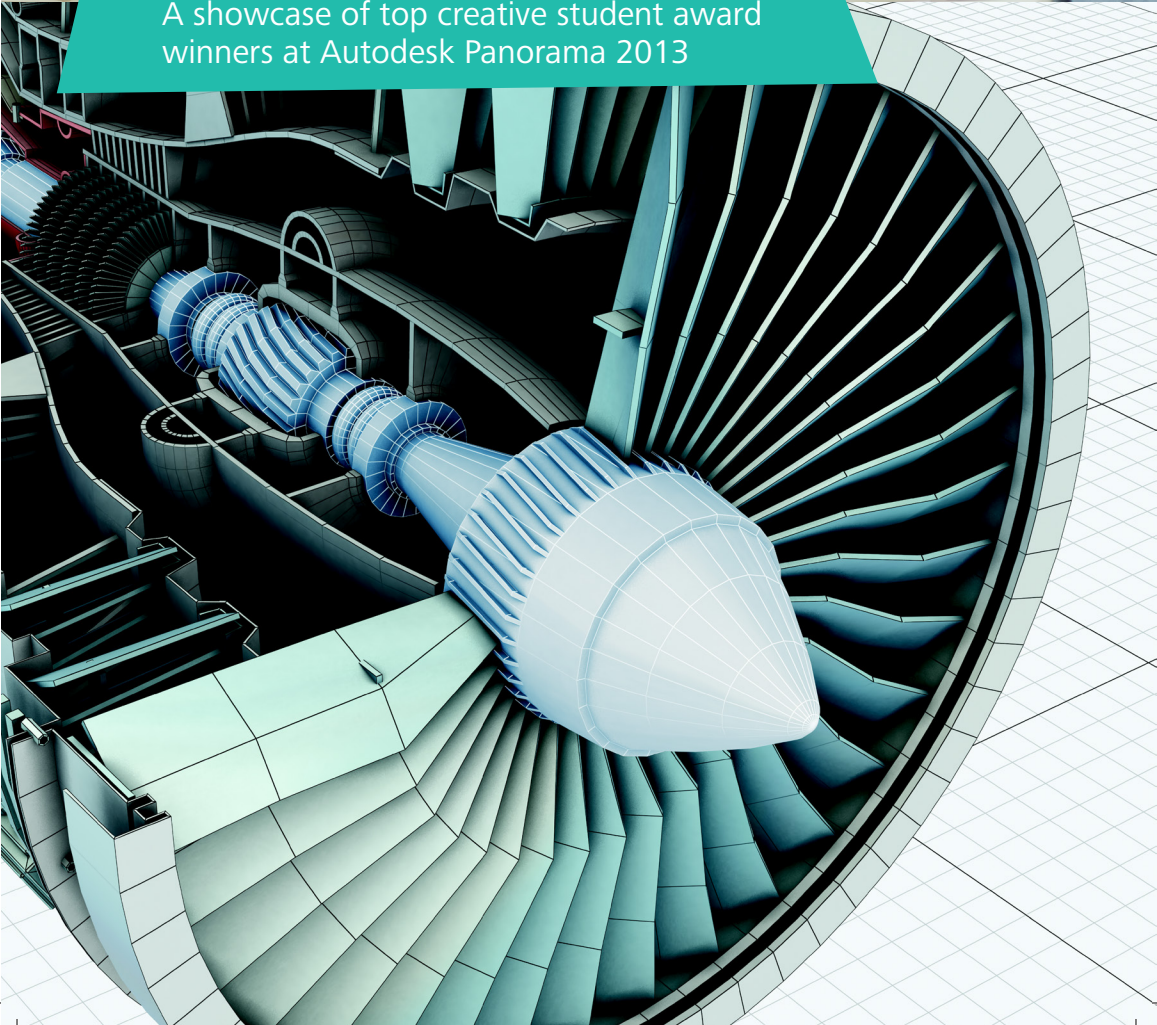




Shaping the future

A showcase of top creative student award winners at Autodesk Panorama 2013



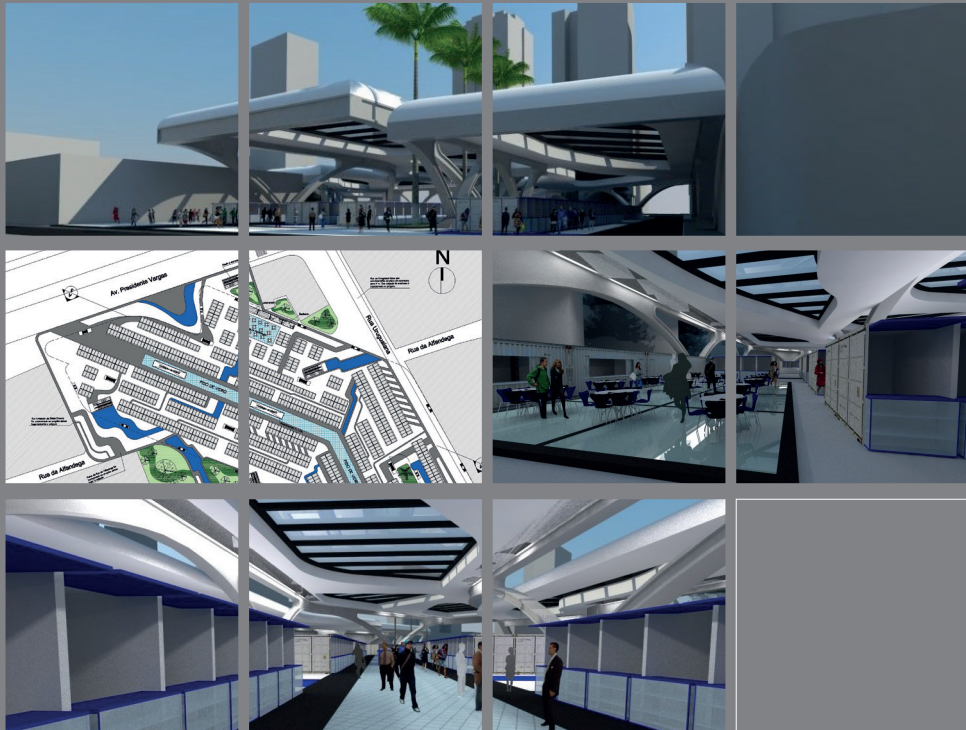
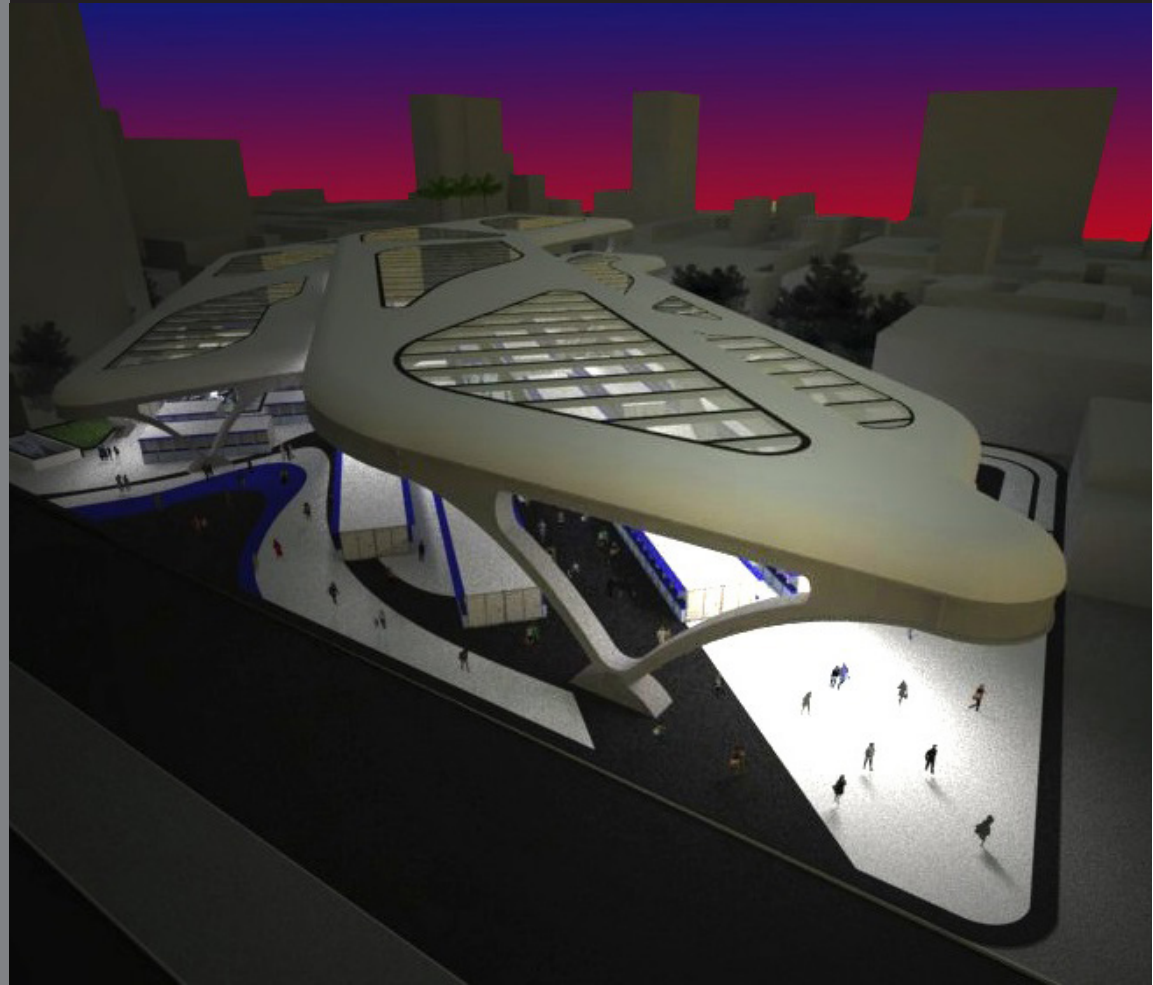
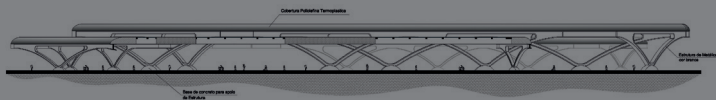
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This eBook features a showcase of creative works by aspiring student designers who took part and emerged as grand winners from national competitions across the emerging markets. Their outstanding performance brought them to the annual event—Autodesk Panorama 2013, a platform that provides them with a unique learning opportunity to network and share their experiences with other students, as well as build their technological knowledge and skills under the guidance of academic experts and top professionals from across the respective industries.



With the renewal of the central area of the city in mind, in the wake of major events that Rio de Janeiro has been expected to host, generating opportunity and growth for the city's development represent the main objectives of this project. With a main focus on sustainability; the project adopts recycled steel structure, recycled tire rubber flooring, solar control glass that can absorb 80% of heat and 99% of UV rays. The sales booths are made of repurposed shipping containers and can be adapted.

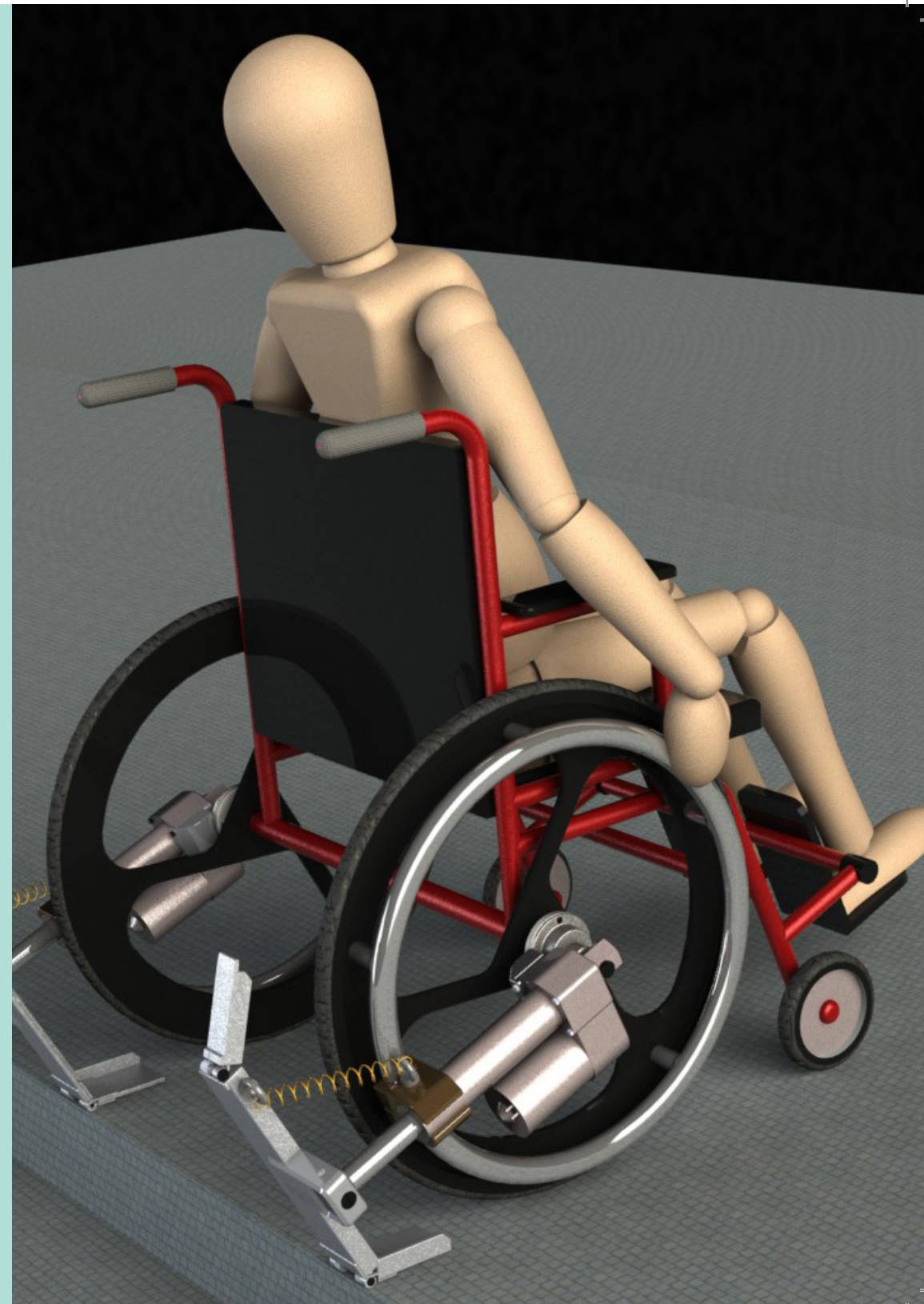
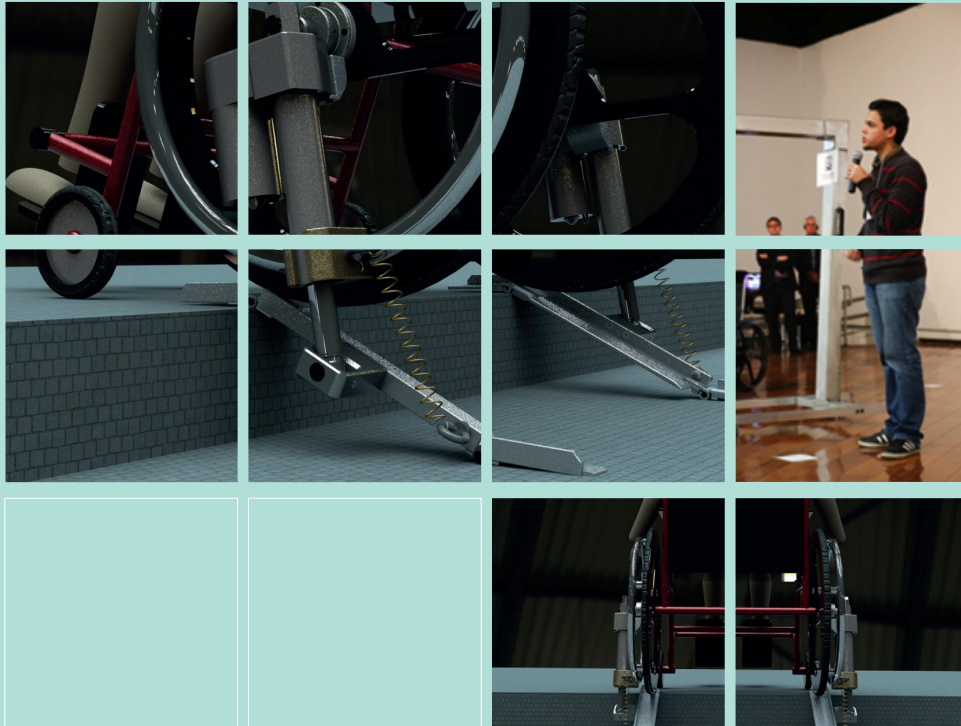


Manufacturing

Brazil

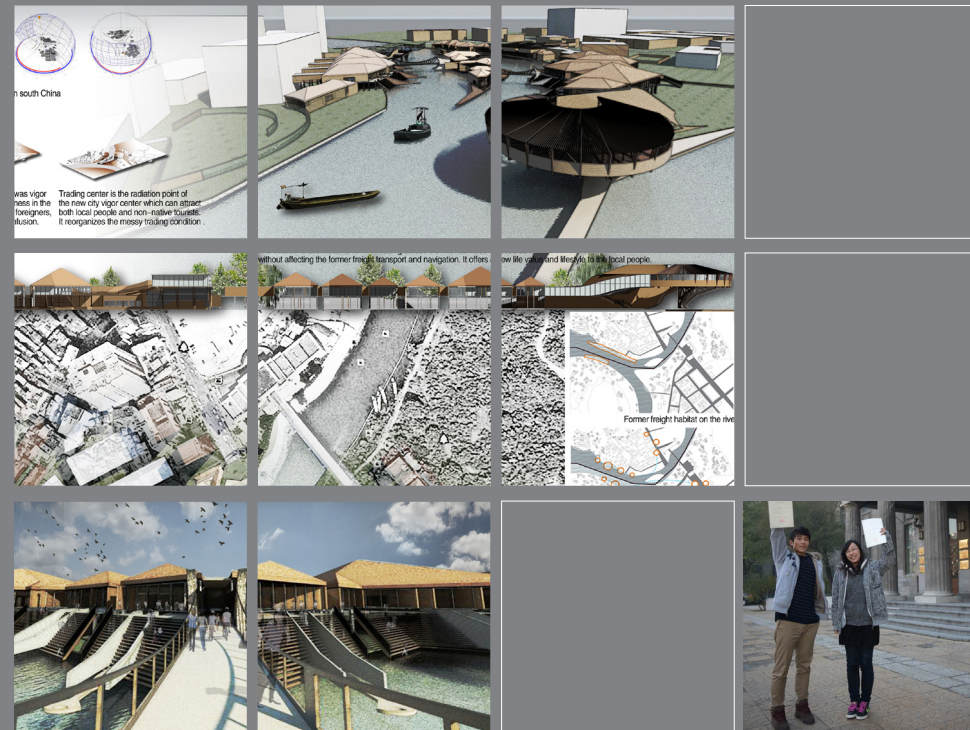
Country: **Brazil**
Institution: **Faculty of Technology of São Paulo**
Members: **Carlos Menezes, Flavio Junior and Giovanni Ferreira**
Project Title: **For A More Accessible World**

This project seeks to address a major problem that exists in many Brazilian cities; namely, the lack of access on sidewalks. With future events due to take place within the country in mind, including Paralympic Games, this project focuses on assisting wheelchair users in commuting. By means of a mechanical device that can be attached to any type of wheelchair, the enabled chairs may then go up sidewalks without the need for ramps. This device is also dockable, and there is currently no other such practical device that works this way in the market.



China

The project involves the redesign of a boundary bazaar into a modern streamlined market that retains common cultural and trading habits while embracing differences and variety in trading. This design has been developed with the objective of utilizing the building to serve as a cultural bridge between two countries.

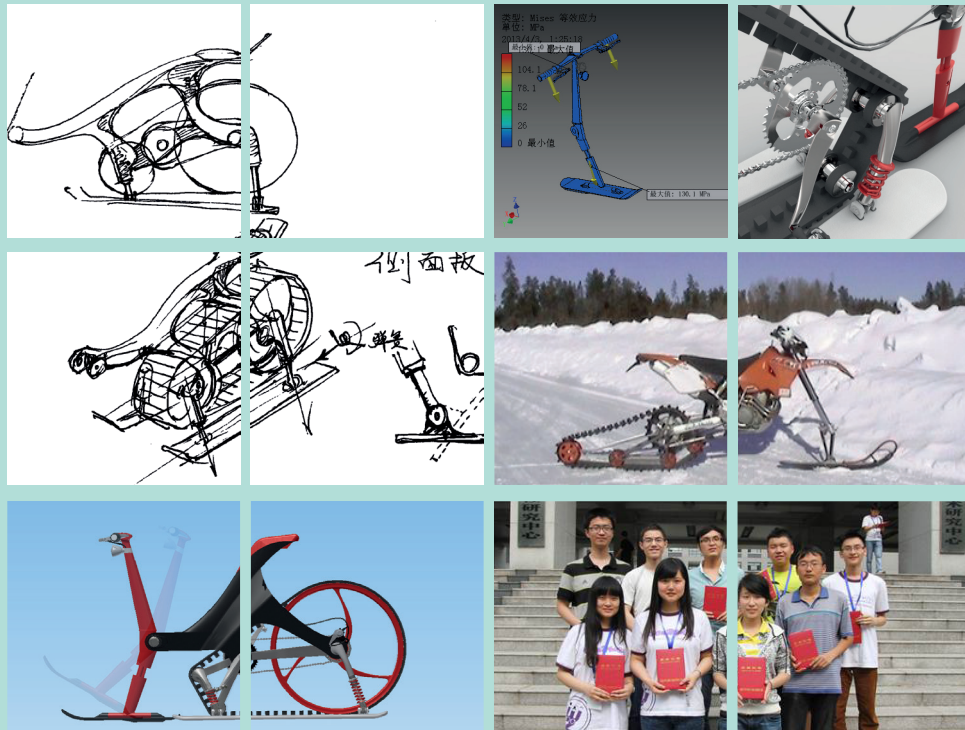


Manufacturing

China

Country: **China**
Institution: **Xi'an Jiaotong University**
Members: **Xu Mu Xun, Wu Tong Hui and Bai Jia Xi**
Project Title: **Snow Bike**

The Snow Bike is a new type of bicycle which serves both riding and skiing functions. Every part of the Snow Bike was created and assembled using Autodesk® products. The Snow Bike can provide a unique sporting experience for cyclists and skiers alike, and surpass limitations of existing products in the market.



Solar Decathlon

China

Country: **China**
Institution: **South China University of Technology**
Team Leads: **Cao Zulve, Zhang Hanyang, Li Bo, Su Pengcheng and Peng Fufa**
Project Title: **E-Concave**

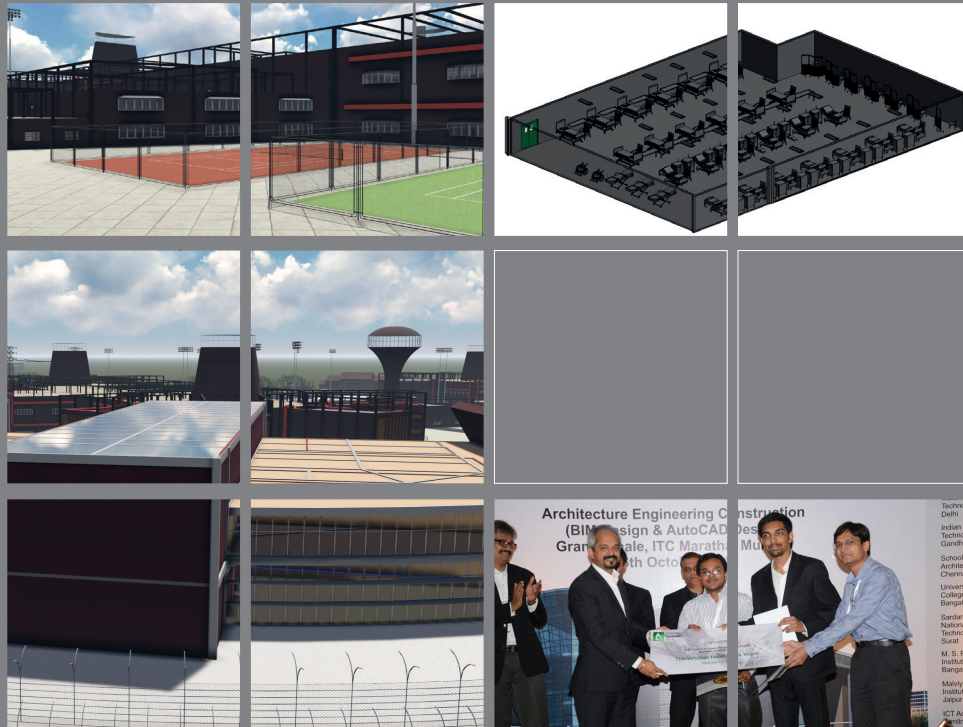
As the urbanization in China leaps to a new stage, cities are facing increasing problems. Industrialization exceeds urbanization, and people crave the conveniences brought about by the developments of our era and great advances in science. Led by crucial issues, including energy resources, land use, environmental concerns, and urban design, this project encompasses the creation of buildings that are high-tech, economical, and adaptable. In addition, building design and construction adapts to the local geology, climate, and environment, and uses local materials that have various regional advantages.



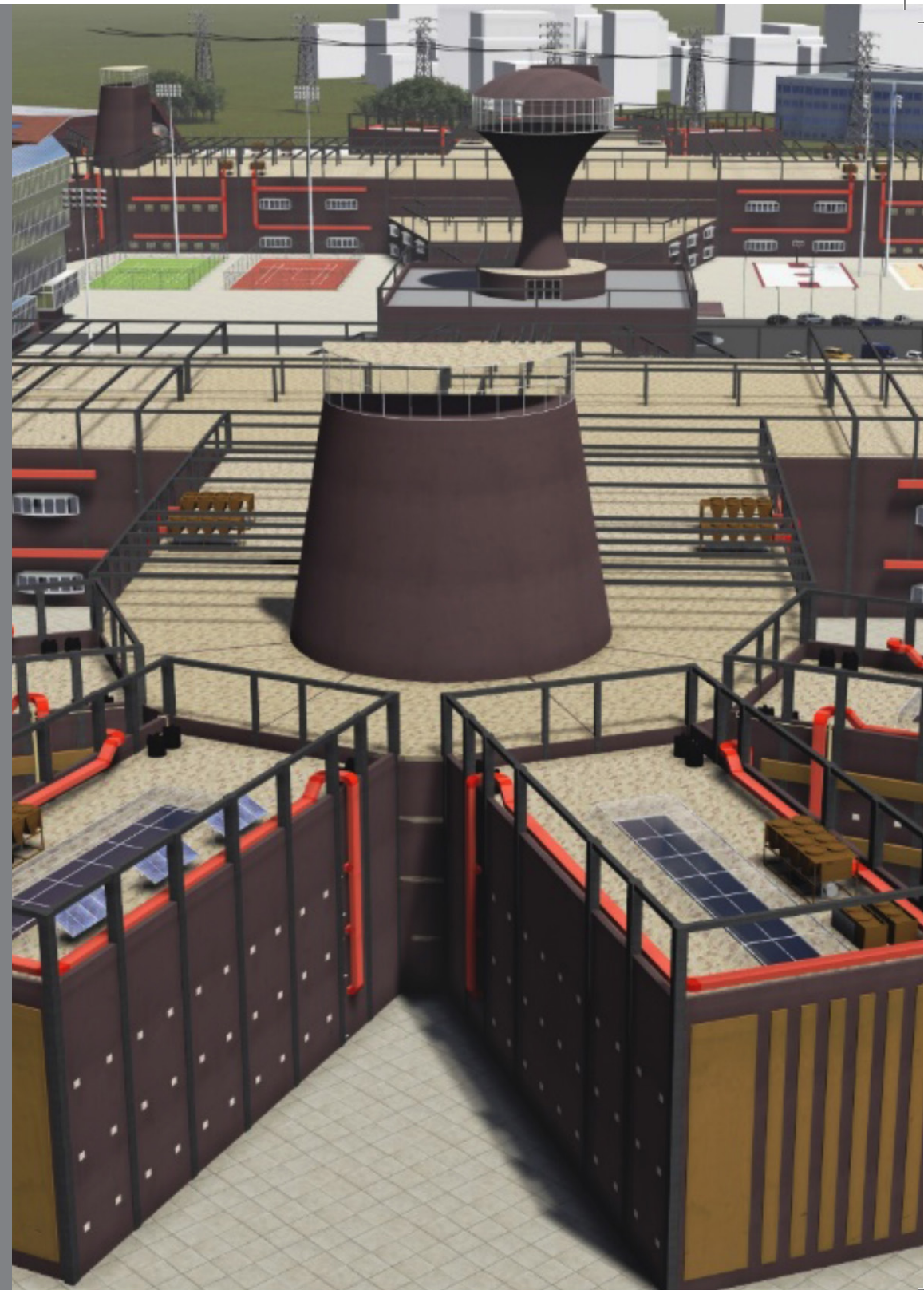
India

Country: **India**
 Institution: **Birla Institute of Technology & Science, Pilani**
 Members: **Dr. Amit Goel, Anvit Kumar Mittal and Viraj Voditel**
 Project Title: **Indian Central Correctional Institution (ICCI), New Delhi**

The design showcases a state-of-the-art prison facility, which stems from a vision of how future prisons in India should be built. Designated to be located in a suburb 20 km off New Delhi's urban sprawl, ICCI consists of a central administrative building block, two large penitentiaries, a library block with computer rooms and classrooms, a sports complex and a workshop zone. With a prison as the central design theme, a wide scope of building aspects ranging from residential to institutional were planned and achieved with the help of BIM. Almost all possible design facets have been considered with the help of Autodesk® Revit® software. The prison cells and the building have been planned in a "radial" manner; this ensures that prisoners have to pass through the main admin building in order to get out in the open. The architecture boldly showcases structural elements like beams and columns, creating a feeling of architectural openness. A modern look for the library, sports complex and workshop areas has also been incorporated with a focus on making the prison area as functional as possible.



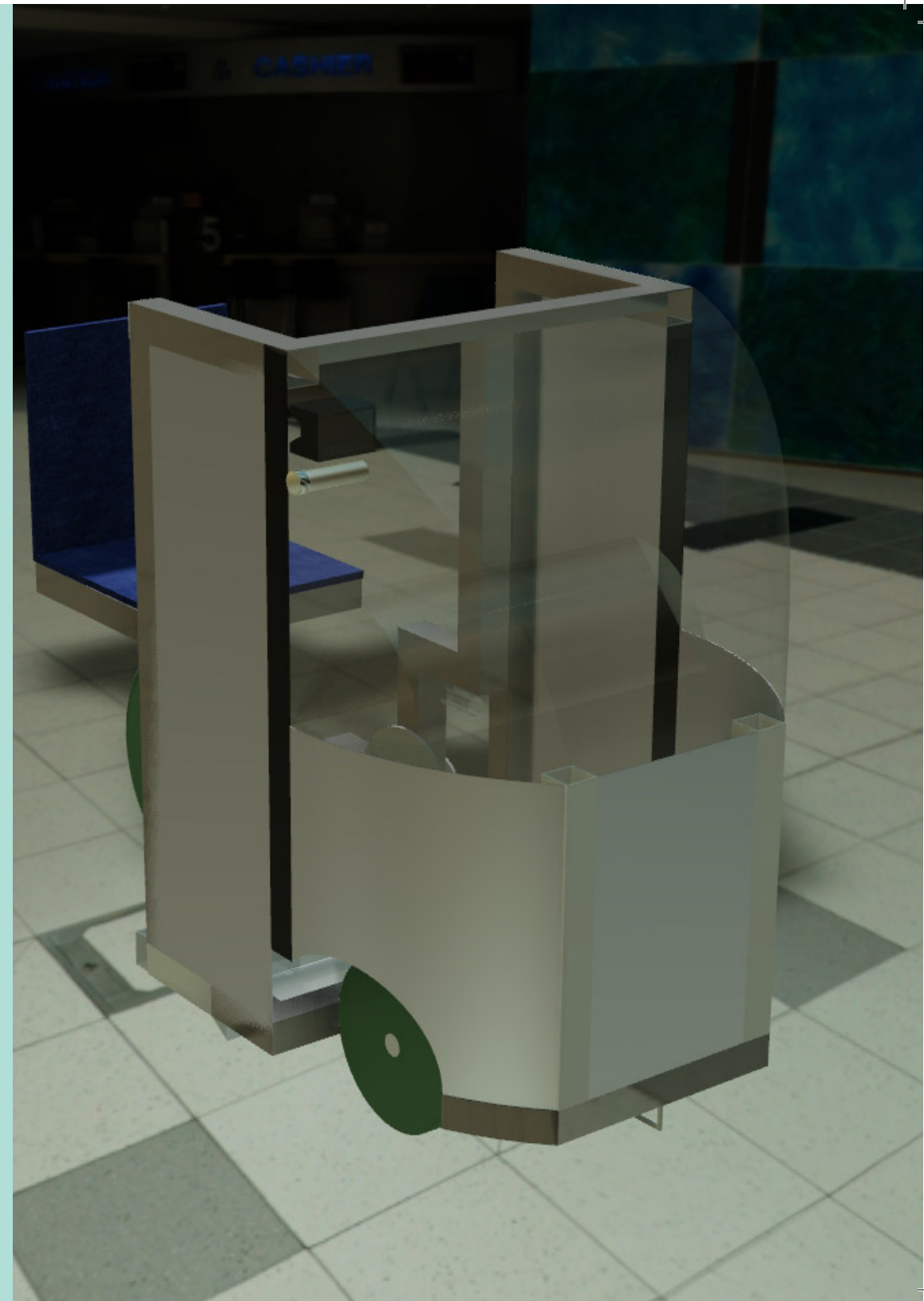
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 Bangalo
 Murthy
 Institute
 Jaipur
 ICT Acad
 Chennai



India

Country: **India**
 Institution: **M.S. Ramaiah Institute of Technology (MSRIT), Bangalore**
 Members: **Venkatesh Donekal, Lathavya Buddya and H.R. Vinay Kumar**
 Project Title: **Mechanical Floor Mopping Machine**

Novel in design, the mechanical floor mopping machine is designed to clean large surface areas, such as walkways, roads, factory floors, etc. It is simple in construction and mechanically operated. The device is free of electric motors and pumps and is portable, and works 10 times faster than manual cleaning. Like a simple bicycle mechanism, the machine works on the principle of power transmission through a chain, sprocket, and gear mechanism, a pair of bevel gears, and single mopping disc to clean the floor's surface. Minimal effort is required to pedal the shaft and therefore, the device can be operated easily. A simple steering mechanism enables the machine to be maneuvered in any direction. A tank of simple capacity is fitted to the frame from the front so that the detergent water from the tank is allowed to flow through a pipe in small quantities in order to wet the mop. Flow of water can be controlled by a valve. As the mop rotates, it cleans the floor. The excess dirty water is pushed into a tank by means of rubber pads rotating due to the power transmitted by the chain and sprocket arrangement.

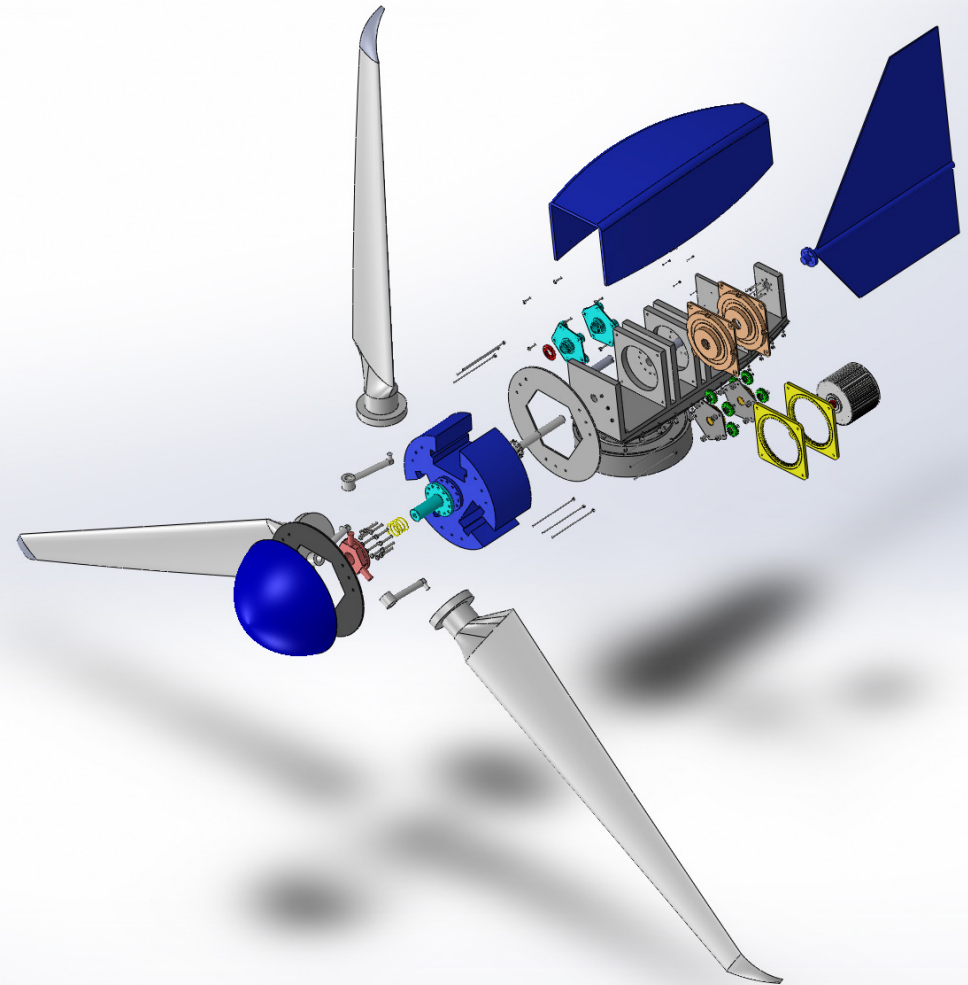
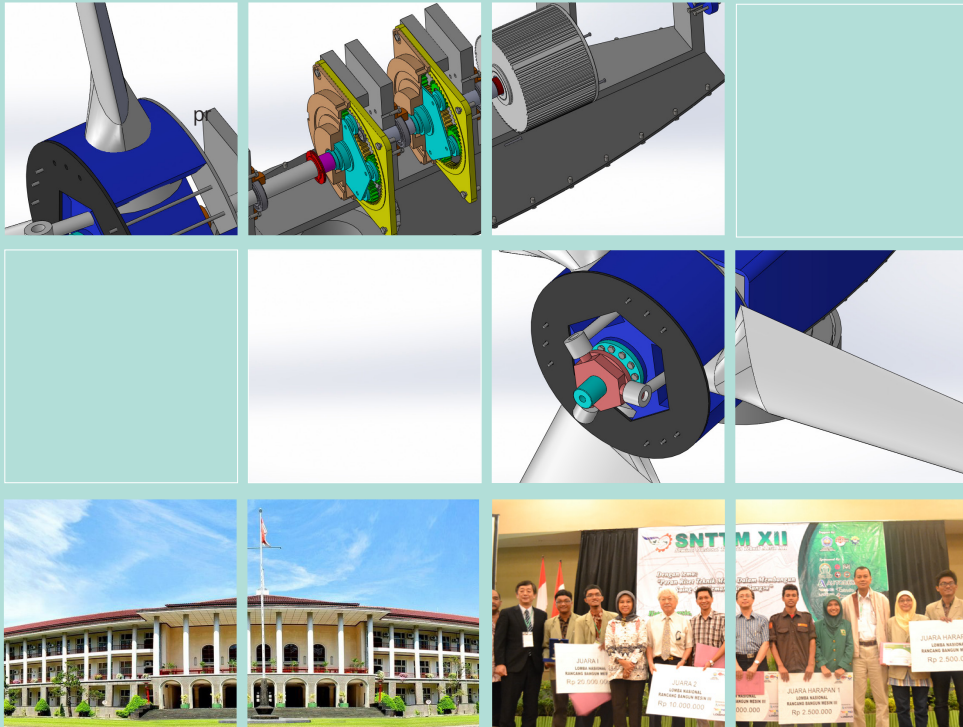


Manufacturing

Indonesia

Country: **Indonesia**
Institution: **University of Gadjah Mada (UGM)**
Members: **Akhsanto Anandito, Naufal Arif Prasetyo W., Hibran S. Maksum and Arfin Aruni Silma**
Project Title: **Wind Turbine 1 kW with Winglet & Pitch Control**

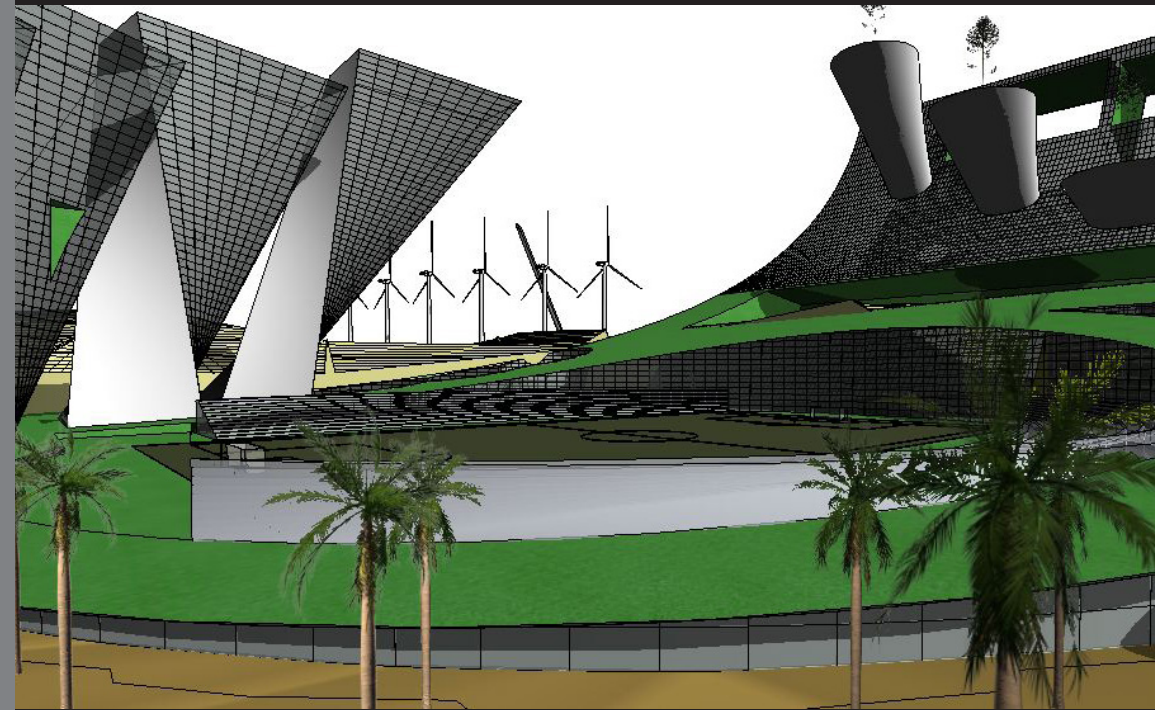
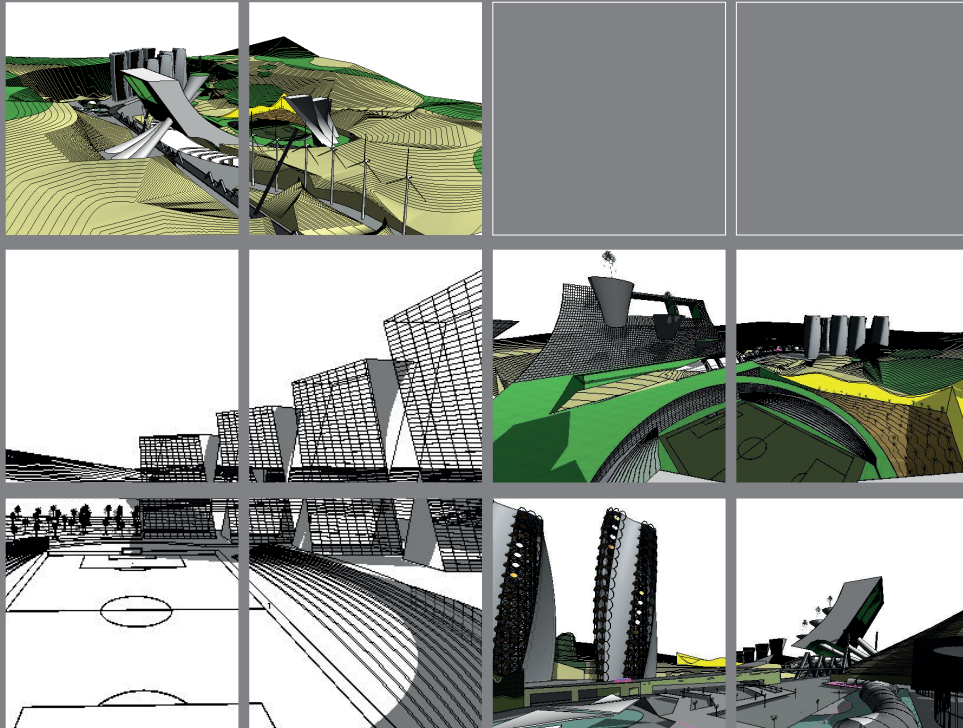
Wind Turbine's design was contrived from the frequent outbreak of sudden windstorms on the beaches of Indonesia. During windstorms, wind turbines that are not equipped with pitch control systems will encounter blade stalls. Wind Turbine's winglet and pitch control system has been specifically designed to generate maximum power as compared to other standard wind turbines. The winglet serves as a momentary enhancer on the blade, while the turbulence reducer on the wing tip ensures optimum performance. From blade to nacelle, the Wind Turbine design took six months of research to complete. The Wind Turbine design was finalized with CAD (computer aided design) and Autodesk® CFD Simulation software, which enabled simulation of the blades with varying angles of attack. The prototype was developed using Rapidprototype 3D printing on Fortus 250mc machine. STL file was printed and designed using Autodesk® Inventor® software, while the shaft was simulated with the help of Autodesk® Simulation Multiphysics software. Finishing was completed after rendering was performed using Autodesk® Showcase® software.



Mexico

Country: **Mexico**
Institution: **National Autonomous University of Mexico**
Members: **Dante Sebastian Ruiz Tamayo, David Ivan Calixto Chavez and Gustavo Cesar Tizoc Ubriaco Contreras**
Project Title: **Sustainable City in Chihuahua**

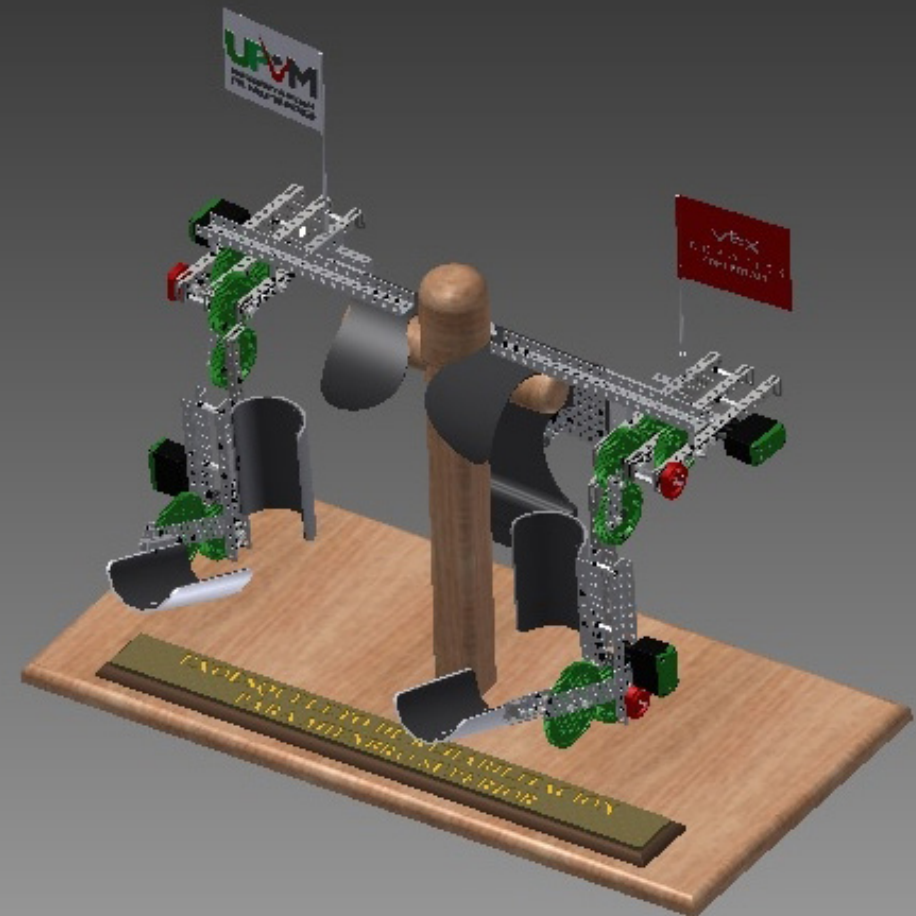
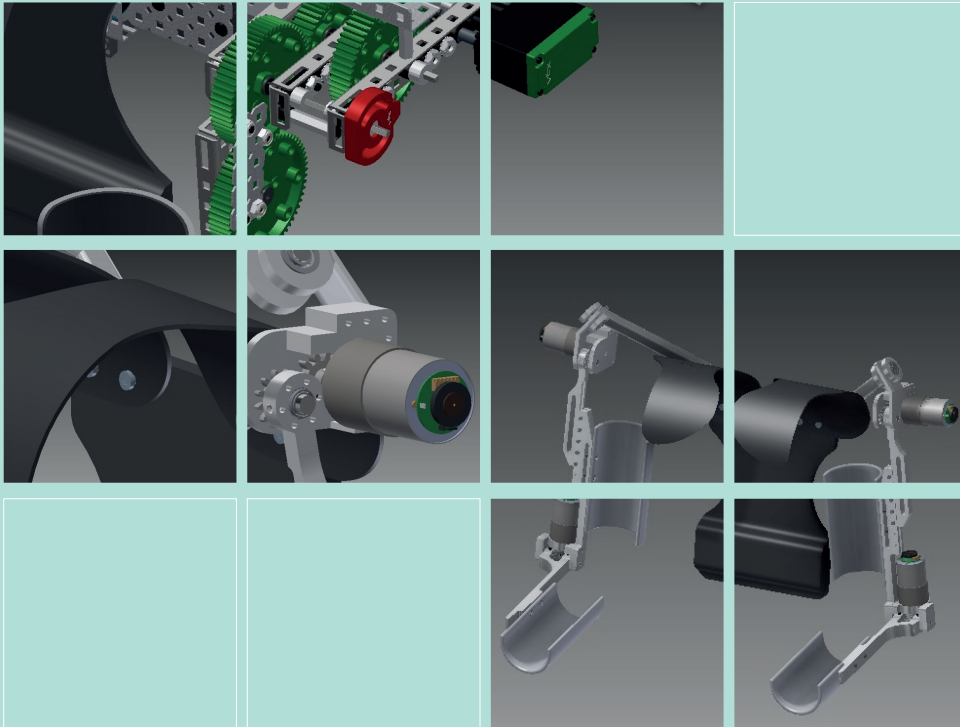
With a proposed urban theme, the objective of this project is to salvage natural resources without neglecting comfort, design, and every other element that makes up good architecture. Preserving natural resources is crucial as it helps present economic benefits, including self-sustainability with intelligent architecture, less labor spent on maintenance, and many more. This proposal incorporates three urban areas; housing, commerce and amenities, and it includes a multipurpose stadium.



Mexico

Country: **Mexico**
 Institution: **Universidad Politécnica del Valle de México**
 Members: **Alonso Alexander Castro Vicente, Noemei Garcia Martinez and Alejandro Miranda Cid**
 Project Title: **ExoArm**

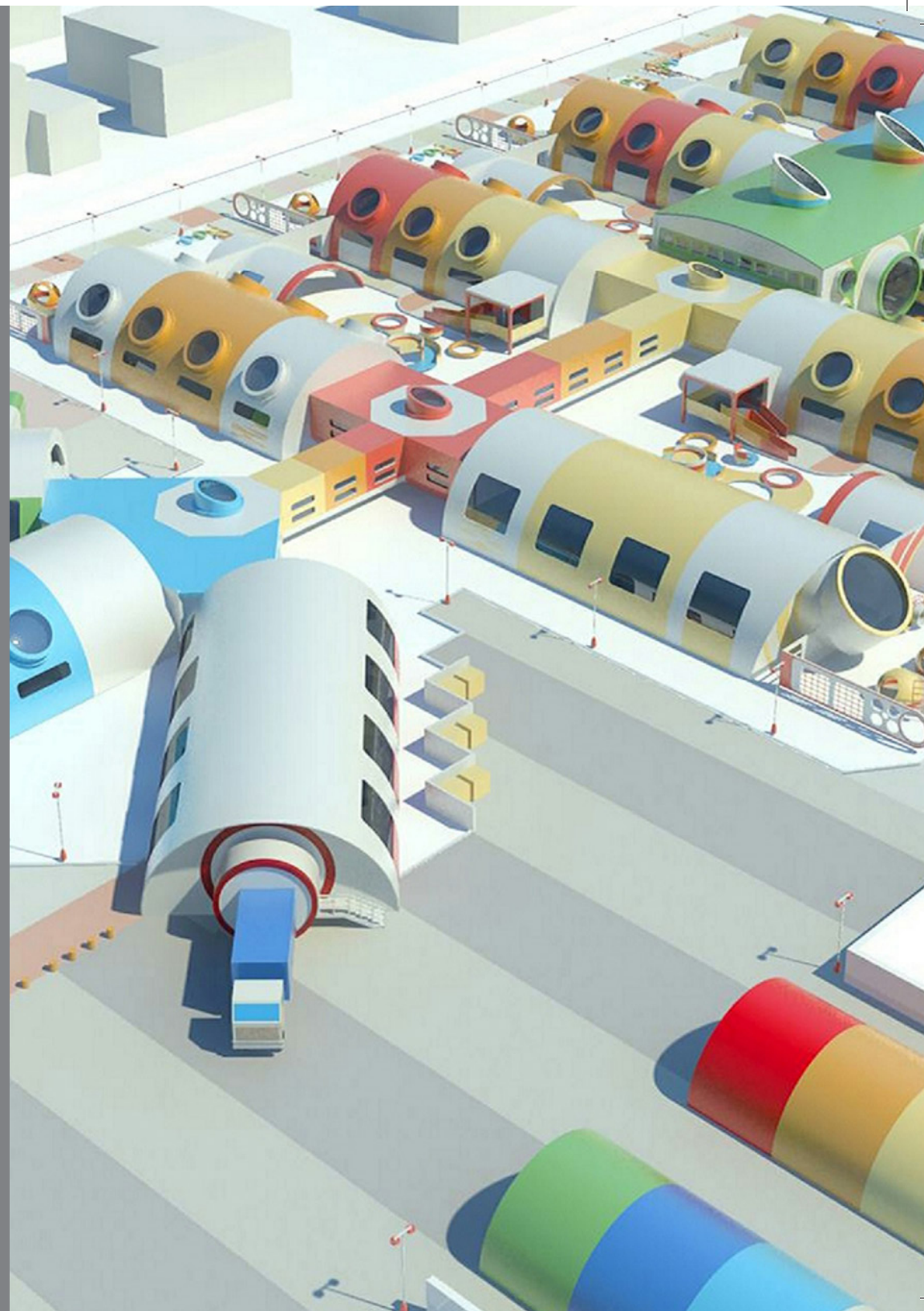
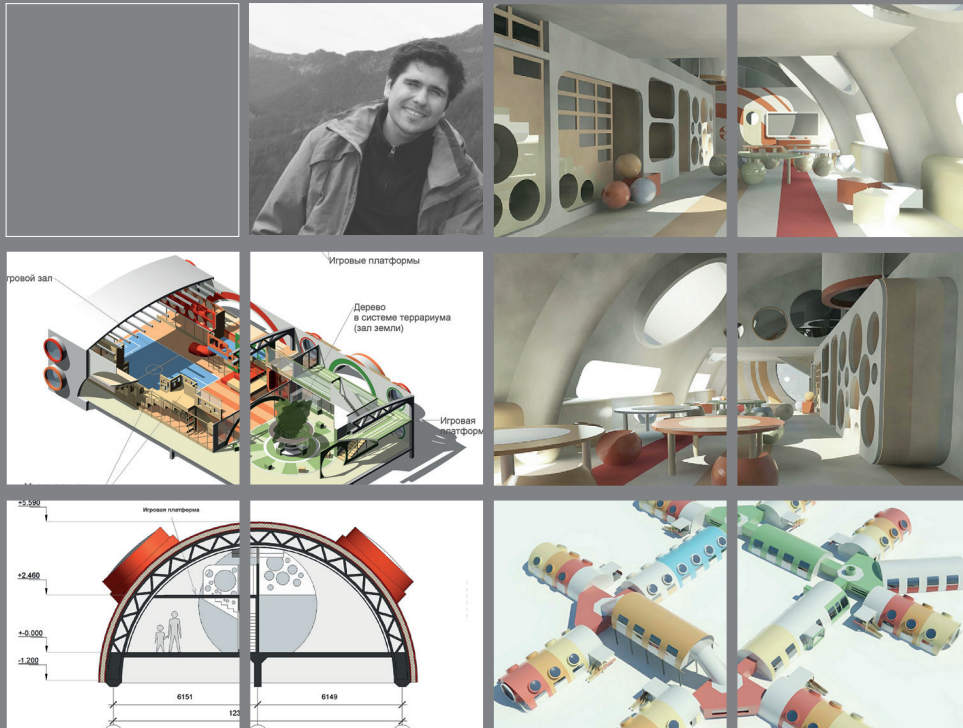
With the growth of medical and technological rehabilitation as a key focus in the country, particularly on Mainly Continuous Passive (MCP) devices that are widely used in medical rehabilitation centres, this project encompasses the development of robotic systems that can be anatomically suited to a human body to monitor body systems and speeds and allow for full rehabilitation by strengthening the affected body parts (e.g., elbow, knee, ankle, hip, etc). It also aims to reduce the repetitive work of a therapist in helping the patient regain mobility, and helps reduce recovery time by offering patients a wide range of personalized therapies and routines with accurate and safe movements.



Russia

Country: **Russia**
 Institution: **Tyumen State University of Architecture and Civil Engineering**
 Members: **Ekaterina Akhmetzianova, Dmitry Dudakov and Vladimir Suvorov**
 Project Title: **Children Garden For Polar Areas**

Modeled after an internal space station, this project encompasses the complete design of a modular children garden for polar areas. Modules are detailed subprojects, which include both the exterior and interior. Examples of the modules are: sports room, swimming pool, bedrooms, classrooms, corridors, etc. For any size of town in the polar area, the required children garden can be assembled, depending on particular requirements such as the number of children, landscape, and other requirements. The colors and materials used were chosen due to their low temperatures and the lack of sunshine during winter. The project was completed in Revit including all parametric families. The modular design and the whole approach are also extremely flexible, allowing the building of anything from a tiny children garden in a village to a huge complex for children.

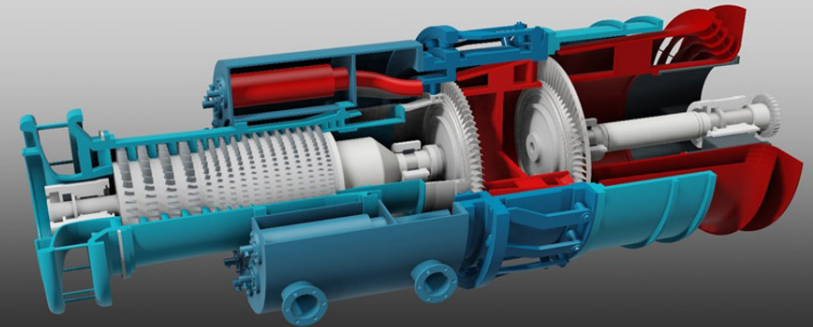
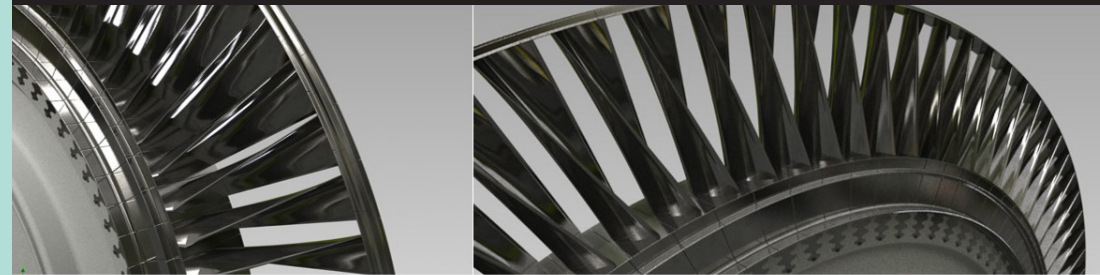
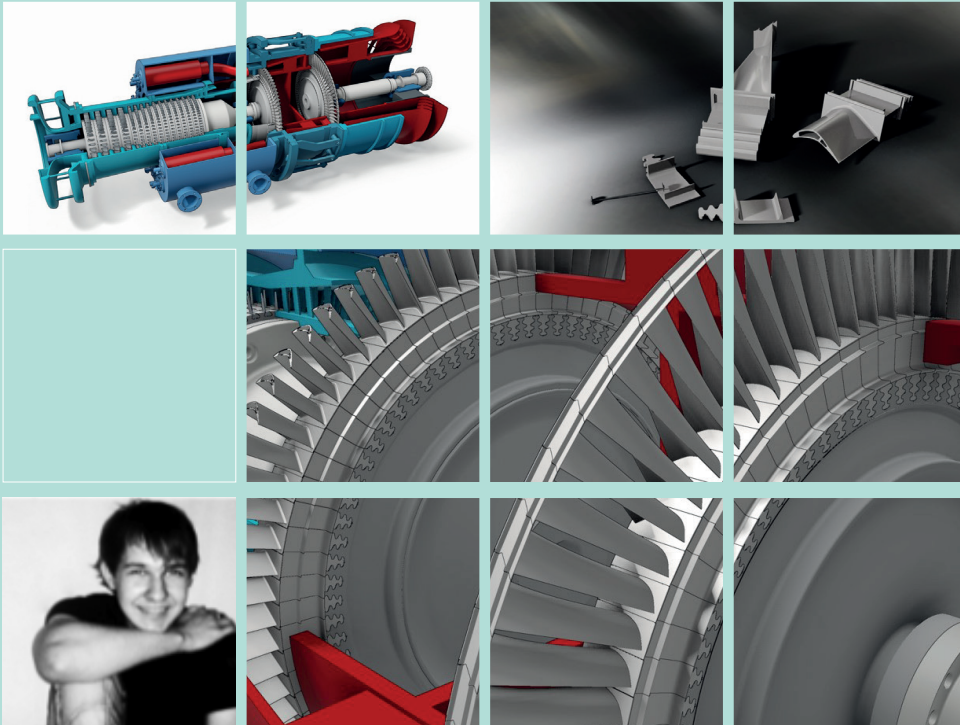


Manufacturing

Russia

Country: **Russia**
Institution: **Bryansk State Technical University**
Members: **Aleksandr Osipov and Evgenii Tulubenskii**
Project Title: **Turbine Simulation**

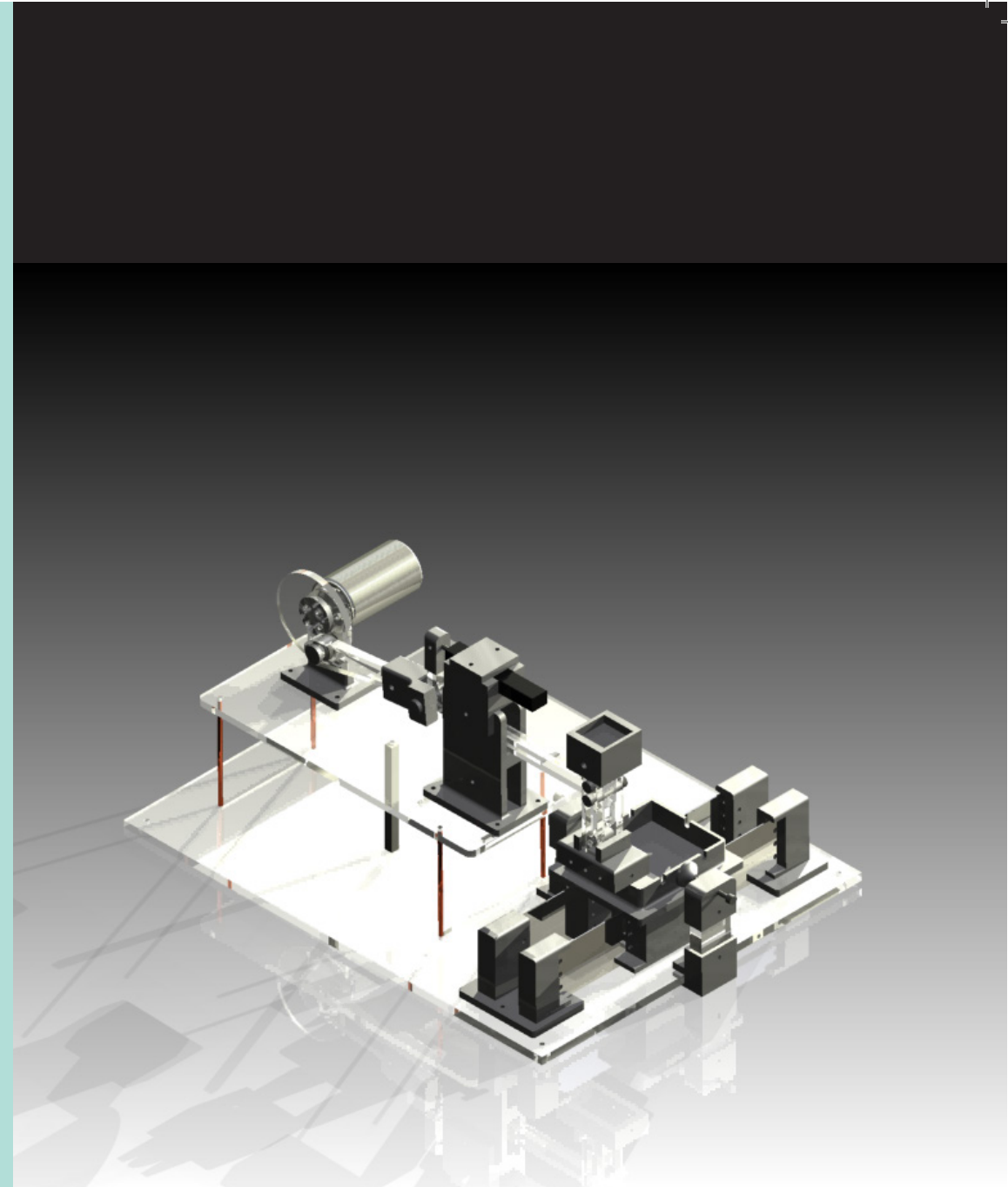
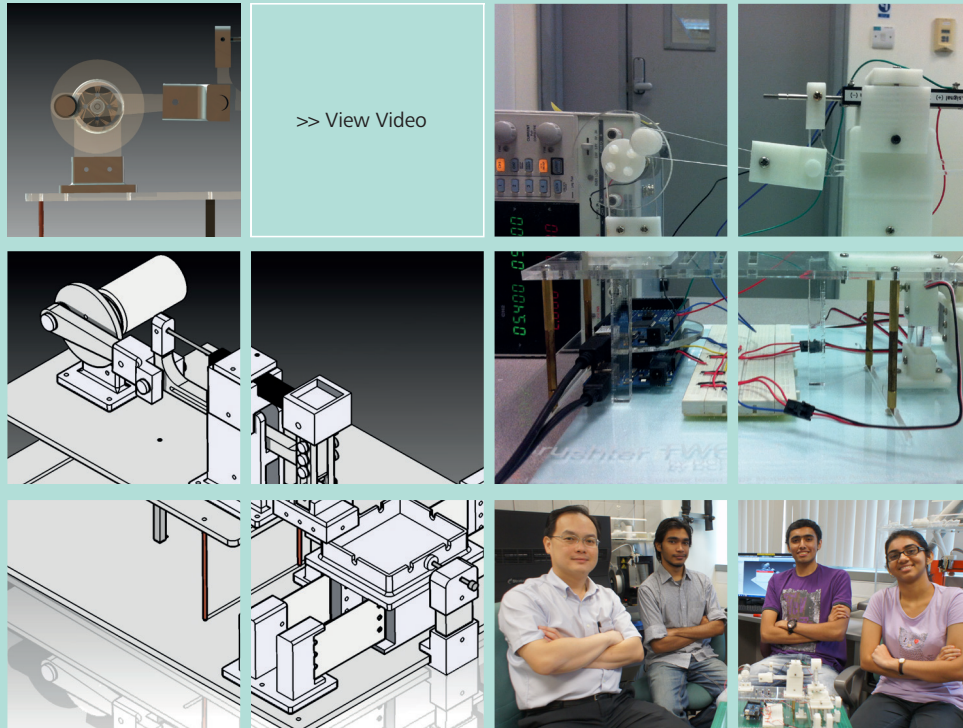
The first step of the project was to create a full assembly of the steam turbine from General Electric. This was completed using Autodesk® Inventor software and did not include any simulation. The design of turbine blades was optimized using Autodesk® Simulation and Simulation CFD software, including a full range of calculations and sustainable considerations. The surfaces were perforated to reduce mass and other inertial properties before complete simulation was done again to ensure an optimal design. Other aspects of the simulation include optimizing the turbine shaft, reducing mass and material use without affecting its reliability. As a result, a new proposed turbine design was finalized with a physical prototype printed using a 3D printer. The printed model has been primed to be tested in the lab as a part of the capstone project.



Singapore

Country: **Singapore**
 Institution: **National University of Singapore (Design-Centric Curriculum)**
 Members: **Choo Jian Huei and Mohit Shridhar**
 Project Title: **Toothbrush Tester**

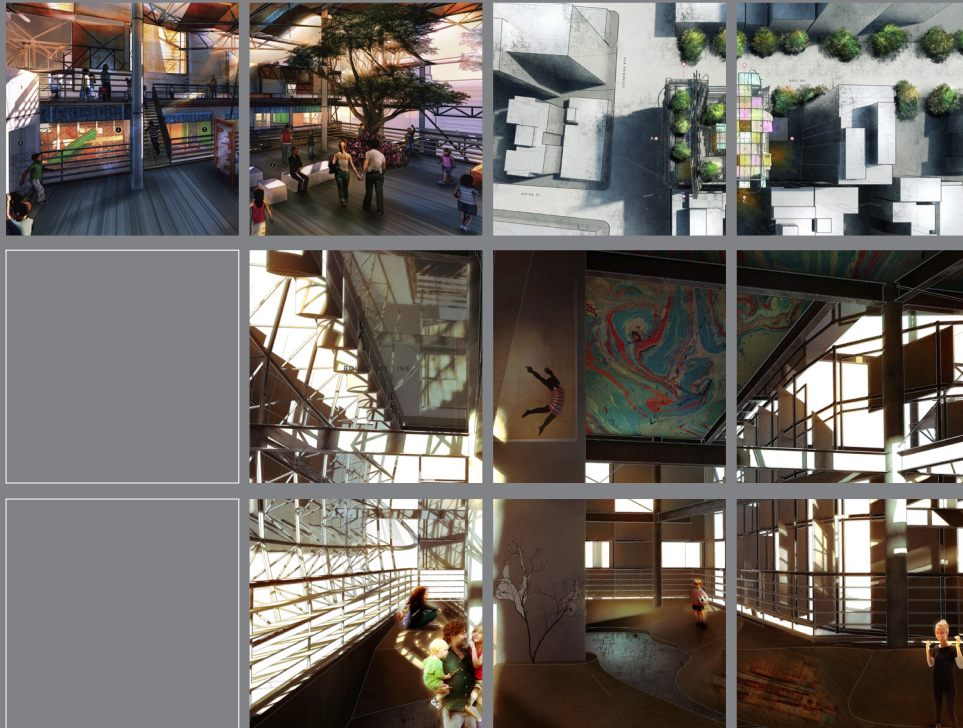
The project includes the design of a toothbrush testing machine that repeatedly simulates linear brush strokes to test the quality and endurance of the bristles. This invention is specifically designed to enable companies to automate the quality testing of toothbrushes rather than rely on human usage, making the process faster and more reproducible. All parts were created and assembled using Autodesk Inventor, the workings of the machine were simulated using animations (using Autodesk® Inventor Studio software), and rendered images and videos were created. 3D parts were fabricated via nontraditional manufacturing methods, namely 3D printing and laser cutting of acrylic sheets. This project took approximately seven weeks to conceptualize, prototype, build, and assemble.



South Africa

Country: **South Africa**
 Institution: **University of Johannesburg**
 Member: **Jaco Jonker**
 Project Title: **Multipurpose Child-Safe High-Rise Building**

Driven by a current situation of AIDS-orphaned children living on the streets of Johannesburg, this project sought to address this complex issue through the adapted use of a multipurpose child-safe high-rise building. The building includes an orphanage and a care centre, as well as an adoption agency to help reintegrate these children into qualified families. Using both high-tech and low-tech elements with a specific focus on energy efficiency, the building's interactive exoskeleton contains both hydrostatic cooling services and shading devices. It has been designed to allow for extra breathing space between its interior and exterior on a very small site (31 x 31m). The design also includes makeshift wind-catchment "sails" to allow prevailing winds to create negative and positive pressure zones around the building, which helps in passively cooling large areas of the building. The project was fully modeled, completed, and rendered in Revit environment.

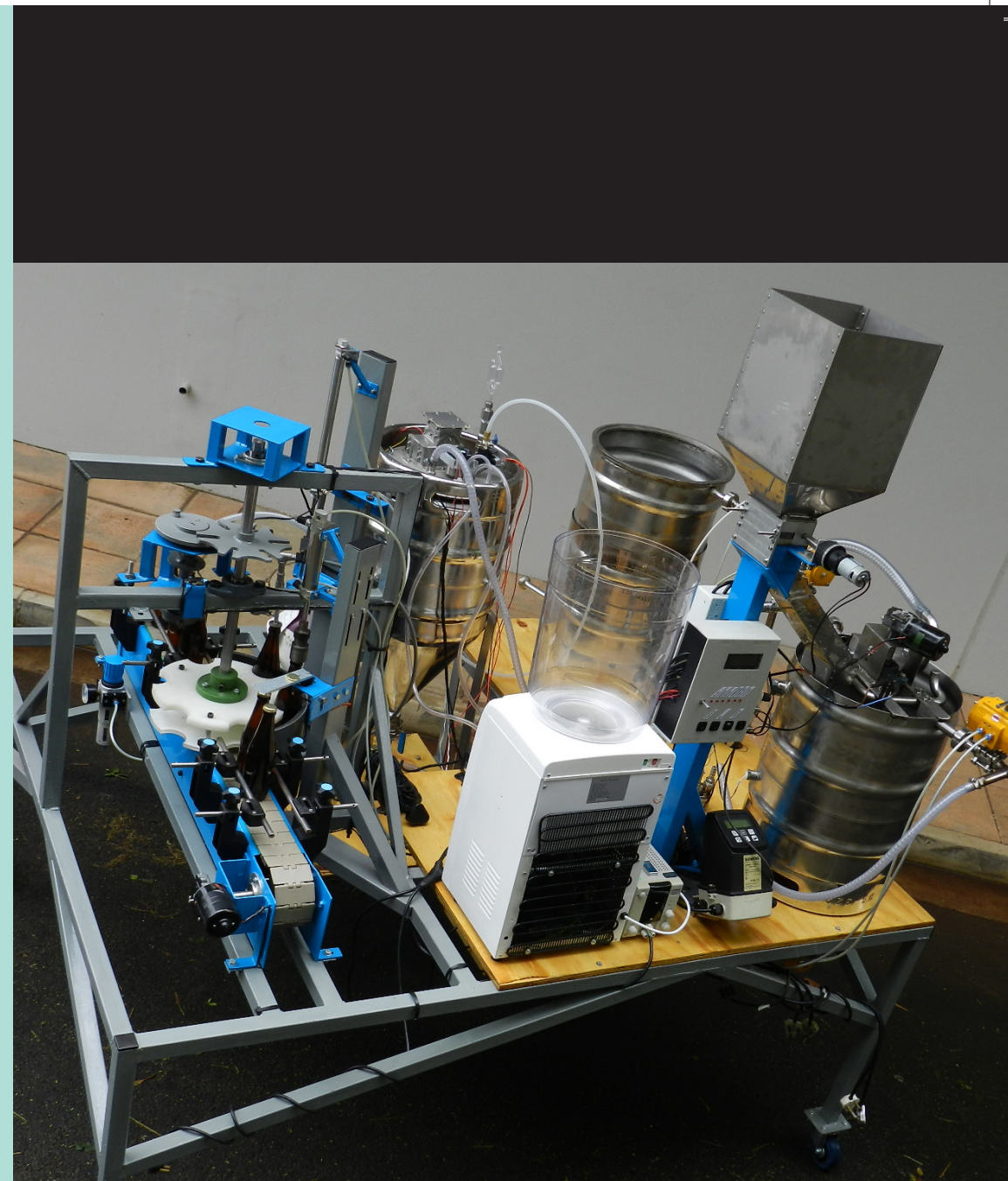
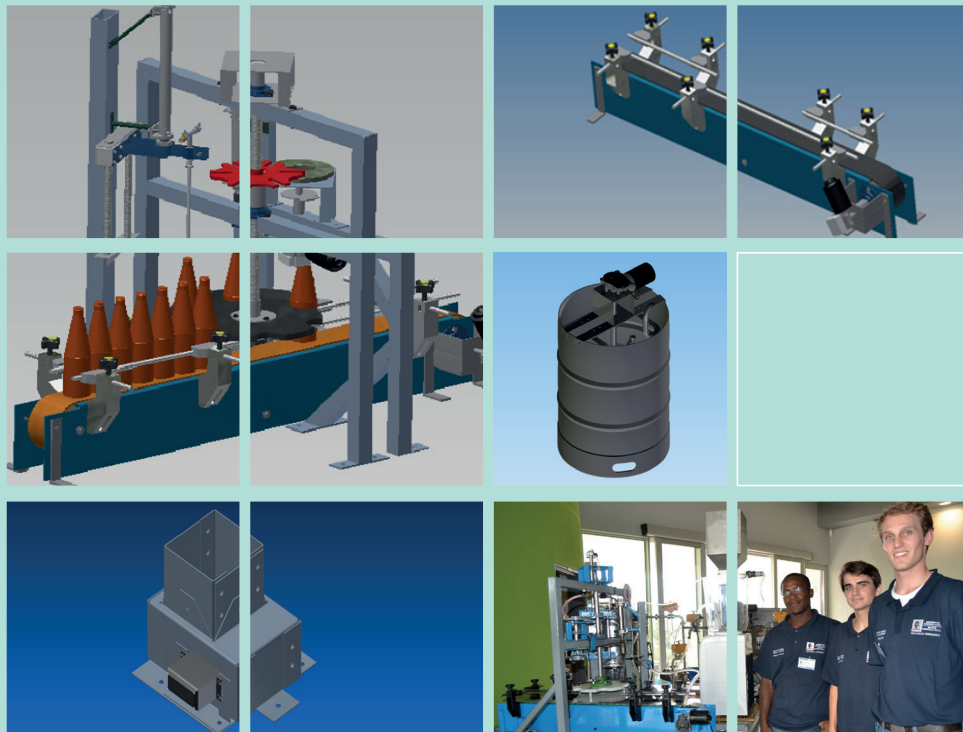


Manufacturing

South Africa

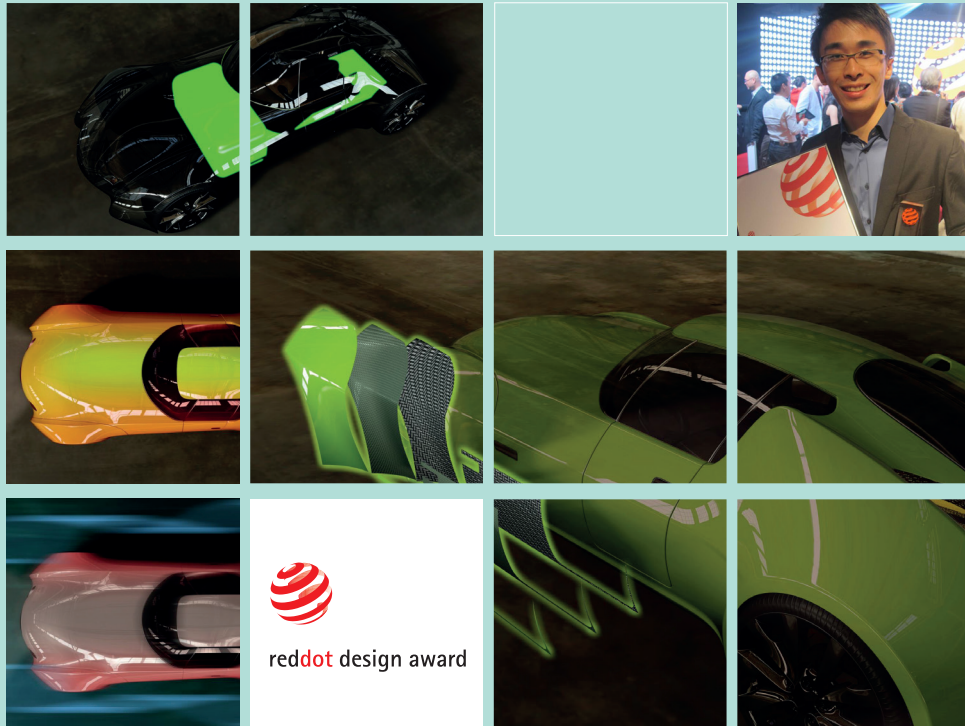
Country: **South Africa**
Institution: **University of KwaZulu Natal**
Members: **Johannes Angula, Ryan Dreyer, Andrew Illidge**
Project Title: **Semi-Automated Beer Production System**

This project includes the research, design, and construction of a semi-automated beer production system that produces 40-litre batches of lager draft beer. The complex production process includes: milling, mashing, filtering, boiling, fermenting, and packaging operations, amongst others. Apart from the production process, extensive research was done to identify the key constituents that affect beer quality, taste, and aroma. After the mechanical construction of the Semi-Automated Beer Production System was completed, all systems were tested and evaluated to ensure operational readiness. The project was completed with the help of Autodesk® Inventor software, which enabled validation of all design aspects with its simulation and analytical capabilities.



Taiwan

This project stems from the concept that from existing products, new ideas and innovation possibilities can be derived. Lifeless products can be given new life through this process and their meaningfulness can be elevated. The objective of this project is to turn a cold product into something brimming with life. Based on this idea, "Life-Fluidity" was developed. The use of innovative materials and technology adds a whole new layer of function. By converting the heat from the body and storing it for later use, life is given to something often overlooked. This new skin brings the automobile to life, giving it newfound liveliness and possibilities for the future. This design was made possible with the help of Autodesk tools such as Autodesk® Alias®, Inventor, and Autodesk® Flow Design software, which enabled the concept to be brought to life.

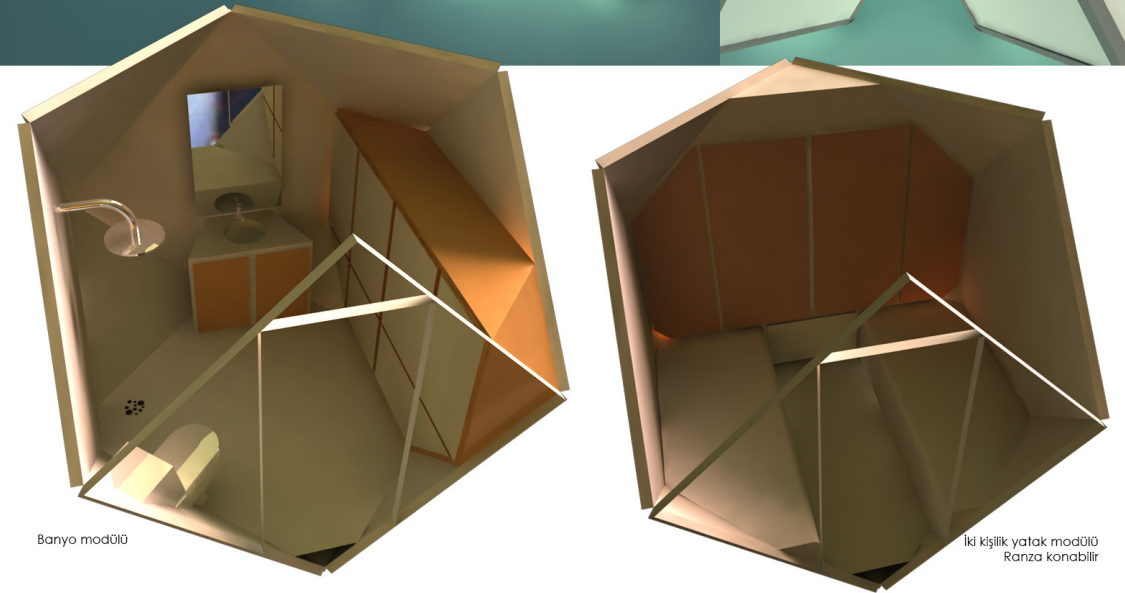
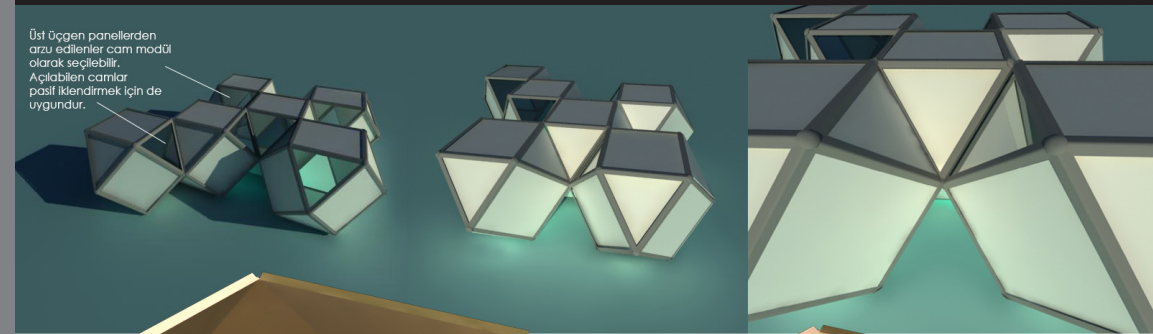
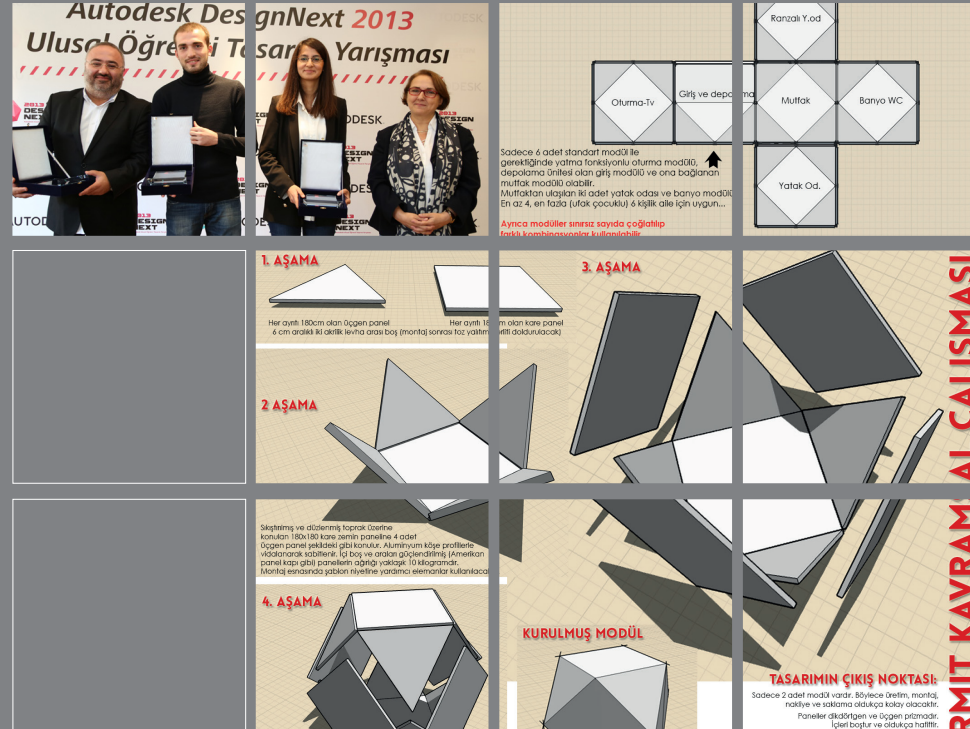


Winner of an international Red Dot Award: **Design Concept 2013**

Turkey

Country: **Turkey**
 Institution: **Zirve University, Gaziantep**
 Members: **Ahmet Turan Koksall, Tugce Saricicek and Yusuf Acikkoll**
 Project Title: **Modular Shelter Design for Natural Disaster Zones**

The objective of this project is to present a design of a temporary shelter to be used in natural disaster zones. Its main features are low-cost manufacturing, ease of transportation, assembly and storage, and its suitability for disassembly and restorage after use. Having a completely modular design, the shelter consists of acrylic fiber panels in two different forms: 180 x 180 cm square and 180 cm equilateral triangle. The production of these panels does not require any advanced technology, qualified staff or special equipment and they can be quickly made in a bathtub production plant near disaster zones. The only required resource is the raw material of acrylic fiber. The panels can be easily carried by two people and the aluminum profiles fixing the panels together can be connected by bare hands. The triangle panels on the top can be replaced with isolated windows, and by adjusting the orientation of the shelter according to the dominant wind, a natural ventilation and cooling can be provided. These units can provide shelter and storage areas for individuals and families of seven to eight people.



Vietnam

Country: **Vietnam**
 Institution: **Architecture University of Ho Chi Minh City**
 Members: **Linh Phan and Quyen Do**
 Project Title: **Vietnam Exhibition & Research Nature Center**

Based on a temporal concept, this center has been designed to cover a total area of 20 hectares in the heart of Ho Chi Minh City, serving as both an educational exhibition area and a high-tech nature research center. A Natural Historical Exhibitions Hall features “the past”; three bio-domes preserving Vietnam’s three contemporary environments (Southern, Northern and Middle Vietnam) represent “the present”; and a bio-tech research center comprising laboratories, a gene bank and other public facilities (conference hall, classrooms, library, etc) manifests “the future”. The essence of the idea stems from two current issues—the lack of attention given to the environment of Vietnamese people, and the alarming situation of nature in Vietnam. Thus, the building strives to provide not only an attractive tourist spot, but also interesting learning spaces and unique facilities for preserving Vietnam’s natural environment.





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