

TECHNICAL MAGAZINE MECH MANTRA



JULY TO DECEMBER 2020
VOLUME : 10

Department of
MECHANICAL ENGINEERING

EDITORIAL BOARD

CHIEF EDITOR

Dr. M. SREENIVASA KUMAR

M.Tech, Ph.D (UK), MISTE, FIE(I)
Principal

EDITOR

Dr. D. SUNEEL

M.Tech, Ph.D, FIE(I), MISTE, MRSI
HoD, ME

MEMBERS

Faculty

Dr. B. Venkata Siva
Professor, ME

Dr. D. Jagadish
Professor, ME

Mr. Ch.Sekhar
Associate Professor, ME

Mr.T.Ashok Kumar
Assistant Professor, ME

Students

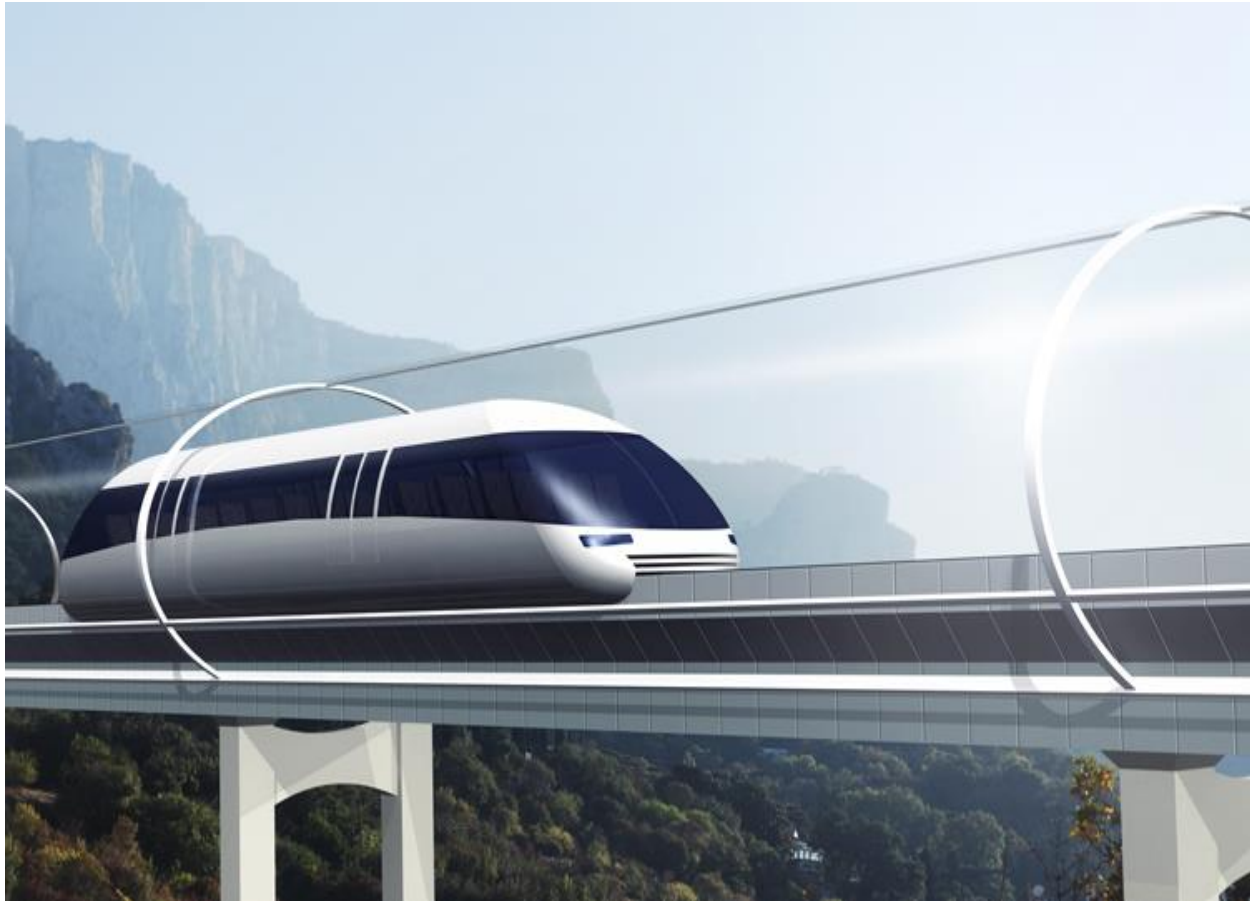
Mr. Pallapu Mallikharjunarao
IV year, ME

Mr. Mallaboyena Lokesh
IV year, ME

Mr. K.Pedda Vamsi Krishna
III year, ME

Mr. K.Prudhvi yeswanth reddy
II year, ME

TECHNICAL MAGAZINE –MECH MANTRA



JULY-DECEMBER 2020

Department of Mechanical Engineering



Narasaraopet-522601, Andhra Pradesh, India

Editorial board

Faculty Members:

Dr.D.Suneel, Professor & HOD, ME

Dr. B.Venkata siva, Professor, ME

Dr. D.Jagadish, Professor, ME

Mr. Ch.Sekhar, Associate Professor, ME

Mr. T.Ashok Kumar, Assistant Professor, ME

Student Members:

Mr. Pallapu Mallikharjunarao, IV year

Mr. Mallaboyena Lokesh, IV year

Mr. K.Pedda Vamsi Krishna, III Year

Mr. Y.Shiva reddy, III Year

Mr. K.Prudhvi yeswanth reddy, II Year

Mr. SK.Mohammad Bilal, II Year

MESSAGES



Chairman's message

It gives me great happiness to note that the department of Mechanical Engineering, NEC is bringing out the volume-10 of the department technical magazine, "MECH MANTRA". From the first edition, I understand that this magazine is intended to bring out the hidden literary talents in the students and also to inculcate leadership skills among them. The newsletter has served as a platform for the students to share their knowledge and ideas. I expect the contributions to this magazine to be of high standard and quality. I wish all the success for this venture.



Vice Chairman's message

I feel extremely delighted to observe that the department of Mechanical Engineering is coming out with a magazine this year also with the dedicated and committed efforts of the faculty and the students of the Editorial Board. The activity depicts the commitment and involvement of students and their thirst for knowledge.

I congratulate the efforts of the members of the Editorial Board in bringing out the volume-10 of the magazine. It is because of their selfless and untiring efforts that we see the magazine enriched with variety of articles.



Principal's message

The magazine of the department is the reflection of the creativity of the students, involved in multifarious activities. It speaks about their imaginative creativity through the medium of a language given in literary and artistic shape.

I feel gratified to see that the department is doing its best in carrying out the mission of grooming the students as such professionals who are not only competent enough to combat the challenges in their life but also become good human beings with moral excellence and social sensitivity

HOD's message



I feel privileged in presenting the volume of our department association magazine. I would like to place my sincere and heartfelt thanks to all those who have contributed to make this effort a success. My special thanks to the Management, for their guidance which enabled us to bring out this volume-10.

The magazine has a variety of articles endowed with different subjects contributed by the students of our department and their participation in various activities round the year.

I extend my gratitude to the entire team of the Editorial Board for their constant exertion, revision and support in bringing out the magazine in the present form.

INDEX

S.No	TOPIC	Page No.
	Student Projects	
1	Development Of PLT Code For Pneumatic Based 3-Axis Robot To Perform Pick And Place Application D Venkata Gopal, II Year ME	1
2	Designing Arc Welding Application Using Collaborative Robots In Software D Anil, II Year ME	2
3	Experimental Analysis Of Single Cylinder Diesel Engine Fueled With Biodiesel And Aluminum Oxide Nanoparticles Y Venkata reddy,III Year ME	3
4	Studies On Microbiological Growth And Machining Characteristics Over Aluminum Metal Matrix Composites Bommineni Ashok Babu, IV Year ME	4
5	Fabrication Of Vertical Axis Wind Turbine Bandi Johnbabu, IV Year ME	5
6	Faculty Achievements	6
7	Department Activities (Workshops/Alumni Talk/Industrial Visits)	7
8	Campus Placements	9
9	Student Toppers	10
10	MOUs	11

DEVELOPMENT OF PLC CODE FOR PNEUMATIC BASED 3-AXIS ROBOT TO PERFORM PICK AND PLACE APPLICATION

In This project, a PLC code is developed for a pneumatic-based 3-Axis robot to perform pick and place applications. The program code basically controls the Pneumatic valves present in the system which actuates the cylinders inside the robotic structure and henceforth achieves the desired movement. This project uses the advanced industrial controller (PLC) software called WPL Soft which is the most widely used tool in industries.

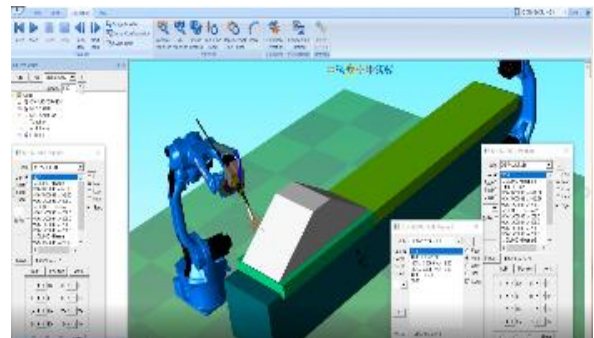


D VENKATA GOPAL
II YEAR ME

DESIGNING ARC WELDING APPLICATION USING COLLABORATIVE ROBOTS IN SOFTWARE

This project presents the concept of Arc Welding simulation using Moto SIM software.

Welding has been used widely in the industries such as automobile industries, trains, cruise ships, sculptures, spacecraft etc. With the help of dedicated simulation software called MotoSIM, design the simulation environment for the Arc Welding application using Yaskawa Arc Welding Robot. MotoSIM software uses a dedicated programming language called Inform 3 which is the proprietor of Yaskawa INC., using which the programming becomes much easier when compared to old generation programming languages like Variable assembly language. Using this MotoSIM software, the user can develop a simulation environment for Arc Welding using two arc welding robots while sharing the task of Arc Welding among themselves. Using this software, the user can create his desired 3D model and can achieve Arc Welding.



**D ANIL ,
II YEAR ME**

EXPERIMENTAL ANALYSIS OF SINGLE CYLINDER DIESEL ENGINE FUELED WITH BIODIESEL AND ALUMINUM OXIDE NANOPARTICLES

Energy demand is the hot topic of all developing and developed countries. Energy demand has been increasing day by day at a high rate. So, it is necessary to find an alternative solution that is eco-friendly. Biodiesel can be the alternative solution for this problem. The main purpose of this paper is to test the engine performance and emission parameters of a diesel engine using animal fat biodiesel (fatty acid methyl esters) with diesel and using aluminum oxide Nano particles as additive. The parameters measured are brake power, brake thermal efficiency, specific fuel conception, CO₂, CO, NO_x and HC.



**Y VENKATA REDDY ,
III YEAR ME**

STUDIES ON MICROBIOLOGICAL GROWTH AND MACHINING CHARACTERISTICS OVER ALUMINUM METAL MATRIX COMPOSITES

The aim of present work is to study the Microbiological Growth and Machining Characteristics over Aluminum Metal Matrix Composites and also to compare pure alloy and composite. Selected the Stir casted Al MMC bars which has A2024 alloy as a matrix material due to its strength to weight ratio & good fatigue resistance and silicon carbide (SiC) as reinforcement due to its good bonding properties.

Machining of both dry & wet will be done by using tool dynamometer to find out the cutting forces, cutting tool temperature and surface roughness of Al alloys and pure metals for the purpose of comparison. The microstructures of the specimens to be found out for the presence of SiC particles and to be tested for hardness by using Rockwell/Brinell to compare the MMCs with pure metals. Microbiological growth to be studied for these materials.



**BOMMINENI ASHOK BABU,
IV YEAR ME**

DETERMINATION OF LOSS OF HEAD DUE TO SUDDEN EXPANSION AND CONTRACTION

Due to friction between the fluid & pipe walls, internal friction, between fluid particles are occurred due to conflicting energy losses. Secondary minor losses may be occurring at any point of pipe system where streamlines are linear. In case of pipe junction, valves, bends, contraction, expansion & inlet & out let reservoir. This project includes design, fabrication of loss of head due to sudden expansion and sudden contraction laboratory equipment. The purpose of this project is to show the inability of Bernoulli's equation to predict how fluids will behave in these situations by comparing the results of experiments involving sudden contraction and sudden expansion to each other as well as to theoretical data.

The experimental test rig fabricated with all necessary attachments. The head losses due to minor pipe fittings were estimated, at flow rate. By using the manometers head loss due to minor loss was measured.



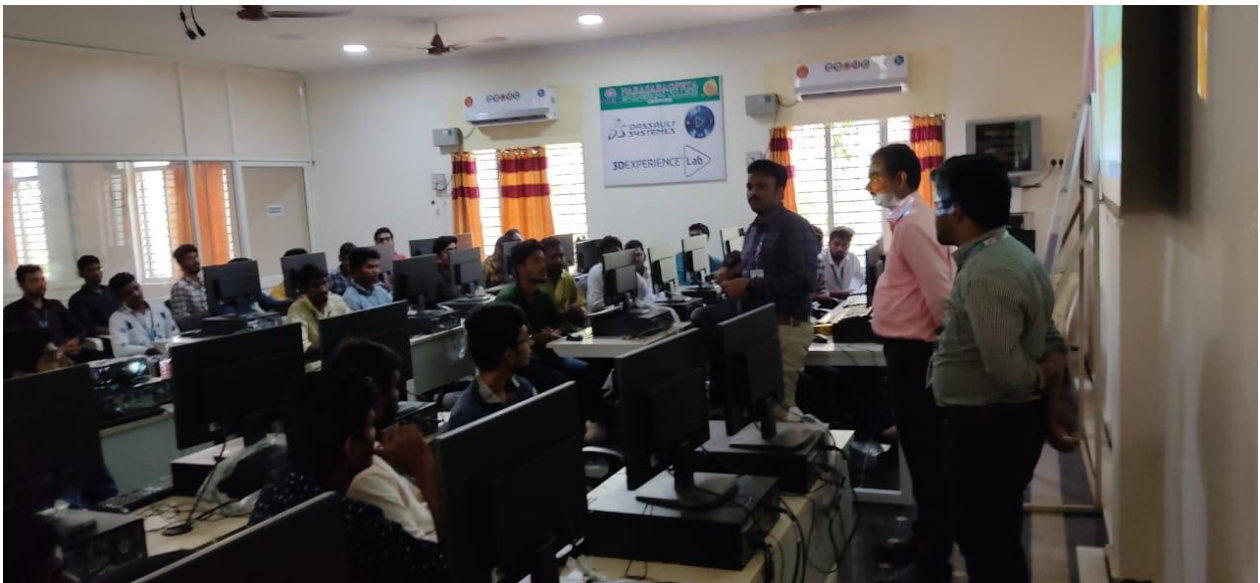
**BANDI JOHNBABU,
IV YEAR ME**

FACULTY ACHIEVEMENTS:

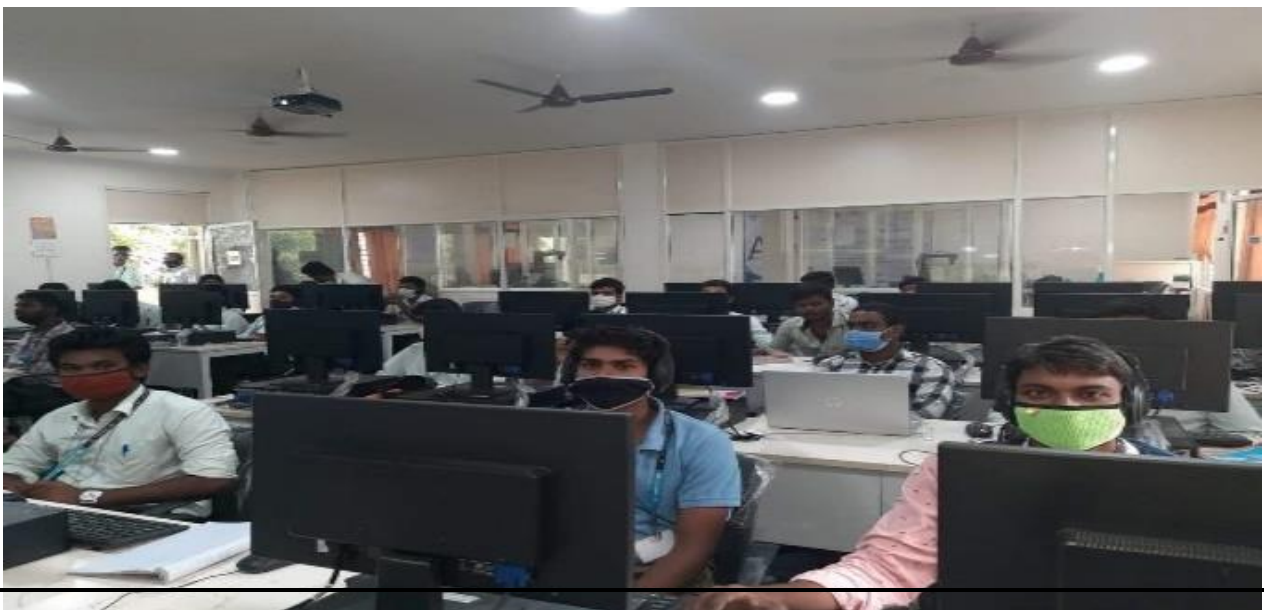
- A team of six faculty members from the Dept of Mechanical Engineering have filed and published for the patent rights on the invention of "**A-Side-Stand: Automatic Side-Stand Sportbike/ Motorcycle**", on 21-8-2020 with reference no - 202041031638 A.
 - 1)Dr.M. Sreenivasa Kumar (Principal And Professor)
 - 2)Dr. Donthamsetty Suneel (Professor And Hod)
 - 3)Dr. D. Jagadish (Professor)
 - 4)Dr.B.Venkata Siva (Professor)
 - 5)Mr. Venkanna Babu Mendi (Assistant Professor)
 - 6)Mr. Penugonda Suresh Babu (Associate Professor)
- T. Venkata Deepthi Associate professor from the Mechanical Engineering department awarded with Ph.D. degree in production from KL UNIVERSITY.
- P. Suresh Babu Associate Professor from the Mechanical Engineering department awarded with Ph.D. degree in production from KL UNIVERSITY.
- Dr. D. Suneel, and P.Sureshbabu, participated in International Conference on Intelligent Manufacturing and Energy Sustainability and published paper on "**An ANN Approach for Predicting the Wear Behaviour of Nano SiC Reinforced A356 MMNCs Synthesized by Ultrasonic Assisted Cavitation**", submitted on 25-04-2020 to ICIMES 2020 organizing at Malla Reddy College of Eng. & Tech., Hyderabad during 21st -22nd August 2020.
- Dr. B. Venkata Siva Professor participated in a five days International E-Conference on "AI, Robotics and Automation" Organized by ICT Academy Global Technology Forum 2020, Tamilnadu during 14-10-2020 to 18-10-2020.
- Dr.B.Venkata Siva Professor participated in an International conference on "**Analysis of Machinability Behavior of Metal Matrix Composite Developed from coal mines waste using mathematical modelling**", Organized by NIT Jamshedpur. From 31-10-2020 to 01-11-2020.

DEPARTMENT ACTIVITIES

- Department of Mechanical Engineering, organized a webinar on “**ADVANCED MANUFACTURING PROCESSES**”, for this webinar Mr.B. Gopala Krishna, ME-MCTE, Tool Design Engineer, CAX Department, CITD, Hyderabad acted as a resource person on 28/08/2020.



- Department of Mechanical Engineering organized a "**DESIGN NOW**" workshop in Association with ICT Academy and Autodesk for BTech III Year Mechanical Engineering Students. A total of 55 students participated in the event. P Kranthi Kumar (Senior Technical Trainer - ICT Academy) acted as a resource person.



- Department of Mechanical Engineering organized a one-week workshop on “**SOLID MODELING USING CREO SOFTWARE**”, for III mechanical students during 21-12-2020 to 28-12-2020. For this workshop B.Gopalakrishna Naik Tool Design Engineer, CAX Department, CITD, Hyderabad acted as a resource person.













CAMPUS PLACEMENTS

S.NO	ROLL NO	NAME	COMPANY	SALARY in LPA
1	17471A0356	NAVEEN INDLA	INFOSYS	3.6
2	17471A0366	CH.GOPI KRISHNA	INFOSYS	3.6
3	17471A0369	ASHOK KUMAR DANDU	TCS	3.36
4	18475A0301	SRIHARI THAMMAVARAPU	ACCENTURE	4.5
5	18475A0304	SAI KRISHNA REDDY DEVARAKONDA	ACCENTURE	4.5
6	18475A0309	JAVVAJI.BHANUPRASA D	TCS	3.36
7	18475A0321	BADULLA SHAIK	ACCENTURE	4.5
8	18475A0327	KOTI REDDY SYAMALA	TCS	3.36
9	18475A0328	REDDY RAJA NAVEEN	ACCENTURE	4.5
10	18475A0337	SHAIK AFRIDEE	ACCENTURE	4.5
11	18475A0341	CHANDRA SEKHAR REDDY AKKALA	DXC TECHNOLOGY	3.6
12	18475A0345	BUSI VIJAY SAI KUMAR	CAPGEMINI	3

STUDENT TOPPERS

NEC **NARASARAOPETA ENGINEERING COLLEGE** (AUTONOMOUS) **22** YEARS

DEPARTMENT OF MECHANICAL ENGINEERING
IV B.Tech. II Semester, ME Toppers List (2016 Batch)

 V. MANIKANTA 16471A0333 9.45	 G. Chandrasekhar Reddy 16471A0348 9.45	 T. VENKATESH 16471A0358 9.45	 M.V. Hemanth Kumar 16471A0363 9.45	 M. SURESH 16471A0331 9.32
 P. AJAY 16471A0344 9.32	 D. NARAYANA 16471A0361 9.32	 K.V.S.S.M. Govind 17475A0301 9.32	 R. ANIL 17475A0317 9.32	 SK. KARIMULLA 16471A0305 9.18

Management, Principal, HOD & Faculty Express their Hearty Congratulations to Toppers in IV B.Tech II Sem

NEC **NARASARAOPETA ENGINEERING COLLEGE** (AUTONOMOUS)

DEPARTMENT OF MAECHANICAL ENGINEERING
III B.TECH II Semester, ME Toppers List (2018 Batch)

 Y. SIVAREDDY 19475A0312 8.91	 CH. V.L. JANARDHAN 18471A0309 8.77	 C. BHARDWAJA 19475A0353 8.68	 D. M. HUSEN 18471A0311 8.64	 G. BALAJI GUPTHA 18471A0315 8.64
 P. PEDDA RAJU 19475A0311 8.64	 K. BABU 19475A0318 8.64	 P. SUDARSAN BABU 20471A0320 8.59	 B. GOPI 18471A0304 8.55	 G. PREM KUMAR 18471A0316 8.5

Management, Principal, HOD & Faculty Express their Hearty Congratulations to Toppers in III B.TECH. II Sem

MOUs

The logo for byteXL, with 'byte' in a standard font and 'XL' in a larger, stylized font.**MEMORANDUM OF UNDERSTANDING**

This Memorandum of Understanding is executed on this ___ Day of November 2020 at Hyderabad by and between: -

M/s. BYTEXL INDIA PRIVATE LIMITED (A subsidiary of KP2 Associates LLC, USA) a company registered at HYDERABAD(Telangana), having its office at 16/1/25, Road No.7, Ida Nacharam Hyderabad, TG - 500076, being represented by its Authorised Representative Mr. Raman Subramanyam (hereinafter referred to as "**First Party**" which term shall include all its successors in interests and permitted assignees)

And

Narasaraopeta Engineering College [Address: Kotappakonda Rd, Narasaraopeta, Andhra Pradesh 522601, India] (hereinafter referred to as the "**Second Party**" which term shall include all its successors in interests and permitted assignees)

WHEREAS the First Party is in the business of providing a platform that offers access to programming and coding courses, via the ByteXL website URL namely bytexlin, bytexl.com and through ByteXL mobile application,

WHEREAS the Second Party is in the activity of providing engineering education to students.

WHEREAS both parties are desirous of synergising their core competencies and have agreed to enter into this Memorandum of Understanding on the following terms and conditions: -

I. PURPOSE AND OBJECTIVE

- 1) The main objective and purpose of this Memorandum of Understanding is to promote cooperation in academic education and research using cyber security, artificial intelligence, deep learning, IOT, blockchain and skill development tools by both parties.
- 2) This MOU shall be valid for Financial arrangements only for the training period
- 3) Both parties shall take all reasonable steps to ensure successful completion of the collaboration and cooperate with each other in duly carrying out the obligation agreed upon

II. FORMS OF COOPERATION

- 1) The First Party agrees to provide members of the Second Party an annual discount of 50% on the purchase price of the service 'BYTEXL EXPLORE', which is 'Learn by Doing' coding platform of First Party.
- 2) The First Party agrees to provide 50% discount on the purchase price of the service 'BYTEXL EXPERT' to the students of the Second Party.
- 3) The First Party shall provide the discounts as mentioned in this Clause if more than 500 new user registrations per year.

The logo for 'byteXL' is displayed in a stylized font. The word 'byte' is in a bold, lowercase sans-serif font, and 'XL' is in a smaller, uppercase sans-serif font. A horizontal line extends from the right side of the 'XL'.

- 5) The First Party shall enlist the Second Party and the Second Party shall enlist the First Party as each other's STRATEGIC PARTNER in each other's website, brochures, or any other marketing material.
- 6) The Second Party and First Party shall mutually agree to undertake joint teaching activities at various educational institutions and other organised seminars and workshops.
- 7) The First Party and Second Party shall mutually agree to conduct joint research activities in machine learning and artificial intelligence. Any outcome or result of the research shall be shared equally between the two parties and duly confer credit to the result of such research.
- 8) First Party will train all students in company specific along with mock interviews
- 9) The agreement is mutually exclusive i.e. both parties do not have exclusive rights on the other side.

III. INTELLECTUAL PROPERTY

- 1) Both Parties agree that they shall execute a separate agreement in respect of the sharing and access to the intellectual property and software programs of each of the parties.

IV. FINANCIAL ARRANGEMENTS

a. Payment Details

S. No	Product	Description	Retail Price	Final Discounted Price
1	Expert + Internship+ CRT + Placement Support	3 rd year students. Finishing school program: It is a combination of platform based and 160 hours instructor led online training.	Rs.5000/ year per user	Rs.2650/ year per user

byteXL

3. Remaining 25% balance at the end of the program
- vi. Any change in the above could impact and lead to change in the overall cost of the program

V. LIABILITY

- 1) Both parties shall have no liability for any losses, damages, or costs towards each other in respect of any conduct arising out of or in relation to this Memorandum of Understanding.

VI. LEGAL RELATIONSHIP

None of the terms of this Memorandum of Understanding shall be construed to confer any legal relationship between the parties.

VII. DURATION

7.1 The duration of this Memorandum of Understanding shall be for a period of three years from the date of this Agreement. Both parties shall have the option to renew this Memorandum of Understanding for further period of three years by written consent of both parties.

7.2 Both parties may cancel this Memorandum of Understanding by giving three months prior written notice delivered to the other party.

IN WITNESS WHEREOF, this Memorandum of Understanding is executed on this ____ day of **November 2020** in the presence of witness with free will and without any undue influence or duress.




FIRST PARTY

S V Raman

ByteXL India PVT LTD.

Executive Director

November __, 2020



SECOND PARTY
PRINCIPAL
NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)
NARASARAOPET - 522 601
Guntur (Dist.), A.P.



SRI VASAVI ENGINEERING COLLEGE

(An Autonomous Institution Affiliated to JNTUK, Kakinda)

(Sponsored by Sri Vasavi Educational Society)

(Approved by AICTE, New Delhi & Accredited by NAAC with "A" Grade)

(NSA Accreditation to B.Tech., EEE, CSE and ME Branches for 5 Years)

(Postuladepalligudem) **TADEPALLIGUDEM - 534 101**, W.G.Dist. (A.P.)

☎ 08818-284325 ☎ Fax: 08818-284322

E-mail : principal@sriivasaviengg.ac.in

Dr. GUDURU.VNSR. Ratnakara Rao

B.E., M.E., Ph.D.

Principal

MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN



NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)

Yellamanda(V), Kotappakonda Road, Narasaraopet-522601, Guntur(Dt.), AP

And



SRI VASAVI ENGINEERING COLLEGE (AUTONOMOUS)

AGREED:

First Party

For: Narasaraopeta Engineering College
(Autonomous)



Authorized Signatory

Dr. M. Sreenivasa Kumar

Principal


Narasaraopeta Engineering College

Narasaraopeta, Guntur(Dt.), AP

PRINCIPAL
NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)
NARASARAOPET - 522 601
Guntur (Dist.), A.P.

Witnessed By:

1 
(Dr. D. Suresh)

2 
Dr. S. N. SRINIVASU.

Second Party

For: Sri Vasavi Engineering College
(Autonomous)



Authorized Signatory

Dr. Guduru VNSR Ratnakara Rao

Principal

Sri Vasavi Engineering College

Tadepalligudem, West Godavari (Dt.)

AP

PRINCIPAL
SRI VASAVI ENGINEERING COLLEGE
PEDATADEPALLI
TADEPALLIGUDEM - 534 101

Witnessed By:

1 
(C.H.V.S.R. Geetha Krishna)

2 
(CH. NARAYANA RAO)





ఆంధ్రప్రదేశ్ ఆంధ్ర ప్రదేశ్ ANDHRA PRADESH

27-10-2020, Rs.100/- NARASARAOPETA ENGINEERING COLLEGE, NARASARAOPET,
Rep by Chairman M.V.Koteswara Rao, S/o.M.Venkateswarlu, Narasaraopet

CE 519241
Yenuka Subba-Rao
Licensed Stamp Vender
L.No.67-31-2019/55
R.L.No. 67-31-2019/55
Stationery, Guntur
NARASARAOPETA
Guntur District, Andhra Pradesh

MEMORANDUM OF AGREEMENT

This Memorandum of Agreement (MoA) is entered into on 27th October 2020 Andhra Pradesh State Skill Development Corporation, a Section 8 Company registered under the Companies Act, 2013 having its Corporate Office at G&J Infra Building, 3rd Floor, D No.78/2, Near NH-5, Near Pathuru Road, Tadepalli, Guntur District, Andhra Pradesh represented by Executive Director-I (hereinafter referred to as "APSSDC" or First Party, which expression shall unless repugnant to this context or meaning thereof, includes its successor in office, legal representatives and permitted assigns) of the First Part.


And

GAYATRI EDUCATIONAL DEVELOPMENT SOCIETY an Educational Society, having its office at Narasaraopet, Guntur District, Andhra Pradesh represented by Dr. M. SREENIVASA KUMAR, Principal, NARASARAOPETA ENGINEERING COLLEGE (Autonomous) (hereinafter referred to as Second Party, which expression shall unless

The parties hereto have executed this agreement as of the last written date below.

**For Andhra Pradesh State Skill
Development Corporation**


**For Narasaraopeta Engineering
College (Autonomous)**


Dr. D.V. Ramakoti Reddy
Executive Director-III

D.V. Rama Koti Reddy
Executive Director
Andhra Pradesh State Skill Development Corporation
Dept. of Skills Development & Training
Govt. of A.P., Tadepalli, Guntur District.

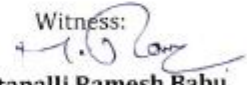

Dr. M. SREENIVASA KUMAR
Principal,
Narasaraopeta Engineering College
(Autonomous)
NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)
NARASARAOPET - 522 601
Guntur (Dist.), A.P.

Witness:


Dr. Ravi K Gujjula
Chief General Manager- Technical

Manager (Technical)
Andhra Pradesh State Skill
Development Corporation
Dept of Skill Development & Training
A.P. Vijayawada, A.P.

Witness:


Mr. Mittapalli Ramesh Babu
Secretary & Correspondent
Narasaraopeta Engineering College
(Autonomous)

SECRETARY
NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)
NARASARAOPET - 522 601,
Guntur (Dist.), A.P.



COURSES

UG-B.TECH

Civil Engineering
Electrical & Electronics Engineering
Mechanical Engineering
Electronics & Communication Engineering
Computer Science and Engineering
Information Technology
CSE (Artificial Intelligence)

PG-M.TECH

Computer Science and Engineering
Digital Systems and Computer Electronics
Digital Electronics and Communication Systems
Power and Industrial Drives
Thermal Engineering
Machine Design
Structural Engineering

PG: MBA, MCA

Master of Business Administration (Dual Specialization)
Master of Computer Applications (Two Years Programme)



NARASARAOPETA
ENGINEERING COLLEGE
(AUTONOMOUS)

Kotappakonda Road, NARASARAOPET - 522 601,
Palnadu Dt., Andhra Pradesh.

Ph: **08647-239905/239907** Fax: **+8647-239902**

E-mail: **Info@nrtec.in** **www.nrtec.in**

  /nrtengcollege