



UKKU

(ANNUAL NEWS LETTER OF METALLURGICAL ENGINEERING DEPARTMENT
GOVERNMENT POLYTECHNIC::VISAKHAPATNAM)

Issue: 2023 Year

Editorial Remarks:

It is my pleasure to release “UKKU” the annual newsletter of the department. This year the department was able to conduct various workshops which gave updates on recent advances in Metallurgical engineering and better skills on industrial practices adopted in Metallurgical Industries. Department is also could conduct expert lectures, industrial visits for updating the students on subject content. We are happy to announce that we have 100% placements for all final semester students who clear the diploma within stipulated time through campus recruitments. Department appreciate through this newsletter.

I hope this is the best tool to know about the department focus, vision and mission for all students and their who have joined the DMETE course at our institute and gear up to achieve their target during the course of study at our department.



Dr. K. Ratna Kumar
Editor & Head of the Department
Department of Metallurgical Engineering
Government Polytechnic Visakhapatnam

Expert Lecture on Advanced Technologies of Iron and Steel Industry

Er.A.K.RamaRao, DGM (QA & TD), Visakhapatnam Steel Plant gave an expert lecture on “Advanced technologies of iron and steel industry used at Visakhapatnam Steel plant” at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 27th January 2023.



He explained about various advanced technologies used in Visakhapatnam steel plant for the production of iron and steel. Staff and Fifty seven students from Metallurgical Engineering department were attended this expert lecture.

Memorandum of Understanding (MOU) with MSME Technology Center, Visakhapatnam

Memorandum of Understanding (MOU) was done between Government Polytechnic, Visakhapatnam and MSME Technology Center, Visakhapatnam at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 30th January 2023. Both parties agreed to share lab facilities, conducting of expert lectures and training of students.



Er. G. Prasada Reddy, DGM, MSME Technology Center, Visakhapatnam and Er. G V V Satya Narayana Murthy, Principal were participated in this MOU exchange ceremony.

Orientation class on Apprentice Act 1961

Er.A.K.RamaRao, DGM (QA & TD), Visakhapatnam Steel Plant gave an expert lecture on "Orientation on industrial training - apprenticeship act 1961" at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 31st January 2023.



He cleared doubts of Metallurgical Engineering students about apprenticeship act 1961. Staff and Fifty seven students from Metallurgical Engineering department were attended this expert lecture.

Expert Lecture on Foundry Operations and Practices

Er. R. Anjaneya Prasad, Managing Director, Hastalloys India Ltd delivered an expert lecture on "Foundry operations & practices" at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 04th February2023.



He explained about various foundry operations and practices used in Metal casting industries. Staff and Eighty two Students from Metallurgical Engineering department were attended this expert lecture.

Inauguration of the Student Chapter of Indian Society for Training and Development (ISTD)

The Indian Society for Training and Development (ISTD) student chapter was inaugurated at IIPC Seminar hall in

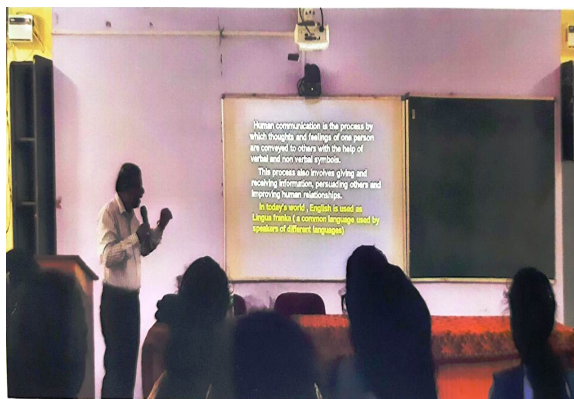


Government Polytechnic, Visakhapatnam on 24th February 2023.

Dr. ORM Rao, Chairman, ISTD Visakhapatnam chapter was chief guest of the inauguration function. Prof. N. Samba Siva Rao, National Vice President, ISTD, and Dr. Hema Yadavalli, Honorary Secretary, ISTD Visakhapatnam chapter was participated in the inauguration function. Er. G V V Satya Narayana Murthy, Principal presided the function. Six students from Metallurgical Engineering Department enrolled in ISTD student chapter of Government Polytechnic, Visakhapatnam.

Expert Talk on Communication Skills for a Successful Career

Dr.M.Solomon Raju, Asst. Professor, Andhra University delivered an expert lecture on “Communication skills for a successful career” at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 25th February 2023.



He envisaged the importance of communication skills to get success in

career. Staff and Eighty one students from Metallurgical Engineering department were attended this expert lecture.

Expert Talk on Personality Development for a Successful Career

Dr.M.Solomon Raju, Asst. Professor, Andhra University delivered an expert lecture on “Personality development for a successful career” at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 04th March 2023.

He emphasized about development of good personality for achieve success in career. Staff and Sixty students from Metallurgical Engineering department were attended this expert lecture.

Inauguration of Student Chapter of the Institute of Indian Foundrymen (IIF)

The Institute of Indian Foundrymen (IIF) student chapter was inaugurated at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 6th May 2023.





Er. S. Muthukumar, Chairman, IIF Southern Region was chief guest of the inauguration function. Er. R A Prasad, Chairman, IIF Andhra chapter, Er. V M Kishore Kumar, Hon. Secretary, IIF Andhra chapter, Er. KDV Narasimha Rao, Principal (I/C), and Dr. K. Ratna Kumar, Head of Metallurgical Engineering, Government Polytechnic, Visakhapatnam was participated in the inauguration function and envisaged the benefits of Technical societies to the student community. Sixty students from Metallurgical Engineering Department enrolled in IIF student chapter of Government Polytechnic, Visakhapatnam.

Alumnus Guidance on Metallurgical Engineering and their Career Options

Er. V.V.N.Raju, Manager, Shell UK Limited, UK gave an Expert lecture on “Metallurgical Engineering and their career options” at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 10th August 2023..



Resource person is an alumnus of Department of Metallurgical Engineering of this Institution. He explained about employment and higher education

opportunities in the field of Metallurgical Engineering. Staff and Sixty three students from Metallurgical Engineering department were attended this expert lecture.

Expert Lecture on Production of Automotive Wheels through Low Pressure Die Casting

Er. Venkateswara Rao, AGM (Foundry), Synergies Casting Ltd, Visakhapatnam delivered an expert lecture on “Production of automotive wheels through low pressure Die casting” at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 15th September 2023.



He explained about the process of Low Pressure Die Casting to produce Aluminum alloy wheels used in automobile sector. Staff and Eighty two students from Metallurgical Engineering department were attended this expert lecture.

Industrial Visit to Hastalloys India Limited, Anakapalli

An Industrial visit to Hastalloys India Limited, Anakapalli was conducted for faculty and students of department of



Metallurgical Engineering on 07th October 2023.



Students learned about the metal casting practice of non-ferrous metals and alloys by using induction furnace. Staff and sixty one students from Metallurgical Engineering department were visited this industry.

Memorandum of Understanding (MOU) with Hast Alloys India. Ltd, Anakapalli

Memorandum of Understanding (MOU) was done between Government Polytechnic, Visakhapatnam and Hast Alloys India Ltd, Anakapalli at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 13th October 2023. Both parties agreed to share facilities, conducting of expert lectures and training of students.



Er. R. Anjaneya Prasad, Managing Director, Hastalloys India Ltd and Er. G V V Satya Narayana Murthy, Principal were participated in this MOU exchange ceremony.

Two Days Workshop on Non-Destructive Testing Methods and Their industrial Applications

Two days' workshop on "Non-Destructive Testing Methods and Their industrial Applications" was conducted at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 29th November 2023 and 30th November 2023.



Er. M. Prasada Rao, Managing Director, Right NDT Training & Consultancy Services, Visakhapatnam and Er. B. Raj S Santosh Kumar, ASNT Level III Engineer, Right NDT Training & Consultancy Services, Visakhapatnam were acted as resource persons for this work shop.

Students gained on-hands experience on various NDT techniques used in industry for quality evolution of weld joints and metal castings. Faculty and Eighty one students



from Metallurgical Engineering department were attended this workshop.

Inauguration of Student Chapter of the Indian Institute of Metals (IIM)

The Indian Institute of Metals (IIM) student chapter was inaugurated at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 7th December 2023. Er. ArunKanti Bagchi, Director (Projects & Operations), Visakhapatnam Steel Plant was chief guest of the inauguration function. Sri Lalan Kumar, GM (Raja Bhasha), Visakhapatnam Steel Plant, and Er. KDV Narasimha Rao, Principal (I/C) was participated in the inauguration function. Dr. K. Ratna Kumar, Head of Metallurgical Engineering, Government Polytechnic, Visakhapatnam was presided the inauguration function.



Guests of the function explained how the Indian Institute of Metals contributed to Metallurgical industries and students community for their growth. Four Five students from Metallurgical Engineering Department enrolled in IIM student chapter of Government Polytechnic, Visakhapatnam.

Expert Talk on Sintering Process and Practices

Er. Ramakrishna Rao General Manager (Retd), Visakhapatnam Steel Plant delivered an expert lecture on “Sintering process and practices at Visakhapatnam Steel Plant” at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 7th December 2023. He explained about sintering process and its importance in steel plants by reducing the wastage of fine ore and coal dust.



Staff and Seventy Eight students from Metallurgical Engineering department were attended this expert lecture.

Workshop on Advances in Metal Casting Techniques

Two days' workshop on “Advances in Metal Casting Techniques” was conducted at IIPC Seminar hall in Government Polytechnic, Visakhapatnam on 27th December 2023 and 28th December 2023. Dr. R. Siva Kumar, DGM (R&D), Visakhapatnam Steel Plant; Er. Anjaneya Prasad, Managing Director, Hastalloy India Ltd, Anakapalli; Er. Parthasarathi, Chairman, IIF Andhra



Chapter, Managing Director, Prakasa Spectro Castings, Vijayawada, Andhra Pradesh were acted as resource persons for this work shop.



Students learned about various advanced metal casting techniques used in ferrous and non-ferrous foundries. Faculty and one hundred and Nine students from Metallurgical Engineering department were attended this workshop.

STUDENT PROJECTS IN 2023

A Project on “Effects of Shape of Casting on Microstructure of Aluminum

Cast Alloys” was submitted by the final year Metallurgical Engineering students:

A. Gnaneswar Kumar, K. Deepak Kumar, K. Likitha, P. Krishna Chaitanya ,P. Mercy Rani, K. Udaynath, P. Uma Rani

Under the guidance of Dr. Puli. Ramesh, Senior Lecturer in Metallurgical Engineering.

Abstract:

Cooling rate is a critical factor controlling the grain size of cast metals. Generally, it is accepted that higher cooling rate leads to smaller grains due to the high undercooling achieved. However, the present work

observed grain coarsening after solidification with higher cooling rate in Aluminum alloys (A390 cast alloy). Using a V-shape mould, different solidification cooling rates were achieved on the Aluminum alloy ingots. It was found that the grains at the tips of the ingots, where corresponded to the highest cooling rate, were significantly finer than the other parts

of the ingots with lower cooling rates. The results can be well explained in terms of the interdendritic spacing of α -Aluminum arms and hardness values at different locations. It is observed that interdendritic arm spacing of α -Aluminum decreases with increase of cooling rate and results in more hardness value compare with higher cooling rates of Aluminum cast alloys.

A Project on “Studies on Flash point and Fire points of Various Fuels with respect to Viscosity”

was submitted by the final year Metallurgical Engineering students:

A. Harshith, M. Jesse Paul, S. Mehaboob Ali, Y. Akshitha, S. Eswar, S. Dhanunjay Kumar, B. Sai

Under the guidance of Sri B.V.V. PRASAD, Lecturer in Metallurgical Engineering.

Abstract:

This project was conducted in order to investigate the relationship between Flash and fire points of various fuels and their viscosity. The flash point represents the temperature at which a fuel emits a vapor that can ignite, which gives a momentary flame. While the fire point indicates the temperature at which sustained combustion occurs gives a continuous flame. The



research explores how viscosity measures fluids resistance to flow influences these points. The fire and flash points of fuels by affecting their ability to vaporize and combust. Higher viscosity implies greater resistance to flow, resulting in slower vaporization. This resistance can raise the flash point as the fuel needs more energy. Transition into a vapor state. Additionally, increased viscosity may hinder or stop the diffusion of wrappers, impacting their concentration in the air and affecting ignition. Therefore, viscosity plays a crucial role in determining the ignition characteristics of fuel. By our study the fuels with the low viscosity and low flash and fire points can store in a cold atmosphere.

A Project on “Studies on Microstructures and Hardness of TIG-Welded Medium Carbon Steels” was submitted by the following final year Metallurgical Engineering students:

J.Revanth kumar, B. Lipikar, B.Prem kumar, D.Manoj, K.Likhith kumar, K.Sai sudeepthi, M.Rajesh, N.Vinodh kumar

Under the guidance of Er. S.Raju, Lecturer (Contract) in Metallurgical Engineering.

Abstract:

This work was conducted in order to investigate the microstructures and hardness of TIG welding on medium carbon steels. All the results obtained shows that the excellent purity with inert gas shielding. Because the heat input is often controlled by pressing on a foot pedal, similar to driving a car, TIG welding allows you to heat

up or cool down the weld puddle giving you precise weld bead control. This makes TIG welding ideal for cosmetic welds like sculptures and automotive welds. Thanks to their high strength, resistance to wear and overall toughness, medium carbon steels are typically used for railway tracks, train wheels, crankshafts, and gears and machinery parts where a combination of material properties is required. TIG welding, it is much faster, resulting in shorter lead times and lower production costs.

A Project on” Studies on Microstructural Changes and Hardness of Cold Worked Aluminum-Silicon Alloy was submitted by the following final year Metallurgical Engineering students:

Ch.Tejaswini, Ch. Chandra Mouli, D. Bhargav Abaya Ram, D. Kusumanjali, G.Abhinav, Y.Sampath Vinay, S.Bhanu Siva Sri Prasad

Under the guidance of Er. N.Rupa Rani, Lecturer in Metallurgical Engineering.

A Project on ”Foundry properties of river sands” was submitted by the following final year Metallurgical Engineering students:

A. Khyateeswar, G. Vital Rajanna, G. Tarun Siddhardha, K. Praveen Kumar, M. Ramesh S. Amrutha Shakthi, Y. Sharan Simha Kumar

Under the guidance of Er. G. Padmaja Rani, Lecturer (Contract) in Metallurgical Engineering.

Abstract:

This study compared the physical and mechanical properties of river sand with foundry sand. The consumption and cost of



silica sand increase day to day, due to which the raw material cost of the foundry industry rises. In the present investigation local river sand was tested in order to know the molding properties of river sands in comparison with foundry sand (molding sand) with respect to AFS grain size number, Clay content, Mold-hardness, green and dry strengths. All the results obtained show that the foundry properties of river sands were low compared with the molding sand. The clay content and grain size has greater influence on the foundry properties. Greater percentage of clay content in the sands helps in improving and matching the other foundry properties irrespective of their AFS grain size number. The optimum content of these properties in the river sands helps us to determine the foundry properties of the river sands and gives an idea about whether they are matching the foundry properties of the (molding sand). Foundry sand found to be suitable for use as foundry molding sand. The optimum mixture of clay and grain size with appropriate water content (molding sand) is suitable for ferrous and non-ferrous alloy castings of component parts.

A Project on “Study the various tempering treatments on medium carbon steel” was submitted by the following final year Metallurgical Engineering students:

A .Durga Rao, C. Kanaka Ramana, E. Rishi Kamal, K. Bhavya Sri, P. Joshna Devi, P. Ravi Kumar, S. Ganesh, K. Teja Kiran under the guidance of Er. K.Venkatesam, Lecturer in Metallurgical Engineering.

Abstract:

This project work was conducted in order to investigate the medium carbon steel to observe the microstructure, mechanical properties of medium carbon steels subjected to a hardening followed by tempering. Hardening involves the heating of medium carbon steel to a critical temperature and rapid cooling it to achieve, increase in hardness, mechanical properties and followed by metallographic procedure to observe the microstructure of a hardened material. Tempering is followed to enhance toughness and reduce the brittleness of material and removes the internal stress induced in the hardened medium carbon steel. Tempering is done in three stages: low temperature tempering, medium temperature tempering, high temperature tempering. Then the tempered steel is subjected to hardness test.

STUDENT ACHIVEMENTS

Campus Placements in 2023

33 students of final year diploma in Metallurgical Engineering got placement in the following industries:

1. Safran Aircraft Engines Pvt. Ltd: Hyderabad: 08 Students were selected with CTC 3.0 Lakhs
2. JSW Steels Ltd, Ballari: 12 Students were selected with CTC 3.2 Lakhs
3. Arcelor Mittal/Nippon Steel: 04 Students were selected with CTC 2.5 Lakhs



4. Wheels India Ltd, Chennai: 05 Students were selected with CTC 2.5 Lakhs

5. L & T Defense Limited, Visakhapatnam: 02 Students were selected with CTC 2.5 Lakhs

6. Pfizer Ltd, Visakhapatnam: 02 Students were selected with CTC 2.0 Lakhs

Department congratulating the students who got placement in various Metallurgical industries through campus drives and wishing them for all round growth in their future careers.

APECET2023 for their achievement and wishing them to be success in their future endeavors.

In Sports & Games

Second Year diploma in Metallurgical Engineering student Ms.S. Mary won Gold medal at national level in Rope skipping (Doubles) and Silver medal in Speed Sprint conducted at JES School and College, Mumbai, Maharashtra from 03-06-2023 to 05-06-2023.

Higher Education Opportunities in 2023

19 students of final year diploma in Metallurgical Engineering got second year B.Tech admission through APECET 2023 conducted by JNTU, Kakinada..



Department congratulating Ms.S. Mary for her well-deserved success and wishing her to get more accolades in her future.



It was proud to our department that our students got state level 1, 2, 4, 5, 6, and 10 ranks in Metallurgical Engineering stream of APECET2023.

Department Congratulates A. Poorna Chandra Sekhar (State 1st Rank), A. Pavan Kumar (State 2nd Rank), and M.Pravallika (State 4th Rank) and other rank holders in Metallurgical Engineering stream of



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Issue: 2023 Year

DEPARTMENT VISION AND MISSION

VISION:

Striving continuously in pursuit of excellence in imparting knowledge with skills in Metallurgical Engineering at diploma level to improve the opportunities in employment and higher learning.

MISSION:

M1: Use of technology enhanced tools and techniques by motivated and qualified faculty for enhancement of knowledge, understanding of principles, concepts and latest trends in Metallurgical engineering.

M2: Modernization of workshops and laboratories as per the curriculum specified by the State Board of Technical Education, Andhra Pradesh.

M3: Conduct of laboratories, guest lectures, industrial visits and industrial training for better understanding of critical concepts of Metallurgical Engineering.

M4: Provide opportunities for developing multidisciplinary skills, communication skills, professional attitude and ethics.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Fundamental knowledge of mathematics, Basic sciences and basic interdisciplinary engineering to apply day to day challenges in the field of Metallurgical engineering.

PEO2: Knowledge in the principles, concepts, and techniques in Metallurgical engineering area to solve contemporary issues.

PEO3: Applications of the principles, concepts, and techniques in Metallurgical engineering area to solve contemporary issues and gain on hand experience.

PEO4 : Effective Communication on activities regarding Planning, designing, manufacturing, and servicing functions with engineering community.

Editorial Board:

1. Dr. K.Ratna Kumar

2. Dr. P. Ramesh

3. Sri K. Venkatesam