

PDG

PROJECT DESIGN GROUP, INC.

ENGINEERING TOMORROW TOGETHER



BUILT FROM THE GROUND UP WITH OPERATIONS AND CONSTRUCTION EXPERIENCE

Project Design Group, Inc. is a multi-discipline, full service, engineering & construction firm dedicated to providing accurate, efficient, cost effective, project services, delivered on time, accident free, with exceptional customer service.

Our employees are gathered from a variety of backgrounds for their specialized experience. We have a proven track record of assisting clients with all phases of their projects including studies, scoping, scheduling, detail design and construction management. Our capabilities range from the specification of a single piece of equipment, to complete multi-disciplinary design of complex industrial systems, and project management.

The next time that you need engineering services, contact PDG and let our experts help develop a solution that's right for you.

Everything is designed. Few things are designed well.

REACHING THE EXPECTATIONS

VISION

To work with our customers with the best people to be the preferred supplier of project related services in the U.S.

MISSION

Our mission is to use valuable resources to create processes and facilities that enhance the business of our customers. We work together with our customers and strive to build long-term relationships based on mutual trust and respect.

CORE VALUES AND PRINCIPALS

RESPONSIVE To be timely and proactive in our response to clients. We are responsible and dedicated to our work.

PEOPLE Our clients and our people are what make us successful.

HEALTH, SAFETY AND THE ENVIRONMENT We are committed to the Health and Safety of our employees, clients, suppliers and the Environment.

INTEGRITY We deal openly and honestly with everyone.

CUSTOMERS We work with our customers to understand their needs from us to meet their goals. We give them our best to build long-term relationships.

RELATIONSHIPS We build long-term relationships with our customers and suppliers.

REPUTATION We continue to build and protect our reputation.

ACCOUNTABLE We always strive to keep our commitments and acknowledge our mistakes.

QUALITY IMPROVEMENT We continually improve both individually and as a company to deliver quality services.

FINANCIAL PERFORMANCE We manage our business wisely and exercise good business judgement to ensure our company has a bright and secure future.

ENGINEERING TOMORROW TOGETHER

Company History

- > Project Design Group, Inc. was formed in Fall 2003
- > Acquired General Contractors License for Construction in 2013
- > Engineering, Project and Construction Management

Our Focus Markets

- > Petrochemical & Chemical
- > Pulp & Paper
- > Specialty Chemical
- > Refining
- > Wood Products
- > Power

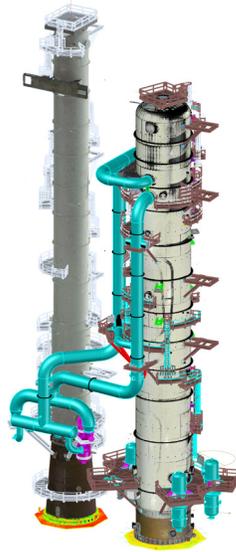
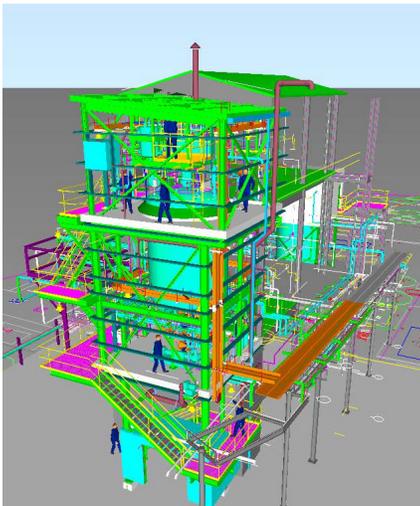
IT'S NOT HARD TO DEFINE EXPERT DESIGN

Designing User Friendly Systems

Model eviws gather input from the facilities, maintenance and operations staff allowing them to educate the design team on specific ways that would be helpful in the long term operation and maintenance of the system. This can reduce the total cost of ownership of the system by reducing operation and maintenance inefficiencies.

Reducing Project Cost

In the study phase of projects these quick preliminary models allow for better cost estimates by allowing bulk material takeaways from a model. These early phase models also help to work out issues with precision such as general arrangements. As the project moves into detail design, these models continue to be developed up to the final design.



Senior Experience

All project roles are led by Engineers and Project Managers with more than 20 years of Industrial engineering experience. This knowledge enables our project team to see the underlying project issues and initiate plans to reduce project risks.

Specialized Skills

Often projects require specialized expertise to accomplish the job scope. Some of these specialized services include Pro/II Modeling for chemical process engineering and Caesar II piping stress analysis for high pressure, high temperature piping engineering.



“From concept to construction,
we work together.”

WES GERHARDT - OWNER / PRINCIPAL ENGINEER



TAKING DESIGN TO THE **NEXT LEVEL** WITH OUR ADVANCED TOOLS

Timberline Estimating

AutoCAD Plant 3D Design

Easy Power (Power Studies, Arc Flash,
Breaker Coordination, Short Circuit
Analysis)

Caesar II – Piping Stress Analysis

Bentley AutoPlant

(CodeCalc, Tank, Aspen, SimSci-Essor
Pro/II, ETAP)

STAAD – Finite Element Structural
Analysis

Navisworks Design Review

MS Project

AGI 32 and Visual Lighting Software

RAM Elements – Finite Element
Structural Analysis

Autocad and Autocad Mechanical

Laser Scanning (Leica)

Design Flow Solutions – Hydraulic
Network Software

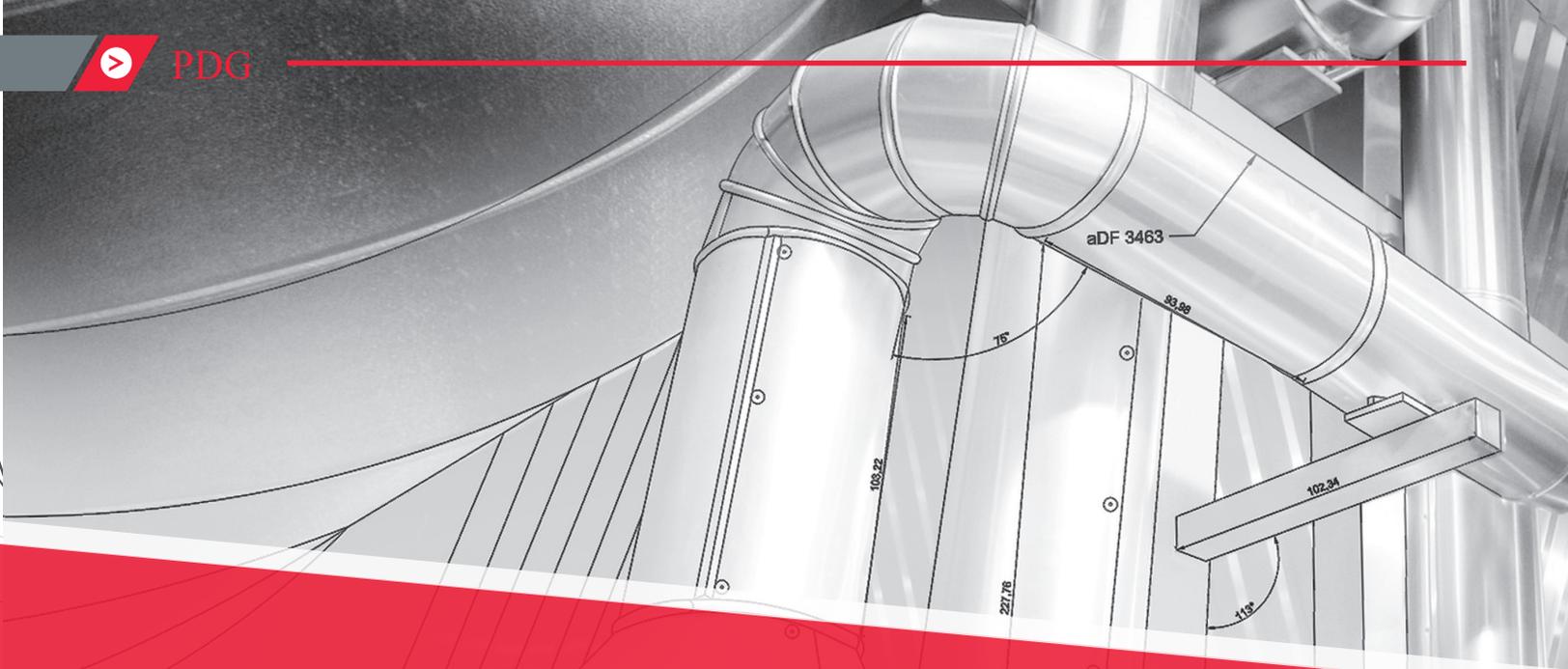
Microstation

Cloudworx

CADWorx 3D – 3D Plant Design
Software

Total Station (Plant Surveying, Grade,
Model Data)

Advance Steel



We provide a diverse set of project services to enhance, maintain, and protect the businesses of our clients.

MOVING FORWARD WITH SOLID ENGINEERING

Project Management

- Scope Development
- Funding Grade Studies
- Project Planning and Scheduling
- Cost Estimates
- Detail Engineering
- Construction Technical Bid Packages
- Cost Control and Tracking
- Grant Writing, Funding Applications, Permits
- In-Plant Support

Construction Management

- Cost Control
- Scheduling
- Planning
- Turnaround and Shutdown Planning
- Quality Management
- Safety
- Constructability
- Startup and commissioning
- Construction Coordination
- Field Engineering
- Contract Management
- Materials Management

Systems/Process Design

- Mass Energy Balances
- Simulations and Studies
- PFD and P&I Diagram Development
- Hydraulic Studies
- Relief System Studies and Calculations
- Process Equipment Specification
- Trouble Shooting Hydraulic Systems and Utility Systems
- Material Selection
- Power/Steam, Solids Handling, Pulp and Paper, Refining, Chemicals, Waste Treatment
- PSV Calculations and Studies
- Process Design and Analysis
- Environmental Compliance Systems

Mechanical

- Mechanical Equipment Engineering
- Equipment Specification and Design (Including Pumps, Compressors, Chillers, Boilers, Turbine Generator Sets, Cooling Towers, Tanks, Pressure vessels, Tanks, Columns, Heat Exchangers, Fired Equipment, Etc.)
- Hydraulic Network Analysis
- Solids Handling (Including Pneumatic Conveying)
- Failure Analysis
- Fabrication Quality Audits
- Equipment Reliability and Improvement
- Maintenance and Lif t Planning
- Mechanical Integrity Program
- HVAC Engineering
- 3D Equipment Modeling

Engineering

Studies

Front End Loading

Funding Grade Studies

Scope Definition

Cost Estimates

Specifications

Project Management

Detail Design (All Disciplines)

Analysis (Stress, Structural, Hydraulic)

Equipment Supplier Shop Inspections

Field Engineering

Planning & Scheduling

Piping

Plot Plans & Layouts

General Arrangements

3D Plant Design [AutoCAD Plant 3D]

Pipe Routing and Fabrication Isometrics

Piping Stress Engineering and Analysis
(Caesar II)

Pipe Specification Development

Maintenance, Installation and Planning

Field Engineering and In-Plant Support

High Pressure (3600 psig) and High
Temperature Experience

Electrical/Instrumentation

Electrical Single Line & Motor Load List
Development

Easy Power System Studies – Modeling
[Short Circuit, Load Flow, Arc Flash &
Protective Coordination Studies]

Electrical Equipment Specification
[Switchgear, Transformers, MCCs, VF
Drives, Motors]

Power and Control Cable and Tray Sizing
and Routing

Motor Control Schematics

Lighting Analysis and Design

Grounding Plans Incorporating IEEE and NEC

Fabrication Quality and Factory

Acceptance Test Audits

Instrument Specification

Control Logic Detail Development Support

P&I Diagram Development

3D Modeling [Cable Tray, Conduit, Junction
Boxes]

Loopsheets

Lighting Protection

Area Classification Drawings

Location plans

Instrument Installation Details

Power Panel Schedules

Civil/Structural

Site Development and Site Plans

Storm Water Management Studies and
Improvements

Retaining Wall Design

Foundation Design

Concrete Design

Fall Protection Systems

Rigging and Lift Planning

Finite Element Analysis

Structural Analysis and Design (STAAD &
RAM)

Structural Evaluations and Retrofit Design

Seismic and Wind Analysis / Design

Bridge Crane, Monorail, and Lifting Beam
Design

Tank Support Structures and Pipe Bridge
Design

Access Platform, Mezzanine, Stair and
Handrail Design

3D Modeling, Construction Drawings, Detail
Drawings

Surveying Services - Total Station

Construction Cost Estimating and Support
Pile Design

LEICA RTC360 LASER SCANNER

PRODUCT SPOTLIGHT



- Range from 0.5m to 130m



- Integrated HDR Spherical Imaging system



- Less than two minutes to complete a full-dome scan



ONE SCANNING SOLUTION START TO FINISH

How it Works

A spinning and rapidly pulsating laser beam rotates around the vertical axis emitting 2 million points per second. Each pulsating beam of light then bounces back to the scanner. Based on a precise measurement of the time the beam traveled to and from the object, the scanner is able to accurately determine the distance of a specific point. Then by using this distance with a reference laser distance and the angle of the mirror the scanner is able to determine the specific location of a single point. Then by merging a photo with the scanned data a photo realistic 3D point cloud is created.

Step 1 – Field Scanning

The Leica RTC360 with Cyclone FIELD 360 workflow starts in the field, using the scanner's VIS (Visual Inertial System) to automatically align scans as you move, guided by the tablet app, tagging data and capturing scans efficiently.

Step 2 – Registration

The process then moves to the office with Cyclone REGISTER 360 PLUS, which takes the field-aligned data to perform full registration, geo-referencing, and export into a single LGSx file for downstream use, creating a seamless "Field-to-Finished" solution.

Step 3 – Publishing

After registration a variety of deliverables can be published: 2D Plans and Elevations, Panoramic Images (that enable measurements to be pulled from the image), Section and Profile Views, Wireframe and Surface Models.



IMPROVING DESIGNS WITH 3D SCANNING



Improved Retrofit Designs

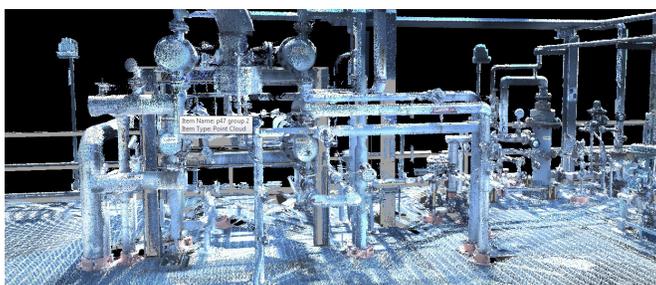
Designing within existing facilities often requires navigating complex structures and limited clearances. Beginning the process with a high-resolution 3D scan provides a precise, real-world representation of existing conditions. This clarity allows design teams to identify and eliminate potential interferences early, verify available clearances, and develop retrofit solutions with greater confidence and accuracy.

Quality Control

3D scans can be used to validate “as-built” conditions, confirming that construction aligns with design intent. This verification supports quality assurance efforts, reduces rework, and provides stakeholders with confidence that project requirements have been met.

Increased Productivity

Industrial projects frequently operate under tight schedules. By rapidly capturing accurate, comprehensive field data, 3D scanning enables design teams to begin work sooner and with fewer assumptions. This efficiency accelerates design development, minimizes delays, and helps keep projects on track.



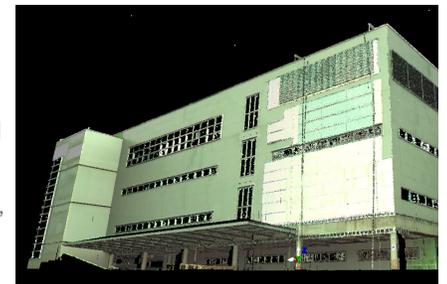
Quickly Evaluate Concepts

Point cloud data allows design teams to quickly and accurately assess how proposed concepts will integrate within existing environments. This enables early validation of layouts, clearances, and constructability; reducing uncertainty and design revisions.



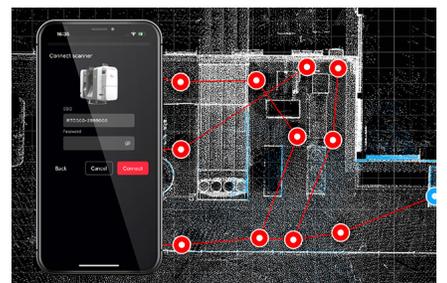
Facility Life Cycle Management

Once a facility is scanned and a point cloud is created, accurate measurements can be extracted from any location within the model at any time. This data supports not only the current project, but also future modifications, expansions, and maintenance planning; extending the long-term value of the scan.



Lower Surveying Cost

Traditional manual surveying is time-consuming and often requires multiple site visits to capture all necessary data. It is also susceptible to costly errors when dimensions are missed or incomplete. 3D laser scanning significantly accelerates data collection, minimizes the risk of missing critical measurements, and reduces the need for repeat field work; lowering overall surveying costs.



KEEPING TURNAROUNDS **ON-TRACK**

Integrated Project Schedules – All turnaround activities are combined into a single, comprehensive master schedule that includes operations, maintenance, capital projects, and contractor schedules. This approach helps eliminate interferences during turnarounds and minimizes crew downtime. Experienced schedulers understand every step required to complete projects for owners, engineers, and contractors, which allows them to field-verify progress and ensure work stays on track. Schedules are continuously reviewed, adjusted, and updated throughout the turnaround. This results in better resource utilization and reduces the overall cost and duration of the turnaround. On-time startup ensures orders ship as planned without loss of revenue.

Total Installed Cost (TIC) Estimates - Expert estimators know how to adjust for priced variances depending on the quantity and complexity, and can make the estimate more accurate than just using unit rates. Estimators use client preferred vendors to get more accurate pricing. Estimating software allows PDG to use a customized code of accounts based on clients standards, and can easily make estimate variations. Standard estimates are +/- 50%, +/- 30%, +/- 10%.

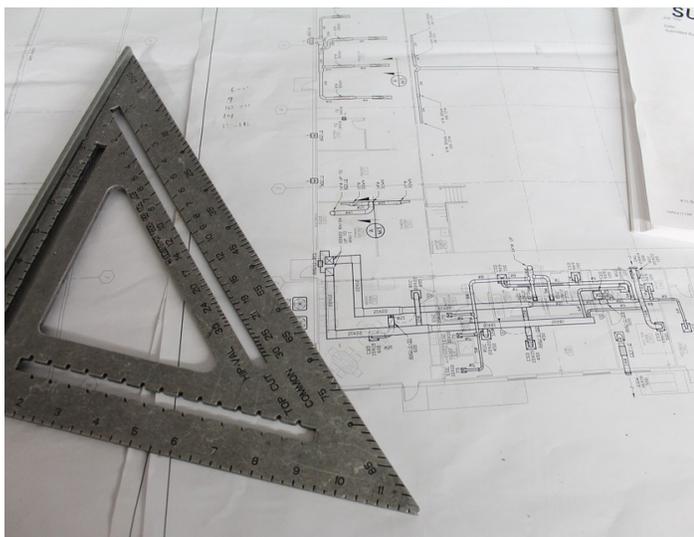
Pre-startup Inspection - Ensures that the project has been constructed per the specifications and that all components are in proper working order before the client takes ownership of the completed project.

Inventory Management - Provide a dedicated staging area where inventory is organized by project and allocated only to its intended use. This approach ensures that materials required for the turnaround are properly tracked, readily accessible and used for the correct project. Effective inventory management reduces confusion prevents misallocation and supports efficient execution of turnaround activities.

Work Order and Change Order Management - Tracking to see that the work orders are being completed within the specifications of the scope of work.



EFFICIENT AND OPTIMIZED



Shut Down Planning Phases

Schedulers and estimators serve as a central hub between designers and construction personnel, helping bridge the gap from design through project completion.

5-6 Months Prior To Outage

Develop a preliminary schedule for the outage. Initial meeting with project stakeholders to determine the major milestones in the schedule.

1-2 Months Prior To Outage

When construction packages are completed and contractors have been selected, detailed schedule is prepared and schedule conflicts are worked out. Define and schedule the process of shutting down the production equipment. Maintain inventory of capital equipment projects and distribution to project work site.

During Outage

Gather daily progress information from contractors and update client through daily updates to schedule and estimate.

Cost Tracking – including all change orders that have been requested and approved during the shutdown.

Projected Spending Burndown – shows a detailed account of the projected expenditures on a timeline throughout the outage.

Pre-startup inspections provide project oversight to ensure that the work is being performed to specification, ensure that the construction has been verified and that the client has approved the work.

Post Outage

Review schedule for lessons learned, and analyze why the variances occurred. Learn how the schedule and estimate can be improved for the next outage.

PAST PROJECT EXAMPLES

New API Firewater Tank and System

Marine Unloading

Rail Loading Project

Main Tank Farm Emergency Generator

Reboiler Debottlenecking

Mill Warm Water System Optimization

Specialty Chemicals Waste Water Treatment Plant Upgrade
(Funding Grade Estimate & Detail Design)

Concentrator Thermo Compressor

K2300/K2500 Hydrocracker Compressor Turbine Overspeed
Protection

Paper Machine Dry End Starch Conversion

Breaker Stabilization Tank

New Main Transformer and MCC

Mill Wide Natural Gas Study

Organic Chemical Plant Expansion

Recovery Boiler Burner Management Safety System and Boiler
Upgrade to Natural Gas

Lighting System Plantwide Upgrade

Boiler M.A.C.T. Combination Boiler Upgrade & New Power Boiler
Installations

Mechanical Integrity Program Development

Distillation Unit Expansion

Energy Monitoring Study-Steam Demand

Tissue Converting Dust Collection

Recovery Boiler Air Optimization Project

New Chip Thickness Screening System-Scope and
Estimate

Tissue Machine Dry End Pulper Rebuild

New Polymer Modified Asphalt Unit

Concrete Repair Study and Recommendations

C-2030 Process Air Compressor and Building

Process Sealed Sewer Refurbishment

1250# Steam Header Engineering and Stress Analysis

Refinery Waste Water Treatment Plant Expansion Study / Detail

Fine Paper Machines Starch Systems-Scope and Estimate

Size Press Starch Cooker Replacement

New Vapor Destruction Unit

Urban Wood Handling Study

Chemical Waste Water Treatment Plant Expansion Study / Detail

Lime Kiln Burner Replacement & BMS Replacement

DMAPA Process De-Coupling

EPAM Reactor Addition

Breaker Addition

Flue Gas Cooler Replacement

New Chiller

Recovery Boiler Screen Tube Replacement

Recovery Boiler Floor, Front Wall, and Dissolving Tank
Replacement

Safety Relief Valve Audit / Study (150 Valves)

Lighting System Upgrades Lowering Operational and
Maintenance Costs

Tissue Machine - Vacuum Pick-up Box at Forming Roll

New Drilling Fluid Mud and Cement Plants

PARTIAL CLIENT LIST



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