



ENERGY REFINING

Rebalancing to the
New Feedstock

ZACHRY

CURRENT OPPORTUNITIES AND CHALLENGES IN REFINING

1

GROWTH

- Responding to the fluctuations in demand for refining capacity
- Adapting to changes in the feedstock mix caused by abundant shale gas
- Achieving the right balance between brownfield and greenfield expansion

2

EFFICIENCY

- Thin operating margins create constant pressure to maintain highest levels of efficiency
- Developing the optimal schedule for maintaining and upgrading infrastructure that dates from the 1970s

3

COSTS

- “War for talent” in securing the best workforce to operate and upgrade existing facilities
- Rising costs of complying with stringent environmental and safety standards

4

UNCERTAINTIES

- Volatility in prices due to an array of market forces
- High profile of the industry in the debate over climate change
- Evolution of tax policy toward renewable energy sources

“Over the next 10 years, operators at one in every three refineries in North America and Western Europe will need to reconsider their operating models and how they are integrated across the value chain.”

A.T. Kearney Report
Refining 2021

ZACHRY ADDS VALUE ACROSS THE LIFECYCLE OF REFINING FACILITIES



PLAN

We plan with the end in mind – engineering a facility that makes the optimal use of its site, and is designed for maximum efficiency, ease of maintenance and upgradability. We plan this way because we understand the priorities across the full lifecycle of refining facilities.



BUILD

The construction phase is where the majority of the project risk resides. That is why Zachry has a self-perform model that allows us to manage project risk more effectively, and to respond to changing customer requirements more swiftly.



RENEW

We work on the assumption that refining facilities can operate for 80 years or more - that with strategic maintenance and thoughtful capital investments, our customers should be able to extend the productive lives of these facilities for generations.

DISTINGUISHED SERVICE ON NUMEROUS REFINING OPPORTUNITIES

THE SCALE

- ✓ We've built large capital projects, including most major refining process units, both on grassroots sites and within operating facilities.
- ✓ We are one of the largest operations and maintenance (O&M) service providers in the US and are on-site at over 50 refineries and chemical plants.

THE SKILLS

- ✓ Our acquisition of Commonwealth Engineering (now Zachry's Houston Engineering Design Center) and JV Tyler Engineers (now Zachry's Tyler Engineering Design Center) expanded our EPC and process engineering capabilities in refining and syngas, and presence in the world's energy capital.
- ✓ Our Moss Point, Mississippi fabrication shop includes the capability to fabricate piping systems and vessels for large projects.
- ✓ JV Industrial Companies, another Zachry-owned entity, is a leading provider of turnaround services, engineering, and fabrication for small to mid-cap projects in the refining and chemicals sectors

THE SAFETY

- ✓ EPC services for our refinery clients reflect a construction-driven mindset, including "Craft Ready Engineering" and "Engineering for Construction Safety."
- ✓ We've earned a reputation for the safe, reliable, on time, on spec, and on budget delivery of very complex projects.

CREATING AND SUSTAINING AMERICA'S REFINING CAPACITY



OUR VAUE ADDED DURING THE PLAN PHASE OF REFINING FACILITIES

Our capabilities in the '**PLAN**' phase of Refining project execution include:

- ✓ Project development and consulting
- ✓ Studies and analysis
- ✓ Front-end engineering design (FEED) program execution
- ✓ Full service design engineering
- ✓ EPC execution planning
- ✓ Project and construction management
- ✓ Professional staffing services
- ✓ Plant start-up and commissioning
- ✓ Plant reliability and maintainability program development



REFINERY GETS NEW LIFE IN SPECIALTY LUBRICANTS AND FUELS



THE CUSTOMER'S CHALLENGE

Calumet Specialty Products Partners, L.P. purchased the Pennzoil Shreveport, Louisiana refinery in 2001, knowing that it would require an extensive redesign and renovation of the facility for Calumet to produce its specialty lubricating oils and waxes, as well as fuel products such as gasoline, diesel and jet fuel.



REFINERY GETS NEW LIFE IN SPECIALTY LUBRICANTS AND FUELS



THE ZACHRY APPROACH

Commonwealth Engineering (subsequently acquired by Zachry) was responsible for program management of the \$275 million TIC effort, including direct responsibility for the hydrotreater, crude, vacuum unit and off-site components. The 22-month effort included over 300,000 work hours in detail engineering and construction management.

THE BUSINESS OUTCOMES

The significant number of safe work hours, especially in light of the challenge of integrating several grassroots units with existing operating units, led to numerous safety accolades for the project.

The resulting upgraded complex has also been a resounding commercial success. Today, Calumet Shreveport Refining has aggregate crude oil throughput capacity of approximately 60,000 bpd.

“The process units started up successfully and their immediate availability post startup was exceptional, allowing Calumet to meet production commitments. Seamless transitions were executed for each unit, between construction and operations resources, in a safe effective manner...”

VP, Technology

Calumet Specialty Products Partners

OUR VALUE ADDED DURING THE BUILD PHASE OF REFINING FACILITIES

Our capabilities in the '**BUILD**' phase of Refining project execution include:

- ✓ Integrated, turnkey EPC project delivery
- ✓ Direct hire construction
- ✓ Project management
- ✓ Safety and QA/QC
- ✓ Commissioning and plant/unit startup
- ✓ Small and midsize project experience
- ✓ Large and mega-project experience
- ✓ Firm price, date-certain delivery



COGENERATION ENHANCES GULF COAST FACILITIES' EFFICIENCY



THE CUSTOMER'S CHALLENGE

A Texas Gulf Coast complex has a history dating back to an oil discovery in the area more than a century ago. Today, local operations include a refinery, a polyethylene plant, a chemical plant and lube plant all within a large complex. While in aggregate these facilities contribute significantly to the nation's energy supply, they also need an efficient source of energy for their own daily operations. This drove a decision to install a gas-fueled power plant with cogeneration capabilities to supply the refinery and associated chemical plants with steam and electricity.



COGENERATION ENHANCES GULF COAST FACILITIES' EFFICIENCY



THE ZACHRY APPROACH

Zachry and its engineering partner provided comprehensive EPC services for the client's cogeneration facility. The facility, completed in 2006, features multiple unit combustion turbines and heat recovery steam generators to provide 480 megawatts of electricity and 1500 psig steam production to the complex. The units are single-fuel, natural gas-fired and the heat recovery steam generators incorporate selective catalytic reduction for emissions control.

THE BUSINESS OUTCOMES

The facility provides steam and electricity to the refining and petrochemical complex with remaining electrical output available for sale to the commercial wholesale electric market. The project also further solidified an outstanding long-term relationship between the client and Zachry, as Zachry has performed continuous presence onsite maintenance and capital work for this customer at all four of its area plants since 2008. In 2013, Zachry was awarded a multi-year capital work contract for another chemical plant and refinery site for the same owner.

OUR VALUE ADDED DURING THE RENEW PHASE OF REFINING FACILITIES

Our capabilities in the '**RENEW**' phase of Refining project execution include:

- ✓ Continuous presence plant operations and maintenance services
- ✓ Reliability engineering, assessments & improvement programs and technologies
- ✓ Maintenance skill development
- ✓ Specialty services
- ✓ Turnarounds/outages
- ✓ In-plant capital projects and upgrades



TEXAS MAINTENANCE ROLE GROWS TO ENTIRE COMPLEX



THE CUSTOMER'S CHALLENGE

When the owner of one of the biggest refining complexes in Texas wanted to optimize its maintenance services at its facilities, it looked to Zachry Industrial Services Group. This decision was based, in part, on the success Zachry had achieved providing engineering, procurement and construction services for the cogeneration facility at the same location. The switch to Zachry maintenance service took place with a 40-person team in 2006.



TEXAS MAINTENANCE ROLE GROWS TO ENTIRE COMPLEX



THE ZACHRY APPROACH

The Zachry maintenance responsibilities at the facilities were initially limited to the refinery. This included a role in helping the plant recover from the substantial flooding of the facility from a major hurricane in 2008. The client became increasingly confident in Zachry's capabilities, expanding the scope of the agreement to include maintenance services for the entire complex which also includes related hydrocarbon processing and chemical units.

THE BUSINESS OUTCOMES

By 2014, Zachry's comprehensive maintenance presence included approximately 350 people on location at the facilities. The relationship continued to prosper, with a three-year renewal in 2014. The integrated production facilities also continue stellar performance for this large international oil and gas company, garnering awards for both safety and operational excellence.

OUR ABILITY TO ADD VALUE TO YOUR PROJECT IS THE PRODUCT OF OUR DISTINCTIVE APPROACH

Zachry's approach to business is based on four key principles

Focus on Distinctive Value

We're always looking for ways to deliver distinctive value to our customers – through performance on immediate work and through using the freedom that our structure allows to focus on value beyond today's bottom line.

Priority on Customer Success

We recognize customer success is the basis for our success. We work to understand your goals so we can collaborate effectively and identify opportunities to enhance your business outcomes.

Right Team in the Right Place

We've assembled an extraordinary professional workforce. We continue to invest in training and development to keep their skills on the leading edge.

Adaptive Excellence in Execution

We believe every project is unique. Our self-perform model, integrated capabilities, loyal workforce and stable project teams allow us to deliver outstanding execution safely under any conditions.

WHAT WE WANT YOU TO KNOW

The Zachry Group's approach to doing business is purpose-built to help you take advantage of your biggest opportunities and tackle the challenges that you will face along the way.

Like you, we are completely focused on accountability for results. Our entire operating model is designed to deliver that accountability – from our lifecycle mindset to our self-perform execution capabilities.

We recognize that the projects we do represents some of the biggest commitments that our customers make – not just for them, but for the customers, communities and employees that depend on them.

LET'S CONTINUE THE CONVERSATION IN PERSON

We would welcome the chance to learn more about your needs.



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