Cintar Inc.

Engineers & Consultants

Multidisciplinary Engineering Services

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Table of Contents

Section 1: Company Profile

Located in Glenshaw, PA, Cintar Inc. is a full-service Engineering and Consulting Firm, providing specialized Consulting Services through our following departments for over **forty-one (41) years**:

- Facility/Building Systems
- Civil/Structural
- Piping
- Mechanical
- Material Handling
- Electrical
- I & C
- Control Systems Integration
- Environmental
- Project Management
- Construction Management

Although Cintar has the technical capabilities and résumé usually associated with larger engineering firms, it is able to maintain the flexibility, adaptability, affordability, and personal service that only local firms can provide. Cintar is a very cost-conscious engineering firm. We always strive for the most cost-effective method of engineering the project or finding the solution to a specific problem.

Cintar's organizational structure lends itself to efficiency, low-cost/high-value, quick decision-making, and a direct, personal approach to its clients. Cintar becomes an integral part of the client's organization for each project and provides the best return on investment.

With close to one hundred (100) employees, Cintar operates nationally and internationally, and holds Professional Engineering registrations in forty-three (43) States and three (3) Canadian Provinces. Cintar has extensive experience in planning, engineering, managing capital projects, construction management, production and facility asset evaluations and optimization. Cintar's personnel have many years of experience in their field and have gained respect from all areas for their quality and efficient work.

Cintar's staff is comprised of senior level engineers and designers that have vast experiences in Engineering Services, and have been involved in all facets of large, complex projects. We have twenty-five (25) Professional Engineers on staff. This wealth of knowledge and experience allows us to be efficient in our performance as we can quickly analyze an issue and determine the correct resolution.

Cintar's primary objective is to provide quality service by approaching each project using the latest technology within the framework of our client's requirements. Cintar can provide a total CADD Design Environment to include AutoCAD, Inventor and Plant-3D, as well as Microstation.

Section 2: Services

Consultant

- Civil
- Structural
- Mechanical
- Electrical
- HVAC
- Plumbing
- Process Piping
- Fire Protection
- Site Drainage
- Site Utilities
- Inspections
- Reports
- Design
- Specifications
- Preparation of Construction Documents
- Energy Use Surveys
- Energy Management Systems
- Procurement Services
- EPCM Services

Engineering

- Architectural
- Civil
- Structural
- Mechanical
- Electrical
- HVAC
- Plumbing
- Process Equipment
- Process Piping
- Fire Protection
- Control and Instrument Systems
- PLC Programming
- Environmental
- Control Systems Integration
- Energy Management Systems

Conceptual and Planning

- Space Planning
- Flow Diagrams
- Structure Design
- Building Services
- Site Work
- Computational Fluid Dynamics (CFD)

CAD

- AutoCAD
- Inventor
- Autodesk Plant-3D
- Microstation

Construction

- Procurement Services
- Project Management
- Construction Management
- EPCM Services

Section 2: Services *(Continued)*

Project Services

- Feasibility Studies
- Cost Estimates
- Plant Evaluation
- Evaluation Studies for Metallurgical Production and Power Generation
- Equipment Specifications
- Procurement Services
- Bid Evaluations and Purchasing Assistance
- Engineering
- Design and Drafting (Including AutoCAD and Microstation Services)
- Plant Layout
- Process and Control Systems Design
- Programmable Controller Systems Design
- Energy Management Systems
- Construction Specifications
- Sub-Contractor Negotiations
- Equipment and Material Expediting
- Field Inspections
- Project Life Cycle Management
- Construction Project Management
- Startup Assistance

Industry / Facility Experience

- Utility and Industrial Power Plants
- Oil & Gas Process & Refinery
- Coal Export Terminals
- Wind Farms
- Solar Power Systems
- Blast Resistant Design
- Bi-Product Fuel Facilities
- Chemical Plants
- Coatings and Resins
- Industrial Wastewater Treatment
- Municipal Wastewater Treatment
- Water Treatment Facilities
- Air Quality Control Systems
- Bulk Material Handling
- Carbide Industry
- Food Processing and Bakery
- Pulp and Paper Facilities
- Treated Wood Products Handling
- Commercial Buildings
- Steel Making Process
- Churches
- Schools / Colleges
- Laboratory Work

Section 3: Experience

Cintar's personnel consist of a group of professionals with long and varied experience in the Engineering and Design Field. We are dedicated to keeping abreast of the latest Engineering and Design Technology. Cintar's CADD capabilities include AutoCAD and Microstation Systems manned with experienced design personnel. In addition to Word Processing, Spreadsheet and Design capabilities, Cintar Inc. has an extensive library of software used for Design and Analysis.

The following list represents a general outline of the types of projects that Cintar's personnel have been involved with during their careers. These projects required ability in all engineering disciplines and full competence in all areas of Engineering, Design and Construction. Cintar Inc. has the resources and qualifications to undertake assignments covering a wide range of industrial processing applications and commercial work.

General Engineering

- Manufacturing Plants
- Lime and Grinding System
- Cement Plants
- Packaging Facilities
- Pipe Coupling Manufacturing Facilities
- Liquid Pitch Handling
- Boilers
- Boiler Oil Conversions
- Paint Plant
- Petro Chemical Plants
- Chemical Plants
- Coatings and Resin Facilities
- Pulp and Paper Facilities
- Motor and Test Pump Facilities
- Laboratories

Utility & Power Distribution

- Generation Facilities
- Co-Generation Facilities
- Wind Turbine Farms
- Renew Old Energy Facilities
- Utility Boilers
- Scrubber Systems
- Coal Handling Facilities
- Lime Handling Facilities
- Top and Bottom Ash Handling Systems
- Substations
- Gas Distribution Systems

Water & Air Pollution Control

- Acid Mine Drainage Treatment Facilities
- Municipal Water Treatment Facilities
- Industrial Wastewater Treatment Facilities
- Municipal Wastewater Treatment Facilities
- Air Quality Control System for Boilers
- Air Quality Control System for Industry

Section 3: Experience *(Continued)*

Bulk Material Handling

- Coal Handling
- Limestone / Lime Handling
- Gypsum
- Bauxite Handling
- Iron Ore
- Rail, Barge and Truck Terminals
- Stocking and Blending
- Coal Preparation and Processing
- Conveying, Screening and Crushing
- Material Bagging Facilities
- Solids Handling Associated with Precipitators
- Pneumatic Conveying

Steel, Aluminum & Copper

- Continuous Casters
- Bar Mills
- Cold Reduction Mills
- Pickle Lines
- Galvanizing Lines
- Basic Oxygen Process Shop
- Aluminum Ingot Scalper
- Hot Strip Mills
- Rod Mill
- Rail Finishing Mill
- Blast Furnaces
- Coke Ovens
- Finishing Mills
- Iron Ore Pelletizing Facilities

Commercial Work

- Office Buildings
- Industrial Buildings
- Hotels
- Day Care and Assisted Care Facilities
- Showrooms
- Warehouses
- Signage
- Hospitals & Institutional Facilities
- Churches
- Schools / Colleges
- Libraries

Energy

- Rail Car Unloading Stations
- Underground Construction Design
- Air Shafts
- Underground Coal Bunkers
- Environmental Control Systems
- Transmission Pipeline Design by ASMN B31 (DOT Standards)
- Upstream, Midstream, and Downstream Services
- Material Screening and Transfer Stations
- Mechanical and Structural Inspections
- OSHA-Type Safety Inspections

Section 4: Professional Departments

Civil / Structural Department Capabilities

Cintar's Civil / Structural Department provides expertise in tank designs, multi-story structures, pipe and conveyor trusses and bridges, vibration analysis, seismic analysis and foundation designs. All of our engineers are proficient in using a computer extensively for analysis and design work. Cintar's CADD capabilities include AutoCAD and Microstation Systems manned with experienced design personnel.

Civil Services

- Sitework / Drainage
- Sewer Systems
- Roadways
- Pilings and Foundations
- Retention Ponds
- Stormwater Runoff
- Erosion and Sedimentation Control
- Soil Analysis Evaluation
- Retaining Walls
- Environmental Compliance Permit Applications
- Concrete Inspections

Structural Services

- Building Structures
- Steel Structures
- Concrete Structures
- Masonry Structures
- Dynamic Structural Analysis
- Seismic Structural Analysis
- Blast Resistant Building Design
- Truss Systems
- Towers
- Gantry Cranes
- Roof Trusses
- Highway Bridge Structures
- Monorail Systems
- Tank Supports
- Walkways & Platforms
- Tanks & Silos
- Construction Specifications
- Planning / Construction Permit Applications
- Ductwork Systems
- Ductwork Support Systems
- Rigging & Lifting Devices
- P.E. Design Review
- Structural Inspections

Civil / Structural Software Library

ENERCALC	Structural Steel, Foundations, Reinforced Concrete and Masonry Wall Design
PCA-MATS	Design of Foundation Mats and Combined Footings
STAAD / PRO	Finite Element Analysis and Design
CARLSON	Civil Sitework Software
MATHCAD	Engineering Calculations including Connections
EXCEL	Engineering Calculations including Connections
AutoPath	Vehicle Turning Radius Software

Section 4: Professional Departments *(Continued)*

Mechanical Department Capabilities

Cintar creates Piping Systems which are built to ANSI B31.1, ANSI B31.3 and ANSI B31.8, various ASME Boiler Codes and DOT Regulations. We also provide piping erection isometrics, CAD generated pipe fabrication spool sheets and design of high and lower pressure / temperature pipe hangers and supports. In addition, we have extensive HVAC capabilities using the latest software. Cintar Inc. also has extensive design capabilities in plumbing and fire protection.

Mechanical Services

- HVAC Systems
- Plumbing
- Process Piping
- Boilers
- Auxiliary Boiler Systems
- Coal Handling Systems
- Piping Stress Analysis
- Power Piping Design
- Fluid Systems Design
  - Equipment Sizing
  - Pipe Sizing
- Mechanical Equipment
  - Process Equipment
  - Lime Processing Equipment
  - Iron ore Pelletizing Equipment
  - Conveyors
  - Stacker / Reclaimers
- Mechanical Plant Work
  - Chute Work
  - Bins
  - Storage Silos
- Dust and Mist Collection
  - Dust Collection Systems
  - Mist collection Systems and Fire Suppression Systems
- Fire Protection Systems
- Pump Sizing Heat Transfer Analysis
- Demineralized Water Systems
- Precipitators and Baghouses
- Cooling Tower and Chiller Systems
- Air Heaters
- Ash Disposal Systems
- Compressed Air Systems
- Computation Fluid Dynamics (CFD)

Mechanical Services Software Library

CAESAR II	Pipe Stress Analysis
Pipe Flow Expert	Pipe Network Analysis
CARRIER	HAP – Hourly Analysis Program
CARRIER	HAP – Engineering Economic Analysis
CARRIER	Duct Link – CAD Duct Program
CARRIER	Refrigerant Piping Design Program
CARRIER	Water Piping Design Program
PIPEFAB	Pipe Fabrication CAD Material Database
MC2	Fire Sprinkler System Design Software
SIDEWINDER	Conveyor Belt Design Program

Section 4: Professional Departments *(Continued)*

Electrical Department Capabilities

Cintar's Electrical Department designs Power Distribution Systems, which includes Power System Analysis and Coordination and Arc Flash Studies. We also have expertise in Energy Efficient Lighting System Design using the latest computer software. Cintar also provides required construction drawing packages including conduit and tray layouts, ground plans, conduit and cable schedules and all necessary details and specifications.

Electrical Services

- Power Distribution
- Transmission & Distribution
- Coordination Studies
- Arc Flash Studies
- Voltage, Power Factor and Capacitor Analysis
- P.E. Design Review
- Short Circuit Analysis
- Load Analysis
- Grounding
- Surge Protection
- Lightning Protection
- Security Systems
- Emergency Power Systems
- Lighting Systems
- Emergency Generator Systems
- Equipment Failure analysis
- Load analysis
- Fire and Smoke Detection Systems
- Heat Tracing Design
- Site Review and Analysis
- Data and Voice Communication Systems

Electrical Services Software Library

ETAP	Short Circuit, Load Flow, Equipment Evaluation, Coordination and Arc Flash
SKM CABLE	Cable Pulling Tension
SKM DAPPER / CAPTOR	Short Circuit, Load Flow, Coordination and Arc Flash
CATERPILLAR – EPG	Emergency Generator Sizing
KOHLER – ONAN	Emergency Generator Sizing
TRACECALC PRO 2	Heat Tracing Design
EPA-GREENLIGHTS	Lighting and Economic Analysis Software
CACTUS	Database Conduit/Cable Schedule
VISUAL LIGHTING	Lighting Design

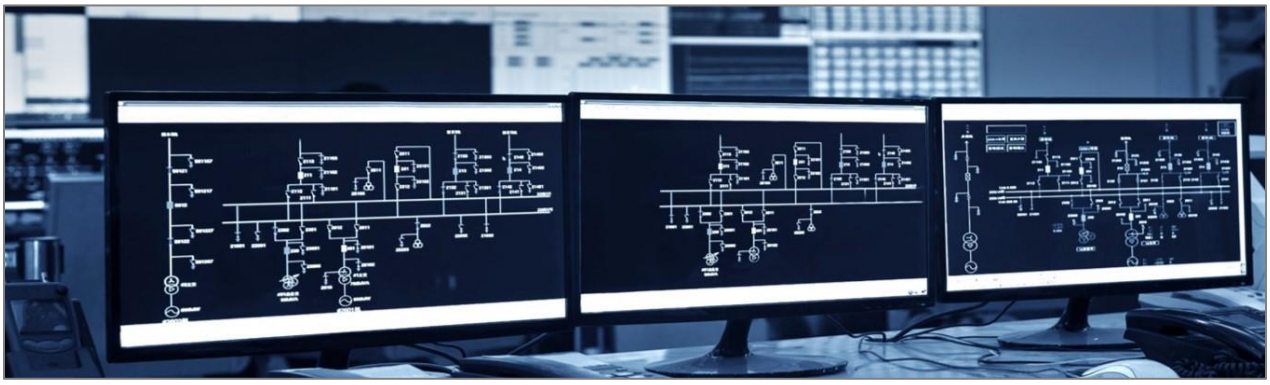
Section 4: Professional Departments *(Continued)*

Control Systems Integration Department Capabilities

Cintar creates Control and Instrumentation Systems, including control panels and console designs, control schematics, PLC Hardware and configurations, PLC Programming and software development, Operator Interface Systems, Touch Screen Systems, Data Logging and Alarm Logging Systems. We are registered Allen-Bradley Control Systems Integrators, and we have had extensive experience with all types of Programmable Controllers. In addition, Cintar provides comprehensive Operation and Maintenance Manuals and custom training on all our systems. We also design and program Energy Management Systems.

Control Systems Integration Services

- Distributed Control Systems
- PLC and Computer Programming
- HMI Systems
- Instrumentation Equipment
- CRT Displays
- Data Acquisition
- Control Panels
- I/O Racks and Cabinets
- Monitoring Systems
    - Flue Gas
    - Water Chemistry / Treatment
- Control Valves
- Process Control
- Control System Application
    - Steel Making Processing Lines
    - Soot Blower Systems
    - Combustion Control Systems
    - Burner Management
    - Coal Handling Systems
    - Water Treatment
    - Fly Ash Handling Systems
    - Precipitator Baghouse Control
    - Load Control
- Energy Management Systems
- Supervisory Control and Data Acquisition Systems



Section 5: Consulting Services

Extended Services

- Procurement Services
- Construction Management
- DCS Training
- Inspection Services and Reports
- Project Development and Management
- Energy Use Surveys
- Energy Management Surveys
- EPA Green Lights Survey and Analysis
- Site Identification
- Site Monitoring and Data Collection
- Environmental Impact Assessment
- Permitting and Licensing
- Computer Programming
- Construction Documentation
- Specifications and Report Preparation
- Conceptual Engineering
- Plant Layout
- Feasibility Studies (FEL-1, 2 and 3)
- Capital Cost Estimates
- Economic Evaluations
- Start-up Assistance
- ASME / ANS Code Review
- AISC / ACI Review
- Value Engineering
- EPCM Services

Global Services

International Services also include:

- Engineering and Consulting Services
- Assistance for Local Approvals
- Work with Local Engineers
- Translation of Documents and Correspondence
- Contractor Bid Evaluations and Selection
- Construction Supervision
- Construction Cost Estimates

Section 6: Computer Software and Equipment

Cintar Inc. outfits its personnel with current software and technology in order to work smart and efficient. Cintar offers a total CADD design environment (including 3D) employing state-of-the-art microcomputer-based CADD workstations.

Overview

- State-of-the-Art Company Wide LAN, Intranet and Internet E-mail.
- Internet-Web Presence (www.cintar.com).
- Dual Graphics Workstations and High-End Servers with Multi-Level Redundancy and Advanced-Fault-Tolerance. Utilizing i5, i7 and Xeon 5500, 5600, 5700 Series Processors; *all custom built in house*.
- Dual Monitor Workstations with i5 or i7 Processors, Solid State Drives, Windows 10 PRO and Advanced Graphics Cards.
- High-End Servers with Dual Xeon Processors, RAID Fault Tolerance, Storage, Local and Off-Site Backups, Running Windows, Linux or VMWare Operating Systems.
- AutoCAD Version 2018 Workstations and Inventor 2018.
- Microstation Version 8.0 Workstations.
- Specification on CSI Format.
- Latest Software for all Engineering Disciplines as well as all Current Word Processing, Graphics, Spreadsheet and Desktop Publishing Software is Utilized throughout the Company.
- FTP Server for large File Transfers.
- Two (2) full size plotters (including color capabilities) and multiple laser/color printers.
- Ability to print and apply Arc Flash labels.
- Physical servers with built-in multi-level redundancy with additional standby virtualized servers that can take over for any one, or all physical servers.
- Web conferencing.

Design Software

In addition to discipline-specific software tools, Cintar utilizes the following tools for CADD users.

Plant Design Suite Ultimate

- AutoCAD
- Inventor
- Navisworks
- Revit
- Plant 3D
- AutoCAD subpackages that include P&ID, Raster, Mechanical and Structural Detailing

Factory Design Suite Ultimate

- AutoCAD
- Inventor
- Navisworks
- ReCap
- AutoCAD subpackages that include Raster, Mechanical and Architectural

Product Design Suite

- AutoCAD
- Inventor
- ReCap
- AutoCAD subpackages that include Raster, Mechanical and Electrical

Section 7: Engineering Services Table

CINTAR INC. ENGINEERING SERVICES

SYSTEMS & BUILDINGS:

- Natural Gas Midstream Facilities
- Petro-Chemical Facilities
- Oil Mid-Stream Facilities
- Glass Facilities
- Steel & Metals Facilities
- Building Structures
- Building Renovations
- Blast Relief Building Design (Deflagration)
- Architectural Services
- Data Centers
- Computer Rooms
- Building Management Systems and Controls
- Demolition Studies and Safety Assessments
- Code Reviews
- Structural Inspections
- Energy Reviews

CIVIL / ENVIRONMENTAL:

- Site Work / Drainage
- Underground Excavations & Structures
- Storm Water Runoff and Retention Ponds
- Concrete Lined Vertical Shafts
- Pilings and Foundations
- Roadways
- Security Structures and Fencing
- Erosion and Sedimentation Control
- NPDES
- Containments
- Retaining Walls
- Environmental Compliance Permit Applications
- Permitting
- Code Reviews

STRUCTURAL:

- Building Structures
- Steel Structures
- Pipe Bridges
- Bridge Structures
- Walkways and Platforms
- Concrete Structures
- Dynamic Structural Analysis
- Support Systems
- Blast Resistant Building Design
- Seismic Structural Analysis
- Storage Tanks
- Towers
- Industrial Ductwork and Breeching
- Crane Runways
- Roof Trusses
- Masonry Structures
- Structural Inspections

MECHANICAL / PIPING / PROCESS:

- Gas Distribution Systems
- Boilers
- Auxiliary Boilers
- Hot Water and Steam Boilers
- Heat Transfer Analysis
- Pipe Stress Analysis B31.1, B31.3 & B31.8
- Pipe Support and Hanger Design & Inspections
- Hydraulic Calculations
- New and Retrofit Pipe Design
- Scrubber Systems
- Cooling Towers
- Fluid Systems Design
- Plumbing
- Compressed Air Systems
- Combustion Turbines
- Compressor Stations
- Pumping Stations
- Processing Piping
- High Energy and Conventional Piping
- High Pressure Steam Systems
- Hot / Chilled Water Systems
- Heat Exchangers
- Valve Stations
- Blower Stations
- Mechanical Systems
- Pumping and Distribution Systems
- Low / Medium / High Pressure Duct Systems
- Flue Gas Ductwork
- Ductwork Support Systems
- HVAC Systems
- Fire Protection Systems
- Material Handling Systems
- Ash Handling Systems
- Dust Collection Systems

ELECTRICAL:

- Power Distribution and Transmission
- Electrical Load Analysis
- Short Circuit Analysis
- Coordination Studies
- Arc Flash Studies
- Energy Reviews
- Power Quality Analysis
- Power Factor Correction Design
- Substation Design
- Switchgear Stations
- Transformer Stations
- Surge Protection Systems
- Grounding Design
- MCC Development
- Control Panel and Console Design
- Cable and Raceway Design
- Emergency Generator Systems
- Uninterruptible Power Systems
- Emergency Lighting Systems
- Perimeter Monitoring and Lighting Systems
- Fire Detection and Alarm Systems
- Electrical Hazardous Classification
- Interior and Exterior Lighting Systems
- Security Systems
- Equipment Failure Analysis
- Lightning Protection
- Data and Voice Communication Systems
- Cathodic Protection

CONTROL SYSTEM INTEGRATION / I & C:

- Distributed Control Systems
- PLC and Computer Programming
- HMI Systems
- Instrumentation Equipment
- I/O Racks and Cabinets
- Control System Applications
- Combustion Control Systems
- Burner Management
- Coal and Lime Handling Systems
- Water Treatment
- Control Panels
- Pumping Station Metering
- Waste Water Treatment
- Load Control
- Control Valves
- Pipeline Regulation and Metering
- Process Control
- Supervisory Control and Data Acquisition Systems
- Monitoring Systems
  - Flue Gas
  - Water Chemistry / Treatment

GAS AND OIL:

- Rail Car Unloading Stations
- Transmission Pipeline Design by ASME B31 (DOT Standards)
- Upstream, Midstream and Downstream services
- Environmental Control Systems
- Material Screening and Transfer Stations
- Mechanical and Structural Inspections
- OSHA-Type Safety Inspections

CONSULTING SERVICES:

- Conceptual Engineering Reports (CER)
- Feasibility Studies (FEL-1, 2 & 3)
- Project Life Cycle Management
- Value Engineering and Project Management Practice
- Conceptual Engineering
- Plant and Facilities Layout
- Capital Investment Cost Estimates
- Equipment and Construction Specification
- Economic Evaluations
- Risk Analysis
- ASME / ANSI Code Review
- AISC / ACI Review
- Construction Documentation (FEL-4's)
- P.E. Design Review
- Specifications and Report Preparations
- Owner's Engineer & Peer Review
- Safety Audits
- Construction Management
- Hazardous Area Review and Mitigation
- Outage Support and Startup Services
- EPCM Services