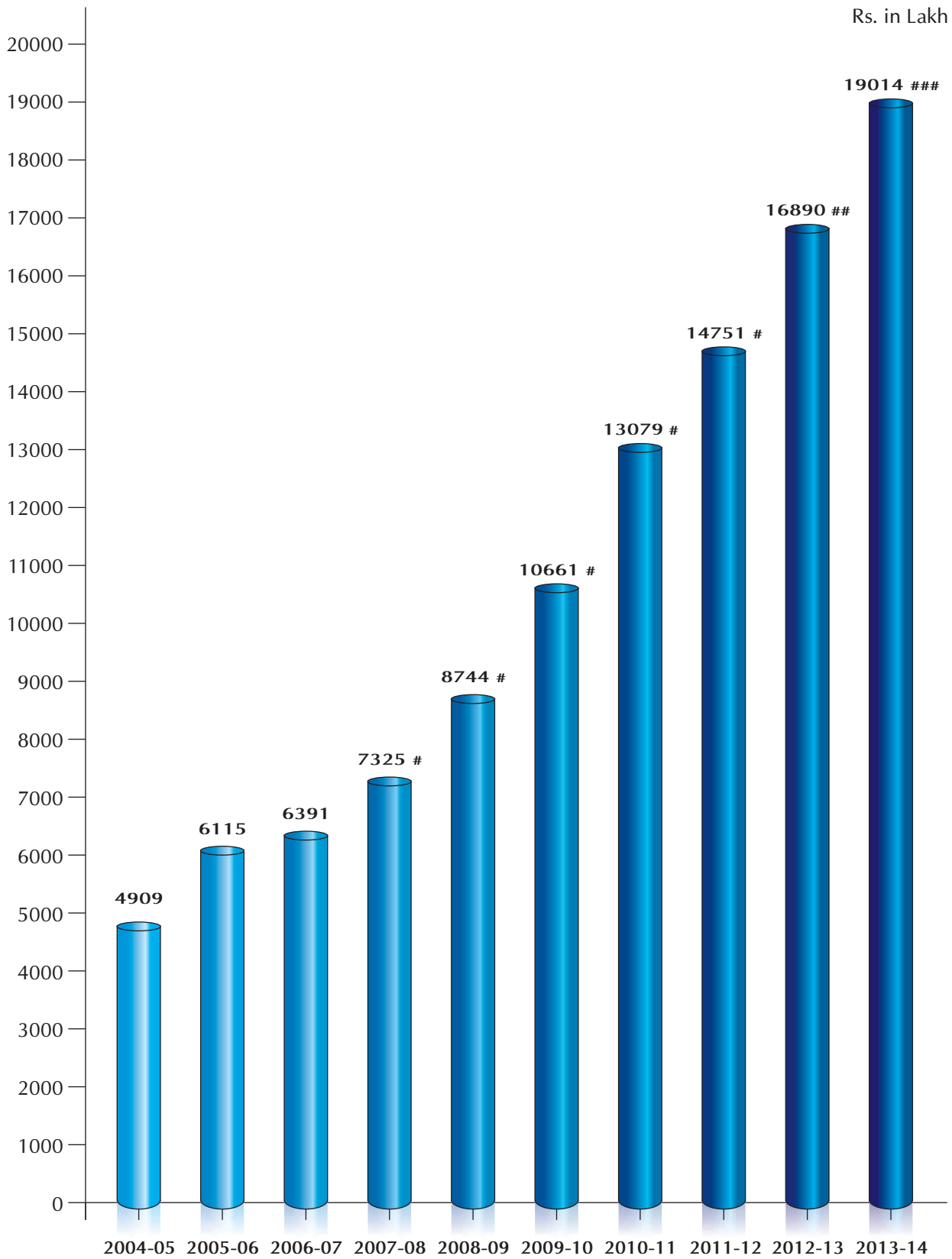


44th ANNUAL REPORT
2013-2014

Keeping the wheels of progress in motion



Total Income



Excluding Interest on earmarked fund transferred to respective fund and fund transferred from R & D reserve fund.

Excluding Interest on earmarked fund transferred to respective fund Rs. 2353 lakhs and fund transferred from R & D reserve fund Rs. 48 lakhs.

Excluding Interest on earmarked fund transferred to respective fund Rs. 2774 lakhs and fund transferred from R & D reserve fund Rs. 34 lakhs.

Highlights of the year

- **12.8% growth in Operational Income (OI).**
- **55% of OI contributed by non-certification business.**
- **ARAI has been appointed as Technical Service provider by RDW, Netherlands to carry out CoP verification audits at the production facilities of the manufacturers.**
- **Laboratories at Chakan equipped with state-of-the-art facilities in Passive Safety, Fatigue & Materials, and Powertrain; to become progressively operational starting from December 2014.**
- **Allocation of financial assistance for Corporate Social Responsibility (CSR) activity enhanced from 0.5% of net surplus to 1%.**

Governing Council Members of ARAI : 2013-14

PRESIDENT**Mr. Vinod Dasari, Managing Director, Ashok Leyland Ltd****VICE PRESIDENT****Mr. Rajan Wadhera, Chief Executive Technology, Product Development & Sourcing,
Member of the Group Executive Board, Mahindra & Mahindra Ltd****DIRECTOR****Mr. Shrikant R. Marathe**

MEMBERS

1 Ashok Leyland Ltd	9 General Motors India Pvt Ltd	17 Piaggio Vehicles Pvt Ltd
2 Bajaj Auto Ltd	10 Honda Cars India Ltd	18 Tata Cummins Ltd
3 Bosch Ltd	11 Hyundai Motor India Ltd	19 Tata Motors Ltd
4 Cummins India Ltd	12 JCBL Ltd	20 Toyota Kirloskar Motor Pvt Ltd
5 Eicher Motors Ltd	13 Kirloskar Oil Engines Ltd	21 TVS Motor Co. Ltd
6 Fiat India Automobiles Ltd	14 Mahindra & Mahindra Ltd	22 VE Commercial Vehicles Ltd
7 Force Motors Ltd	15 Mahindra Trucks & Buses Ltd	23 Volkswagen India Pvt Ltd
8 Ford India Pvt Ltd	16 Maruti Suzuki India Ltd	24 Volvo India Pvt Ltd

GOVT. OF INDIA REPRESENTATIVES

Mr. Ambuj Sharma,

Additional Secretary,
Govt of India
Ministry of Heavy Industries & Public
Enterprises
Department of Heavy Industry
Udyog Bhavan, New Delhi 110 011

Mr. S. K. Goyal,

Director (Finance)
Govt of India
Ministry of Heavy Industries & Public
Enterprises
Department of Heavy Industry
Udyog Bhavan, New Delhi 110 011

Mr. Sushil Lakra,

Industrial Adviser,
Govt of India
Ministry of Heavy Industries & Public
Enterprises
Department of Heavy Industry
Udyog Bhavan, New Delhi 110 011

INVITEES

- Society of Indian Automobile Manufacturers
- Automotive Component Manufacturers Association of India
- Tractor Manufacturers Association
- National Automotive Testing and R&D Infrastructure Project

SECRETARY TO THE GOVERNING COUNCIL

Mrs. Prajakta M. Dhere

ADDRESS

Survey No. 102, Vetal Hill, Off Paud Road, Kothrud,
Pune 411 038, Maharashtra, INDIA
Phone : 91-20-3023 1111, 3023 1200
Fax : 91-20-3023 1104
Email : director@araiindia.com

BANKERS

- Bank of Baroda
- HDFC Bank Ltd

STATUS OF INSTITUTE

Registered under
The Societies Registration Act,
XXI of 1860 Regn. No. 133/66
GBBSD dated 10.12.1966

AUDITORS

M/s. A. R. Sulakhe & Comp.

Chartered Accountants

Head Office :

Anand Apartment, 1180/2, Shivajinagar, Pune 411 005

ARAI Members : 2013-14

- | | |
|--|---|
| 1 Ashok Leyland Ltd. | 40 Mahindra Reva Electric Vehicles Pvt Ltd |
| 2 AMW Motors Ltd (Formerly Asia MotorWorks Ltd) | 41 Mahindra Trucks and Buses Ltd
(Formerly Mahindra Navistar Automotives Ltd) |
| 3 Atul Auto Ltd. | 42 Man Trucks India Pvt Ltd
(Formerly Man Force Trucks Pvt Ltd) |
| 4 A.J. Auto Pvt. Ltd. | 43 Mansons Automotive Rubber Pvt Ltd |
| 5 Bajaj Auto Ltd. | 44 Maruti Suzuki India Ltd. |
| 6 Behr-Hella Thermocontrol (India) Pvt Ltd | 45 Mercedes-Benz India Pvt Ltd |
| 7 Bharat Forge Ltd. | 46 MLR Motors Ltd. |
| 8 Bharat Seats Ltd. | 47 MSKH Seating Systems India (P) Ltd * |
| 9 Bosch Limited | 48 Piaggio Vehicles Pvt. Ltd. |
| 10 Brakes India Ltd. | 49 P M Diesels Pvt Ltd |
| 11 Cummins India Ltd. | 50 Premier Ltd. |
| 12 Cummins Technologies India Ltd * | 51 Randhawa Automobile Engineering Pvt Ltd |
| 13 Dars Automobiles Inc. ~ | 52 Rinder India Pvt. Ltd. |
| 14 Delphi-TVS Diesel Systems Ltd. | 53 Rocket Engineering Corporation Pvt Ltd |
| 15 Eicher Motors Ltd. | 54 Rohan BRC Gas Equipment Pvt. Ltd. |
| 16 Enginetech Systems Pvt. Ltd. | 55 Rotary Electronics Pvt Ltd. |
| 17 Fiat India Automobiles Ltd. | 56 Scooters India Ltd. |
| 18 FIEM Industries Ltd. ~ | 57 Simpson & Co. Ltd. |
| 19 Force Motors Ltd. | 58 Skoda Auto India Pvt. Ltd. |
| 20 Ford India Pvt Ltd. | 59 S. M. Auto Engineering Pvt. Ltd. |
| 21 F P Seating Systems Pvt Ltd | 60 SML Isuzu Ltd |
| 22 General Motors India Pvt. Ltd. | 61 Spaco Technologies (India) Pvt Ltd. |
| 23 Greaves Cotton Ltd. | 62 Sri Ramdas Motor Transport Ltd. |
| 24 Hero Electric Vehicles Pvt Ltd * | 63 Tata Cummins Ltd. |
| 25 Hindustan Motors Ltd. | 64 Tata Motors Ltd. |
| 26 Honda Cars India Ltd. (Formerly Honda Siel Cars India Ltd.) | 65 Toyota Kirloskar Motor Pvt Ltd. |
| 27 Hyundai Motor India Ltd. | 66 TVS Motor Co. Ltd. |
| 28 International Cars and Motors Ltd | 67 Ucal Products Pvt. Ltd. |
| 29 JCBL Ltd. | 68 Vanaz Engineers Ltd |
| 30 Jetex Carburettors Pvt. Ltd. ~ | 69 Varroc Lighting Systems (India) Pvt Ltd
(Formerly Visteon Technical & Services Centre Pvt Ltd) |
| 31 Johnson Controls Automotive Ltd
(Formerly Tata-Johnson Controls Automotive Ltd.) | 70 VE Commercial Vehicles Ltd. |
| 32 Kanda Auto Pvt Ltd. | 71 Vira Industries ~ |
| 33 Kirloskar Oil Engines Ltd. | 72 Virama Laminates Pvt Ltd |
| 34 Lear Automotive India Pvt. Ltd. | 73 Volvo India Pvt. Ltd. |
| 35 Lombardini India Pvt Ltd | 74 Volkswagen India Pvt Ltd |
| 36 Madras Engineering Industries Pvt Ltd. | 75 WABCO India Ltd |
| 37 MM Auto Industries Ltd
(Formerly M and M Auto Industries Ltd.) | 76 Wheels India Ltd. |
| 38 Mahindra Gujarat Tractor Ltd. | |
| 39 Mahindra & Mahindra Ltd. | |

Committees of ARAI : 2013-14

Finance & Internal Audit Committee

CHAIRMAN

Mr. Rajan Wadhwa

Vice President – ARAI,
Chief Executive Technology, Product Development & Sourcing,
Member of the Group Executive Board, Mahindra & Mahindra Ltd

MEMBERS

Mr. N. D. Pathak

Chairman & Managing Director,
Spaco Technologies (India) Pvt Ltd

Mr. T. Vinodkumar

CFO,
Kirloskar Oil Engines Ltd

Mr. Suhas Kadlaskar

Vice President-Corporate Affairs
& Human Resources,
Mercedes-Benz India Pvt Ltd.

Mr. Venugopal P. Rao

Head – (NPI-CVBU Business Planning),
Tata Motors Ltd

Mr. S. K. Goyal

Director (Finance),
Govt. of India,
Ministry of Heavy Industries & Public
Enterprises,
Dept. of Heavy Industry

Mr. Nitin Gokarn

CEO & Project Director,
National Automotive Testing and R&D
Infrastructure Project (NATRiP)

Mr. Shrikant R. Marathe

Director-ARAI

Project Evaluation & Monitoring Committee

CHAIRMAN

Mr. Jayanta Kumar Deb

Sr Vice President
Head – Product Development (Automotive Sector), Mahindra & Mahindra Ltd

MEMBERS

Mr. R. S. Sachdeva,

Executive Vice President and
Head - Technology,
VE Commercial Vehicles Ltd

Mr. I. V. Rao,

Executive Adviser,
Maruti Suzuki India Ltd

Mr. S. Janardhanan,

Vice President (Co-ordination)
Simpson & Co. Ltd

Mr. M. N. Muralikrishna

Technical Adviser
TVS Motor Co. Ltd

Mr. Vinay Harne,

President (NPD)
TVS Motor Co.Ltd

Mr. T. C. Gopalan

Chairman (Technical Committee)
Tractor Manufacturers Association

Mr. Vijay Damodaran,

Engineering Chief,
General Motors India Pvt Ltd

Mr. Michael Poznanski Eisenschmidt,

Technical Head,
Volkswagen India Pvt Ltd

Mr. Aniruddha Kulkarni,

Chief Technology Officer,
Force Motors Ltd

Mr. Sushil Lakra,

Industrial Advisor,
Govt. of India,
Ministry of Heavy Industries &
Public Enterprises,
Dept. of Heavy Industry

Mr. Nitin Gokarn,

CEO & Project Director,
National Automotive Testing and
R & D Infrastructure Project

Mr. Shrikant R. Marathe

Director-ARAI

Mr. D. J. Kulkarni,

Sr. Dy. Director - ARAI

Mr. S. C. Gadgil,

Dy. Manager, ARAI,
Member Secretary, PEMC of ARAI

**Mr. Vinod Dasari**
President**Mr. Rajan Wadhwa**
Vice President

Dear Members,

I am pleased to present our Annual Report for the Financial Year 2013-14. This year has been another successful period for us, as we continued to deliver strong results with our Operational Income registering a growth of about 12.8%. Our success results from our dedication to provide quality services to our customers by working in partnership with them to deliver cost effective innovations, value and quality.

We continued to see momentum in our non-certification business, which accounted for about 55% of our Operational Income. This strong performance demonstrates the effectiveness of our strategic priority of focusing on research and developmental work. Our relentless focus on customer satisfaction, operational excellence and quality has driven us forward and will continue to do so in future. I would like to congratulate Director – ARAI, and each and every employee, whose commitment and efforts made Financial Year 2013-14 yet another successful year for the organization.

We firmly believe that innovation and investment in research and development provide the foundations for a successful future. Therefore, we are focused on expanding our technical capabilities to take up research projects to build a sustainable, long-term competitive advantage. This year we successfully completed a project supported by DHI on study of 'Effect of deformation temperature on microstructure and properties of hot forging materials'. Seven other projects currently being executed include, two projects supported by DHI, viz. development of simulator for EV/HEV application and development of design guidelines for light-weight city bus. The other five, which are internally funded projects, are on building a prototype EV small commercial vehicle for intra-city application, development of control strategies for Gasoline Direct Injection (GDI) ECU application, road vehicle interaction analysis study using 3D road profiles, development of transmission suitable for LCV application and development of high performance 3 Cylinder engine. We are also facilitating establishment of five Inspection & Certification (I&C) centres across five states under an initiative of Ministry of Road Transport & Highways (MoRTH).

Over the years, technology has evolved from being a desirable investment into an essential investment. Looking ahead, technology is not just desirable or essential; it has become the vital success factor. It is this reality that drives us in investing in newer technologies and upgrading our existing facilities. Our investments are targeted to improve our ability to serve customers, accelerate growth and expand our capabilities. We have continued our efforts in this direction through investments in facilities for pre cat and post cat emission evaluation; seat anchorage / safety belt and static airbag deployment testing; four station tyre endurance testing; tyre cavity measurement; resonance testing; post processing software etc., in addition to the new facilities being set-up under NATRiP and modernization of existing facilities. We are confident that these investments will enable us to achieve our growth ambitions.

We have always believed that our biggest assets are our people. We are committed to cultivating the potential of our talented employees through extensive professional development programmes and by focusing on providing safe and healthy workplaces. Various measures in-line with these ideas are being implemented.

Mobilizing the skills and passions of our future scientific and engineering leaders fuels our nation's success. To take this idea forward, we have associated ourselves with renowned Indian as well as International Universities to offer under-graduate, post-graduate and doctoral programmes. Through the collaborations with Vellore Institute of Technology (VIT), Vellore; VEL TECH University, Chennai; College of Engineering, Pune (CoEP); University of Alabama (UAB), Birmingham, USA; and Braunschweig University, Germany; we offer Ph.D., M. Tech, M.S. and B. Tech. programmes with specialization in various automotive technology disciplines. During the year we also organized thirty-eight Proficiency Improvement Programmes (PIPs) and three Domain Training Programmes (DTPs) for automotive industry professionals.

The fourteenth edition of 'Symposium on International Automotive Technology', SIAT 2015, will be organized in association with SAEINDIA, NATRiP and SAE International during 21 - 24 January 2015. SIAT EXPO 2015 will be held concurrently with the symposium. This edition of SIAT symposium will focus on technologies for Safer, Cleaner and Quieter vehicles with enhanced connectivity.

ARAI provides secretariat services to 'Automotive Industry Standards Committee' (AISC) and contributes towards formulation and harmonization of standards. A total of 149 standards covering wide range of subjects for different categories of motor vehicles have been published by AISC till date. This year, five standards were released, with several others nearing completion.

Even as we pursue our growth targets, we ensure that our hearts remain tuned to the area of social responsibility. Through our Corporate Social Responsibility (CSR) initiative, we continue to be committed to bringing more productive and inspired thinking to the needs of the communities in the society where we live and work. We voluntarily started our CSR initiative in the year 2008, earmarking 0.5% of the previous year's net surplus as financial assistance for CSR activities. This allocation has been now enhanced to 1% from the Financial Year 2013-14. This year, we identified twelve projects in the areas of education, environment and health for our CSR activities.

I am sure our growth trajectory will continue to be fueled by our values, culture and service. We at ARAI, continuously endeavour to demonstrate our attributes and capabilities like adaptability, continuous improvement and learning, as we seek to find new ways to deliver on our commitments to our customers. Looking towards the future, I am confident we will meet our customers' expectations and at the same time, we will challenge ourselves to aim higher, go further and achieve more.

I wish to share with you an important senior management change. The current Director, Mr. Shrikant Marathe, is due to retire on July 1st 2014 after a stint of 9 years with us. He has been instrumental in the growth of the institute by focusing on the R&D projects for the Industry, Government and ARAI, without losing focus on homologation activities. ARAI has been a well respected organization since its inception which is now further enhanced due to strategic focus on R&D service to the industry. As he moves onwards in life to pursue his goals and interests, let us thank him for his valuable contribution and wish him all the best.

Mrs. Rashmi Urdhwarshre, who currently heads Homologation Management & Regulation Department, will take over as Director – ARAI from July 2nd 2014. I wish her success and I am sure, her experience, expertise and insights will propel the institute forward to accelerated growth.

I would like to take this opportunity to sincerely thank the Members of the Governing Council; Department of Heavy Industry (DHI); the Chairman and Members of Project Evaluation and Monitoring Committee; the Chairman and Members of Finance and Internal Audit Committee; and ARAI Members for their unstinted support and guidance. Also, I would like to thank our customers, associates, Director and all ARAI employees for their commitment and contribution.

While a great deal of work lies ahead, we believe our strategy is sound, our execution will improve, and that we are extremely well-positioned to deliver best-in-class service in the years to come. With our emphasis on technology, innovation and quality, which are critical elements of customer satisfaction, we are well-positioned to become a global R&D organization. I am confident that we can attain success in all our ventures and reach the impressive growth targets that we have set for ourselves.

Vinod Dasari



Mr. Shrikant R. Marathe
Director

The Governing Council of ARAI has great pleasure in presenting the Annual Report along with Technical Report and Audited Statement of Accounts for the year ending 31st March 2014.

This year, our Operational Income grew by 12.8% in spite of a general lull in the automotive sector. A noteworthy aspect has been our revenue from non-certification business, which accounted for about 55% of our total operational income. This is very much positive and encouraging, as this is in-line with our vision.

We view R&D capabilities as a vital component of our strategy to provide safer, cleaner and reliable cost-effective solutions to the automotive industry. In-line with this focus we have been carrying out R&D in the areas where we believe we can bring cost-effective technologies that matter most to the people we serve. At the same time, we are also concentrating on increasing our certification activities. This year, we signed an agreement with RDW, the approval authority in Netherlands. Under this agreement, RDW has appointed ARAI as Technical Service provider to carry out CoP verification audits at the production facilities of the manufacturers on behalf of RDW, Netherlands. This clearly shows the confidence RDW has in ARAI's capabilities.

As we enter the Financial Year 2014-15, more opportunities and challenges are ahead of us. Our upcoming laboratories at Chakan will become progressively operational starting from December 2014. These laboratories will have state-of-the-art equipment in Passive Safety, Fatigue & Materials, and Powertrain. I am confident; with these additions, our team will certainly take up many more challenges as always to emerge as a stronger organization.

As my term as Director – ARAI concludes on 1st July 2014, I would like to put on record the wonderful experience I have had during these 9 years of my tenure. Reflecting on these 9 years, I am pleased to note that we have been successful to take up several new R&D projects. This was possible only due to the confidence shown by our customers in assigning challenging projects, and unstinted and determined efforts of our entire team. This was a new phase in my life and I have had the opportunity to learn a lot during this period. I have professionally enjoyed every bit of it and wish to thank everyone in the industry and at ARAI, for having shared this memorable journey.

Beginning 2nd July 2014, Mrs. Rashmi Urdhwarshre, who is currently heading Homologation Management & Regulation Department, will take over as Director – ARAI. I would like to take this opportunity to wish her all the best for her new assignment as Director – ARAI. I am confident that ARAI will continue to grow and flourish under her able leadership, fulfilling its mission and making contributions to the nation.

On behalf of Team ARAI, I would like to thank the President, Vice President, Members of the Governing Council, Senior Officials from the Department of Heavy Industry, Chairman and Members of Finance and Internal Audit Committee, Chairman and Members of Project Evaluation and Monitoring Committee, all the members of ARAI and also, all our customers from India and abroad for their unwavering and continuous support and confidence shown in us. Without this, we would not have been able to achieve such a performance.

Shrikant R. Marathe

OPERATIONAL HIGHLIGHTS

■ **Finance & Accounts**

The Income & Expenditure Account, Balance Sheet and Auditor's Report are presented herewith.

• **Financial performance**

ARAI has continued to show excellent performance during the Financial Year 2013-14. The Income Target has been achieved and Operational Income has gone up by 12.85% to Rs. 17,129 lakh in 2013-14 as compared to Rs. 15,178 lakh in 2012-2013. The Total Income, including Membership Subscriptions, Interest, etc. has reached a figure of Rs. 21,788 lakh (excluding funds transferred from R&D reserve fund) as compared to Rs. 19,243 lakh of last year. All this had been possible due to several measures undertaken in overall ARAI governance, in various areas such as finance, purchase, invoicing procedure, time management, productivity, competence building and Human Resource Development etc.

• **Investment of funds**

The cash assets available with ARAI have been invested in Scheduled Banks / Financial Institutions in various Deposit Schemes as per Government guidelines and in Savings Bank Accounts.

• **Pattern of funding**

Projects approved by the Cess Committee are supported, either fully or partially by Department of Heavy Industry (DHI), Ministry of Heavy Industries & Public Enterprises (MHI&PE), Government of India; out of Automobile Cess funds. In case of partially funded Cess projects, the balance is contributed from ARAI funds. Further, ARAI also takes up R&D projects funded from its internal funds. ARAI is self supporting in respect of operational expenditure and is not getting grants for recurring expenditure.

• **Appointment of Statutory Auditors**

M/s A.R. Sulakhe & Comp., Chartered Accountants, Pune were appointed as Statutory Auditors for the year 2013-2014 in the Annual General Meeting held on 5th September 2013.

• **Membership Subscription**

The total number of members of ARAI as on 31/3/2014 is 72 and the Annual Membership Subscription for the year under report is Rs. 415.18 lakh. Membership Subscription is outstanding from 5 member companies for the year 2013-14.

- **Income tax**

The Central Board of Direct Taxes has approved ARAI for exemption purposes under Sec. 35(1)(ii) of the Income Tax Act, 1961 vide Notification No. 9/2007 (F.NO. 203/18/2005-ITA-II) dated 28-3-2007 effective 1-4-2004.

- **Recognition by DSIR**

The Department of Scientific & Industrial Research, Ministry of Science & Technology, Govt. of India, has renewed recognition to ARAI as a Scientific and industrial Research Organization (SIRO) for further period from 01-04-2014 to 31-03-2017.

- **Credit Rating**

The rating on the bank facilities of ARAI has been reaffirmed at CRISIL A1+ (corresponds to very strong degree of safety regarding timely payment of financial obligations).

- **Government Supported R&D Projects**

During the year, following R&D project supported by Department of Heavy Industry (DHI) was successfully completed.

- Effect of deformation temperature on the microstructure and properties of hot forging materials (implemented at ARAI – Forging Industry Division)

Further, following DHI supported R&D projects are in progress.

- Development of design guidelines for light weight city bus
- Development of off-line and real-time simulator for EV and HEV application

- **ARAI R&D Projects**

Following internally funded R&D projects are under implementation.

- Building a prototype EV small commercial vehicle for intra-city application

- Development of control strategies for Gasoline Direct Injection (GDI) ECU application

- Road vehicle interaction analysis study for durability and ride comfort using 3D Road Profiles in virtual and experimental domains

- Development of Transmission suitable for LCV application

- Design & development of high performance 3 Cylinder CRDI Euro 4 diesel engine

- **Business Development**

- Agreement signed with RDW, the approval authority in Netherlands, under which ARAI has been appointed as Technical Service provider to carry out CoP verification audits at the production facilities of the manufacturers on behalf of RDW, Netherlands

- Memorandum of Understanding (MoU) signed with Michelin, USA for studying 'Tyre Road Interaction Analysis'

- Some of the new services / processes / methodologies developed during the year include verification of OBITS as per Urban Bus Specification, durability simulation of seat assembly, high altitude not to exceed emission measurement for EPA compliance, child restraint system installation check as per AIS 072, static airbag deployment testing as per SAE J1630 Rev.2001, chain dynamics study test rig, engine blow-by meter calibration rig, GIS based tool for display and analysis of Indian road profile database, ARAI Vehicle Data Analysis Software, brake testing of agricultural tractor and trailer combinations etc.

- ARAI participated in nine domestic and three international exhibitions / seminars wherein, ARAI's facilities and capabilities in design, development, testing and certification of automobiles & automotive components were showcased

- User meets organized at Chennai in Structural Dynamics and Powertrain areas

■ **Quality Management**

- Successful completion of Surveillance Audit of ISO 9001, ISO 14001 and OHSAS 18001 of ARAI, Pune and ARAI-FID, Chakan.
- Successful completion of NABL Desktop Audit of three fields of calibration, viz. mechanical, thermal and electro-technical calibration.
- Successful completion of NABL Desktop Audit of four fields of testing, viz. mechanical, chemical, photometry and electronics testing.
- Launch of Certified Technical Experts (CTE) scheme for ARAI personnel

■ **Corporate Social Responsibility (CSR)**

ARAI had taken up Corporate Social Responsibility (CSR) initiative voluntarily in 2008, earmarking 0.5% of previous year's net surplus as financial support for CSR activities. From the Financial Year 2013-14, this allocation has been enhanced to 1%. During the year, twelve projects were supported under this initiative. The details on CSR activities are provided in the corresponding chapter.





Mrs. Rashmi Urdhwareshe
Incoming Director

I am pleased to announce my taking charge as Director - ARAI, beginning 2nd of July 2014. I am indeed thankful to all the stakeholders for the confidence reposed in me while assigning this challenging task.

ARAI, since its inception is being regarded as a highly respected testing and research organization for the automotive fraternity. True to its reputation, ARAI has demonstrated exceptional capability to adapt to an ever-changing external environment. As I reflect for a moment on the fact that we are nearing our Golden Jubilee (in year 2016) having begun as a small testing organization, it is indeed very heartening for all of us at ARAI to rejoice our successful journey laced with innumerable moments of joy and happiness. I consider myself fortunate to be a part of ARAI since year 1983, when I had joined as Trainee Engineer.

We have grown, both in stature and revenue, and done it with a succession of visionary leaders, technically competent employees and prudent initiatives. The core values and principles that have guided us through this journey are fundamental to the organization's success. I take this opportunity to pay tribute to everyone who has contributed to ARAI's tremendous growth and success over our history.

I am very sure that the future has a large plethora of opportunity in store for us with the economic situation showing signs of treading the path of recovery, and the automotive industry beginning to prefer building production facilities in or near the potential markets. Converting this opportunity into success will be our challenge.

We are keen on taking this challenge with renewed focus on research and development in the areas of green technologies, occupant safety and sustainable mobility solutions. I am confident that the cost-effective innovative solutions developed at ARAI will add value to OEMs as well as small and medium scale auto and auto-ancillary companies in their endeavor to compete with global players. While we work to achieve this, we will also take actions to support diverse programs for enhancing community health, education, safety and environment under our corporate social responsibility initiative.

Homologation services and regulatory support has always been our strength. Achieving sustained growth in the domestic as well as international market and adding new dimensions through global recognition would be the future endeavor. Through our participation in various regulatory forums at national and international levels we are eager to strive for bringing in regulations related to enhanced driver/passenger safety and cleaner environment ensuring our national interest.

We believe that a comprehensive strategy of leading to win; growing talent and teams; and proactively competing and connecting with the external environment; provides the competitive edge to create shared value for our stakeholders and for the society. Regardless of the scope of our aspirations or the scale of our achievements, our future rests on a foundation of enduring values – customer satisfaction, integrity, quality, commitment and cost effective innovations. These have sustained the loyalty of our customers and are a source of inspiration for us. They also have resulted in the continuous support and belief extended to us by our stakeholders. As we expand ourselves in pursuit of reaching out further to national as well as global automotive fraternity, we reaffirm our dedication to our values and recognize their vital role in our continuing success.

Looking towards the future, we will continue to invest in delivering the right services and solutions to our customers, and at the same time, challenge ourselves to aim higher and to achieve more.

Mrs. Rashmi Urdhwareshe

Homologation and Regulation

FORMULATION OF SAFETY STANDARDS

ARAI provides secretariat services to Automotive Industry Standards Committee (AISC) since its inception in 1997 and contributes towards formulation of safety standards. A total of 149 standards have been published till Financial Year 2013-14 covering wide range of subjects for different categories of motor vehicles.

■ **New Automotive Industry Standards (AIS) Released**

During the year, five standards and eleven amendments to AIS were released covering the following subjects:

• **New Standards**

- Administrative procedures for Corrigendum, Amendments or Revisions to AIS, TAP 115/116, CMVR Notifications, IS and ISO standards notified under CMVR
- Automotive Trailer Code
- Approval of vehicles retrofitted with Hybrid Electric System
- National Ambulance Code
- Testing procedure and requirements for Headlamp Beam Testing and Brake Testing at Authorized Test Stations (I&C Centers)

• **Amendments to AIS Published**

- Technical specifications to be submitted by vehicle manufacturers

- Installation of Lighting and Light-signaling devices
- Performance requirements for Registration Plate Illuminating Lamp
- Performance requirements for Front and Rear Position (side) Lamps, Stop- Lamps and End-outline Marker Lamps
- Speed Limiting devices
- Advance Warning Triangle
- Bus Body Code
- Demisting and Defrosting Systems
- Automotive Trailer Code
- Electromagnetic Compatibility
- Temporary-use Spare Wheel / Tyres and Run Flat Tyres

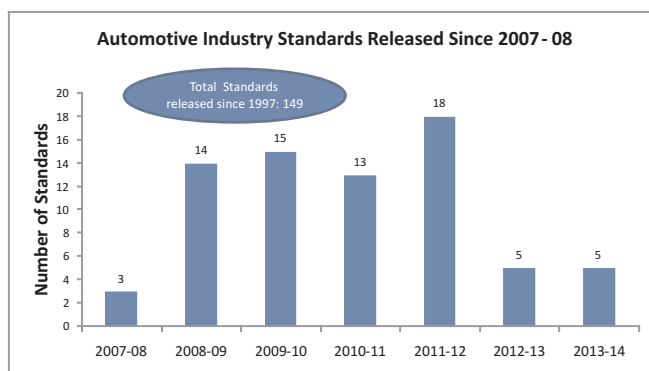
■ **AIS Standards under Finalization**

Several other subjects are nearing finalization and standards are expected to be completed during 2014-15. These standards are on the following subjects.

- Approval Procedure and Safety Standards for Motor Caravan
- Motor Cycle Controls, Indicators and Tell-tales
- Revision of AIS on Spray Suppression Systems

■ **AIS Standards under Revision**

- Battery Operated Vehicles
- Procedure for Type Approval and Certification of Vehicles for Compliance to CMVR
- Seats, their Anchorages and Head Restraints for M1
- Technical specifications to be submitted by vehicle manufacturers



■ **Amendments to existing AIS Standards**

Amendments to several AIS are under consideration in the Technical Panels under AISC and are expected to be finalized in 2014-15

- Speed Limiting Devices
- Bus Body Code
- Requirements for School Buses
- Performance requirements of Front Fog Lamp
- Metallic Fuel Tanks of Automotive Vehicles
- Filament Lamps
- Approval of Hybrid Electric Vehicles
- Protection of occupants in the event of an Offset Frontal Collision
- Truck Body Code

■ **New subjects for formulation of AIS**

- Light Emitting Diodes (LED) light sources for use in approved lamp units
- Adaptive Front-lighting Systems (AFS) for motor vehicles
- End of Life of Vehicles
- Procedure for approval of vehicles produced in small series, individual vehicles and vehicles produced under pilot / demonstration projects

- **TED 2:** Automotive Prime Movers, Transmission Systems and Internal Combustion Engines
- **TED 6:** Automotive Body Chassis Accessories and Garage Equipment
- **TED 22:** Transport Tractors, Trailers and Industrial Trucks
- **TED 26:** Automotive Vehicles running on Non-Conventional Energy Sources

CMVR AND ITS IMPLEMENTATION

■ **CMVR Technical Standing Committee**

ARAI provides technical secretariat services to CMVR Technical Standing Committee. During this year, the committee approved several Automotive Industry Standards and their future implementation schedule. CMVR-TSC has identified following subject of national importance for formulation of policy:

• **Vehicle Recall Policy**

Many countries in the world have established mandatory or voluntary vehicle recall system for safe transport. A need is felt for a mandatory / government administered vehicle recall policy and evolving of suitable guidelines for the same in the country in the interest of consumer and road safety. Work has been initiated to prepare the same in consultation with all stakeholders.

COOPERATION WITH BUREAU OF INDIAN STANDARDS (BIS)

Indian Standards on automotive safety components and systems are formulated in various TED (Transport Engineering Department) Sectional Committees of BIS. Transformation / adaptation of AIS into IS, is one of the major activity in TED. ARAI provides technical guidance / expertise to BIS and also, has the responsibility of Chairmanship of following TED Sectional Committees.

INTERNATIONAL COOPERATION AND HARMONIZATION OF NATIONAL STANDARDS

■ **National Committee on WP.29**

ARAI acts as the Technical Secretariat for National Committee on WP.29 matters and Core Group on WP.29 related activities. India became signatory to 1998 Agreement under UN ECE as part of the

commitment for harmonization of automotive regulations. Under this agreement, Global Technical Regulations (GTRs) are being formulated. During this year, India has voted in favour of following UN GTRs and amendments to existing GTRs.

GTR on hydrogen and fuel cell vehicles

- Amendment 1 to GTR 12 on Controls tell-tales and indicators for 2-wheeled vehicles
- Amendment 3 to GTR 2 on Worldwide Motorcycle Emissions Test Cycle (WMTC)
- GTR on Pole Side Impact (PSI)
- GTR on Worldwide Harmonized Light Vehicle Test Procedures (WLTP)

Further, as a second step, action has been initiated in Automotive Industry Standards Committee (AISC) to transpose GTRs into our national standards.

■ **Participation in Technical Sessions of WP.29**

This year, India participated in several technical sessions of WP.29, its subsidiary working parties and Informal Group Meetings. Total of sixteen delegations were sent on different occasions under ARAI's leadership and with active participation from the industry. Secretariat at ARAI provided technical and other support to these national delegations for attending sessions at United Nations, Geneva, Switzerland. Some of the important highlights of Indian participation included submission of technical views / informal documents on following subjects in various GR groups and WP.29 sessions.

- GRRF-75-24: Proposed Supplement 02 to the 01 Series of amendments to UN R 131 on Advanced Emergency Braking Systems (AEBS) – Proposal for better understanding that vehicles categories (M3, N3 and N2 > 8 T) shall have haptic or accosting warning and vehicle categories (M2, N2 ≤8T) shall have haptic or accosting or optical warning.
- GRRF-75-25: Comments on document ECE/TRANS/WP.29/GRRF/2013/34 – Amendments to UN R 78 (Approval of 2W and 3W vehicles of categories

L with regard to Braking) regarding clarity on definition of Secondary Brake System, editorial corrections in order to make the intention clear that if there is a failure affecting the front brake, performance of rear brake should be achievable and vice versa.

- GRRF-76-32: India's comments on GTR 3 (Motorcycle Brake Systems) and UN R 78 (Motorcycle Brakes) – This proposal is to correct the various possible architectures for front only brakes, rear only brakes and the combined braking systems. Accordingly, the test proposal and requirements were proposed for inclusion in line with the existing principle of GTR.
- GRRF-76-34: India's proposal on inclusion of definition of Vehicle Stability Function in the proposed new UN regulation on Electronic Stability Control Systems (ESC) for better clarity for vehicles equipped with vehicle stability function including roll over function.
- GRE-71-30: India's comment on the proposed amendment in UN R 50: (Light-signaling devices for 2/3 W vehicles) regarding in case a light-signaling device is intended to be installed on vehicle with its H plane at a mounting height ≤750 mm above the ground. India proposed to include text to ensure that applicant of the device, at the time of application, states whether installation height of the device on vehicle will be ≤750 mm and intends to use the condition of lower vertical angle requirement in photometric measurements. This information would help during photometric test on a device.

■ **Worldwide Harmonized Light Vehicles Test Procedure (WLTP)**

India is actively involved in WLTP Project since its inception, by way of necessary data collection and raising India specific issues / concerns relating to wide range of Indian vehicle spectrum (including low powered vehicles in both M1 and N1 categories). This participation has helped in incorporation of major changes in the global test cycle and procedures.

Further to completion of Validation of Test Cycle and Test Procedure, Indian views were presented on downscaling proposal, gearshift calculation, cycle traceability, step-

less inertia, chassis dynamometer inertia simulation, test cell and soak room conditions, coast down procedures, test cycle mode construction and related issues. Draft GTR prepared based on WLTP Phase 1 (a) (formulation of new test cycle and test procedure) and finalized by GRPE, was endorsed by WP.29 in its March 2014 session. India has voted in favour of this GTR.

The next WLTP Phase 1 (b) is Round Robin Test Program and involves work on various open issues remaining from Phase 1(a). Apart from India, other confirmed participants in this program include Japan, Korea, China and Europe. Under international round robin program India will be offering one vehicle for testing at hub laboratories in Japan, China, Korea and EU. Also, WLTP has recommended national level round robin at Contracting Party's level, for which ARAI will prepare test matrix & proposal, and approach the ministry for necessary funding.

■ **Environmental and Propulsion Performance Requirements (EPPR) for L – category vehicles**

The activities under Environmental and Propulsion Performance Requirements (EPPR) are very important to India considering the large production of 2W and 3W. ARAI hosted the 4th session of Informal Working Group on EPPR for L-category vehicle on behalf of India during 8-9 October 2013. Representatives from MLIT, JAMA, JASIC, IMMA, European Commission, Sweden, Belgium, SIAM and ARAI were part of this meeting. The EPPR Informal Group directly works under WP.29 – GRPE to revise type approval procedures for L-category vehicles such as powered cycles, mopeds, motorcycles, tricycles and quadri-cycles. This meeting was for deciding the items and their priority to formulate world harmonized global technical regulations.

Indian delegation also attended the 5th and 6th sessions of EPPR Informal Group held at Geneva and Tokyo respectively. During these meetings, various documents were hosted by EC on the OBD requirements, EVAP procedure and GTR 2 amendments. India submitted comments on these documents and the same were discussed in detail. The initial proposals on EVAP and OBD were discussed among contracting parties in Tokyo meeting based on which revised proposals will be submitted in next EPPR meeting to be held in conjunction with 69th GRPE session at UN, Geneva.

TYPE APPROVAL CERTIFICATION

■ **Implementation of New Safety Standards**

During this year, Type Approval and Certification for several safety components and emission norms were implemented for different categories of vehicles. ARAI has carried out testing and approval for safety norms implemented during this year and initiated work for the same for safety norms to be implemented in 2014-15. Some of the highlights are:

- Interior fittings in other than M1 category vehicles w.e.f. 1st April 2013 (existing models)
- Safety standard for the hydraulic brake hose wherever used in motor vehicle w.e.f. 1st October 2013
- Revised safety norms for identification of controls, tell-tale and indicators for all vehicles including CEV (existing models) w.e.f. 15th March 2014
- New norms for electromagnetic compatibility for L category vehicles (new models) w.e.f. 1st October 2013
- New safety standard for spray suppression systems for 2 wheelers for existing models w.e.f. 1st October 2013
- New safety standard for traction batteries for battery operated vehicle w.e.f. 1st October 2013
- Bus Body Builder Accreditation w.e.f. 1st April 2013
- Fitment of radio frequency identification tag w.e.f. 8th October 2013
- Bus Body Code as per AIS-052 (Revision 1) w.e.f. 1st October 2014 for new models
- Fitment of speed limitation devices for transport vehicles w.e.f. 1st April 2014
- Safety standard for agricultural tractor-trailer brake systems w.e.f. 31st August 2014
- Agricultural Tractors: Ballast Mass, Roll-over Protective Structure (ROPS), Load Platform, Attendant's Seat, Rear View Mirrors w.e.f. 1st October 2013 and Driver's Field of Vision w.e.f. 1st April 2014

■ **Notifications for implementation of Safety Standards in future**

• **Notifications on following subjects have been issued for implementation of safety standards in 2014-16**

- Bus Body Code as per AIS-052 (Revision 1) w.e.f. 1st April 2015 for existing models
- Norms for new vehicle category Quadricycles w.e.f. 1st October 2014
- Two, Three and Four Wheeled Vehicles: Windscreen wiping systems for 4W, Horn installation, Rear Marking Plates, Rear Underrun Protective Device (RUPD) and Lateral Protection (Side Guards), Speedometer, Child Restraint System, Electromagnetic Compatibility for L category vehicles (existing Models) and M & N category of vehicles
- Agricultural Tractors: Windscreen Wiping Systems, Driver perceived Noise & Pass by Noise, Tractor Identification Number, Bulbs, Hydraulic Brake Hose, Fuel Tanks, Max design speed w.e.f. 1st April 2015

• **Draft notifications published in 2013-14 on following subjects for future implementation of the Safety Standards**

- Automotive Trailer Code as per AIS-113
- Provisions of Anti-lock Braking System for M3 and N3 category vehicles
- Retro fitment of Hybrid Electric System Kit
- Implementation of Indian Standards on safety components for CNG fuelled vehicles
- Testing procedure and requirements for Headlamp Beam Testing and Brake Testing at authorized test stations for vehicle fitness certification

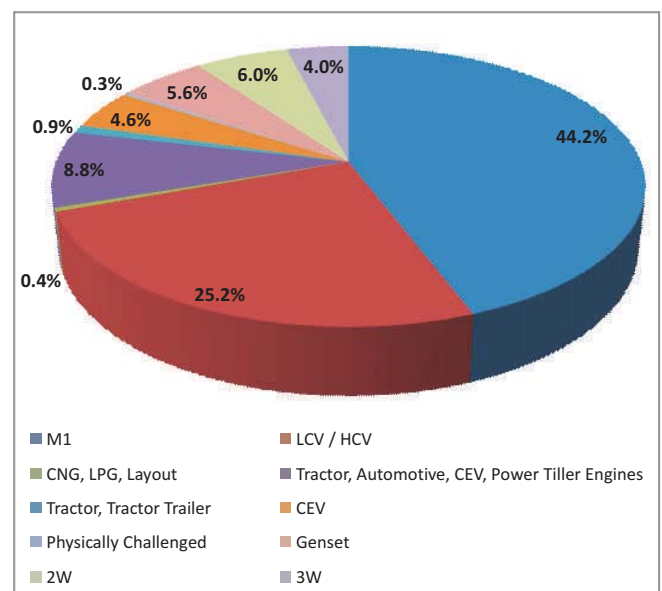
■ **Notifications on Environment / Emission**

- Revised norms for emission for new genset (up to 19 kW) run on petrol and kerosene and new diesel engine up to 800 kW for genset application

- Draft rules for revised test procedure for free acceleration for measurement of smoke density for diesel vehicles
- Draft rules for revised norms for Pollution Under Control Certification (PUC) for Petrol, CNG, LPG vehicles
- Draft rules for Bharat Stage IV (BS IV) emission norms for 2 wheeled vehicles w.e.f. 1st April 2015
- Average Fuel Consumption Standard for the motor vehicles of Petrol or Diesel or LPG or CNG, used for carriage of passengers and their luggage and comprising not more than nine seats, including driver's seat and GVW not exceeding 3500 kg

TYPE APPROVAL CASES DURING THIS YEAR

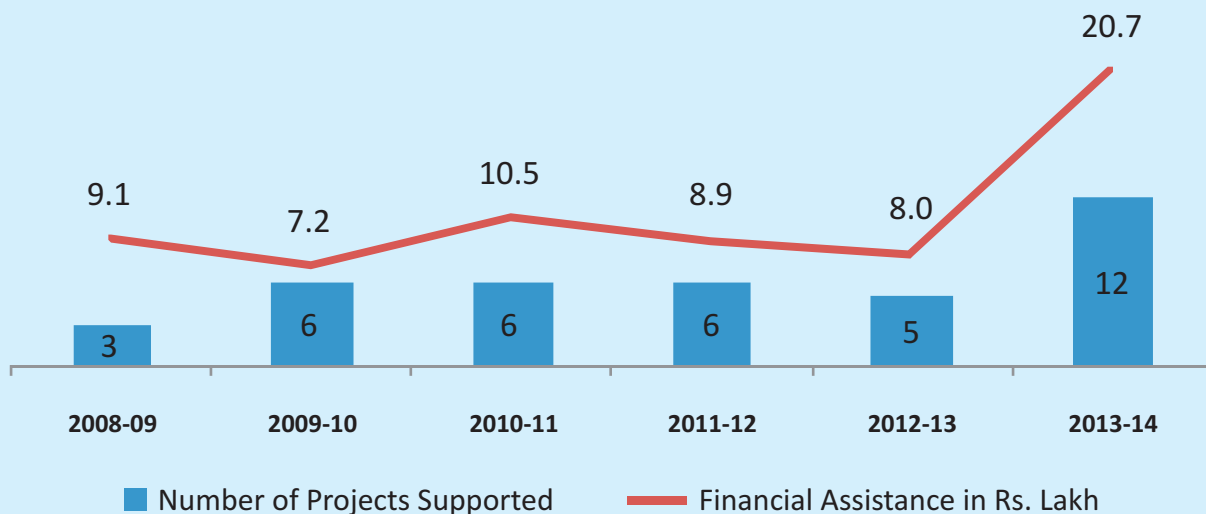
This year ARAI registered 1904 cases relating to CMVR Type Approval. Each case being unique in nature, all the certification departments handled this work very efficiently. Customers have expressed full satisfaction on the aspects of timely completion, technical accuracy and administrative ease of our operations. The below chart depicts the wide range of the work executed.



Corporate Social Responsibility (CSR)

ARAI had taken up Corporate Social Responsibility (CSR) initiative voluntarily in 2008. Over the last five years, it has supported many social projects in the areas of environment, education & health, and provided financial assistance of over Rs. 64 lakh to various projects. ARAI had been earmarking 0.5% of its previous financial year's net surplus for CSR activities. From Financial Year 2013-14, this allocation has been raised to 1%.

Projects Supported and Financial Assistance



During this year, following twelve projects were supported under CSR.

■ **Support to Old Age Home**

Financial assistance was provided for procurement of cupboards for the inmates of MATOSHREE VRUDDHASHRAM, an old age home run by Raja Shri Shivrai Pratishtan.

■ **Supporting Poor Cancer Patients**

Cancer Patients Aid Association (CPAA) is an NGO working for Total Management of Cancer as a disease since 1969. CPAA has a tradition of untiring service to needy cancer patients from all over India, and neighbouring countries like Bangladesh, Bhutan, Nepal and Pakistan. CPAA is an empathetic, reassuring, non-medical presence that has supported the treatment and overall needs of more than 3 lakh cancer patients. ARAI has provided financial assistance for treatment of poor and needy cancer patients.

■ **Pharmacy Refrigerator for Blood Bank**

Jankalyan Raktapedhi (JKRP) Pune, a renowned Blood Bank for last 30 years, has been provided with a 750 liter capacity pharmacy refrigerator for safe storage of blood and other critical components.

■ **Support to Drought Hit Villages**

• **Supply of Water and Water Storage Tanks**

Many villages in the state of Maharashtra experienced a severe drought during the summer of 2013. ARAI in association with Aai Janhit Bahu Samajsevi Sanstha, which is an NGO, supplied water and water storage tanks to the drought probe areas of Marathwada.

• **Sponsoring Cattle Feed**

The severe drought of 2013 summer in Maharashtra also led to scarcity of cattle fodder. ARAI, under its CSR

initiative, sponsored cattle feed at one of the animal camps organized by Bhartiya Kisan Sangh near Purandar, District – Pune.

■ **Caring for the Environment**

Institute of Natural Organic Agriculture (INORA) is a division of KNOW-HOW FOUNDATION, a Pune based NGO working in the field of recycling of organic waste in housing societies, hotels, school, temple and households. As part of CSR activity, shredder for composting garden waste has been funded to INORA, for installation in selected schools and housing societies in Kothrud, Pune.

■ **Solar Energy System for Orphanage**

Sadhana Village, a NGO established 1994, located in Kelvan, Tal. Mulshi, is engaged in care and rehabilitation of mentally challenged adults. This NGO has also started a school for providing quality education to children in and around the valley area. Under the CSR initiative, ARAI has supported this NGO by funding a solar energy system.

■ **Installation of Rain Water Harvesting**

Vidyarthi Sahayyak Samiti (VSS), Pune, a Non-Government charitable organization, provides lodging, boarding facilities at a nominal cost to students (boys and girls) from economically weaker sections of the society, who come to Pune to pursue higher education. VSS also conducts various programs aimed at personality development and character building for the benefit of the students. ARAI has provided financial assistance for installing rain water harvesting facility at their girls hostel (Sumitra Sadan).

■ **Provision of Lighting System**

Rugna Seva Sadan, run by Nana Palkar Smriti Samiti (NPSS), operates a dialysis center and pathology laboratory for patients affected by cancer, TB, etc. It provides free services to poor patients and charges a nominal fee for others. ARAI has provided LED lighting system for this organization's 10 storey building which has helped in reducing electricity consumption by about 30%.

■ **Promotion of Sports**

Jagruti Pratishthan, a Pune based organization, is involved in promoting sports and encouraging participation of under-privileged children. ARAI has lent its support to this organization's project on personality development for girls from slum areas by providing them training in various outdoor games.

■ **Provision of Tools and Equipment**

Sanskriti Samvardhan Mandal (SSM) has been active in integrated rural development since 1959. Started as a small school, SSM has now grown into a 200 acre development hub in Nanded and Beed districts of Maharashtra. As part of CSR activity, ARAI has funded for purchasing of tools and equipments for their new technical school.

■ **Sponsorship for Golden Jubilee Celebration of Karve Institute of Social Service**

Karve Institute of Social Service was established on 9th November 1963 in commemoration of Bharat Ratna Maharshi Dr. Dhondo Keshav Karve. The institute, since its inception, is serving the society and imparting training to aspiring professionals. ARAI has sponsored a souvenir on the occasion of their Golden Jubilee Year Celebration.



'ARAI's CSR Team: Mrs. Rashmi Urdhwareshe, Chairperson of Social Responsibility Support Group (SRS), with Team

Papers Presented / Published

- 'An innovative tool to generate single HyperView® session file for creation of several bode plots for an NVH analysis' by Y S Thipse, in July 2013 at Altair Users Conference 2013, Pune
- 'An innovative one-click tool retrieving and displaying peak von Mises stress result for multiple models from multiple transient analysis runs' by Y S Thipse in July 2013 at Altair Users Conference 2013, Pune
- 'Digital Information Services: A Case Study of ARAI Knowledge Centre' by A Madhava Rao, Dr. K C Vora and S S Das in September 2013 at National Conference on 'Impact of Web Technologies and E-Resources on Library Services', Pune
- Key-Note Paper on 'Ambulance Code' by A Akbar Badusha in October 2013 at 2nd International Congress on Emergency Medical Service Systems (EMS 2013), organized by AIIMS, New Delhi
- 'Adaptive Headlamp Leveling System using Occupant Detection method – A concept' by B V Shamsundara in November 2013 at 'International Symposium on Lighting (ISoL 2013 - Illuminating Pathways)', New Delhi
- 'A Study on Homogeneity and Heterogeneity of Polyurethane Foams – An Indian Scenario' by S K Jain, Manasi Joshi, Paresh Shravage and N V Karanth in November 2013 at ACOUSTIS 2013, New Delhi
- 'Simulation and Validation of Metal Perforated Panels for Architectural Acoustics' by Paresh Shravage, Manasi Joshi, S K Jain and N V Karanth in November 2013 at ACOUSTIS 2013, New Delhi
- 'Noise Control Measures of DG Sets' by N V Karanth in November 2013 at ACOUSTIS 2013, New Delhi
- 'Development of in-house Competency to Build Compact Gerotor Oil Pump for High Speed Diesel Engine Application' by Mohammed Jamadar, Alen Jose, Sushil S Ramdasi and N V Marathe in November 2013 at SIMCOMVEC 2013, Chennai
- 'Study of Compatibility of Metals used in Fuel System of Gasoline Engine with E10 and E20' by Dharmdev Vyas, Moqtik A Bawase, and M R Saraf in November 2013 at SIMCOMVEC 2013, Chennai
- 'Sound Quality based Benchmarking Methodology for Vehicle Interior Noise' by Ammar Ali, Aditya S Luktuke, E Ramachandran and N V Karanth in November 2013 at SIMCOMVEC 2013, Chennai
- 'Evaluation of Modal Parameter Estimation Techniques for Simple Structures' by J Chandra Sekhar, R Ramkumar, E Ramachandran and N V Karanth in November 2013 at SIMCOMVEC 2013, Chennai
- 'Design and Validation of a Race car with respect to Aerodynamics and Body Styling' by Abdul Vaseem Akram, Ajay Kumar, M, Rafiq Agrewale and Dr. K C Vora in November 2013 at SIMCOMVEC 2013, Chennai
- 'Modeling, Simulation & Analysis of Whole Body Vibration for Two Wheeler' by Shantanu Tathe and Kiran Wani in November 2013 at SIMCOMVEC 2013, Chennai
- 'Evaluation of various Semi – Active Suspension Strategies for Vehicle Performance' by Rohit Aggarwal, Pulkit Jain and Sanjay Patil in November 2013 at SIMCOMVEC 2013, Chennai
- 'Cab Interior Acoustic Cavity Analysis – Prediction and Evaluation' by R Ramkumar, P S Yadav, E Ramachandran and N V Karanth in December 2013 at 2013 LMS India User's Conference for Automotive and Mechanical Industry, Chennai
- 'Latest Trends in Automotive NVH' by N V Karanth in December 2013 at 2013 LMS India User's Conference for Automotive and Mechanical Industry, Chennai
- 'An Innovative Strategy Applying Knowledge Management Methodology Towards Achieving Productivity, Protecting IP, & Establishing a Knowledge Sharing Culture Deployed Within An Automotive Research And Certification Agency' by Y S Thipse in February 2014 at International Conference on Management of Intellectual Property Rights and Strategy, IIT Bombay, Mumbai
- 'Experimental and CFD Analysis of a Perforated Inner Pipe Muffler for the Prediction of Backpressure' published in International Journal of Engineering and Technology, (Volume 5, Issue 5, October-November 2013)

Events

■ **Upcoming Event : Symposium on International Automotive Technology (SIAT 2015)**



SIAT
Symposium on International Automotive Technology 2015
Towards Safer, Cleaner & Quieter World...
21-24 January 2015, ARAI, Pune, India

■ **SIAT 2015** ■
21-23 January 2015

■ **SIAT EXPO 2015** ■
21-24 January 2015

■ **TECHNOLOGY THEATRE** ■
24 January 2015

'Symposium on International Automotive Technology' (SIAT) is a benchmark event organized by ARAI biennially. SIAT serves as an important forum for exchange of ideas and brainstorming for the automotive industry. Over the years, the event has grown in stature and is now considered as a prestigious event marked by presence of global automotive fraternity.

Fourteenth edition of 'Symposium on International Automotive Technology' (SIAT 2015) being organized by ARAI in association with SAEINDIA, NATRiP and SAE International is scheduled to be held at ARAI, Pune from 21 to 24 January 2015. It will focus on technologies for safer, cleaner and quieter vehicles with enhanced connectivity. It will likewise concentrate on innovative advancements in automotive technologies to take on future challenges. SIAT provides a common platform for national and international experts to share their innovative ideas concerning developments in several areas of automotive technology. It brings together experts from the automotive fraternity, who will collaborate and debate the current challenges to promote the multitude of opportunities for a successful automotive industry.

Over 200 Technical Papers along with 30 Keynote Papers are expected to be presented by experts from across the globe at this conference in different technical sessions like Driver Assistance Systems, Electronics, HVAC

Systems, Manufacturing Methods, Materials, Powertrain Technologies, Alternate Fuels, Embedded Systems, Emission Control, NVH & Comfort, Hybrid & Electric Vehicles, Innovation & Collaboration, etc. Student Poster Presentation will also be organized during this conference. A Reference Technical Bulletin, comprising of technical articles will be published to commemorate SIAT 2015. It will provide an opportunity for sharing various technical advancements in automotive technology.

SIAT EXPO 2015 exposition is also being organized concurrently with the conference. More than 100 worldwide organizations will be the part of this exposition, showcasing their technologies / products in over 200 stalls. Automotive / equipment manufacturers and research institutions will also have an opportunity to participate in Technology Theatres to present their technological strengths, making it the biggest ever in the history of SIAT.

Dr. K. C. Vora, Sr. Deputy Director-ARAI is the Convener of SIAT 2015 and Mr. H. A. Nakhawa, Deputy Director - ARAI is the EXPO Coordinator for this event. The detailed information on the symposium and exposition is available at <http://siat.araiindia.com> or can be obtained by contacting Convener, SIAT 2015 at siat2015@araiindia.com or +91 20 30231190.

■ **SAEINDIA and Other Activities**

ARAI is associated with SAEINDIA's wide spectrum of activities carried out for the benefit of practicing engineers, engineering students and school children. SAEINDIA organizes training and educational programmes, workshops and knowledge dissemination for enhancing human resource skills to meet the growing industry requirements.

• **Workshops / Seminars / Lectures for Professionals**

- Workshops
 - Workshop on 'Innovative Flow'
 - Workshop on 'Bus Roll-over'
- Lectures
 - International Lecture on Automotive Heat Transfer by Dr. Raj Ranganathan
 - International Lecture Series on Sound Package Materials for Vehicle Noise Control by Dr. Pranab Saha
 - Tech-Talk Series Lecture by Ms. Rajani Modiyani on 'Success Journey'



'Automotive Heat Transfer' by Dr. Raj Ranganathan



'Fitness The Need of The Day'
by Padmavibhushan Dr. Kantilal Sancheti

- Eminent Speaker Series Lecture by Padmavibhushan Dr. Kantilal Sancheti on 'Fitness The Need of The Day'

• **Activities for Student Members:**

- During the year, ARAI sponsored SAEINDIA's activities like BAJA and AWIM (A World in Motion). ARAI also provided support in the form of judges / volunteers for BAJA and AWIM activities. The volunteers had the responsibility of initial inspection as Technical Inspectors of BAJA All Terrain Vehicle. In case of AWIM, the volunteers played the role of mentors and trained the school children in AWIM activities.
- ARAI sponsored SINE 2013 (Student Industry Education) under SAEINDIA Off-highway Board, wherein 23 women engineering students were trained for 2 weeks in Pune.
- ARAI sponsored ASM Materials camp for 11th and 12th Science students, with an aim to orient these students towards use of materials & manufacturing in engineering.



BAJA 2014 held at Pithampur, Indore



AWIM Pune Olympics 2013

Knowledge Centre

ARAI, through its Knowledge Centre carries out training, educational programmes and knowledge dissemination activities to enhance human resource skills for meeting the growing needs of the automotive industry. These activities are carried out through Learning Centre, Library and Training Centre.

■ Learning Centre

Learning Centre conducts undergraduate, postgraduate and doctorate programs, with specialization in Automotive Engineering through collaboration with various universities. It has tie-ups with VIT University (Vellore), VEL TECH University (Chennai), College of Engineering (Pune), University of Alabama (USA), Loughborough University (UK) and Braunschweig University (Germany). Brief summary of the joint programmes conducted is given below.

VIT University, Vellore	<ul style="list-style-type: none"> • Ph.D. in Automotive Engineering for Industry Professionals • M. Tech. in Engine Technology & Powertrain Electronics for Industry Professionals • M. Tech. in Automotive Engineering • B. Tech. in Mechanical Engineering with specialization in Automotive Engineering
VELTECH University, Chennai	<ul style="list-style-type: none"> • M. Tech. in IC Engines • M. Tech. in Automotive Electronics & Embedded Systems
College of Engineering, Pune	<ul style="list-style-type: none"> • M. Tech. in Automotive Technology
University of Alabama, Birmingham, USA	<ul style="list-style-type: none"> • M. S. in Mechanical Engineering with Automotive Engineering emphasis
Braunschweig University, Germany	<ul style="list-style-type: none"> • Students Exchange Programme

Prominent highlights of the year:

- MoUs with Cummins, Mahindra & Mahindra and Magna Steyr for deputation of their engineers for M. Tech. in Engine Technology programme (conducted jointly with VIT University)
- MoU with ETAS Technologies for mutual cooperation and building Embedded System Lab and related courses
- Five Indian B. Tech. / M. Tech. students were at Braunschweig University, Germany and two M. Tech. students of Braunschweig University were at ARAI under Student Exchange Programme
- One student is undergoing his second year MS at University of Alabama, USA
- Inauguration of Automotive Electronics & Embedded System Lab at the hands of Dr. V. Raju, Vice-Chancellor, VIT University
- Ten engineers from various industries enrolled for joint Ph.D. Programme
- Convocation held for first batch of M. Tech. for Industry Professionals from Cummins



MoU with ETAS Technologies

■ Library

During the year, 106 books and 48 standards were added to Knowledge Centre's library. Also, 37 National and International Journals were subscribed to, in addition to selected sections of Indian Standards and SAE Digital

Library. Over 5357 professionals and students visited Knowledge Centre's library during the year. From this year, corporate membership with book issue facility has commenced for ARAI Member companies.

■ **Training Centre**

Training Centre organizes Proficiency Improvement Programmes (PIPs) & Domain Training Programmes (DTPs). This year, 27 PIPs and 2 DTPs were organized at ARAI, Pune and 11 PIPs and 1 DTP were organized at ARAI FID, Chakan. These lectures were given by ARAI personnel, academicians and eminent industry experts, including speakers from abroad. These PIPs & DTPs had a participation of 1554 delegates and were conducted in the following areas of automotive engineering.

- Forging Technology
- Metallurgy for Non Metallurgist
- Billet Optimization Technique for Forging using Veracad
- Certified Reliability Engineer
- DTP on Latest Trends in Design and Development of I.C. Engine (Focus on Diesel Engine)
- DTP on Fundamentals of Bus Body Code: AIS-052 Regulation
- DTP on Forging Technology
- Engine Design & Development
- Automotive EMC
- Road Vehicle Interaction Study for Development of Lightweight Vehicles
- Engine Materials and Failure Analysis
- Automotive Engineering
- Powertrain Engineering
- Advanced LS-DYNA
- Engine Combustion and Advance Heat Transfer
- Regulation Driven Global Automotive Crash Worthiness and Occupant Safety
- Applied Engineering Mathematics & Thermodynamic Analysis of I.C. Engines
- Engine Testing and Certification
- Product Design and Life Cycle Management
- Automotive Fuels and Energy
- Powertrain NVH
- Research Methodology
- Advances in Automotive Materials
- Engine Emission and Control
- Engine Combustion
- Engine Electronics and Management System
- Advanced Fluid Mechanics
- Automotive Testing and Certification
- Material Failure Mode Analysis
- Design of Experiments
- Design Failure Mode Analysis
- Calibration



PIP on 'Road Vehicle Interaction Study for development of Lightweight Vehicles'

ARAI has tied up with Hyderabad based Involute Institute of Technical Training (IITT). This institute is affiliated to Steinbeis Centre for Technology and is a partner of National Skill Development Corporation (NSDC). This partnership is a perfect amalgamation of ARAI's technical expertise; and training & skilling capabilities of IITT. It is for meeting the training needs of automotive and manufacturing industries; and for introducing latest training courseware and methodologies, which would be helpful in developing technically competent employable work force. During this year, two skill school training programmes, viz. Industrial Automation and Multi Skilled Maintenance were organized under this partnership.



Mr. Dilip Chenoy inaugurating 'Industrial Automation' and 'Multi Skilled Maintenance' PIPs

Establishment of Test Facilities Under NATRiP at Chakan

ARAI's facilities are undergoing comprehensive upgradation under NATRiP to match with the global peers. With a budgeted investment of Rs. 270 crore, the new facilities are being developed as a Centre of Excellence in Powertrain; and Fatigue & Materials; in addition to Homologation facilities for Passive Safety, including full vehicle crash systems. These facilities are being established on an industrial plot measuring 5.5 Ha. area in Phase III MIDC, Chakan, which has an advantage of proximity to the end-users, i.e., automotive and auto component industry. Details of the various laboratories being established under the project are given below.

■ **Powertrain Laboratory – Centre of Excellence:**

This laboratory will be for testing of vehicles; engines & powertrains; and other accessories; for their performances with respect to power, efficiency, exhaust emissions etc. It consists of different types of engine / chassis dynamometers; controlling & measuring equipment; and instrumentation. The laboratory and test cells will be climatically controlled and fitted with advanced systems for fire protections, telecommunications and data transfer for ensuring confidentiality. The laboratory shall be treated acoustically for control of noise pollution. The major facilities in this laboratory include:

- Vehicle Test Cell (CVTC) to test vehicles up to Light Commercial Vehicle (LCV) category using 4 x 4 Chassis Dynamometer for performance and emission tests up to Euro V Certification
- Climatic Soak Room (-30° C to 50° C)
- Vehicle Test Cell (VTC) to test vehicles up to Light Commercial Vehicle (LCV) category using 4 x 4 Chassis Dynamometer with controlled climate with temperature of 25° C ± 3° C associated with humidity control for emission tests up to Euro – V Certification
- Soak Room for above test cell with temperature of 25° C ± 3° C
- Mileage accumulation test cell with 4 x 4 Chassis Dynamometer for endurance testing
- Test Cell for Transmission / Gear box performance testing
- Variable Volume / Variable Temperature (VV / VT), Sealed Housing for Evaporative Determination (SHED) Area

■ **Fatigue Testing Laboratory – Centre of Excellence:**

This laboratory shall be for prediction of structural failures & evaluation of vehicular structural components; systems & sub systems; and chassis / full vehicle subjected to real life dynamic loading conditions. It provides seismic foundations, super strong floors areas to sustain reaction loads of very high magnitude and high-pressure high-volume centralized hydraulic power system with its distribution through underground piping network. Salient features of this laboratory are:

- Climatic MAST facility for components
- Climatic 4 Poster for LCV
- X Poster
- Universal Test Benches with maximum capacity of 500 kN
- HPS of 2600 LPM (expandable to 4000 LPM), 210 bar with piping network
- Electro-dynamic Shaker with climatic chamber
- Instrumentation and vehicle preparation area

■ **Passive Safety Laboratory – Homologation:**

Passive Safety Laboratory will evaluate vehicular safety performance under impact conditions. It will accommodate external vehicle propulsion system, straight track, impact barriers and provision for underground videography of test vehicles during the event of different types of test impact. It will include a structure to support high intensity lighting system required for high speed videography; control rooms for command; control & monitoring systems; and associated instrumentations. It will also have vehicle garages, workshops, and other utility areas for vehicle preparation, instrumentation room, manikin storage, calibration and other areas for testing various sub systems like air bags, Under run protection devices, vehicle interiors, seat anchorages etc. It will primarily consist of:

- Crash area
- Vehicle preparation area – climatically controlled
- 500 HP drive system to propel test vehicle
- Underground Photo Pits

- Instrumented manikin room – climatically controlled (Temperature & Humidity)
- Calibration Laboratory – climatically controlled (Temperature & Humidity)
- Confidential Parking / Garage areas
- High speed videography set up with image analysis software
- Movable high intensity lighting system at truss level
- Pedestrian safety and air bag test cells
- Sled facility with programmable stopping device

The above laboratories will be supported with Power Station, Transformer Yard, Captive Gen-set of 4000 kVA, Panel Rooms, Underground Water Storage Tank, Fuel Stations, Underground Fuel Storage Tanks, Client Workshops, General Storage and Maintenance Workshop.

■ **Progress of Work:**

Subsequent to obtaining of possession of the plot in July 2011, necessary clearances and approvals for starting the construction activities were received in July 2012. The civil work contract for the planned buildings, i.e.

Powertrain Lab, Fatigue Lab, Passive Safety, Workshop, Client Workshop and other Utility buildings like Power Station, Fuel Yard, Water Storage Tank, Canteen were awarded through open tendering process. Work at this site commenced in the first week of August 2012. The overall progress of the civil construction activities is grossly as per planned schedule and more than 80% of civil work is completed.

Utility designs and specifications have been finalized in consultation with test system suppliers. Almost all utility contracts for electrical systems, fuel distribution, LAN, voice & data, security system, HVAC systems etc. have been awarded further to techno-commercial evaluation of bids received through open tendering system. About 50% ~ 60 % of utility works have been completed. Contracts worth of Rs. 118 crore have been awarded and remaining utility contracts worth Rs. 16.5 crore are under finalization.

All the activities, including civil construction, provision of utilities and installation & commissioning of equipment are so planned that facilities shall be ready for use one by one, starting from December 2014, commencing with Passive Safety Laboratory and followed by Fatigue & Powertrain Laboratory by May 2015.



Passive Safety Laboratory



Powertrain Laboratory



Fatigue Laboratory



Workshop

- **Auditors' Report**
- **Annual Statement of Accounts**

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Auditors' Report

To

The Members

The Automotive Research Association of India

1. We have audited the accompanying financial statements of **The Automotive Research Association of India** ("the Association"), which comprise the Balance Sheet as at March 31, 2014, and the Income and Expenditure Account for the year then ended, and a summary of significant accounting policies and other explanatory information.

2. Management's Responsibility for the Financial Statements

The Association's Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position, financial performance of the Association in accordance with the Accounting Standards. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

3. Auditor's Responsibility

3.1 Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

3.2 An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Association's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of the Association's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

3.3 We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

4. Opinion

In our opinion and to the best of our information and according to the explanations given to us, the financial statements give a true and fair view in conformity with the accounting principles generally accepted in India:

- (a) in the case of the Balance Sheet, of the State of affairs of the Association as at March 31, 2014; and;
- (b) in the case of the Statement of Income and Expenditure Account, of Surplus for the year ended on that date.

For **A. R. Sulakhe & Comp.**
Chartered Accountants
Firm Registration No.110540W

Place : Pune

Dated : 18th June, 2014

J V Dhongde
Partner
Membership No. 37290

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Balance Sheet as on 31st March 2014

(Rs. in Lakhs)

PARTICULARS	SCHEDULE NO		AS ON 31/03/2014	AS ON 31/03/2013
SOURCES OF FUNDS				
1. GENERAL & OTHER FUNDS				
A) GENERAL FUND	1	42588.82		33051.31
B) R & D RESERVE FUND	2	20122.65		18247.69
C) REPLACEMENT OF EQUIPMENT/MACHINERY FUND	3	8785.62	71497.09	7921.15
2. PROJECT FUNDS (NET)	4		1412.89	3717.07
3. CURRENT LIABILITIES AND PROVISIONS	5		6390.70	6059.40
TOTAL			79300.68	68996.92
APPLICATION OF FUNDS :				
1. FIXED ASSETS	6		27925.04	23110.22
2. CURRENT ASSETS, DEPOSITS AND ADVANCES				
A) INVENTORIES	7(A)	33.66		26.34
B) SUNDRY DEBTORS	7(B)	3003.47		3042.94
C) DEPOSITS, CASH & BANK BALANCES	7(C)	46450.06		41786.89
D) ADVANCES	7(D)	1800.23		950.29
E) SUNDRY DEPOSITS	7(E)	88.22	51375.64	79.94
TOTAL			79300.68	68996.62
NOTES TO THE ACCOUNTS	13			

Shrikant R Marathe
Director

Rajan Wadhwa
Vice President

Vinod Dasari
President

As Per Separate
Report of Even Date
For A. R. Sulakhe & Comp.
Chartered Accountants
F. R. No. 110540 W

J. V. Dhongde
Partner
Membership No. 37290

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Income And Expenditure Account For The Year Ended 31st March 2014

(Rs. in Lakhs)

PARTICULARS	SCHEDULE NO	YEAR ENDED 31/03/2014	YEAR ENDED 31/03/2013
INCOME			
SPONSORED PROJECTS, TESTING, LEARNING & TRAINING CENTRE	8	17128.74	15178.38
ANNUAL MEMBERSHIP SUBSCRIPTION	-	415.18	384.24
SIAT 2013 INCOME	-	0.00	486.50
FUNDS TRANSFERRED FROM R&D RESERVE FUND	-	34.48	48.18
INTEREST	9	3946.53	3092.01
OTHER INCOME	10	297.82	101.95
TOTAL		21822.75	19291.26
EXPENDITURE			
SPONSORED PROJECTS, TESTING, LEARNING & TRAINING CENTRE EXPENSES	-	2144.67	1689.16
ARAI R&D PROJECTS	-	34.48	48.18
SALARIES & OTHER ALLOWANCES	11	7176.31	6175.62
EMPLOYEE RELATED EXPENSES	-	192.09	204.10
OPERATION & ESTABLISHMENT EXPENSES	12	2068.35	2037.45
DEPRECIATION	-	2359.44	1871.12
(LESS: DEPRECIATION ON GOVT. FUNDED ASSETS (Ref : Note No I (3) (a) of Schedule no 13)		1186.50	1052.20
SIAT 2013 EXPENSES	-	5.05	361.53
LESS:- EXPENSES TRANSFERRED FOR CAPITALISATION OF ASSET		0.00	(55.00)
EXCESS OF INCOME OVER EXPENDITURE		9028.86	8011.30

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Income And Expenditure Account For The Year Ended 31st March 2014

(Rs. in Lakhs)				
PARTICULARS	SCHEDULE NO		YEAR ENDED 31/03/2014	YEAR ENDED 31/03/2013
APPROPRIATION				
A) INTEREST ON EARMARKED FUNDS TRANSFERRED TO RESPECTIVE FUNDS				
- R & D RESERVE FUND		1909.44		1648.63
- REPLACEMENT OF EQUIPMENT/ MACHINERY FUND		864.47	2773.91	704.82
B) SURPLUS (DEFICIT) OF SIAT 2013 TRANSFERRED TO GENERAL FUND		(5.05)	(5.05)	124.97
C) EXCESS OF INCOME OVER EXPENDITURE (NET)			6260.00	5532.88
TOTAL			21822.75	19291.26

Shrikant R Marathe
Director

Rajan Wadhera
Vice President

Vinod Dasari
President

As Per Separate
Report of Even Date
For A. R. Sulakhe & Comp.
Chartered Accountants
F. R. No. 110540 W

J. V. Dhongde
Partner
Membership No. 37290

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Statement of Receipts & Expenditure on Cess Projects

APPENDIX - I

(Rs. in Lakhs)

Sr No	NAME OF THE PROJECT	PROJECT COST	RECEIPTS			EXPENDITURE			*REFUNDED TO THE GOVT	AMOUNT BORNE BY ARAI				NET FUNDS AVAILABLE [6-(9+10)] + [(11 to 14)]
			UPTO 2012-13	2013-14	TOTAL (4 + 5)	UPTO 2012-13	2013-14	TOTAL (7 + 8)		2010-11	2011-12	2012-13	2013-14	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Study & Development of vehicle suspension for Indian Road Conditions for better ride comforts & less fatigue to Driver Using Hardware in Loop Simulation Technology	800.00	400.00	0.00	400.00	750.90	13.28	764.18	21.49	171.52	171.56	29.32	13.27	0.00
2	Generate Data Bank on Chemical, Mechanical, Physical & Dynamic properties of Automotive grade High Strength steels (HSS) & Aluminium Alloys	500.00	250.00	0.00	250.00	456.81	1.49	458.30	18.93	171.16	39.38	15.20	1.49	0.00
3	Development of Accelerated Test Programme for life prediction of auto electric components	185.00	92.50	0.00	92.50	117.88	0.31	118.19	33.32	0.00	23.70	35.01	0.30	0.00
4	Measurement of Wheel Forces of 4-Wheel Automotive Vehicles and Study of Their Co-relation with Customer Usage Pattern	700.00	350.00	0.00	350.00	676.76	18.93	695.69	0.00	128.12	87.09	111.56	18.92	0.00
5	Study of Vehicles System Duty Cycle / Operation Pattern Under Indian Road Conditions	650.00	0.00	325.00	325.00	597.21	21.16	618.37	8.19	32.42	281.76	283.04	-295.66	0.00
6	Design Analysis of Lightweight aluminium intensive city transit bus for maximum light weighting for Indian Conditions	484.00	200.00	0.00	200.00	101.62	65.22	166.84	0.00	0.00	0.00	0.00	0.00	33.16
7	Offline and Real time simulator for Electric Vehicle/Electric Vehicle Systems	1155.83	75.00	25.00	100.00	127.94	59.93	187.87	0.00	0.00	0.00	52.94	34.93	0.00
8	Effect of deformation temperature of hot forging material	400.00	300.00	100.00	400.00	233.49	126.62	360.11	0.00	0.00	0.00	0.00	0.00	39.89
TOTAL		4874.83	1667.50	450.00	2117.50	3062.61	306.92	3369.55	81.93	503.22	603.49	527.07	** (226.75)	73.06
Previous Year		4874.83	1667.50	-	1667.50	3062.57	-	3062.57	73.73	503.20	603.47	527.01	-	164.90

* Includes refunded to Government during previous years

** includes recoupment of ARAI Funds Rs.295.66 lakhs

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

**Statement Showing the Receipts and Payments
on Projects Funded by NATRiP**

APPENDIX - II

(Rs. in Lakhs)

SR NO	NAME OF THE PROJECT	PROJECT COST	RECEIPTS			PAYMENTS			NET FUND AVAILABLE AS ON 31.03.2014
			UPTO 2012-2013	2013-2014	TOTAL	UPTO 2012-2013	2013-2014	TOTAL	
1	EXPANSION OF EXISTING FACILITIES AT SDL	200.00	200.00	0.00	200.00	198.25	0.00	198.25	1.75
2	PROCUREMENT OF ENGINE TEST EQUIPMENTS / INSTRUMENTS FOR CELL C2 OF NEW EDL	59.38	59.38	0.00	59.38	52.11	0.62	52.73	6.65
3	DEVELOPMENT OF CIVIL INFRASTRUCTURE UNDER NATRiP PROJECT	5509.00	5141.51	0.00	5141.51	2234.10	2780.77	5014.88	126.63
4	DEPOSITORY WORK FOR PWT 4-HVAC ARAI	1059.85	0.00	965.00	965.00	0.00	595.63	595.63	369.37
TOTAL		6733.38	5400.89	965.00	6365.89	2484.47	3377.03	5861.50	504.39
PREVIOUS YEAR		5768.38	5400.89	-	5400.89	2484.47	-	2484.47	2916.42

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

**Statement showing Receipts and Payments
for Inspection Maintenance Project Cell (IMPC)**

APPENDIX - III

(Rs. in Lakhs)

SR NO	NAME OF THE PROJECT	PROJECT COST	RECEIPTS				PAYMENTS				NET FUND AVAILABLE AS ON 31.03.2014
			2011-2012	2012-2013	2013-2014	TOTAL	2011-2012	2012-2013	2013-2014	TOTAL	
1	SETTING UP OF A MODEL INSPECTION & CERTIFICATION CENTRE AT NASIK IN MAHARASHTRA	1440.00	140.00	385.00	-	525.00	0.63	110.65	184.23	295.51	229.49
2	SETTING UP OF A MODEL INSPECTION & CERTIFICATION CENTRE AT RAILMAGARA IN RAJASTHAN	1440.00	-	240.00	295.00	535.00	0.50	61.61	211.08	273.19	261.81
3	SETTING UP OF A MODEL INSPECTION & CERTIFICATION CENTRE AT NELAMANGALA, BANGALORE DISTRICT IN KARNATAKA	1440.00	140.00	0.00	385.00	525.00	0.66	62.28	168.71	231.65	293.35
4	SETTING UP OF A MODEL INSPECTION & CERTIFICATION CENTRE AT MALKAPUR IN HYDERABAD DISTRICT IN ANDHRA PRADESH	1440.00	-	-	40.00	40.00	0.00	0.56	11.24	11.80	28.20
5	SETTING UP OF A MODEL INSPECTION & CERTIFICATION CENTRE AT OLPADA IN SURAT DISTRICT IN GUJARAT	1440.00	-	-	40.00	40.00	0.00	0.56	16.85	17.42	22.58
TOTAL		7200.00	280.00	625.00	760.00	1665.00	1.79	*235.66	592.12	829.56	835.44

* Net of previous year adjustments

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Fixed Assets Schedule - 2013-2014

(Rs. in Lakhs)

Particulars	GROSS BLOCK				DEPRECIATION				NET BLOCK	
	As on 31/03/2013	Additions during the year	Deductions during the year	As on 31/03/2014	As on 31/03/2013	Deductions during the year	Depreciation Provided during the year	Total upto 31/3/2014	As on 31/03/2014	As on 31/03/2013
I. Land	2,345.75	-	-	2,345.75	-	-	-	-	2,345.75	2,345.75
II. Building & Roads Etc.	4,667.11	922.68	9.48	5,580.31	1,127.91	9.17	275.02	1,393.76	4,186.55	3,539.20
III. Plant & Machinery	21,620.24	2,472.98	102.80	23,990.42	9,641.53	78.99	1,365.18	10,927.72	13,062.70	11,978.71
IV. UNDP Equipment Recd. in Kind	343.44	-	-	343.44	304.59	-	3.69	308.28	35.16	38.85
V. Furniture & Fixtures	470.25	33.81	-	504.06	177.58	-	82.00	259.58	244.48	292.67
VI. Office Equipments	259.53	14.29	6.61	267.21	64.63	4.46	93.44	153.61	113.60	194.90
VII. Mobile Handset	5.05	-	5.05	-	4.55	4.55	-	-	-	0.50
VIII. Computer & Peripherals	1,006.75	111.92	5.94	1,112.73	850.04	5.75	123.04	967.33	145.40	156.71
IX. Vehicles	354.95	93.29	24.50	423.74	188.17	15.67	85.54	258.04	165.70	166.78
X. Air-Conditioners	472.66	3.87	8.19	468.34	272.11	7.45	52.50	317.16	151.18	200.55
XI. Intangible Assets										
A) Computer Software	983.00	334.46	-	1,317.46	569.23	-	279.05	848.28	469.18	413.77
B) Patent	-	-	-	-	-	-	-	-	-	-
Total	32,528.73	3,987.30	162.57	36,353.46	13,200.34	126.04	2,359.46	15,433.76	20,919.70	19,328.39
Capital Work In Progress	-	-	-	-	-	-	-	-	7,005.34	3,781.83
GRAND TOTAL	32,528.73	3,987.30	162.57	36,353.46	13,200.34	126.04	2,359.46	15,433.76	27,925.04	23,110.22
Previous year Gross Total	29,682.35	3,153.12	306.74	32,528.73	11,424.62	95.40	1,871.12	13,200.34	23,110.22	20,442.42

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA

Fixed Assets Schedule Procured Out of Govt. Funds : 2013-2014

Particulars	GROSS BLOCK				DEPRECIATION				NET BLOCK	
	As on 31/03/2013	Additions during the year	Deductions during the year	As on 31/03/2014	As on 31/03/2013	Deductions during the year	Depreciation Provided during the year	Total upto 31/3/2014	As on 31/03/2014	As on 31/03/2013
I. Land	20.92	-	-	20.92	-	-	-	-	20.92	20.92
II. Building & Roads Etc.	3,613.73	27.75	5.25	3,636.23	820.06	5.07	265.00	1,079.99	2,556.24	2,793.67
III. Plant & Machinery	15,010.02	233.75	83.43	15,160.34	7,444.12	63.00	755.57	8,136.70	7,023.64	7,565.90
IV. UNDP Equipment Recd. in Kind	343.44	-	-	343.44	304.59	-	3.69	308.28	35.16	38.85
V. Furniture & Fixtures	124.04	-	-	124.04	49.48	-	19.30	68.78	55.26	74.56
VI. Office Equipments	21.29	-	-	21.29	4.93	-	7.38	12.31	8.98	16.36
VII. Mobile Handset	0.00	-	-	-	-	-	-	-	-	-
VIII. Computer & Peripherals	337.76	7.43	1.41	343.78	313.58	1.41	17.03	329.20	14.58	24.17
IX. Vehicles	46.74	-	-	46.74	29.56	-	6.74	36.31	10.43	17.18
X. Air-Conditioners	317.05	-	8.19	308.86	198.91	7.45	30.59	222.05	86.82	118.14
XI. Intangible Assets										
A) Computer Software	354.96	98.60	-	453.56	245.60	-	81.20	326.80	126.76	109.36
B) Patent	-	-	-	-	-	-	-	-	-	-
Total	20,189.95	367.54	98.28	20,459.20	9,410.84	76.93	1,186.51	10,520.42	9,938.78	10,779.11
Capital Work In Progress									5,623.76	1,677.03
GRAND TOTAL	20,189.95	367.54	98.28	20,459.20	9,410.84	76.93	1,186.51	10,520.42	15,562.54	12,456.14
Previous year Gross Total	19661.23	764.67	235.98	20189.95	8423.78	65.14	1052.2	9410.84	12456.14	11522.93

(Rs. in Lakhs)

ORGANISATION CHART

(As on March 2014)

RESEARCH & DEVELOPMENT DIVISION 1

Structural Dynamics Lab.,
Automotive Materials Lab.,
Forging Industry Division



Mr. M. R. Saraf
Deputy Director
mrsaraf.sdl@araiindia.com

Noise, Vibration &
Harshness Lab., CAE



Mr. N. V. Karanth
Deputy Director
karanth.nvh@araiindia.com

RESEARCH & DEVELOPMENT DIVISION 2

Powertrain Engg.,
Prototype Mfg. Dept.



Mr. N. V. Marathe S
Senior Deputy Director
nvmarathe.edl@araiindia.com

Automotive Electronics
Dept.



Mr. A. A. Deshpande
General Manager
deshpande.aed@araiindia.com

HOMOLOGATION DIVISION

Homologation Management
& Regulation,
Quality Management Dept.
Calibration Lab.



Mrs. R. H. Urdhwaresh
Senior Deputy Director
urdhwaresh.apx@araiindia.com

Safety & Homologation Lab.,
Passive Safety Lab.



Mr. A. V. Mannikar
Senior Deputy Director
mannikar.psl@araiindia.com

Emission Certification Lab.



Mr. K. Srinivas
Deputy Director
srinivas.ec@araiindia.com

Vehicle Evaluation Lab.



Mr. A. Akbar Badusha
Deputy Director
badusha.vel@araiindia.com

SERVICE DIVISION

Business Development &
Corporate Planning,
Information Technology
Management



Mr. D. J. Kulkarni
Senior Deputy Director
djulkarni.dts@araiindia.com

Infrastructure Development,
Special Projects



Mr. S. M. Haragapurkar
Senior Deputy Director
haragapurkar.shl@araiindia.com

Knowledge Centre



Dr. K. C. Vora
Deputy Director
vora.pga@araiindia.com

Finance & Accounts
Purchase, Stores



Mr. S. M. Shahane
General Manager
shahane.acc@araiindia.com

Human Resource
Management
& Admin.



Dr. M. V. Uchgaonkar
General Manager
uchgaonkar.pah@araiindia.com

Governing Council
Secretariat



Mrs. R. M. Dhere
Secretary to the Governing Council
dhere.acc@araiindia.com



Mr. Shrikant R. Marathe
Director - ARAI
director@araiindia.com

ARAI

Progress through Research

The Automotive Research Association of India
(Affiliated to Ministry of Heavy Industries & Public Enterprises, Govt. of India)

Postal address :

P. O. Box No. 832, Pune - 411 004, Maharashtra, INDIA

Address :

Survey No. 102, Vetal Hill, Off Paud Road,
Kothrud, Pune - 411 038, Maharashtra, INDIA

Tel. : +91-20-3023 1111

Fax : +91-20-3023 1104

E-mail : director@araiindia.com

Website : www.araiindia.com

