NATIONAL YOUTH INNOVATOR'S CHALLENGE

BOOK OF ABSTRACTS

Vol. 1 (SCHOOL STUDENT EDITION)

SCIENTIFIC COMMITTEE

Chairperson

Dr Sunant Grover
Expert Educationist, Director COE, SACC, Karnal, Haryana

Member

Dr. Anuj Kumar
Principal Scientist, ICAR IIWBR

Dr. Rajesh Kumar Tripathi
Sr. Scientist DIPR, DRDO

Dr. Akhilesh Kumar
CEO Eden Horticulture services

Nirdesh Pratap Singh
Sub Divisional Magistrate UP

Bhanu Pratap Singh
Project Manager Raach Solar GmbH, Germany

Convener

Dr. Kaveri Chauhan
International Psychologist & Behavioral Scientist

ABOUT US

Mr. Satish Soni

Vice Admiral Mr. Satish Soni(Retd.)
PVSM, AVSM, NM ,Honorary Secretary
DSCTS, Karnal, Haryana

Dr Sunant Grover

Expert Educationist & Director
COE, SACC, Karnal, Haryana

Mrs. Sushma Devgun

Expert Educationist & Principal,
Dyal Singh Public School,
Main Branch, Karnal, Haryana

Dr. Rekha Malik

Principal Scientist, ICAR
Indian Institute of Wheat &
Barley Research Karnal.

Dr. Kaveri Chauhan

International Psychologist,
Wellbeing Centre, DSPS,
Karnal, Haryana

Scientific Committee

National and International

Dr. Rajesh Kumar Tripathi

Senior Scientist DIPR, DRDO
Ministry of Defence, Govt. of India

Dr. Rekha Malik

Principal Scientist, ICAR Indian Institute of Wheat & Barley Research Karnal.

Dr. Anuj Kumar

Principal Scientist, ICAR- Indian Institute of Wheat and Barley Research, Karnal

Dr. Akhilesh Kumar

Founder & CEO, EDEN Horticulture consultancy service, Karnal

Nirdesh Pratap Singh

Civil Engineering from IIT BHU
Sub Divisional Magistrate Uttar, Pradesh

Bhanu Pratap Singh

MS(Sensor Technology),European Union, Project Manager, Raach Solar GmbH, Germany

PATRON

Vice Admiral Mr. Satish Soni(Retd.)

PVSM, AVSM, NM, Chairman of DSPS,Main Branch,KNL

ADVISOR

Mrs. Sushma Devgun

Expert Educationist & Principal, Dyal Singh Public School, Main Branch, Karnal

GUIDANCE

Dr Sunant Grover

Expert Educationist, Director COE, SACC, Karnal, Haryana

Project Co-ordinator Students

Akash Kumar	*XII (Humanities)*
Mokshit Chaudhary	*XII (Science)*
Gorish	*XI (Science)*
Pulkit Kaur	*XI (Science)*
Pulkit Jawa	*XI (Commerce)*
Akshat Goel	*XI (Science)*
Parth Jawa	*XI (Commerce)*
Tarun Dhanda	*Class VIII*

Editorial Board

Dr Kaveri Chauhan	*Editor in Cheif*
Parth Jawa	*Editor*
Pulkit Kaur	*Language Editor*
Mr. Viraj Ashri	*Technical Editor*

NYIC's Orientation Program

NYIC team actively presented themselves in multiple schools for NYIC orientation in Haryana, Punjab, Delhi and near by states.

NYIC's Glimpses

NYIC team with SACC centre head Dr Sunant Grover, Mrs Sushma Devgun, Mr Ashok Sethi, Ms. Priya Kapoor & Mrs. Khushali Thareja

NYIC team behind the Grand Finale held on 9th of November 2024 at MPH, DSPS

NYIC team with orientation program for students 8th to 12th

Foreword

Dr. Sunant Grover
Expert (NYIC), 2024

On behalf of the Organising Committee, I am honored to present the abstract booklet for the National Youth Innovation Challenge (NYIC), 2024. This platform has served as an exciting opportunity for Indian school students (Grades 8 to 12)to present their innovative ideas and solutions to some of the most pressing environmental challenges of our time. As we embark on this journey, we are proud to witness the remarkable creativity and enthusiasm shown by the youth in addressing sustainability issues through science, technology, and innovation.

The NYIC was designed to encourage students to think critically, collaborate with others, and develop practical solutions for environmental sustainability. The goals of the challenge are clear: to foster innovation, build community, increase awareness, and drive tangible impact through novel ideas that contribute to a more sustainable future.

At the heart of this challenge lies the development of key 21st-century skills. Students are not only learning about environmental issues but are also gaining hands-on experience in innovation, problem-solving, and entrepreneurship. The benefits of participating in the NYIC extend far beyond the competition itself. The selected students are empowered with the tools and resources necessary to turn their innovative concepts into real-world solutions.

We would like to extend our sincere gratitude to all the students, mentors, and judges and scientists who have contributed their time, energy, and passion to making the NYIC a success.

We are excited to see the potential of these young innovators and look forward to the next steps in their entrepreneurial journeys. In this abstract booklet, you will find a snapshot of the incredible ideas and projects that have emerged from this year's challenge. Each project represents the ingenuity, vision, and dedication of the next generation of environmental leaders. We are proud to support these students in their quest to create a better, more sustainable world.

About NYIC

NYIC IS A SPECIAL PLATFORM WHERE STUDENTS LIKE YOU CAN SHARE THEIR CREATIVE IDEAS AND GET THE SUPPORT TO MAKE THEM REAL WORLD SOLUTIONS. WE BELIEVE THAT THE YOUTH ARE THE CATALYSTS FOR CHANGE, AND THROUGH NYIC, WE AIM TO PROVIDE THEM WITH THE TOOLS, GUIDANCE, AND MENTORSHIP THEY NEED TO MAKE A MEANINGFUL IMPACT.

Goals

- INNOVATION AND CREATIVITY: ENCOURAGE THE DEVELOPMENT OF NOVEL, SUSTAINABLE TECHNOLOGIES AND PRACTICES THAT REDUCE ENVIRONMENTAL IMPACT.
- COLLABORATION AND COMMUNITY: BUILD A DIVERSE COMMUNITY OF INNOVATORS, BUSINESSES, AND ORGANIZATIONS WORKING TOGETHER TOWARDS COMMON ENVIRONMENTAL GOALS.
- EDUCATION AND AWARENESS: INCREASE AWARENESS AND KNOWLEDGE ABOUT ENVIRONMENTAL ISSUES AND SUSTAINABLE PRACTICES AMONG PARTICIPANTS AND THE BROADER COMMUNITY.
- SCALABILITY AND IMPACT: SUPPORT PROJECTS THAT HAVE THE POTENTIAL TO BE SCALED AND REPLICATED, CREATING SIGNIFICANT AND MEASURABLE POSITIVE ENVIRONMENTAL IMPACTS.

Benefits of the Challenge

THIS CHALLENGE GENERATES SCIENTIFIC AND RATIONAL THINKING AT THE LEARNING STAGE OF STUDENTS. THIS PROGRAM INCULCATES VARIOUS SKILLS WHICH INCLUDE:

- EDUCATION AWARENESS: PROVIDING STUDENTS WITH KNOWLEDGE AND AWARENESS OF CURRENT ENVIRONMENTAL ISSUES, THEIR CAUSES, AND POTENTIAL SOLUTIONS.
- SKILL DEVELOPMENT: EQUIPPING STUDENTS WITH SKILLS IN INNOVATION, PROBLEM-SOLVING, CRITICAL THINKING, AND ENTREPRENEURSHIP WITHIN THE CONTEXT OF ENVIRONMENTAL SUSTAINABILITY.
- HANDS-ON EXPERIENCE: OFFERING OPPORTUNITIES FOR PRACTICAL APPLICATIONS OF KNOWLEDGE AND SKILLS THROUGH PROJECTS OR CHALLENGES FOCUSED ON DEVELOPING INNOVATIVE SOLUTIONS.
- EMPOWERMENT: EMPOWERING STUDENTS TO MAKE A POSITIVE IMPACT ON THE ENVIRONMENT BY SUPPORTING AND NURTURING THEIR IDEAS AND INITIATIVES.

CONTENTS

HYDROMETRICS: THE FUTURE OF WATER CONSERVATION

Overconsumption has been a major issue for the people affecting their health and long term well-being. Every year, household leak margins have touched over approximately 3.4 trillion litres.

Our technology – Hydrometrics – a water tracking software – provides an efficient mechanism to solve this issue. Hydrometrics is a user friendly software designed to help users monitor their daily water consumption and conservation. Its interface allows them to make accounts for themselves and their family members, tracking their daily consumption and hydration levels as well. It provides them reminders, notifications and tips on minimizing their water wastage on a daily basis. It informs them about how much water is appropriate for a certain activity, and sends them warnings when they've used too much of it. It also motivates them by providing a weekly record of how much water they've conserved all throughout the week.

The materials required to make this programme a success are computers, tracking devices (smartwatches or fitness trackers), Iot sensors to connect with the plumbing systems and a programming language. This water tracking application helps you track your water consumption and save water effortlessly. With simple tips and reminders, it makes caring for your environment easy.

Keywords– Water conservation, IOT sensors, water tracker

Authors
Vandita Gaba, X-D, School: St. Theresa's convent sr. sec. school, Karnal
Kritika Kamboj, X-C, School: St. Theresa's convent sr. sec. school, Karnal
Mentor: Ms. Vandna Vohra, School: St. Theresa's convent sr. sec. school, Karnal

AI-Driven Bioengineered Sand Dam

Given the expanding global population and escalating environmental challenges, the imperative for sustainable water management strategies grows more acute.

Our solution involves the creation of AI-Driven Bioengineered Sand Dam designed to enhance natural aquifer recharge processes. This dam are made from a combination of engineered sand, natural fibres, and biodegradable materials that allow for the slow infiltration of water into the ground while filtering out contaminants. Unlike traditional dams, this sand dam is porous, allowing water to seep through gradually. This method enhances the recharge of groundwater while preventing soil erosion.

Sensors like flow, sediment, and infiltration rate sensors are embedded around the sand dam to monitor water flow, sediment levels, infiltration rates, and aquifer recharge. The AI system analyses data from sensors to determine the optimal times for water flow through the sand dam, opening channels during monsoons to boost groundwater recharge and closing them during droughts to conserve water. Farmers and local communities help monitor and maintain the dams, receiving real-time updates and educational tips through a mobile app on sustainable water use.

Keywords: Sustainable, Sensors, sediment, groundwater

Authors
Rajat, XII Non-medical, DSPS, Sec-7, Karnal,
Aditya, XII Non-medical, DSPS, Sec-7, Karnal,
Tannu, XII Non-medical, DSPS, Sec-7, Karnal,

Greywater Recycling System

Water has become scarce day by day which needs to be conserve. My idea is that we can use Greywater recycling system. In this, We treat wastewater from appliance such as shower, bath and sink to be re-used and fed back into a property for non portable purpose such as flushing toilet. First, wastewater is collected from appliances and fed into a collection unit. The collection unit removes contaminants using chemical. From here, the wastewater is pumped into a treatment system for 'ultrafiltration' which prevents particles, bacteria and viruses from passing through to the next stage of the system.

The treated water is stored in a tank before being pumped out for re-use in toilet flushing or irrigation. greywater recycling can reduce carbon emissions and energy use – some low-energy systems are capable of produce a cubic metre of water using just 1.5kw/h energy.

There is no single figure for the installation costs of a rainwater harvesting system- it is based on size. The average greywater system installed on a single-family home can save about 2,600 gallons of water per year, and have a lifespan of 10+ years. Reduced freshwater extraction from rivers and aquifers. It's advantages include less impact from wastewater treatment plant infrastructure, nutrification of the topsoil, reduced energy use and chemical pollution from treatment, replenishment of groundwater, increased agricultural productivity, improved quality of surface and ground water.

Keywords : ultrafiltration, extraction, aquifers, nitrification, replenishment.

Authors:
Shubhi, IX B, school: DSPS, DSC, karnal
Divjot Kaur, IX B, school: DSPS, DSC, karnal
Jaskirat Kaur, IX B, school: DSPS, DSC, karnal
Mentor:- Mrs. Pooja Madhok, school: DSPS, DSC, karnal

Piezoelectric Floor

Our project seeks an innovative development of piezoelectric flooring in populated urban areas for space augmentation-aligned with the challenges posed by growing global energy crises and climate change. Imminent developments in the market with sustainable energy solutions are therefore highly required, with about $10 million viewing between 2023 and 2028 as a fair market estimate.

Using SWOT analyses, we have several strengths: piezoelectric technology is
environment friendly, does not require lots of maintenance, and can produce sustainable energy through common activities. . However, on the flip side, we need to be consciously aware of the impending threats, especially from technologies in the renewable sector, which will likely provide alternatives.
Moreover, our strategies will also include the marketing 4Ps: product-there will be advanced, durable piezoelectric tiles that extract energy as efficiently as possible; price-will be working in competition to drive its scaling-in; place-this system targets the busy urban environment places such as large shopping malls, airports, and transit hubs; and promotion-this will include awareness campaigns on the environmental side and energy savings that will come along with this new solution. With the installation of piezoelectric floors, we can contribute towards meaningfulness.

Keywords- Piezoelectric materials, Energy harvesting, Sustainable technology, Urban infrastructure

Authors:
Navya Singh 12th humanities, Bal Vikas progressive School Panipat
Twinkle Sachan 12th PCM, Bal Vikas progressive School Panipat

Algae-Based Carbon Capture & Nutrient Recycling System For Farms

In the world, most of the farmers use chemical fertilizers, that can hurt the environment and people's health. These fertilizers can pollute the air, cause cancer, and damage the soil and water. To address the harmful effects of chemical fertilizers, Our innovation is an Algae-Based Carbon Capture and Recycling System. Algae species would be specifically selected for their high CO_2 absorption rate and ability to thrive in local climates, for e.g. chlorella or spirulina. This system will also help in Biofertilizer & Biopesticide creation, Soil health enhancement; as it works in a closed-loop it recycles water and uses less energy.

This eco-friendly approach offers a long-term cost-effective alternative for small to medium-sized farmers, promoting organic farming practices and decreasing associated expenses.

Keywords: Algae, Fertilizer, Organic farming, Nutrient recycling, Closed loop system, Soil enhancement, Carbon capture, Energy efficient.

Authors:
Ritesh Khullar, 9th B, School: DSPS, DSC, Karnal
Aarav Sharma, 9th A, School: DSPS, DSC, Karnal
Mentor:- Ms. Priya Kapoor School: DSPS, DSC, Karnal

Zero Waste Greenhouse System

Practicing sustainable agriculture and using renewable energy are major challenges in both urban and rural areas. My solution to this problem is to create a zero-waste greenhouse with an integrated bioenergy system. This system would use an anaerobic digestion process to convert organic waste into biogas and nutrient-rich digestate. The system begins with the collection of plant trimmings, spoiled produce, and other organic matter from the greenhouse. This waste is fed into an anaerobic digester, where microorganisms break it down in an oxygen-free environment, producing biogas primarily composed of methane and carbon dioxide. The biogas generated is used as a renewable energy source to power the greenhouse's heating, lighting, and other systems, reducing reliance on external energy sources and lowering operational costs. This closed-loop system ensures that the greenhouse remains energy-efficient, sustainable, and environmentally friendly.

Meanwhile, the byproduct of anaerobic digestion, known as digestate, is rich in nutrients and can be used as a natural fertilizer for the greenhouse crops, enhancing soil health and reducing the need for synthetic fertilizers. This creates a cycle where waste is entirely repurposed, making the greenhouse both self-sufficient and zero-waste. Such a system not only minimizes environmental impact by reducing waste and carbon emissions but also contributes to long-term sustainability by promoting energy efficiency and improving crop production.

Authors:
Taani Dudeja , IX-E , School : PPS , Jarnailly Colony , Karnal
Taashi Dudeja , IX-E , School : PPS , Jarnailly Colony , Karnal
Pavani Dhamija, IX-E , School : PPS , Jarnailly Colony , Karnal
Mentor:- Ms. Shalini Aggarwal ,School : PPS , Jarnailly Colony , Karnal

SAND BATTERIES

Sand batteries represent a promising alternative to traditional energy storage methods. By harnessing the unique properties of sand, these batteries offer a scalable, cost-effective, and environmentally friendly solution for storing excess renewable energy. This abstract provides a brief overview of sand battery technology, its potential applications, and the challenges it faces. Sand batteries operate by heating sand to high temperatures using excess renewable energy. The stored heat can then be released to generate electricity when demand is high or renewable energy sources are unavailable. This process leverages the excellent heat-retention capabilities of sand, allowing for long-duration energy storage. Sand batteries offer several advantages over conventional energy storage methods.

They are scalable, allowing for the construction of large-scale facilities to meet growing energy demands. Additionally, sand batteries are relatively inexpensive compared to other storage technologies, making them more accessible and affordable. Furthermore, they have a minimal environmental impact, as sand is a readily available and sustainable resource. Despite their potential, sand batteries face some challenges. One significant hurdle is the development of efficient heat transfer systems to maximize energy storage and retrieval. Additionally, the long-term durability and reliability of sand batteries need to be thoroughly evaluated. Nevertheless, ongoing research and development efforts are focused on addressing these challenges and unlocking the full potential of sand battery technology.

Keywords: Sand batteries , Energy storage , Renewable energy , Heat storage , Scalability , Cost-effective , Environmental friendly , Heat transfer , Durability , Reliability.

Authors:
Sameer - X C , School: S.B.S. sr. sec. school ,railway road karnal
Ritesh - X C , school : S.B.S. sr. sec. school railway road karnal

Advanced AI Drip-Irrigation System

Problem-Excessive water usage in fields, Damage to crops due to excessive or shortage of water supply.Adapting AI tool into drip irrigation system can a revolutionize water management into agriculture the system can make intelligent decisions about when and how much water to deliver to crops, thus conserving water and empowering water yields. The AI system integrates with whether data sources to monitor the current conditions such as temperature, humidity and rainfall forecasts. This helps in determining of irrigation is needed based on upcoming weather preventing unnecessary water uses when rain is
expected. By combining AI with soil moisture sensors, the system can detect precise water requirements of the crops. The AI continuously learns from data and optimize irrigation schedule.

The AI analyzes data from the environment and makes real time decisions whether to irrigate or not. For e.g., if rain is predicted within few hours the system will automatically delay or reduce the irrigation. By avoiding over irrigation and optimizing in water usage farmers can save both water and energy cost manual intervention saving labour and operational course it and answers the water efficiency and crop help while reducing cost and Precise water requirements of the crops continuously learn from data and optimize irrigation schedule delay or reduce the irrigation by avoiding over irrigation and optimize in water uses farmers can same bath water and energy cost manual intervention saving labour and operational course it and answers the water efficiency and crop help while reducing cost and environmental impact

Keywords:-Drip Irrigation System,Crops,AI,Rain,etc.

Authors:
Niharika Bajaj, I X, School: DSPS, Dyal Singh Colony, Karnal
Anu, I X, School: DSPS, Dyal Singh Colony,Karnal
Muskan,IX, School: DSPS, Dyal Singh Colony,Karnal
Mentor:- Ms. Priya Kapoor School: DSPS, DSC, Karnal

Biodegradable Plastic

Plastic is a major issue impacting public health and environment. My solution is to turn unwanted weeds into biodegradable plastic. Initially, weeds are collected and dried. Then, they're broken down into tiny pieces and turned into a liquid. This liquid contains cellulose, a natural material found in plants. The cellulose is then mixed with special helpers called enzymes, which convert it into a fermentable liquid by the process of fermentation. Lastly, this liquid is transformed into biodegradable plastic using a process called polymerization.

This eco-friendly plastic can replace traditional plastic used in making bag, disposable items and packaging. Using weeds to make plastic not only reduces waste but also utilizes invasive species and helps the environment. This innovative solution also promotes sustainable resource management. Best of all, the biodegradable plastic can easily decompose, reducing plastic pollution. By turning weeds into plastic, we can create a significant impact on the environment and making it cleaner, greener future. This groundbreaking technology has the potential to revolutionize the way we produce and dispose of plastic.

Keywords: enzymes, fermentation, polymerization, sustainability, weeds

Authors:
Pranjal, XI Science, : DSPS, Dyal Singh Colony, Karnal
Pratishtha, XI Science, : DSPS, Dyal Singh Colony, Karnal
Vidushi, XI Science, : DSPS, Dyal Singh Colony, Karnal

AR-ENHANCE COGNITIVE TRAINING

Traditional learning methods often fail to engage students, leading to shallow understanding and limited critical thinking skills. This can result in inadequate preparation for real-world decision-making and problem-solving. The static nature of conventional education hinders the development of cognitive flexibility, creativity, and effective decision-making.

“What-If” scenarios provide an interactive solution, enabling users to project alternate realities or outcomes of historical events, scientific theories, or personal decisions. This immersive experience enhances cognitive thinking through scenario-based learning, encouraging critical analysis, creativity, and problem-solving. Applications in education, business, scientific exploration, and personal development demonstrate potential.

Key benefits include real-time feedback, cross-disciplinary thinking, and improved decision-making. By integrating AI-driven simulations, AR “What-If” scenarios can become more realistic and adaptive, revolutionizing education and decision-making processes. This approach fosters cognitive growth, creativity, and informed decision-making, preparing individuals for complex, dynamic environments. Enhanced critical thinking and strategic planning abilities are additional outcomes.

Authors:
Shaurya Mittal, IX-E,School: PPS, Jarnailly Colony,Karnal
Dakshesh Mudgal,IX-B, School: PPS, Jarnailly Colony,Karnal
Keshav Khanijon,IX-D,School: PPS, Jarnailly Colony,Karnal
Mentor:- Shalini Aggarwal School: Pratap Public School, Jarnailly Colony,Karnal

REHABILITION FOR MUTE PEOPLE

Not being able to express your thoughts, feelings and emotions because of being deprived from privilege of speaking, And it can be a barrier in their social life . Daily communication can be a great task for them, because not everyone is able to understand or communicate using sign language .

So mute people can communicate using sign language with only another mute person and rarely with normal person , so our idea is making an app for these specially abled people. So basically this app will be developed using the knowledge of sign language as one will use this app by using the camera of his or her mobile on the hand signs made by the mute person and the app will convert those signs into speech and when the normal person will want to communicate further or give feedback he will speak and the app will convert that into subtitles or pics of sign language which then will be showed to the mute person and hence the communication will go on and help all those special abled around the world to improve their social experience making their day to day life much easier.

Authors:
Raspreet Singh , Class XI(Science): Dr.MKK Arya Model School, Panipat
Gantavya, Class XI(Science): Dr.MKK Arya Model School, Panipat

Moodmirror Headband

Creating a headband for individuals who cannot speak and or choose not to, involves designing a wearable device that detects and interprets emotional states. The design leverages Brain-Computer Interface (BCI) technology and AI-powered coaching. EEG sensors placed on key areas of the scalp detect brainwaves linked to emotional states, such as Alpha, Beta, and Theta waves.

These brain signals, associated with emotions like happiness, stress, or calmness and so on are processed using a microcontroller, such as Arduino or Raspberry Pi, and analyzed using advanced algorithms to recognize patterns linked to specific emotions. The AI-powered coaching feature takes this data further by offering real-time feedback and personalized guidance based on user emotions. It suggests activities by detecting brain signals. The device wirelessly transmits emotional data via Bluetooth or Wi-Fi to a connected device, which translates these signals into visual or textual feedback and text -to-speech.

The headband is designed for comfort, made from soft, adjustable material and powered by a battery for portability. It supports emotional regulation, well-being, self awareness, boost motivation, goal setting, facilitates communication and understanding. This headband can serve as a powerful tracking and regulation, a non-invasive way to show their emotional states.

Keywords: Wearable Headband, Emotional states, Brain-Computer Interface (BCI), AI-powered coaching, EEG sensors

Authors:
Mehak, XI , School: DSPS, DSC, Karnal
Shreya Sharma, XI, School: DSPS, DSC, Karnal

AIRWAVE POLE FOR AIR PURIFICATION

Enhancing air quality is vital for creating healthier environment and reducing air pollution It is essential for public health and environment sustainability. Effective measures can significantly enhance air quality by reducing the pollutants and purifying the air. Airwave pole can play a significant role in purifying the air. It combine with the street lighting with air purification technology to improve air quality in cities.

They are equipped with the sensors that monitor real-time air quality collecting various data on harmful pollutants such as Carbon dioxide, Nitrogen dioxide etc. .The collected data would be sent to Central system for decision making and to know the updates of air quality. Microcontrollers can be used for processing sensor data and controlling the lamp's functions and solar panels would be used for renewable energy, making the lamps self- sustainable. Rechargeable

Batteries can be used to store energy for nighttime operation and LED Lights can be used for energy-efficient street lighting. These are the main components used for making Airwave Poles which act as a plus point for decreasing air pollution. This can surely be proved as an boon to the problem of air pollution and can give many benefits to the people. Thus making our environment clean and green.

Authors:
Avni : DR.MKK Arya Model School, Panipat
Ronak : DR.MKK Arya Model School, Panipat
Vedika: DR. MKK Arya Model School, Panipat

Warm Air Warrior (WAW)

ACs work like a heat pump, cooling a room by releasing hot air outside; hence making the world hotter. This is a double edged sword because as the planet warms due to climate change, we will be using ACs even more. The sterling solution of the problem is WAW (Warm Air Warrior) which will utilize the warm air coming out of the ACs to evaporate waste water from the drain pipe. Placing evaporative cooling wet curtain along with waterfall distributor connected with the drain pipe of AC, behind the compressor will help to check the increase in temperature due to the warm air released by ACs.

This WAW is designed to effectively use the waste water coming out of ACs to turn down the increased heat caused due to the warm air discharged by ACs. The materials required include low maintenance evaporative cooling wet curtain wall and water fall distributor. This mechanism is manageable, worthwhile and adaptable, making it suitable for extensive use. This solution will monitor air temperature in real time by causing cooling effect.

Keywords: Evaporative cooling wet curtain, Water fall distributor, cooling effect.

Authors:
Diksha, XI Science, School: DSPS, DSC Karnal
Navya, XI Science, School: DSPS, DSC, Karnal

Green Steel Clothing Iron

Today improving air quality is a growing concern due to rising pollution levels. My solution is green steel clothing iron. Green steel refers to steel produced using environmentally friendly processes significantly reducing or eliminating carbon emissions . It encourages the use of environment friendly and sustainable production methods. Green steel irons will be designed to consume less electricity while maintaining high performance. Features like rapid heating, precise temperature controls, and steam optimization contribute to lower energy usage. High-quality steel construction ensures that the iron is durable and long-lasting, reducing the need for frequent replacements and thereby decreasing waste. The materials involved are Green Steel, Plastic or Recycled Plastic , Ceramic or Non-Stick Coating , Electrical Components . At the end of its lifecycle, a steel-based iron is highly recyclable, ensuring that materials can be reused and reducing landfill waste. Green steel production emits less CO_2 compared to traditional steel, lowering the iron's carbon footprint. This results in a more eco-friendly product lifecycle and supports the transition to a greener economy. Overall, the primary benefit of a green steel clothing iron is its combination of environmental responsibility and effective performance, making it a sustainable choice for consumers looking to reduce their ecological footprint while maintaining high-quality garment care.

Keywords: Green steel , Carbon emissions, Ceramic or Non- stick coating, Electrical Components

Authors :
Divyanka Rana XII Commerce , School: DSPS, DSC,Karnal.
Shaina, XII Science,School: DSPS,DSC,Karnal.

Sustainable Classrooms: Innovative Solutions for a Greener Future

The rising carbon footprint in school classrooms is a major environmental concern. While many schools aim for sustainable solutions, traditional methods like building renovations or upgrades can be expensive and disruptive, especially for schools that cannot be rebuilt. To address this, we propose a "Green Classroom" solution that not only applies to new constructions but also provides products for existing classrooms. One key innovation is the introduction of solar-powered window films, which can be easily applied to existing windows.

These films generate electricity, reduce heat, and enhance natural lighting, leading to up to a 30% reduction in energy costs without requiring structural changes. Additionally,we suggest using air-purifying paint, which absorbs pollutants and improves air quality,creating a healthier environment for students and staff. These products can be applied in any school building, making them affordable and accessible options for schools that cannot undergo major renovations.

With these solutions, schools can significantly lower their carbon emissions, save on energy costs, and improve indoor air quality without the need for costly rebuilding.

Keywords: Carbon footprint, solar-powered window film, air-purifying paint, energy efficiency, sustainable solutions, existing buildings, green construction.

Authors:
Aaddya Chaudhary, Class 8th, School: DSPS, DSC, Karnal
Vanshu Rana, Class 8th, School: DSPS, DSC, Karnal
Mentor:- Mrs. Khushali Thareja, School: DSPS, DSC, Karnal

Terrabuild

Introducing Terrabuild—an innovative construction method that combines traditional and modern practices to create sustainable living spaces for the future. In conventional construction, materials like chemical-laden cement harm the soil and create structures that are difficult to dismantle. Terrabuild, on the other hand, focuses on eco-friendly materials and techniques that promote sustainability without compromising on durability or aesthetics.

The core of this method involves constructing homes using thick bamboo stems filled with cow dung. This combination provides natural insulation, regulating indoor temperatures while giving the structure an earthy, appealing appearance. For multi-story buildings, Terrabuild uses a blend of natural compounds that bond bamboo with a strength comparable to iron, ensuring stability and resilience. A key feature of Terrabuild structures is their design, which promotes efficient air circulation. The architecture facilitates the exit of hot air and the entry of cooler air, reducing or eliminating the need for air conditioning. At the heart of the building, a central water area absorbs excess heat, creating a natural cooling system.

To maintain this balance, a mechanism replaces heated water with cooler water drawn from deep underground and ground water recharged with rain water harvesting system. In addition to its environmental benefits, Terrabuild offers significant cost reductions and minimizes resource wastage.

Keywords: Sustainable, Technique, Innovative, Insolation stability, aesthetics.

Authors:
Ayush Gupta, IXth E Science, School: Pratap Public School, Karnal
Sarthak Ahlawat, IXth E Science, School: Pratap Public School, Karnal
Sanvi Kamboj, IXth E Science, School: Pratap Public School, Karnal

GREEN BUILDING AND CONSTRUCTION

Concrete has been in use for more than two thousand years ,dating back to when the Romans employed a similar material known as opus caementicium(cement). Its durability, versatility, and ease of transport make it difficult to replace, especially in large infrastructure projects like bridges and tunnels where it is essential. However, the production of concrete has a significant drawback—its manufacturing process is energy-intensive, particularly in the creation of clinker, a key ingredient. The question arises: is it possible to produce a greener, more sustainable version of concrete? Progress in this field is already underway, with both experimental techniques and proven methods offering various ways to reduce emissions. This abstract paragraph examines: What is clinker? Clinker is a crucial element in cement production, and cement, in turn, is an essential component of concrete. It is produced by heating a precise mixture of raw materials—mainly limestone (calcium carbonate) and clay —at extremely high temperatures, typically between 1,400 and 1,500 degrees Celsius. During the heating process in a rotary kiln(a physically large process unit used in cement production where limestone is decomposed into calcium oxide which forms the basis of cement clinker particles under high temperatures.), the raw materials undergo chemical reactions, producing small gray pellets or nodules known as clinker. These nodules contain the primary compounds that give cement its binding characteristics: calcium silicates and aluminates. Once cooled, clinker is ground into a fine powder and mixed with a small amount of gypsum to create cement. Gypsum controls the cement's setting time when it is combined with water. The most commonly used cement in construction is Portland cement, derived from this process. Clinker production is responsible for significant carbon emissions.

The incorporation of organic materials, from agricultural waste to coffee grounds, helps produce lighter concretes with enhanced thermal properties. This innovation reduces the carbon footprint of buildings constructed with these materials.

Authors:
Bhumi,10thKaveri, School:JPS Academy, Nissing
Vaidehi,10th Kaveri School:JPS Academy, Nissing

NYIC 2024 WINNERS

GOLD	SILVER	BRONZE
Creative Innovators	Aqua Guardians	Innovative Canpaigners
Innovators	The Trailblazers	Green Prodigies
Earthy Endeavors	EcoEdge	Innovator's Gang
Diya	Kusharg Innovators	
Intellect Innovators	Agro Protectors	
Sprash		
Legendary team		

Sr. No.	Team Members Name	Rank		Team Members Name	Rank
1	Shubhi	Gold	33	Shaurya Mittal	Bronze
2	Divjot Kaur		34	Dakshesh Mudgal	
3	Jaskirat Kaur		35	Keshav Khanijon	
4	Navya Singh	Gold	36	Aaddya Chaudhary	Bronze
5	Twinkle Sachan		37	Vanshu Rana	
6	Pranjal	Gold			
7	Pratishtha				
8	Vidhushi				
9	Mehak	Gold			
10	Shreya Sharma				
11	Gantavya	Gold			
12	Raspreet Singh				
13	Diksha	Gold			
14	Navya				
15	Bhumi	Gold			
16	Vaidehi				
17	Rajat	Silver			
18	Aditya				
19	Tannu				
20	Taani Dudeja	Silver			
21	Taashi Dudeja				
22	Pavani Dhamija				
23	Ritesh Khullar	Silver			
24	Aarav Sharma				
25	Divyanka Rana	Silver			
26	Shaina				
27	Ayush Gupta	Silver			
28	Sarthak Ahlawat				
29	Sanvi Kamboj				
30	Niharika Bajaj	Bronze			
31	Anu				
32	Muskan				

NYIC 2024

Published by-
Dyal Singh Public School (41 years of excellence)
Dyal Singh Colony, Karnal, Haryana 132001 (India)