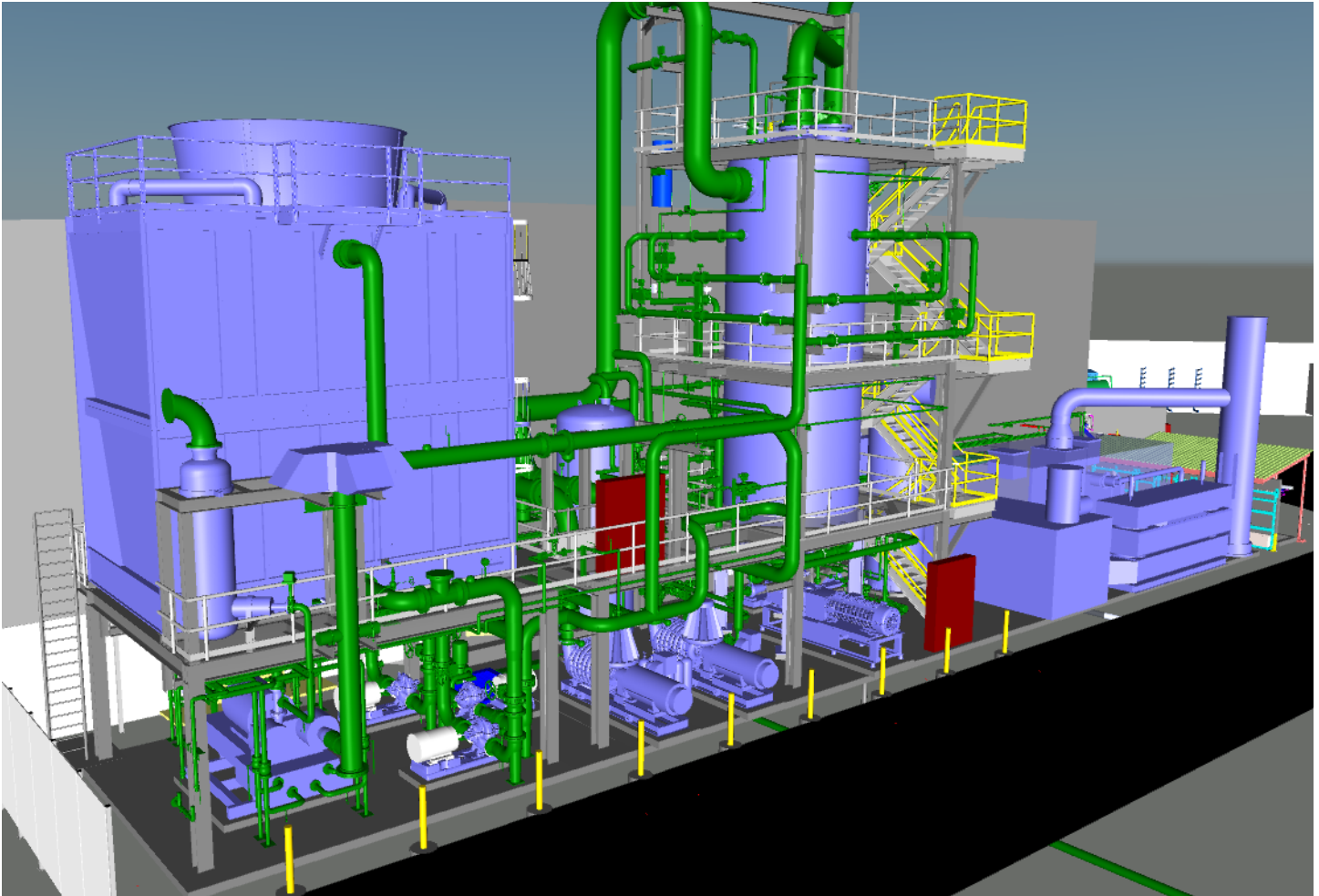
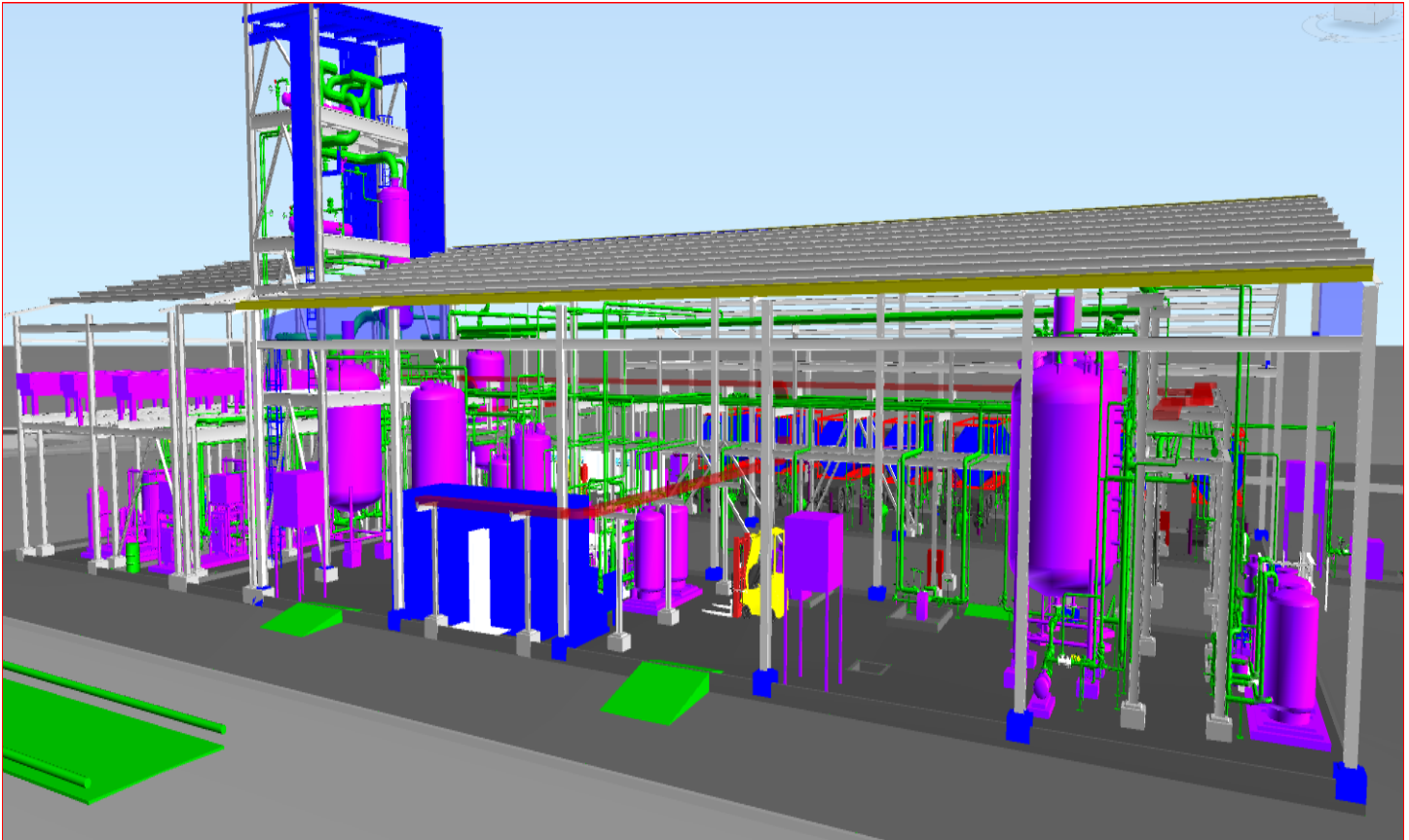


Refinery & Process Facilities



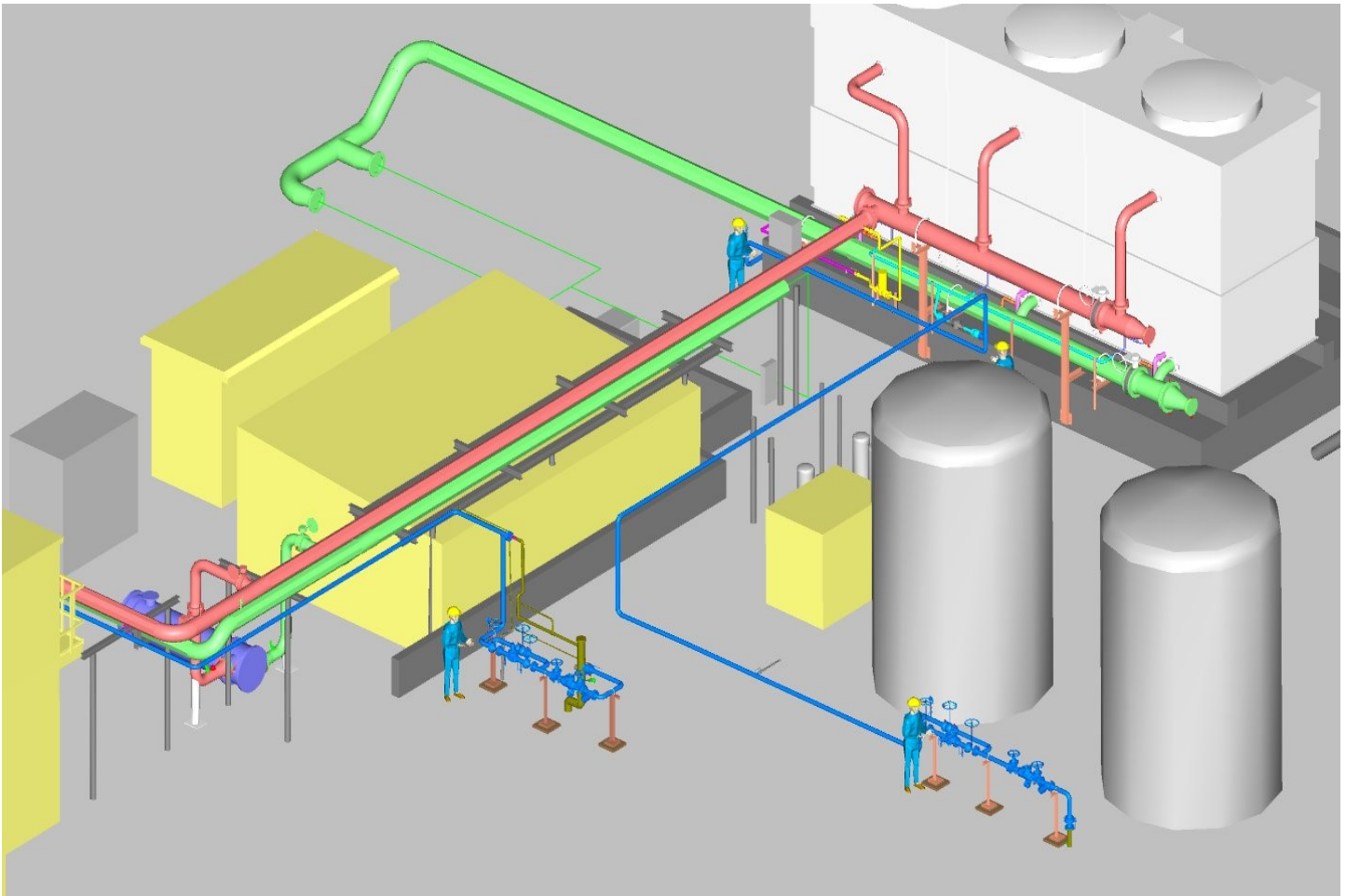
PROJECT DETAILS

- First of its kind Bio-Degradable Polymer Production Facility
- Fast Track Design-Build Contract
- IQA executed FEED and Detailed Design
- Scale –up from an Existing Pilot Plant
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$17,000,000
- Total Engineering Cost - \$1,300,000
- Schedule - 9 Months Engineering



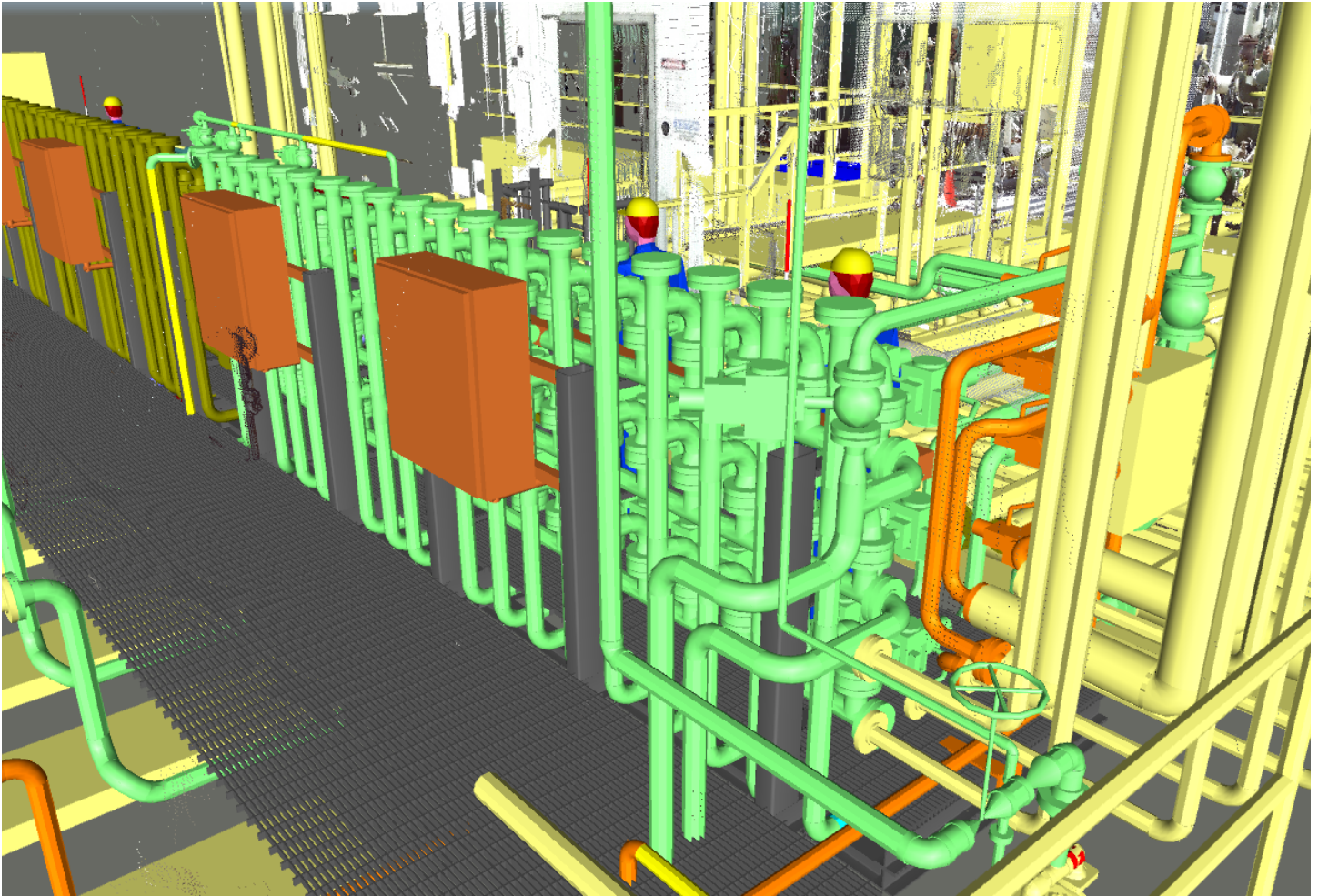
PROJECT DETAILS

- Grass Root High Performance Resin Distillation and Formulation Facility
- 7,000 gallon batch Distillation Unit consisted of a Distillation Reactor, Distillation Column, Condenser, Sub-Cooler, Product and Byproduct Receivers, a Vacuum System, and a Vapor Recovery System
- Formulation Unit consisted of a Receiver Tank, Formulation Reactor, Vacuum System, and Vapor Recovery System
- IQA executed Conceptual Design and Detailed Design of the following:
 - Site Development
 - Distillation and Formulation Units
 - Utilities (Cooling, Heating, N2, and Air)
 - Feed and Product Storage
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$15,000,000
- Total Engineering Cost - \$1,100,000
- Schedule - 6 Months Engineering



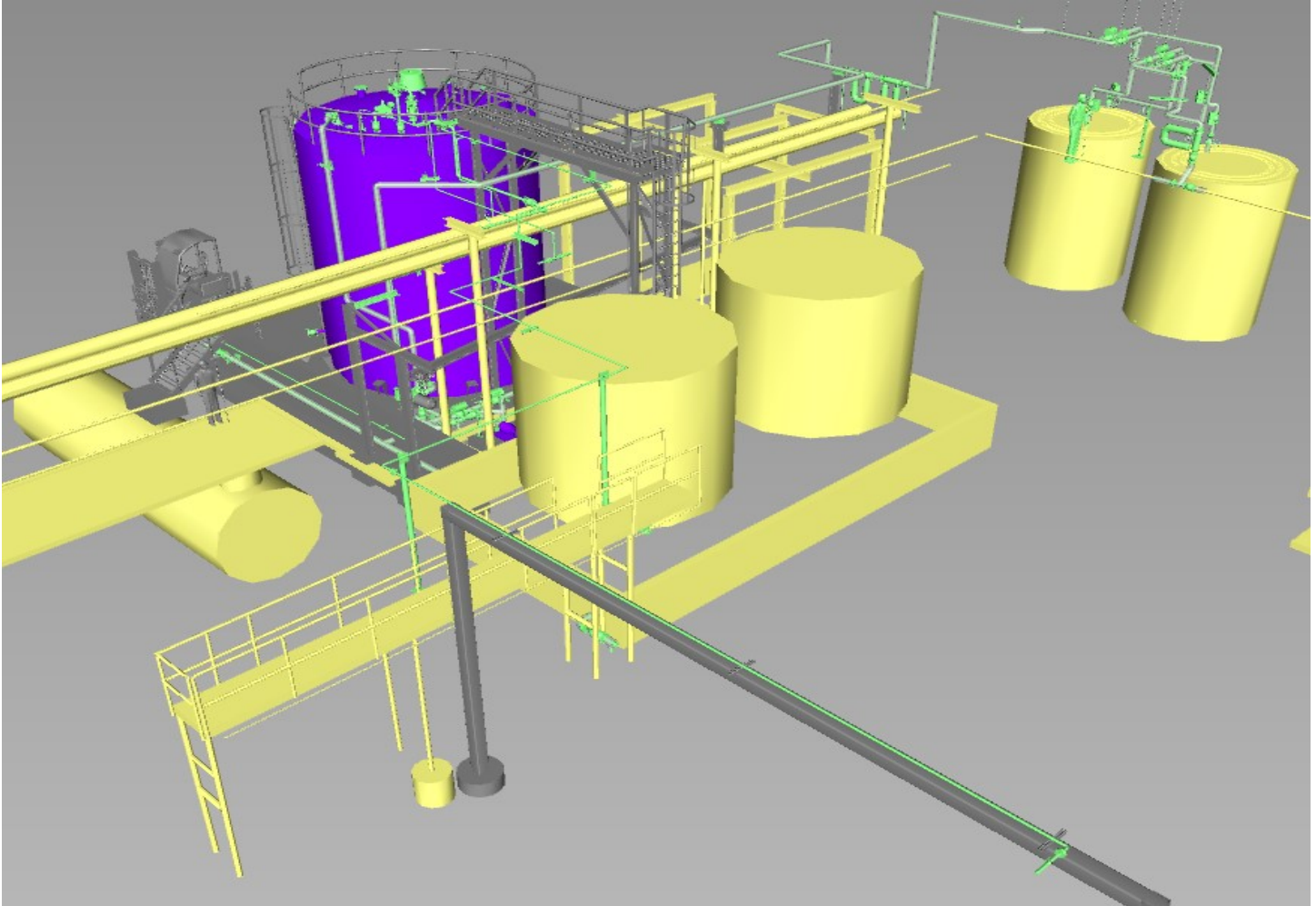
PROJECT DETAILS

- Replaced existing Cooling System to increase unit capacity
- Performed Hydraulic Analysis on the Cooling Water Supply and Return to meet heat exchanger cooling requirements
- Upgraded the instrumentation and controls system
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$3,000,000
- Total Engineering Cost - \$275,000
- Schedule - 6 Months Engineering



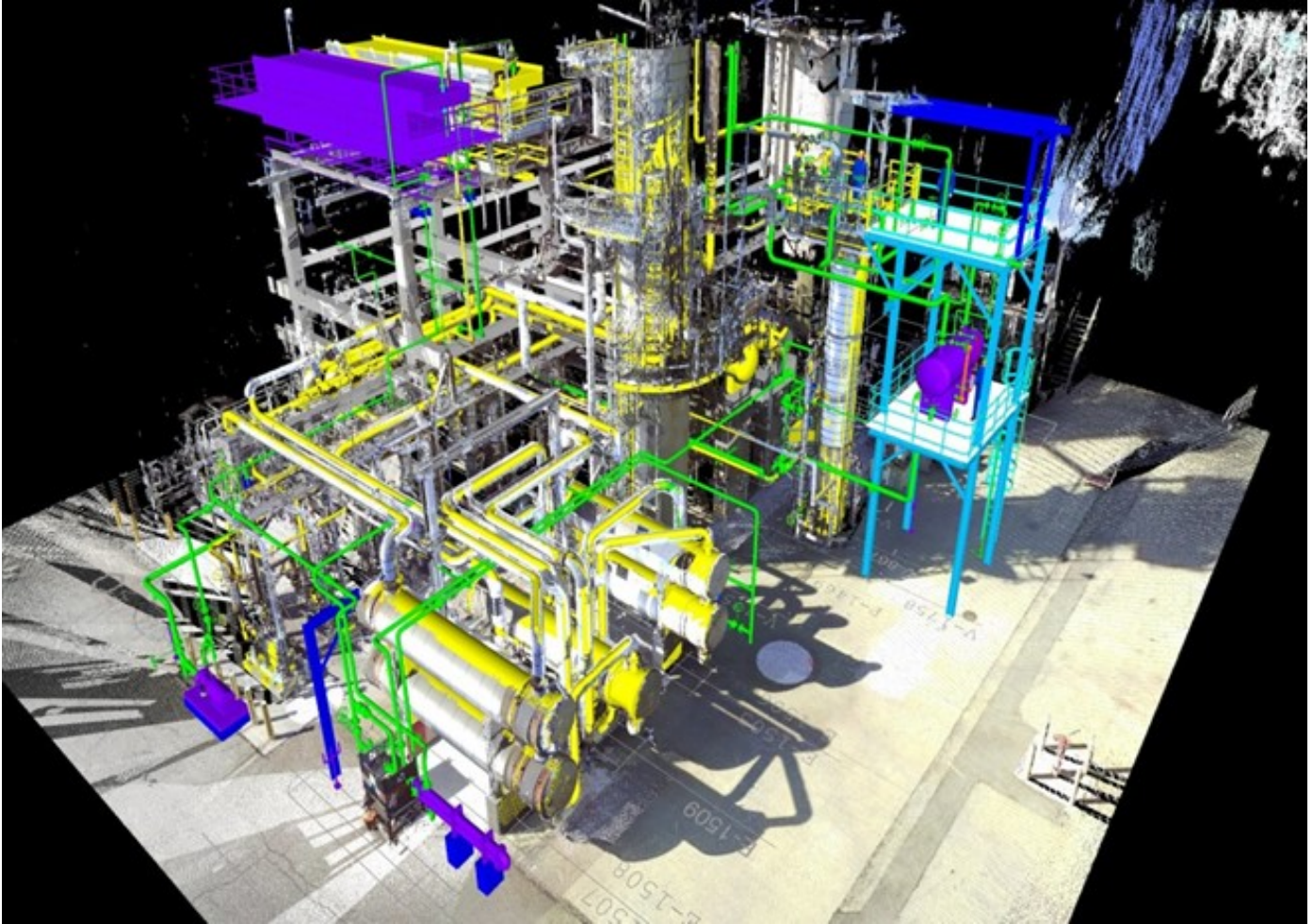
PROJECT DETAILS

- Decongested existing Hose Manifold Area to increase operator safety, eliminate line-up errors, and decrease manual operation requirements
- Designed new piping and manifolds with automated valves to eliminate manual hose handling
- IQA executed Conceptual Design and Detailed Design
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$2,500,000
- Total Engineering Cost - \$300,000
- Schedule - 6 Months Engineering



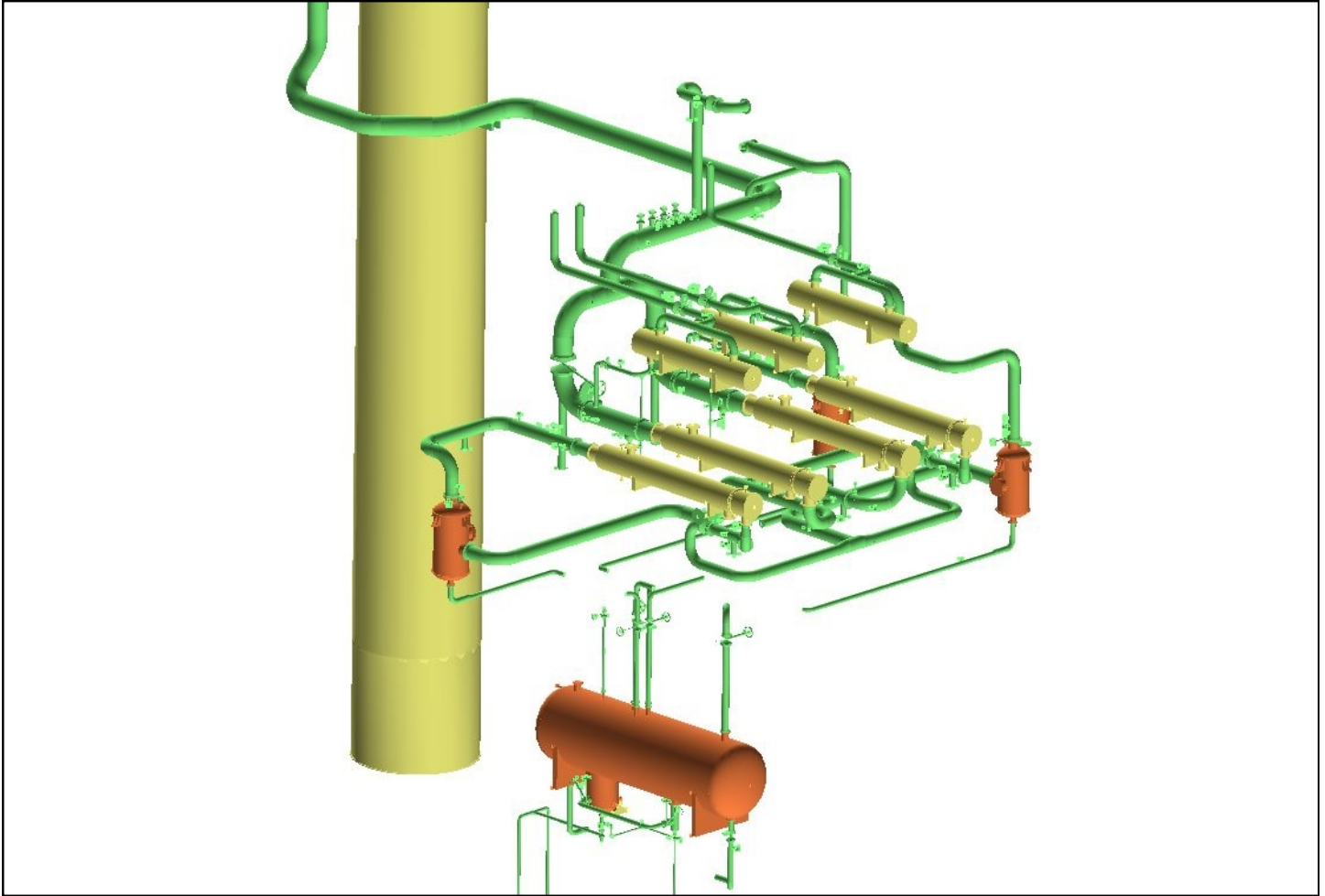
PROJECT DETAILS

- Designed a new 30,000 gallon DCPD Storage Tank with foundation and secondary containment
- Designed a new Rail Unloading Station and Truck Unloading Station both with secondary containments
- Sized and specified a new DCPD Transfer Pump (100 GPM)
- Specified a new 4.00 MM BTU/hr Air Cooler
- Specified a new Natural Gas Generator to provide backup power to the system.
- IQA executed Conceptual Design and Detailed Design
- Total Installed Cost (TIC) - \$3,000,000
- Total Engineering Cost - \$300,000
- Schedule - 7 Months Engineering



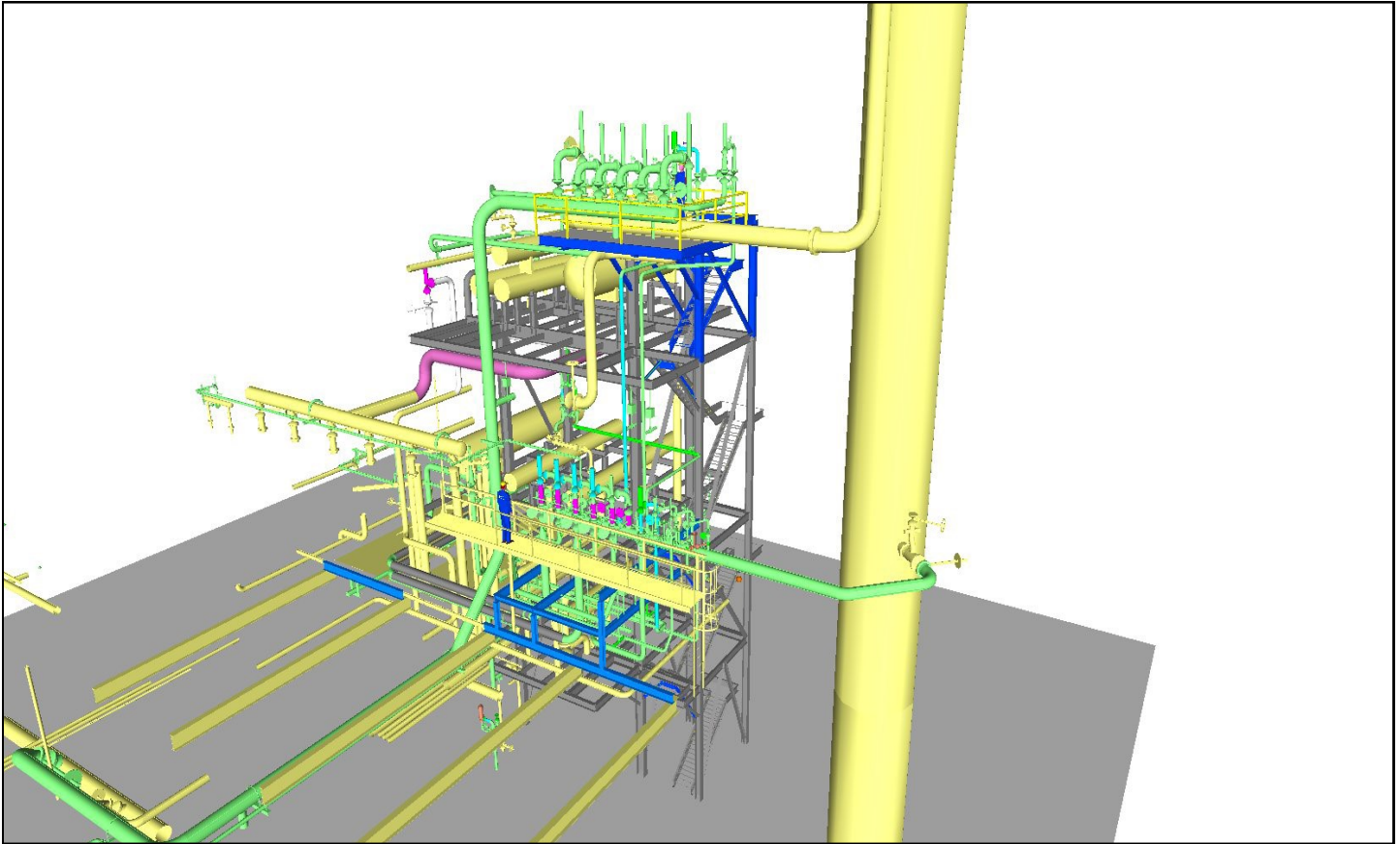
PROJECT DETAILS

- Designed a Jet Draw from the Hydrotreater Fractionator for blending. Diesel Product Rate was maintained by increasing DGO Product Recovery from the Fractionator Bottoms.
- Changed the service of the existing Side Stripper from Diesel Stripping to Jet Stripping with Reboiler
- Designed a new Diesel Surge Drum
- IQA executed FEED, Conceptual Design, Detailed Design, Procurement Support, and Construction Support
- All Tie-Ins and Fractionator Revamp completed during Turnaround
- All remaining work completed Post-Turnaround
- Total Installed Cost (TIC) - \$4,500,000
- Total Engineering Cost - \$550,000
- Schedule - 15 Month Completion



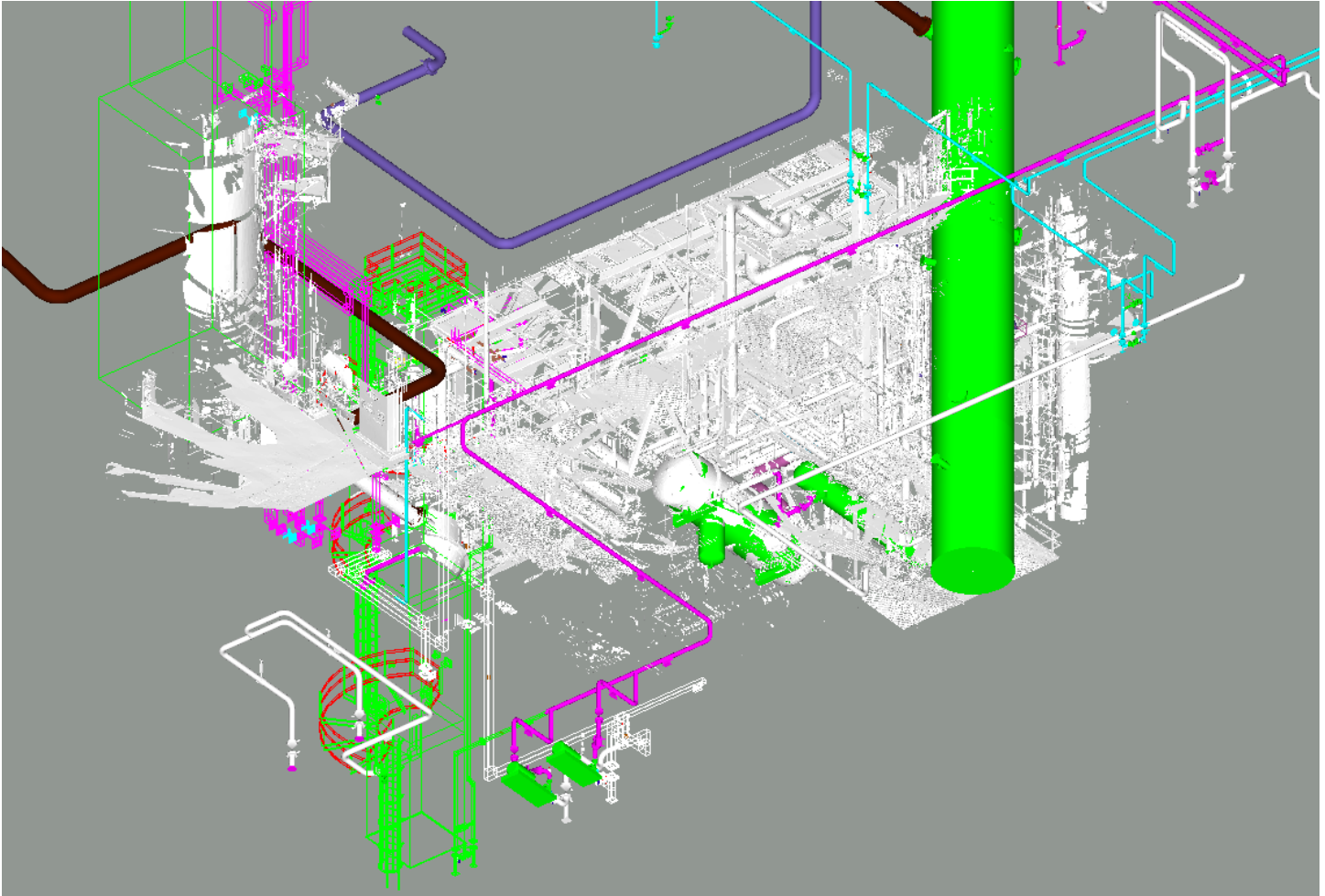
PROJECT DETAILS

- Revamp and retrofit of the Crude Secondary Column Overhead System
- IQA executed Conceptual and Detailed Design
- Conceptual Design included Heat and Material Balances, Alternative Design Analysis, Equipment Specification and Sizing, PFD and P&ID Development, and Cost Estimating
- Detailed Design included Pipe Stress Analysis, Piping Design, Construction Isometrics, Instrumentation Design, Electrical Design, Structural Steel Modifications, and TIC Estimating
- Total Installed Cost (TIC) - \$6,000,000
- Total Engineering Cost - \$520,000
- Schedule - 10 Month Completion



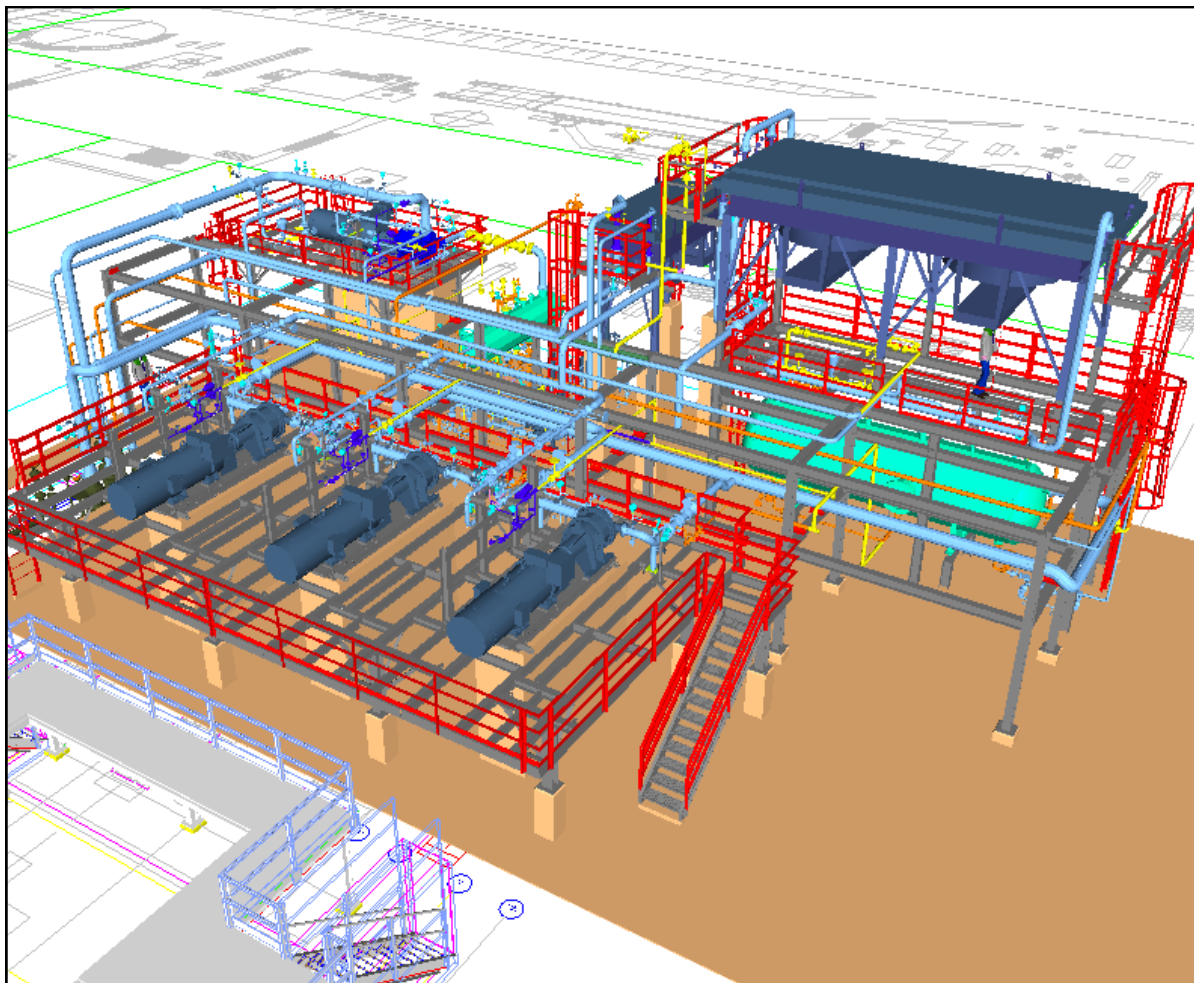
PROJECT DETAILS

- Design of 75 new PSVs in two Crude Units, a Vacuum Unit, two Coker Units, and two Light Ends Recovery Units.
- IQA executed Conceptual and Detailed Design
- Conceptual Design included Relief Analysis, PSV Sizing, Relief System Hydraulic Analysis, PFD and P&ID Development, and Cost Estimating
- Detailed Design included Pipe Stress Analysis, Piping Design, Construction Isometrics, Instrumentation Design, Civil/Structural Design, re-rating existing vessels, design of new vessels, Construction Scope Narratives, and TIC Estimating
- Total Installed Cost (TIC) - \$11,000,000
- Total Engineering Cost - \$1,100,000
- Schedule - 18 Month Completion



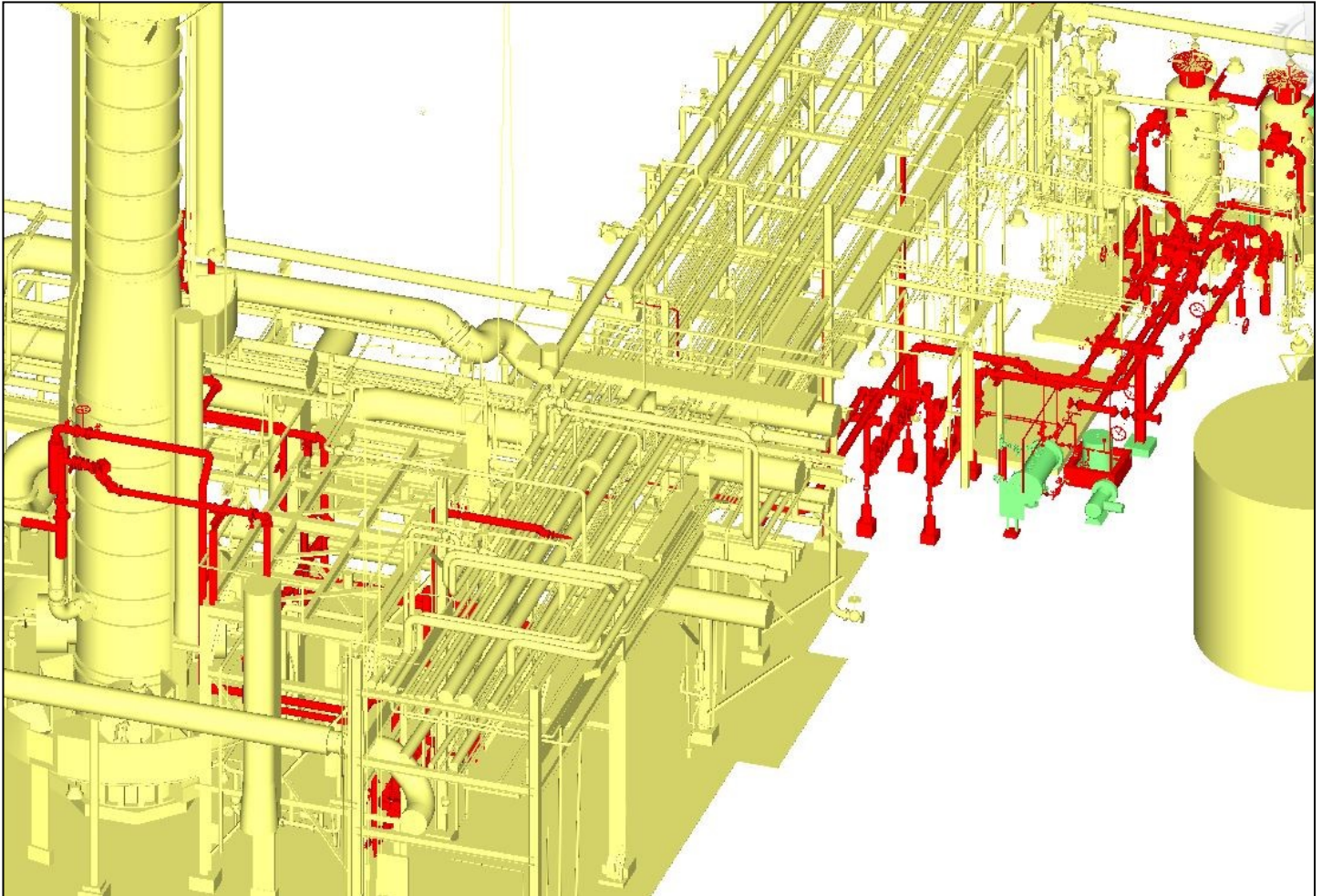
PROJECT DETAILS

- Improved clean products yield from 50% to 68% by improving fractionation in both the Crude Tower and Vacuum Tower. The Crude Unit produced full range Diesel and the Vacuum Tower produced LVGO.
- IQA executed Conceptual and Detailed Design
- Conceptual Design included Heat and Material Balances, Alternative Design Analysis, Crude and Vacuum Fractionation Modifications, Equipment Specification and Sizing, PFD and P&ID Development, and Cost Estimating for Alternative Designs
- Detailed Design included design of additional Convection Coils in the Crude Furnace, design of a new larger Furnace ID Fan, design of Crude and Vacuum Tower Internals, new PA and Crude Preheat Piping System, and Instrumentation Design
- Total Installed Cost (TIC) - \$5,500,000
- Total Engineering Cost - \$500,000
- Schedule - 9 Months Engineering



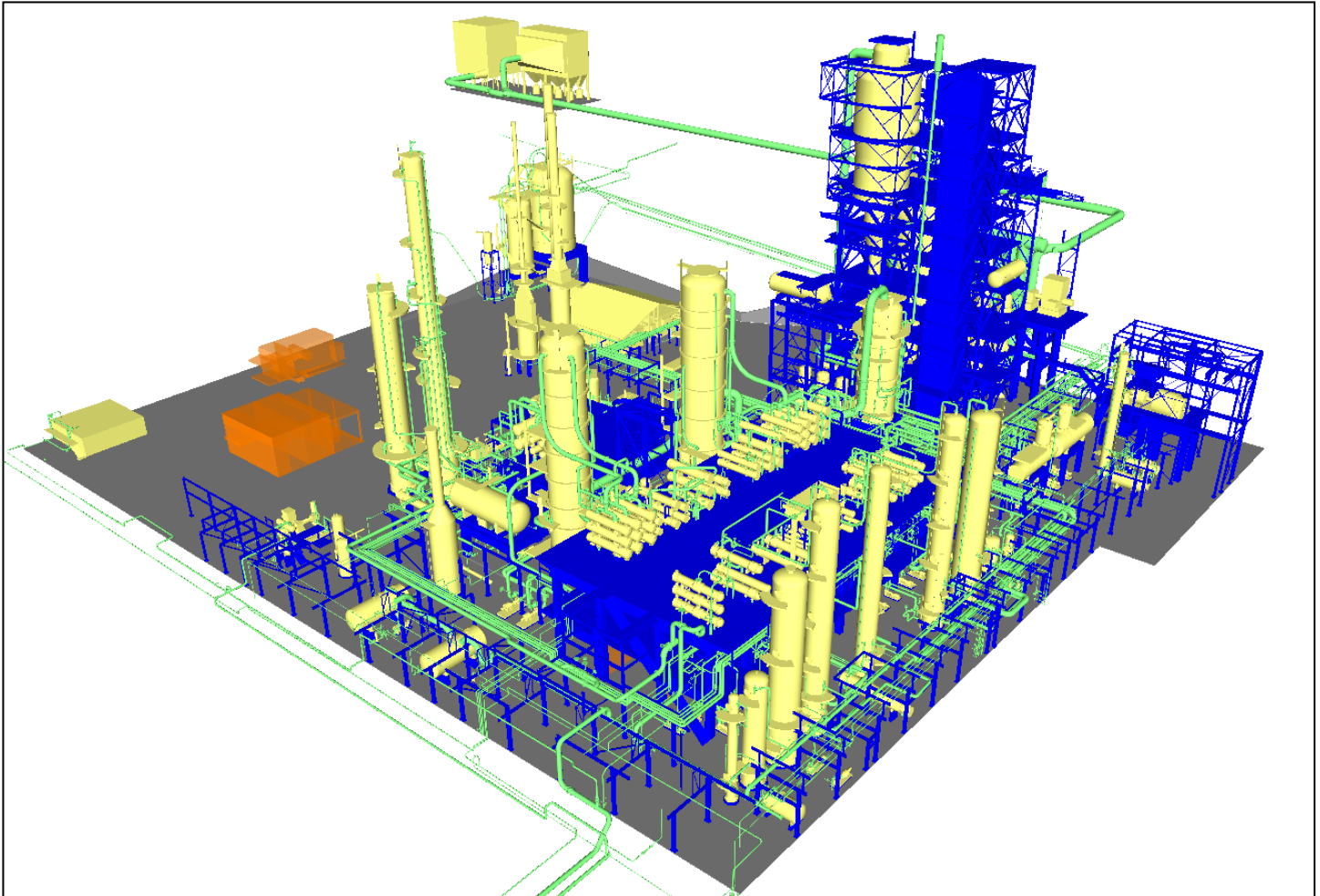
PROJECT DETAILS

- Added Flare Gas and Vapor Recovery Capacity to the Refinery Flare System. Design included a new Powerhouse, new Piping Design, Site Development, new Foundation Design, and Control System Tie-ins.
- Total Installed Cost (TIC) - \$12,500,000
- Total Engineering Cost - \$650,000
- Schedule - 9 Months Engineering
- IQA executed Detailed Design
- Detailed Design included Powerhouse Spec, RFQ, Bid Evaluation, Module Vendor Document Review, Equipment Specification and Sizing, PFD and P&ID Development, Piping Layout Studies, Piping Design, Electrical Design, Instrumentation Design, Civil / Structural Design, Schedule Analysis, Constructability Analysis, and Cost Estimating



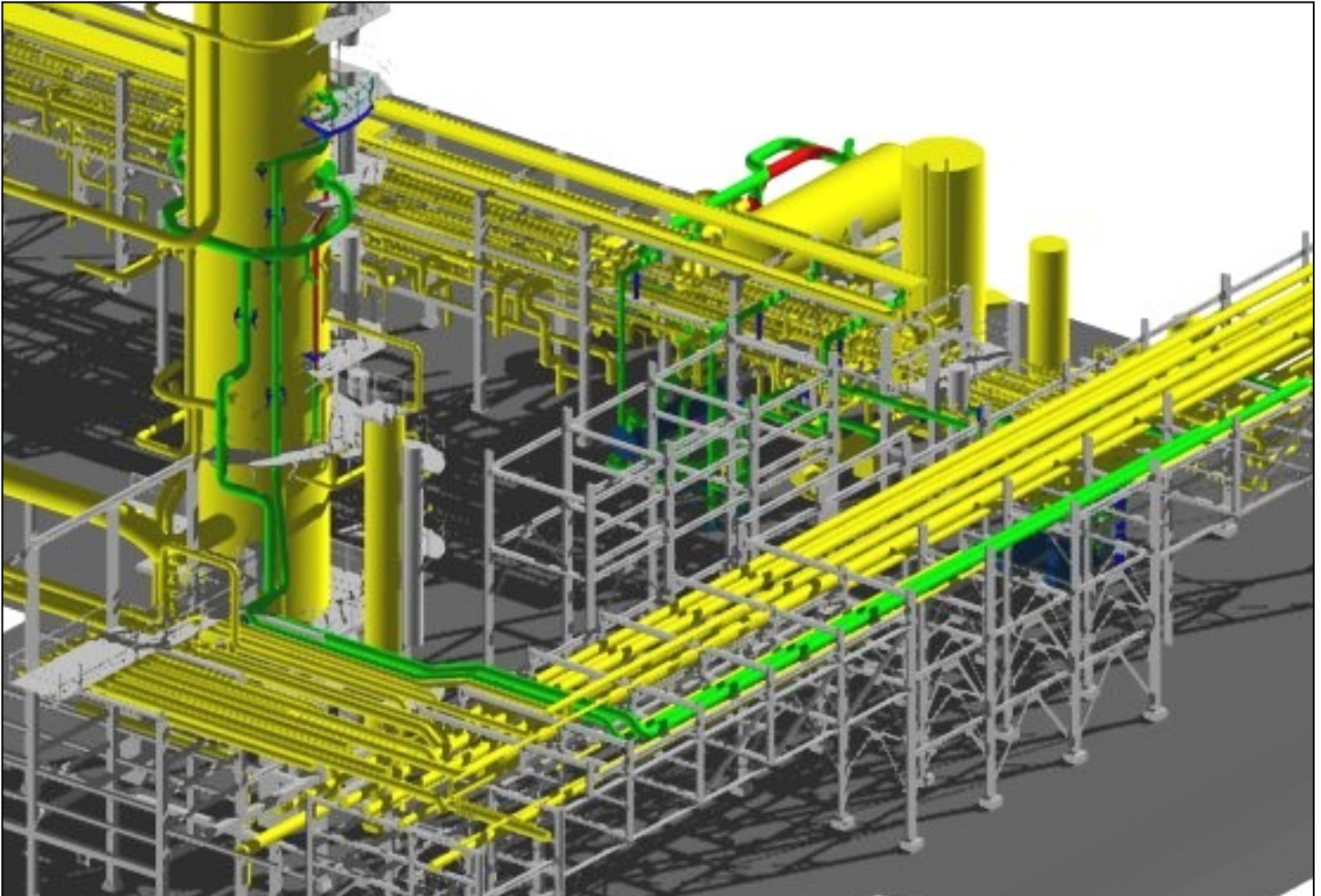
PROJECT DETAILS

- Design of new Resistoflex (Teflon Lined) piping system from existing Carbon Bed Adsorbers to the Incinerator.
- IQA executed Conceptual and Detailed Design
- Conceptual Design included Heat and Material Balances, Material Selection, Equipment Specification and Sizing, PFD and P&ID Development, and Cost Estimating
- Detailed Design included Pipe Stress Analysis, Piping Design, Construction Isometrics, Electrical and Instrumentation Design, Civil/Structural Design, and TIC Estimating
- Total Installed Cost (TIC) - \$5,500,000
- Total Engineering Cost - \$500,000
- Schedule - 12 Month Completion



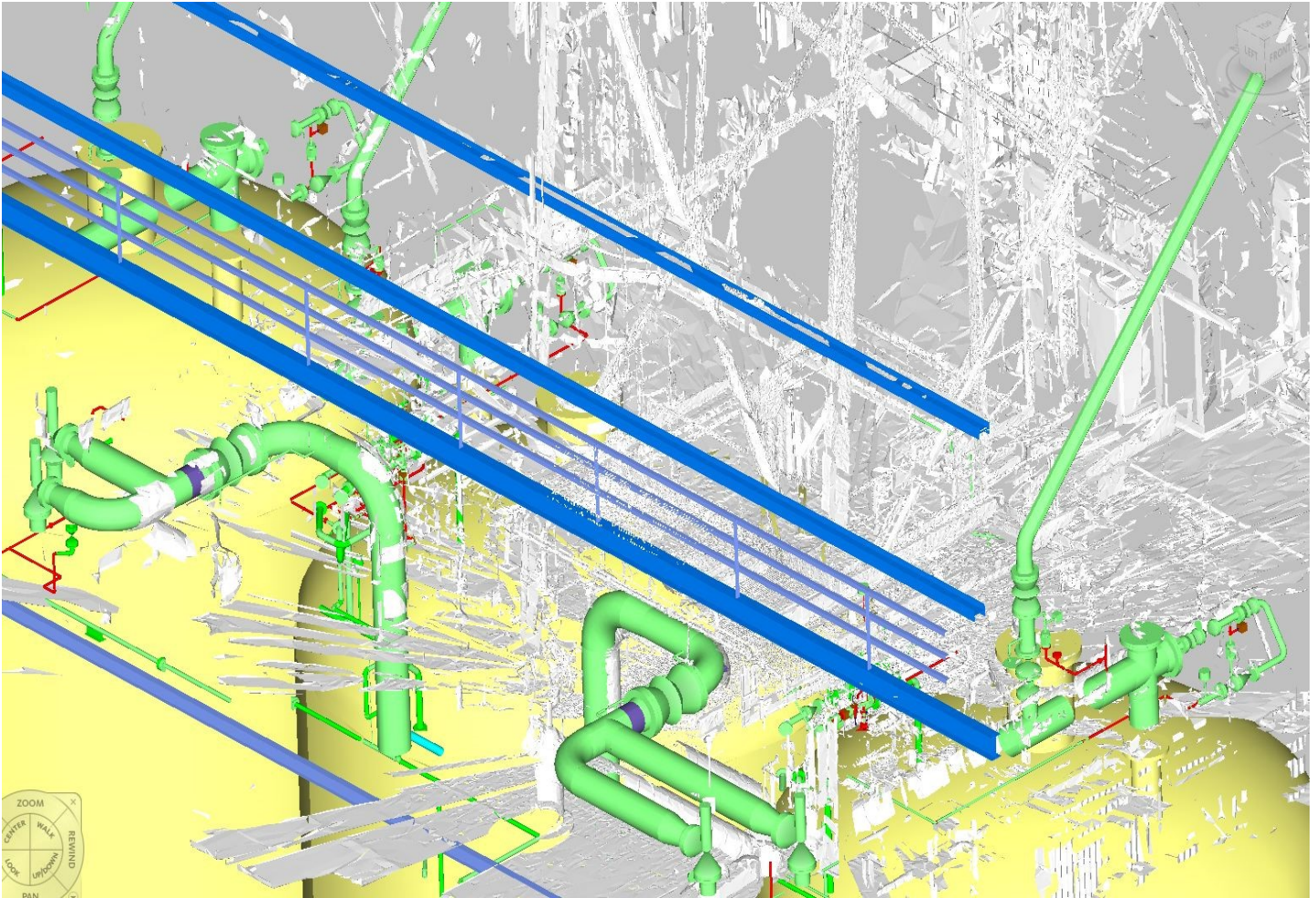
PROJECT DETAILS

- Developed As-Is P&IDs, Piping Isometrics, and Inspection Isometrics for the entire FCC Unit. The 3D Model was then utilized for replacement-in-kind piping projects.
- Laser Scanned, Surveyed, and created a 3D Model of the entire FCC Unit
- Developed PSM Documentation including field verified P&IDs with Links to Inspection Isometrics, Plot Plans, Inspection Isometrics, and a Database for Management of Inspection Isometrics
- Developed Construction Isometrics for replacement -in-kind Carbonate Cracking piping projects.
- Total Installed Cost (TIC) - \$7,000,000
- Total Engineering Cost - \$600,000
- Schedule - 6 Months Engineering



PROJECT DETAILS

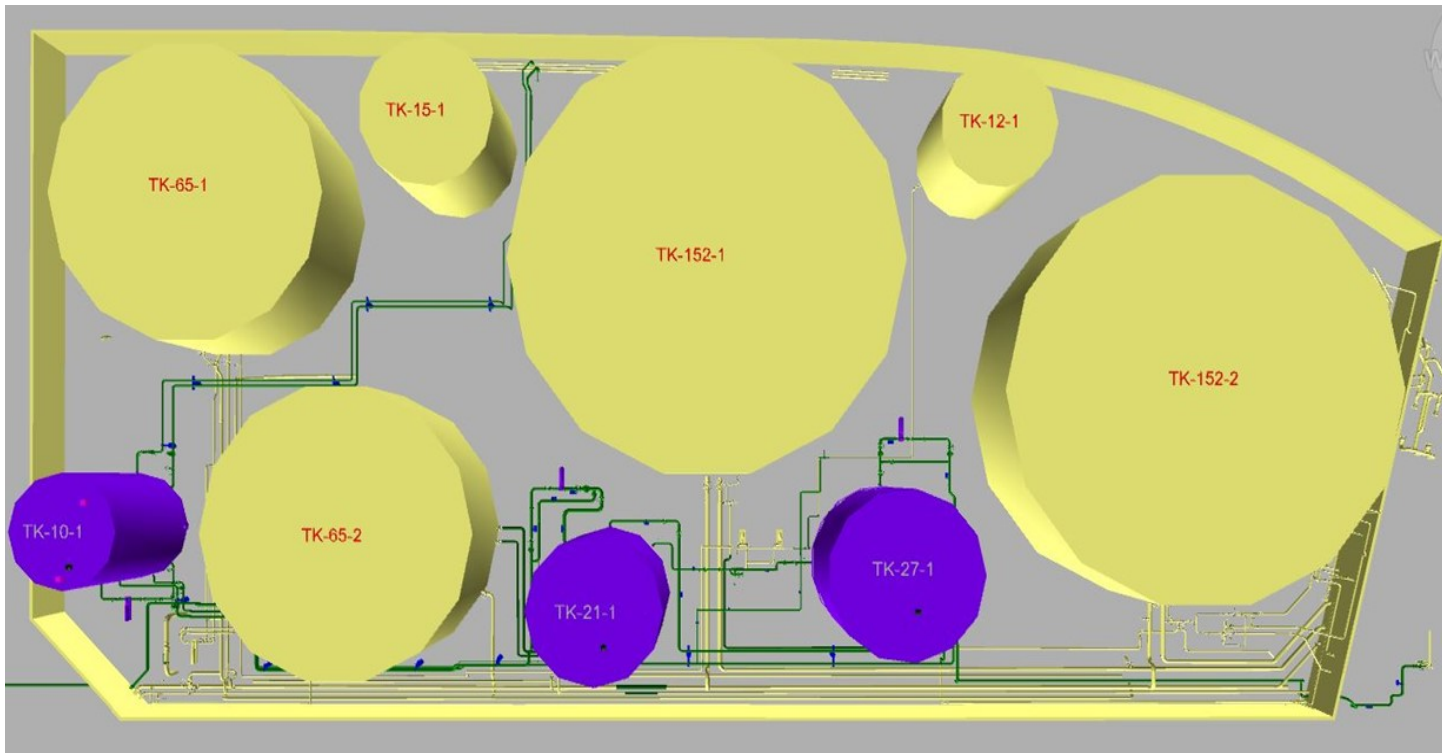
- Designed a new Pump-Around Cooler, Reboiler, and LGO Coolers for the FCC Main Fractionator
- IQA executed Conceptual and Detailed Design
- Conceptual Design included design of new equipment, relocation of existing equipment, conceptual routing of new piping, and TAR/Post-TAR Construction Planning
- Detailed Design included Pipe Stress Analysis, Piping Design, Construction Isometrics, Electrical and Instrumentation Design, Civil/Structural Steel Design, re-rating existing exchangers, design of new exchangers, and developing a Construction Scope Narrative
- Total Installed Cost (TIC) - \$3,600,000
- Total Engineering Cost - \$400,000
- Schedule - 5 Months Engineering



PROJECT DETAILS

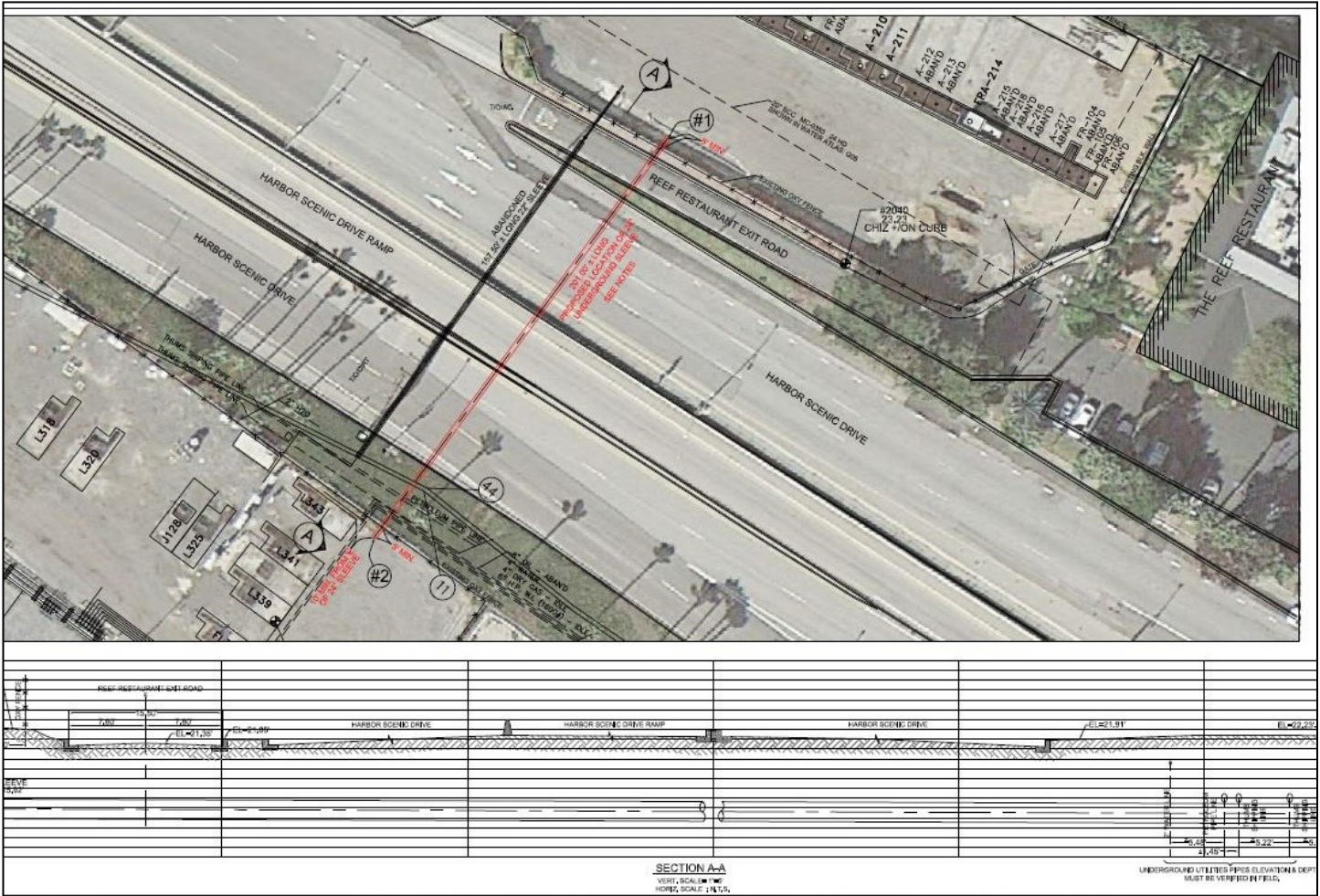
- Designed installation of MOVs and integration of associated Interlock Logic for 4 Coke Drums at a Coker Unit.
- Design included laser scanning and surveying of the project area, 3D modeling of the project area, modifications to various lines, and design of lock-out devices/signage
- Detailed Design included Pipe Stress Analysis, Piping Design, Construction Isometrics, Structural Steel Modifications, and developing a Construction Scope Narrative
- Total Installed Cost (TIC) - \$6,000,000
- Total Engineering Cost - \$600,000
- Schedule - 6 Months Engineering

Oil and Gas Production & Transportation



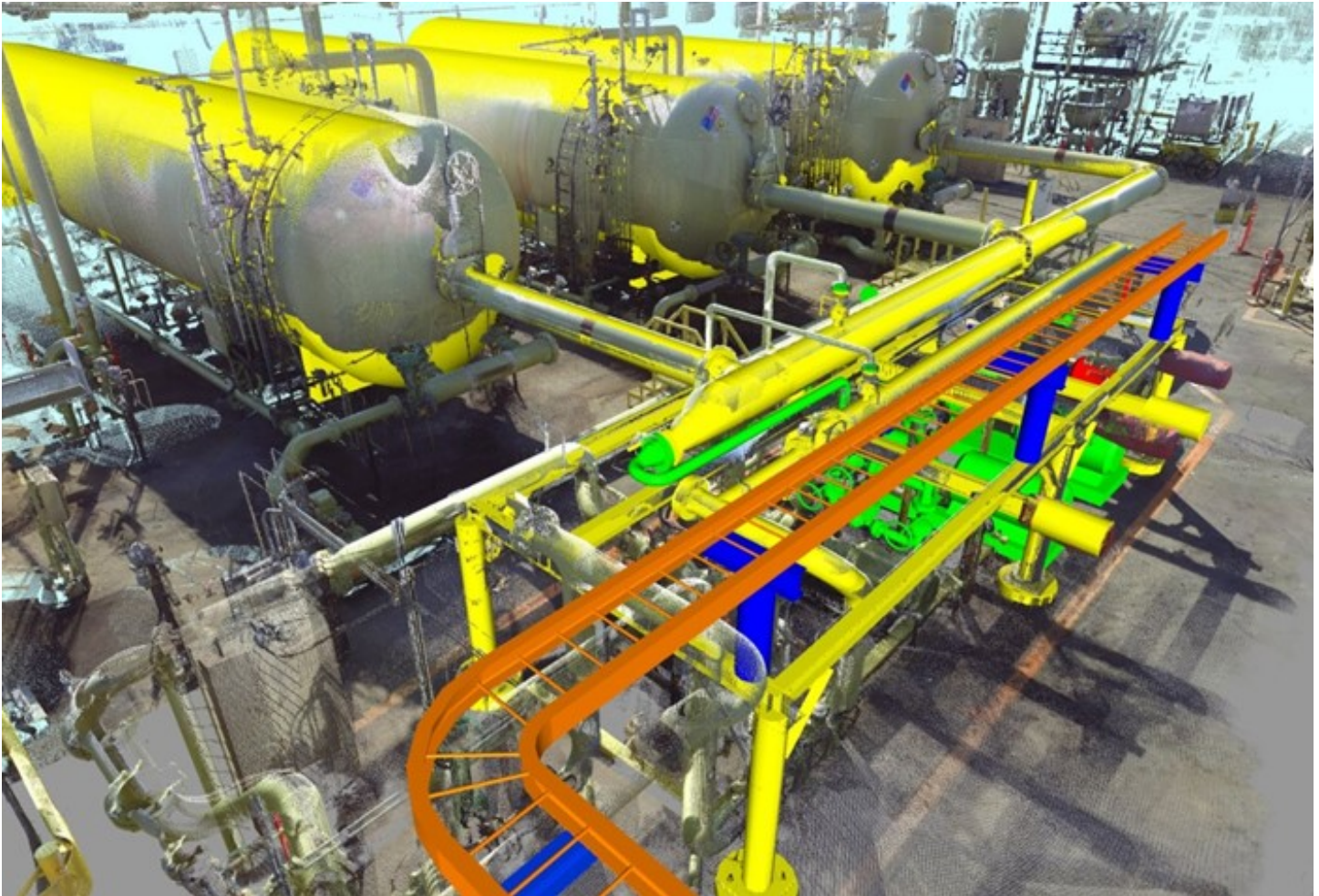
PROJECT DETAILS

- Designed three new storage tanks, associated piping/pumping systems, and a new pipeline to the adjacent pier
- IQA executed Conceptual and Detailed Design
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$12,600,000
- Total Engineering Cost - \$1,200,000
- Schedule - 12 Months Engineering



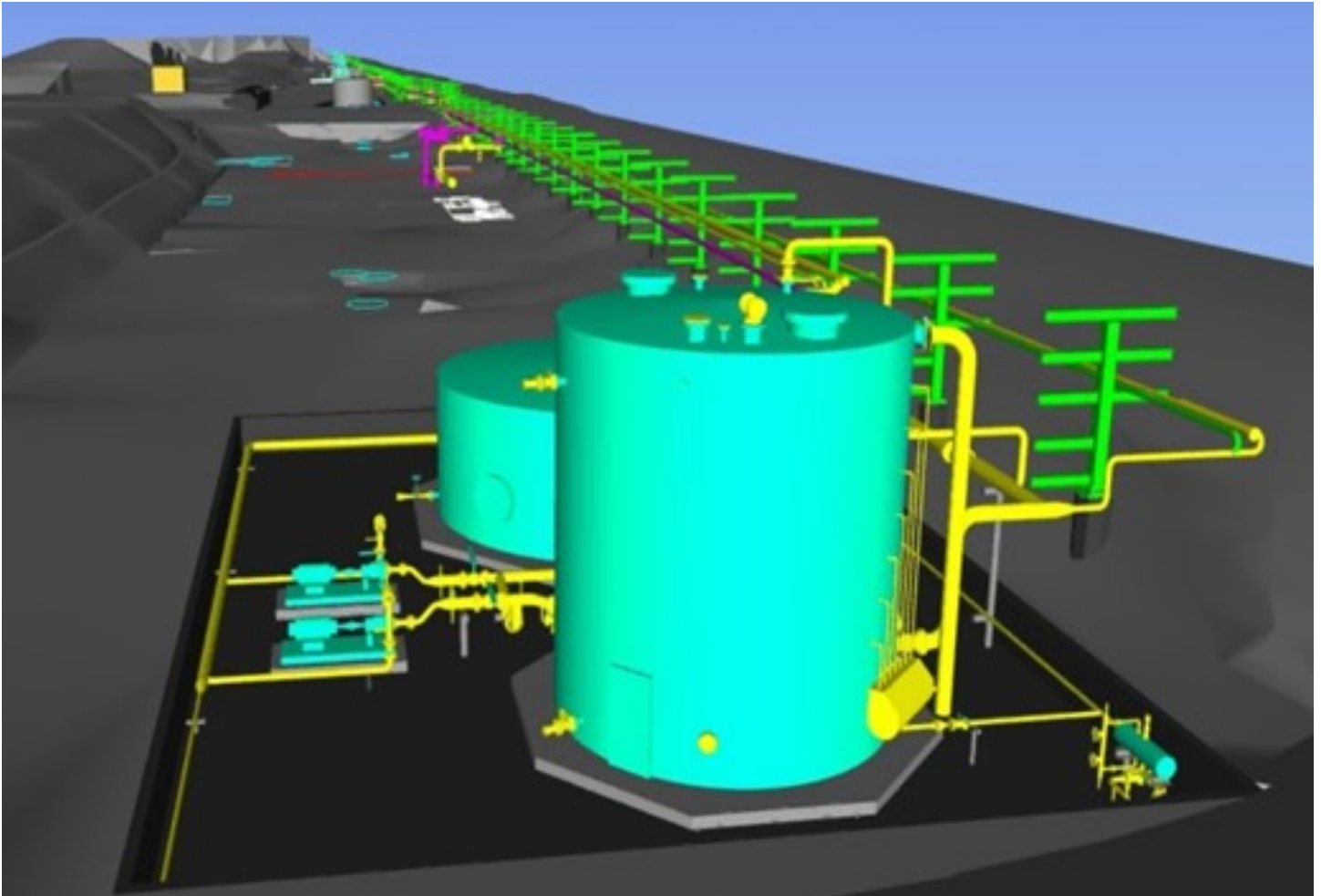
PROJECT DETAILS

- Provided Engineering Support to run Oil Gathering and High Pressure Water Injection Systems under a Major Freeway
- Project included more than 1000' of underground public road crossings with depths of 8' - 10' and multiple crossings of existing pipelines and municipal utilities
- Design included Electrical and Instrumentation Engineering, obtaining permits, verifying right-of-way, providing Traffic Control Plans, and developing Construction and Commissioning Plans to minimize public impact
- Total Installed Cost (TIC) - \$6,800,000
- Total Engineering Cost - \$600,000
- Schedule - 12 Month Completion



PROJECT DETAILS

- Designed replacements for six Oil Transfer Pumps at two facilities. Project included larger pumps/ motors, VFDs, new electrical infrastructure, and upgraded instrumentation.
- Total Installed Cost (TIC) - \$6,500,000
- Total Engineering Cost - \$680,000
- Schedule - 24 Month Completion
- IQA executed Conceptual and Detailed Design
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey



PROJECT DETAILS

- Designed aboveground and underground piping to support the Oil Field Well Development Program at the PICO site.
- Design included Oil Gathering, High Pressure Water Injection, Firewater, Gas Gathering, Wastewater, and Vapor Recovery.
- IQA executed Conceptual and Detailed Design
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$13,000,000
- Total Engineering Cost - \$1,100,000
- Schedule - 24 Month Completion



PROJECT DETAILS

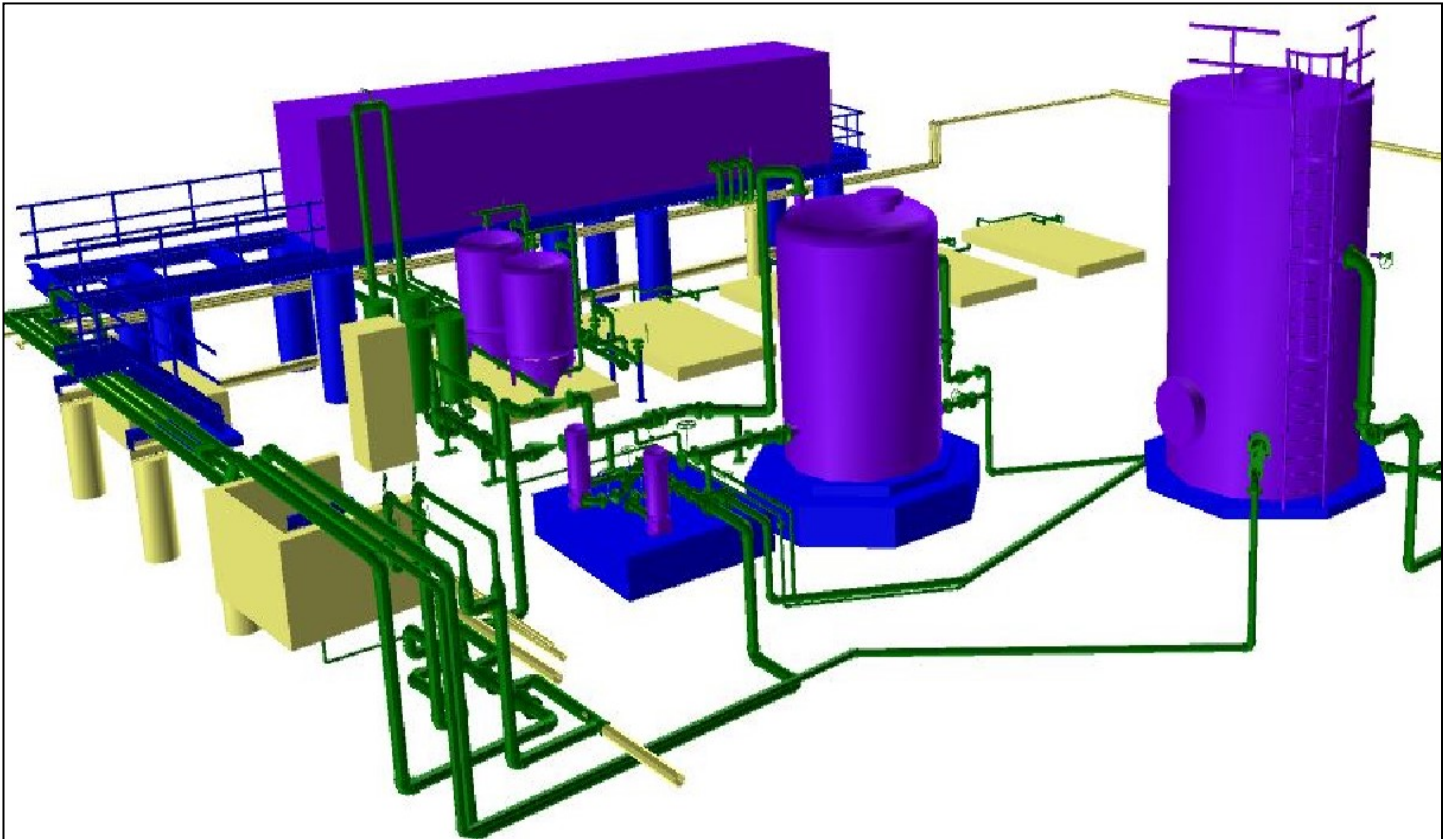
- Created Inspection Isometrics for all process streams on three offshore platforms
- Updated existing PFDs and P&IDs to As-Is Conditions
- Laser Scan Cloud of Points is utilized for multiple future revamp and retrofit projects.
- Total Engineering Cost - \$500,000
- Schedule - 12 Month Completion



PROJECT DETAILS

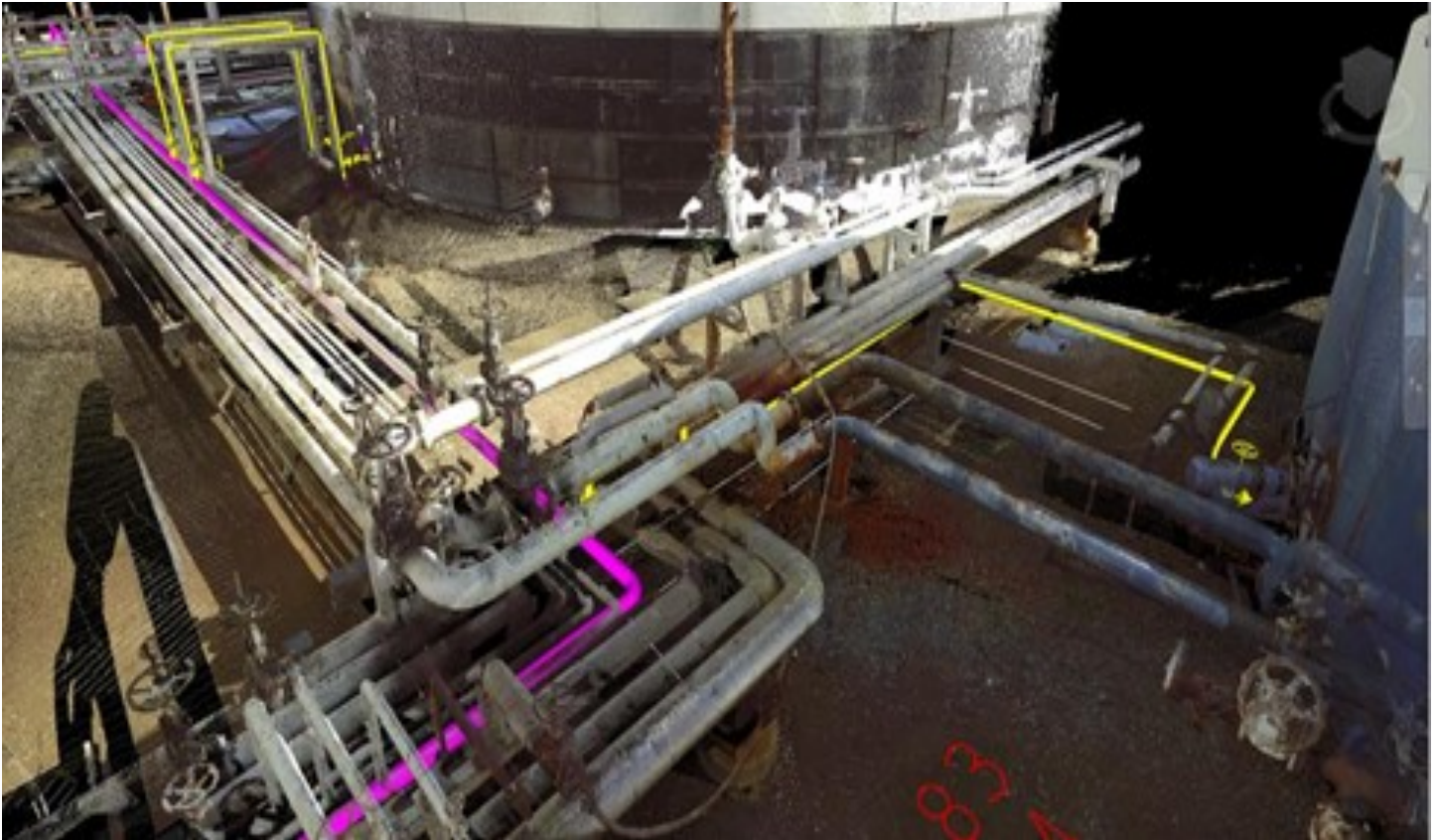
- Designed the new Berth Toppides Ship Loading Facilities
- Re-designed on-shore piping to comply with MOTEMS
- IQA executed Conceptual and Detailed Design
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
 - Fire Protection
- Total Installed Cost (TIC) - \$38,000,000
- IQA's Engineering Cost - \$2,600,000
- Schedule - Ongoing

Utilities



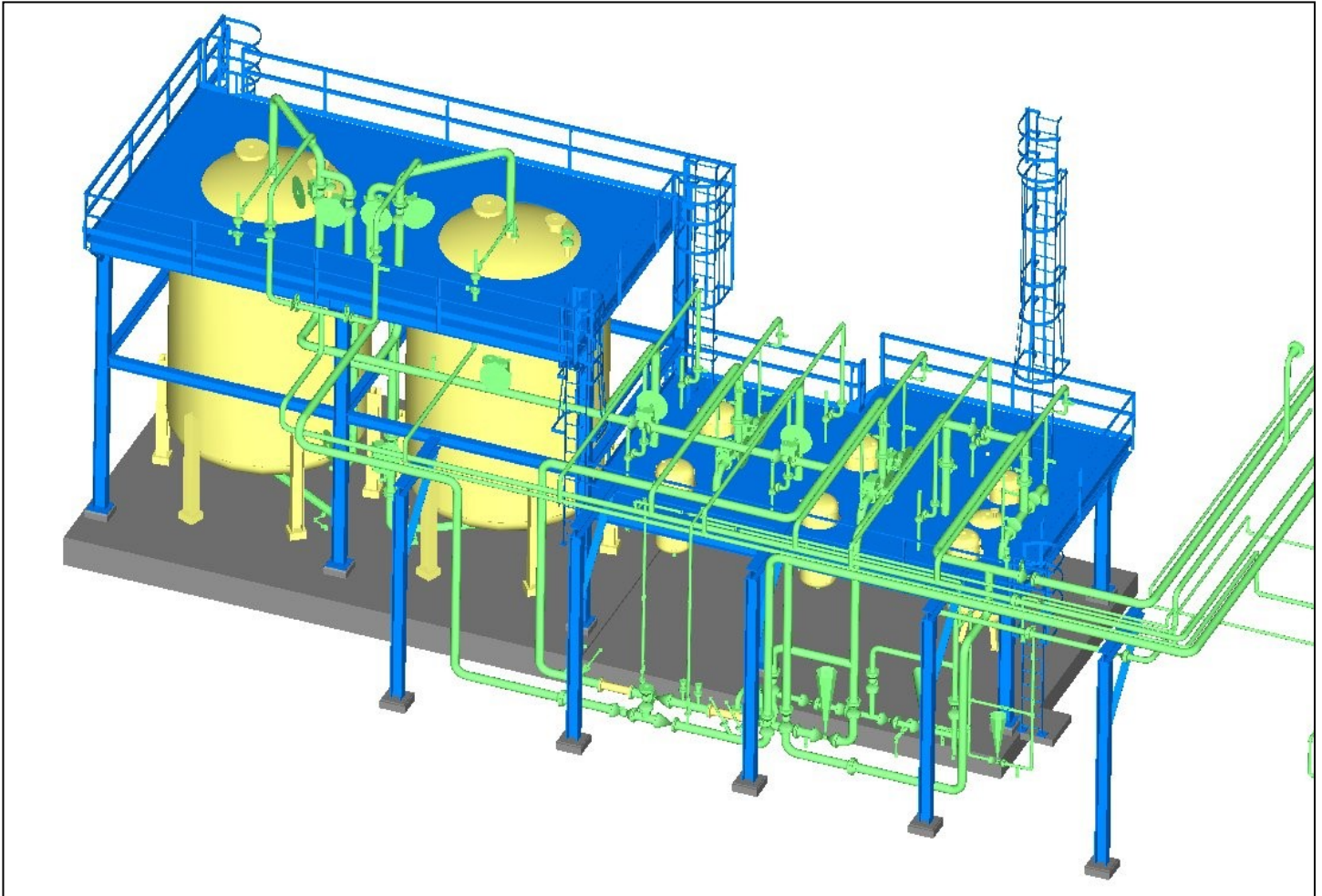
PROJECT DETAILS

- Designed a new Reverse Osmosis (RO) Water Treatment Facility for Potable Water Production
- Critical drought relief required a highly compressed engineering schedule and co-current design and construction
- IQA executed Conceptual and Detailed Design
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$4,000,000
- Total Engineering Cost - \$450,000
- Schedule - 5 Month Completion



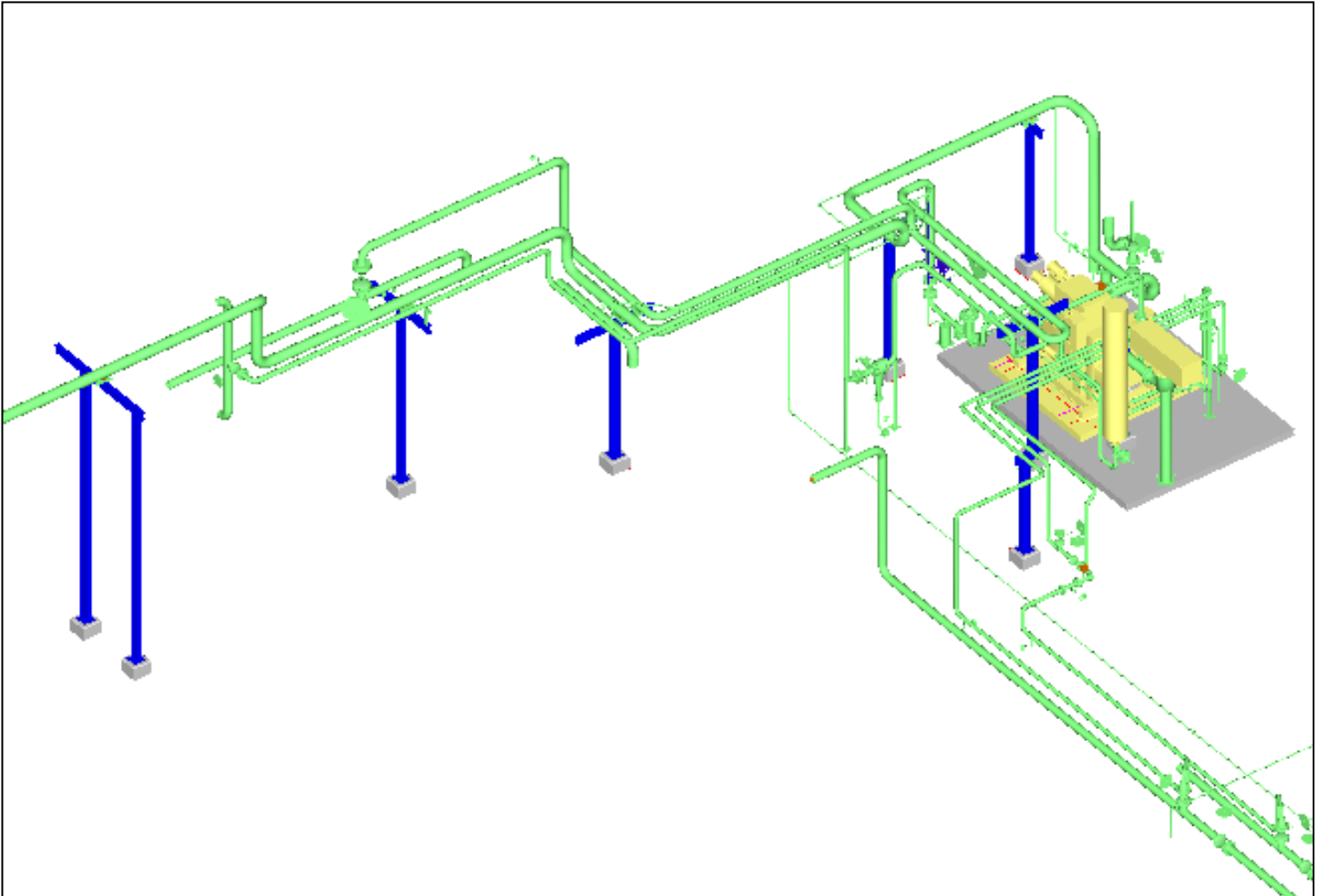
PROJECT DETAILS

- Evaluated and designed a replacement Steam and Condensate System for the facility
- Evaluation consisted of analyzing steam requirements for all services, boiler capacity, and hydraulic analysis to establish an optimum layout
- IQA executed FEED and Detailed Design
- Disciplines Involved:
 - Process / Process Controls
 - Mechanical
 - Piping
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$4,500,000
- Total Engineering Cost - \$440,000
- Schedule - 36 Month Completion



PROJECT DETAILS

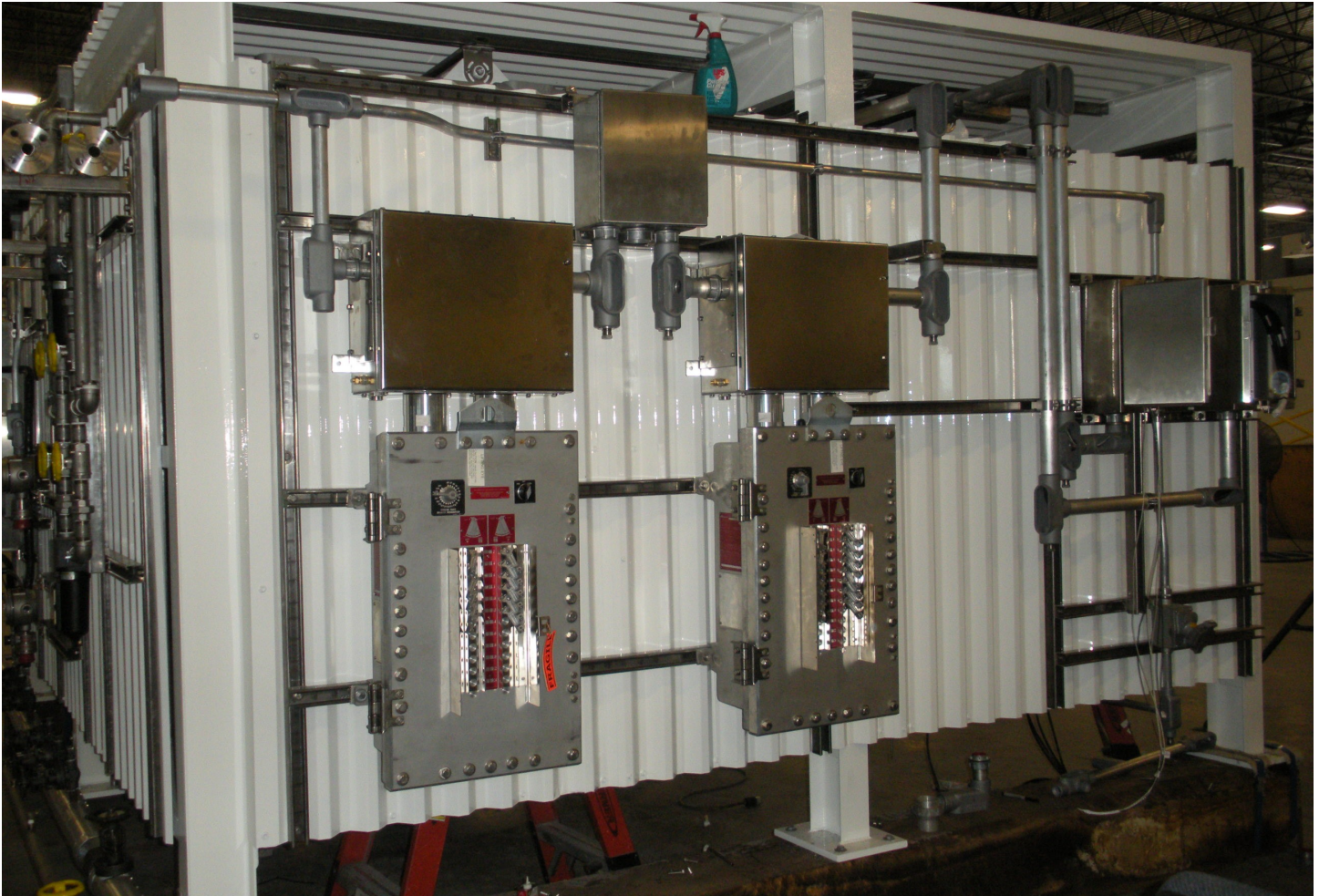
- Designed integration of a 250 GPM Selenium Removal (SeRT) Facility to the existing Sour Water Treatment Unit.
- Total Installed Cost (TIC) - \$3,500,000
- IQA executed Conceptual and Detailed Design
- Total Engineering Cost - \$460,000
- Conceptual Design included Heat and Material Balances, Material Selection, Equipment Specification and Sizing, PFD and P&ID Development, and Cost Estimating
- Schedule - 8 Months Engineering
- Detailed Design included Pipe Stress Analysis, Piping Design, Construction Isometrics, Instrumentation Design, Civil/Structural Steel Design, re-rate existing and design of new vessels, Construction Scope Narrative, and TIC Estimating



PROJECT DETAILS

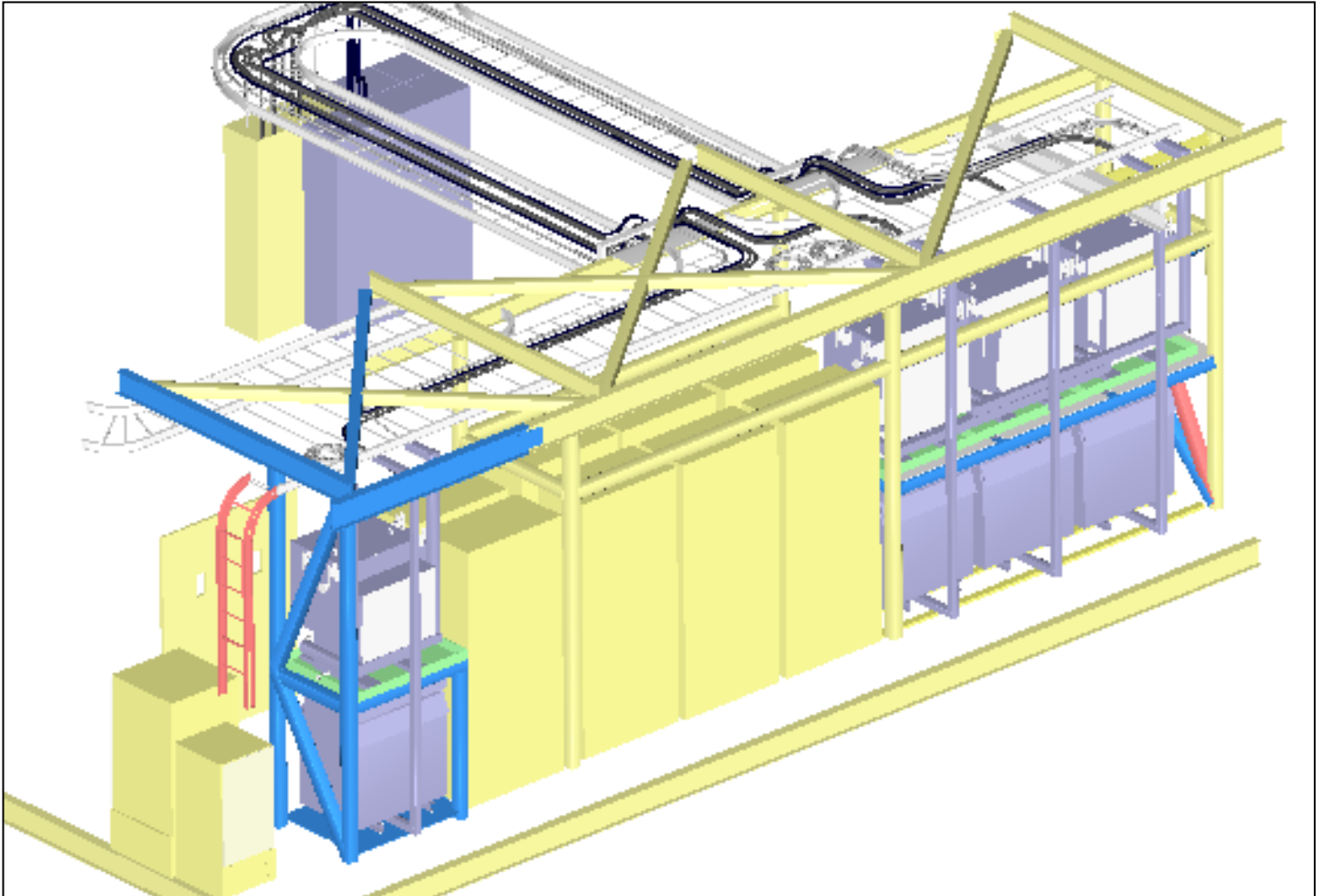
- Design of new Plant Air and Instrument Air Compressors at various locations of the refinery. Design consisted of electric and steam driven compressors.
- Total Installed Cost (TIC) - \$3,500,000
- Total Engineering Cost - \$300,000
- Schedule - 12 Month Completion
- IQA executed Conceptual and Detailed Design
- Conceptual Design included Equipment Specification, RFQ, Vendor Selection, P&ID Development, Demolition Plans, Plot Plans, and Cost Estimating
- Detailed Design included Piping Design, Construction Isometrics, Instrumentation Design, Electrical Design, Civil/Structural Design, Construction Scope Narrative, and TIC Estimating

Electrical & Instrumentation



PROJECT DETAILS

- Designed a Flare Emission Monitoring System including Analyzers, Sample Piping, and E&I Infrastructure
- Design included 3D Modeling, E&I Engineering, Sample System Design and Specification, Utility Piping Design, Analyzer Specification, Severe Service Shelter Specification, modifications to the main Flare Headers, and Civil Engineering
- Design Objectives included Maximum Redundancy at Minimum Cost, Spare and Expansion Capability, Maximum Reliability, Personnel and Logistical Safety, Maintainability, and Robust Data Integrity and Reporting
- Total Installed Cost (TIC) - \$15,000,000
- Total Engineering Cost - \$700,000
- Schedule - 18 Month Completion



PROJECT DETAILS

- Designed a new MCC Unit and upgraded the entire Electrical System for an Offshore Platform
- Design included a new 6 MVA Power Center, Lighting System, Emergency Shutdown System, VFDs, HVAC, and reclassification of all levels
- IQA executed Conceptual and Detailed Design
- Disciplines Involved:
 - Electrical and Instrumentation
 - Civil and Structural
 - Laser Scanning and Survey
- Total Installed Cost (TIC) - \$10,000,000
- Total Engineering Cost - \$1,000,000
- Schedule - 24 Month Completion