



# Energy



*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.

# Energy Projects and Services



## TRANSMISSION & DISTRIBUTION

### Projects

Greenfield Substations (138KV and below)  
 Brownfield Substation Upgrades (345KV and below)  
 Ring Bus Additions  
 Circuit Breaker Replacements & Additions  
 Transformer Replacements & Additions  
 Protection Replacements (Relay Panel, RTAC, RTU, SCADA)  
 Capacitor Bank Additions  
 Transmission Lines (138KV and below)

### Services

Protection & Control Development  
 Single Line, Schematic, & Wiring Diagram Design  
 Substation Layout & Physical Design  
 Site Civil, Structural Foundation, & Bus Structure Design  
 Ground Grid & Lightning Protection Design  
 Capacity Assessments & Upgrade Design  
 Transmission Pole Line Design (138KV and below)  
 Underground Transmission Design (138KV and below)



## POWER GENERATION

### Projects

Fossil Fuel Plant Upgrades & Maintenance  
 Combined Heat & Power (CHP) to 100MW  
 Cogeneration  
 Biogas Generation  
 Balance of Plant  
 Wind Turbine Generation  
 Solar Generation

### Services

General Arrangement Development  
 Process PFD & P&ID Development  
 Mechanical System Design & Equipment Specification  
 Process Piping 3D Design & Isometrics  
 Civil & Structural Design  
 Electrical System Design  
 Instrumentation & Control  
 SCADA  
 NERC Compliance



## POWER DELIVERY & ANALYSIS

### Projects

Power Distribution Systems (69KV, 34.5KV, 15KV and below)  
 Electrical Equipment Upgrades & Additions  
 Protective Device Upgrades & Additions  
 SCADA System Upgrades & Additions

### Services

Single Line Diagram Development  
 Electrical Equipment Specification  
 Computer Modeling, Load Flow, Load Analyzer, Voltage Profiles  
 Short Circuit Analysis & Device Evaluation  
 Protection: Selectivity, Coordination, Relay Programming & Set-up  
 Motor Starting, Transient Stability, Acceleration Analysis  
 Harmonic Screening, DC Systems Analysis  
 Arc Flash Analysis & Mitigation  
 Distribution System Physical Design  
 System Grounding & Earthing Design  
 Fiber & Ethernet Network Development



## DISTRIBUTED ENERGY

### Projects

Microgrid Development & Design  
 Emergency Power  
 Generators, Boilers, HRSG's  
 Steam & Hot Water Systems  
 Chilled Water Systems  
 Energy Storage  
 Uninterruptible Power  
 Waste Heat to Energy  
 Compressor Stations & Pipelines  
 Fuel Storage & Distribution  
 Wind & Solar Generation

### Services

Electrical System Development & Design  
 Process System Development & Design  
 Mechanical, Civil, Structural Design  
 Control System Architecture Development

## 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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