



# Chemicals



*Engineering relationships.*

Nexus Engineering Group is a full-service, independent engineering firm focused on supporting clients' specific project goals, from concept to startup. With fifteen years of proven engineering and design successes and a growing team with more than 200 professionals that you will enjoy working with, Nexus is more than your typical engineering firm. Clients come to us for our expertise, creativity, passion, and relentless focus on their goals.

**Business Case Development  
& Front-End Loading**

**Engineering & Detail Design**

**Project Services & Controls**

**Construction, Commissioning,  
Outage & Turnaround Support**



### **Energy**

Our energy services offerings for power delivery (T&D) and distributed generation includes substation engineering, power systems analysis, and plant system design and maintenance solutions. Focused on medium and high-voltage applications up to 345kV, our industry-seasoned staff brings a wealth of project and system experience to develop safe, comprehensive solutions.



### **Renewables**

Our experience includes working directly for clients in the renewable, biofuel, and green energy industry to provide process and project management expertise, helping integrate power from renewable sources into their existing operations, and consulting to vet sustainability investments, provide the economic analysis needed to project return on investment, and implement smart solutions. Nexus's process expertise makes us a trusted partner in designing more efficient facilities and processes that reduce carbon emissions and operational costs.



### **Oil Refining**

Nexus brings a rare combination of technical skill and practical knowledge gained from years working with refining clients to help improve productivity and safety while meeting environmental standards. Our understanding of the refining business and its operational complexity helps us deliver quality, pragmatic designs that work.



### **Petroleum Midstream**

Nexus professionals have the resources, skill and expertise to manage midstream projects and provide operational support for the processing, separation, storage, and distribution of natural gas, liquid petroleum gas, liquid natural gas, crude oil, and crude oil components.



### **Chemicals**

Nexus offers full-service project design that drives efficiency, productivity, and improved quality and plant safety for specialty and commodity chemical companies. We have a deep understanding of continuous processing, solids handling, combustion, and distillation, with a proven track record in product and feedstock logistical planning and optimization.



### **Manufacturing**

Our broad manufacturing expertise includes installation of new process lines, rearranging equipment to maximize logistical efficiencies, and designing equipment modifications that improve productivity, product quality, and safety while minimizing manufacturing costs and production line downtime.



# Chemicals Services and Capabilities



## PROCESS & PIPING ENGINEERING

### Process Design

Data Gathering & Baseline  
System Modeling  
Process Flow Diagram  
Development  
Heat & Material Balances  
Hydraulic System Design  
Liquid & Solid Chemical  
Processes  
Design Basis Development  
Statement of Requirements  
PID Development & Control  
Operating Cost Analysis  
Equipment Specifications  
PSM Documentation  
Operating Procedures  
Tank Farms & Distribution  
Commissioning & Start-Up  
Support  
Technical Service Support  
Relief & Flare System Design

### Piping Design

Laser Scanning  
3D Design  
Installation Animation  
Navisworks Integration  
Modular & Pre-Assembly  
Design  
Isometric & Spool Drawings  
Construction Support



## ELECTRICAL, INSTRUMENTATION & CONTROLS (I&C)

### Electrical Engineering

Load Modeling  
One Line Development  
Arc Flash Analysis  
Substation Design  
Class I/Division I Design  
Power Distribution  
Protective Relay Coordination  
Energy Audits  
Energy Management Systems  
Equipment Layout  
Equipment Specification  
Facility Design  
Fire & Security Systems  
Lighting & Lighting Controls  
Lightning Protection  
Start-up Planning & Support

### Instrumentation & Controls

System Design & Device  
Specifications  
Distributed Control Systems  
(DCS)  
Safety Instrumented Systems  
(SIS)  
Human Machine Interface  
Hybrid Control Systems  
Programmable Logic Controls  
(PLC)  
Supervisory Control & Data  
Acquisition Systems (SCADA)  
Field Checkout &  
Commissioning



## MECHANICAL, CIVIL & STRUCTURAL ENGINEERING

### Mechanical Engineering

Mechanical Integrity  
Assessment Support  
Vessel Shop Drawings  
Nozzle Design Drawings  
Skid Packages  
Equipment Setting Plans  
Turbo Machinery  
Rotating Equipment  
Stationary Equipment  
Chillers & Refrigeration  
Boilers  
Dust Collection  
Energy Recovery Equipment  
Bulk Material Handling  
Hydraulic Controls

### Civil Engineering

Grading/Earthwork  
Sewer & Run-Off Hydraulic  
Modeling  
Sewer System Assessment  
& Design  
Road & Railroad Design  
Site Planning  
Underground Utilities

### Structural Engineering

Shoring Plans  
Structural Repairs  
Pre-Assembly Design  
Geotech Reviews



## PROJECT & CONSTRUCTION MANAGEMENT

### Project Controls

Initial Project Support  
Integrated Document  
Management Systems  
Formal Project Reporting  
Risk Assessment/Register  
Risk Management System  
Review of Lessons Learned

### Estimating

Initial Estimate: (AACE) Class V/IV  
Class II & III Estimates  
Basis of Estimate/Metric Review  
ASPEN Cost Estimator &  
Historical Metrics

### Scheduling

Level 2 Schedule  
Level 3 Schedule – Resource  
Loaded  
Earned Value Process in Place  
Primavera – P6 & Microsoft Project  
Advanced Work Packaging

### Project & Construction Management/CM/CA

Procurement Services & Support  
Evaluate Lifecycle Costs  
Constructability Analysis  
Lift Planning  
Logistics & Heavy Haul  
Field & Shop QA  
Commissioning Support

## You'll Want Us in Your Business.

You expect design, project management and controls expertise from an engineering design firm. What you may not expect is how our understanding of your business inspires creative approaches you hadn't considered. We call it Busineering, and it's how we ensure every engagement begins with our team learning your business objectives, not just your engineering needs.

We start by studying your operations, investment and desired outcome, which helps us evaluate the engineering problem from all angles. Then Nexus gets to work on how to best maximize your return. Business-first thinking inspires more creative design, and more effective communications throughout the project.

From project kickoff to closeout, we work hard to become the trusted partner you'll want to come back to for the next project or investment program. Our high-energy staff is made up of talented process, instrumentation and controls, structural, electrical, mechanical, and piping professionals with decades of hands-on conceptual and detailed system design, construction, commissioning and turnaround support, and project management experience. What we all have in common—a shared commitment to building engineering relationships that last for careers.



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