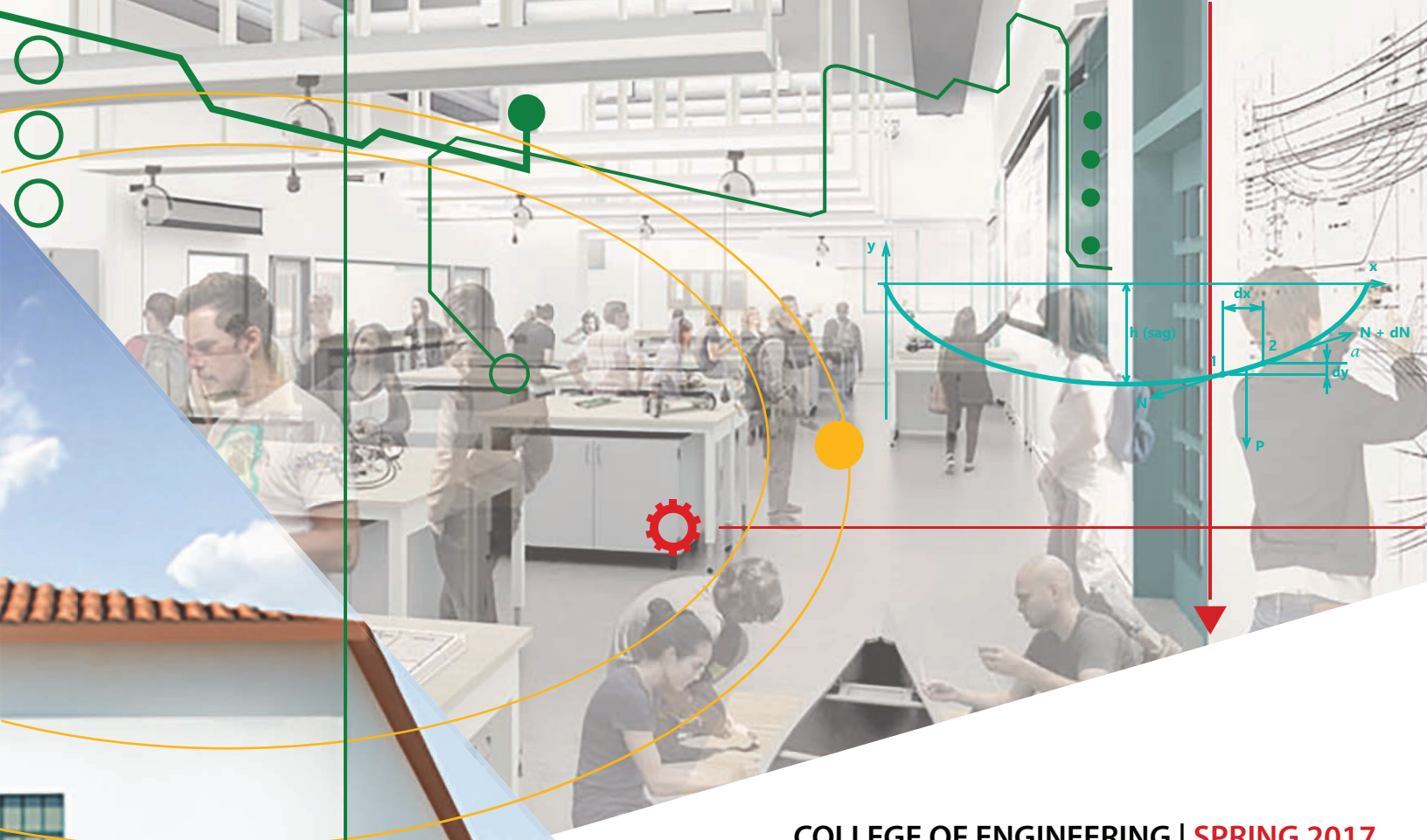

COLLEGE OF ENGINEERING | SPRING 2017

DESIGN DAY

MONTEZUMA HALL
AZTEC STUDENT UNION
MAY 3, 2017 | 1:30-3:30PM

with special thanks to
NORTHROP GRUMMAN

WELCOME

Welcome to the College of Engineering's Spring 2017 Design Day at the Conrad Prebys Aztec Student Union, Montezuma Hall. We are proud to have our undergraduate students showcasing their design project work completed during the 2016-17 Academic Year. There are teams representing our Senior Design classes in Aerospace Engineering, Civil, Construction & Environmental Engineering, Electrical & Computer Engineering, and Mechanical Engineering.

Please join me in congratulating our student teams on their innovative design projects which represent the culmination of the technical knowledge they have developed during their time at San Diego State University's College of Engineering. These projects provide the students with real-world experience that involve design constraints, budgets, reviews, and deadlines. Through these projects our students learn to apply and develop their critical thinking skills, recognize human and societal needs, and design novel, sustainable engineering solutions.

We are grateful to our many sponsors for their generous support of these student projects. Our sponsors include: Black & Veatch, Caltrans, City of Carlsbad, City of San Diego, Northrop Grumman, San Diego Gas & Electric and Solar Turbines. Many of these sponsors are integrally involved with the student design teams and serve as mentors to the teams. This provides meaningful projects of value, and instills a professional orientation in the student teams. We appreciate all of our sponsors and their support for the student teams.

Enjoy SDSU's Spring 2017 College of Engineering Design Day. Thank you for being a part of this important event.

Monte Mehrabadi, Ph.D.
Dean
College of Engineering

1961, T-38

T-38 SUPERSONIC TRAINER ENTERS SERVICE

SPECIAL THANKS TO OUR TITLE SPONSOR

NORTHROP GRUMMAN

THANK YOU TO OUR SPONSORS

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AZTEC BAJA
SOCIETY OF AUTOMOTIVE ENGINEERS

AZTEC Baja

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Caltrans

CDM Smith

Certified Metal Craft, Inc.
-Specializing In Brazing and Heat Treating-

CITY OF CARLSBAD CALIFORNIA

CITY OF LEMON GROVE
BEST CLIMATE ON EARTH
CALIFORNIA

The City of SAN DIEGO

CLARK CONSTRUCTION

COMPETITIVE METALS

CORONADO SAN DIEGO BRIDGE COLLABORATIVE FOR SUICIDE PREVENTION

THE NOBLEST MOTIVE IS THE PUBLIC GOOD
COUNTY OF SAN DIEGO
MDCCCLI

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THANK YOU TO OUR SPONSORS

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ENCINA WASTEWATER AUTHORITY

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EXO SYSTEMS
High Strength Exoskeleton Arm

FLATIRON

Hensel Phelps Construction Co.

Honeywell
Refrigerants

kpff

M.A.C.S 10

MECHATRONICS

Michael Baker
INTERNATIONAL

MORRIS CERULLO
WORLD EVANGELISM

NORTHROP GRUMMAN

level up. MAX

THANK YOU TO OUR SPONSORS

PTG
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THE sage PROJECT
Community Engagement for Sustainable Cities

SANDAG

SAN DIEGO
INTERNATIONAL AIRPORT
LET'S GO.

SAN DIEGO STATE UNIVERSITY

SAN DIEGO STATE UNIVERSITY
College of Engineering

SAN DIEGO STATE UNIVERSITY
ROCKET PROJECT

SDGE

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A Caterpillar Company

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STG

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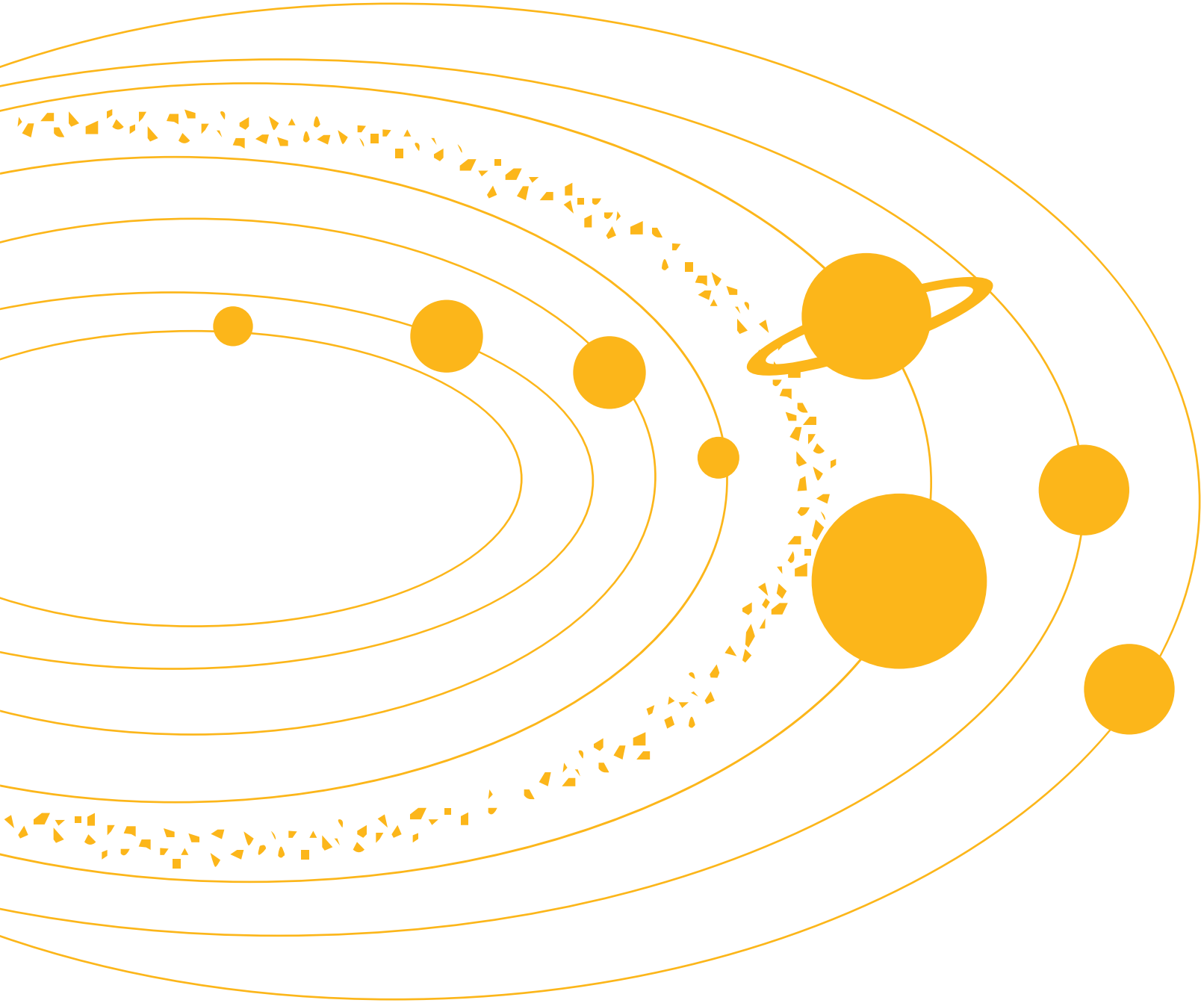


AEROSPACE ENGINEERING

BMB DESIGN AND ENGINEERING

MEMBERS: Tony Cervantes, David Landfield, Ben Law, Jon McClurg, Hoa Nguyen, Yasmine Vega
ADVISOR: Greg Marien - Northrop Grumman

RAVEN SUPERSONIC BUSINESS JET

Design and engineer a business jet capable of carrying 10 passengers and exceeding Mach 2.

CURVED HORIZONS

MEMBERS: Arnold Cruz, Pedro Escobar, Irving Hernandez, Alexander Lewis, Bashar Quashat, Rami Soro
ADVISOR: Greg Marien - Northrop Grumman

SUPERSONIC BUSINESS JET

An innovative supersonic business jet design with variable geometry. Our aircraft will be able to accommodate up to 15 businessmen and businesswomen to any destination within a 4,000 nautical mile range. This jet will be capable of reaching Mach 2 at altitudes of 55,000 to 65,000 feet.

DANGERZONE AEROSPACE

MEMBERS: Ben Beckwith, Wes Brookman, Eddie Pipitone, Ben Sadoff, John Soto, Ruben Valle
ADVISOR: Greg Marien - Northrop Grumman

DUTCHESS YA-15

Experimental Close Air Support (CAS) aircraft design project.

DANK SQUAD

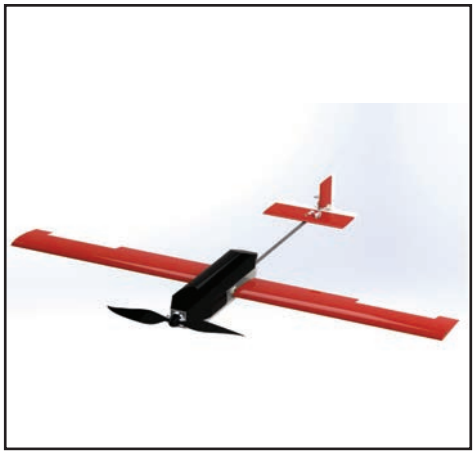
MEMBERS: Jamie Andrzejewski, John Blaske, Jemmery Eligan, Carlos Mendoza, Victor Ortega, Andrew Sweeten
ADVISOR: Greg Marien - Northrop Grumman

SANIK X

Sanik X is a design for a next-generation supersonic business jet, based on a given System Requirements Document. This concept aircraft is designed for two different roles: first as a military transport for high-value personnel including, but not limited to, the President of the United States, and second as a standard business jet for corporations or private parties. The design is optimized for speed and efficiency, providing more people with faster travel than current comparable designs, with a similar range. Virtually all aspects of the aircraft were designed within the group, and chronicled in a technical report.

DESIGN BUILD FLY

MEMBERS: Daniel Amador, Jamie Andryzewski, Jamie Blockey, Chengyou Chow, Chris Clark, Jason Eakin, Nick Fritzler, Edgard Jimenez, Julian Johnson, Carlos Mendoza, Ben While
ADVISOR: Dr. Xiaofeng Liu - Assistant Professor, SDSU Department of Aerospace Engineering
SPONSOR: Greg Marien - Northrop Grumman
WEBSITE: http://sdsudbf.com



TUBE-LAUNCHED UAV

This year's Design Build Fly team is tasked with manufacturing a remote controlled aircraft for an international competition hosted by AIAA, Cessna, and Ratheon. The objective for this year is to design a tube-launched UAV. The UAV must fit completely inside the launch tube, which also acts as the UAV handling and storage container. The launch tube must protect the UAV from damage during normal handling and storage. Upon removal of the UAV from the launch tube, all folded or stowed surfaces or features must move into the flight condition. Teams must design a UAV and launch tube that minimizes system weight while maximizing speed, range, endurance and payload capacity.

ROCKET PROJECT

MEMBERS: Ben Beckwith, Brian Bowling, Wes Brookman, Ryan Callahan, Colin Casazza, Christian Engelbrecht, Adrian Juarez, Jenna McGuigan, Clinton Motley, Stephen Nick, Andrew O'Hair, Jaymee Panian, Karl Parks, Levi Schlapfer, Daniel Silva, Anthony Talavera, Jennifer Martin-Velazquez, Allie Virgen, Dani Viveros
ADVISOR: Carl Tedesco - Flometrics
SPONSOR: Scott Borden - Virgin Galactic
WEBSITE: http://sdsurocketproject.wixsite.com/rocket-project

GALACTIC AZTEC HEAVY

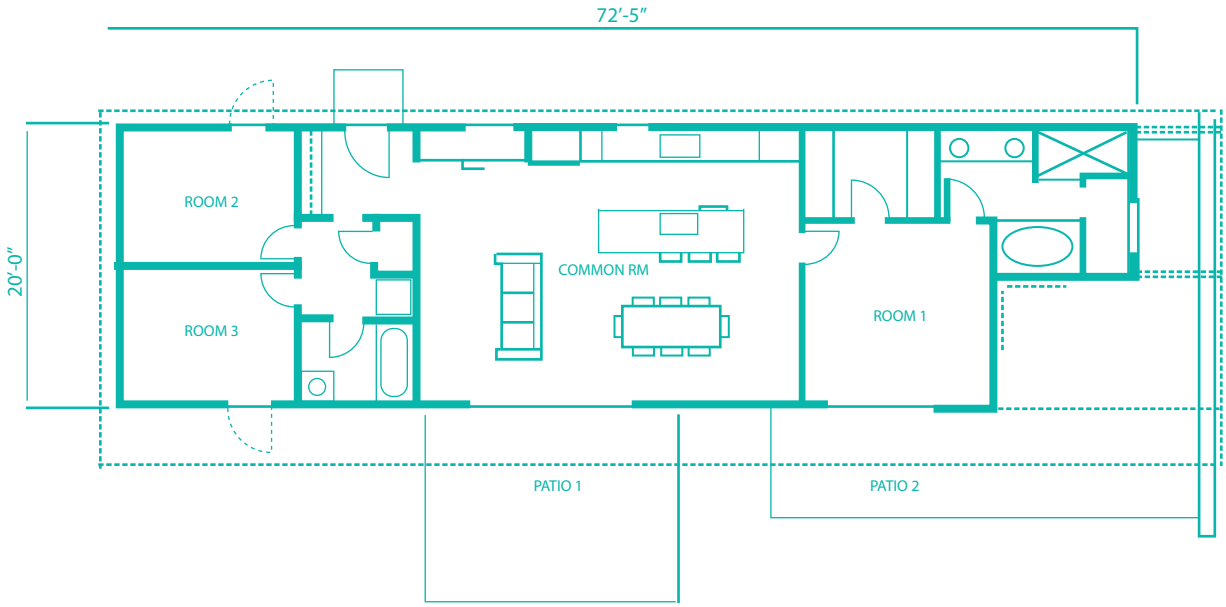
Experimental liquid bi-propellant (LOX & Kerosene) high powered rocket.

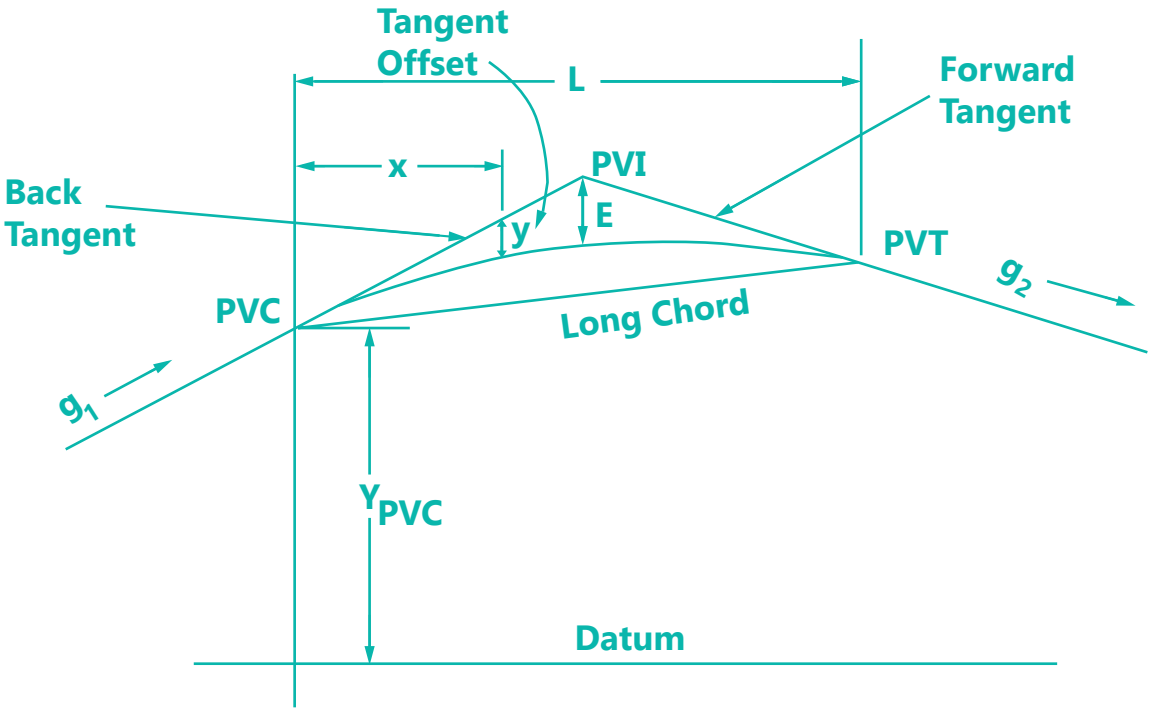
TBM AEROSPACE

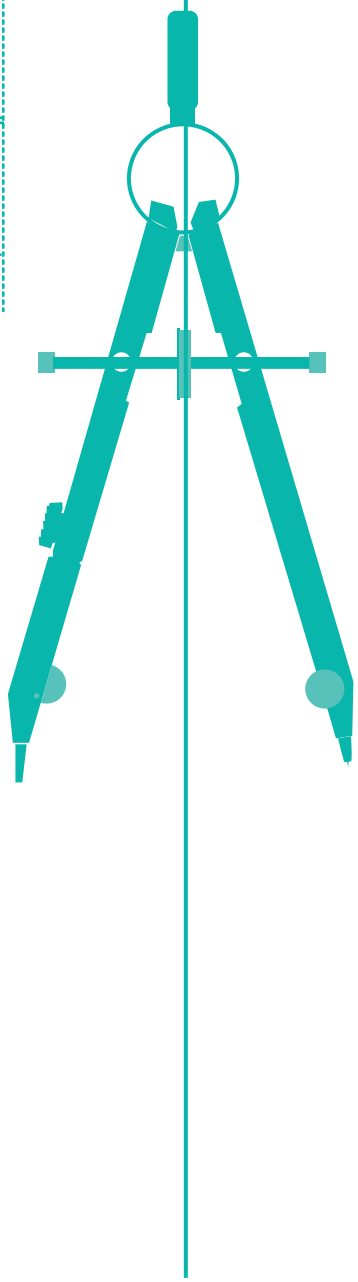
MEMBERS: Miguel Espinoza, Victoria Gonzeles, Patrick Lim, Alexandria Virgen, Daniel Viveros
ADVISOR: Greg Marien - Northrop Grumman

CLOSE AIR SUPPORT AIRCRAFT DESIGN

Design of a close air support aircraft capable of meeting projected future battlefield requirements. Capable of responsive delivery of effective ordnance in close proximity to friendly ground forces during the day, night, and under-the-weather environment during mission execution.







CIVIL, CONSTRUCTION, & ENVIRONMENTAL ENGINEERING

A TO Z CONSTRUCTION SERVICES (RENO - HEAVY CIVIL)

MEMBERS: Andres Enriquez, Andrea Farias, Andre Hoss, Zechariah Palmer, Andrew Poliska
ADVISOR: Evan McColl - Flatiron

SR-28 SHARED USE PATH

The SR 28 Shared-Use Path involves bikeway, storm drain, and road improvements. This project uses an integrated approach to improve safety, mobility water quality, and a recreational access in the SR 28 corridor. The Project is being delivered and implemented using the Construction Manager at Risk (CMAR) procurement method, and a final design is to be submitted.

The Nevada Department of Transportation (NDOT) is the owner and coordinator for this project. The project scope consists of constructing an undercrossing of SR 28 at Tunnel Creek; relocating the IVGID owned and operated effluent pipeline and force sewer main; construct new trail head parking lot within SR 28 Right of Way just north and south of Ponderosa Ranch Road; and provide directional signing for the shared-use path and the trailhead parking lot.

ABM J^4

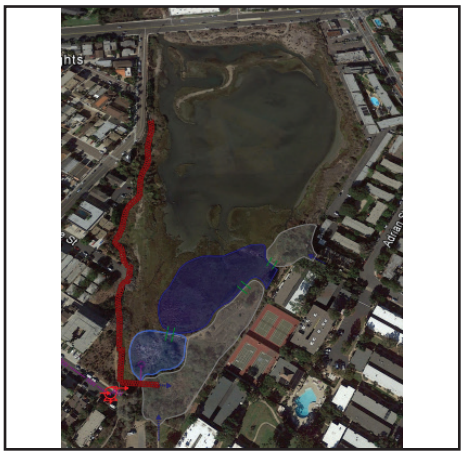
MEMBERS: Brandon Alderson, Jose Calderon, Ana Paula Moctezuma, Jonathan Noonan, Jwan Mufti, Michael Shamoun, Jasmine Wadie
ADVISOR: Chris George - San Diego International Airport

SD AIRPORT AUTOMATED PEOPLE MOVER

The Automated People Mover is designed to connect the San Diego International Airport terminals to the Consolidated Rental Car facility located on the north side of the airport, keeping in mind future expansion to the planned Intermodal Transportation Center. This project will improve efficiency of San Diego's transport system for our rapidly growing city.

AQUATERRA ENGINEERING

MEMBERS: Lauren Breitenbach, Daniel Dutra, Ryan Fatchett, Addison LeBlanc
ADVISORS: Jim Rasmus - Black & Veatch, Mayhar Navizi - City of San Diego, John Prince - Delane Engineering



FAMOSA SLOUGH WATER CATCHMENT DESIGN

On the south side of the Famosa Slough, a Marine Protected Wetland located in Point Loma, three water treatment ponds exist to protect the slough against harmful runoff and eutrophication. Aquaterra Engineering proposes a design that expands these treatment ponds with the purpose of reclaiming some of the runoff for recycled use. Furthermore, restoration of the west walking trail is proposed to prevent further erosion of the trail from entering the slough. Along with a conceptual design layout, an in-depth study on hydrology, water quality, and environmental impact will be included. The initial studies of the ecosystem and the potential impacts of construction are carefully considered to allow for environmental engineering designs that serve both purpose and preservation.

ASC COMPETITION - COMMERCIAL TEAM

MEMBERS: Blake Shoemaker (Project Manager), Edgar Melendrez (Estimator), Jose Muguerza (Scheduler), Nick Fuentes (Superintendent)
ADVISORS: Wendy Bohn - Clark Construction, Kyle Green - Clark Construction
SPONSOR: Hensel Phelps

EMERYVILLE MEDICAL OFFICE BUILDING

The existing core and shell building in Emeryville, CA needs to be retrofitted to house a new medical office building. The gross leasable space is 98,560 SF, with 76,500 usable SF; the building also has an operational restaurant located on the ground floor. There is first floor and below grade parking within the building, as well as parking available in adjacent complexes. As the construction team, we have developed a comprehensive construction schedule, estimate, site logistics plan, and executive summary. We will present this to our upper management; justifying the reasons why we should be awarded this project.

CASTOR CONSULTING, INC.

MEMBERS: Derrick Bizicki, Pedro Manuel Cardenas, Metehan Gumustekin, Gustavo Lopez Mendoza, Henryk Pedersen, Michael Tran

ADVISORS: James Haughey, PE - Michael Baker International, Jon Deck, PE - DCI Engineers

DOWNTOWN HIGHRISE FOR NEW SAN DIEGO CITY HALL

The City of San Diego needs a new City Hall to replace city offices spread throughout many different buildings in downtown San Diego. Currently, the main city offices are included in the City Operations Building (COB) and the City Administration Building (CAB). The CAB will either need to be demolished after occupancy of the new City Hall or re-purposed for another use. The current condition of the COB is in such disrepair that it is planned to be vacated soon. The development will include the full demolition of the existing COB. There is an existing fire station that is located within the COB that must be included as part of the development or relocated. This constraint will need to be considered as part of the project.

CRC&E

MEMBERS: Ian Cohan, Gabriel Frota, Samantha Knolle, Victoria Ortiz, Kelsey Riley, Jonathan Teas, David Turner

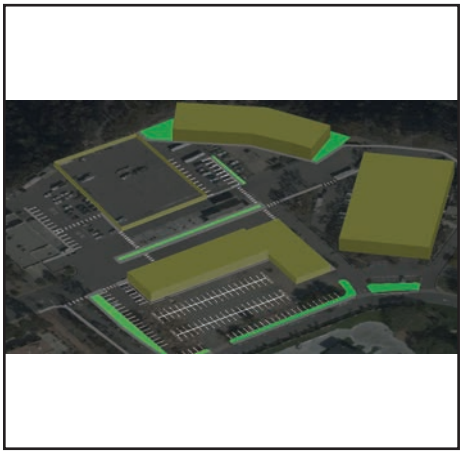
ADVISOR: Bruce Smith - SANDAG, John Prince - Delane Engineering

SAN DIEGUITO DOUBLE TRACK

The San Dieguito River Double Track project proposes to add a passing track across San Dieguito River between Del Mar and Solana Beach. The Alternatives Analysis is also required to consider platform alternatives. Which alternative is the Least Environmentally Damaging Practical Alternative or (LEDPA)? And why should this alignment alternative advance to the final design stage?

ENSPIRED DESIGN

MEMBERS: Lujaina Al Adwani, Sheikha Al Rahbi, Abdul Hakeem Al-Shukaili, Marcus Chousal, Mohammed Kabli, Stuart Osborne, Yazmin Razon



CARLSBAD OPERATION AND MAINTAINANCE CENTER

The City of Carlsbad has requested preliminary designs for creating a new Maintenance and Operations center for the City. The proposed facility would renovate an underutilized area of 6.8 acres, replacing a fleet maintenance center with facilities to house Carlsbad Maintenance and Operations Staff. Special focus is given to improving multimodal accessibility to and within the facility to better serve the community and staff, and in design of sustainable methods in treating and recycling wastewater and runoff.

HYDRA

MEMBERS: Junnreck Elizaga, Belal Ghali, Karim Khamis, Matthew Louie, Quds Omar, Alberto Perez
ADVISORS: Jim Rasmus - Black & Veatch, Mayhar Navizi - City of San Diego

PURE WATER PHASE 2

Pure Water Phase 2 is part of a program for providing San Diego with local access to clean and reliable water through water purification to produce one-third of its drinking water demands by 2035, as the City currently imports 85% of its water. This project focuses on designing water pump stations and pipelines for the upcoming Central Area Water Reclamation Plant (CAWRP), Famosa Slough watershed, and Central Pure Water Facility (CPWF), as 68 mgd of water from the CAWRP and a studied water supply supplement from the Famosa Slough watershed will reach CPWF at about 40 to 50 psi relative to ground level to then be sent to the San Vicente Reservoir. The project also accounts for water usage over its path, along with planning its construction and studying its environmental impacts.

LUCKY 13 ENGINEERING

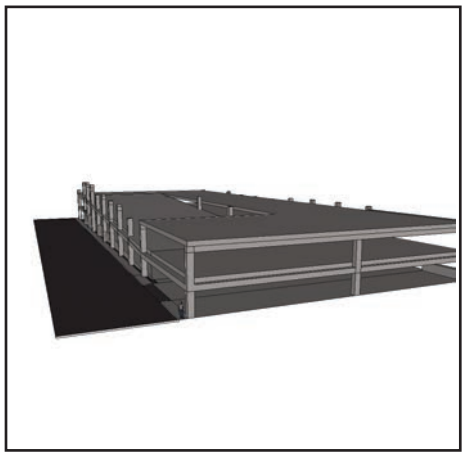
MEMBERS: Steve Becera, Alexis Bray, Nicole Deeb, Sebastian Dowling, Mikayla Gonzalez, Steven Medina
ADVISOR: John Prince - Delane Engineering
SPONSORS: Dr. Jessica Barlow - SDSU Sage Project, Mike James - Director of Public Works, City of Lemon Grove, Kyle Schellenger and Shaun Walters - KPFF

CITY OF LEMON GROVE GATEWAY SIGNS

In association with the Design Studio Course (ART 545) and the SDSU Sage Project, Lucky 13 Engineering is working for the City of Lemon Grove to design gateway signs to be installed at 8 locations throughout the roadways entering the city limits as well as the City's downtown area. The scope includes structural requirements, traffic concerns, scheduling and cost estimates, and renderings. These signs are part of a bigger revitalization of downtown Lemon Grove and the surrounding areas. The idea stems from the growth Lemon Grove is experiencing and an increasing need to capture what Lemon Grove is and share that with the residents as well as the artists, home buyers, and businesses who are considering moving in.

MADMET ENGINEERING

MEMBERS: Emilio Aguayo, Michael Ahern, Tyler Kessler, Mitchell Martinez, Aaron Ramirez, Daniel Warstadt
ADVISORS: Kyle Schellenger - KPFF, Shaun Walters - KPFF
SPONSORS: Mike James - City of Lemon Grove, Jessica Barlow - The SAGE Project SDSU, Kyle Schellenger and Shaun Walters - KPFF

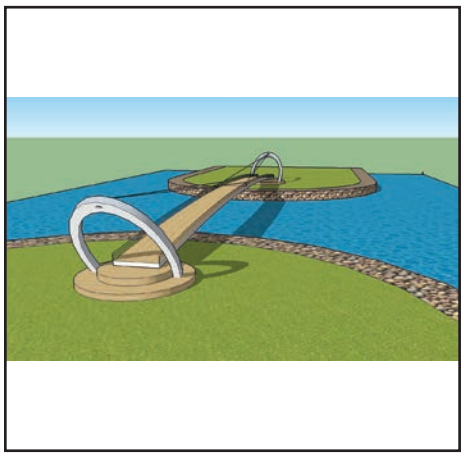


LESTER AVENUE PARKING STRUCTURE

The City of Lemon Grove is looking to enhance the downtown area off of Broadway. These enhancements are aimed to functionally improve and beautify the block in between Lester Ave and Broadway. However, these actions will lead to the loss of sixty-six available street parking spaces. Thus, the City of Lemon Grove has asked for the feasibility of a parking structure on Lester Ave to make up for the loss of parking in addition to the future outlook of the downtown business districts. The City has identified a property that is to be converted from surface parking into a parking structure.

MEGA INTERNATIONAL CONSULTANT GROUP, LLC

MEMBERS: Dalia Al-Ansari, Aric Careat, Trinh Hoang, David Senah, Kyle Wallace
ADVISOR: James Haughey - Michael Baker International



EMBARCADERO PARK PEDESTRIAN BRIDGE

As part of the Port of San Diego's plan to reinvigorate the Embarcadero area, this pedestrian bridge will provide access across the marina inlet to connect the North and South park peninsulas. Spanning approximately 300 ft, this elegantly-designed bridge will become a centerpiece for visitors, and will compliment the surrounding amenities. The design is a counter-weighted drawbridge, pivoting on a central hinge during operations. This allows the structure to accommodate any boat traffic in or out of the marina, and quickly return to a closed position to provide for pedestrian passage.

PLATINUM DESIGN

MEMBERS: Daniel Arnstein, Dustin Spencer-Bacon, Ryan Fallica, Derick Hobbs, Blake Petersen, Matt Sheldon,
ADVISORS: Bruce Smith - Senior Engineer at SANDAG, Cheryle Hodge - Senior Environmental Planner at SANDAG

SAN DIEGUITO DOUBLE TRACK PROJECT

The San Dieguito Double Track Project consists of major rail improvements and a special events platform, along a 2.1 mile coastal track through Solana Beach and Del Mar. Environmental impacts are a primary focus, as the rail improvements include construction of a new double track bridge structure over the San Dieguito River and demolition of the existing single track bridge. The special events platform is designed to provide direct access to the Del Mar Fairgrounds and Racetrack, and a new underpass will accommodate the Coast to Crest Bike Trail. Ultimately, this project will allow for increased train traffic and operational flexibility for this segment of the LOSSAN rail corridor, and such improvements will ease traffic as transportation needs increase in the future.

PRECISION ENGINEERING

MEMBERS: Jerald Albritton, Matt Appleton, Daniel Brunskill, Elijah Chastain, Delon Jopa, John Maaja, Danielle York

ADVISOR: James R. Haughey, P.E. - Michael Baker International

SAN DIEGO STATE UNIVERSITY WEST CAMPUS HOUSING

The San Diego State University West Campus Housing will provide 850 residential beds for undergraduate students (800 revenue, 50 non-revenue). The project site is developed with the existing 11 story, 575 bed Chapultepec Hall that is located immediately east of Parking Lot 9. Chapultepec Hall will continue to be occupied during and after construction of the addition to the student housing. The project completion date is targeted for the Fall Semester of 2019 and will be accomplished using phase plan approvals.

The West Campus Housing will provide 171,530 GSF housing complex with 15,000 GSF dedicated to the Community Food Service/ Social Space to provide a lounge, food court, and market. Precision Engineering will be providing the schedule, estimate, hydrology report, site plans, traffic study, grading plan, and utility design.

SPROCKETS ENGINEERING GROUP

MEMBERS: Arlyn Abanes, Miguel Avalos, Jessica Gonzalez, Daniel Long, Carlos Novoa, Yesenia Ortega

ADVISOR: James R. Haughey - Michael Baker International

EMBARCADERO PARK PEDESTRIAN BRIDGE

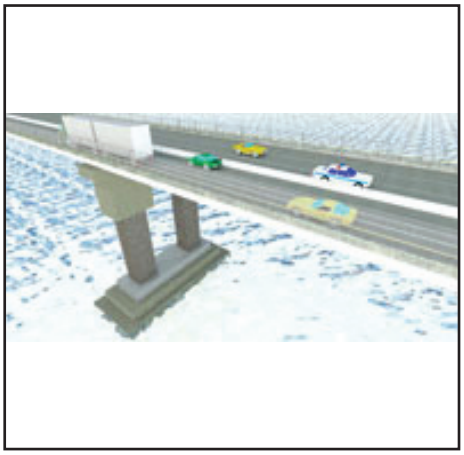
The Embarcadero Park Pedestrian Bridge project involves the design and construction of a pedestrian bridge proposed to connect the North and South Embarcadero Marina Parks. The San Diego Unified Port District solicited proposals for the the 70-acre site, located within the Tuna Harbor and Marina Zone Subarea of Planning District 3 of the certified Port Master Plan. Planned in conjunction with the Protea Waterfront Development Plan, the bridge is meant to connect Seaport Village to the newly proposed permanent outdoor symphony venue. The bridge will provide a seamless connection between the two island parks, facilitating pedestrian access. The construction documents and drawings included an analysis and presentation of a design to meet the objectives previously mentioned.

THE SAN DIEGO URBAN PLANNING GROUP

MEMBERS: Mohammed Alhatlani, Omar Batta, Matthew Edgeworth, Ameen Khaznadar, Maximino Rosales, Dustin Semple, Annie Wright

ADVISOR: Sam Amen - Caltrans

SPONSORS: Wayne Strickland - Coronado San Diego Bridge Collaborative for Suicide Prevention, Frank Wei - Caltrans



CORONADO BRIDGE SUICIDE BARRIER

The Coronado Bridge Suicide Barrier is a proposed project that will protect the San Diego community. The intent of this project is to create an aesthetically pleasing barrier on the Coronado Bridge while preventing tragic deaths. The San Diego-Coronado Bay Bridge has been the site of roughly 300 suicides and several vehicular accidents where vehicles have fallen from the bridge. The barrier that the San Diego Urban Planning Group has designed will be strong enough to withstand an impact from a vehicle and was designed in a manner which inhibits climbing.

TRANSPRO

MEMBERS: Shane Atkins EIT, Kristy Barker, Aaron Boyd, Janelle Clanton EIT, Ben Dale Haney EIT, Anthony Naderhoff EIT

ADVISORS: Zoubir Ouadah - County of San Diego, Dr. Xianfeng Yang - Assistant Professor & Dr. Julio Valdes - Professor, SDSU Dept. of Civil, Construction & Environmental Engineering

AMMUNITION ROAD INTELLIGENT TRANSPORTATION SYSTEM (ITS) REVERSIBLE LANE

Our goal for this project is to implement a Reversible Lane on the severely congested Ammunition Road located in Fallbrook, CA. This road leads into the Camp Pendleton Marine Corps Base and encounters traffic that increases commute times upwards of 30-40 minutes during the morning and evening peak hours. A Reversible Lane adds an additional lane during the morning commute and would switch to go the opposite way for the evening traffic leaving Camp Pendleton.

WIP ENGINEERING

MEMBERS: Joseph Akers, Patricia Haskin, Audrey Le Reverend, Theodore Mendoza, Michael Violante, Timothy Zoellick
ADVISOR: John Prince - Delane Engineering
SPONSOR: Tom Falk - CDM Smith

ENCINA WATER POLLUTION CONTROL AREA IMPROVEMENTS

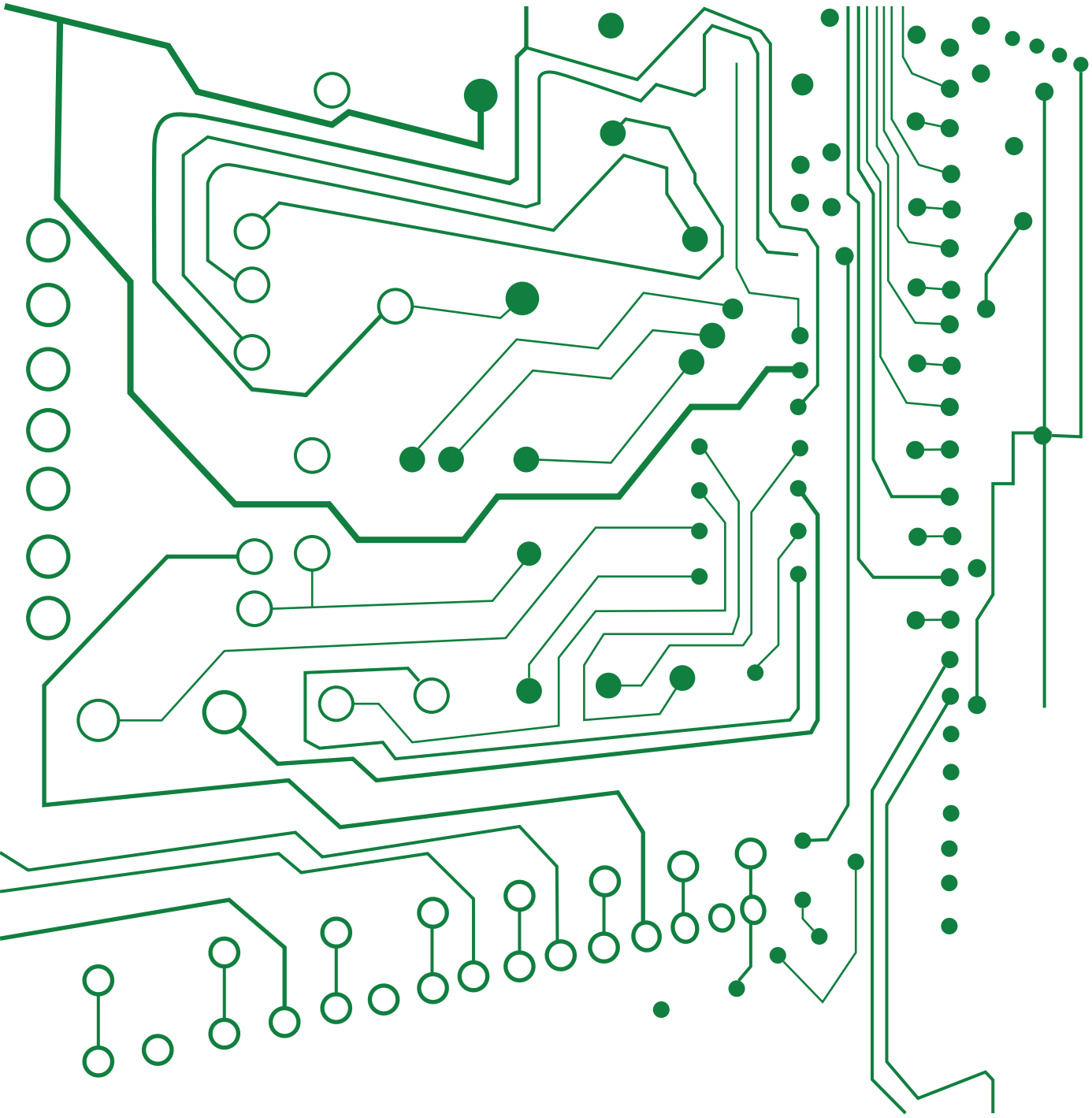
Our team's goal is to evaluate, suggest, and plan out area improvements to the Encina Water Pollution Control Facility. The facility upgrades will increase efficiency and prevent further damage from corrosion. New influent screens, corrosion controls, and odor reduction will be achieved with suggested implementation of the upgrades. The project will provide cost savings over the lifetime of the new equipment and show the effectiveness of 30 years of technology advances.

ZIGGURAT ENGINEERING

MEMBERS: Shane Bonner, Jesse Cabral, Christian Felix, Kailene Gini, Alex Leaño, Summer Mutawe, Anda Wright
ADVISOR: James Haughey - Michael Baker International

THE CITY OF CARLSBAD OPERATIONS & MAINTENANCE FACILITY

Designing the land development for the Carlsbad Operations & Maintenance Facility at 2486 Impala Drive. The existing site is currently used as a large parking area for the nearby Carlsbad Police Department, Carlsbad Fire Department, and Carlsbad Fleet Maintenance Center. After completion, the site will be transformed into an environmentally friendly LEED certified maintenance facility designed to meet the growing needs of the City of Carlsbad.



ELECTRICAL & COMPUTER ENGINEERING

CRIQUIT

MEMBERS: Joseph Clements, Andy Grewe, Jeremy Klossner, Bryton Negahban, Marky Ramirez, Jeremy Shutrump, Kevin Stanzione, Ryan Young
ADVISOR: John Kennedy - SDSU Department of Electrical & Computer Engineering
SPONSOR: Hugh Molesworth - XPI Design
WEBSITE: http://criquit.sdsu.edu

BEAMFORMING CRICKET DETERRENT

Falling asleep can be difficult for those who are kept awake due to the chirping of crickets. CriQuit is the world's first beamforming cricket deterrent. CriQuit will execute a Three-Stage System (Alert, Identification, Attack) that will successfully recognize the cricket and eliminate its chirping by emitting ultrasonic sound. We will achieve this by utilizing a state of the art STM32 Nucleo 446RE microcontroller, six ultra-sensitive microphones, reflection-aimed precision-focused transducers, rotating audio horn reflector, and solar power.

ENFORCER

MEMBERS: Juan Delgado, Aeon Forsythe, Kevin Ly, Phu Nguyen, Duc Phan, Terry Phan, Greg Turner
ADVISORS: Ken Arnold and John Kennedy - SDSU Department of Electrical & Computer Engineering
SPONSORS: Ken Long - STG LLC, RC Anderson - STG LLC
WEBSITE: http://enforcer.sdsu.edu/

TEAM ENFORCER

HELMET CAMERA SYSTEM

The more common practice of body-worn cameras is often used by law enforcement. It is distributed throughout many countries to help protect and to keep our officers in line. However, it does have its own flaws as it does not reveal the perspective of the officer's eyes and can be easily obscured. The concept of building the camera onto the helmet will help resolve this dilemma and with added technology we can help improve the safety of those in the line of duty. Our objective is to implement a helmet camera that will record events that were to occur and send information to a dispatcher if trauma is detected on the helmet.

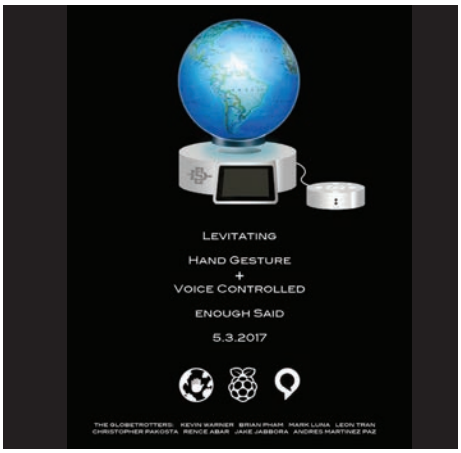
GLOBETROTTERS

MEMBERS: Rence Abar, Jake Jabbora, Mark Luna, Christopher Pakosta, Andres Martinez Paz, Brian Pham, Leon Tran, Kevin Warner

ADVISORS: Richard Lane and William Hugh Molesworth - Morris Cerullo World Evangelism, John Kennedy - SDSU Department of Electrical & Computer Engineering

SPONSORS: Richard Lane and William Hugh Molesworth - Morris Cerullo World Evangelism

WEBSITE: http://globetrotters.sdsu.edu



LEVITATING GLOBE

An interactive levitating globe powered by electromagnetism. The user can interact with the globe through voice and gesture commands to learn geographical and statistical information about the various countries and cities around the world. The globe is designed with a focus on ease of use and accommodating people with disabilities. The end goal is to educate people about the different cultures and countries around the world in a fun and interactive manner.

MISSION AUTOMATED CARRIER SYSTEM (M.A.C.S.)

MEMBERS: Ryan Caganap, Roger Castillejos, Sejin (Sean) Chang, Blake King, Marqus Patton, Edgar Ramirez, Jessica Romio, Taylor Roscoe, Tony Wulfekuhle, Connor Zablow

ADVISOR: John Kennedy - SDSU Department of Electrical & Computer Engineering

WEBSITE: http://www.macs.sdsu.edu

ROBOTIC AUTOMATED CARRIER SYSTEM (R.A.C.S.)

Imagine the day when self-driving vehicles deliver your everyday desires. Autonomous delivery is going to be the new mailperson. The Mission Automated Carrier System Team at San Diego State University is proud to present, the Robotic Autonomous Carrier System, or R.A.C.S. for short. We are designing a one of a kind delivery system. A small, self-driving delivery unit that can travel up to speeds of 15 mph! Using GPS, collision detection and avoidance, RF signal detectors, combined with intelligent programming, will deliver a load of small objects to a large range of new places. With this project, we hope to further the development of autonomous small land based mini-vehicles and gain a better understanding of autonomous robotics.

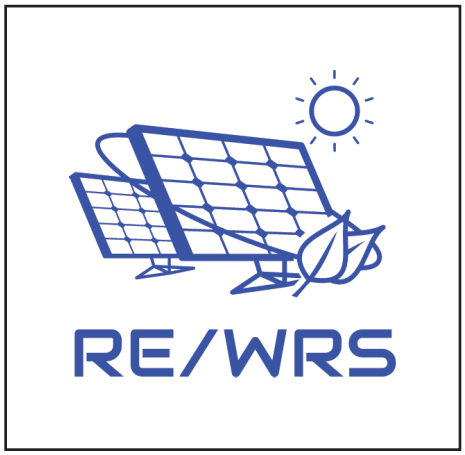
RE/WRS - RENEWABLE ENERGY & WATER RESOURCES SOLUTIONS

MEMBERS: Ali Alnakas, Cheng Hao Chen, Bassam Dawood, Marco Jacome, Sherman Page, Jorge Quezada, Ryan Roman, Jerald Tomada, Luis Torres

ADVISORS: John Kennedy, SDSU Dept. of Electrical & Computer Engineering, and Dr. Sridhar Seshagiri, Associate Professor, SDSU Dept. of Electrical & Computer Engineering

SPONSORS: Dr. Sridhar Seshagiri, Associate Professor, SDSU Dept. of Electrical & Computer Engineering, SDSU Presidential Leadership Fund

WEBSITE: http://rewrs.sdsu.edu/



SOLAR PUMPING FOR IRRIGATION

Affordable, reliable and environmentally sustainable energy is a vital input for delivering irrigation services. In developing countries, the electricity grid can be unreliable, while fuel-based options can be expensive and have a large environmental impact. To address this, we explore the design of a solar irrigation pumping system with battery storage, resulting in reliable hybridization of grid/diesel-based pumping with renewable energy. We will employ smart controls that maximally harvest power from the sun, optimally charge and discharge the batteries for prolonged life, and monitor environmental conditions for improved management of water and soil moisture, that improve the system efficiency and lower operating costs. We hope to perform a simple economic analysis of the competitiveness of solar-pumping on a life-time basis.

THE RESISTANCE

MEMBERS: Ameenah Alnaser, Edwin Corpus Jr., Artin Daryabari, Ryan Estacio, Mark Lawrence Galvan, Drew Haines, Ray Johnson, Efrain Magallon, Phoebe Nguyen

ADVISOR: John Kennedy - SDSU Department of Electrical & Computer Engineering

SPONSOR: John Kennedy - SDSU Department of Electrical & Computer Engineering

WEBSITE: http://resistance.sdsu.edu/

AUTONOMOUS PAYLOAD DELIVERY DRONE

The purpose of this project is to have a robot autonomously navigate and drop its payload at designated waypoints within a limited time-span. Our robot will have a Raspberry Pi that will pilot the 3DR drone to desired locations. Based on GPS and image processing routines, it will precisely deliver its entire payload using python script. Our robot must race to three separate areas, deliver the payload at each site, and return to its start point all in less than two minutes. Our robot must also perform a delivery towards an emitting radio signal and return faster than the opposing robots.

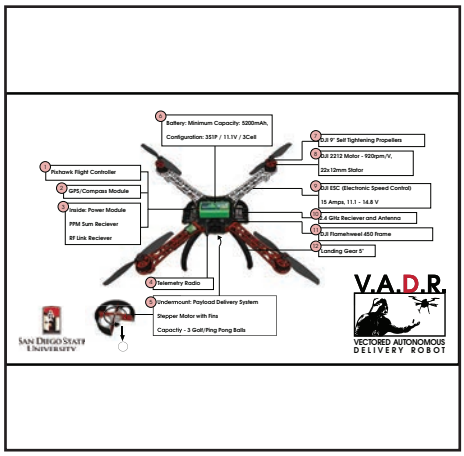
VECTORED AUTONOMOUS DELIVERY ROBOT (V.A.D.R.)

MEMBERS: Ali Al-Lawati, Christian Druihet, Annan Gaggi, Tong Ho, Gerald Mora, Joseph O'Connor, Alexander Timm

ADVISOR: Ken Arnold - SDSU Department of Electrical & Computer Engineering

SPONSOR: San Diego State University

WEBSITE: https://www.vadr.sdsu.edu



VECTORED AUTONOMOUS DELIVERY ROBOT (V.A.D.R.)

V.A.D.R. is one of the three teams competing in the Payload Delivery design contest. The drone will navigate to the three target locations in the first part of the contest using GPS coordinates and the RF signal coming from each location, the drone will then drop the payload, and this must be done in under two minutes. The second stage will be similar to the first but with one location being active, the drone will use the RF signal to navigate to that target and ignore the other two. Accuracy is very important and the closer the payload is, the more points V.A.D.R. receives.

WEATHER ENGINEERING TEAM - HARDWARE

MEMBERS: Jonathan Acuario, Johnny Briseno, Longjie Chen, Joseph Dantay, Alven Eusantos, Noel Garcia, Jeremey Lee, Yuanzhi Li, Matthew Salvino, Nathan Vujovich

ADVISORS: Alan Dulgeroff, Darren George, Steven Prsha, Daniel Smith, Drew Smith - San Diego Gas & Electric

WEBSITE: http://www.wetnet.sdsu.edu

CAMPUS WEATHER AND ENVIRONMENT NETWORK

Meeting the unique needs of San Diego Gas and Electric, we will provide a stable and reliable system to accurately measure the micro-climate weather conditions around the San Diego State University campus. We accomplish this by using refined and tested industry practices to build a distributed sensor node network thus providing real time updates in a single consolidated easy to use website.

WEATHER ENGINEERING TEAM - SOFTWARE

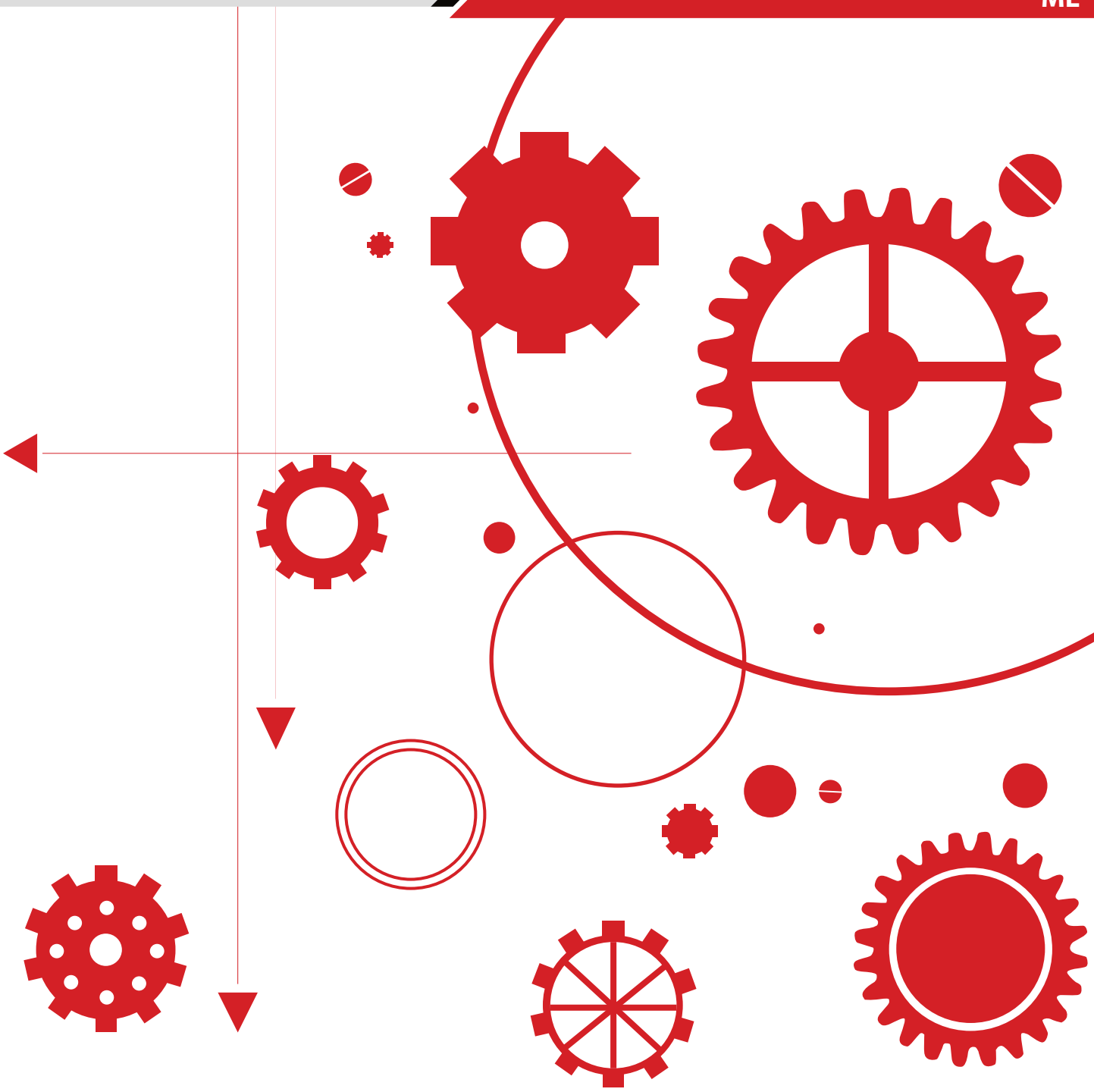
MEMBERS: Philippe Grepo, Benjamin Hunt, Brent Knickerbocker, Brandon Ma, Kevin Sahagun, Yusuf Shaikh, Ankit Verma, Stephen West

SPONSORS: Alan Dulgeroff, Darren George, Steven Prsha, Daniel Smith, Drew Smith - San Diego Gas & Electric

WEBSITE: https://www.wetnet.sdsu.edu

CAMPUS WEATHER AND ENVIRONMENT NETWORK

Meeting the unique needs of San Diego Gas and Electric, we will provide a stable and reliable system to accurately measure the micro-climate weather conditions around the San Diego State University campus. We accomplish this by using refined and tested industry practices to build a distributed sensor node network thus providing real time updates in a single consolidated easy to use website.



MECHANICAL ENGINEERING

AFL

MEMBERS: Dagoberto Aguilar, Wyatt Castellan, Christian Currie, Connor Jacobs
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

AUTOMATIC FOOTBALL LAUNCHER

Football launcher that can be operated by a single person. It tracks the player's movement and then via a remote on the player's person the launcher will throw the ball.

AUTOMATIC COLLECTOR

MEMBERS: Ibrahim Alshugair, Andre Belanich, Moez Khanfir, Jose A. Meza
ADVISOR: Luis Ledezma - Unlimited Electro Manufacturing, Inc.
SPONSOR: Rafael Perez - Unlimited Electro Automation and Controls, Inc.

AUTOMATIC COLLECTOR

Our project is part of a toy production process for Mattel®. Toy pieces are collected from an injection molding machine by a Cartesian robot arm and placed into our automatic collector. The automatic collector can be programmed based on the cycle time and number of cycles that it will take for a tray to get full. The tray then moves to a second position where the operator can collect the full boxes and move them into the next station.

AZTEC BAJA SAE

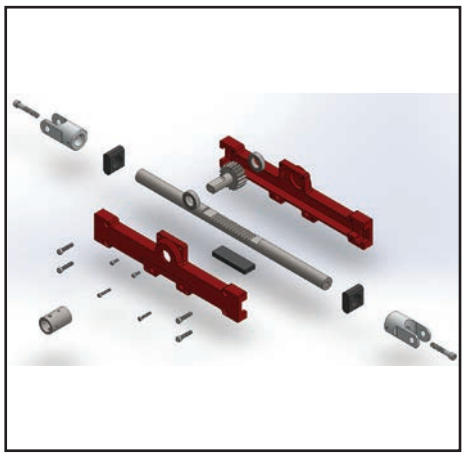
MEMBERS: Mario Gutierrez, Jared Hill, Elijah Lettau, Alexandro Martinez
ADVISORS: Aztec Baja SAE

REAR SUSPENSION DESIGN

This team designed a rear suspension that is lighter, easier to manufacture, replicate, as well as assemble on the Aztec Baja SAE car when compared to the 2016 design. For the first time in Aztec Baja history, the car will have carbon fiber tie rods and camber links, student designed and manufactured hubs, as well as custom spec'd FOX coil over shocks.

AZTEC BAJA STEERING SYSTEM

MEMBERS: Derrick Greene, Salvador Martinez, Nino McNeil, Alan Svehaug
SPONSOR: Certified Metal Craft, Inc., Competitive Metals, Performance Titanium Group, Aztec Baja SAE



BAJA STEERING SYSTEM

We have designed a rack and pinion steering system for the SDSU Baja SAE team.

COILOVER ADJUSTER TEAM

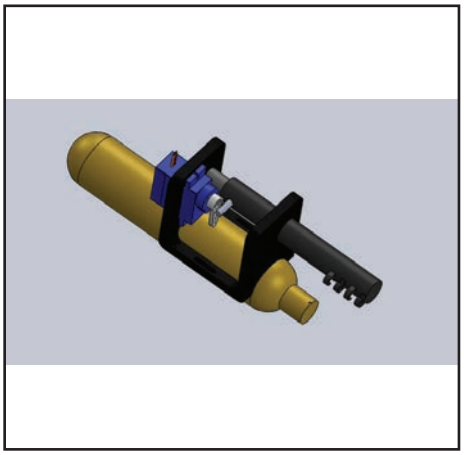
MEMBERS: Joshua Brew, Trevor Holmquist, Kris Manlulu, Erik Vizcaya
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Parts Shop Max

COILOVER ADJUSTER

Car enthusiasts ranging from those who race to those who simply work on cars as a hobby may purchase suspension components known as "coilovers" to upgrade their suspension setup. Users utilize coilovers to adjust vehicle ride height by using spanner wrenches to spin metal collars that lock the coilover height in place. Spanners require the user to put them in place, spin the collar about a quarter to a third of a rotation, remove the spanner, and repeat. This process can take several minutes or even more if a collar is hard to spin due to being in place for such a long amount of time. Our idea is to create a power tool version of spanners that makes adjusting collars on a coilover much easier and faster.

DAVY JONES' ROBBER

MEMBERS: Brennen Berry, Sarah Chan, Adam Olson, Kevin Rooney
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

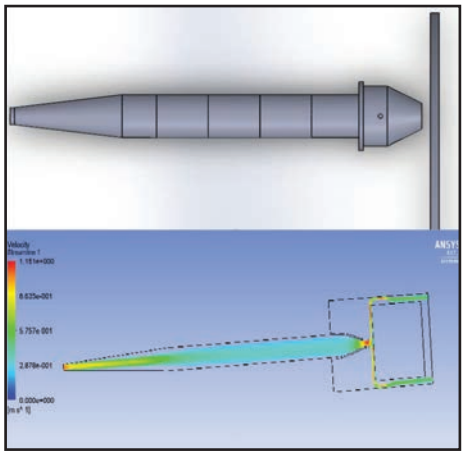


DAVY JONES' ROBBER

The objective of this project was to design a device that attaches to a ripcord style life vest that will automatically inflate if the user becomes unconscious or is drowning. Using a reflective sensor attached to the user's earlobe, it monitors the blood oxygen levels continuously. If the blood oxygen level drops below a normal reading, the servo will activate, pulling the pin. This will then pull the ripcord automatically and inflate the life vest. We designed this device to be versatile and able to attach to any ripcord style life vest.

DUAL FLAME CVD NOZZLE

MEMBERS: Eric Abresch, Caitlyn Bralla-Martin, Jesse Marquez, Ryan Tandy
ADVISOR: Dr. Joaquin Camacho, Assistant Professor, SDSU Department of Mechanical Engineering

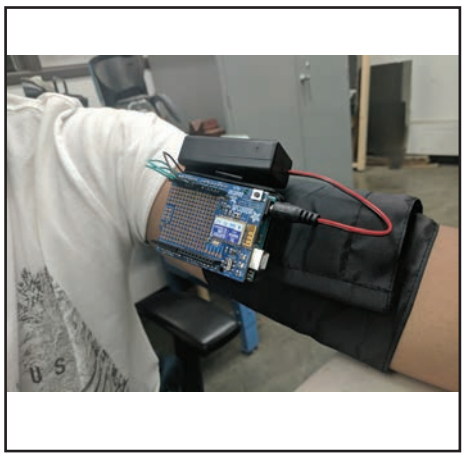


CVD NOZZLE

Flame Assisted Chemical Vapor Deposition (FCVD) is a technique used by Dr. Joaquin Camacho to synthesize nanoparticles for improvement of battery and ultra-capacitor performance and efficiency of the fabrication process. The FCVD nozzle and subsequent apparatus was first established by Dr. Camacho at Stanford University. The overall project objective is to design and manufacture a new FCVD nozzle capable of producing a flat velocity profile at the exit of the nozzle. The proposed design of this new FCVD nozzle will allow for multicomponent thin films to be grown from two opposing chemical reaction sources.

ENGINEERING HEALTH CONCEPTS

MEMBERS: Bruce Cerezo, Greco Cosente, Ed Pingquian, Patric Trinh
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Self funded

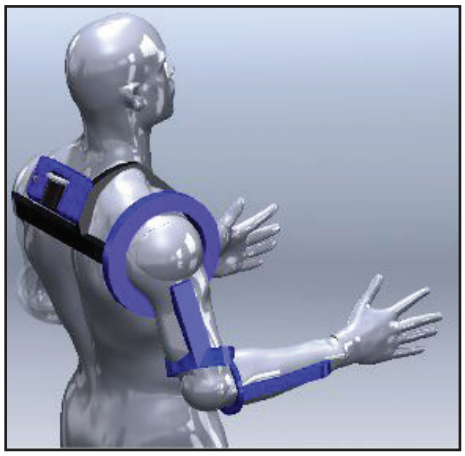


INTEGRATED VITAL SIGNS MONITORING DEVICE

Vital signs play an important role in patient care. They aid physicians in determining the immediate health treatment that a patient needs. The four vitals signs include blood pressure, pulse, respiration, and temperature. With this project, we seek to minimize or eliminate the process of bringing our multiple pieces of equipment to monitor a patient's vital signs. We seek to develop a solution that will monitor three of the four vital signs through one measuring device and the readings wirelessly transmitted to a monitor.

EXO SYSTEMS

MEMBERS: Said Al-shezawi, Anders Schmidt, Ziv Weizman, Paul Winkelmann
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering



HIGH STRENGTH EXOSKELETON ARM

High strength exoskeleton arm that will aid the user in lifting heavy objects. This project is intended for elderly people and individuals who have been weakened by illness, in order to reduce the burden of various daily tasks.

EXO-GYM

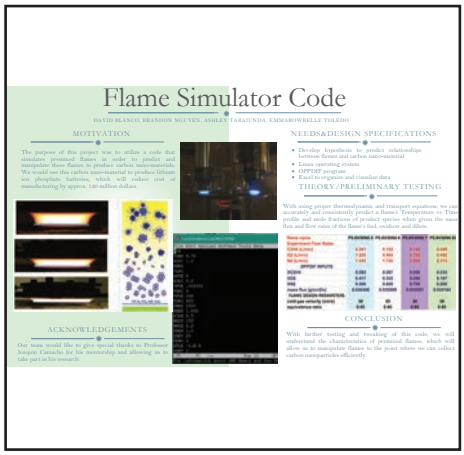
MEMBERS: Archanghel Bauista, Josue Campos, Bill Fahrbach, Alberto Tirado
ADVISORS: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Student Funded

EDICAL REHABILITATION DEVICE

The team will develop an exoskeleton that will emulate gym machine workout. This will be achieved by using a medium that will cause the exoskeleton to resist motion. Either springs, industrial rubber bands, dampers, or a pulley system will be used to create resistance on the exoskeleton. The Exo-Gym, will be worn on top of the body, and will achieve biceps, triceps, shoulders, chest, and back workout. The purpose of this project is to help people with disabilities that have difficulties changing from one exercise to another, rehabilitate physical injuries by strengthening the muscle in the injured area, and will help those who seek to achieve their fitness goal.

FLAME SIMULATOR

MEMBERS: David Blanco, Brandon Nguyen, Ashley Tabajunda, Emmarowbelle Toledo
ADVISOR: Dr. Joaquin Camacho, Assistant Professor, SDSU Department of Mechanical Engineering
SPONSOR: Dr. Joaquin Camacho, Assistant Professor, SDSU Department of Mechanical Engineering

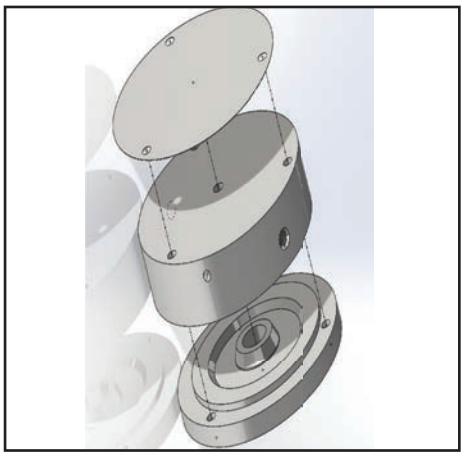


FLAME SIMULATOR

Our team is discovering the link between experimental flow rates for combustion and capacitor synthesis by performing computer simulations of possible experimental flames that burns gas to create different crystalline carbons. With the use of Linux and OPPDIF we are able to retrieve data such as time, temp and O2 levels which will then be confirmed by Raman spectroscopy and Xray diffraction of the experimental samples provided by the burner apparatus. In the simulations we are only able to control a few variables such as mass flux and different fuel type levels. By manipulating these inputs to find the right parameters, we will be able to create crystalline carbon.

FLAME-ASSISTED NANOPARTICLE ANALYZER

MEMBERS: Ryan Badertscher, Natalie Robertson, Kasia Siedlecki, Lloyd Tisuela
ADVISOR: Dr. Joaquin Camacho, Assistant Professor, SDSU Department of Mechanical Engineering - SDSU Energy FANS Lab

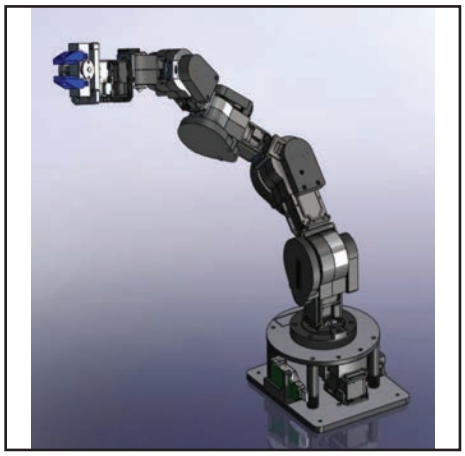


FLAME-ASSISTED NANOPARTICLE ANALYZER

We designed a nanoparticle analyzing system to be used in combustion chemical vapor deposition (CCVD) process subsequent to Dr. Camacho's research in flame-assisted nanoparticle synthesis process. Dubbed the "Flame-Assisted Nanoparticle Analyzer", it utilizes three subsystems: nitrogen flow, coolant flow, and a thin surface plate to characterize carbon nanoparticles produced by a stationary premixed flat flame. Complementary instruments to be used are a Centrifugal Particle Mass Analyzer and Scanning Mobility Particle Sizer Spectrometer. Through nanomaterial fabrication and particle analysis we hope to optimize the battery and ultracapacitor manufacturing processes while also maximizing their power and energy densities.

INFINITY

MEMBERS: Abdulaziz Alhubail (Enzo), Donald L. Kleinhen III, Nathan Thomas
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

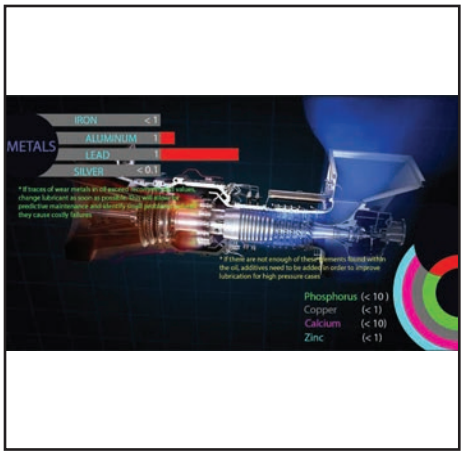


ROBAI CYTON GAMMA ROBOTIC MANIPULATOR

Robai Cyton Gamma Robotic Manipulator is a seven Degree of Freedom Robotic Manipulator designed to assist the extremely disabled with everyday tasks. The flexibility of seven revolute joints allows for the most user control of this robotic arm. By simple use of a wearable input device and motion tracking, a user is able to control the motion of the robotic arm. On the technical side, this robotic manipulator uses the Pseudo-Jacobian iterative method to map the trajectories of each joint. Combining this with Python code to manage motion tracking operations and safety conditions allows for the robotic arm to mimic any motions made by the operator.

LUBE OIL PRESSURE FLUCTUATION STUDY

MEMBERS: Ben Pecot, Jaymen Richardson, David Tellefsen, Kate Woodward
ADVISOR: Marco Leon - Solar Turbines
SPONSORS: Marco Leon, Santiago Mesa, Alfredo Cardenas - Solar Turbines

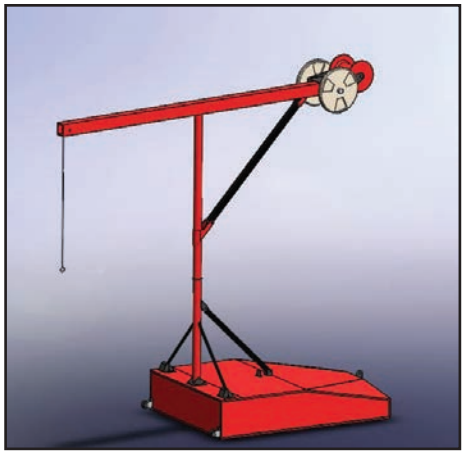


LUBE OIL PRESSURE FLUCTUATION STUDY

The purpose of our senior design project is to analyze and stabilize the lube oil pressure system for the SDSU Cogeneration Plant Unit B Solar Taurus 60 Gen Set Package before it becomes a problem.

MECHATRONICS ROBOSUB DEPLOYMENT SYSTEM

MEMBERS: Brandon Beal, Todd Currier, Dino Ljubovic, Andrew Sherburne
ADVISOR: Jared Guerrero - SDSU Mechatronics
SPONSOR: SDSU Mechatronics
WEBSITE: https://www.sdsumechatronics.org/



MECHATRONICS ROBOSUB DEPLOYMENT SYSTEM

Deployment system capable of safely and securely delivering testing vehicles to above and below ground pools, while maintaining a light-weight, easy to set up, and easy to store design.

MODULAR KNEE STABILIZER

MEMBERS: Erica Jane Cabaluna, Joshua McSherry, Marisela Martinez, Andrew Rodriguez
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

MODULAR KNEE STABILIZER

Flexible knee stabilizer that assists with preventing anterior cruciate ligament injuries. Features include adjustable air pressure bladders and built-in gel packs for adjustable temperature.

NEUROLINX SMARTBOARD

MEMBERS: Nick Chavez, Ryan Kulbarsh, Collin McQueen, Steven Nolls, Melissa Phothiwat
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

NEUROLINX SMARTBOARD

Neurolinx Smartboard expands the range of human bio-potential ability with assistive technology using neurological remote control. This provides an outlet for people with limited physical abilities and also serves as a potential transportation device. Inspired by various patents, technology, and advising from SDSU's Dr. Kee Moon, we enhanced the already operational Smartboard vehicle with three additional subsystems to interface an entirely neurologically controlled device. The three subsystems include: First Person Video (FPV) System, Collision Avoidance System, and Brain Control. Remote control is regulated by an EMG hat receiving facial EEG signals and by head tracking from FPV goggles. Infrared proximity sensors and the mounted camera live streaming to the FPV goggles completely integrate the user for the most efficient assistance.

NORTHROP GRUMMAN/SDSU FOD DETECTION TEAM

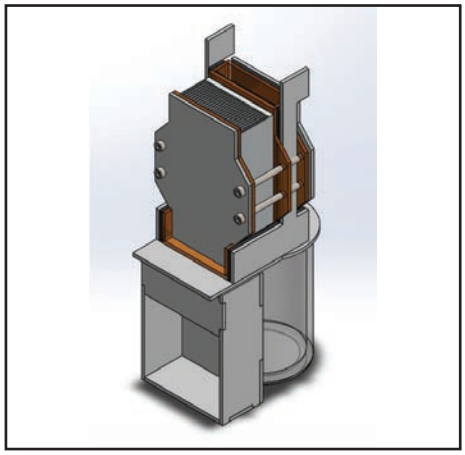
MEMBERS: William Ritchie, Josh Sather, Naomi Smithwa, Daniel Stec
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSORS: Scott Shaffar - Northrop Grumman, John Crawford - Northrop Grumman

HANDHELD FOREIGN OBJECT DEBRIS DETECTION SYSTEM

Designed to be lightweight, handheld, and non-cumbersome, the handheld foreign object debris detection system will help inspectors on the manufacturing line to detect potentially dangerous Foreign Object Debris (FOD). FOD is any item or residue left behind in the manufacturing process that is not part of the originally designed assembly. This debris can be harmful to the unit being built and adversely affect its performance up to and including catastrophic failure.

PELTIER WATER COLLECTOR

MEMBERS: Youseff Elkassis, Matt Fuller, Freddy Ghosn, Omar Hernandez



PELTIER WATER COLLECTOR

Our project is the Peltier Water Collector. It is a device that harnesses water from the surrounding environment by condensing air utilizing thermoelectric coolers.

PROJECT TRAVEL

MEMBERS: Paul John Francisco, Kendal Hussein, Madeleine McConnell, Jason Nguyen
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Don Greenberg - San Diego Plastics, Inc.

PROJECT TRAVEL

Units that are easily installed into an existing carry-on suitcase that will benefit the traveler by simplifying the packing and preparation process. Features included are weight sensors, a mobile device charger, a mobile app, and a compact electric air pump. Assembling the features as easily-installed compact units allows for the end user to choose a suitcase that matches their taste while still providing the benefits of a smart suitcase.

RECYCLINATOR

MEMBERS: Sean Bennett, Jordan Custodia, Matthew Penning, Cassandra O'Shea
ADVISOR: Jeff Silver - Rough Draft Brewing Company
SPONSOR: Student Funded
WEBSITE: http://recyclinator.com/

RECYCLINATOR CO2 RECOVERY SYSTEM

Breweries use carbon dioxide (CO2) for many brewhouse operations. Most craft brewers purchase CO2 from bulk suppliers even though it's created as a byproduct of the fermentation process. The Recyclinator CO2 Recovery System offers carbon dioxide reclamation suited to the scale and budget of craft breweries. A proprietary filtration system delivers usable CO2 at a level of purity greater or equal to that of the CO2 brewers currently purchase from bulk suppliers.

REGENERATIVE SUSPENSION

MEMBERS: Christian Chapman, Brandon Jones, Xavier Martinez

REGENERATIVE SUSPENSION

The concept of this system is to translate the kinetic energy of the lower A-arm of the suspension of a car to electrical energy by way of magnetic induction. As the lower A-arm moves, the magnet will translate through the coil field producing a voltage. This voltage can then be utilized to charge the existing car battery and extend the range of the vehicle's travel.

RESPIRATORY SYSTEM SIMULATOR TEAM

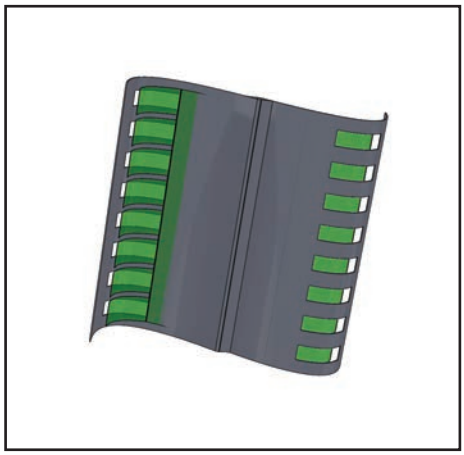
MEMBERS: Mohammad Al-Ali, Adriana Garcia, Benito Gutierrez, Vittorio Longi
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

RESPIRATORY SYSTEM SIMULATOR

The Respiratory System Simulator (RSS) replicates the physical functions of the human respiratory system and simulates different breathing complications, with a main focus on asthma. The main application of the project, sponsored by Dr. Kee Moon, is to calibrate medical and fitness-tracking devices that measure parameters related to the breathing activity (mainly air flow, respiratory rate and sound). The device's numerous sensors and actuators are connected to a host computer through a DAQ board (NI PCIe-6259) and an I/O module (NI SCB-68A). The user can control the system through a LabVIEW interface and can toggle between automatic presets and full manual settings.

SAVONIUS TURBINE DRAG REDUCTION SYSTEM

MEMBERS: Nicholas Bonse, Kevin Cruz, Jose Antonio Faria, Olivier Malabanan
ADVISOR: Dr. Asfaw Beyene, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Parker Champlin - SDSU Graduate Student

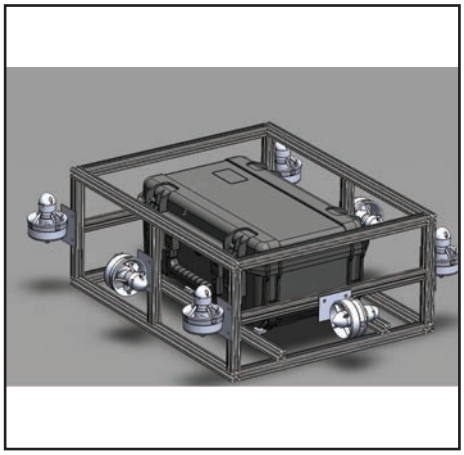


SAVONIUS TURBINE DRAG REDUCTION SYSTEM

The Savonius vertical axis wind turbine is a good turbine for high torque applications, but is hindered due to a negative pressure region slowing its rotation. The goal of our project is to relieve this low-pressure region by adding a series of morphing flaps that will break up the low-pressure region and improve the turbines performance.

SDSU MECHATRONICS

MEMBERS: Ben Briones-Colman, Christian Reha, Denver Schutz, James Walker
ADVISOR: Jared Guerrero, SDSU Mechatronics
SPONSOR: Jared Guerrero, SDSU Mechatronics
WEBSITE: https://www.sdsumechatronics.org/



CONTROL SYSTEMS TEST VEHICLE

This project is a test vehicle submarine meant for small-range testing of Controllers & Control systems. In previous years the software team has not had enough time to perform testing. The project should be easy to construct, low cost & robust. In order to accomplish this, we primarily used off-the-shelf parts, and focused on integration of these parts.

SMARTHELMET

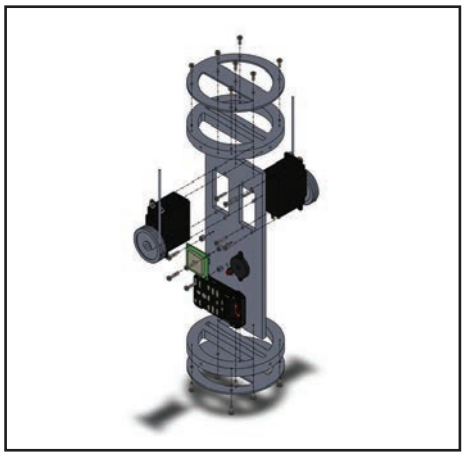
MEMBERS: Aaron Aguiar, Kyle Hogencamp, Josh Plunkett, Mason Veyveris
ADVISORS: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering, Patrick Spieldenner, MS, ATC - Asst. AD of SDSU Sports Medicine/Head Athletic Trainer

SMARTHELMET

The SmartHelmet system is an integrated eye tracking software intended to remove emotional bias when deciding if a player needs further evaluation for a concussion.

SONOBUOY ATTACHMENT DEVICE

MEMBERS: Eric Goulet, Angela Mudge, Nick Rivera, Brandon Young
ADVISORS: Matthew Handfelt, Chris Maceyko, Lauren Smith - Northrop Grumman

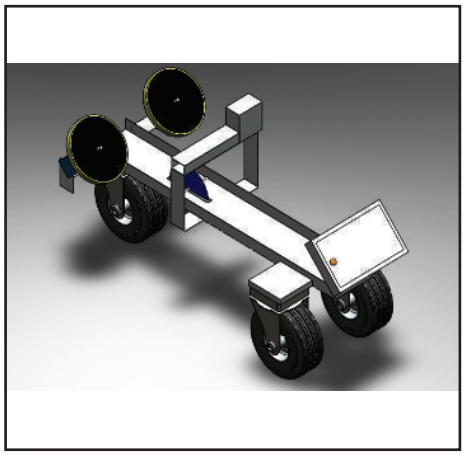


SONOBUOY ATTACHMENT DEVICE

Identify a concept for, and perform design and analysis of, an add-on device that couples to an existing G-sized sonobuoy and allows for precision-guided sonobuoy delivery from higher altitudes.

STRYKR

MEMBERS: Abdulaziz Almeshaileh, Sulaiman Altunaib Ziyad Al Mubarak, Saman Sharifi
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Bill Greene, Sports Tutor Inc.

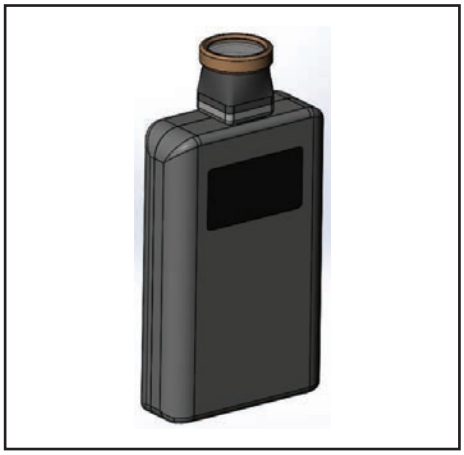


SOCCER TRAINING MACHINE

Our project is designed to improve player skill when a partner or coach is not available. It can be controlled from a distance via an Android app with Bluetooth integration, to negate the need of walking to the machine to adjust the settings. The machine will fire off balls at various speeds and modes of rotation with a randomize feature, all controllable from your phone. This will mimic the unpredictability of receiving a real shot or cross from a teammate or opposition. Currently there are no training systems which feature such a system, so we hope to fill this hole in the market. We would like to thank our sponsor, Sports Tutor Inc. for their constant support and supply of various, essential pieces to our project.

TEAM F.I.T.

MEMBERS: Kenny Potok, Enrique Quirk, Karl Reyes, Yacoub Saba
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

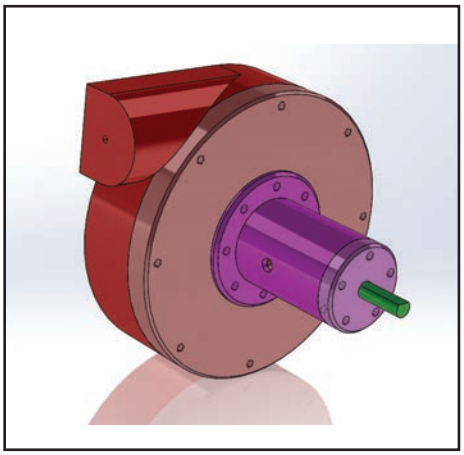


FASTENER IDENTIFYING TOOL

Many companies and mechanics in industry require a readout of bolt sizes for numerous applications. The Fastener Identifying Tool (or F.I.T.) was developed in order to expedite this process. This device captures an image of a bolt, processes the image in a database, and outputs the correct bolt size in english or metric units.

TESLA TURBINE

MEMBERS: Ramze Beydoun, Zacharia Fouda, Mao-Hung (Myron) Lee, Vicente Trujillo
ADVISOR: Dr. Asfaw Beyene, Professor, SDSU Department of Mechanical Engineering
SPONSOR: Honeywell Refrigerants, San Diego State University



TESLA TURBINE WITHIN RANKINE CYCLE

Design a less expensive alternative turbine for an Organic Rankine Cycle system. Recreate a Tesla Turbine to be incorporated within an Organic Rankine Cycle and produce approximately 1 kW.

WIFFLE BALL PITCHING MACHINE

MEMBERS: Mohsin Al-Ruqaishi, Philip Daum, Matthew Dessel, Daniele Narelli
ADVISOR: Dr. Kee Moon, Professor, SDSU Department of Mechanical Engineering

WIFFLE BALL PITCHING MACHINE

Automated, APP controlled wiffle ball pitching machine. This pitching machine uses an app to control three universal motors. The speed of each motor is programmed and create different select pitches.