

## **ENGINEERING SERVICES**

## Optimizing Your Major Turnarounds, Revamps, and Shutdowns

## Comprehensive In-House Capabilities

Whether planning the move of a million-pound object or the lift of a 200-foot tower, our engineers can help improve each project phase, from estimation through completion. Our in-house engineering services include:

Design and alteration of pressure vessels, piping systems, temporary structural systems, and specialized rigging components:

- Constructability and logistics
  support
- Weld selection and testing strategies
- Equipment rigging and lifting plans
- Crane selection review
- Heavy haul and crane counterweight strategies
- Plot plans logistics
- Pressure vessel repairs and alterations
- Design of project-specific below-the-hook lifting devices
- Structural analysis
- Dimensional control
- Subcontractor management fabricators and major equipment

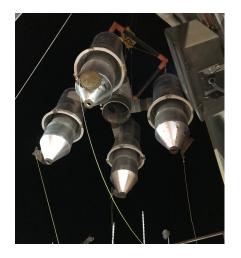
At AltairStrickland, our in-house engineering experts collaborate early in projects to identify critical path activities, consult on rigging and lift plans, develop weld strategies, digitally map with dimensional control surveying, and more.

Because we've worked on hundreds of projects with some of the country's leading refiners and contractors, we understand complex environments and can help optimize your projects for safety, reliability, effectiveness, and cost-efficiency.

### Utilizing the Latest Technology

Using the latest technology helps us model, analyze, and design your project needs, considering alternatives quickly and early, so we can help deliver cost-efficiency and quality. We utilize:

- Detail engineering technologies
- 3D modeling and 2D drafting
- Finite Element Analysis modeling
- Structural analysis software



#### OUR MARKETS

REFINING
PETROCHEMICAL
CHEMICAL
GAS
POWER
FERTILIZER
RENEWABLE ENERGY



#### **ENGINEERING SERVICES**

#### A FULL SUITE OF TURNAROUND AND REVAMP SERVICES

PLANNING, MANAGING, AND EXECUTING

FCCU AND COKER UNIT SERVICES

AMMONIA PLANTS

PROCESS TOWER REVAMPS AND REPLACEMENT

POWER PLANTS

SPECIALTY WELDING SERVICES AND ASME-CODE WELDING

HEATER AND BOILER REPAIRS

VESSEL FABRICATION

CONSTRUCTABILITY REVIEWS

**PROJECT CONTROLS** 

CONSULTING SERVICES AND SOLUTIONS

SCOPE AND BUDGET DEVELOPMENT

'COLD EYES' REVIEWS

COMPUTER AIDED DESIGN (CAD) AND COMPUTER AIDED MANUFACTURING (CAM) MODELING

LIFTING AND RIGGING PLANS

ESTIMATING







#### Advanced Dimensional Control

Our project design group offers advanced dimensional control with our own surveying equipment. Whether you need us to set equipment-trim cut guidance and vessel shims, measure working points, set level towers, assess equipment strappings, or confirm nozzle layouts—we're ready.



### **Reliable Code Expertise**

We've been engineering lifts, moves, turnarounds, revamps, and process unit upgrades for the refining, petrochemical, chemical, ammonia, and power industries for decades. We're experts in a wide variety of industry codes, including:

- National Board Inspection Code (NBIC)
- American Society of Mechanical Engineers (ASME)
- American Society of Civil Engineers
  (ASCE)
- American Welding Society (AWS)
- American Petroleum Institute (API)
- American Institute of Steel Construction (AISC)

# Leading the Industry with an Unwavering Commitment to Safety

Over the past 40 years, AltairStrickland has been fundamentally committed to fostering a company-wide safety culture. To live up to this commitment, we invest substantial energy and resources into developing and implementing a detailed, continuously evolving Zero Injury Safety Program which speaks to our unwavering commitment to the wellbeing of our customers and employees.