



Industry Partner Guide

2023-24





Introduction

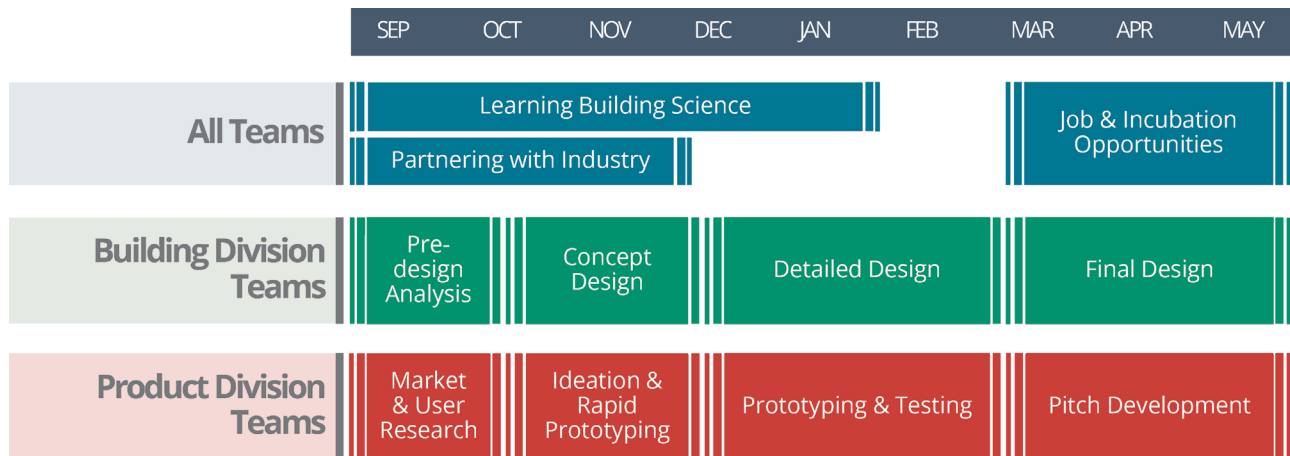
We invite building product manufacturers, technology suppliers, and knowledge providers to become Industry Partners. Industry Partners collaborate with the student teams participating in Solar Decathlon India (SDI), enabling them to integrate the most cutting-edge technologies and approaches that address climate change and sustainability.

SDI is a challenge for post-graduate and undergraduate students from Indian institutions to develop net-zero energy and climate-resilient building solutions to combat Climate Change.

- Each student team works with Industry Partners and/or a Project Partner (developer, owner, or a client) on real projects to design sustainable building solutions.
- During the 2022-23 Challenge, 154 teams from 126 Indian institutions partnered with 79 Industry partners to and 83 Project Partners to work on 27 million square feet of buildings. Many teams produced high-quality work, at par with the best professionals. We have 175 teams in the 2023-24 challenge.
- Each team is multi-disciplinary made up of 5-15 students and is mentored by their faculty.
- In the Product Division called the Residential Cooling Retrofit (RCR):
 - o Each team works closely with an industry partner to develop a tested prototype for their product solution.
 - o Each team will make a product solution that improves cooling performance in existing residential buildings, where the solution can be in a range of domains, including building envelope, dynamic shading, passive cooling techniques, active cooling, appliances, and smart controls. Solutions can also overlap across these domains.
- In the Building Divisions
 - o Each student team works with a developer, owner, or a client (Project Partner) and an Industry Partner on a real project and develop their designs to the level of tender documents.
 - o Each team works on one of the five building types: 1) Multi-Family Housing, 2) Educational Building, 3) Office Building, 4) Construction Worker Housing, and 5) Community Resilience Shelter.

Industry Partners get to collaborate with the most creative and motivated students in the country, expose them to the latest technologies and techniques, and test their innovations and design interventions. This is a unique opportunity to mentor and get early access to the next generation of professionals combating climate change through the building sector.

Annual Schedule



Industry Partner's Role

The primary commitments expected from an Industry Partner are:

- Provide information about materials, processes, products, technical specifications, and costs, and discuss approaches for integration of such products and technologies into buildings.
- Provide in-kind support in the form of materials, equipment, making or testing facilities, in case the team is developing a product solution that is of interest to your business.
- Invest a limited amount of time to review the team's work and mentor the team, providing inputs in terms of market readiness and feasibility.
- Take interest in the outcome by sending your representative to the SDI Finals in May 2024 to witness the event.
- Optionally, Industry Partners can also provide financial support to teams developing product solutions.

Industry Partner Benefits

- Innovation: Opportunity to see innovations and mentor innovators. Industry Partners can collaborate with the teams or the institutions towards arrangements for sharing the intellectual property developed.
- Recruitment: Opportunity to recruit the best talent in the market.
- Exposure: Media exposure related to SDI, and products/technologies/services related to high-performance buildings.
- Learning: Complimentary access to SDI's e-learning modules on net-zero building science.

What the Students Gain

- Experience: The students get hands-on experience in developing real product and building design solutions focussed net zero goals.
- Education: Our online educational modules help them understand concepts and best practices for high performance buildings.
- Career boost: Past experience shows that Solar Decathlon participants get a boost in their careers. They build a strong network with their peers, project and industry partners, and become

highly desirable placement candidates. Working on product solutions shows them entrepreneurship opportunities.

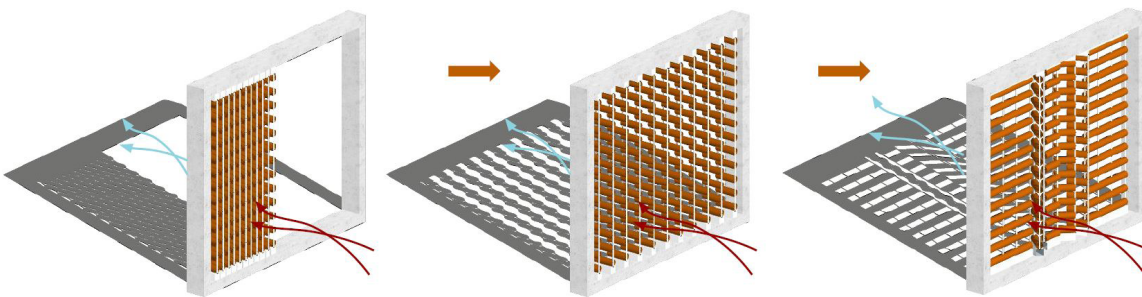
- Confidence: Importantly, they gain confidence that they can learn and tackle climate change.

Interested to become an Industry Partner?

- Contact us: If you want to collaborate with and mentor teams.
- Contact a participating institution: If you are in touch with a participating institution, you can become their Industry Partner directly.

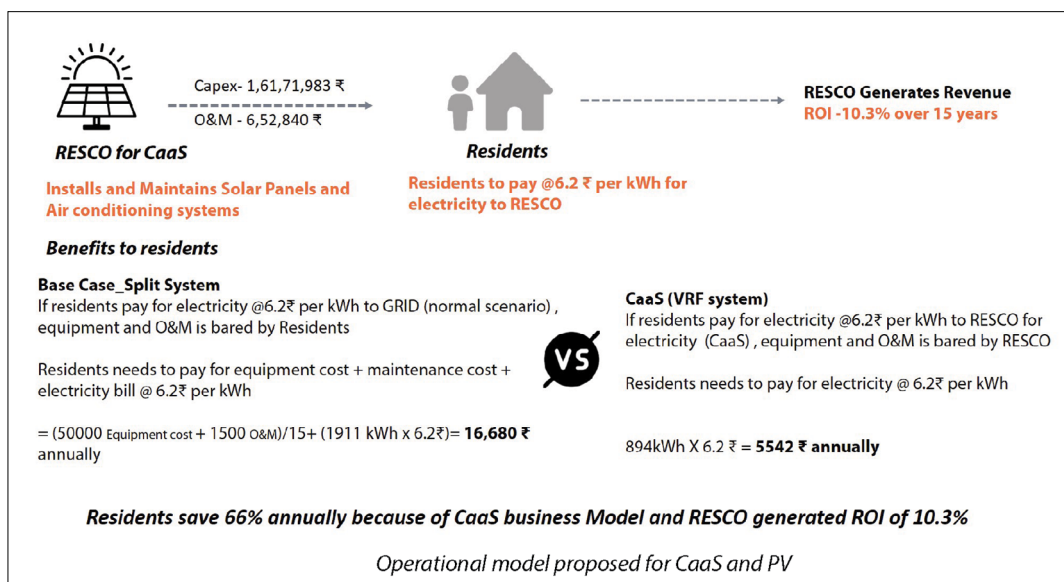
Innovations from the past

Cooling innovation by Team Synergy from Sir J.J. College of Architecture



In the 2022-23 Challenge team Synergy from Sir J.J. College of Architecture worked on a housing project design for Mahindra Lifespaces. They integrated Coolant KINETIC, a movable external shading and insulation device made from terracotta tubes. Inspired by nature, this solution can create a temperature drop of 3°C to 12°C depending on the humidity. Used on the facade, these devices also provide ample fresh air to the occupants.

Cooling-as-a-Service (CaaS) model by Team 0:0:0 from CEPT University



In the 2020-21 Challenge team 0:0:0 from CEPT University used the Variable Refrigerant Flow (VRF) system and scaled it up to develop a Cooling-as-a-Service (CaaS) model.

The CaaS model is a shared air-conditioning system with a single outdoor unit used by 6 indoor units in 6 residences in their Multi-Family Housing Building in Ahmedabad. The system works on a partnership basis where an agency installs the VRF system, and the occupants share the expenses by paying a monthly rent/charge based on usage.

This reduces the energy consumption, while making thermal comfort affordable to all. The CaaS model can also be repeated and scaled up in buildings with a higher occupancy and increased cooling demand, without guzzling energy.

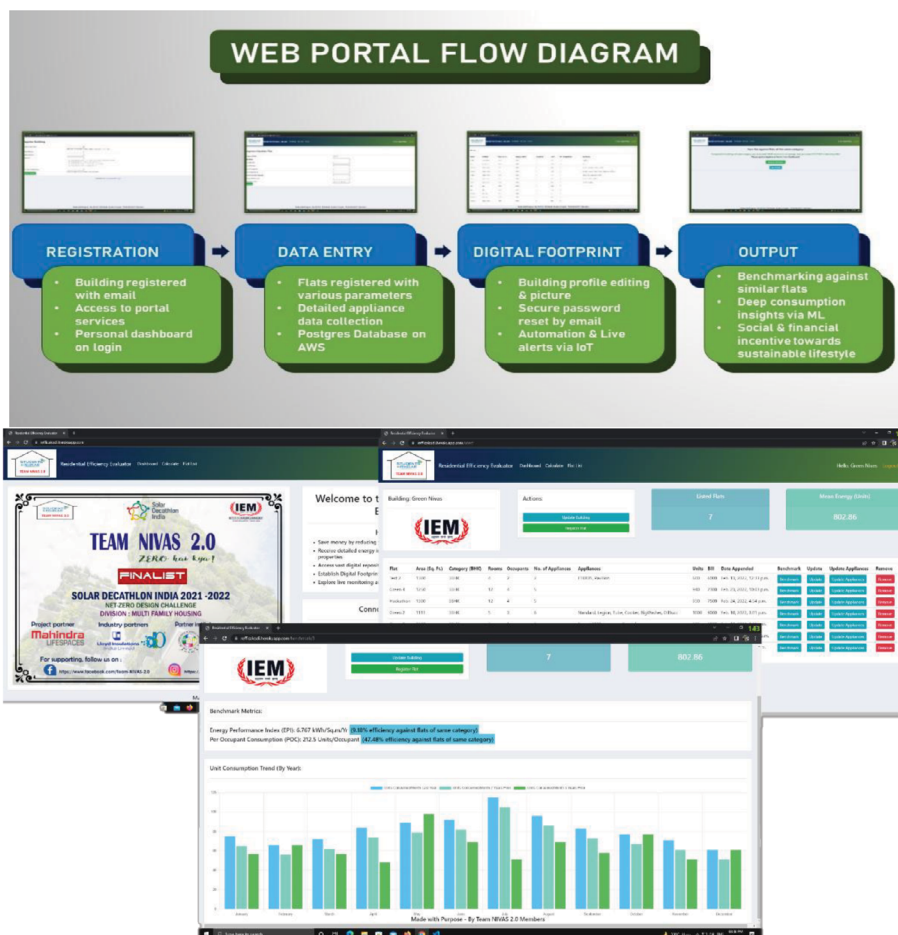
Earthquake safety innovation by Team Green Collars led by RV College of Architecture

In the 2022-23 Challenge team Green Collars led by RV College of Architecture designed a net-zero school project and innovated earthquake-resistant furniture. Named SAFETY PRISM and made from low-carbon bamboo, the furniture is designed to protect the students in the school from falling objects during an earthquake. It offers them immediate protection by transforming into a triangle shaped shield. This innovation is scalable and has the potential to be deployed in educational buildings across all earthquake prone areas.



Residential Energy Evaluator by Team Nivas 2.0 from IEM Kolkata, Ashoka School of Planning and Architecture, JNTU, Hyderabad, NIT Raipur, and Goa College of Architecture

In the 2020-21 Challenge team Nivas 2.0 from IEM Kolkata, Ashoka School of Planning and Architecture, JNTU, Hyderabad, NIT Raipur, and Goa College of Architecture proposed a Residential Energy Evaluator. The Evaluator uses a web portal as the interface to a digital database of residential buildings, their appliances, and energy consumption metrics, grouped by area. Users can register their buildings on the portal and feed their data manually, to evaluate their energy performance against similar buildings. The IoT – enabled smart meters in the building make this process automatic and give periodic alerts based on real-time data. The team suggested that the sensor integration can make automatic appliance control possible and that the data can later be analysed by a machine learning model. The model can then provide insights into inefficiency patterns in equipment and help formulate suggestions to improve efficiency.



Web portal flow diagram and web portal screenshots

In 2014 for Solar Decathlon Europe, Team Shunya from IIT Bombay collaborated with their industry partner Pluss Polymers to develop a solar hot-water system that integrated phase change material (PCM). While the hot water requirement in a house is for 40°-50° C, a solar hot water system typically can heat water up to 60°-70° C. This excess heat is stored in the PCM and can be used later when adequate solar energy is not available, or to preheat the water. This approach can eliminate the backup electrical resistance coil that is often installed in solar hot water tanks, further reducing electrical consumption.



Organisers*



GOI Support



Knowledge Partner†



Programme Support#



Affiliates*



* The roles and responsibilities of AEEE and IIHS are separate and distinct, with independent budgets, financial resources and execution.

† AEEE and COA have signed a Memorandum of Understanding for knowledge collaboration on net-zero buildings in India.

The American Council for an Energy Efficiency Economy (ACEEE) has funded AEEE for activities relating to SDI.

□ ISHRAE (India) and IEEE SA (India) are acting as outreach partners to SDI. Solemma provides free software licenses to all student participants and facultymentors for the SDI competition. There is no financial implication. The respective teams at their own risk and responsibility, may enter into relevant agreement(s) with Solemma for use of the Solemma software. Teams are however free to use any dynamic simulation modelling software of their choice.

Climate Launch Pad India to provide incubation to finalist team(s) of SDI.

Contact

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