



MECHXION

2K13

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MECHANICAL ENGINEERING

A Magazine of



ABOUT THE INSTITUTE

Priyadarshini Engineering College, the flagship of Jai Barath Charitable Trust, was established in 1995 at Vaniyambadi in Vellore district of Tamilnadu. The college has been approved by All India Council for Technical Education, New Delhi and affiliated to Anna University, Chennai. Priyadarshini Engineering College situated in the rural area of Vaniyambadi, Vellore District is committed to the vision of developing itself into a multi campus, Inter - disciplinary Institution of Excellence through symbiotic efforts and innovative practices of management and faculty to provide the student with an ambient academic environment, ideal for the pursuit of knowledge and development carrier.

VISION OF THE INSTITUTE

To inculcate in the young rural minds the aptitude to compete with the world class technocrats.

MISSION OF THE INSTITUTE

1. To instill technical skills to compete in the sustainable world.
2. To impart holistic value based technical education.
3. To intensify research and development (R & D) activities in technological development.
4. To imbibe core values of love for motherland, performance of duty, compassion, tolerance, honesty and integrity.

MOTTO

PERSEVERANCE, ENDURANCE, COMMITMENT

“கற்றலும், கற்றவை கேட்டலும், கேட்டதன்கண் நின்றலும்”



ADMINISTRATOR'S MESSAGE

I congratulate the faculty and the students of Mechanical Engineering Department of our College on the occasion of release of their First Department magazine "MECHXION 2K13". I wish the initiative, and I hope it will contribute to their professional and career development. I wish all the faculty members and students to work hard to produce the first issue of Department Magazine. I hope it will be continued to the next level to enrich the development of students and faculty members.

PRINCIPAL'S MESSAGE

It gives me immense pleasure to pen a few words as prologue to mechanical Engineering magazine "MECHXION 2K13" exclusively meant for churning out the writing talent which bears immense potentiality of sharpening students communication skill as part of overall personality development. I congratulate all the contributors and the editorial board for bringing out such a beautiful magazine.

Today education means much more than merely acquiring knowledge. It is acquisition of knowledge and skills, building character and improving employability of our young talent, the future leadership. Measures initiated by the steps taken by the college administration, the willing contribution of the teaching and non-teaching staff and over whelming response and enthusiastic participation of my dear students in the college activates. When all the constituents come together and work in unison, the expected results are bound to flow..

VICE PRINCIPAL'S MESSAGE

I am happy to note that Mechanical Engineering department has taken the initiative to prepare their first Department magazine "MECHXION 2K13" to highlight the activities of the Department and to bring out the talents of students. I hope every year Mechanical Engineering department will bring out its own magazine which will be lovingly named as MECHXION 2K14, 2K15 etc., The purpose of the magazine is to provide a platform to the students and staff to give expression to their original thoughts and thus develop an important aspect of their personality.

HOD'S MESSAGE

Greeting to the readers of this magazine “MECHXION 2K13”. I am happy to inform that our pride rests in the department Magazine “MECHXION 2K13” which highlights the academic and non-academic activities of both staff and students of the department. This year all the students of Mechanical shown their magic in every event, every sports, technical event they won prizes. For final year students, I hope we will be a good engineer outside this institution also, loyal to work, pray for hardship to solve every problem of this society also beginners will read this magazine and may get inspired and try to improve departmental activities, form a bond of love with devotion to their education and study place with senior students. In this race for regular students it's a challenge to do better and better than before and achieve new heights.

EDITORIAL BOARD'S MESSAGE

Warm welcome to the readers of Mechanical Engineering Magazine” MECHXION 2K13”. It is with immense pleasure that I was given the opportunity to work on the department Magazine “MECHXION 2K13”. As we all know, a department Magazine mirrors a department-Its vision and mission. It also highlights events, activities and academic prowess and achievements. In this edition, I have tried to capture 2012-2013 Academic year excitement and activities. I do hope that the Magazine encourages many more including students to use it as a platform to express their creativity. We would like to place on record our gratitude and heartfelt thanks to all those who have contributed to make this effort a success. We profusely thank our honorable justice Mr.V.Rengasamy and Principal Dr.P.Natarajan for giving support and encouragement and a free hand in this endeavor. I sincerely hope that this edition makes for an interesting read. Please feel free to offer any suggestions for Improvement

ABOUT THE DEPARTMENT

The Department of Mechanical Engineering came into being in the year 1999 and the first batch of Mechanical Engineers graduated in the year 2003. The department was first started with the intake strength of 40 seats in 1999. After, the intake was increased to 60 seats in 2004. At present the department offers 120 seats from 2014. The department has both undergraduate and postgraduate courses in Mechanical Engineering and Design. In the year 2013 Post Graduate Programme in Engineering Design was launched. The department has laboratory and workshop facilities with modern sophisticated equipment to carry out research in all areas related to Mechanical Engineering. Throughout its history, the department has provided a strong technical foundation to prepare students to meet the changing needs of industry.

VISION OF THE DEPARTMENT

To produce competent Mechanical Engineers specifically from rural based population to confront the latest technological innovations.

MISSION OF THE DEPARTMENT

1. Imparting quality education and training to nurture competitive Mechanical Engineers.
2. Motivating innovations in the various fields of Mechanical Engineering with better infrastructure facilities to meet the industrial and societal requirements.
3. Inculcating ethical values in their careers for their successful life.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1. Core Competence:

Graduates will Excel in their Professional Career with Strong Fundamental Technical Background.

PEO 2. Breadth:

Graduates will be able to demonstrate their Technical Skills in Designing, Fabrication and Installation of New Mechanical Components.

PEO 3. Professionalism:

Graduates will be Competent to Exhibit their Multidisciplinary Skills in Related Fields of Mechanical Engineering.

PEO 4. Teaching & Research:

Graduates will Pursue Higher Studies in Mechanical Related Disciplines to work in the field of Teaching and Research.

PROGRAMME OUTCOMES (POs):

PO 1: Engineering Knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals and core engineering for complex engineering problems.

PO 2: Problem Analysis:

Identify, formulate and analyze complex engineering problems.

PO 3: Design & Development of Solutions:

Design and develop solutions for complex engineering problems.

PO 4: Investigations of complex problems:

Use research based knowledge to conduct investigations of complex problems.

PO 5: Modern Tool Usage:

Apply appropriate modern tools and techniques to tackle Mechanical Engineering problems.

PO 6: Engineer and Society:

Provide solutions to Mechanical Engineering problems relevant to societal needs.

PO 7: Environment and Sustainability:

Acquire contemporary knowledge to sustain in the ever changing environment.

PO 8: Ethics:

Apply professional ethics.

PO 9: Individual and Team work:

Exhibit individual and leadership qualities in multidisciplinary group.

PO 10: Communication:

Comprehend and communicate effectively in a team.

PO 11: Lifelong Learning:

Engage independently in lifelong learning.

PO 12: Project Management and Finance:

Plan and manage a project in a cost effective manner.

STUDENT CORNER

VOJES OF A STUDENT

You Demand Concentration !
 English is composition
 Mathematics is calculation
 History is civilization
 Economics is production
 Biology is classification
 Chemistry is preparation
 Commerce is co-ordination
 Accountancy in verification Physics is
 purely Derivation
 Physical Education is Demonstration
 Computer Science is computation
 Examination though an irritation
 For the young students
 Ascertaining the victory
 Is not possible
 without Examination

-Suresh C(Third Year Mech)

EVERYONE HAS A STORY IN LIFE

Ramesh.R (Final Year)

A 24 year old boy seeing out from the train's window shouted...
 "Dad, look the trees are going behind!"
 Dad smiled and a young couple sitting nearby, looked at the 24 year old's childish behavior with pity, suddenly he again exclaimed...
 "Dad, look the clouds are running with us!"

The couple couldn't resist and said to the old man...

"Why don't you take your son to a good doctor?"The old man smiled and said..."I did and we are just coming from the hospital, my son was blind from birth, he just got his eyes today.

Every single person on the planet has a story. Don't judge people before you truly know them? The truth might surprise you.

It is a kind man's heart.

THE GREATEST EXAMPLES OF PRESENCE OF MIND

Soundarajan.M(FinalYear)

It may be a tricky situation which needed great presence of mind to get through. The answer may include an incident from any and every walk of life as this is a very wholesome question. The answer may come from your personal experience of having seen it or having read/heard of it.
 Great

answers during edgy interviews are also welcome. Please refrain from trolling. 1. In 1912, Theodore Roosevelt was nearing the end of a hard-fought presidential election campaign. To reinforce his position, he decided to distribute a pamphlet which – as it is expected – has his picture on the

cover. Inside was the transcript of a speech called “Confession of Faith”.

Three million copies of the brochure had been printed. Just before starting distribution of the pamphlets, one of the workers noticed a small line on the photograph that read: “Moffett Studios – Chicago”.Moffett held the copyright and no-one had obtained permission to use the photo. Unauthorized use of the photo, estimated to incur \$3 million. Campaign team quickly realized that there’s no way except negotiating with Moffett.Further research, revealed bad news: Moffett was financially hard up, and approaching retirement with a “Money-Focused” mindset.

George Perkins, campaign manager, decided to send the following message to the Moffett studios: "We are planning to distribute millions of pamphlets with Roosevelt’s picture on the cover. It will be great publicity for the studio whose photograph we use. How much will you pay us to use yours?"

You can guess Moffett’s answer: "We have never done this before. But under the circumstances, we’d be pleased to offer you \$250." Perkins accepted the offer, without asking for more

MY HEART

Rajesh.J (Final Year Mech)

It looks like diamond
 It shines like gold
 It’s sweet as sugar
 Not sour as salt
 It flows like river
 Not hard as rocks
 It is like a leaf
 Not like a thief
 It is a kind man’s heart.

உண்ணப் பார்த்தும் தண்ணீரில்
 குணம்!
 என்னுள்ள சிலிப்படி உருவாகின்றது!
 நீ என்ன கித்தைக்காரனா?
 நீ உருகையில் மட்டுமே
 படிக்கிறீர்கள் போன்றவர்களும்
 எதிர்க்கள் அங்கமாகின்றனர்!
 பார் உருவம் எதிர்ப்பு எதிர்ப்பில்
 கிண்பித்து வந்தோம்!
 உருவங்கள் எதிர்ப்பு எதிர்ப்பு
 உருவத்தில்-உருவம்?
 ஜெயன்,
 ராஜேஷ். J
 3rd Year - Mech

10 Benefits of the Holy Basil (Tulasi)

Sundar.S (Third Year Mech)

1. **Healing Power:** The leaves are a nerve tonic and sharpen memory. They promote the removal of the inflammation of a mucous membrane and phlegm from the bronchial tube. The leaves strengthen the stomach and induce copious perspiration.
2. **Fever & Common Cold:** The leaves of basil are specific for many fevers. During the rainy season, when malaria and dengue fever are widely prevalent, tender leaves, boiled with tea, act as preventive against these diseases.
3. **Cough & Sore Throat:** Tulsi is an important constituent of many Ayurvedic cough syrups and expectorants. It helps to mobilize mucus in bronchitis and asthma. Chewing tulsi leaves relieves cold and flu. Boiled leaves work on sore throat.
4. **Respiratory Disorder:** A decoction of the leaves, with honey and ginger is an effective remedy for bronchitis, asthma, influenza, cough and cold. (leaves+ cloves+ common salt=immediate relief of influenza).
5. **Kidney Stone:** Basil has strengthening effect on the kidney. In case of renal stone the juice of basil leaves and honey, if taken regularly for 6 months Tulsi will expel them via the urinary tract.
6. **Heart Disorder:** Basil has a beneficial effect in cardiac disease and the weakness resulting from them. It purifies

Blood and reduces the level of blood cholesterol.

7. **Stress:** Basil leaves are regarded as an "adaptogen" or anti-stress agent. Recent studies have shown that the leaves afford significant protection against stress. Even healthy persons can chew 12 leaves of basil, twice a day, to prevent stress.
8. **Mouth Infections:** The leaves are quite effective for the ulcer and infections in the mouth. A few leaves chewed will cure these conditions.
9. **Insect Bites & Skin Disorders:** A paste of fresh roots is also effective in case of bites of insects and leeches.
10. **Headaches:** Basil makes a good medicine for headache. A decoction of the leaves can be given for this disorder. Pounded leaves mixed with sandalwood paste can also be applied on the forehead for getting relief from heat, headache, and for providing coolness in general.

ENGLISH JOKES

Vivek.G(Third Year Mech)

Two factory workers are talking.

The woman says, "I can make the boss give me the day off."

The man replies, "And how would you do that?"

The woman says, "Just wait and see." She then hangs upside-down from the ceiling.

The boss comes in and says, "What are you doing?"

The woman replies, "I'm a light bulb."

The boss then says, "You've been working so much that you've gone crazy. I think you need to take the day off."

The man starts to follow her and the boss says, "Where are you going?"

The man says, "I'm going home, too. I can't work in the dark."

A Famous inspirational speaker said:

Ganesan.S(Final Year Mech)

“Best years of my life were spent in the arms of a woman, who wasn’t my wife.”

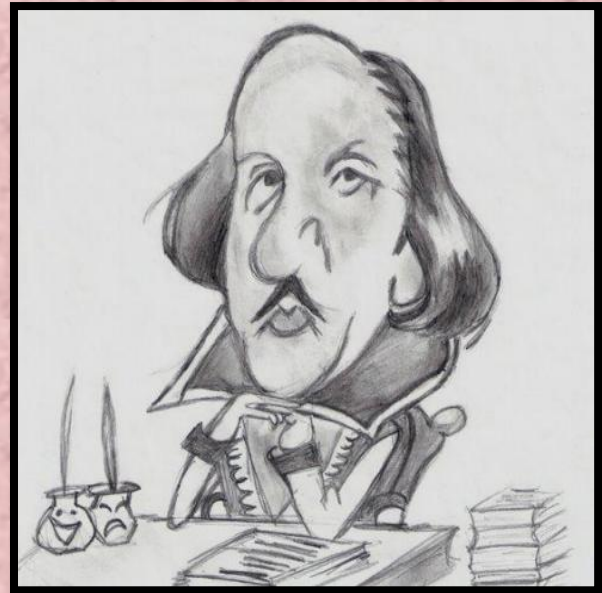
Audience was in shock and silence. He added: “She was my mother.” (A big round of applause and laughter)

A very daring husband tried to crack this at home. After dinner, he said loudly to his wife in the kitchen: “Best years of my life were spent in the arms of a woman, who wasn’t my wife”

Standing for a moment, trying to recall the second line of that speaker...

By the time he gained his senses, he was on a hospital bed, recovering from burns of boiling water!

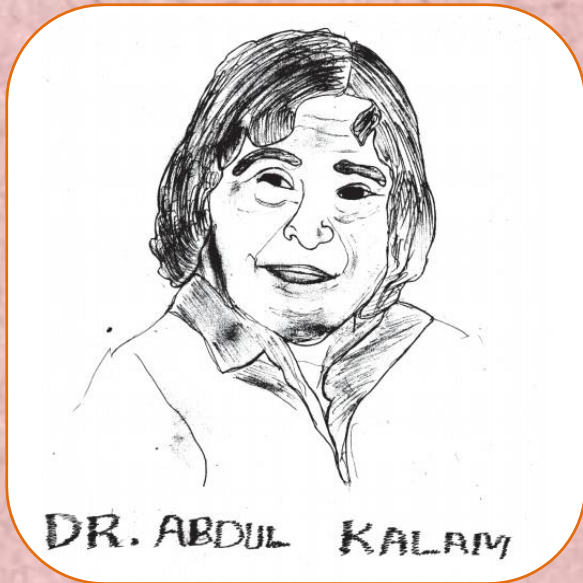
Moral: Don’t Copy, if you can’t Paste



Hemakumar S(Second Year Mech)



Lokesh T (Second Year Mech)



-Rajesh.J (Final Year Mech)

I LOVE U MOM!!!

Santhosh.S (Third Year Mech)

When I'm sad and feel depressed
 You understand my feelings and guide me!
 My little broken heart becomes light,
 When you lovingly hug me light!

Oh mummy, I love you so much dear!!!
 If I have another life, I pray to God
 That I should be your mother!!!
 B'coz I don't have any other chance

To reciprocate the love you showed me!
 You are not only my mother, you are
 My friend, guide and philosopher
 And above everything you are my God
 I'm blessed to have a mother like you
 Forever I wish to be with you!

Law Of Success

Vivek.G (Third Year Mech)

There is no more dangerous person
 Dangerous to himself and to others than
 The person who passes judgment
 Pretending to know facts.
 To love praise, but not worship it, and fear
 Condemnation but not go down under it,
 is evidence of a well balanced personality.
 The person who sows a single beautiful
 thought in the mind of another,
 renders the world a greater service than
 that
 rendered by all the fault finders combined.
 There is no lazy man. What may appear to
 be
 a lazy man is only an unfortunate person
 who has not found the work for which
 he is best suited.
 Congratulate yourself when you reach that
 degree of wisdom which prompts
 you to see less of the weakness of others
 and
 more of your own, for you will then be
 walking into the future of really great.

MATH PUZZLES

Mr.D.Madan (AP/Mech)

- Using six 1's and three plus signs form an expression that equals 24?
- One of the numbers below a common English word when converted into roman numerals. Which one?
 38 54 626
 1,009 2,376 3,128

3. If one worker can complete a job in 6 days and a second worker takes 12 days to complete the same job, how long will it take them working together?

4. Can you place ten dots on a page using just five lines of four dots a piece?

5. If you count out the matchsticks below, you'll see that the statement works out fine. Rearrange the match sticks so that statement is still true and you don't need to do any counting?

$$IIIIIIIIIIIIIIIIIIII = 29$$

6. A Frisbee and a softball together cost \$ 6.20. The Frisbee costs \$ 1.20 more than the soft ball. How much does the Frisbee cost?

7. The sum of the three digits of a certain three digit number is 12. If the hundreds digit is three times the tend digit, and the tens digit is one-half of the ones digit, what is the number?

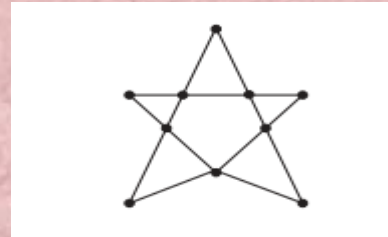
8. Which is bigger, 18 percent of 87, or 87 percent of 18? And don't multiply this out!

Answers :

1. $11+11+1+1=24$
2. 1,009 in Roman numeral is MIX. It is only the common English word in roman numerals.
3. In 12 days first worker would complete the entire job twice & second worker

complete it only once. Hence Both work together would complete 3 jobs in twelve days.

4.



5. Twenty Nine = 29

6. The cost of Frisbee \$ 3.70 and the soft ball cost \$ 2.50, the Frisbee cost & 1.20 more than the softball.

7. The number is 624

8. 18% 87 & 87% 18 are exactly same since is

$$18\% \ 87 \text{ is } (18/100) \times 87 \ \&$$

$$87\% \ 18 \text{ is } (87/100) \times 18. \text{ both}$$

are same because they involve same numbers.

FRJENDS

Abdul Rasheeth.S (Third Year Mech)

Friends

Who are they?

People for sure

Why they are here?

They would surely have some reason

Are they forever?

Or are they first for now?

If they're here forever

I would surely scream wow!

Rarely do you find friends

Who stay with you forever?

If people like that exist,
 Then I shall have no fear
 But said I don't know anybody
 With such an attitude
 Many friends just vanish
 In the blinking of an eye
 After the work is over,
 They scream bye, bye
 Is what friends are for?
 I hope it is not true
 Friends must be friends forever
 And forever be true.....)

TECHNICAL ARTICLE

1. TELEMATICS- THE FUTURE OF CAR NAVIGATION SYSTEM

Imagine being able to find the cheapest bargain at Wal-Mart, order lunch at McDonalds, and find the quickest route from McDonald's to Wal-Mart without taking your eyes off the road, or your hands off the steering wheel? Today's automobile navigation systems don't have this kind of advanced functionality. Yet these kinds of possible scenarios are not too-far off especially with globalization and advanced technologies. It is not a question of if, but when, currently available commercial Telematics systems will be redesigned for the consumer market.

Even though automobile technology has come off over profound levels, we still want for more. The current globalization

scenario and competitions with equals have made us want for more. Telematics seems to be the best option for the automobile navigation system with the technicians of United States already working on it. Moreover, Research in this field is open to almost all branches of engineering and technology, especially Mechanical, Electrical and Electronics and CSE/IT. This is because the ultimate working of this system involves ideologies and basics from all the three branches.

Advanced GPS-based Telematics technology is primarily deployed in commercial fleet management applications. Some of the U.S. largest companies save money by using Telematics to monitor fuel consumption, vehicle maintenance, and driver safety. What began as a Fleet Management System to Save Fuel is Providing the Foundation for Telematics Car Technology. Telematics technology easily integrates with other systems. In addition to monitoring fuel consumption, driver safety and vehicle maintenance, Telematics-related software enhances business productivity and expands mobile communications.

An article by Chris Brown (July 2008) titled "The Future of In-Car Communications" carries an insider summary of an interview with Erik Goldman, President of Hughes Telematics,

who predicts advanced, interactive GPS car technology will be commonplace by 2015. According to him, automobiles will eventually have a fully-customizable personal web portal that provides a broad array of services. Furthermore, almost all activities or more which we can do with a pc and internet can be facilitated inside an automobile as such.

And researchers aim that such a development will be a renovation in future of Automobile Technologies.

The introduction of Voice Recognition system corroborates the basis of the fact that Telematics has already come into play. The newest version of Hughes Telematic's voice recognition software became part of the first release of Mercedes "mbrace" technology found in all 2010 or newer Mercedes-Benz models. Mbrace features integrated GPS-based emergency response, anti-theft tracking, navigation assistance, vehicle locator, vehicle info, real-time weather and traffic, plus a concierge service to book flights or go shopping. And I assure you, this is just a beginning. By 2015, it is expected that spell bounding innovations and technologies pertaining to automobiles will mesmerize consumers in a way they wouldn't even have imagined automobile to be.

The most successful Telematics systems in the consumer car market will be systems

that match value-added features with an easy to use interface. Consumer demand and consumer preference will consequently guide future Telematics development and ease-of-use will become a primary selling point in new models.

2. THE POWER OF DUAL-FUEL DIESEL ENGINES

The abundant reserves of gas in the U.S. are also making companies think more about dual-fuel engines as a long-term solution. Natural gas/diesel dual-fuel engines offer a path toward meeting current and future emissions standards with lower fuel cost. However, numerous technical challenges remain, which require a greater understanding of the in-cylinder combustion physics. "For example, due to the high compression ratio of diesel engines, substitution of natural gas for diesel fuel at high load is often limited by engine knock and pre-ignition. Additionally, increasing the natural gas percentage in a dual-fuel engine often results in decreasing maximum load," says Anthony J. Marchese, professor of mechanical engineering and director of the Engines and Energy Conversion Laboratory at Colorado State University in Fort Collins.

Knocking out the Knock

When operating at part load, dual-fuel engines can suffer from excessive incomplete combustion of the natural gas, which results in increased tailpipe emissions of methane and other pollutants. Another problem with natural gas is that chemical reactivity of the “pipeline quality” fuel can vary greatly from day to day, or region to region, depending on the percentage of ethane and propane in the natural gas.



Prof. Anthony J. Marchese at the Engines and Energy Laboratory. Image: Colorado State University

“With natural gas, you don’t know exactly how reactive the fuel is since the composition can vary from nearly 100 percent methane [high resistance to knock] to less than 90 percent methane [greater

propensity for knock],” says Marchese. “Therefore, understanding the phenomena that lead to engine knock in a dual-fuel engine is very important for designing engines and control systems.”

Through combined modeling and experiments, Marchese and his research team uncovered a new regime of engine knock observed in dual-fuel engines, which is different from the knock observed in spark-ignited engines. “Specifically, we observed detonation of the natural gas/air mixtures in regions between the individual diesel spray jets,” he states. “This was a surprise and suggests there may be ways to minimize knock in dual-fuel engines by designing the diesel injectors in a different way.”

Don’t Forget Ammonia

Norm Olson, biomass and alternative fuels program manager at the University of Iowa’s Iowa Energy Center in Ames, has been conducting research on dual-fuel ammonia (NH₃)/diesel, NH₃/ dimethyl ether (DME) and NH₃/hydrogen (spark ignition) engines.

The use of NH₃ as a fuel is a relatively novel concept, especially in dual-fuel applications. Carbon dioxide, nitrogen oxide, and particulate emissions are

significantly reduced when NH₃ is burned as a fuel.

“NH₃ is a very high-octane fuel with a high resistance to pre-ignition,” says Olson. “Power output for engines operating on NH₃ is increased compared to the power output for gasoline and diesel fuel in the same engine. Combined, these properties allow for extremely high engine efficiencies for engines designed to take advantage of the characteristics of NH₃ fuel.”

There are also huge economic, environmental, and efficiency advantages associated with NH₃ fuel. NH₃ can be produced using air (for nitrogen), water (or any other source of hydrogen), and primary.

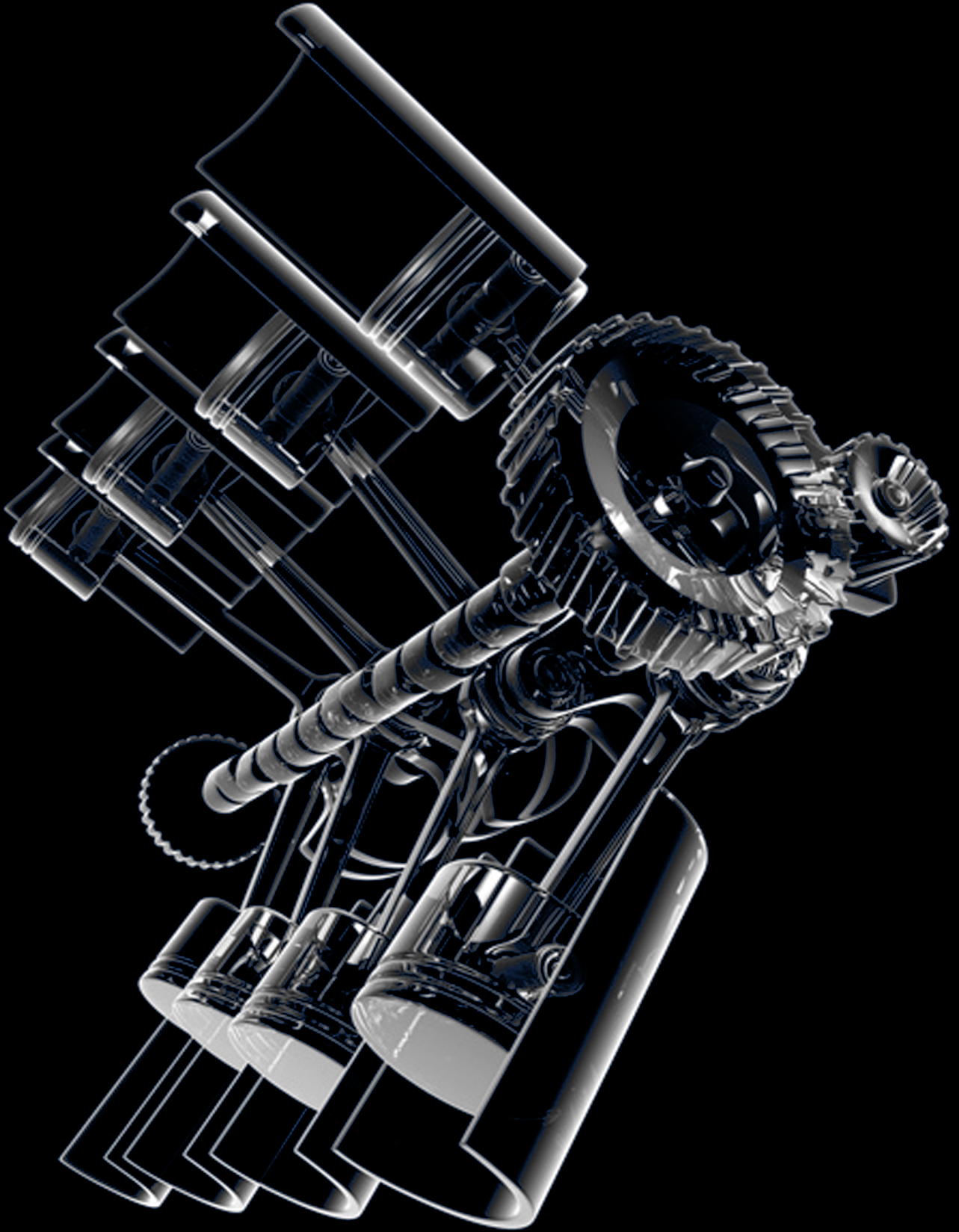
Sources of energy (wind, solar, nuclear, coal, natural gas, etc.). The only significant emissions associated with NH₃

are oxides of nitrogen, which can easily be controlled with NH₃ via selective catalytic reduction.

Delivery infrastructure costs for NH₃ are orders-of-magnitude lower than hydrogen infrastructure costs and liquid NH₃ contains 30 percent more hydrogen per unit volume than liquid hydrogen. In fact, NH₃ is the second-most transported chemical in the world.

“We envision stationary engines as the initial application for NH₃ fuel, followed by fleet vehicle conversions and eventual adoption by all transportation sectors, with the lone exception of air transportation applications,” says Olson.

Flexibility in both production and end-user applications, combined with high efficiency and unmatched environmental performance, make NH₃ fuel the optimal choice for replacement of fossil fuels.



PRIYADARSHINI ENGINEERING COLLEGE

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