ORU MAKE NO LITTLE PLANS HERE

ENGINEERING DEPARTMENT NEWSLETTER

ORAL ROBERTS UNIVERSITY ENGINEERING GRADUATES OF 2018

Left to Right: Prof. Akbar, Dr. Zhang, Dr. Liu, Dr. Weed, Dr. Gregg, Dr. Halsmer, Dewayne Bryant, Matthew Samuelson, Nicholas Bogdanoff, Austin McCulloch, Jacob Bishoff, Connor McCain, John Voth, Kirsten Burnett, David Ahrens, Nicholas Johnson, Gustav Atengong, Margaret Dipronio, Daniel Rickard, Nathaniel Frailey, Alexander Mills, Laura Carvajal, Chase Ophus, Morningstar Akinrinlola, Somtochukwu Ekwempu, Jordan Reutter, Sarah Higginbotham, Timothy Turner, Austin Short, Nicholas Nation, Connor McGraw, Kristaps Kokis, Thomas Monnier, Theodoor Nap, Ayanaw Mesganaw, Torin Ekblad, Faran Maalik, Samuel Moriera, Dr. Matsson, Dr. Leland, Dr. Ma

SUMMER ENGINEERING INTERNSHIPS

RICHARD ERNST

As a Mechanical Engineering student going into my Junior year, finding an internship opportunity was very challenging, but I have been blessed with the opportunity to work at L3 Technologies as a Mechanical Engineering Intern for the summer of 2018. The responsibilities of this internship consist predominantly of aiding in the assembly of simulators for various fighter planes. Through this experience, I have had the chance to witness the different required stages of creation of complex systems such as: ideation, designing, drafting, ordering of parts, painting, subsystem assembly, and finally system assembly. What has added most value to my summer, however, is learning how engineers complete tasks in a highly competitive, professional field. L3 Technologies operates with precision and vigor, which has now been woven into my own work ethic, helping me to become a better, well-rounded engineer after graduation. If I were to give any advice to another Mechanical Engineering student striving for excellence, it would be to seek out every internship opportunity available and trust that God will direct you in the right direction. My internship has been both exciting as well as challenging and without it, I would not be as prepared to enter into the workforce after graduation. Thanks to my well-rounded education at ORU, however, no matter what environment I enter, I am prepared to make a lasting impact for God's Kingdom.

Photo: Gerard van der Schaaf

DANIEL LEANDER

I'm in Air Force ROTC through ORU's crosstown program with a nearby Detachment. As a part of the program to become an officer after graduation, cadets go to Field Training between their sophomore and junior year in college. Field Training is a short and intense leadership evaluation course that thrusts participants into high pressure leadership positions where they are evaluated by Air Force personnel.

In the summer of 2016, I found myself in such a position at Maxwell AFB, Alabama. I was marching my Field Training team, or flight, back to our dorms after Retreat when I suddenly run into a conundrum. I need to turn the flight 90 degrees to the right, from a narrow sidewalk, onto a narrow sidewalk. There're a lot of details that go into marching and there're about a dozen different rules that factor into the single command that I need to give my flight. The biggest problem is timing.

I must call my command to turn right as the right foot strikes the ground, one and a half paces from the turn. There are 20 cadets, 2 abreast, and 10 deep, filling the narrow sidewalk. I'm required to be behind them, unable to see the feet of those in the front. I'm doing 120 seconds of thinking in about 60 seconds as I close in on the turn. I'm getting yelled at by my two Field Training staff, other flights in the area are getting yelled at by their staff, and other flights are yelling out their commands to approach their own dorms. Suddenly the Holy Spirit points out the shadow being cast by the setting sun.

Long shadows from each cadet in my flight are being cast forward and to the right. Looking down at my shadow being cast in the same direction, I do some quick geometry to figure out where the front cadet is, relative to his shadow. With these mental calculations completed, I called the command at just the right moment. The flight made the turn perfectly and my Field Training staff were silent (silence from your drill sergeant is a compliment.)

ORU's vision is to "Raise up your students to hear My voice, to go where My light is dim, where My voice is heard small, and My healing power is not known, even to the uttermost bounds of the earth. Their work will exceed yours, and in this I am well pleased." The university's mission is "To build Holy Spirit-empowered leaders through whole person education to impact the world with God's healing."

Thank you ORU Engineering Department for making free body diagrams and geometry a subconscious process. Also, thanks to ORU for courses that teach about the Holy Spirit, as well as weekly chapel services and an environment that is sensitive to the Holy Spirit. I completed Field Training in the top 4 of my flight of 20 cadets. My flight achieved *Honor Flight*, the award given to the best flight of 24 at Field Training. I give God all the credit.

BEN RUSSELL

Sitting in Dr. Halsmer's Applied Thermodynamics classroom last fall, I never would have guessed that I'd have the opportunity to work with gas turbines! I am eternally grateful for that class! Currently I am interning in Cincinnati, Ohio with Baker Hughes, a GE company which is the world's second leading oil field services provider.

At this particular branch in Cincinnati, BHGE projects are closely tied with GE Aviation. Jet engines like the GE9X and CF6 have been designed, assembled, and tested in Cincinnati for many of Boeing's commercial airliners and military projects. Engines like these have been modified into aeroderivative gas turbines for land and marine applications by removing the jet engine turbo-fan and adding driven equipment like a generator for power generation or compressor for LNG manufacturing. These gas turbines are optimized to meet a wide range of power output (from 18 to 100MW), fuel variety, and ambient conditions while having a low environmental impact and high reliability (over 100 million hours of operating experience.)

So far I've been assigned two main projects with the LM2500 and LM9000 aero-derivative gas turbine series. The first project involves assisting in root cause analysis for failures of compressor discharge pressure (CDP) seals at LNG suppliers in Houston, TX and Papua New Guinea. This project has mostly consisted of analyzing key variables before and after the turbine's CDP seal failure by identifying trends and concluding data correlations. The second assignment deals with project planning for the brand

new LM9000 FETT (First Engine To Test.) My task is to reduce the assembly time of external kits, like the fuel, air, actuation, and lube systems, from 6.5 weeks to 4 weeks by parallelizing workflows and updating procedures. Working on this project with an engineering team in Italy and systems engineer in India has significantly broadened my view of globalization!

The travel aspect of this internship is something I have really enjoyed. Trips to the Evendale factory allow me to actually hold the mechanical parts, learn from the assembly technicians, and better understand how parts fit together and function. Something I really admire about BHGE is how the company strongly emphasizes mentoring and community service. I'm so thankful to be surrounded by geniuses who want to better the next generation of engineers as well as the surrounding community. Weekly mentoring meetings with my manager and volunteer opportunities and events with other interns are things I constantly look forward to throughout the week. I am very excited for what the next month holds and for what the Lord has in store for this upcoming semester at ORU.

ELIZABETH STAPLETON

This summer, I had the incredible opportunity to work as an intern for TD Williamson. Founded in 1920, TD Williamson is a global pipeline servicing company that has successfully manufactured and implemented numerous pipeline components, made to order and by catalog, for multiple generations. There are three main branches of the company: Hot Tapping and Plugging, Pigging, and Pipeline Integrity. My primary location of work was at the Tulsa Manufacturing Plant, or TMP. Here, I worked with an engineering group known as Knowledge Management, or Technical Authorities. This particular group is responsible for oversight of design and manufacturing of TDW's products. These products range from hot tapping and plugging components to pigging parts. Thus, I had exposure to all three branches of the company productions at various levels.

Hot tapping and plugging refers to a specific practice for repairing a damaged or failing segment of a pipeline without disturbing the flow of the pipeline's contents. The term "pigging" refers to cylindrical equipment, known as pigs, that go into a pipeline system to perform various tasks. There are basic pigs that go through a pipeline scraping, coating in comprehensive layers, clearing, cleaning, and other similar jobs. There are also "smart" pigs that possess scanning capabilities so that they collect valuable data about the condition of the pipeline interior. This data can track pipe deformation, points of high stress, and other critical information that allows opportunity for better and more specific care. With well over a hundred patents, TDW constantly designs innovative approaches to these aspects of their industry to increase the specificity and effectiveness of their pipeline solutions.

Upon starting my internship, I was exposed to a quality learning environment where high level concepts were explained in order to better understand the context of the more detailed projects I was tasked with. I immediately began to heavily use my engineering mathematics to prove a method of calculations for flange design according to ASME codes and standards specific to the industry. I also spent a lot of time working with calculations and drawings for a signature TDW product, their pipeline closures. These closures are patented with an innovative sealing and closing system that maximizes ease of operation and safety, as the operator need never cross in front of the pipeline to be opened. In addition, I worked with other engineers to run particular tests to prove theoretical shear stress limits and internal residual weld stresses. It was fascinating work. I also had the opportunity to work with ANSYS and utilize the methods of Finite Element Analysis learned in class. I learned a new CAD modeling program called NX, similar to SolidWorks, and used it to model components for testing with ANSYS. Aside from these projects, I also conducted several more advanced calculation processes for critical design information.

In the end, I reported my work and results to management and suggested future steps for moving forward, given my findings.

Working at TDW exposed me to many new concepts and industry while also requiring me to pull heavily upon the skills previously learned in engineering classes. I was able to see innerworkings of the industry from multiple different angles, and was given clear opportunity to truly contribute in ways meaningful to the company. It was definitely a wonderful and rewarding summer work experience that will stick with me throughout my engineering career.

ENGINEERING GRADUATE JOBS

LAURA CARVAJAL

NMB Manufacturing is a company located in Bixby, Oklahoma that fabricates steel products such as heaters, pump skids, flare tip and burner assemblies, control racks, and piping and vessel fabrication. Some of our main customers are Tulsa Heaters Midstream, Callidus Technologies/ Honeywell, Elkhorn Construction, and others. NMB also provides product design that meets customer needs. I started working at NMB the last semester of my senior year as a Mechanical Engineering Intern. After graduating, I had the opportunity to keep working with them. NMB started in 2012 and has grown rapidly the last few years. Working at a fairly new and small company has let me learn and work on many different projects. I work along with ORU alumnus Juan Jose Betancur and some of my main tasks are drafting of heaters such as SHO heaters and waterbaths (Figure above) designed by Tulsa Heaters. We receive drawings or pictures of products from our customers, then we detail each drawing either on SOLIDWORKS or AutoCAD in order to purchase all materials needed and also make it easier for the people who will manufacture the product. If there is a challenge in the process of fabrication, then the guys from the shop come to us in order to find a suitable solution. My favorite thing about working at NMB is that I get to interact directly with customers, vendors, and all the team encharged with fabricating the product. I always wanted to work in the energy industry. It is a challenging, yet rewarding work and I have been able to use many of the skills I learned while going to ORU.

FARAN MAALIK

I am thankful to God for giving me an opportunity to work as a mechanical engineering intern at OSECO in Broken Arrow, OK. During my internship, I have supported Capital Commercial Projects Team from the engineering department. My main tasks are working on engineering requests made by customers, designing 3D CAD models in SOLIDWORKS, and drafting drawings for the approval process. I create engineered part numbers in the company's database with established procedures and data specifications. Many of the parts I design are ASME certified, checked and approved by a senior engineer. I've had confidence and success at my internship because of the knowledge received from my professors at Oral Roberts University and the mentorship from the engineers at OSECO.

CHASE OPHUS

Since graduating in May, I have taken a mechanical engineering job at a company in Van Nuys, California, which is just north of Los Angeles. The company I work for is Ratpac Dimmers, a company that manufactures dimmers for film industry lighting. While you may not be familiar with the company, you are certainly familiar with the movies their products have helped create. Their products have been used on massive blockbusters like the Star Wars and Avengers franchises.

The first project I worked on with the company was to design a product that would be used in conjunction with old portable distribution boxes that get used on film sets to provide power to equipment. Essentially, this product upgrades this older power distribution technology by providing it with a new function—the ability to transfer the data needed for dimming lights. We currently have a prototype of this product, and are expecting to go into full production in early fall.

Front view of the prototype of the product I designed (in black) as it is attached to a portable distribution box (in grey).

In addition to this first project, my job consists primarily of working on SOLIDWORKS. I create drawings on SOLIDWORKS that are used by employees in the manufacturing department of the company. I also create 3D models of parts and then compile these parts into assemblies that are used in the design process. Fortunately, all of the SOLIDWORKS modeling I did in my college classes has shown to be good preparation for the work I have done in industry so far!

AUSTIN SHORT

After graduating from ORU, I was excited to see where God would lead. I felt as though I had been prepared well for this next phase in life by the past four years. I returned home to Minnesota with an interview scheduled with a medical device manufacturer. I went through the interview process, and at the end of the interview, I was asked when I was able to start. Two weeks later, (after a reference check and another week of summer break) I found myself filling out paperwork on my first day of work. I had accepted the title of Associate Operations Engineer, and I was about to be thrown into a brand-new world.

Mendell, the company with which I now work, specializes in implantable medical devices. We tackle the hard jobs, and though we are a smaller company with only 100 employees, we are able to have a quick production changeover which keeps us competitive. Our focus and driving force is producing quality products. My first day I realized how significant figures are – the largest tolerance that we have in our products is a ±0.005 inches. It was also readily apparent (despite the groans from every college student still wondering how to get their answer into "slugs") that we do not use the metric system.

Since starting, I have been spending my time in different areas of Mendell. One day in milling, another turning, another with inspectors verifying dimensions on parts. Understanding the entire process is key. I now am working in the quality office - using statistics to better understand the machining capabilities, problem solving as to why machines are producing bad parts, and analyzing processes to try and remove the human error aspect. Every day there is something different, a new problem to tackle. Mendell is a place where: quality and traceability of parts are key, tolerances are everything, and statistics combined with technology are your best friend.

Entering ORU four years ago, I never would have imagined that I would end up in the medical field on a path resembling that of a quality engineer. The one thing that I did know as a freshman was that God had created a job for me post-graduation. All I can say, is that without ORU, the hours of homework, and incredible professors, I would not have been able to step into this role.

JOHN VOTH

I've had the pleasure to be a design engineering intern this summer at Boeing's Oklahoma City location. Boeing is a monstrously large corporation; it's the United State's #1 exporter and totals over 150,000 employees across the globe. With that said, it's been a very valuable experience to learn how to function as an extremely small cog in a huge machine, and there are a lot of tips and tricks unique to industry that can really only be learned through an internship. All of Boeing's work in OKC pertains to various nations' air forces, which is why our office is located right next to Tinker AFB. I work on designing low-level components for ground and training systems of the E-3 AWACS plane, which is used as a sentry for the air forces of US and other allied nations. Half of the job is CAD modeling using CATIA, and the other half is figuring out what all of the acronyms mean. I'm only kind of joking. Overall, it's been a great change of pace from the school year, and I absolutely recommend other ORU engineering students and grads to apply to Boeing OKC. (They're hiring engineers like crazy, so seriously, apply!)

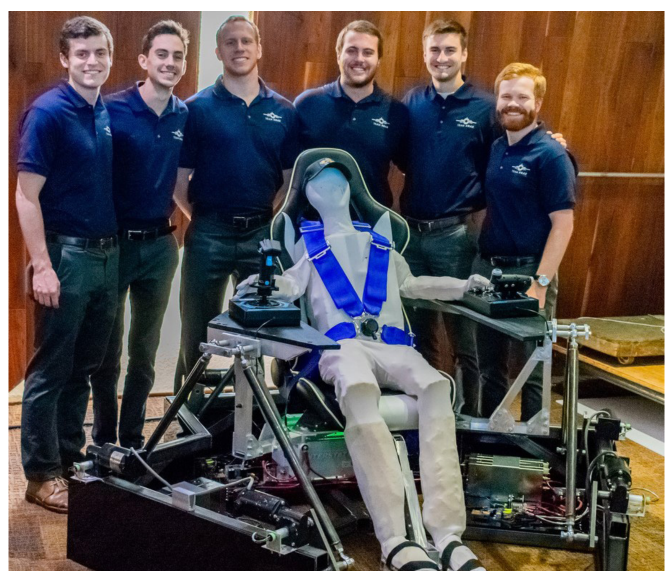
An E-3 Sentry of the United States Air Force

2017 – 2018 SENIOR DESIGN PROJECTS

TEAM SOAR – DESIGN AND FABRICATION OF AN EDUCATIONAL VIRTUAL REALITY AIRCRAFT MOTION SIMULATOR

David Ahrens, Nate Frailey, Connor McCain, Jordan Reutter, Matthew Samuelson, John Voth

A team of six engineering students, under the direction of two faculty members from Oral Roberts University, is researching a new, innovative approach to deepen undergraduate students' practical understanding of aircraft design. These undergraduate seniors are developing, fabricating, and fine-tuning an aircraft flight simulator, which, along with the help of virtual reality technology, will realistically produce the motion effects of flight. Through research and ©Solid-Works modelling, Team SOAR modified the Stewart platform system to accommodate their specific design criteria, successfully manufacturing a six degrees of freedom structure.



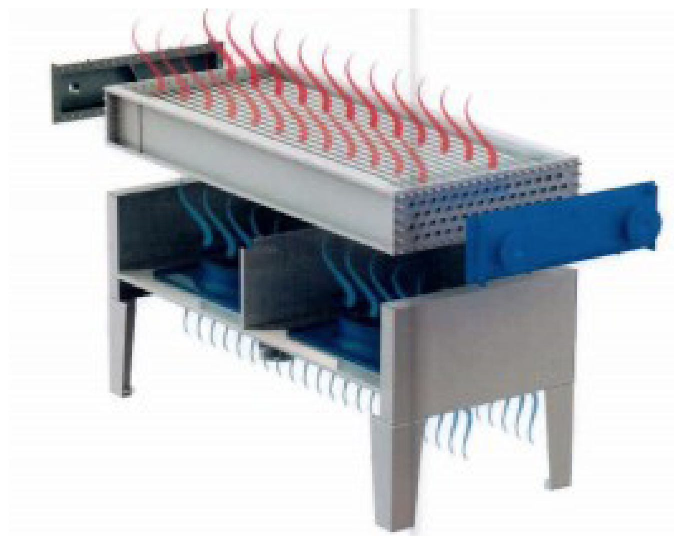
Team SOAR, Left to Right: David Ahrens, Jordan Reutter, Nate Frailey, Connor McCain, Matthew Samuelson, John Voth

In Dr. Dominic Halsmer's Aircraft Design course, students learn how to design an experimental aircraft using "correct" specifications according to theoretical values. This educational process will be improved by providing further connection between actual flight handling and the supporting aircraft design theory. This project allows students to speed up the iterative aircraft design process, while affording them the capability to realistically experience flight in their own custom designed aircraft. The scope of Team SOAR's project, however, reaches beyond just enhancing educational opportunities for engineering students. Several passive flights are programmed for the general public's immersion, exposing prospective and nontechnical students to the world of aircraft design. As a whole, this project functions as a powerful tool of engineering education, providing an immersive learning experience to many, regardless of the individual's prior level of knowledge.

S.T.A.R.C. INDUSTRIES STREAMLINED TEMPERATURE-ALTERING RESPONSE COOLER

Sarah Higginbotham, Connor McGraw, Thomas Monnier, Austin Short

The purpose of this project is to reduce the overall cost of Air-Cooled Heat Exchangers (ACHE's) by implementing a Joule-Thomson Effect (JTE) feedback loop. The goal of this innovative method is to reduce the geometry of the ACHE, thus leading to lower manufacturing and transportation costs. When the natural gas is harvested from a ground well, it has to be compressed to a higher pressure before going into a gathering line. The temperature is increased from this process due to the direct relationship between pressure and temperature. To keep the temperature of the gas within a usable temperature range, an ACHE is used to remove heat from the gas. This process is accomplished by three compression stages with intermediate cooling by the ACHE. The ACHE operates by utilizing forced-draft convection to transfer heat from a hot fluid. The fluid runs through a series of tubes that are often wrapped in aluminum fins to aid in the heat transfer. As the heat energy from the fluid conducts to the wall of the tubes and through the fins, ambient air is blown across the tube bank via large fans, to transfer this heat energy from the finned-tubes to the air. This project attempts to reduce the cost to cool the gas using the JTE. In essence, the JTE happens when a gas at a high pressure is throttled to a much lower pressure. This can result in a large temperature change depending on conditions and the Joule-Thomson coefficient. For this application, the natural gas exiting the final cooling stage is throttled down from its high pressure to match the low pressure of the warm gas entering the first cooling stage. The throttled gas is mixed in with the initial gas resulting in a much lower temperature of gas entering the first cooling stage. This requires less work and a smaller geometry of the heat exchanger to lower the temperature to the same as it would have been before implementing the throttling effect. Initially, theoretical calculations were used to prove the viability of this method. CFD simulations were run using ANSYS Fluent and SOLIDWORKS Flow Simulation to verify the results obtained from the theoretical calculations. Finally, to prove the practicality of implementing the solution, Heat Transfer Research, Inc. (HTRI) provided simulation software which allowed different ACHE designs to be compared by generating performance reports. Thus, the results of the implemented solution were compared with results from existing designs, to determine its practicality and validity in lowering costs. The final result of this project shows that the JTE feedback loop decreases the area in part of the ACHE but increases it enough in the rest of the ACHE to result in an overall geometry and cost increase.



Cooling Unit

WATER FILTRATION THROUGH CERAMIC POT FILTERS

Morningstar Akinrinlola, Laura Carvajal, Ayanaw Mesganaw

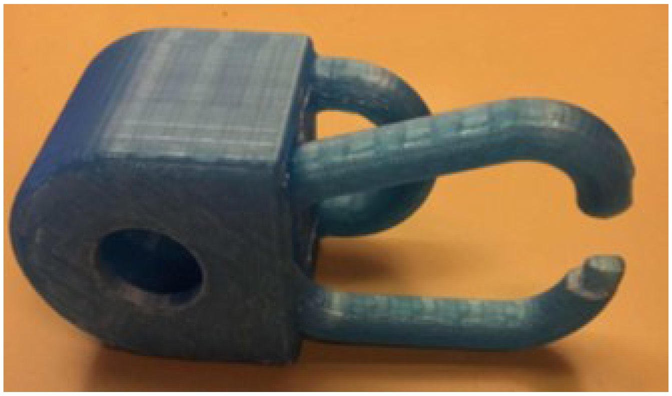
Frustum filter

Water is vital for the health and well-being of people. According to The World Health Organization (WHO), approximately 2 billion people lack access to clean drinking water. The purpose of this project is to improve the provision of clean drinking water for the country of Honduras specifically in the community of Morazán, Yoro. This project emphasis is on enhancing the performance of ceramic pot filters. These low-cost filters are made of mixed clay and some combustible material such as sawdust or rice husks. When firing the pot, the combustible material burns off leaving small pores where the water filters. The team built a hemisphere, cylinder, and frustum small scale filter to compare the flow rate for different geometries. The team also performed experiments with a wider frustum filter and a candle filter that the department of Engineering provided for them. Theoretical and experimental results were compared. Results showed that the hemisphere had the highest flow rate due to the 10% increase of combustible material. However, its yield strength decreased. The tall and thin frustum filter provided an acceptable flow rate when compared to the wide frustum. Increasing the burnout material will compromise the strength of the filter. The higher the hydraulic head, the higher the flow rate. Thus, a recommendation is to make taller filters with moderate burnout material to clay ratio.

GROUND RETRIEVABLE ANCHORING DEVICE

Nick Johnson and Chase Turner

When climbing a traditional or bolted rock wall, once the climber reaches the top of the route, a top anchor is created using rock geometry, sturdy trees, or drilled anchor points. Next, the climber is lowered, removing intermediate fall protection on his way down. Once down, the climber has retrieved all his equipment except the webbing and carabiners at the top of the route. Over time, this causes an accumulation of abandoned equipment at the top of routes which are inaccessible except by climbing. The objective of this project is to design and create a ground-retrievable anchoring device. Design objectives were driven by safety, usability, and longevity. These constraints included minimizing weight, as it would be carried by the climber to the top of the route, minimizing rope wear on the device and device wear on the rope, minimize the likelihood of static, dynamic, and fatigue failure, impact resilience for when it is released from the anchor point and falls to the ground, and corrosion resistance under normal outdoor use. Of the numerous design possibilities which were considered, two main options were quickly thrown out: 1) remote release via electric motor and 2) release by pull string attached to the device. The first was not considered because of the sensitivity of electronics to falls from great height, as would be expected during normal use. The second was not considered because of the high likelihood of accidental actuation before the climber has reached the ground. This left the third method of actuation, which uses the climbing rope itself. The principle of the design was that, once the climber was finished with the climb, he would untie himself and pull the rope through the device. The device would be released by an interaction with some mechanism at the end of the rope which could not reach it under normal operation. After considering the options within this category, it was decided that the safest option would be a design which could not release until the end of the rope had passed through. With this in mind, a hinged shackle was designed to slide into the body of the device and be held closed by the inside walls of the device and held in by the rope. When the climber is finished, the rope is pulled through the device and the shackle. This would release the shackle allowing it to slide out of the body and release its side of the anchoring tether and fall to the climbers on the ground for future use.



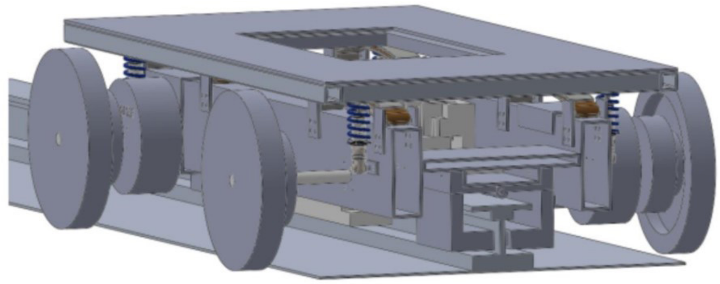
Functional 3D Printed Model of Anchoring Device

HYPERLOOP COMPETITION

Paul Acheampong, Austin McCulloch, Samuel Moreira, Daniel Rickard

The objective of this project is to design and build a pod to compete in the Hyperloop competition conducted by SpaceX. To succeed in the competition, the pod needs to go down the track as fast as possible and stop safely. This project can have major implication on travel for the future, making long distance transportation become significantly shorter in time.

The Hyperloop project first started with Elon Musk's paper that was submitted. In his original paper, he wanted to turn the idea of a cheap and extremely fast mode of travel into reality. The idea from his paper was to have a train travel through a tube using air bearings and linear induction motors to reach speeds up to 700 mph. This idea has been modified to use magnetic levitation instead of air bearings allowing the tube to be put under vacuum conditions. This allows the pod to reach high speeds with a minimum amount of friction.



ENGINEERING MISSIONS TRIP

ELIZABETH STAPLETON

Beginning in Fall of 2017, I joined the Zimbabwe Healing Team. For the remainder of the academic year, I, along with the rest of the team steadily prepared for our work on the ground in Hatcliffe, Harare, Zimbabwe. Divided into sub-groups by area of concentration, I, Elizabeth Stapleton, worked closest with fellow mechanical engineering graduate Nick Johnson and environmental science students Abigail Nusbaum, Anna Mueller, and Nathan Feller.

While on location in Hatcliffe, Zimbabwe, our group focused on two main projects. The first project developed and implemented a specific type of garden called the Wicking Bed, which is a small 2m x 2m, high yield garden that minimizes water usage and land occupation while maximizing crop yield. This, along with a develop of a mentor-mentee program designed to encourage community members to propagate the creation and maintenance of these innovative gardens, provided a means of food security for individuals currently subsisting on virtually a few handfuls of cornmeal (cooked and made into the national food, "sadza") as well as opportunity for additional income to meet their daily needs. Six gardens were completed during our time in Zimbabwe – five in the community of Hatcliffe and one at a local school.

Our second project involved the innovative design of a simple and inexpensive, yet effective latrine system. During the healing team trip to Zimbabwe in the previous year, we implemented a latrine design called the Arborloo design, which had unique qualities designed to turn waste to usable compost, prevent the infestation of flies, and more. This summer, we built upon and improved those ideas. In addition, we collected data through extensive assessment of the previous latrines used in the community in order to implement new ideas that corrected some of the pitfalls of the current latrine systems. For example, the composting idea was preserved, but adapted to accommodate specific challenges presented by community. Their needs were addressed by implementing the introduction of a special kind of earthworm into the latrine and compost system. This is an untested method, but promises to eliminate key challenges discovered in the previous latrine design.

This is just a quick snapshot of some of the work the "environeering" (combined mechanical engineering and environmental science team members) team addressed while in Zimbabwe. While these projects were extremely vital to the quality of life and health of the community of Hatcliffe, our ultimate goal was not just to simply improve the contamination levels of local soil. Rather, we went to utilize the skills learned in class to meet the needs of a people so that ultimately we could spread the love of Christ through our efforts. In the end, our projects were quite successful, significantly impacting local community members and inspiring high hopes of sustainable and positive change in the community. We pray that God will continue to bless the fruit of this labor and spark a wave of holistic healing across the nation of Zimbabwe.