Dr. A. B. KOTESWARA RAO

B.E.(Mechanical), M.Tech.(M/c tools), Ph.D (IIT-Delhi)
Fellow Institution of Engineers (I),
Fellow AP Akademi of Sciences
Member ASME, Life Member IWS, Life Member ISTE

Professor, Mechanical Engineering Department

PRINCIPAL

Gayatri Vidya Parishad College of Engineering (Autonomous)
Madhurawada, Visakhapatnam-530048
Andhra Pradesh, INDIA

E-mail: abkr_gvp@yahoo.co.in
Phone: Personal: (+91) 9441919560 Office: (+91)8885043401
Passport No.: J5526656

RESEARCH INTERESTS: **Design & Development of Robots, Parallel Kinematic Machines (PKMs), Optimization, Machine tools, Vibrations**

1. Name : **Dr. ABBARAJU BALA KOTESWARA RAO**
2. Father's name : (Late) Sri A. Seetha Ramaiah
3. Date of birth & age : 15th August, 1966 and **53 years**
4. Nationality : Indian
5. Category : General
6. Permanent Address : **Professor, Mechanical Engineering Department**
   Gayatri Vidya Parishad College of Engineering (Autonomous)
   Madhurawada, VISAKHAPATNAM – 530 048
   ANDHRA PRADESH (INDIA)

7. Educational Qualifications:

COURSE	STATE BOARD / UNIVERSITY / INSTITUTION	DIVISION (% of MARKS)	YEAR OF PASSING	SPECIALIZATION / MAIN SUBJECTS
S.S.C	S.S.C. Board	I Class (73.5)	1981	Composite Mathematics
Intermediate	Board of Inter. Edn. Hyderabad	I Class (76.5)	1983	Maths, Physics, Chemistry
B.E.	Nagarjuna University	I Class (74.2)	1987	Mechanical Engineering
M.Tech.	NIT-Warangal	I Class (72.6)	1990	Design & Prod. Engg., M/C Tools
Ph.D	**I I T - Delhi**	**9.54 (CGPA)**	2004	**Parallel Kinematic Machines (new kind of robots for machine tool applications)**

8. Contributions through Project / Thesis works:

B.Tech. Project work (July, 1986 – April, 1987):

Title: Performance evaluation of a solar flat plate collector with and without booster mirror

The fossil fuels are getting emptied. Necessity of switching over to alternate sources of energy was discussed in the report. The availability and capabilities of solar energy are highlighted. A solar flat plate collector water heating was designed and developed. Providing a booster mirror in front of solar flat plate collector improved the effectiveness further. Performance of the solar flat plate collector with and without booster mirror were compared.

M.Tech. Project work (September, 1989 – March, 1990):

Title: A study on the influence of wheel properties on grinding performance

A degree of variation in the properties of a grinding wheel, fired density (D_2) and Elastic modulus (E-mod), is unavoidable due to the inherent variations in the manufacturing practice. A grinding wheel with given specifications will have defined acceptance limits of E-mod and D_2, for inspection purposes. A quality control acceptance box is obtained by plotting these limits. The wheel is accepted or considered to be satisfactory if its properties fall within a prescribed box, no matter where they fall.

In the present work, the properties of a large number of grinding wheels having same specification are measured. Only those wheels whose properties are within the acceptance box are chosen for their performance investigation. Thus, the influence of acceptable variations in the properties of E-mod and D2 on the performance of the grinding wheel is the subject of study.

This was carried out in M/s Grindwell Norton Ltd., Bangalore (R&D-Branch) and in M/s Grindwell Norton Ltd., Mumbai (Manufacturing Unit). This work was presented as a paper in **14th All India Machine Tool Design and Research Conference (AIMTDR)** at **IIT-Bombay** in December, 1990 for which a **2nd Prize [National-wide] with a cash reward of Rs 3,000/- was awarded.**

Ph.D. Thesis work (July, 2001 – June, 2004):

Title: Analysis and design of hexaslide manipulators for machine tool applications

Conventional machine tool structures used for milling, drilling, etc., have serial kinematic chain, with each feed axis built on the top of another one. The lower axis carries larger mass due to the axes' elements above it, causing high bending due to the cantilever action. This imposes limitations on their accuracy and maximum cutting force to be withstood. Machine tools based on Parallel Kinematics (PKMs) have been found to overcome these limitations due to smaller moving masses. Hexapods are the most common version of PKMs which have been explored for Machine tool applications. Hexaslides which seem to overcome some of the limitations of hexapods have been of recent interest among PKMs.

In this thesis, a comprehensive study of the hexaslides is carried from kinematics, kinetostatics, and dynamics point of view. Each leg of constant length is connected to a slider that moves over a fixed rail. Actuators, usually the heavier part of the machine, that drive the lead-screw on a rail, are mounted on fixed base. So, the moving mass in a hexaslide is drastically reduced, allowing higher cutting forces to be withstood. Due to high rigidity and lightweight structures, hexaslides find applications in high speed machining, precision measuring, and others. However, their closed kinematic chains make their design and control difficult. Hence, a comprehensive study on workspace, dexterity, stiffness, and dynamics of hexaslides is presented. Several new performance indices like *workspace volume index, workspace shape index*, etc. are introduced for design purposes. Optimization is also performed for maximum workspace and dexterity. Finally, a novel dynamic model based on the Decoupled Natural Orthogonal Complement (DeNOC) matrices is presented, which is used for the inverse dynamics necessary to estimate actuator power and control.

9. Teaching Experience: 30 years

13th August, 1990	–	30th September, 1997	as Lecturer and then Senior Lecturer, Mechanical Engineering Dept., R. V. R. & J. C. College of Engineering, Guntur, A.P.
1st October, 1997	–	6th September, 2005	as Associate Professor, Mechanical Engg. Dept., G.V.P. College of Engineering, Visakhapatnam, A.P.
7th October, 2005	–	22nd October, 2006	as Professor, Mechanical Engineering Dept., G.V.P. College of Engineering, Visakhapatnam, A.P.
23rd October, 2006	–	25th May, 2009	as HEAD of Mechanical Engineering Dept., G.V.P. College of Engineering, Visakhapatnam, A.P.
26th May, 2009	–	31st August, 2009	as Professor, Mechanical Engineering Dept., G.V.P. College of Engineering, Visakhapatnam, A.P.
1st September, 2009	–	7th November, 2009	as VICE-PRINCIPAL, G.V.P. College of Engineering, Visakhapatnam, A.P.
9th November, 2009	–	3rd August, 2011	as Senior faculty, Mechanical & Motor Vehicle Division, BTI, **BAHRAIN**.
4th August, 2011	–	2nd September, 2011	as Professor, Mechanical Engineering Department, G.V.P. College of Engineering, Visakhapatnam, A.P.
3rd September, 2011	–	1st July, 2012	as VICE-PRINCIPAL, G.V.P. College of Engineering, Visakhapatnam, A.P.
2nd July, 2012	–	28th February, 2013	as DEAN-Academics (PG & Research) and VICE-PRINCIPAL G.V.P. College of Engg., Visakhapatnam, A.P.
1st March, 2013	–	**TILL DATE**	as **PRINCIPAL** G.V.P. College of Engg., Visakhapatnam, A.P.

10. Industrial Experience: 6 months

M.Tech. Project was carried out in M/s Grindwell Norton Ltd., Bangalore (R&D-Branch) and in M/s Grindwell Norton Ltd., Mumbai (Manufacturing Unit)

This research work was presented as a paper in **All India Machine Tool Design and Research Conference** (14th AIMTDR) at **IIT-Bombay**, Powai, Mumbai in December, 1990 with title of the paper as "Influence of wheel properties on grinding performance" for which a **2nd Prize [National-wide] with a cash reward** of **Rs 3,000/- was awarded.**

11. Contributions at BTI, BAHRAIN:

As a senior faculty in Mechanical & Motor Vehicle Division, BTI, BAHRAIN,

- supported Bachelor of Engineering Degree Program in Mechanical Engineering (B.ENGG.) of Teesside University (United Kingdom)
    - by delivering Mechanics of Materials #2 as module leader,
    - by supervising number of B.ENGG. final year's projects, and
    - by helping Dynamics Analysis #2 as a team member.

- supported the Higher National Diploma (HND) Program in Mechanical Engineering of Edexcel, UK (United Kingdom)
    - by delivering Dynamics of Machines as module leader,
    - by delivering Mechanical Principles as module leader, and
    - by supervising final year's projects.

- developed experimental setups for the conduct of practical & demonstration sessions.

- motivated colleagues, handling B.ENGG. subjects, towards research oriented activities.

- Imparted training to the students on the use of MATLAB and then guided them to carry out the following projects:
    - Stiffness modeling, analysis and optimal design of a 3-DoF Translational parallel kinematics based machine.
    - Optimal design and development of a four legged walking robot.
    - Optimal design of a four bar carrier mechanism for the desired motion generation.
    - Synthesis of a film advancing mechanism to achieve the desired path generation.

- Motivated the students, working in Aluminum Bahrain plant, etc., to carry out the following projects:
    - Design, analysis and installation of a 2-Ton monorail lifting beam in Aluminum Bahrain plant.
    - Analysis, design and fabrication of a small wind turbine for wind conditions in Bahrain.

12. Theory / Laboratory Courses handled:

M. Tech. (PG Program)

Theory Courses

- Industrial Robotics (6)
- Mechanical Vibrations (2)
- Advanced Mechanics of Materials (2)
- Optimization Methods in Engineering or Design Optimization (6)
- Stress Analysis & Vibrations (1)
- Computer Aided Manufacturing (1)

Laboratory / Practical Courses

- Optimization Lab (2)
- CAD / CAM Lab (2)

B. Tech. (UG Program)

Theory Courses

- Engineering Mechanics (8)
- Mechanics of Solids (3)
- Kinematics of Machines (5)
- Dynamics of Machinery (5)
- Engineering Graphics (5)
- Finite Element Method (4)
- Production Technology (2)
- Machine Tools (4)
- Instrumentation & Control Systems (1)
- Power Plant Engineering (1)
- Strength of Materials-I (3)
- Strength of Materials-II (4)
- **Mechanics of Materials (2) of Teesside University (UK) in BTI, BAHRAIN**

Laboratory / Practical Courses

- Kinematics of Machines (1)
- Dynamics of Machinery (2)
- Production Technology (2)
- Machine Tools & Metrology Lab (5)
- Workshop (8)
- Instrumentation & Control systems Lab (2)
- **Mechanics of Materials Lab (2) of Teesside University (UK) in BTI, BAHRAIN**

* Numbers in brackets indicate no. of times that particular course is taught

13. Student Projects guided so far (33)

M.Tech. (12)	
2017-2018	Analysis and Design of a Parallel Kinematics based Rapid Prototyping Machine
2016-2017	Experimental Investigations on a 3-DoF Translational Parallel Kinematic Machine Tool
2014-2015	Design and Analysis of a Multi-Purpose Inter-Cultivator
2013-2014	Workspace and Dynamics Analyses of a 3-DoF Planar Parallel Kinematic Machine Tool
2012-2013	Modelling and Analysis of a 3-DoF Translational Spatial PKM
2007-2008	Modelling of a 3-RRR Spatial Robot and Optimal Location of a Component in its Workspace
2007-2008	Modelling and Kinematic Analysis of a Two Degree of Freedom PKM in CATIA
2007-2008	Workspace and Dexterity Analyses of A Three Degree of Freedom Planar PKM
2006-2007	Surface Roughness Evaluation using Digital Image Processing and Artificial Neural Networks
2006-2007	Dynamics Modeling and Analysis of a Two Degree of Freedom Translational Mechanism
2005-2006	Kinematic Design of Serial Robot Manipulators for Optimal Performance Indices
2005-2006	Modeling and Stiffness Analysis of A 2-DOF Parallel Kinematic Mechanism
B.Tech. (21)	
Projects guided at BTI (Bahrain), affiliated to Teesside University (UK)	
2010-2011	Stiffness Analysis and Optimal design of a 3-DoF Translational PKM based Machine
2010-2011	Optimal design and development of a four legged walking robot
2010-2011	Optimal design of a four bar carrier mechanism
2010-2011	Synthesis of a Film Advancing Mechanism for path generation
2009-2010	Design, Analysis and Installation of A 2-Ton Monorail Lifting Beam in Aluminum Bahrain plant
2009-2010	Design and Fabrication of a Small Wind Turbine
Projects guided in India	
2011-2012	Kinematic Synthesis and Development of a Hand driven Rice Transplanter
2008-2009	Design and development of a 3-PRRR Isoglide
2007-2008	Optimal design and development of a Biped Robot
2007-2008	Design and development of a vacuum cleaning robot
2005-2006	Optimal design and development of a quadruped ambling mechanism
2004-2005	Analysis and design of a 2-DOF PKM based machine tool
2000-2001	Design and development of a 3-DOF PKM based machine tool
1999-2000	Kinematic synthesis, design and fabrication of a 4-bar carrier mechanism in assembly machine
1996-1997	Design of a mechanism to support an extra-seated passenger in aisles of bus
1995-1996	Dimensional synthesis of a four link planar function generator
1994-1995	Truss and Beam deflection analysis through FEM
1993-1994	Influence of machining conditions on performance characteristics during turning
1992-1993	Effect of surface roughness on coefficient of friction
1992-1993	Temperature distribution in a fin by FEM
1991-1992	Measurement of average tool tip temperature
1990-1991	Influence of cutting conditions on machining characteristics

14. RESEARCH PUBLICATIONS (Total: 48)

(a) in International Journals: 16

1. Sanjay Darvekar, **A. B. Koteswara Rao** and S. Shankar Ganesh, "Machining capability of a 2-D of parallel kinematic machine tool and conventional CNC milling machine", Materials Today: Proceedings (**Elsevier, Science Direct**), Available Online from January 2021 (in Press).

2. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Design optimization of a 2-DOF parallel kinematic machine based on natural frequency", in ***International Journal of Mechanical Science and Technology, KSME*** **(Springer), 2020,** Volume 34, No. 2, pp 835 - 841 (**SCI Indexed**, Impact Factor: 1.14).

3. B Sridhar Reddy, **A B Koteswara Rao**, G Ranga Janardhana, "Multi-Objective Optimization of Wire Electrical Discharge Machining of Al 2124/SiC Composite", in ***International Journal of Engineering and Advanced Technology***, Volume 9, Issue 1, October 2019 in Regular Issue (**Scopus Indexed**) pp. 2155 - 2163.

4. B Sridhar Reddy, **A. B. Koteswara Rao**, G Ranga Janardhana, "Modeling and Analysis of Machining Parameters and Responses of Wirecut Electric Discharge Machining of Al2124/SiCp Using Response Surface Methodology and Soft Computing Techniques", in ***International Journal of Recent Technology and Engineering,*** ISSN: 2277-3878, Volume 8, Issue 2, July 2019, pp 5429 – 5434 (**Scopus Indexed**).

5. S. Shankar Ganesh, **A. B. Koteswara Rao**, and B. Sarath Kumar, "Design Optimization of 3-DOF Star triangular Manipulator for Machining Applications", Materials Today: Proceedings (**Elsevier, Science Direct**), Volume 22, Part 4, 2020, pp 1845-1852.

6. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Kinematic and dynamic optimization of a 2-DoF Parallel Kinematic Machine", in ***Procedia Computer Science*****, 2018,** Volume 33, pp 576-584 (**Elsevier, Scopus Indexed**).

7. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Inverse Dynamics of a 3-DOF Translational Parallel Kinematic Machine", in ***International Journal of Mechanical Science and Technology, KSME*** **(Springer), 2015,** Volume 29, No. 11, pp 4583-4591 (**SCI Indexed**, Impact Factor: 1.14).

8. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Study on the Stiffness of a 3-Degree of Freedom Translational Parallel Kinematic Machine", in ***International Journal: Frontiers of Mechanical Engineering,*** **(Springer, Scopus Indexed),** 2014, Volume 9, Issue 3, pp 233-241 (available on-line DOI: 10.1007/s11465-014-0312-z)

9. S.Shankar Ganesh and **A. B. Koteswara Rao**, "Error analysis and optimization of 3-DOF translational Parallel Kinematic Machine", in ***International Journal: Frontiers of Mechanical Engineering*****, (Springer, Scopus Indexed),** 2014, Volume 9, Issue 2, pp 120-129 (available on-line DOI: 10.1007/s11465-014-0300-3).

10. S. Shankar Ganesh, **A. B. Koteswara Rao**, and Sanjay Darvekar, **"**Multi-Objective Optimization of a 3-DOF Translational Parallel Kinematic Machine", in ***International Journal of Mechanical Science and Technology, KSME*** **(Springer),** 2013, Volume 27, No. 12, pp 3797-3804 (**SCI Indexed,** Impact Factor: 1.14).

11. Darvekar Sanjay, **Rao A. B. K.**, Ramji K., "A study on machining capability of a 2-DoF PKM-based milling machine", in ***Procedia Engineering*** **(Elsevier, Scopus Indexed),** 2013, Volume 64, pp. 757-766 (Impact Factor: 0.038).

12. Sanjay Darvekar, **A. B. Koteswara Rao,** S. Shankar Ganesh and K. Ramji, "Optimal design and development of a 2-DOF PKM based machine tool", in ***International Journal of Advanced***

***Manufacturing Technology*, (Springer),** 2013, Volume 67, Issue 5-8, pp. 1609-1621 (**SCI Indexed,** Impact Factor: 1.779).

13. P. Srinivasa Rao, O. P. Gupta, S. S. N. Murthy, and **A. B. Koteswara Rao**, "Effect of Process Parameters and Mathematical Model for the Prediction of Bead Geometry in Pulsed GMA Welding", in ***International Journal of Advanced Manufacturing Technology*, (Springer),** 2009, Vol. 45, pp. 496-505 (**SCI Indexed,** Impact Factor: 1.128).

14. **A. B. Koteswara Rao**, S. K. Saha, and P. V. M. Rao, "Dynamics Modelling of Hexaslides using the Decoupled Natural Orthogonal Complement Matrices," in ***International Journal of Multibody System Dynamics***, Volume 15, 2006, pp. 159-180 (Impact Factor: 0.63).

15. **A. B. Koteswara Rao**, S. K. Saha, and P. V. M. Rao, "Stiffness Analysis of Hexaslide Machine Tools," in ***International Journal of Advanced Robotics, Robotics Society of Japan***, Publisher: VSP, Volume 19, No. 6, July 2005, pp. 671 – 693 (Impact Factor: 0.348).

16. **A. B. Koteswara Rao**, P. V. M. Rao, and S. K. Saha, "Dimensional Design of Hexaslides for Optimal Workspace and Dexterity," in ***IEEE Transactions on Robotics*-IEEE-TRO**, Volume 21, No. 3, June 2005, pp. 444-449 (Impact Factor: 1.486).

(b) in International Conferences: 23

1. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Design Optimization of 3-DOF Hybrid Manipulator", in the CD *Proc. of* 2nd *International Mechanical Engineering Congress* – 2019 (IMEC 2019), held at NIT Tiruchirapalli, Tamilnadu, during 29th November – 1st December, 2019.

2. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Design Optimization of 3-Dof Star Triangle Manipulator for Machining Applications", in the CD *Proc. of* 2nd *International Conference on Materials Manufacturing and Modelling* (ICMMM 2019), held at VIT, Vellore, Tamilnadu, during 29 - 31, March, 2019.

3. B. Sridhar Reddy, **A. B. Koteswara Rao**, and G. Ranga Janardhana, "Multi-Objective Optimization of Surface Roughness, Recast Layer Thickness and Surface Crack Density in WEDM of Al2124/SiCp using Desirability Approach," 2nd *International conference on recent trends in metallurgy, materials science and manufacturing (IMME 2019*), held at NITT, Tamilnadu. India, during 27 - 28 December 2019.

4. **A. B. Koteswara Rao** and M Phani Krishna Kishore, "The future of Digital Pedagogy: An Indian Perspective", in the CD *Proc. of International Conference on Digital Pedagogy* (ICDP), 2018, held in AICTE, New Delhi, India, during 1-3 April 2019.

5. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Kinematic and Dynamic Optimization of a 2-DOF Parallel Kinematic Mechanism", in the CD *Proc. of* International Conference on Robotics and Smart Manufacturing (RoSMa 2018), held at IIIT Kancheepuram, Chennai, India, during 19 – 21 July, 2018.

6. Sanjay K Darvekar, **A B K Rao** and J V S Praveen, "Stiffness Estimation of a 2-DoF Parallel Kinematic Machine", in the *Proc. of International Conference on Computing Communication Control and Automation (ICCCCA 2015: IEEE)*, held at Pimpri Chinchwad College of Engineering, Pune, Maharashtra, 2015, pp 23-28.

7. P. D. V. V. S. Kiran Babu and **A. B. Koteswara Rao**, "Orientation Workspace Analysis of a 3-DoF Planar Parallel Kinematic Machine", in the *Proc. of* 4th *International Conference on Advances in Materials and Manufacturing Technology* (AMMT-2014), held at Chitkara University, Punjab, during 10-11 October, 2014.

8. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Stiffness Analysis Of 3-Dof Parallel Kinematic Machine for Manufacturing Applications", in the *Proc. of International Conference on Emerging Trends in Engg. and Mgt.* (ICETEM-2014), held at Coimbatore Institute of Technology, Tamilnadu, during 4-6 August, 2014, pp. 347-354.

9. S. Shankar Ganesh, **A. B. Koteswara Rao**, and A. Nageswara Rao, "Dynamics of 3-DOF Translational Parallel Kinematic Machine", in the *Proc. of International Mechanical Engineering Congress* (IMEC 2014), held at National Institute of Technology, Tiruchirapalli, during 13-15 June, 2014, pp. 250-253.

10. Sanjay Darvekar, **A. B. Koteswara Rao**, K. Ramji "A study on machining capability of a 2-DoF PKM-based milling machine" in the *Proc. of International Conference on Design and Manufacturing 2013 (IConDM 2013)* held at IIITD&M Kancheepuram, Chennai, during 18-20 July, 2013.

11. **A. B. Koteswara Rao,** Sanjay Darvekar, and K Ramji**,** "A Study of the Impact of Workpiece location on Machining Performance of a 2-DOF PKM based Machine tool", in the *Proc. of the ASME 2013 International Manufacturing Science and Engineering Conference MSEC2013,* held in Madison, Wisconsin, USA, during 10-14 June, 2013, (Paper code: MSEC2013-1100).

12. Sanjay Darvekar, **A. B. Koteswara Rao**, S. Shankar Ganesh, and K Ramji, "A Study of the impact of tool position on performance of a 2-DOF PKM based machine tool while drilling", in the *Proc. of the International Conference on Mfg Excellence* (TECH XELL ENCE - ICMAX 2013), held at Sri JJT University, Jhunjhunu, Rajasthan, during 28-30 January, 2013, pp. 8-13.

13. S. Shankar Ganesh, **A. B. Koteswara Rao**, and Sanjay Darvekar, "Stiffness modelling and analysis of 3-DOF Translational PKM", in the *Proc. of the International Conference on Manufacturing Excellence* (TECHXELL ENCE-ICMAX 2013), at Sri JJT University, Jhunjhunu, Rajasthan. during 28-30 January, 2013, pp. 14-19.

14. **A. B. Koteswara Rao**, S.V. Subramanyam and B Pradeep Jayasimha, "Design optimization of a 3-DOF RRR Robot and optimal location of a component in workspace", in the *Proc. of International Conference on Emerging Research and Advances in Mechanical Engg.* (ERA-2009), held at Velammal Engg. College, Chennai, during 19-21 March, 2009, pp. 522-526.

15. P.S.Rama sreekanth, K.Ramji, and **A. B. Koteswara Rao**, "Dynamic Behaviour of a 4-Wheeled Vehicle Suspension System By Characterizing Its Power Spectral Density", in the *Proc. of International Conference on Computational Methods in Engineering & Sciences* (ICCMES 2009) held at CBIT Hyderabad, during 8-10 January, 2009, pp. 582-590.

16. **A. B. Koteswara Rao**, L.V.Suryam and Pradeep Jayasimha, "Modelling and Kinematic Analysis of a Two DOF PKM in CATIA", in *Proc. of International Conference on Advances in Mechanical Engineering (AME-2008)* held at SVNIT, Surat, during 15-17 December, 2008, pp. 539-544.

17. **A. B. Koteswara Rao**, S.Shankar Ganesh and K. Santa Rao, "Workspace and Dexterity Analyses of A Three DOF Planar Parallel Kinematic Machine Tool", in the CD *Proc. of International Conference* TEAMTECH 2008, held at IISc Bangalore, during 20-24 September, 2008.

18. **A. B. Koteswara Rao**, S.Shankar Ganesh and U Ravindra Varma, "Workspace and stiffness analysis of a two degree of freedom translational parallel kinematic machine", in the *Proc. Of 2nd International Workshop on Fundamental Research for Parallel Mechanisms and Manipulators, Montpellier (France)*, 2008.

19. **A. B. Koteswara Rao** and B. Sunith, "Optimal Design and Development of A Quadruped Ambling Mechanism", in the *Proc. of International Conference on Fascinating Advancements in Mechanical Engineering* (FAME 2008), held at Mepco Schlenk Engineering College, Sivakasi, Tamilnadu, during 11-13 December, 2008, pp. 437-442.

20. **A. B. Koteswara Rao**, ASCS Sastry, and J. Ramakrishna Aditya, "Surface Roughness Evaluation using Digital Image Processing and Artificial Neural Networks," in the *Proc. of International Conference of Advances in Mechanical Engineering* (ICAME 2007), held at MIT, Manipal, during 24-26 October 2007.

21. **A. B. Koteswara Rao** and A.P.C.Koundinya, "Dynamics Analysis of a two degree of freedom translational mechanism" in the *Proc. of International Conference on Recent Trends in Mechanical Engineering* (IRTME-2007) held at Ujjain, during 4-6, October, 2007.

22. **A. B. Koteswara Rao**, S. K. Saha, and P. V. M. Rao, "Workspace and Stiffness Analyses of a Two Degree of Freedom Parallel Kinematic Machine Tool," in the *Proc. of International Conference on Recent Trends in Automation & its Adaptation to Industries* (PCEA-IFToMM), PICA2006, at Nagpur, during 11-14 July, 2006.

23. **A. B. Koteswara Rao**, S. K. Saha, and P. V. M. Rao, "Workspace and Dexterity Analyses of Hexaslide Machine Tools," in the *Proc. of **IEEE** International Conference on Robotics & Automation* (**ICRA 2003**), held at Taipei, Taiwan during 19-25 September, 2003, pp. 4104-4109.

(c) in National Conferences: 9

1. **A. B. Koteswara Rao**, "Parallel Kinematic Machines for Medical Applications", in *Proc. of* A.P.Science Congress held at P.B. Siddhartha Arts & Science College, Vijayawada, during 7- 9 November 2016.

2. S. Shankar Ganesh and **A. B. Koteswara Rao**, "Optimal Trajectory Planning of 3-DOF Parallel Kinematic Machine for Manufacturing Applications", in the *Proc. of* 2nd *National Conference on Emerging Trends in Engg.* (NET 2014), held at Government Engg College, Kozhikode, Kerala, during 29-30 August, 2014, pp. 224-228.

3. Sanjay Darvekar, S. Ganesh, and **A. B. Koteswara Rao**, "Influence of Dimensions of a 2-DOF Parallel Kinematic Machine on its Workspace, Dexterity, and Stiffness", in the *Proc. of National Symposium on Planar Parallel Robots and Mechanisms,* held at Rungta College of Engineering and Technology (RCET), Bhilai, during 7-10 January, 2010, pp. 38-46.

4. S. Ganesh, Sanjay Darvekar, and **A. B. Koteswara Rao**, "Design of An Isoglide- A 3-DOF Translational PKM", in the *Proc. of National Symposium on Planar Parallel Robots And Mechanisms,* held at Rungta College of Engineering and Technology (RCET), Bhilai, during 7-10 January, 2010, pp. 70-74.

5. D. Lingaraju, **A. B. Koteswara Rao**, and M. Pramila Devi, "Cell Formation and the Machine Selection in the Design of Cellular Manufacturing System," in the *CD Proc. of National Conference on Advances in Computer Integrated Manufacturing* (NCACIM), held at J. N. V. University, Jodhpur, during 16-17 February, 2007.

6. **A. B. Koteswara Rao**, P. V. M. Rao, and S. K. Saha, "Performance Analysis of Hexaslide Machine Tools," in the *Proc. of 21st All India Manufacturing Technology, Design, and Research Conference* (21st AIMTDR), held at VIT, during 19-21 December, 2004, pp. 699-704.

7. **A. B. Koteswara Rao**, P. V. M. Rao, and S. K. Saha, "A Study of Total Workspace Characteristics of Hexaslide Machine Tools," in the *CD Proc. of National Conference on Advanced Manufacturing & Robotics* (NCAMR-2004), held at CMERI, Durgapur, during 10-11 January, 2004.

8. **A. B. Koteswara Rao**, S. K. Saha, and P. V. M. Rao, "Inverse Dynamics of 2-DOF Planer parallel manipulators with prismatic actuators," in the *Proc. of 11th National Conference on Machines & Mechanisms* (NACOMM 2003), held at IIT-Delhi, during 18-19 December, 2003, pp. 217 - 225.

9. **A. B. Koteswara Rao**, R. L. Murty, and G. Srihari, "Influence of wheel properties on grinding performance," in the *Proc. of All India Machine Tool Design and Research Conference* (14th AIMTDR), held at IIT-Bombay, Mumbai, December, 1990.

15. Short-term Courses / Training Programs / Workshops Organized: (11)

Typical programmes Organized:

- Organized as a Co-Ordinator, for **AICTE sponsored Two week Faculty Development Programme** on **Serial and Parallel Robots: Analysis, Design and Applications** from 22nd January – 3rd February 2018. **Dr. S.K. Saha, Professor, IIT Delhi, Dr. P.V.M. Rao, Professor, IIT Delhi** were among the resource persons.

- Organized as a Co-Ordinator, **a One day Seminar on *A CAE Centric™ Approach to Product Design*** for faculty from engineering colleges **in collaboration with Cranes Software International Ltd.**, Hyderabad on 25th August, 2008.

- Organized as a Co-Ordinator, **a Short-Term Program on *Mechatronics & Micro-Manufacturing*** for faculty from various engineering colleges **in collaboration with M/s Cybermotion Technologies**, Hyderabad, during 19th - 23rd May, 2008**. Professor S. K. Saha**, Incharge-Mechatronics Lab, IIT-Delhi was one of the resource persons.

- Organized as a Co-Ordinator, **a Workshop on *Engineering Problems Solving using MATLAB (WEPS 2008)*** for faculty from various engineering colleges, employees from R&D Organizations and Research Scholars, held during 18th - 20th February, 2008.

- Organized as a Co-Ordinator, for **a Faculty Development Program on *Analytical Dynamics - A New Approach*** for faculty from various engineering colleges held during 29th March - 3rd April 2007 in GVP College of Engineering, Visakhapatnam. **Professor Firdaus E. Udwadia** University of Southern California, Los Angeles, California, USA was the resource Person.

- Organized as a Co-Ordinator, for **a Short-Term Program on *Advanced Finite Element Analysis*** for faculty from various engineering colleges, employees from R&D Organizations and Research Scholars held during 20th - 24th December, 2007 in GVP College of Engineering, Visakhapatnam. **Professor J. N. Reddy**, Texas A&M University was the resource Person.

- Volunteered as one of the Key Organizers of 11th ***National Conference on Machines and Mechanisms* (NACoMM-2003)**, in **I I T - Delhi**, during 18th - 19th December, 2003 (**Two days**).

16. Short-term Courses/Training Programs/Workshops Participated: (36)

Typical programmes Participated:

- Participated in the Training Programme on **"Robot Programming, Operation and Maintenance"** in **M/s Mitsubishi Electric India Pvt. Ltd., Bangalore** during 25th – 26th June 2019.

- Participated in Programme on Academic Leadership Skills in Wipro **India, Bangalore**, during 25th - 27th March, 2019 (**Three days**).

- Participated in a National Conference on **"Indian Higher Education: Challenges of Quality & Brand Building"** organized by AICTE at Bangalore on 24th November 2018.

- Participated in the **Management Capacity Enhancement Programme (MCEP)** for TEQIP Institutions during 13th – 18th February 2017, organized by **IIM Udaipur.**

- Participated in the **Management Capacity Enhancement Programme (MCEP)** for TEQIP Institutions during 12th – 16th October 2015, organized by **IIM Trichy.**

- Participated in the National Conference on **"Innovations in Engineering Education with Global perspective – A blended approach"** during 31st October – 2nd November 2014 organized by **JNTUK-Kakinada**

- Participated in a Programme on ***Good Governance and Institutional Assessment*** in **Administrative Staff College of India, Hyderabad**, during 12th - 14th May, 2014 (**Two days**).

- Participated in a Conclave on ***Enhancing Quality of Technical Education and Research*** in **I I T - Hyderabad**, during 7th - 8th March, 2014 (**Two days**).

- Participated in an International Conference on ***Transformations in Engineering Education*** in **B V B College of Engineering & Technology**, during 16th - 18th January, 2014 (**Three days**).

- Participated in a Workshop on ***Curriculum Design using Outcome Based Education - framework*** in **B V B College of Engg. & Technology**, on 16th January, 2014 (**One day**).

- Participated in a Workshop on *Redesigning of Engineering Curriculum in the Context of Outcome Based Learning* in **J N T U Kakinada**, during 24th - 25th February, 2013 (**Two days**).

- Participated in a Workshop on ***Quality Initiatives in Technical & Higher Educational Institutions (in Compliance with NBA & NAAC Accreditation)*** in **Engineering Staff College of India, Hyderabad**, during 29th - 31st January, 2013 (**Three days**).

- Participated in a Workshop on ***The Establishment of Centres of Excellence*** in **Andhra University College of Engineering, Visakhapatnam**, during 29th - 30th November, 2012 (**Two days**).

- Participated in a Faculty Development Program on ***Leadership Skills*** in **G V P College of Engg., Visakhapatnam** in collaboration with **TCS, Hyderabad**, on 21st June, 2012 (**One day**).

- Participated in a Workshop on ***Micro and Nano Technology – Advances and Implications*** in **Sri Chandrasekharendra Saraswathi Viswa MahaVidyala, Kanchipuram**, during 21st - 22nd March, 2008 (**Two days**).

- Participated in a Short-term Training Program on ***Mechatronics and Micro Electro Mechanical Systems*** in **N I T, Warangal**, during 12th - 17th March, 2007 (**One week**).

- Participated in a Short-term Training Program on ***Advanced Manufacturing & Metrology,*** in **Indian Institute of Technology, Madras**, during 4th - 8th December, 2006 (**One week**).

- Participated in a Workshop on ***Competency Based Curriculum Development,*** in **G V P College of Engineering, Visakhapatnam**, in connection with the setting up of **Indo-German Institute of Advanced Technology (IGIAT)-Visakhapatnam**, during 8th - 10th June, 2005 (**Three days**).

- Participated in a Workshop on ***Institution Building: Approaches-Strategies-Synergy,*** in **G V P College of Engineering, Visakhapatnam**, during 1st - 2nd May, 2005 (**Two days**).

- Participated in a Workshop on ***Rotor Dynamics & Tribology*** in **G V P College of Engineering, Visakhapatnam** in association with **C-Gates**, **Bangalore**, during 5th - 6th November, 2004 (**Two days**).

- Participated in a Short-term course on ***Advanced Mechanism Design,*** in **Indian Institute of Science, Bangalore**, during 4th - 14th January, 1999 (**Two weeks**).

- Participated in a Seminar on ***Service Quality Management***, in **R.V.R & J.C. College of Engineering, Guntur**, on 12th September, 1997 (**One day**).

- Participated in an ***Induction Training Programme*** organized by Academic Staff College, Kurukshetra University, in **REC-Kurukshetra**, during 15th July - 3rd August, 1996 (**Three weeks**).

- Participated in the ***Induction Training Course***, in **Academic Staff College, Andhra University**, **Visakhapatnam**, during 13th - 31st May, 1996 (**Three weeks**).

- Participated in ISTE course on ***Induction Training for Teachers***, in **R.V.R & J.C. College of Engineering, Guntur**, during 20th - 22nd April, 1995 (**Three days**).

- Undergone a **Training Programme in *Tool design* Section**, **Bharat Heavy Plates & Vessels Ltd. (BHPV), Visakhapatnam**, during 26th April - 21st June, 1989 (**Two months**).

17. Exposure to Application Software / Soft skills:

MATLAB, ANSYS, CATIA, ProE, MS Office tools etc.

18. Membership in Professional bodies:

- Fellow, Institution of Engineers (India).
- Member, Indian Institute of Welding.
- Member, American Society of mechanical Engineers (ASME), USA.
- Life Member of Indian Society for Technical Education (ISTE), India

19. Awards / Prizes / Typical Achievements:

(i) **Fellow AP Akademi of Sciences (from AP AS) 2016**, during A.P. Science Congress – 2016, held at P.B. Siddhartha Arts & Science College, Vijayawada, during 7-9 November, 2016.

(ii) **Best Engineering College Principal (from ISTE AP Section) during AP State Awards 2018**, award sponsored by G. Pullaiah College of Engineering & Technology, Kurnool, ceremony held in Siddhartha Institute of Engineering Technology, Puttur, on March, 2019.

(iii) **Best Researcher Award (from JNTU-K)** among many colleges (around 240) affiliated to Jawaharlal Nehru Technological University, Kakinada, 2009.

(iv) **Best Teacher Award (from GVPCE)** in G V P College of Engineering, Visakhapatnam, 2009.

(v) **ICRA Travel Award (from IEEE)** worth **Rs 50,000/-** for presentation of the paper **in IEEE Conference**, Taipei, **Taiwan**, 2003.

(vi) **2nd Prize [National-wide] with a cash reward** of **Rs 3,000/-** for the paper in **14th AIMTDR Conference at IIT-Bombay, Mumbai**, 1990.

(vii) **Bringing the name of G V P College of Engineering for first time in International Journals** like IEEE Transaction on Robotics, Advanced Robotics, Advanced Manufacturing Technology etc.

(viii) **Commendation from the administration** wherever works (viz., in R.V.R. & J.C. College of Engg., Guntur, and in the present G. V. P. college of Engineering, Visakhapatnam, and BTI, Bahrain.

20. Academic / Administrative activities or responsibilities:

- Motivated the students to conduct a National level student symposium, *first of its kind* in GVPCoE, and then organized IMPETUS-2000 successfully as a mentor.

- Developed various Laboratories viz. CAD/CAM Lab, Machine tools Lab, Workshop, Metrology Lab, Mechatronics Lab, etc. and their laboratory manuals.

- Responsibilities as in-charge Head, Mechanical Engineering Department, GVPCoE since 1st October, 1997.

- Responsibilities as Head of the Mechanical Engineering Department, GVPCoE from 23rd October, 2006.

- Responsibilities as Vice-Principal, GVPCoE from 2nd September, 2009 till 7th November, 2009 (joining BTI, Bahrain) and then from 3rd September, 2011 till 28th March, 2013 (taking charge as Principal, GVPCoE).

- Developed the material necessary for the delivery, in course assessments, examination question papers at BTI, Bahrain in-line with Teesside University, U K.

- As a Member of Academic Committee, Faculty Selection Committee, etc. in G V P College of Engineering, Visakhapatnam.

- As a Member, Examination committee of various Universities, namely,
  Sri Chandrasekharendra Saraswathi Viswa MahaVidyala, Kanchipuram;
  Osmania University, Hyderabad;
  J N T University, Hyderabad;
  GITAM University, Visakhapatnam;
  Andhra University, Visakhapatnam;
  Nagarjuna University, Guntur, etc.

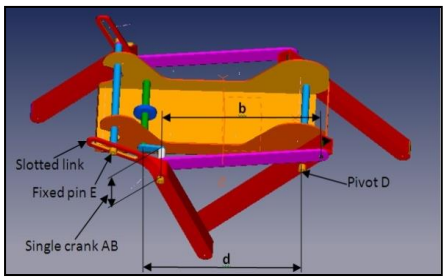
- **As Head of the Institution**, G. V. P. College of Engineering, Visakhapatnam since 1st March, 2013, initiated implementation of Outcome Based Education (OBE) leading to achieving NBA accreditation (OBE formatted) for four B.Tech. programmes, achieving Extension of Autonomy to the Institution for six years till 2020; initiated Revision of Curriculum in Choice Based Credit System (CBCS) etc., established a Centre for Fostering Social Responsibility through which large number of students are contributing for the goodness of the Society.

21. Typical Research activities / responsibilities:

- **Design and development of a new kind of 2-DOF PKM based machine tool for drilling and milling applications.**

- **Design and development of a Special Purpose CNC Machine for 2-D contour machining & other applications.**

- **Design and Development of a Four-legged walking Robot**



- **Development of two Robot Cells under FIST-DST:**

(i) Robot Cell (Mitsubishi 6-axis Articulated Arm)

(ii) Robot Cell (Mitsubishi 4-axis, SCARA)

- **Experimental Investigations on Rot-arc Welding.**
- **Development of a CAD/CAM, Robotics & Mechatronics Lab**.
- **Ph.D. Guidance: Total 6 Research scholars. Three scholars are awarded Ph.D. Three scholars registered** with NIT-Warangal, JNTUK-Kakinada and Andhra University, Visakhapatnam and are carrying out their research work.
- **Co-Ordinator, Research & Development**, G.V.P. College of Engineering.
- **Principal Investigator / Co Investigator** for **SIX funded projects** worth **Rs. 100 Lakhs from All India Council for Technical Education (AICTE), New Delhi and Department of Science & Technology (DST), Delhi etc**.
- **Reviewer to International Journals,** viz. **IEEE-Transactions on Robotics** / Mechatronics, **ASME,** Multibody Systems Dynamics, Mechanical Science & Technology (JMST), etc.
- **Member, Editorial Board, International Journal of Nonlinear Studies**.
- **Adjudicating Ph.D. and M.Tech. theses** of affiliating and other Universities mentioned in item 20.

22. Strengths / Weaknesses:

- Self-disciplined, discharging duties with commitment and dedication.
- Joining the teaching profession by choice (basically from a family of teachers).

--- Prof. Dr. A. B. KOTESWARA RAO

==========

Residence: Flat S-1, D.No: 55-1-27/24, BOBBY ENCLAVE, JagannadhaRaju Nagar, Near Isukathota Jn, Visakhapatnam-17
Phone: 0891-2521668 (Residence); (0)9441919560 (Mobile)