ENCORUS GROUP IS YOUR INDUSTRIAL ENGINEERING PARTNER

DELIVERING BETTER SOLUTIONS TO THE TOUGHEST PROBLEMS.

ENCORUS® GROUP

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An Overview

Positioned to Solve Your Design Problems

Encorus Group is a professional engineering, testing, inspection, and environmental services firm with offices in Buffalo and Springville, NY. Founded in 1996, the firm now has a staff of 70 full-time employees, including licensed Professional Engineers in all major disciplines. This allows Encorus Group to offer a comprehensive in-house solution for any project, no matter how big or small. In addition, our civil materials testing, non-destructive examination, and mechanical integrity asset management divisions offer a wide range of inspection services to meet the needs of our industrial, commercial, nuclear, manufacturing, healthcare, and higher education clients.

Encorus Group is verified as a Service-Disabled Veteran-Owned Small Business (SDVOSB) at both the Federal and New York State levels.

We Live (and Practice) our Core Values

OWN IT!
Encorus staff members are expected to take personal ownership of the projects to which they are assigned. This ownership stake means we care about our client's issues such as budget, schedule, and quality.

SOLVE IT!
Encorus encourages all employees to actively seek robust and innovative solutions to our customers' challenges. This leverages the creativity of our staff, building on their interest and enthusiasm for the project.

GROW IT!
Encorus emphasizes an atmosphere of learning and teaching. We want our employees to learn and teach throughout a project, so that at the end, both Encorus and the client have increased skills and understanding.

DO IT RIGHT!
Encorus staff members perform work the right way, without cutting corners, and taking ethics into account.

Processes

Front End Engineering Services

Encorus Group has an experienced team ready to evaluate your project using a Front End Loading (FEL) approach. The FEL process will establish deliverables for review with the client, allowing an opportunity for feedback in the engineering and design process without costly change orders.

FEL Process

As the project progresses through the phases, more technical detail is provided along with more accurate cost estimation and risk identification. This allows the right amount of effort to be applied for more manageable fees. Once a project receives approval, the FEL effort moves into detailed design where an 'issued for construction' package is finalized. Encorus is able to act as the owner's engineer or continue to execute as an EPCM (Engineering, Procurement, Construction, and Management) partner.

Investing in the Front End of a project has great payback in the construction phase by providing accurate information for bidding and construction.

Engineer, Procure, Construct and Manage

Keeping Encorus Group involved in the EPCM effort provides continuity with the engineering and design intent with a direct line of communication to support construction and commissioning.

The Encorus team can provide construction management, technical support, inspections, scheduling, cost tracking, QA/QC plans, vendor/contractor evaluations, and commissioning assistance. Encorus has licensed Professional Engineers (P.E.) in each engineering discipline: civil, structural, mechanical/process, and electrical/I&C. Our engineers and staff bring technical expertise as well as practical field experience to help make a project succeed.

Including Encorus will improve critical path planning to maintain schedule, change order management to control costs, and quality control by having the engineers of record complete inspections.

Meet the Engineering Design Team

Thomas Gilmartin, P.E.
Director of Engineering Design
tgilmartin@encorus.com

Richard Meigs, P.E.
Senior Design Engineer
rmeigs@encorus.com

Evan Krug, P.E.
Lead Mechanical Engineer
ekrug@encorus.com

Ben Hrycik, P.E.
Senior Mechanical Engineer
bhrycik@encorus.com

Dan Sarata, P.E.
Lead Structural Engineer
dsarata@encorus.com

Jerry Sullivan, P.E.
Senior Structural Engineer
gsullivan@encorus.com

John Bard
Lead Electrical Engineer
jbard@encorus.com

Mike Wittenberg, P.E.
Senior Electrical Engineer
mwittenberg@encorus.com

Geoff Chadwick
Senior Electrical/Controls Engineer
gchadwick@encorus.com

Steve Rakvica
Project Manager
srakvica@encorus.com

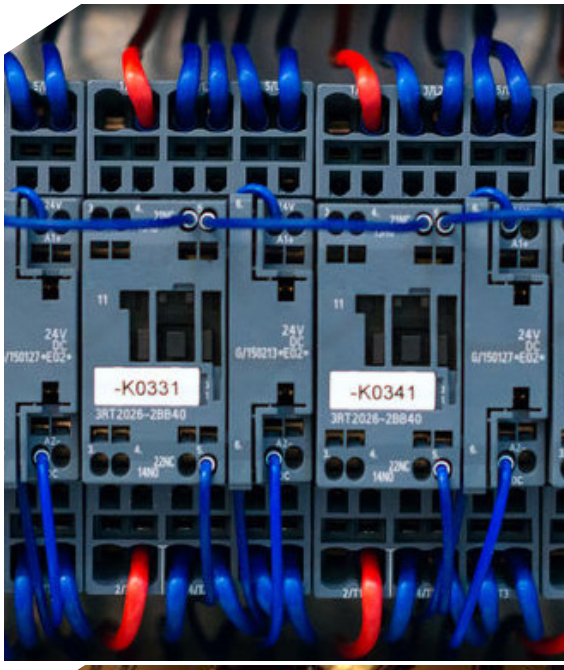
Andy Wiedemann, P.E.
Senior Fire Protection Engineer
awiedemann@encorus.com

George Reinhardt, Jr., RA
Senior Architect
greinhardt@encorus.com

Engineering Services

Structural

Encorus Group provides structural engineering services for a wide range of clients such as government agencies, industrial facilities, commercial buildings, and property insurance companies. These services include site investigations, field measurements, field verifications, structural evaluations, and services during construction. Encorus is experienced in the design of steel framing, wood framing, reinforced concrete structures and foundations, and masonry walls. The professional engineering capabilities of Encorus make it easy to customize services for a wide range of specific project requirements. Structural engineering services often include coordination with Geotechnical Services, Mechanical Integrity, and Civil Materials Testing to provide an accurate report of a structure's current condition. This collaborative effort allows the structural engineering group to make informed design decisions more efficiently.



Electrical/I&C Engineering

Encorus Group's electrical engineers have had the privilege of working with clients in the healthcare, manufacturing, industrial, energy, nuclear, and private industries. Their varied skillset has allowed the firm to complete projects ranging from commercial lighting design to the complete revamp of the electrical system serving a VA Medical Center, and everything in between.

Encorus brings experience in automation and control system design to your project, having designed complex control systems for the WIPP site in Carlsbad, NM, Building Management Systems for office and retail facilities, and electrical control systems for Department of Veterans Affairs Medical Centers. In addition to design, Encorus offers services to ensure the safety of your facility, employees, and clients, including arc flash analysis, hazard operations reviews, code compliance review, failure/origin and cause investigation, and hazard mitigation plans.

Mechanical /Process Engineering

Our expert mechanical engineers have designed HVAC and plumbing systems, machines and equipment, pressure vessels, remote handling devices, and much more. We also offer specialized services including failure analysis, Finite Element Analysis (FEA), 3D modeling, and other types of analysis and assessment. We have extensive mechanical experience in the nuclear arena, and have designed modifications for the refurbishment of a radioactive waste sorting and packing system, analyzed the integrity of nuclear waste storage canisters, and designed a five-ton remotely operated battery-powered hook rotator.

Other notable projects completed by Encorus's Mechanical Engineering Group include the evaluation of mechanical, electrical, plumbing, and fire protection systems in buildings at Buffalo's Outer Harbor, the redesign of a drive system for Global Tungsten Products, the design of heat exchangers for Praxair, and a chilled waterline extension at SUNY Fredonia's Mason Hall.

Civil

Our decades of experience across a range of technical industries allow us to provide our clients with high-quality work and results.

Encorus Group's civil engineers provide a full range of services related to site development, utility analysis and design, stormwater management, and general civil engineering. We have the expertise to take a project from initial feasibility to concept development, and on to preliminary and final design. We develop innovative, efficient, and cost-effective solutions for our clients. Working closely with our in-house environmental and architectural experts, we consider all factors when preparing our engineering designs and use practical, cost-effective approaches to help our clients realize their project goals.

Fire Protection

With decades of fire protection and life safety design experience, Encorus can bring you expert solutions to ensure the safety of your facility and staff. We have designed fire protection systems ranging in size from a single room to a 30-building campus. Encorus has specialized fire protection experience in the nuclear, medical, and industrial arenas.

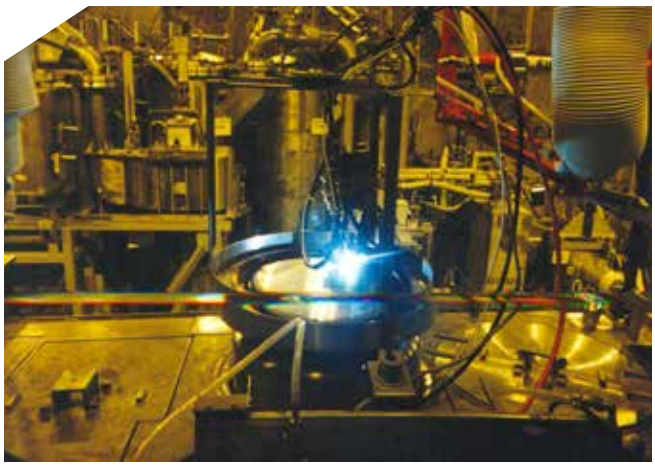
Encorus has worked with a range of clients and different facility needs. From fire and smoke detection systems to master fire alarm control stations and remote monitoring stations, we are dedicated to keeping your employees, clients, and facilities safe. In addition to fire detection and suppression system design, Encorus can assist you with fire hazard analysis, life safety code evaluations and assessments, emergency planning and hazards assessments, and code interpretation and evaluation. In the event that you have experienced a fire in your facility, Encorus is able to assist you or your insurance carrier in the determination of origin and cause and help determine reparability, extent of repairs, and safety upgrades necessary to prevent another such occurrence.

Forensic

We are able to determine the origin and cause of equipment failures, accidents, fires, slip and fall events, structural failures, and other events. Utilizing our knowledge and experience, we are able to "reverse engineer" the situation to determine how it occurred and help to determine who should bear responsibility for the event. Then, we can determine appropriate corrective measures and offer guidance as to their implementation. We are also able to offer expert witness services and litigation support.

Encorus uses the knowledge gained from engineering experience and the investigation of previous incidents to bring you preventative care as well – code compliance support, risk avoidance evaluations, life safety assessments, and the examination of building systems, mechanical equipment, pressure vessels, tanks, and piping. Our engineers and inspectors hold certifications from a number of organizations and are continually undergoing training in the latest regulations and safety developments to ensure the best possible outcome for your company.

Representative Projects



CHBWV Canister Welding System Restoration and Deployment Support

West Valley, NY

Project Objective

The objective of this project was to restore the duplicate High-Level Waste (HLW) Canister Lid Welding System in order to perform one final canister lid weld. The project's scope included planning, design of auxiliary equipment and support for deployment to weld HLW Canister WV413 in the former Chemical Process Cell (CPC). The WVDP is a former nuclear fuel reprocessing plant located on a 175-acre site in West Valley, NY, which is managed by prime contractor CHBWV with oversight from the Department of Energy.

Unique Project Features

The DOS PC-based control system had not been used in over 20 years. A detailed knowledge of DOS based computers was required, along with knowledge of current PC differences in order to develop a plan to recover PC hard drives. This project was subject to NQA-1 requirements.

Encorus Group Solution

Encorus removed hard drives for secure storage, removed failed batteries, and consolidated good working parts between two systems in order to make one working system. The original multi-recorder strip chart could not be recovered, so a new one was designed.

Specific Project Tasks

- Restart main controller PCs
- Design new strip chart recorder to replace inoperable original
- Perform informal calibration and testing at original manufacturer's facility
- Design support for remote installation

WIPP (Waste Isolation Pilot Program) PVS Fire Protection Design

Carlsbad, NM

Project Objective

The scope of this project was to design a fire loop around and connections to the proposed WIPP Permanent Ventilation System building.

Unique Project Features

This project involved multi-discipline interconnections and communication, as well as coordination with other design contractors, providing a logistical challenge, which Encorus was able to overcome through the use of effective communication tactics.

Encorus Group Solution

Encorus kept careful tabs on all aspects of the project through thorough Project Management, and with diligent work from the design team. Encorus's thorough and efficient approach allowed the project to be completed successfully.

Specific Project Tasks

- Design fire loop
- Design sprinkler systems
- Consult on Fire Hazard Analysis and other documents

WIPP (Waste Isolation Pilot Program) Supplemental Ventilation System

Carlsbad, NM

Project Objective

The Waste Isolation Pilot Plant (WIPP) was designed to permanently dispose of transuranic radioactive waste left over from the research and production of nuclear weapons. The client requested design and procurement of a new, supplemental underground booster fan.

Unique Project Features

Due to the secure nature of the facility, the project was subject to NQA-1 quality assurance requirements. The fan is installed 2300 feet below ground in a mine tunnel.

Encorus Group Solution

Completed in 2016, Encorus provided a fully automated fan solution. The fan is a 150HP, VFD-driven, 6-foot diameter vane axial fan. It is controlled with an Allen-Bradley ControlLogix PLC and PanelView HMI. The operator can enter a setpoint in CFM and the system will control the fan speed and damper to provide the requested air flow.

Specific Project Tasks

- Design a fan to meet the flow requirements
- Procure all components for delivery to fan manufacturer
- Full factory test for all functions
- Deliver and commission fan at client site

Eaton Corporation Glass Collar Machine Automation

Olean, NY

Project Objective

Eaton provides power management technologies and services to help their clients manage electrical, hydraulic, and mechanical power. An upgrade was needed on a continuous production line machine.

Unique Project Features

The upgrade was planned to reduce shutdown to the shortest time possible. Encorus personnel worked double shifts to reduce shutdown time.

Encorus Group Solution

Encorus Group performed a full process, PLC, pneumatics, drives and HMI upgrade on a continuous production line machine spraying coatings on small parts. An Allen-Bradley SLC controller was replaced with a modern CompactLogix, and several servo drives were upgraded to the latest Allen-Bradley drives. Encorus personnel performed reverse-engineering on the entire system, including mechanical, pneumatic, electrical and spray systems, then reprogrammed the new PLC for improved operations and functionality with the new drives. New network connected pneumatic valves and servo drives were installed, tested and commissioned. Encorus designed and implemented a segmented network using a Network Address Translation (NAT) router.

Specific Project Tasks

- Develop and install HMI screens
- Replacement of Allen-Bradley SLC controller with modern CompactLogix
- Drive upgrades and reprogramming of PLC
- Installation, testing, and commission of system
- Design and implementation of segmented network
- Connection to plant-wide ethernet network

Partial List of Engineering Design Services

Civil/Environmental Engineering
- Drainage design
- Pumping station design
- Land development
- Radiological waste handling
- Design/build support
- Civil materials testing oversight
- Construction support
- Dams/Ponds
- Sanitary sewer collection/treatment
- Potable water source development, treatment/distribution
- Process water treatment
- Stormwater/SWPP Plans/Inspection
- Hydraulics/Hydrology

Structural Engineering
- Seismic design
- Feasibility studies
- Crane design:
  - Monorail
  - Gantry
  - Modifications
- Shipping container evaluations
- Seismic evaluations
- Finite Element Analysis
- Independent reviews
- Existing structure evaluation/repair

Electrical Engineering
- Single line drawing development
- Service entrance and building systems
- Raceway and cable tray systems
- Ground grid systems
- Lightning protection design
- Protective device coordination studies
- Forensic engineering evaluations
- Load flow, short-circuit and arc flash analysis
- Efficiency studies
- Cost estimation
- Field support
- Lighting design
- Audio system design
- Solar system evaluation & design
- Substation/Switchgear design
- M.C.C. design
- Low and medium voltage power distribution design

I+C Engineering
- PLC and HMI software programming
- Control system design
- Control panel design
- SCADA system design & integration
- DCS (PlantPAx)
- Instrumentation specification
- Coordination for process integration and upgrades
- Modicon
- Instrument and equipment tagging
- Cost estimation
- Field support
- Network design
- Allen Bradley Certified Service Integrator
- Safety instrumented system design
- SIL & SIF Evaluations

Fire Protection Engineering
- Lightning protection assessments
- Wildland fire assessments
- Custom fire detection design and special detection applications
- Special hazards suppression system design
- Glovebox, hot cell, lab hood fire suppression design
- Life safety code evaluations and assessments
- Emergency planning and hazards assessments
- Fire barrier design and repair
- Code Interpretation/Application

Forensic Engineering
- Origin and cause determination
- Expert witness
- Litigation support
- Code compliance
- Risk avoidance evaluations
- Examination & evaluation of:
  - Electrical systems
  - Drainage systems
  - Fire protection compliance
  - Mechanical equipment
  - Pressure vessel components
  - Equipment modifications

Architecture
- Planning and design
- Building assessments
- Construction administration
- Design/build support
- Non-destructive exterior envelope surveys
- Roof assessment and design

Mechanical Engineering
- HVAC airside and hydronic design
- Process ventilation
- Steam energy distribution and condensate recovery design
- Building energy analysis
- Energy optimization and conservation
- Domestic and sanitary plumbing design
- Process piping design
- Pressure vessel and tank design
- Heat exchanger sizing/specification
- Pump sizing/specification
- Pressure safety valve sizing/ specification
- Existing equipment inspection/ assessment/improvement
  - Condition and operations assessments
  - Machine modification/upgrade design
- Finite Element Analysis (FEA)
  - Mechanical stress/strain
  - Thermal expansion
  - Fluid flow
- Cost estimation
- Life cycle cost analysis
- CAD 3D modeling
- Shop drawings
- Field support

Process Engineering
- Mass and energy balance calculations
- Process flow calculations
- Production of PFDs and P&IDs
- Process skid design
- Process equipment sizing/specification
- Process support for hazard analysis reviews
- Process off-gas treatment system design and selection
- Chemical loading and unloading system design
- Waste water treatment development
- Cost estimation
- Field support

Procurement Engineering
- NQA-1 Commercial Grade Item Dedication (CGID)
- Basic procurements
- Electrical, mechanical, civil, fire protection components procured

Project Management
- Complete project management from inception through completion
- Development of cost estimates, schedules, and project scope documentation
- Development of project risk management plans
- Application of earned value management processes
- Development of work breakdown structures (WBS)
- Development of estimates at completion (EAC), etc.
- Assistance in standardizing project tools and processes
- Primavera P6 Scheduling

Operations and Maintenance
- Field engineering support
- Testing, start-up, operation and maintenance procedures
- Specifications for new and replacement equipment/systems

Encorus Group also offers a wide range of civil materials testing, non-destructive examination, and mechanical integrity inspection services. Visit encorus.com for more information.

How can we assist you?

Kevin Opp
Director of Marketing and Business Development
M 716.310.2914
kopp@encorus.com