

## PACE

**Partners for the Advancement of Collaborative Engineering Education (PACE)** is providing a platform of hardware and software to encourage young and budding engineers to use them effectively and conceive new ideas and initiatives which would help innovate in the new areas of engineering and technology. Globally there are 65 institutions and in India only five institutions are recognized PACE centers of excellence and SJCE is one of the institutions in collaboration having an established PACE –PLM centre of excellence. SJCE is one of the institutions in collaboration having an established PACE –PLM centre of excellence.

### PACE REPORT 2011-12

In this year, PACE global forum was held in **Shanghai, China between July 22- 27, 2012.**

This year in the Asian region of the globe in Team 3 SJCE was working on a project relating to a theme called **“Sustainable Urban Transport – Development and Implementation stage (SUT-II Phase) – a solution for a specific urban area (city) for the year 2025”**. Series of meetings were held throughout the year and slides were prepared based on the work and shared across in the global virtual meetings. Final meeting and presentation was held this year in **Shanghai, China between July 22- 27, 2012.**

There were a total of six teams that participated in this PACE competition out of 31 universities worldwide. Each team’s work was judged in bases on four criteria namely ***Product Engineering, Market Research, Manufacturing Research and Design.***

PESIT- Bangalore, Sri Jayachamarajendra College of Engineering (SJCE) – Mysore and the Universidad Iberoamericana (Mexico) were the institutes in Team 3.

PESIT handled the implementation of layout optimization and design and steering systems; ***SJCE worked on Next Generation of Sustainable Urban Transport (SUT)- “Implementation of Car maintenance and Data feedback system – A***

**case study on GPS and Social Networking"** and Universidad Iberoamericana (Mexico) handled the prototype model and implementation of the electronics and control unit of the car.

**Electronics & Communication Engineering students** from **Sri Jayachamarajendra Engineering (SJCE)**, Mysore comprising of **Anshuman, Ashwin C.R, Mohammed Safwan , Sahas S, Sanjay K and Suhasini S** have been awarded with a trophy for their work with **2<sup>nd</sup> place for Team 3**.

The project was guided by **Dr. C.R.Venugopal**, Professor & Head, Department of Electronics & Communications and the SJCE-PACE Co-ordinator was **Dr. V.Ramesh**, Professor, Dept. of Industrial & Production Engineering and the overall in-charge for this project was **Dr. B.G.Sangameshwara**, Principal, Sri Jayachamarajendra College of Engineering, Mysore. The award was personally received by **Dr. V.Ramesh** and **Prof. V.Basavaraj** in Shanghai, China along with Team 3 students.

Also, **PACE Global Project – Collaboration & Innovation Challenge (CIC)** with the topic titled **“Energy Reclamation Application”** was presented by the **Industrial & Production Engineering students from Sri Jayachamarajendra College of Engineering (SJCE) Mysore** comprising of **Vidhey V Rao, Vaishnavi Seetharama, Sripriya B R and Vinutha J K**.

They have worked **on improving the Efficiency with a better catalytic converter** and to initiate **Energy Reclamation making use of kinetic energy** in the exhaust of a car. Their work has been awarded as the **Competition Winner** with **I Prize**. A plaque was presented in the award ceremony.

The Project Guide and the PACE Integrator for CIC was **Dr. V.Ramesh, Professor, Department of Industrial & Production Engineering** and the **PACE Administrator** was **Dr. B.G.Sangameswara**, SJCE, Mysore. The award was personally received by **Dr. V.Ramesh** and **Prof. V.Basavaraj** in Shanghai, China along with the students.

This is a consistent achievement by the students of SJCE in the PACE Annual Forum in the Golden Jubilee Year of Sri Jayachamarajendra College of Engineering.



**Dr. V.Ramesh, Prof. V.Basavaraj** receiving the trophies from  
**Laura McCausland**, PACE project manager

Standing L to R : **Anshuman, Ashwin C.R, Sahas S, Suhasini S, Mohammed Safwan , Sanjay K (SUT)** with **Vidhey V Rao, Vaishnavi Seetharama(CIC)**



## **PACE REPORT 2012-13**

In this year, PACE global forum was held in **Pasadena, CA, USA during July 22- 27, 2013.**

This year in the Asian region of the globe SJCE was working on two main projects namely **“Portable Assisted Mobility Device” (PAMD)** and **Collaboration & Innovation Challenge (CIC)** projects as a part of PACE initiative. Each team’s work was judged based on four criteria namely ***Product Engineering, Market Research, Manufacturing Research and Design.***

*Mechanical Engineering Students Mohith, Abhinandan and Palgun* from Sri Jayachamarajendra Engineering (SJCE), have bagged 2<sup>nd</sup> overall prize for **PAMD ( Design stream)** in Team 3 with a trophy in the Annual forum held in **Pasadena, CA, USA during July 22- 27, 2013.** This project was guided by **Dr. R. Srinidhi, & Prof. V.Basavaraj,** Department of Mechanical Engineering Department.

Further 2 CIC projects namely **“Heat Integrated Kinetic Energy Recovery System” (HIKERS)** and **“Black Box Based Monitoring and Alerting System”** were presented by I & P, Mechanical and Electronics Engineering students. The team members were Nishanth Bhat, Kuldeep Kumar, Pravarth P , Pratheek Reddy, Abhay Raina, Archana Noochila, B. Namratha, Chethan M. P., G Mohamed Abdulla, Prasad Malya and Prajwal Prakash. Their work was well appreciated and they bagged II and III prize with the plaques as the ***Competition Winners*** respectively. These Projects were guided by **Prof. V. Basavaraj,** Professor, Department of Mechanical Engineering and **Dr. C.R.Venugopal,** Professor, HOD, Electronics and Communication Engineering. All these awards were personally received by **Prof. V.Basavaraj** in Pasadena, CA, USA along with PAMD and CIC students.

Finally, a technical paper entitled “Programmable Braking System (PBA)” was also presented in the Forum by Abhay Raina and Chethan M. P of Electronics and Communication Engineering department.

These projects were coordinated by the **SJCE-PACE INTEGRATOR Dr. V.Ramesh,** Professor, Department of Industrial & Production Engineering & organized by **SJCE-PACE ADMINISTRATOR- Dr. B.G.Sangameswara.**



**Caption: Prof. Basavaraj. V receiving the award from Dr. Marcelo Augusto L. Alves, PACE CIC Project Manager along with the students Abhay Raina, Chethan, Pravarth, Nishanth Bhat and Kuldeep Kumar.**

## PACE REPORT 2013-2014

The faculty and students of SJCE attended the Pre-Conference Training which was held between 21<sup>st</sup>July (Monday) and 25<sup>th</sup>July (Friday) 2014 *and Global forum during 27<sup>th</sup> July (Sunday) and 1<sup>st</sup> August (Friday) 2014 at Politecnico di Torino campus located at CorsoDucaDegli Abruzzi, Torino, Italy.*

1. SJCE was awarded **SILVER CERTIFICATION** for their contribution in Research and Development in the forum during the 5 years of its inception. This certification has the benefits of SJCE getting free software up gradation like NX, Solid Edge, hardware grants and grants for the PACE sponsored projects.
2. In this regard, SJCE has sent request letter to PACE for the up gradation of the existing NX6 modelling software to NX9 version.
3. 38 students and 4 faculty members attended the forum. 11 students were given 50% travel grant and 4 faculty members namely Dr. V.Ramesh, Dr. R. Srinidhi, Prof. V.Basavaraj, Dr. K.Chandrashekara were given full sponsorship by JSS management. Dr. V.Ramesh , PACE Integrator and Dr. Syed Shakeeb Ur Rahman, Principal would like to thank the management for this gesture.
4. The following projects were presented in the forum during the year 2014.
  - a. **Collaborative Innovative Challenge (CIC)** – In this category, 5 CIC Projects of SJCE presented their work. One CIC project titled “*Study on Implementation of Connected, Automated and Resourceful Vehicular System (CARVS)*”, a project that aims at revolutionizing the prevalent scenario of travel on road, was awarded the First Prize.
  - b. **Portable Assisted Mobility Devices (PAMD)** – 4 students of SJCE were involved with the fabrication of 2 wheeler “STAG”. This project was done with PES University, National Institute of Design, Prairie University, University of Toronto, University of Mexico. This project did not yield any prizes.
  - c. **Technical Paper Presentation** – 5 technical papers were presented in the forum which is an achievement and lauded well in the forum. Their papers were included in the proceedings of the forum.
  - d. **NX Certification Training** – 25 students attended the NX certification program in the Pre conference training. Two students were awarded the “Basic Certified Trainer award”. This was awarded based on the examination taken by the students after the pre-conference training program in the global forum.

These projects were interdisciplinary in nature, which involved the guides and students from Electronics & Communication Engineering, Mechanical Engineering, Industrial & Production Engineering, Instrumentation & Technology, and Computer Science. These projects were guided by Dr. C.R.Venugopal, Dr. K.Chandrashekar, Dr. S.P.Kulakarni, Pr. Ratnakara, Dr.Mallesha, Dr. R.Srinidhi, Pr. V.Basavaraj and Dr. V.Ramesh.

In the year 2015, the students of SJCE have been given the following 2 PACE projects

1. **Reconfigurable Shared Mobility System (RSMS)** - Team 6 consisting of PES University, India, Sri Jayachamarajendra College of Engineering, India, M.S. Ramaiah University of Applied Sciences, India, Michigan Tech, USA, Wuhan University of Technology, China and ITAM, Mexico.

<b>Name of the Candidate Involved with RSMS</b>	<b>PACE Project</b>	<b>Name of the Guides</b>
1. SrinidhiBukkapatnam	<b>Reconfigurable Shared Mobility System (RSMS) (Mechanical , IP , IT and E&amp;E)</b>	<b>Prof. V.BASAVARAJ &amp;Dr. R. SRINIDHI</b>
2. Srikanth N		
3. Suraj H P		
4. Satyam Taorem		
5. Nikhil Murthy		
6. VijayeendraRao H.P		
7. Abhinandan S		
8. Venkatesh A M		
9. Varsha T P		
10.Anshad		
11.Kishan		

<b>Name of the Candidate involved with CIC project</b>	<b>PACE Project</b>	<b>Name of the Guide</b>
1. Abhiram	Designing, Modeling and Analysis of iREACTOR. Innovative Rege-nerative Electromagnetic Air compressed Cogenerative Tesla Optimized Rotor Engine	<b>Dr. K. Chandrashekar</b>
2. Venkatesh		
3. Aniketh		
4. Mohan Rao		
5. H P Suraj		
6. Vadiraja M N		
7. Varsha T P		
8. Sourabh N Mahendrakar	Design and Analysis of Electromagnetic internal Combustion hybrid Engine <b>(Mag-Ic)</b>	<b>Dr. K. Chandrashekar</b>
9. Chandan K R		
10. Tejas Bharadwaj S		
11. Rohit Ramesh Muttur		

The mentor for all these projects is **Dr.V.Ramesh, SJCE PACE Integrator** and **Dr. Syed Shakeeb Ur Rahman** is the **SJCE PACE Administrator**.

The Global forum will be held at University of São Paulo campus in São Paulo, Brazil during July 27 – 31, 2015 under the guidance of Dr. K.Chandrashekar, Dr. R.Srinidhi, Prof. V.Basavaraj. The mentor for these projects is Dr.V.Ramesh. The PACE administrator is Dr. Syed Shakeeb Ur Rahman.





## **PACE REPORT 2014 -2015**

In this year, PACE global forum was held in **University of São Paulo, Sao Paulo, Brazil during July 27 – 31, 2015.**

In this year, “iREACTOR” project won the **II prize** in the Collaborative Innovative Challenge competition in **University of São Paulo, Sao Paulo, Brazil.** The students involved in this project were Aniketh Mohan Rao, Abhiram Madenur Venkatesha, Suraj Handithavalli Purushothama and Vadiraja Mysore Nagendra. This project was guided by Dr.K.Chandrashekara and mentored by Dr. V. Ramesh and Prof. V.Basavaraj.

“A Comparative FEM Analysis of Tribological and strength characteristics of composites of PF and ER matrices reinforced with GF and other filler materials with commercially available Brake pads” Won the III prize for outstanding poster preparation and presentation. The students involved in this project were Vadiraja M N and Mohan Kumar. This project was guided by Dr.K.Chandrashekara and mentored by Dr. V. Ramesh and Prof. V.Basavaraj.

In addition, 1 CIC project, 02 CIC poster presentations and 02 Technical paper poster presentations were presented by SJCE in the Global Forum, which consisted of 65 globally recognized PACE institutions from all around the world.

A total of 05 students participated in the Siemens NX Basic certification training program in the forum and Srikanth of I&P and Mohammad Anshad of Mechanical Engineering cleared the NX Certification exam and they were awarded the **Basic NX trainer certificates by Siemens PLM software, USA.**

Further, the students of SJCE who participated in RSMS (Reconfigurable Shared use Mobility System) project as TEAM 6 with other universities namely PES University, Bangalore, MSRUAS, Bangalore, Wuhan University of Technology, China, Michigan Technological University, USA and ITAM, Mexico prepared a prototype model of RSMS which is a four wheeler vehicle with the provision of reconfigurable and shared use mobility system.

SJCE students Srinidhi Bukkapatnam, Nikhil Somashekar Murthy, Vijayendra Rao Harnall Padmanabh, Suraj Handithavalli Purushothama and Srikanth Nanjundaswamy participated in this project. RSMS project was sponsored fully by General Motors and PACE consortium. This project was guided by Prof. V.Basavaraj and Dr.R.Srinidhi and mentored by Dr. V. Ramesh.

SJCE PACE Coordinator Prof. Basavaraj. Valong with project mentor Dr.K.Chandrashekara with 13 students of SJCE attended the PACE global forum and received these awards.

PACE has extended NX 10 version software for a period of 1 year and this has been installed in the CAD/CAM - PACE laboratory.

Automobile assemblies of 2 car engines are donated by General Motors Bangalore during December 2015 from the PACE initiative. These engines and accessories will

be used to carry out study projects in the field of Automotive Electronics and Mechanical Engineering Sciences branches. These engines and parts are located in the Mechanical Laboratory of SJCE.



# PACE REPORT 2015-2016

This year PACE Global forum was held in Cincinnati USA between 26<sup>th</sup> July 2016 and 30<sup>th</sup> July 2016. Dr. K.Chandrashekara and Dr. H.Yogesh along with 10 students attended the forum in person and competed in the following 3 categories of events.

## 1. Reconfigurable Shared Use Mobility Systems (RSMS)

This was a 2 year project started in 2014 and concluded in 2016 involving 8 global teams across the globe and SJCE was in Team 6 along with PES, MSRAUS, Michigan State, ITAM and Wuhan State University.

SJCE team comprising of Mr. Muhammed Anshad, Sanganagouda, Kishan, Chethana Naik carried out the Design and analysis phase of the project and assisted the other team members in building a prototype “Konnect” and successfully presented the configurability features of their concept. This project was very well appreciated by the PACE for its innovative ideas and this work was jointly guided by Dr. V.Ramesh, Dr. R.Srinidhi and Prof. V.Basavaraj.

## 2. Collaboration & Innovation Challenge (CIC)

This is a proud moment for SJCE, as it bagged 3 prizes out of 4 in this category which was competed by 20 teams worldwide. The students have applied for the patents for their concepts.

SJCE bagged I prize for the innovative concept on Co-generative Re-generative Hybrid Nitrogen Engine and this was presented by Atrish Bhatt, John Pao, Madhav Goel, Giridhar D J under the guidance of Dr. K. Chandrashekara and Dr. H.Yogish.

Kale Tukaram, Varun Raaj, Sudharshan bagged III prize for their innovative concept of Energy Harvesting using the piezo- electric crystals from automobile tyres under the guidance of Dr. K. Chandrashekara, Dr. Rudraswamy and Dr. H.Yogish.

The innovative concept on hybrid gear shifting for automobile proposed by Muhammed Anshad, Kishan, Mayur bagged IV prize in the forum which was mentored by Dr. K. Chandrashekara and Dr. H.Yogish.

In the poster session, the concept on Hybrid Intelligent Decoupled power train system and concept on Self Acting Jack in an automobile were presented by Mr. Atrish Bhatt, Aishwarya and Sanganagouda. These projects were mentored by Dr.V.Ramesh, Dr. M.N.Shanmukhaswamy and Professor V.Basavaraj.

### 3. Connected Mobility Design

In the Connected Mobility Design Category, Muhammed Anshad, Mayur, Kishan presented their concept on mobility features in an automobile and they **emerged as top 5 finalists**. This project was mentored by Dr. K. Chandrashekara and Dr. H. Yogish.

The concept on mobile additive manufacturing vehicle bagged **best paper award** in the **technical paper presentation** in the manufacturing track and was selected for the **journal publication**. This paper was presented by Chethan Naik in the forum and authored by Pradeep Singh & Sachin H L under the guidance of Dr. V.Ramesh and Dr. Savitha. M.

John Pao, Kishan, Mayur, Varun Raaj and Kale Tukaram cleared **NX modeling Basic Certification Examination** and 10 students were given the training on NX Modelling during 16<sup>th</sup> to 24 July 2016.

## **PACE REPORT 2016-2017**

In this year, PACE global forum was held in **Instituto Tecnológico Y De Estudios Superiores De Monterrey Campus, Toluca (itesm toluca) in toluca, México from 24th July to 27th July 2017.**

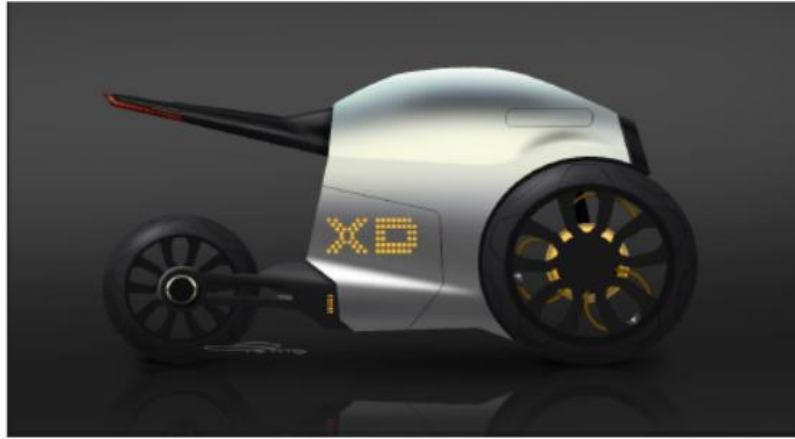
The students of SJCE participated in Personal Mobility Urban Access (PUMA) project in Team 3 comprising of Escola Politécnica Da Universidade De São Paulo, Instituto Mauá De Tecnologia Rheinmain University of Applied Sciences, People's Education Society University, National Institute of Design , **Sri Jayachamarajendra College of Engineering** and **Michigan technological university.**

The students bagged **I prize in Consumer Insight Category, II prize in Industrial Design and II prize in their Manufacturing Engineering category** for their innovative car concept for elderly people namely "CELOT" & "XD" designs. This project was guided by the PACE Integrator of SJCE **Dr. V.Ramesh along with the mentors Dr. R.Srinidhi and Prof. V.Basavaraj.**

Further in the COLLABORATION & INNOVATION CHALLENGE (CIC) category the students bagged **II prize for their work titled " Compact Uni Piston Balanced Octa cylinder Engine (CUBO E).**

Two technical papers were accepted in the conference, which were guided by **Dr. V.Ramesh, Prof. Arunkumar and Prof. V.Basavaraj.** 2 Posters were accepted which was guided by Dr. K.Chandrashekar.

PACE has announced the travel grant of \$1500/- each per person and a maximum amount of \$4500/-.



**XD - PROPOSAL 1**



**CELOT - PROPOSAL II**

**PUMA PROJECT - I, II & III PRIZE WINNER CUSTOMER INSIGHT, DESIGN & MANUFACTURING - AJITH HEGDE, NAGESH SJCE MYSORE - TEAM 3**

**GUIDE: Dr. V.RAMESH, Dr. SRINIDHI R, Prof. BASVARAJ. V**