



**A LEADING INNOVATOR  
IN ENGINEERING AND DESIGN SERVICES**



## SUITE OF SERVICES

-  Storage Terminals and Transfer Facilities
-  Instrument and Electrical
-  Automation Control System
-  Skid Fabrication
-  Equipment Procurement
-  Vapor Control
-  Regulatory Compliance Services
-  Process Hazard Analysis (PHA)

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Aura Engineering, LLC was established in 1996 to provide quality, cost-effective professional engineering and design services to the petrochemical, chemical, and storage terminal industries. Through the years, we have aided our clients in increasing throughput, decreasing emissions, and improving reliability.

Aura has grown exponentially in our 25 years, not just in size, but also in our competencies, capabilities, and knowledge. Together with our service partners, we can tackle almost any challenge in the petrochemical, chemical, and storage terminal industries. For this reason, Aura strives to be your first contact for addressing any new projects, retro-fits, or problems occurring in your facility.



# Storage Terminals and Transfer Facilities

Aura Engineering provides complete, reliable turnkey solutions for chemical and petrochemical storage. Our team of engineers offers cutting-edge expertise in storage equipment design, fabrication, installation, and Start-up, making us a trusted source for new construction and retrofits. Throughout the consultation, design, and construction phases of your next project, we'll create a tailored plan to address your unique storage challenges as quickly and efficiently as possible. Contact Aura Engineering today for expert storage terminal facility designs and upgrades.

## EPC (Engineering, Procurement, Construction)

## Front End Engineering and Design (FEED)

## Full Service Project Management

## AutoCAD Design and Drafting

2D and 3D design (plans, sections, and isometrics) and equipment modeling

As built drawings & as built P&ID walkdowns

## Site Plans

Greenfield site development

Brownfield Site Development

Drainage / Storm Water Pollution Prevention Plan (SWPPP)

Grading plans

Survey

Layout of equipment and facilities

Air permit assistance and preparation

## Facility Engineering

### Truck and rail loading and unloading

- Meter skids
- Mobile transloading skids
- Terminal automation system consultation
- Weigh scales
- Grounding and overfill

### Storage tank design consultation

- Floating roof / fixed roof
- Instrumentation
- Cathodic protection
- Containment design
- Waste/storm water collection and treatment
  - Oil/water separators
  - Carbon filtration



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## PROJECT FEATURE: Hayti, MO Railcar to Marine Transfer and Truck Loading Facility

Aura designed a railcar crude unloading facility at a terminal in Hayti, MO that is capable of unloading a 120-car unit train in less than a 24-hour period. The unloading hose connections are situated between two tracks which gives the ability to stage a second unit train while the first train is unloading. The header empties into a sump where it is then pumped to above ground storage tanks or directly to a barge. Vapors displaced during barge loading are collected and destroyed via an open flame flare. The marine vapor control system is capable of recovering vapors at 4,600 bbl/hr.

Aura also designed a diesel truck loading and diesel additive injection rack covered by an 80'x80' canopy for this facility. The loading rack consists of three (3) loading bays with two (2) loading arms at each bay for multiple compartment loading. Each loading arm can handle a rate of 500gpm. The loading operation is automated using Accuload flow computers to measure the correct volume and ensure the proper amount of additives are included in each load. This facility has the capability to inject red dye, lubricity, and high-performance additives. The truck loading area has a dedicated open flame flare to collect and destroy the vapors created during the loading process.

Aura designed the control panels, control scheme, rack, and the additive injection skid. We also provided start up and programming assistance and were present during the first truck load.





# Instrument and Electrical

Aura Engineering provides comprehensive electrical engineering and design services to our clients in order to ensure their systems function just as they should. We design the equipment and implement the control logic which starts and stops motors and controls pressure, flow, temperature, and more. We are intimately familiar with valves, sensors, meters, and switches, and we create intricate, compliant systems that get the job done.



PLC panel design and fabrication

Wiring diagrams for OMNI, TopTech, and Technip FMC flow computers

Single line diagram engineering

Point to point wiring diagrams

Grounding system design

Area classification drawings per API RP 500, NFPA 70, and NFPA497 Standards

Coordination with terminal automation and terminal management systems

Security camera infrastructure consultation

Facility data center and IT design

Accuload and Multiload flow computer programming

Conduit and cable tray design and layout

UL 508A Certified Control Panel Manufacturer

## Automation Control System

### PLC Programming

Allen Bradley

Honeywell

GE

Omron

Schneider Electric

Wonderware



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## PROJECT FEATURE: Mexico Transloading to Permanent Storage and Loading

Aura Engineering began working in the Mexico process petroleum market in 2016 when the Mexican gasoline market opened to include international operators. The first client we worked with in this exciting new market went on to open the first non-Pemex operated gasoline terminal in Mexico.

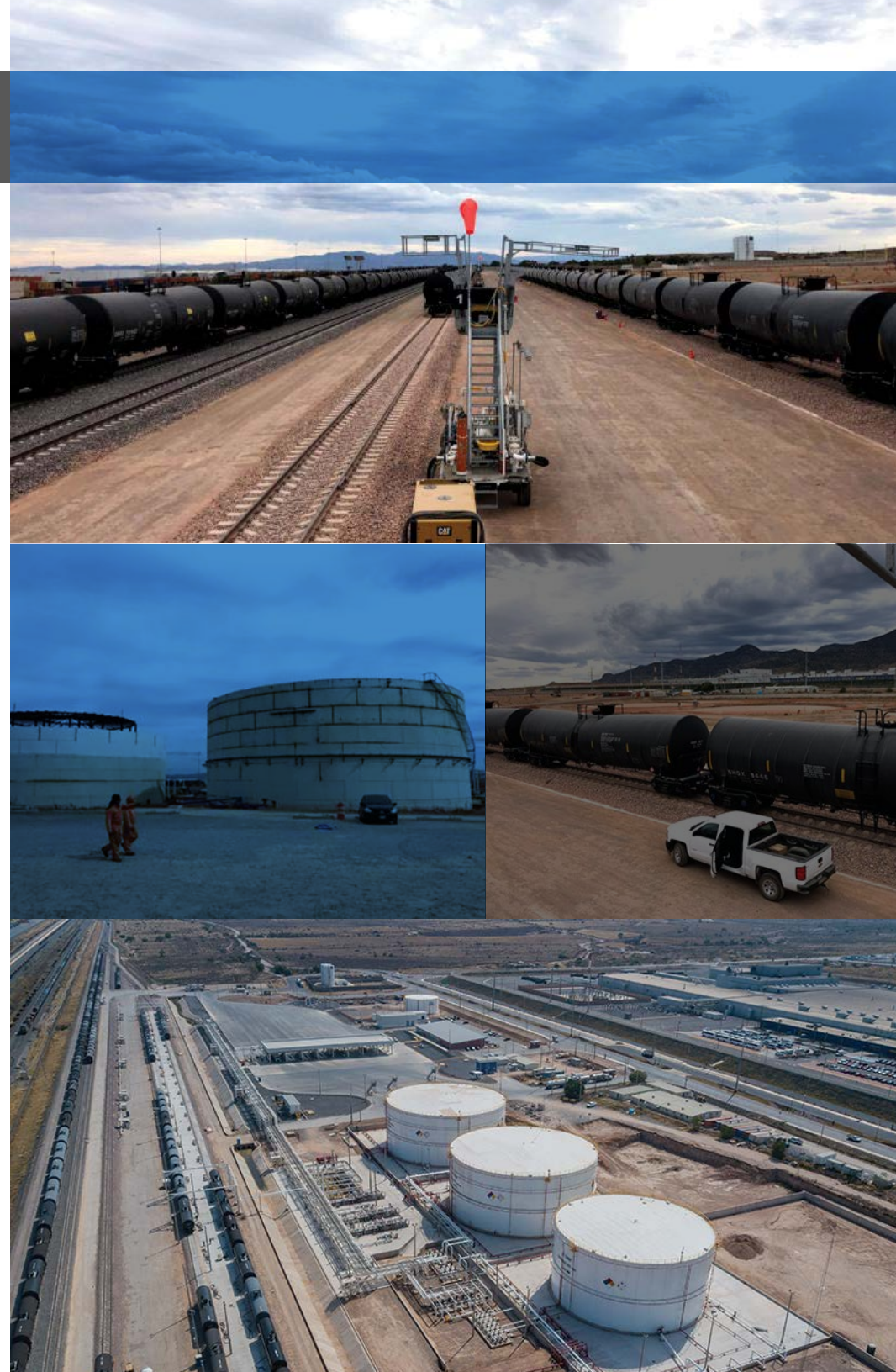
Due to the uncertainty of demand that a new market creates coupled with the impact of open season fuel market laws, our client wanted to break into the Mexican market with a solution that had less upfront capital and operating costs—together, we determined that transloading would fit this bill. Transloading offers clients the ability to have mobile equipment, a smaller footprint, and lower costs when compared to a fixed loading rack system and permanent storage tanks.

Our client's terminal, located in San Luis Potosi, started up in late 2016 and consisted of transloading gasoline and diesel from railcars directly into transport and delivery trucks. The scope of services for this effort included: process calculations for equipment sizing, review of equipment specifications, development of wiring diagrams, and wireless communication system design. We also coordinated and participated in the start-up and commissioning of this transloading operation.

During this project Aura developed a close working relationship with an engineering firm based in Mexico City. This relationship has helped us to ensure all design parameters meet Mexican governmental and regulatory requirements. They have also assisted us with document translation, so local fabricators and contractors can easily build from our designs.

In addition to standard transloading capabilities, we also designed a first-of-its-kind mobile transloading and additive injection unit mounted on a forty-foot long trailer for the client. Our design allows suppliers to load gasoline and diesel with special additive blends directly into transport trucks, ready for delivery to gas stations.

The transloading operation has been so successful for our client that they contracted Aura to complete a design for permanent storage and a fixed truck loading rack with multi-product loading capability in each bay. The fixed loading rack accompanied with the transloading concept allows the terminal ultimate flexibility and ensures the terminal is marketable to multiple, varied interests with differing throughput needs. Aura provided the terminal with start-up assistance.





## Skid Fabrication

Aura Engineering is expert in designing, fabricating, and installing many different kinds of process skids. We provide everything from process and instrument drawing to design, procurement, production, installation and testing in order to create value for our customers.

Turnkey skid procurement, fabrication, and testing

Mechanical and structural fabrication

Marine Vapor Control System (MVCS), dock safety skids, blower skids, and gas injection skids

Custody transfer metering skid design and fabrication

Transloading Skids

Electrical wiring and testing

Trailer mounted skids



## Equipment Procurement

We have extensive relationships with major vendors and can pass along discounts that we have with each vendor to our clients. **Procurement includes, but is not limited to:**

Pumps

Valves

Variable Frequency Drives (VFDs)

Motor Control Centers (MCCs)

Programmable Logic Controller (PLC) systems

Power Control Buildings

Spare Parts Sales

Instrumentation  
(pressure, flow, temperature, level)



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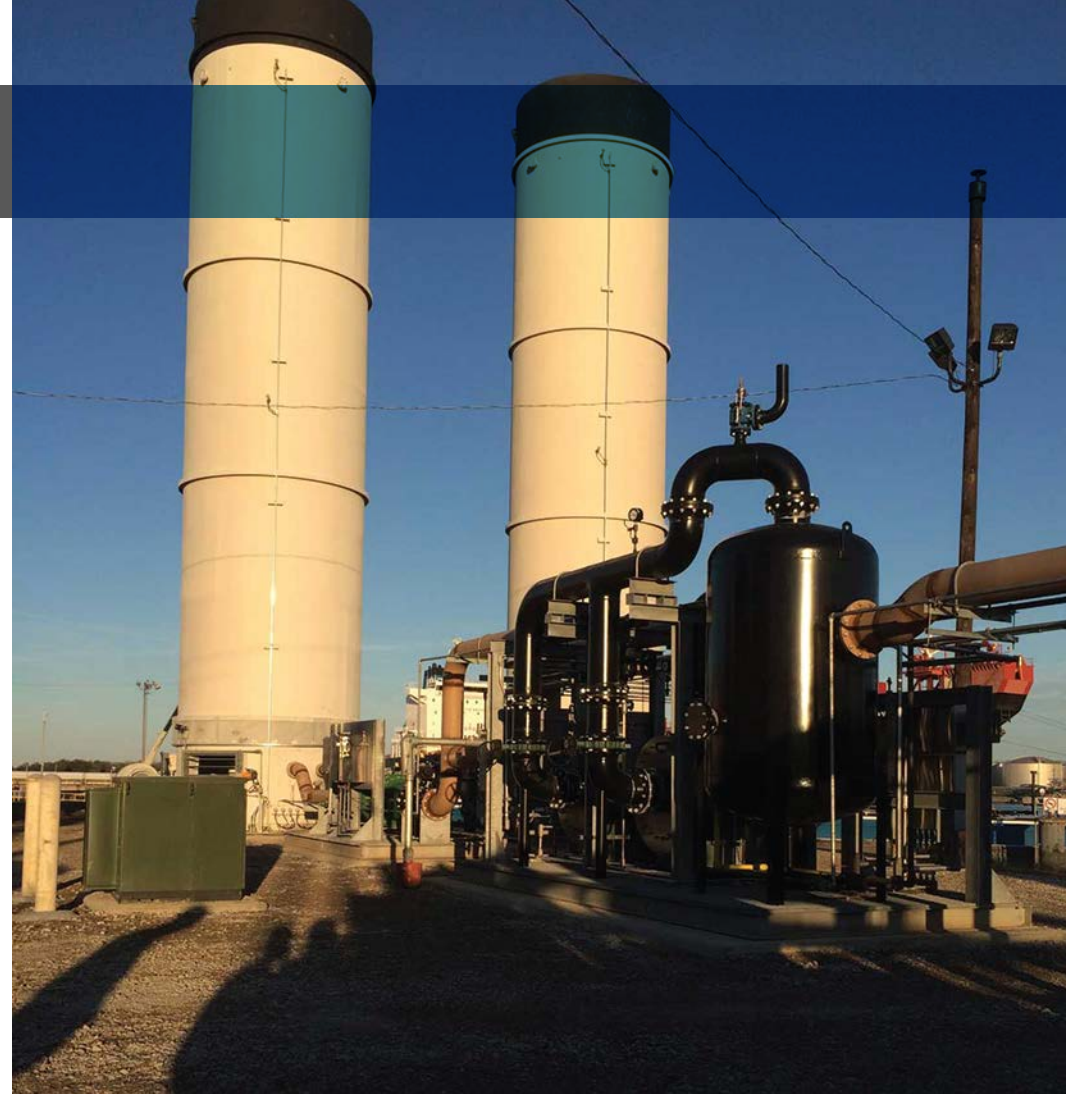


## PROJECT FEATURE: Pasadena, TX Facility Vapor Control System

Aura recently commissioned a third vapor combustor for a facility on the Houston Ship Channel; the other two Aura-designed vapor combustors were installed in 2016 and have been running smoothly since that time. Each of our client's three vapor combustors are capable of loading at 20,000 barrels per hour (BPH), for a total facility capacity of 60,000 BPH and can handle inbound movements from marine, rail, or truck sources. We are currently in the process of designing two additional vapor combustors that will add additional capacity to the facility.

This client has many Aura vapor control systems located at their two Houston-area terminals. The personnel at both of these facilities are extremely knowledgeable, yet they still rely on Aura for not only their design and equipment procurement needs, but also to be their vapor control "experts." This might include helping with decision making, personnel training, and equipment maintenance and inspection.

We have had a close working relationship with this client for over twenty years, helping them with any vapor control or liquid side issues that have arisen. We value these long-term relationships and work hard so our clients consider us not just another vendor, but as a valuable partner.







# Vapor Control Engineering Experts

After nearly 30 years in business, Aura Engineering continues to be a leading innovator in the vapor control industry. Beginning in the 1990s, our team of pollution-control engineers has designed and installed fully customized chemical and petrochemical vapor control systems across the United States and beyond. We create efficient, compliant systems to suit any project, any flow rate, and any facility. Contact Aura Engineering today for expert assistance with your vapor control and air permit needs.

## Vapor Combustion System Design

**Flow rate evaluation and sizing calculations**

**Assist with location of equipment**

**Equipment selection and permit integration services**

- Flares
- Vapor combustors
- Thermal oxidizers
- Catalytic, Regenerative, Recuperative

**Evaluation of equipment bids and vendor analysis**

**Prepare and submit bid packages**

**Start-up, maintenance assistance**

## Operator Training Classes

**System operation**

**Basic maintenance**

**Troubleshooting**

## Vapor Recovery Systems

**Evaluate options and assist in the selection of the best technology for your application**

- Scrubbers
- Carbon adsorption
  - Off-site regeneration
  - Self regeneration

**Prepare bid packages**

**Ensure compliance with permit requirements**

**Design and build vacuum-based carbon adsorption**

**Start-up, maintenance assistance**

## System Reliability

## Environmental Permitting Assistance

**State and National Air Permitting**

**Storm Water Pollution Prevention Plans (SWPPP)**



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# Vapor Control Maintenance and Technical Services



Aura Engineering provides turnkey vapor control solutions tailored to our customers' specific needs. No matter your pollution-control challenges, we can help—whether you need a permanent solution such as skid-mounted or field installed equipment, or even a temporary mobile unit.

## Preventative Maintenance and Technical Services

**Preventative maintenance, testing and inspection**

**System Troubleshooting**

**Complete sample system repair or replacement for hydrocarbon, BTU, or oxygen analyzers**

**Environmental compliance testing of temperature sensors for combustion units. Testing and certification of thermocouples, RTDs, and temperature switches to ensure your system is operating at the temperature required by your air permit.**

**Oxygen Analyzer maintenance, service, and repair. We have extensive experience with:**

- Servomex
- SICK
- Teledyne

**Variable Frequency Drive (VFD) set up for pumps and blowers**

## HART Smart Transmitter set-up, calibration and re-scaling, including:

- Flow meters
- Pressure transmitters
- Temperature transmitters
- Liquid level transmitters

**Our technicians can repair or replace nearly every electrical component in your terminal, including (but not limited to):**

- Solenoid valves inline or on automated pneumatic valves
- Limit switches
- Level gauges, transmitters, and switches
- Thermocouples, RTDs, Switches, and temperature transmitters
- Pressure transmitters, gauges, and switches
- Vapor combustor or flare pilots and associated components
- Motor starters and variable frequency drives for pumps and blowers
- Pilot ignition systems







## Regulatory Compliance Services

Our company has a long and distinguished record working with the U.S. Coast Guard on regulatory compliance-related issues and questions. Aura Engineering's leadership was involved in the development of the initial vapor control regulations in the late 1980s (33 CFR 154 Subpart E) and instrumental in designing the first USCG compliant marine vapor control systems in the early 1990s. More recently, Aura was involved in the development of the latest regulations published in 2013 (33 CFR 154 Subpart P) as well as the policy letters clarifying those regulations that have been published afterwards.

Since the very beginning, our leadership and expertise has been recognized by the vapor control industry, and the U.S. Coast Guard. That leadership continues today. Our longstanding relationship with the US Coast Guard will help ensure all your compliance needs are taken care of, making your certification process smooth and worry-free.

### USCG Regs Consultation

USCG Certifying Entity

Compliance analysis

Compliance management

Annual testing

5-year operational reviews



## Process Hazard Analysis (PHA)

Safety and reliability can be improved by identifying events that result in system failures. What-if and HAZOP are both Process Hazard Analysis (PHA) methods that utilize a skilled facilitator and the expertise of your team to help check for errors, potential hazard or operability issues in a system. What-If is a generally a better methodology for simple systems, such as vapor control systems or tank farms. HAZOP is ideal for refineries and other, more complex systems.

What-If

HAZOP

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## PROJECT FEATURE: Watford City, ND Crude Oil Gathering and Booster Pump Station

Aura Engineering completed the design and coordinated the construction effort of a 70,000 barrel per day (BPD) crude oil gathering and booster pump station on a greenfield site near Watford City, North Dakota. The facility consists of six (6) climate controlled truck unloading LACT units, an inbound metering skid, crude stabilization equipment to reduce product vapor pressure, and 240,000 barrels (bbl) of on-site storage. The pipeline booster pump package includes climate controlled buildings housing five (5) charge pumps and three (3) 600HP mainline pumps to transport up to 70,000 bbls of product per day down a 10" pipeline.

The mechanical design was completed entirely in AutoCAD Plant 3D. This 3D modeling software was very useful in facilitating easy coordination between the design team, end user, and on-site contractor. Aura also provided a complete I&E design package, including specification for the motor control centers, Variable Frequency Drives (VFDs) for large pumps, and a crude stabilization package. The design included special provisions for the harsh winter conditions that are regularly encountered in northwestern North Dakota.

In addition to the engineering design, Aura provided written procedures for the safe operation of the terminal facility, as well as on-site start-up and commissioning assistance.





Louisiana



Mexico



Missouri



Montana



Oklahoma



Texas





Wyoming



Pennsylvania



North Dakota



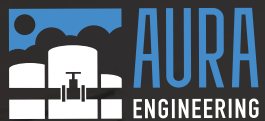
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