



SENIOR DESIGN SYMPOSIUM

LAMAR UNIVERSITY | COLLEGE OF ENGINEERING

THURSDAY, APRIL 26, 2018
SETZER STUDENT CENTER
LAMAR UNIVERSITY

1. Ethylene Production Facility

Leader: Kelci Crawford

Group: Ramil Glorioso, Darrell Hardy, Daniel Perales, Manoj Subedi, Andre Zuniga Leiva

Description: The project is to design and cost a profitable, operating ethylene production facility with given design and operating specifications.

2. Ethylene Plant Design

Leader: Cody Angelle

Group: Erick Anfoso Salazar, Duc Duy Au, Kevin Nguyen, Chigozie Ohamara, Jesus Pena

Description: An ethylene plant was designed with a capacity of 171,120 kg/hr and a product purity of 99.92 mol%.

3. Ethylene Production

Leader: Amoghalila Romo

Group: Aurora Garcia, Basil Shafi, Harris Shafi, Michael Howard, Rebekah Hunt

Description: Ethane cracker producing 1.5 million metric tons/year of ethylene using a 90/10 E/P feed composition, produce superheated steam at 1750psig.

4. Ethylene Plant Design

Leader: Shelby Whitehead

Group: Mitchell Blackburn, Matthew Ervin, Mason Horbath, Carley Richmond, Yazeed Alhumaidan

Description: The initial design and cost estimate was performed for a full scale ethylene plant. This plant will run on an ethane and propane mixed feed with propylene as a major byproduct. The priorities of the design include process safety, return on investment, and low environmental impact.

5. Ethylene Production Facility Design

Leader: Michael Powell

Group: Vu Phan, Sloan Richey, Thorton Slaughter, Matthew Burns, Stefan Salinas

Description: A 70/30 ethane/propane volumetric feed composition, that produces 1600 psig superheated steam used to design a grass-roots facility safely and efficiently producing 1.5 million metric tons of high purity ethylene (99.2 mol%).

6. Ethylene and Propylene Production Team 2018

Leader: Spencer Wagley

Group: Sandrine Bonalair, Thuy-Vy Bui, Khoa To, Dulani Kuruppu, Kaleb Bendy

Description: A reactor and separation design was done for 1.5 million tonnes per year of ethylene production by using a 90/10 liquid volume percent ratio of the ethane and propane feed.

7. Designing an Ethylene Production Facility

Leader: Scott Karasik

Group: Elissa Tate, Benjamin O'Fiel, Chassity Bazarow, Cheyenne Warthen, David Garcia

Description: Design an ethylene production facility capable of producing 1.5 million metric tons of ethylene per year using an 80/20 ethane to propane feed mixture and superheated steam at a pressure of 1600 psig. Design includes project cost estimation, equipment sizing, and safety considerations.



8. Ethylene Production Facility

Leader: Michael Hollier

Group: Alejandria Avila, Ryan Quinn, Mohammad Abdulrahim, Ahmed Alzahrani, Marissa Peltier

Description: The design, evaluation, and cost of an ethylene production facility.

9. Ethylene Complex Design

Leader: Katherine Deaton

Group: Charles Flowers, Grant Freeman, Yuangao Liu, Catherine Sparkes Matthew Tillet

Description: Comprehensive design of an ethylene production facility using 70/30 ethane/propane feed and 1500 psig steam to produce 1.5 million metric tonnes per year of ethylene.

10. Ethylene Production Using 90/10 Ethane-Propane Mix

Leader: Danielle Tucker

Group: Jhovanna Mata, Megha Karatela, Ismay Cantu, Matthew Marks, Keith Rushing

Description: An ethylene production unit was designed using a 90/10 volumetric mix of ethane and propane for the feed and a production rate of 1.65 million tons/yr. The steam used for hot utility in the unit was at a pressure of 1500 psig.

11. Ethylene Production Facility

Leader: Farwa Rizvi

Group: Xin Wei, Julia Lin, Bryan Wright, Pingpeng Fan, Jim Le

Description: Simulate an ethylene plant design that produces 1.5 million metric tons/year base from feedstock comprised of an E/P (ethane-propane) mixture. This E/P mixture is a 70/30 vol% mixture with superheated steam that will be produced at pressures of 1600 psig.

12. Ethylene Production Facility Design

Leader: Zane Lopez

Group: James Simon, Joshua Vigil, Nicholas Treybig, Apol Bodiongan, Romel Cardenas

Description: Production of ethylene simulated via Aspen to design and cost a grass roots ethylene production facility that produces 1.5 million pounds of ethylene/year.

CIVIL & ENVIRONMENTAL

13. Pervious Concrete

Leader: Presley Lundquist

Group: Andre Trottier, Hayden Rice, Faustino Cisneros, Matthew Jones

Description: Implement pervious concrete in the sustainability garden at LU.

Pervious concrete is an alternative to conventional concrete that allows for water to flow through voids in the surface into a sub base, reducing flooding.

14. Dredged Material Protection Against Erosion

Leader: Reid Johnson

Group: Brian Bonner, Fernando Aleman, Faustino Cisneros, Jared Defrancis

Description: Create compressed dredged stone bricks with the goal of 1000 psi compressive strength, with the intention of cabling them together in a mat system to mitigate erosion along waterways such as levees and dams.



15. Embankment Erosion Protection Along SH 87

Leader: Zachery Parker

Group: Garrett Boudoin, David Tingle, Taylor Kane, Garret Love

Description: Assist current projects conducted by TxDOT and Lamar University to formulate sustainable solutions to erosion along State Highway 87 due to ships entering and exiting waterways.

ELECTRICAL ENGINEERING

16. Token Acquiring Robot (TAR)

Leader: Hunter Smith

Group: Chris Bishop, Sergio Guzman, Gabriella Escamilla, Francisco Loza

Description: Attended the IEEE R5 Robotics competition in Austin. There are 3 rounds and our robot is capable of collecting and sorting colored tokens to bring them to the correct colored bin.

17. Lamar University Sensing Integrated Autobot (LUSIA)

Leader: Daniel Espinoza

Group: Garrick Winfield, Mahjabeen Javed

Description: A robot that will have sensors in order to avoid obstacles that come in its way. It has additional sensors to do be able to follow lines, a specific track or additional commands.

18. Electromagnetic Stringed Transducer

Leader: Anthony Simental

Group: Thien Tran, Javier Diaz Gutierrez

Description: An electromagnetic stringed transducer that may be monitored and controlled via software. We developed formatting/encoding techniques whose input parameter is sheet music and whose output drives the stringed transducer.

19. Lift Safety Enhancement System

Leader: Benjamin Bulgherini

Group: Rondell Martin, Trey Keyes

Description: A system to be mounted on various construction operating equipment to give precise measurements of distance as well as a warning for close electromagnetic field signals on an LCD screen by wireless communication when operating in close quarter proximity.

20. Level Control & Automation

Leader: Jesus Diaz Gutierrez

Description: The project will add a Radar level measuring instrument to a process vessel. The level radar will be program to automatically shut off a series of control valves when a high level is present, preventing process over flow.

21. Autonomous Vehicular Transport

Leader: Sean Hudson

Group: Brandon Storey, Josephy Vese, Victor Trujillo

Description: The AVT is a cart capable of receiving GPS coordinates from a cell phone and navigating towards those coordinates which are relayed via Bluetooth. With GPS streaming, the operator can have their cell phone in their pocket and the robot will follow them. With the waypoint feature, the operator can enter GPS coordinates and the vehicle will navigate to those coordinates.



22. Utility Pole Inclination Detection via Wireless Transmission

Leader: Jakob Bethea

Group: Wesley Grisham, Hunter Barrow, Christoval Gallegos

Description: Detects and records the orientation of a utility pole on the X,Y and Z axis, then transmits the data through Bluetooth to a monitor for display.

23. Electric Vehicle Design

Leader: Darin Dickinson

Group: Lance Lindsey, Aaron Nguyen

Description: Build an all electric motorcycle. The bike is a dual sport driven by a 3 phase brushless hub-motor, a drive employing field oriented vector control, and a Li(NiMnCo)O₂ chemistry battery pack we hand built.

24. Nucleotide Sequencing Using a Charged-Sensitive MOSFET Array

Leader: Nicolas Nikoloutsos

Group: Tyler Mackey

Description: Research of several methods of 3D modeling, utilizing visualization and electro-physical data function softwares to show the plausibility of MOSFET nucleotide sequencing.

INDUSTRIAL ENGINEERING

25. Clarifier Polymer Feed Optimization with Predictive Analytics

Leader: Isaish Gerald

Description: Evaluate different modeling techniques to develop a comprehensive strategy to determine required polymer feed rates in water treatment processes.

26. Researching Alternative Deployment Techniques of Fiber Optic Cable Along Transmission Lines for AP Sensing

Group: Louis Bemberg, Isleisi Mendez, Andy Mak

Description: AP Sensing is a company that offers data sensing services through various fiber optic cable sensing techniques. The goal of this project is to research, test, or even design alternative deployment techniques of the fiber optic cable that satisfy both the economical and physical constraints of installation.

27. Cristacurva Tempering Process

Leader: Dana Nelson

Group: Raghda Ajel

Description: Assist Cristacurva to identify the causes of the current increased breakage percentage of the produced glass and provide reliable solutions.

28. Company ABC Mass Balance Loss Investigation

Group: Taylor Landry, Hunter Rising, De'Andrez Johnson

Description: Investigate a mass balance system after seeing a loss outside of the acceptable range and we are tasked to find the cause and propose a solution.

29. Manufacturing Company Scrap Reduction Project

Leader: Amber Riggs

Group: Bianca Allen, Cameron Shipp

Description: Gather and analyze data to identify causes of scrap production and provide solutions for eliminating scrap. Our team is also analyzing a process that requires implementation of robotics and a new layout design.

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30. Creating an Effective Queuing System – Jefferson County Sub-Location Tax Office

Leader: Justin Eaglin

Group: Peter Bolanrinde

Description: Creating a queuing system for the two sub location of Jefferson county (Mid-county & Port Arthur) tax office.

31. Evaluation of Cordless Drilling Methods at M&I Electric

Leader: Ashley Bray

Group: Jake Loreda, Everett Warrick

Description: M&I Electric is a company who assembles and wires power distribution centers and other electronic components. For this project, our team analyzed the handheld cordless drilling process.

32. Efficient Patient Handling in Local Health Clinic

Leader: Danny Smith

Description: Understand challenges faced by Gulfside Dental Clinic in Port Arthur, Texas in the areas of scheduling and workflow operations and provide solutions to problems faced by the clinic for implementation to current workflow processes.

MECHANICAL ENGINEERING

33. SAE Mini Baja

Leaders: Mason Simmons, Jennifer Huang

Group: Nathan Benson, Tyler Copeland, Kenny Courville, Nick Harrison, Hunter Kuehnel, Patrick Parfait, Keyla Rodriguez, Brandon Simoneaux

Description: Students must function as a team to design, build and race a single person off-road vehicle that can endure the punishment of rough terrain.

34. Shell Eco Car

Leader: Jose Vidal

Group: Thuy Van, Johnny Morris, Victor Eze, Samuel Barnes, Kevin Gould, Blake Freduie, Eddie Brown, Cornelius Washington, Jose Vidal, Mark Jackson, Tanner Crow

Description: Design and build an economical diesel powered vehicle that includes legal components such as headlights, taillights, mirrors and windshield wipers.

35. Human Powered Vehicle 1

Leader: Christopher Scurlock

Group: Connor Sullivan, Chi Le, David Negret, Ramiro Aguilar, Cesar Conzalez, Yifan Wang

Description: Human-powered transport is often the only type available in underdeveloped or inaccessible parts of the world, and if well designed, can be an increasingly viable form of sustainable transportation.

36. Human Powered Vehicle 2

Leader: Jesse James

Group: Jessica Koch, Kendal Jackson, Courtney Pray, Dalton Lockler, Josh Crain

Description: The HPVC provides an opportunity for students to demonstrate the application of sound engineering design principles in the development of sustainable and practical transportation alternatives.



37. Human Powered Vehicle 3

Leader: Paul Gebbert

Group: Reagan Ficken, Blake Ballard, Stephanie Coolidge

Description: The HPVC provides an opportunity for students to demonstrate the application of sound engineering design principles in the development of sustainable and practical transportation alternatives.

38. LUMEROV

Leader: Dustin Smith

Group: Anthony Kirkendall, Jonathan Crain, Phillip MacCallum, Bryce Smith, Dylan Guzman, Colby Hughes

Description: Create an underwater robot to complete three tasks that include: finding remains of a vintage plane and returning its engine to the surface, installing and adjusting an ocean bottom seismometer and installing a tidal turbine and instrumentation to monitor the area

39. ROV_Brice

Leader: Edgar De La Cruz

Group: Kevin Dang, Brice Evans, Huy John Pham, Luke Placette, Louis Bryant, Mall Beadle, Adebayo Onafuwa, Joseph Schoenfeld

Description: Design, develop and integrate an underwater ROV capable of collecting soil samples, salvaging wrecked airplanes, and installing tidal turbines.

40. Solar Splash

Leader: Scott Girdwood

Group: Samuel Blackshear, Rovin Jaime, David Shifflett, Jancy Varghese, William Villa, Shanna Walker

Description: Design and build a solar powered boat to compete in the following events: sprint, slalom and endurance race.

41. Texas Space Grant Consortium Team 1: Mars Habitat and Initial Settlement

Leader: Andrew Hunt

Group: Jacob Sullivan, Shelly Campbell, Robbie Clark, Kirby Clayton, Mark Magno

Description: Determine all functions necessary for humans to live more than 1000 days on the surface of Mars.

42. Texas Space Grant Consortium Team 2: Lamar Launderers

Leader: Carlos Caballero

Group: Erick Lopez-Garcia, Karli Overstreet, Wyatt Wales

Description: Design and create a washing machine to be utilized in space using UV lighting and low power consumption.

43. Texas Space Grant Consortium Team 3: Human Tended Inflatable Lunar Outpost

Leader: Nasim Abdelwahab

Group: Quaid Campbell, Stephen Mays, Will Newell

Description: This Lunar Inflatable Outpost is a habitat that can house a minimum of 4 astronauts for 2 weeks on the Lunar surface; it utilizes inflatable materials in order to reduce its weight and fold up when not in use or being transported.

44. Texas Space Grant Consortium Team 4: Mars Sample Return System

Leader: Grant Stansbury

Group: Laura Soto, Derek Fregia, Jayson James Gasper, Brandon Austin

Description: Develop an adaptive caching system for the Mars 2020 Rover allowing it to effectively work in tandem with the Mars Sample Return System.



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