Horizon Educational

FUELING TOMORROW

Cienytec CIENCIA Y TECNICA

Tecnologías para Educación

Creating a workforce ready to meet tomorrow's clean energy technology challenges.

CONTENTS

WHO WE ARE

Horizon Educational Group (HEG) was formed in 2011 with the goal of bringing renewable energy technology to classrooms and teachers across the globe. We design, produce, and distribute STEM education kits and teaching materials to over 150 countries, with a focus on hydrogen and hydrogen fuel cell education. This empowers learners of all ages to develop renewable energy technology skills through hands-on learning.

10+ YEARS EXPERIENCE **4** OFFICES **1** TEAM

Los Angeles **USA**
Prague **CZECH REPUBLIC**

Berlin **GERMANY**
Gold Coast **AUSTRALIA**

150 000+
CUSTOMERS

100 000+
SCHOOLS

150+
COUNTRIES

Originally branded as Horizon Fuel Cell Europe (HFCE), the Horizon Educational Group expanded to North America (HFCA) in 2014. In 2015, we launched the Horizon Hydrogen Grand Prix Series. In 2016, we acquired Heliocentris Academia GmbH, whose product portfolio covers a variety of renewable energy training systems, energy storage solutions and complete energy management systems. In 2022, HEG expanded to Asia Pacific (HFCP).

2011 — Horizon Educational
2014 — Horizon Fuel Cell Americas
2015 — H2 Grand Prix Series
2016 — Heliocentris
2022 — Horizon Fuel Cell Pacific
Horizon Fuel Cell Europe

OUR MISSION

Through our teaching materials, STEM kits, and educational programs, we aim to promote four educational values in the next generation of renewable energy leaders.

CREATIVITY

In building our equipment and teaching materials, we aim to develop students who are curious, inquisitive, and constantly questioning. They learn by experience, by experimentation, and by analytical thinking leading to greater insight.

DISCOVERY

Our resources help students develop a sense of wonder, excitement, and eagerness to discover more about renewable energy. Through seeing the technology 'in-action' and first hand, students become interested in learning more about how the technology works.

UNDERSTANDING

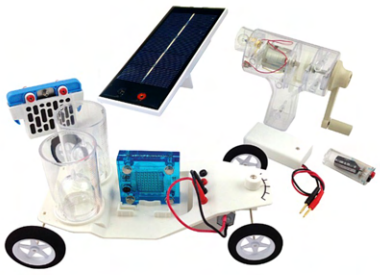
Students understand renewable energy through our equipment. By providing detailed lesson plans and teaching materials alongside practical, hands-on STEM kits, we allow teachers to facilitate different forms of learning – such as kinaesthetic, visual, and auditory – enabling different types of learners to comprehensively understand how these new forms of technology work.

TEAMWORK

Our equipment allows students to learn through collaboration, interaction, negotiation, and joint decision-making. Students not only learn how future energy technologies work, but how to work together to construct and realize these technologies in a classroom setting.

SCIENCE KITS

MOBILITY



FUEL CELL CAR SCIENCE KIT
FCJJ-11

Investigate chemistry concepts by performing electrolysis reactions, and physics concepts by modifying your fuel cell car.

MULTI ENERGY CAR SCIENCE KIT
FCJJ-31

Compare different kinds of fuel cell technology - the direct ethanol fuel cell, the salt water fuel cell and PEM fuel cell.

RENEWABLE ENERGY

RENEWABLE ENERGY SCIENCE KIT
FCJJ-37

Explore the principles behind renewable microgrids by powering an electrical circuit with a wind turbine or solar panel, generating hydrogen through electrolysis, and converting it into electricity with a PEM fuel cell.

HORIZON ENERGY BOX
FCJJ-40

Discover how hydrogen fuel cell technology interacts with renewable energy sources to create an entirely sustainable power grid using solar power, wind energy, kinetic energy, and a super capacitor.

CURRICULUM

All our educational science kits come with free access to a comprehensive, multi-subject curriculum. Our Horizon Energy curriculum comes with activities and guided lessons to help educators integrate our hands-on lab equipment with existing learning outcomes.

CONCEPTS COVERED	Fuel Cell Car Science Kit	Solar Hydrogen Education Kit	Wind Energy Education Kit	Vertical Axis Wind Turbine	Salt Water Fuel Cell Science Kit	Super Capacitor Science Kit	Thermal Power Science Kit	Wind to Hydrogen Education Kit	Ethanol Fuel Cell Science Kit	Electric Mobility Experiment Set	Renewable Energy Education Set	Horizon Energy Box
CHEMISTRY CONCEPTS												
Biofuels									✓			✓
Electrochemistry					✓					✓		✓
Electrolysis	✓	✓						✓		✓	✓	✓
Energy	✓	✓			✓			✓	✓	✓	✓	✓
Ethanol Reactions									✓			✓
Hydrogen Generation	✓	✓			✓			✓		✓	✓	✓
Organic Chemistry									✓			✓
pH									✓			✓
Reaction Rates	✓	✓			✓			✓	✓	✓	✓	✓
Reaction Yield		✓			✓						✓	✓
Reactions	✓				✓			✓	✓	✓	✓	✓
Redox Reactions	✓									✓	✓	✓
Semiconductors		✓									✓	✓
Solution Concentrations					✓					✓		✓
Stoichiometry		✓							✓		✓	✓
PHYSICS CONCEPTS												
Angular velocity			✓	✓				✓			✓	✓
Capacitors						✓				✓		✓
Classical Mechanics	✓		✓	✓				✓		✓	✓	✓
Current/Voltage						✓	✓			✓		✓
Efficiency	✓		✓	✓				✓			✓	✓
Electric Charge						✓				✓		✓
Electric Circuits		✓				✓				✓	✓	✓
Energy	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓
Generators						✓				✓		✓
Heat							✓					✓
Light		✓										✓
Ohm's Law	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓
Parallel Circuits		✓								✓	✓	✓
Power (Electric)	✓	✓	✓	✓		✓		✓		✓	✓	✓
Rotational Mechanics			✓	✓				✓			✓	✓
Series Circuits		✓								✓	✓	✓
Thermal Energy							✓					✓
EARTH SCIENCE CONCEPTS												
Climate Change										✓	✓	✓
Renewable Energy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Human Impacts										✓	✓	✓

PROGRAMS

The Horizon Hydrogen Grand Prix (H2GP) program challenges tomorrow's innovators to design, engineer, build and race their own hydrogen-powered cars. Throughout the program, these future leaders develop the creativity, ingenuity and real-world problem-solving skills needed to tackle tomorrow's energy challenges.

THE WORLD'S LARGEST HYDROGEN EDUCATION PROGRAMS

STEAM EDUCATION H2 GRAND PRIX XPR

30,000+

Introduce students to the basic principles of engineering and renewable energy technology through hands-on learning.

STEAM EDUCATION H2 GRAND PRIX SPRINT

1,000+

Extend renewable energy and engineering skills and introduce the concepts of design iteration, solution testing and collaboration through hands-on learning and competition.

STEAM EDUCATION H2 GRAND PRIX PRO

3,000+

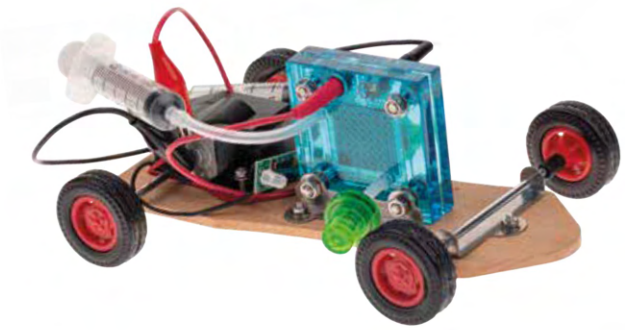
Empower the future energy workforce to be innovators, critical thinkers, collaborators, and leaders through student-driven, project-based learning.

STEAM EDUCATION

H2 GRAND PRIX XPR

AGES 6-10

The Horizon Hydrogen Explorer (XPR) program introduces elementary and middle school students to basic science and engineering principles together with sustainability and renewable energy awareness. This program allows students to design & build their own fuel cell-powered vehicles using recycled materials. Through its broad spectrum and developed curriculum, the H2GP XPR will easily fit in your Chemistry, Physic, as well as Art or Ecology classes.



FALL IN LOVE WITH SCIENCE

Besides the knowledge, students' competencies are developed through SEL principles. The H2GP XPR program raises self-awareness, develops self-management, and emphasizes social awareness. It was developed to help young students fall in love with science.

HOW WILL YOU SHAPE THE FUTURE?

What can you do with the DIY Fuel Cell Science Kit from Horizon? Whatever you can dream up! Everything you need to produce hydrogen from water and convert it to electricity is included in your kit. What that electricity powers is up to you. Use our included activity guide or come up with your own ideas. How will you shape the future of energy?

SEL LEARNING

STEAM EDUCATION

H2 GRAND PRIX SPRINT

AGES 10-15

The H2GP SPRINT program boosts education to the next level - allowing students to extend their renewable energy engineering skills with a lightning-fast 1:20 scale SPRINT car.

UNLEASH INNOVATION

Our one-of-a-kind SPRINT Car Kits are complemented by an innovative curriculum delivering an understanding of noy only hydrogen fundamentals and fuel cell electrical systems, but also the basic laws of physics, collecting experimental data, and discovering core scientific principles.

BRING YOUR SCIENCE LESSONS TO LIFE

The H2GP Sprint Car includes everything students need to create their own hydrogen before using it to power their lightning-fast, 1:20 scale SPRINT car. Once your students familiarize themselves with the technology, encourage them to build their own car from scratch and then use the Fuel Cell and motor to power it.

NEXT GENERATION SCIENCE STANDARDS

ISTE International Society for Technology in Education

ITEEA

COMMON CORE STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

STEAM EDUCATION

H2 GRAND PRIX PRO

AGES 15-19

The H2GP Pro program provides the next generation of designers and engineers with the skills they need to lead us into a sustainable future. Our one-of-a-kind, hands-on program allows students to gain real-world experience working with hydrogen fuel cells and 1:10-scale electric vehicles.

EMPOWERING TOMORROW'S INNOVATORS

Students must be able to use a wide range of knowledge acquired in the first part of the program. Their task is to design, engineer and build their own 1:10 scale fuel cell-powered RC car and test it in 4–6-hour endurance races. From the earliest conceptual stages to maintaining and repairing their car during the race, students are in control of every step of the process, enabling truly immersive experience that captures the rigor and excitement of real-world science and engineering endeavors.

SEMESTER LONG PROGRAM, LIFELONG BENEFITS

The entire program is accompanied by a professionally developed, semester long curriculum, from package delivery to the final Horizon Hydrogen Grand Prix Race on a national level. Winners of the national competitions then compete in an international championship with teams around the world. Thanks to the program, students gain real-world engineering experience, hands-on automotive mechanical experience, and an exposure to careers in STEAM.

IMPACT

River, Student, 2023 H2GP Pro World Champion Team

"The H2GP is the best thing I ever chose to do at my school."

Amy, Teacher, Plum Grove Junior High

"This club has changed one student's life. He has found his people and is thriving with the challenges it presents."

Carla, Director of Partnerships LAUSD

"This is the type of a learning experience that students can't get from textbooks. It's a real-world application connecting us directly to the automotive and design industries."

Mark, Toyota
GM of Advanced Tech Vehicles

"It's a great way to expose high-school students to opportunities and engineering challenges using math and science so we think it's a great match!"

TECHNICAL EDUCATION

H2 HYBRID - FUEL CELL AUTOMATIVE TRAINER SET

FCAT-30

The H2Hybrid Fuel Cell Automotive Set is the ultimate tool for exploring science and engineering concepts through hands-on activities with a working fuel cell car. An impressive array of hardware, software, and digital curricular materials allow for hours of activities for students of everything from high school vocational-technical up through college-level engineering.

HORIZON SOLAR ENERGY TRAINING SET

HSETS-11

The Horizon Solar Energy Training Set is prepared for the purpose of experimenting with solar power and its impact on electricity production. The experiment set is designed in accordance with the curricula of all institutions requiring technical education in which can be listed as technical university, technical high school and any institution in need of technical education.

AIR COOLED FUEL CELL SYSTEMS

(12W - 10kW)

H-SERIES PEM FUEL CELLS

The H-series fuel cell stacks are a series of open-cathod PEM hydrogen fuel cell stacks equally capable of being used in mobility and stationary applications. They can be used to provide backup power for a remote site, or to electrify a scooter.

T-SERIES FUEL CELLS

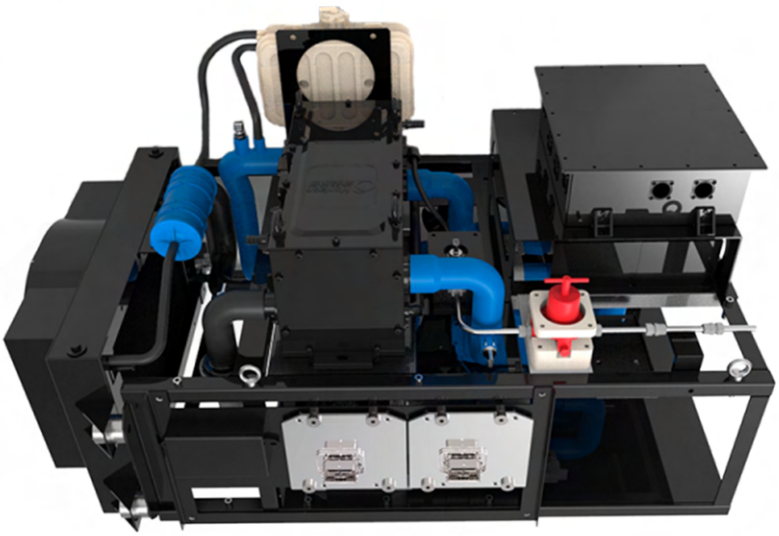
The T-series fuel cell systems provide a single, fully integrated system that fits within a standard equipment rack. The chassis includes a fuel cell module, integrated control, and power electronics for a complete system in a single chassis.

LIQUID COOLED FUEL CELL SYSTEMS

(5kW - 120kW)

LIQUID COOLED SYSTEMS

Our liquid cooled fuel cell stacks are mid-range fuel cells that can be used in a variety of mobility applications. The lower range stacks (5kw) are ideal for electrifying all-terrain vehicles, tractors used in agriculture, and switching golf carts to being electrified using fuel cells. The higher range stacks can be used for more demanding tasks in agriculture, construction, and even Class 8 trucks.



Heliocentris

Heliocentris Academia International GmbH dates back to 1995, when the first educational products for teaching hydrogen and fuel cells were created. Since then, our team of engineers, educators and creators have developed a complete portfolio of products in close collaboration with our clients and users. Our products cover a range of solutions for middle school, high school, colleges, universities and professional industrial training centres.

During our existence we've realized educational and research projects with dozens of educational and research institutions around the world. Our mission is to create a scientific environment where theory meets real application.

GLOBAL PARTNERS

Heliocentris

METAL HYDRIDE STORAGE CANISTER

MHS

Compact and safe hydrogen storage at low pressure. The metal hydride storage canisters (MHS) from Heliocentris Academia GmbH allow safe and compact storage of relatively large amounts of hydrogen at low pressures. Heliocentris' metal hydride storage canisters can store a multiple amount of hydrogen in comparison to a pressure storage at low pressure.

HYBRID RENEWABLE ENERGY TRAINER

HRET

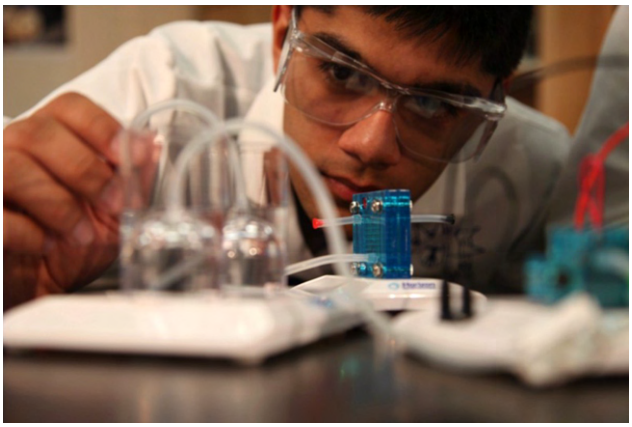
Made with professional-grade materials, the Hybrid Renewable Energy Trainer allows a semester of high-quality experiments in renewable energy for any laboratory. The included solar energy simulator, projector, and wind turbine provide multiple renewable energy technologies for students to explore. The included software enables complete control of every aspect of the simulators.

CSR

Today, more businesses than ever are working with the communities they operate in to ensure long term sustainability. Through the H2GP Foundation, we help organizations achieve their social goals by focusing on 3 core areas.

EMPOWERING PEOPLE

We empower people from all walks of life to achieve their full potential. We do this by instilling real-world, hand-on engineering skills while fostering diversity and inclusion. This means next-generation tech skills are available to all.



PROTECTING THE ENVIRONMENT

All our programs and equipment develop clean energy technology skills that will prove vital to protecting the environment for future generations.

ENGAGING COMMUNITIES

We believe in fostering strong connections between business and the communities they serve. Through our educational programs, we actively engage local communities, understand their needs and collaboratively develop solutions.

OEM PARTNERSHIPS

Whether it's simple equipment for introductory laboratories or complex fuel cell stacks for engineering competitions, Horizon Educational creates a wide range of products. These are just a few examples of the customized products Horizon Educational has created with past partners.

THAMES & KOSMOS

Thames & Kosmos had an innovative design for their Fuel Cell 10 car but needed Horizon Educational's fuel cell technology to run it.

RE+

Horizon Educational built a series of custom 1:10 scale model FCEVs for primary sponsors of the H2GP World Final 2023.

SoCalGas™

Horizon Educational partnered with SoCalGas to build a 1:14 scale working concept of a hydrogen fuel cell truck.

BRAND VISIBILITY

Horizon Educational collaborates with a global network of media outlets and platforms to promote our one-of-a-kind programs around the world. Exclusive access to this audience is available to select partners.

PR & MEDIA REACH 2023

2 MILLION+

SOCIAL MEDIA REACH 2023

340,000

WEBSITE TRAFFIC 2023

200,000

EDUCATIONAL PARTNERS

PROGRAM PARTNERS

LOCAL RESELLERS

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