

GLIMPSES 2018-19



ALUMNI SPEAKS



Selecting Mechanical as my graduation course has been one of the best thing in my life to strengthen my career path. Under the guidance of teachers at G L Bajaj, today I am successfully establishing myself in core sector. Working in production field has made me realize the importance of every subject that was taught in B. Tech. The courses, the curriculum nurtured us in most aspiring way. The faculties helped in every possible way and also provided with opportunities to explore and achieve do much beyond the normal curriculum. Thank to my teachers of mechanical department who put in their so much effort to nourish us and moulding us into what we are today.

Prathmesh

The VIBRAZONE eNewsletter

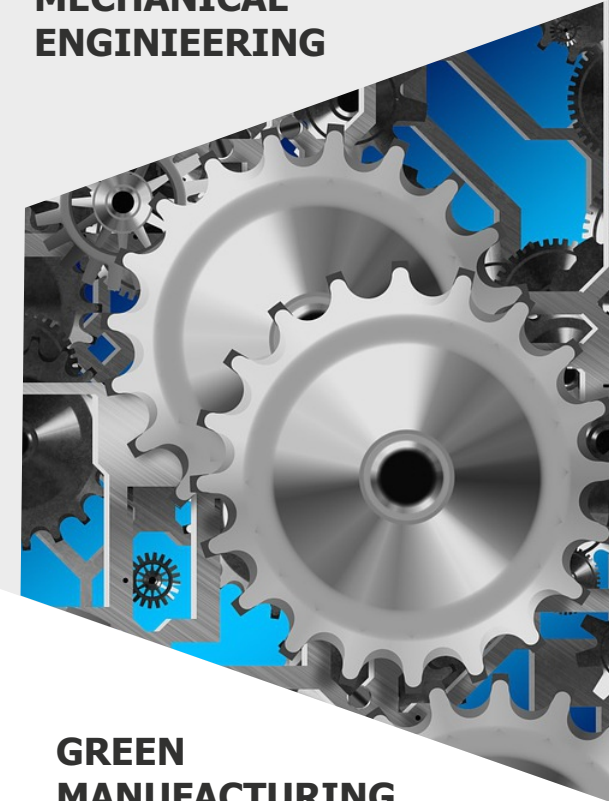
Volume II

Issue I

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DEPARTMENT OF MECHANICAL ENGINEERING



GREEN MANUFACTURING

Green Manufacturing is a method for manufacturing that minimizes waste and pollution achieved through product and process design. It slows the depletion of natural resources as well as lowering the extensive amounts of trash that enter landfills. Its emphasis is on reducing parts, rationalizing materials, and reusing components, to help make products more efficient to build.

It is a holistic endeavour intended to result in less waste, cleaner products and processes, a better and safer working environment, improved relationships between companies and local communities, compliance with government regulations, and enhancement of profitability and competitiveness.

From Desk of The Head of Department



**Knowing is not enough; we must apply
Wishing is not enough; we must do.**

Dear Students,

Mechanical Engineering-a core engineering discipline plays a central role in creation of materialistic world and we at GL Bajaj Group of Institutions Mathura present a platform broad and wide for the inculcation of qualities needed for an engineer and we proudly announce the completion of ten years of inception, growth and establishment. The department cares for student support, mentoring, tutoring, skill and career development.

The department has state of art laboratories along with project lab. The students culminate their studies with a yearlong capstone project requiring design problem solving, creative thinking, project planning and team work. Ample amount of workshops, guest lectures from industries and academicians, technical quizzes, seminars and extracurricular activities are conducted on regular basis.

Mechanical Engineering being the broadest of all branches provides a good platform to work in Government jobs, public sector units, Indian companies and multinational companies.

PROF. (DR.) JAGVIR SINGH

B.Tech (GBPUA&T), M.Tech. (MNREC, Allahabad), PhD (AMU Aligarh)

From Desk of The Editor-in-chief



We are glad to bring out the Vol I of Issue II of our eNewsletter **The VIBRAZONE**. Carrying forward our agenda of information clubbed with entertainment, this issue features variety of news and soft features. This issue addresses new joining, departmental activities, faculty achievements, student achievements and new technologies that came into existence.

I really appreciate the efforts done by Mr. Vivek Bhardwaj - Programmer & Analyst, Department of CSE, in designing **The VIBRAZONE**.

Vibrazone is thankful to all who contributed to this issue. We are equally open to comments, criticism and suggestions to make it more informative.

ER. SHASHI KANT SINGH

NEW JOININGS



DR. Ashutosh Sharma has done his **B. Tech.** in Mechanical Engineering and completed his **M. Tech.** degree in Hydraulic Engineering as field

of specialization from **IIT Roorkee** in 2013. He has completed his **PhD from IIT Roorkee** in 2019. His areas of interest are Fluid Mechanics, Computational Fluid Dynamics, and Wind Engineering. He has published nine papers in national and international journals and presented four papers in national and international conferences. He has worked on C basics, MATLAB, Ansys/Fluent, Pro-E, AutoCAD and LabVIEW.



Er. Hemant Gautam has done his **B. Tech.** in Mechanical Engineering and completed his **M. Tech.** degree in Production Technology as field

of specialization in 2017. His areas of interest are Engineering Graphics and Design, Production and Industrial Engineering. He has an experience of 4 years in teaching. He has worked on AutoCAD and PTC CREO.



DEPARTMENTAL ACTIVITIES

INDUSTRIAL VISITS

GINNI FILAMENTS LIMITED

13.07.2019

Students of B.Tech, II & III year, Mechanical Engineering have visited GINNI FILAMENTS LTD., Chhata, Mathura on 13 July, 2019. Students were accompanied by Md. Mohsin. These students have interacted with Industry Experts and discussed about integrated operations with presence across cotton spinning, knitting, processing, and garmenting. The company expanded into knitted fabrics and installed knitting machines from M/s. Terrot and Cie & Mayer to produce Single Jersey, Interlock, Rib Terry and Lycra fabrics. The students participated enthusiastically in order to obtain the basic knowledge about the preparation of thread of different gauge from bulk cotton package (cart board) under the blown air through the duct passage and they applied the technical skills to understand such a big automation in the processes. Beyond this, they were also aware about the fire free handling and other security procedure in order to avoid man as well as machine loss.



The department is very thankful to the experts of Ginni Filaments Ltd., for supporting our industrial visit and helping our students in enhancing the knowledge of the students.

PRAKASH AGRICULTURAL INDUSTRIES

15.07.2019

Department has organized an educational/Industrial trip to Prakash Diesel Pvt. Ltd, Agra, on 15th July, 2019. A group of students of 2nd year and 3rd year accompanied faculty member, Mr. Satendra Kumar and Mr. Vipin Kumar, visited the plant.



PRAKASH AGRICULTURAL INDUSTRIES was successfully launched in the 70s as a diesel engine manufacturing company. Now it is India's leading ISO-9001:2008 certified company and the products are marketed under Brand Name of "PRAKASH" a name already synonymous with quality. In giving the farmers a reliable source of irrigation, Prakash pumps sets and mono-blocks improve their prosperity & happiness. The stringent quality standards in manufacturing, makes Prakash Agricultural Products, farmers' First Choice. PAL manufactures diesel engines, diesel engine parts, industrial diesel engine, diesel water pumps, submersible water pumps, centrifugal water pumps, pump sets. Furthermore, PAI is also concentrating in manufacturing of fertilizer sprayer and agriculture spray machine.

PRAKASH DIESEL Pvt. Ltd. opened for business in 1990. Since then, it has played a significant role in this trade. With the Manufacturing of Biomass, Biogas and Natural Gas Gensets, PDPL giving more

DEPARTMENTAL ACTIVITIES

strength to our brand 'Prakash'. Every part of the power-generating Gensets is manufactured in the well-equipped factories of Prakash diesel Pvt. Ltd. The parts are assembled by skilled technicians and highly qualified engineers. With the use of high-efficiency alternators for power generation, these Gensets have worked wonders in various sectors of Industry, but specifically, they have been a boon for farmers. Ordinary Gensets face the problem of excessive noise, but the use of canopies manufactured by 'Prakash diesel' absorbs a large part of undesirable noise. Prakash diesel is one of the leading manufacturers of welding Gensets across the country. PDPL manufactures welding equipment, portable welding machine, and electric welding machine. We provide welding sets up to 400 amperes and with an optional single phase output light up to 7.5 kva. These sets can be used to melt all kinds of welding rods. PDPL manufactures many products like biomass Gensets, biogas Gensets, natural gas generators and many more. This is one of the best Gensets Industries till now. PDPL is adding more to the Genset industry with its silent generators, biogas generators, and alternator generators.

The department is very thankful to PRAKASH INDUSTRIES for supporting our industrial visit and helping our students in enhancing the knowledge.

VARUN BEVERAGES LIMITED

19.07.2019

Students of II year, visited Varun Beverages Ltd., Kosi Kalan, Mathura on 19 July, 2019, accompanied by faculty member Mr. Shashi Kant Singh.

The students have interacted with Industry Experts and discussed about the new era of

the technologies used in the field of Soft drinks. It is the second largest franchisee in the world (outside US) of carbonated soft drinks ("CSDs") and non-carbonated beverages ("NCBs") sold under trademarks owned by PepsiCo and a key player in the beverage industry. It produces and distributes a wide range of CSDs, as well as a large selection of NCBs, including packaged drinking water. PepsiCo CSD brands sold by it include Pepsi, Diet Pepsi, Seven-Up, Mirinda Orange, Mirinda Lemon, Mountain Dew, Seven-Up Nimbooz Masala Soda, Evervess Soda, Duke's Soda and Sting. PepsiCo NCB brands sold by it include Tropicana (100%, Essentials & Delight), Tropicana Slice, Tropicana Frutz, Seven-Up Nimbooz, Gatorade and Quaker Oat Milk as well as packaged drinking water under the brand Aquafina.



The department is very thankful to the experts of Varun Beverages Ltd., for supporting our industrial visit and helping our students in enhancing the knowledge of the students.

SWASTIK PIPES LIMITED

20.07.2019

Department has organized an educational/Industrial trip to Swastik Pipes Ltd., Kosi Kalan, on 20th July, 2019. A group of 29 students of 2nd year and 3rd year accompanied by faculty member Mr. Mohammad Mohsin visited the plant.

DEPARTMENTAL ACTIVITIES

Swastik Pipe Limited is one of the leading manufactures and exporter of T.T. Swastik Band high quality Mild Steel/Carbon Steel ERW Black and Galvanized Pipes/ Tubes Since 1973. Swastik Pipes is also manufacturing LINE PIPES as per APL Spec. 5L since December 2005. Its advancement state-of-art manufacturing facilities with ISO 9001: 2000 and APIQ1 approvals has achieved national and international reputation and appreciation. SWASTIK PIPE LIMITED is one of the leading manufacturer, exporter and supplier of steel pipes and tubes to various heavy engineering industries in India and abroad. Steel pipes and tubes can be used for many purposes such as steel pipes for frames and shafts, steel pipes for bicycle frames, steel pipes for furniture, CDW pipes for shockers, steel pipes for various structural purposes, steel pipes for various engineering purposes etc. We have a very wide range of steel pipes and tubes products. The lengths of the steel pipes & tubes range from 4m to 6.5m unless otherwise specified by the customers. We manufacture steel pipes and tubes in various shapes and size such as square, round, rectangular, triangular, and elliptical or any special shape.



On reaching the plant, Assistant Manager Human Resources, Mr. Narendra Singh along with his team of three GETs gave us a warm welcome. Mr. Narendra Singh gave introduction on the various manufacturing process used in the plant for manufacturing quality Mild Steel/Carbon Steel ERW Black and Galvanized Pipes/ Tubes and knowledge about different processes like electric arc

welding, piercing using a hot extrusion process, rolling process, forging, finishing. He also instructed about the precautions to be taken by the students during the plant tour.

During the visit the students also got an idea of various industrial engineering concepts including quality control, 5S, skill mapping etc. It was an enlivening experience in which the students got a chance to get themselves familiar to the practical knowledge of the different stages of Manufacturing. This visit was to enhance the knowledge of students in spheres of manufacturing, production and quality control. The visit was an informative experience satisfying the curiosity of engineering students, where they could relate to the theoretical knowledge of the subjects to the practical application in industry.

Students were divided into two groups, with each group guided by a technical guide from the company who explained various processes. During this visit, students witnessed how finished products like high quality Mild Steel/Carbon Steel ERW Black and Galvanized Pipes/ Tubes are made.

The department is very thankful to Mr. Narendra Singh, Assistant Manager Human Resources, Swastik Pipes Ltd., for supporting our industrial visit and helping our students in enhancing the knowledge about pipe manufacturing.

B.S. AGRICULTURAL INDUSTRIES

14.09.2019

Department has organized an educational/Industrial trip to B. S. Agricultural Industries, Nawalganj, Agra, on 14th Sept, 2019. A group of 23 students of

DEPARTMENTAL ACTIVITIES

2nd year and 3rd year accompanied by faculty members Mr. Mohammad Mohsin and Mr Ashutosh Sharma, visited the plant.

B.S. Agricultural Industries is an Agra based company which concentrates on the development of quality products for expanding diesel engine industry and precision agriculture sector. It manufactures Diesel generating engines, Air cooled diesel engines, water cooled diesel engines, Water cooled pump sets, light weight pump sets, Air cooled pump sets, Centrifugal water pumps, Mini Grinding Mills etc. Manufactured using the high grade factor components and contemporary fabrication techniques, the provided products are designed with utmost precision in order to confirm these with the set global standards. These products are widely appreciated among our customer spread all across the nation due to their features such as low power consumption, efficient functionality, high performance, easy operation and easy installation. The company exports their products to various countries e.g. Australia, Malaysia, Egypt, South Africa, Central America, East Africa, Sri Lanka, Lebanon etc and to various states in India. This company manufactures various parts/casings of the engines, pumps and assemble them to shape it to a final operational device.

On reaching the plant, Manager Human Resources, Mr. Ajay Agrawal along with his team of two GETs gave us a warm welcome. Mr. Ajay Agrawal gave introduction on the various process used in the manufacturing of Diesel generating engines and agricultural pumps, casting, machining, grinding, finishing. He also instructed about the precautions to be taken by the students during the plant tour.

During the visit the students closely observed different manufacturing processes involved

(Casting, machining, grinding etc) in making of a final working product and gained the knowledge of conversion of raw material to final product, assembly line, quality control and various machining processes. It was an enlivening experience in which the students got a chance to get themselves familiar to the practical knowledge of the different stages of Manufacturing.



During the visit the students also got an idea of various industrial engineering concepts including quality control, 5S, skill mapping etc. It was an enlivening experience in which the students got a chance to get themselves familiar to the practical knowledge of the different stages of Manufacturing. This visit was to enhance the knowledge of students in spheres of manufacturing, production and quality control. The visit was an informative experience satisfying the curiosity of engineering students, where they could relate to the theoretical knowledge of the subjects to the practical application in industry.

Students were divided into two groups, with each group guided by a technical guide from the company who explained various processes. During this visit, students witnessed how manufacturing processes involved (Casting, machining, grinding etc) in making of a diesel engines and pump sets. The supervisor of the company helped students to understand operations carried out during the manufacturing processes and functionality of the organization.

DEPARTMENTAL ACTIVITIES

SEMINAR

DESIGN / 3D MODELING

BY LELOGIX DESIGN SOLUTION PVT. LTD.

Er. Abhishek Sharma (Expert & Alumni) discussed about manufacturing companies which support in shortening the product development time and bringing the product in market faster by helping them in developing a new product design or doing value engineering on existing designs. He interacts with students to understand design requirements to arrive at a few concept designs. Then alternative concepts are evaluated to choose one or two final alternatives. He also discussed to build both virtual prototypes and physical prototypes

(using rapid prototyping techniques) to study fit, form and function. These technologies give us the ability to finalize the product design from an overall perspective.

He discussed how to transform our conceptual sketches to manufacturing drawings, with required dimensioning and tolerances for shop floor engineers. He also discussed how to convert existing 2D drawings to 3D model and data migration services from one CAD software to the other. He told about 3D part modeling, sub assembly and assembly creation. This includes complex surface geometries using Advance surface functions.



GATE CLASSES

GATE classes are conducted for 2nd / 3rd / 4th year students of the department willing to prepare for GATE examination. GATE classes give opportunity to all aspirants to boost their technical knowledge during semester. These classes will ensure academic gains i.e. good results in GATE, IES exams, PSU exams, university exams, placements etc. Hence these classes are highly beneficial for students.



FACULTY ACHIEVEMENTS



Er. Satendra Kumar has successfully completed the 8 weeks faculty development program on **REFRIGERATION AND AIR CONDITIONING** and 12 weeks on **FUNDAMENTAL OF MANUFACTURING PROCESS** from NPTEL in Elite Silver Group.



Er. Udayvir Singh has registered for PhD in Thermal Engineering.



Er. Shashi Kant Singh has successfully completed the 8 weeks faculty development program on **FINITE ELEMENT ANALYSIS** from NPTEL in Elite Silver Group.

Congratulations!

STUDENT ACHIEVEMENTS



STRIKERS won ...

GLBIIANS Robo War Team (Strikers) won Zonal level Technical, Management and Literary Fest 2019-20.

Robot (MAAS) was designed and fabricated by students Arif Khan (4th year ECE Department), Amit Sharma (4th year Mechanical Department), Manish Ranjan (3rd year ECE Department) and Shubham Singh (2nd year Mechanical Department).

PLACEMENTS 2018-19



Prathmesh Pratik
CAPGEMINI, RANE GROUP



Abhishek Sharma
LELOGIX DESIGN SOLUTIONS PVT. LTD., ANJANI TECHNOPLAST LTD.



Vicky Vishal
MAINTEC TECHNOLOGIES PVT. LTD. ANJANI TECHNOPLAST LTD.



Pradutta Kesharwani
CAPGEMINI



Naman Gupta
TECH MAHINDRA, PHOENIX LAMPS



Bankey Lal Sharma
ACCENTURE, ANJANI TECHNOPLAST LTD.



Pankaj Chaudhary
ANJANI TECHNOPLAST LTD.



Rahul Maurya
LELOGIX DESIGN SOLUTIONS PVT. LTD.



Himanshu Misha
ANJANI TECHNOPLAST LTD., GURUNANAK AUTO ENTERPRISES LTD.



Jishan Ali
MAINTEC TECHNOLOGIES PVT. LTD. PRITAM INTERNATIONAL PVT. LTD.



Saurabh Kumar
FUTURE SUPPLY CHAIN SOLUTIONS LTD.



Sachin Kumar
PHOENIX LAMPS



Deepak Kumar
PRITAM INTERNATIONAL PVT. LTD.



Manish Kumar Varma
PERFECT GENERATORS PVT. LTD.



Vikas Singh
BUNDY INDIA LIMITED

Congratulations!

TOPPERS 2018-19

Batch 2017-21 (II Year)



Vishal Maurya
87.04%



Vivek Agnihotri
80.50%



Krishna Kumar Shah
78.83%



Aakash Srivastava
86.60%



Hari Om
86.12%



Sahil Saxena
85.42%

Batch 2015-19 (IV Year)



Pradutta Kesharwani
82.10%



Yogesh Sharma
80.70%



Naman Gupta
78%

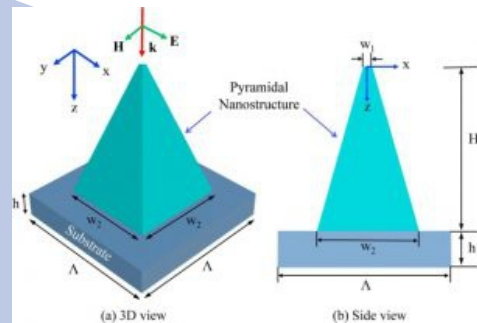
Well Done!

LATEST TRENDS

6 Amazing Mechanical Engineering Innovations that could be Industry Game-changers

AN ABSORBER DESIGN USING A NATURAL HYPERBOLIC MATERIAL FOR HARVESTING SOLAR ENERGY

Researchers led by Professor Ping Cheng, from Shanghai Jiao Tong University, in collaboration with Professor Zhuomin M. Zhang, from Georgia Institute of Technology, developed a perfect light absorption structure that utilizes an array of pyramidal nanostructures made of bismuth telluride (a natural hyperbolic material) over a thin substrate to absorb incident solar radiation.



The study successfully presented a perfect absorber design that manipulates a periodic array of pyramidal nanostructures that are made of a natural hyperbolic material bismuth telluride on a metallic substrate. The results from the experimental procedure undertaken in this study have shown that the proposed structure can achieve absorptance values of almost 100% in the wavelength range of 300–2400 nm, upon which most of the solar radiation spectrum fall into. Altogether, the proposed metamaterial has great potential application and can lead to the effective harvesting of solar energy

during photothermal conversion processes in water or aqueous solutions.

WINDOWS DOUBLE AS SOLAR PANELS: FULLY TRANSPARENT SOLAR-POWER-GENERATING WINDOWS

These windows have solar cells installed in the edges at a specific angle, which allows the incoming solar light to be efficiently transformed into electricity. The windows could generate 8 to 10 watts of power, according to Grapperhaus. "Right now, we are looking for iconic projects all over the world to show that a large glass building can be made energy neutral in an aesthetic way."

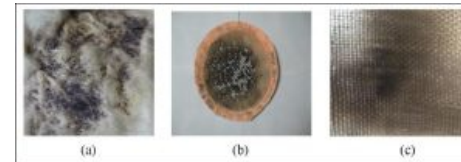


EXPERIMENTAL INVESTIGATION ON THE PERFORMANCE OF NON-METALLIC FLEXIBLE FIRE-RESISTANCE MATERIALS IN FLAMEPROOF DIESEL ENGINE LOCOMOTIVE

Three kinds of flexible refractory fiber materials were used to verify the

LATEST TRENDS

performance of fire resistance, according to explosion-proof principle and test methods of flame arrests. Then, a comparison of transmission efficiency between flexible refractory fiber arresters and general arresters was given. The aim of this is to verify the properties of non-metallic flexible fiber materials in fire resistance and transmission efficiency so that we can apply it to the flameproof diesel engine locomotive.



Theoretically, refractory fibers have good performances of air permeability and complex internal space, so it can provide with absorption area. First, irregular porous structure increases the cooling area. The temperature of the flame can decrease under the ignition point and quench after the heat exchange. Tiny pores of the porous materials, moreover, increases the probability of absorbing free radicals during chain reaction so as to prevent the combination of free radicals and premixed gas. Then, the chain reaction will slow down and even terminate.

The investigation was aimed at testing the performances in fire-resistance and transmission efficiency of non-metallic flexible materials in flameproof diesel engine locomotive which may replace traditional metal flame arresters with low gas transmission efficiency. On the basis of the chain reaction mechanism, the mixed gas was burnt in the experiment, and the free radical which can be absorbed by tiny pores of flexible fiber materials and quenched was released (School of Mechanical and Electrical Engineering, China University of

Mining and Technology, Xuzhou, China2Jiangsu Collaborative Innovation Center of Intelligent Mining Equipment, Xuzhou, China-Kedi Chen, Baolin Li).

BIODIESEL PRODUCTION FROM WASTE COOKING OIL BY USING AN ULTRASONIC TUBULAR REACTOR

The aim of this research is to find an optimum synthesis biodiesel from waste cooking oil (WCO) using an ultrasonic tubular reactor. The experimental studies explored the variations in reaction time, molar ratio WCO to methanol (MeOH), amount of catalyst, the frequency of ultrasonic and output power ultrasonic on the ester contents. Comparisons of type ultrasonic and also the mechanical stirring method based on time reaction were investigated.



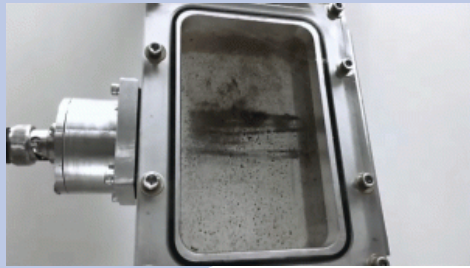
The optimum results of the biodiesel process is the reaction time of 5 minute, NaOH catalyst 1%wt of WCO, molar ratio WCO to MeOH of 1:6, frequency ultrasonic of 20 kHz and output power ultrasonic of 650 W. The reaction time reduced 12-24 times compared to both of method and the yield of ester contents was obtained at 96.54%wt.

ACOUSTIC WAVE SEPARATION

FloDesign Sonics, with funding from the

LATEST TRENDS

National Science Foundation, has developed a uniquely effective patented technology called Acoustic Wave Separation (AWS) that separates or cleans water or other liquids from other contaminants. Acoustic waves were the secret behind this breakthrough technology that divorced all foreign substances such as radioactive material, hydrocarbons, bacteria, chemical additives, salt, and more, without the use of chemicals or filters.



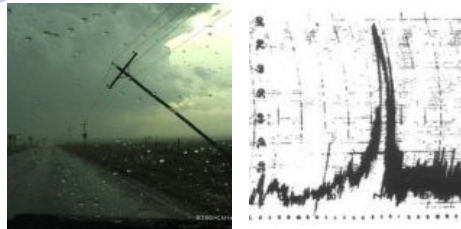
Their immediate goal was to be able to process 100,000 gallons a day for the gas and oil industry. This same technology could also be used to cleanse blood during surgery, to reclaim proteins from the cells of mammals, as well as many uses in gene and cell therapies. This groundbreaking AWS technology will have innumerable potential uses in the future (<https://www.nsf.gov/water>).

HYBRID SIMULATION OF THUNDERSTORM OUTFLOWS AND WIND EXCITED RESPONSE OF STRUCTURES

The authors successfully investigated wind-excited responses through modal analysis and time-domain approaches. In the simulation analysis, some parameters such as aerodynamic damping and transient aerodynamic effects were neglected. The obtained results also helped in getting the information about classic analysis. This was

done about synoptic stationary cyclones. It was however observed that thunderstorms outflows often induce a major structural response as compared to synoptic stationary cyclones.

However, both synoptic and thunderstorms events experience similar qualitative responses as far as the dynamic response and wind loading on the structures are concerned. The same similarities for the two cases are too witnessed with the aerodynamic admittance. Structural components such as buildings, bridges, and tunnels are often affected by actions of winds and thunderstorms outflows.



The need to control their effects on structures has resulted in numerous researchers in the wind engineering field. The study by Professor Giovanni Solari and his team will help in gathering different data involving such structures which will thus be analyzed to produce robust results that may be further used in understanding other effects such as those resulting from aerodynamic damping.

GLIMPSES 2018-19

