



## GURU NANAK DEV DSEU ROHINI CAMPUS

# स्पंदन

## WELCOME 2023

**NEWSLETTER**  
**NOV - DEC**  
**2022**

गुरु नानक देव रोहिणी परिसर की ओर से  
नववर्ष 2023 की हार्दिक शुभकामनायें





## GURU NANAK JAYANTI CELEBRATION

Guru Nanak Jayanti, also known as Prakash Utsav or Guru Purab, is observed every year as the birth anniversary of the Sikh founder, Guru Nanak Dev. This year marks the 553rd birth anniversary of Guru Nanak.

Our ROHINI CAMPUS celebrated it with utmost and reverence and Hon'ble VC Dr. AMITA DEV attended it with fervour







## HOW TO ACHIEVE YOUR DREAMS MARCEL WILLEMS

Founder of swiss pathway and motivational speaker MARCEL WILLEMS from Switzerland gave a motivational lecture and interacted with students and faculty to help them in achieving their dreams. it was really a fun filled, motivational and mind healing moment







Mrs JYOTI KAPOOR conducted a workshop on RETIREMENT EDUCATION & AWARENESS PROGRAMME (REAP) on 14 dec 2022 at GURU NANAK DEV DSEU ROHINI CAMPUS. Faculty members attended and appreciated this initiative by PFRDA.

## ABOUT NPS & REAP



ERegulated by the PFRDA, the National Pension System is a scheme that allows you to invest small amounts throughout your working life and reap its benefits when you retire. NPS is a unique market-linked scheme that also provides excellent tax savings.





## TRANSFORMING CAREER

AMRIK SINGH (Associate Professor T&P) guided students of final year mechanical branch in transforming career seminar . Students were highly motivated







## PLACEMENT DRIVES







## MR. YASHPAL (HOD CHEMICAL ENGG)

Mr. YASHPAL explored the career opportunities of chemical engg students in the field of automotive coating industry. Interaction with many industry leaders laid the foundation of branch specific industry academia coordination.



## SURGACE COATING SHOW 2022

Team T&P of DSEU Rohini campus visited the INTERNATIONAL CONFERENCE CUM EXPOSITION ON SUSTAINABILITY TRANSITION IN AUTOMOTIVE COATING TECHNOLOGY ON 24 -25 NOVEMBER 2022



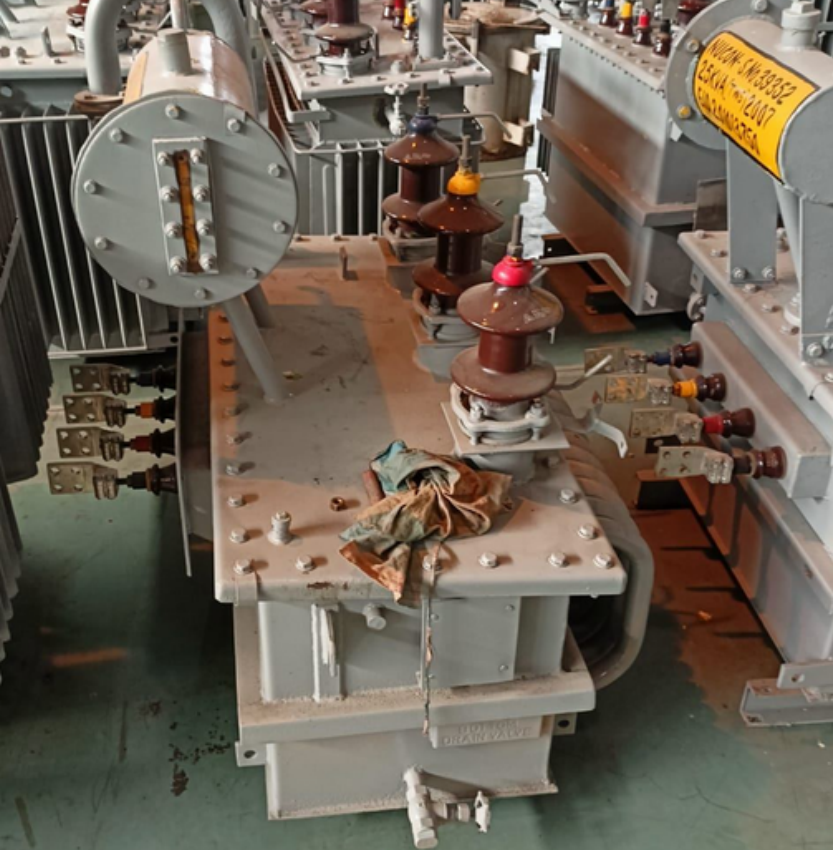




**STUDENTS OF CHEMICAL ENGG DEPARTMENT ALONG WITH FACULTY MEMBERS ATTENDING THE INTERNATIONAL CONFERENCE**







# RESONATING WITH INDUSTRY

## TATA POWER VISIT

The most exciting moment for an electrical engineer is to visit a sub-station where students can determine their potential fields of employment, such as maintenance, safety, logistics, etc., with the help of routine industry trips. Students can use this as a platform to improve their technical skills.







## GAINWELL VISIT OF MECHANICAL ENGG DETT

Mechanical Engineering students attended industrial visits organised by the department at:

.Gainwell Commosales Pvt Ltd Greater Noida Plant. The visit was very well admired by the students and faculty involved. it provided them a deep insight of industrial operations



## SURGACE COATING SHOW 2022

Team T&P of DSEU Rohini campus visited the INTERNATIONAL CONFERENCE CUM EXPOSITION ON SUSTAINABILITY TRANSITION IN AUTOMOTIVE COATING TECHNOLOGY ON 24 -25 NOVEMBER 2022







Samsung Quad Camera

Shot with Abhishek's

Galaxy A13 5G

## **STUDENTS OF MECHANICAL ENGG DEPARTMENT ALONG WITH FACULTY MEMBERS ATTENDING THE INDUSTRIAL VISIT AT MOTHER DAIRY PLANT**



Samsung Quad Camera

Shot with Abhishek's





# CONTINUING EDUCATION PROGRAM

DSEU organized a faculty development program at IIT Delhi under continuing education program. (CEP) to equip the faculty in the area of data science.

3.5- day offline training at IIT Delhi commenced on 10/10/2022. Various faculties from GNDIT were there to attend the programme. It was successful and faculty members were excited to learn new things.





## DUCAT VISIT OF COMPUTER ENGG DETT

COPUTER Engineering students attended industrial visits organised by the department at:

.DUCAT Pvt Ltd Greater Noida Plant. They provide a practical approach for all the training modules and a student gains an in-depth knowledge of the subject and also learn complex programming codes and structures more simply.

## ABOUT DUCAT

DUCAT is one of the leading industry-based training institutes in India, and it provides the students with the knowledge and hands-on training for the computers and IT-based fields. Started in the year 1999, DUCAT is a private institute that has been creating professionals for big MNC's and providing them with the job-specific workforce.







## **YAMUNA BIODIVERSITY PARK VISIT OF COMPUTER ENGG DETT**

COPUTER Engineering  
students attended  
ENVIRONMENT AWARENESS  
FIELD visits organized by  
Assistant professor Mr. Pankaj  
Kumar.

.To motivate the students  
about protecting  
environment ecology and  
promoting G20 vision and  
goals .







## CAMPUS ACTIVITIES



RANGOLI is a folk art and it radiated the vibes through vibrant colors and reflects the beauty of life. Rangoli is an art form that originates from the Indian subcontinent, in which patterns are created on the floor or a tabletop using materials such as powdered lime stone, red ochre, dry rice flour, coloured sand, quartz powder, flower petals, and coloured rocks.

## SINGING COMPETITION

Music binds our soul, heart and emotions. Music is the best method of relaxation. It cheers the spirit and lightens the heart. In fact, through singing, children learn to express their feelings and ideas. To bring out the singing talent of the students, a Solo Singing Competition was organized at GURU NANAK DEV DSEU ROHINI CAMPUS.



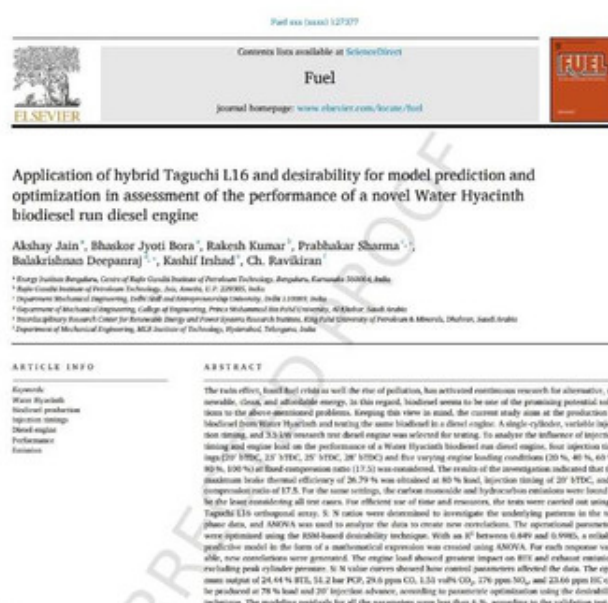




## FACULTY ACHIEVEMENTS

### Dr. PRABHAKAR SHARMA MECHANICAL ENGG DETT

Dr. Prabhakar Sharma (Assistant professor) published more than 10 research papers in reputed international journals in last two months. It's a matter of pride in the academic world and feat of achievement. His excellence in research motivates students and other faculty members a lot to contribute in the field of research.



#### Application of hybrid Taguchi L16 and desirability for model prediction and optimization in assessment of the performance of a novel Water Hyacinth biodiesel run diesel engine

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#### ARTICLE INFO

**Keywords:**  
Water Hyacinth  
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Estimation

#### ABSTRACT

The rapid effect, bio-fuel crisis as well as the rise of pollution, has activated continuous research for alternative, renewable, cheap, and affordable energy. In this regard, bio-diesel seems to be one of the promising potential solutions to the above-mentioned problems. Keeping this view in mind, the current study aims at the production of bio-diesel from Water Hyacinth and testing the same bio-diesel in a diesel engine. A single-cylinder, variable injection timing, and 3.5-litre research test diesel engine was selected for testing. To analyze the influence of injection timing and engine load on the performance of a Water Hyacinth bio-diesel run diesel engine, four injection timings (15°, 18°, 21°, and 24° BTDC) and five varying engine loading conditions (20%, 40%, 60%, 80%, and 100% of full-load) were considered. The results of the investigation indicated that the maximum brake thermal efficiency of 26.79% was obtained at 80% load, injection timing of 21° BTDC, and a compression ratio of 17.5. For the same settings, the carbon monoxide and hydrocarbon emissions were found to be the least among all test cases. For efficient use of time and resources, the tests were carried out using a Taguchi L16 orthogonal array. 5% noise was determined to investigate the underlying patterns in the test phase data, and ANOVA was used to analyze the data to create new correlations. The operational parameters were optimized using the RSM-based desirability technique. With an  $R^2$  between 0.649 and 0.990, a reliable predictive model in the form of a mathematical expression was created using ANOVA. For each response variable, new correlations were generated. The engine load showed greater impact on BTE and exhaust emission, excluding peak cylinder pressure. 5% N value curves showed how control parameters affected the data. The optimum output of 24.04% BTE, 54.2 bar PCP, 29.0 ppm CO, 1.51 vol% CO<sub>2</sub>, 276 ppm SO<sub>2</sub>, and 23.66 ppm HC can be produced at 78% load and 21° BTDC injection advance, according to parametric optimization using the desirability technique. The modeling results for all the parameters were less than 6%, according to the validation test.

#### Investigation of a Newly Developed Slotted Bladed Darrieus Vertical Axis Wind Turbine: A Numerical and Response Surface Methodology Analysis

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In the past few years, wind energy became the most reliable and clean energy source throughout the world. This research broadly has focused on the 2D design of the conventional (without slots) wind turbine blades as well as slotted circular blades for places having a low power density of wind. For vertical axis wind turbines, optimum airfoil design plays a vital role in the aerodynamic efficiency of the wind turbine. To get better aerodynamic efficiency, a feasible airfoil criterion of selection, played an important role in the chosen blade design. In this paper, the conventional NACA0018 profile without slots and slotted airfoil profile is selected for measuring the turbine blade performance. The geometry of the computational domain has been created using the solid works software and the computational investigation has been performed using the computational fluid dynamics (CFD) solver using *ANSYS 2020 R2* with the help of the shear stress transport (SST *k- $\omega$* ) turbulence model. The simulations are conducted initially with base airfoil and then varying the different structures of slots. After introducing slots in the base airfoil, efficiency was increased in terms of lift coefficient ( $C_L$ ) and power coefficient ( $C_P$ ) by 2.32% and 17.94%, respectively at the angle of attack of 15°. The results indicate that slotted airfoils have a better lift coefficient and power coefficient compared to an airfoil without a slot. The best turbine operating parameters were found to be 14.32 deg of angle of attack, 1.73 coefficient of lift, and 2.99 tip speed ratio (TSR) by using the response surface methodology (RSM). At these optimal settings, the best  $C_P$  response was 0.406. A field experiment was carried out to verify the modeling optimization outcomes, and the results were within 7% of the model projected results. Thus, this type of slotted airfoil designed for a vertical axis wind turbine (VAWT) can be used to harness wind energy potential more efficiently.  
[DOI: 10.1115/1.5056331]

**Keywords:** Darrieus-vertical axis wind turbine, power coefficient, computational fluid dynamics, optimization, response surface methodology, renewable energy

#### 1 Introduction

Human beings require energy supply to fulfill their necessities such as power supply, heating, transportation, cooking, etc. To acquire these needs, healthy and clean energy is needed which creates a less adverse impact on the environment and its alliances [1]. For meeting and fulfilling the energy demand, major environmental problems are recently reported like greenhouse gas (GHG) emissions, smog generation, ozone layer depletion, etc. by burning fossil fuels [2]. For reference, traditional energy sources are decreasing day by day because of population expansion and huge energy demand due to the fast development of emerging nations [3]. According to International Energy Agency (IEA) data, predicted that global energy demand and consumption 49–50% by 2025 [4]. Among the top leading countries in renewable energy production, India has achieved 100 GW of renewable energy output yearly, with a goal of 450 GW by

2030. Wind energy accounts for around 40 GW of this total [5]. The IEA predicted that this will happen due to two key factors: population growth and the gross domestic product (GDP) difference between developing and industrialized countries. The field of renewable energy is gaining the development and potential capacity in all developed and emerging nations to address the challenges of conventional energy technologies in the future [6]. Wind kinetic energy is transformed into mechanical power, which is subsequently turned into electricity and utilized in a variety of applications. The wind is the cleanest source of energy a nation may have in plenty anytime it is required [7]. The total installed capacity of wind power capacity for India is depicted in Fig. 1.

The emergence of the vertical axis wind turbine (VAWT) application as well as the development of it is increased over the last decade. VAWTs can be utilized in small scale even large-scale farm, and it accepts low wind flow from any direction, due to these characteristics VAWTs are suitable in urban as well as remote areas. These are the reasons why VAWTs are getting attention to implementation in the real field. Several kinds of research are



#### A novel optimization approach for biohydrogen production using algal biomass

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#### HIGHLIGHTS

- Biohydrogen produced using *Chlorella sp.* micro algae in a photobioreactor.
- Taguchi L9 was used for design of experiment.
- ANOVA revealed biomass concentration was most influential factor on biohydrogen yield.
- Desirability approach used for optimization revealed best biohydrogen yield of 77.84 mL/g VS.
- Validation test revealed the biohydrogen yield as 74.32 mL/g VS denoting an error of 4.52%.

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Sustainability  
Taguchi

#### ABSTRACT

The objective of this research was to employ a low-cost device to produce biohydrogen with several potential applications for clean energy. A multi-input and single-output (MISO) framework was formed during the production process containing three control factors namely time duration, sulfur content, and biomass concentration. The biohydrogen yield during the process was considered the response variable. Furthermore, the response surface approach was used to optimize factors impacting hydrogen generation (H<sub>2</sub>). The MISO problem thus was solved using a Taguchi L9 approach to design the experiments with minimum numbers of experimental runs. Analysis of variance (ANOVA) was employed to study the association among data groups. The desirability approach was employed to optimize the operating parameters for the maximum possible yield. Signal to noise ratio curve, ANOVA, and perturbation curve revealed the biomass content as the most important contributor to biohydrogen synthesis. The ideal conditions obtained with the desirability technique were 130 g/L biomass concentration, 95.28 h, and 0.9% sulfur content. The biohydrogen output was anticipated to be 77.84 mL/g VS (Volatile solid). A validation testing shows that the biohydrogen production was 74.32 mL/g VS, with a 4.52% error, which is fairly reasonable.

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# THANK YOU

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