



MANUFACTURING





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Thomasson Industrial Services

A Professional Alliance

consisting of

Design Innovation - Architects

I. C. Thomasson Associates - Engineers

Carpenter Wright - Engineers

Manous Design - Planning and Architectural Design



TIS has senior professionals in key leadership roles in the major disciplines and has strategic alliance firms that provide additional capacity and specialized capabilities to suit the requirements of specific project types and localities.

Thomasson Industrial Services (TIS) is a full service professional planning, design and consulting firm that provides all disciplines required for planning and design of industrial site and facilities, manufacturing and industrial processes, and power generation and energy-related projects.

TIS is an alliance of I. C. Thomasson Associates, Inc. (ICT) a consulting engineering firm headquartered in Nashville, Tennessee, with prominent design firms, [Design Innovation Architects](#), [Manous Design](#), and [Carpenter Wright Engineers](#). ICT has provided consulting engineering services across the USA and abroad for decades in a wide range of market sectors. TIS offers planning, consulting, design, construction/start-up support and program/project management services to our clientele in the industrial, process and power generation and utilities market sectors.



Thomasson Industrial Services



- Master Site, Infrastructure and Facility Planning
- 3D surveying, planning and design
- Building Information Modeling (BIM)/3D Design
- Site/Civil Surveying and Engineering/Landscape Architecture
- Architecture
- Sustainability Consulting Services
- Structural Engineering
- Mechanical Engineering (HVAC, Plumbing, Piping)
- Fire Protection Engineering
- Refrigeration Engineering (Central plants and split systems; distribution systems; cool rooms; cold storage)
- Process/Industrial Engineering (Operations Consulting, Planning Studies, Equipment Layout, Equipment Installation Packages, Utilities Design)
- Controls Engineering (Real-time Automation, Data Acquisition, Custom Controls/Operator interface, Analytical Instrumentation and Environmental Monitoring)
- Energy Engineering and Consulting (Strategic Advisory/Procurement Services, Energy Assessments, Project Planning/Implementation)
- Environmental Engineering, Permitting and Consulting (Air, Water, Solid Waste, Hazardous Waste)
- Water Treatment and Distribution Systems Engineering
- Waste Water Treatment and Disposal/Reuse Systems Engineering
- Fire Protection Engineering
- Electrical Engineering (Power, Lighting, LV/ Specialty systems)
- Electrical Distribution Engineering (Distribution & Transmission)
- Intelligent Transport Systems (fiber/broadband, data/comm, IT)
- Construction Start-up Support/Field and Commissioning Services
- LEED Commissioning, and Measurement & Verification services
- Disaster Recovery/Emergency Response Services
- Forensics Engineering
- On-Site Project Staffing/Staff Augmentation Services
- Facility Assessments
- Bridging Documents





Design Innovation Architects

excellence through service and design

History

Established in 1989, Design Innovation was founded by Faris Eid, AIA, upon his relocation from Atlanta to Knoxville. In 2005, the firm's growth and planned expansion led to the development of its own 7,400 square foot office space in Downtown Knoxville at 402 S. Gay Street. DIA has steadily developed a reputation for our quality design services as proven by the numerous awards we have received. We have been recognized locally by the Metropolitan Planning Commission with Excellence Awards for several of our projects. Our firm has been recognized by the Knoxville Chamber with a Pinnacle Small Business Excellence Award and nationally by Inc. 5000 as one of the fastest growing private companies in America. On a more personal scale, Faris Eid was recently honored by the East Tennessee Community Design Center with the Bruce McCarty Community Impact Award. This award summarizes our belief in supporting the community that supports us.

Firm Capabilities

Architectural / Planning

Design Innovation (DIA) has established a strong portfolio of projects of diverse scale and function, including Multi-Family & Single-Family Residential, Corporate, Commercial, Hospitality & Theaters, Retail, Food Service, Industrial, Religious, Educational, and Health Care. DIA's projects range in size from 2,000 s.f. to 1,000,000 s.f. with budgets between fifty thousand dollars to upwards of nearly \$200 million dollars. We offer a full range of architecture, interior design, land planning, and project management services in-house. DIA has the capability and experience to provide and coordinate the services of qualified consultants to provide any additional services which may be required.





Manous Design

Planning and Architectural Design

110 Lakewood Drive

Lebanon, TN 37087

615-444-6207

www.manousdesign.com



Manous Design was established in 1992 in Lebanon, Tennessee, in the greater Nashville area. Since then, the firm has worked on projects throughout Middle Tennessee and the nation. Its numerous projects include everything from private residences to master-planned projects, from historic restorations to mixed-use retail centers, and from commercial distribution centers to country clubs.

Budgets have ranged from \$250,000 to more than \$250 million. Whatever the project, challenge or budget, Manous Design delivers architectural excellence.

Services

- Architectural Design
- Master Planning
- Civil Engineering
- Structural Engineering
- Interior Architecture & Design
- Landscape Design
- 2D and 3D Computer-Aided Designs





Carpenter Wright Engineers

a division of bennett&pless

- Established: 1976
- Offices: Atlanta, GA · Boca Raton, FL · Charlotte, NC · Chattanooga, TN · Knoxville, TN · Nashville, TN · Orlando, FL
- Registrations: 50 States, Canada and Puerto Rico
- Project Types: Data Centers, Healthcare, Higher-Ed, Hi-Rise, Office, Training Facilities, Hospitality, Industrial, Manufacturing, Parking Structures, Recreation, Self-Storage
- Specialties: Mission-Critical Data Centers, Heavy Industrial, Wireless Infrastructure, Parking Structures, Signs, Billboards and Pools

The complex environment of today's world demands that a progressive engineering consultant maintain a highly competent staff of specialists educated in the required disciplines. Carpenter Wright Engineers maintains a Firm that incorporates an outstanding staff of qualified engineers with years of practical experience in design and construction. The organization provides for each project to be produced by a Team which combines special technical skills and practical application within the framework of present-day scheduling demands. The Firm's completed projects reflect excellence in solving the difficult problems of technology, economics, and environmental accountability as they relate to structural engineering.

Established in 1976, John Carpenter and Associates became one of the largest structural engineering firms in Tennessee. The firm became Carpenter Wright Engineers in 1994 and continued to expand adding the Knoxville office. The growth didn't stop there. In January 2020, CWE merged with Bennett & Pless, a firm with over 55 years experience in the southeast and a recognized leader in the industry. This merger has created an exact combination of extraordinary design expertise. With a staff of over 70 in 7 offices this combination enables the firm to provide a broader geographic presence, increased capacity, and added technical depth. Together, the firms have created an energized structural engineering powerhouse providing enhanced capabilities to an ever-growing client base.



Bennett & Pless



Bennett & Pless has provided structural engineering services in the southeast since 1964

A 57-year track record of expertise

The demands of today's complex environment require a highly competent staff of specialists educated in the required disciplines. For 55 years, Bennett & Pless has maintained a Firm that incorporates an outstanding staff of qualified engineers with years of practical experience in design and construction. The organization provides for each project to be produced by a Team which combines special technical skills and practical application within the framework of present day scheduling demands. The Firm's completed projects reflect excellence in solving difficult problems of technology, economics, and environmental accountability as they relate to structural engineering.

Qualifications

- Registered Professional Engineers in 50 states, Canada and Puerto Rico
- Over 80% of our engineers are licensed Professional Engineers
- Staff of over 50 Engineers
- 7 offices across the southeast

Specialized Knowledge

Unlike other firms, our engineers have expertise in all areas of structural engineering. We pride ourselves in our ability to deliver complex projects. Although not always high-profile, these projects challenge our capabilities and keep us on the leading edge of design.

Experience

Our experience extends far beyond commercial, institutional and industrial projects. Our team is proficient in all aspects of evaluation and design of mission critical, energy storage facilities, wireless towers, LED outdoor signage and ETFE design.

Excellent relationships

Our responsiveness, technical excellence and "can-do" attitude have been our foundation for developing long standing relationships and successful projects.



I. C. Thomasson Associates, Inc.



I. C. Thomasson Associates, Inc. (ICT) is an employee-owned, multidisciplinary engineering consulting firm providing expertise in mechanical, electrical, controls, plumbing, fire protection, information technology, energy efficiency, and environmental services. ICT designs projects throughout the United States and abroad for aviation, healthcare, commercial, hospitality, recreation, education, institutional, and industrial clients.

Our experienced staff of over 200 employees including 70 Professional Engineers is able to offer the production capacity of a large MEP firm while still providing small company, client-based personal attention and interaction. This is accomplished with ICT's client team-based approach which allows for consistency in client interface without sacrificing technical expertise.

ICT's primary obligation is to the client and to the job with which we are entrusted. The company has a continuing commitment to provide price-competitive, innovative, sustainable timely, and quality engineering services for a diverse range of project types.

Design of over \$5.7 BILLION in Process and Manufacturing projects.

41
MEP GIANTS

Consulting Specifying Engineer
2019

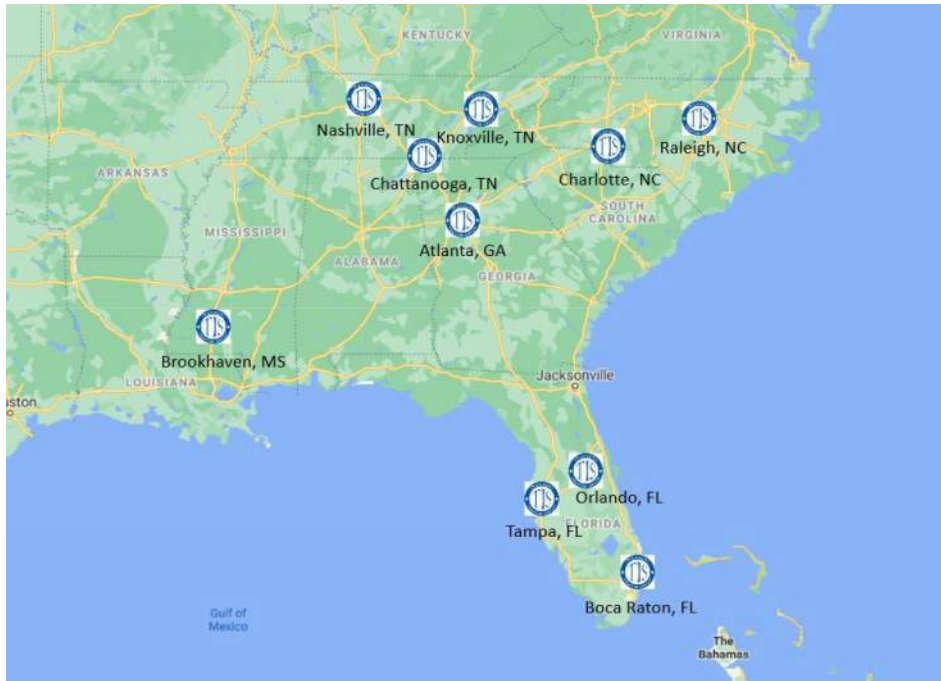
18
INDUSTRIAL SECTOR
ENGINEERING FIRM

Building Design and Construction
2019

32
ENGINEERING
FIRM



Where We Are Presence Throughout the Southeast Registered and Work in all 50 States



With presence throughout the southeast, our team can be to your project site at a moment's notice. TIS has licensed professionals in all 50 states, with project experience across the United States. Our strategic alliance has team members well-versed in working with international clients as well as domestic.

Our Team Can Support Your Project



Where We Have Worked



Daltile Manufacturing Facility Dickson, TN



Carpenter Wright Engineers
a division of Bennett & Pless

Structural

I. C. Thomasson Associates

Mechanical Design

Architectural, structural, preliminary mechanical and project management services were provided for a new 1.2 million SF porcelain tile manufacturing facility (shell only). Six primary functional areas of the facility are raw material storage, body prep and spray drying, glazing, kiln, packing, and warehouse storage.



American Wonder Porcelain Tile Manufacturing Facility Lebanon, TN



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

Design Innovation Architects
Architect

I. C. Thomasson Associates
Mechanical, Electrical,
Plumbing and Fire Protection
Design

The TIS Team provided full planning and design services, including architectural, site/civil, structural, mechanical, electrical, plumbing and fire protection design services for a new 750,000 SF single-story pre-engineered metal building for a tile manufacturing and storage facility.

The project includes the manufacturing plant / warehouse; an office building which includes corporate offices, showroom and R&D facilities.

The Master Plan for the project looked at multiple building configurations and an ultimate planned build-out of potentially 2.25 million SF under roof, on an approximately 150 acre site.



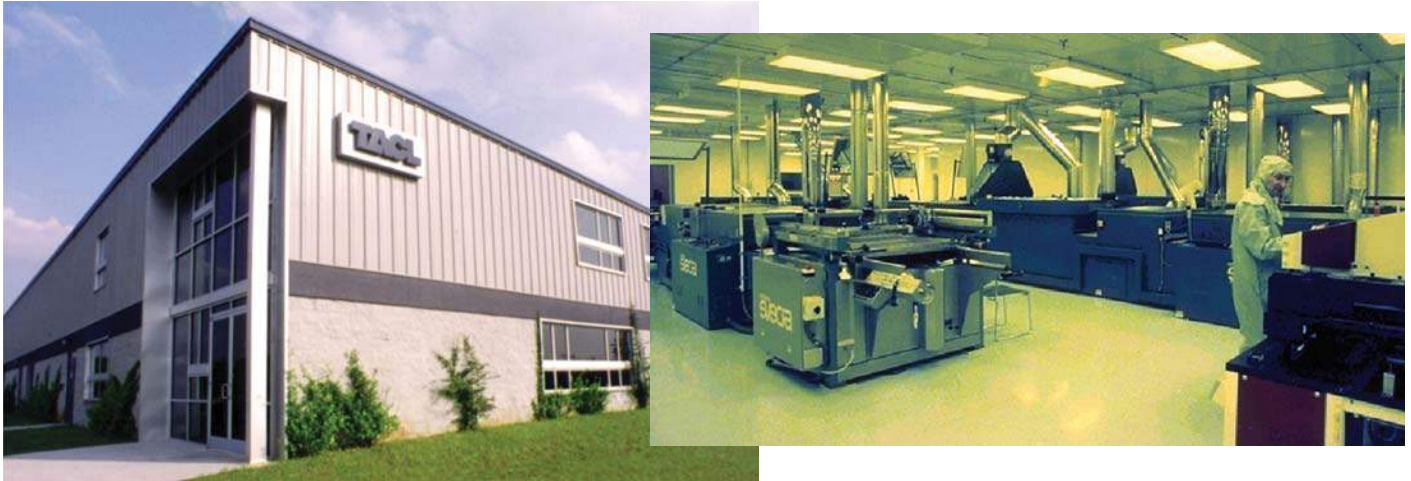
Sumiden Wire Products Corporation Manufacturing Facility Dayton, TX



The project is located on approx. 22 acres and includes paved areas for the Rod Storage Yard (raw materials) and Rod Unloading/Pickling area, the shipping and receiving dock areas, traffic aisles, new access bridge and road, and employee/visitor parking lot.



Polymore Circuit Technology Formerly TACL Manufacturing Maryville, TN



Design Innovation Architects Architect

DIA provided architectural design for a new printed circuitry board manufacturing facility for a start-up company. DIA initially conducted an in-depth programming analysis of the manufacturing process, determining environmental, special, equipment, and special construction requirements. The owner identified functional and manufacturing requirements.

The resulting solution is a 28,000 SF infill in an existing pre-engineered metal building, with the addition of a mechanical room, and exterior modifications including a new facade. Final design incorporated a 10,000 SF office and laboratory facility, an 8,000 SF Class 10,000 clean room, and support areas.

DIA was later called upon for the Phase II expansion of the facility to further increase the company's production capability.



Northrup Grumman Ship Systems Propulsion Assembly Building Pascagoula, MS



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

Carpenter Wright Engineers and VP Buildings provided the structural design for the approximately 42,300 SF, 80 foot tall, hybrid structural steel and pre-engineered building for the assembly of ship engines for Northrup Grumman Ship Systems.

The assembly building includes a crane runway that extends the entire length of the building. There are two 150-ton cranes with a rail height of 60 feet. The design wind speed was 150 mph, Exposure C.



DELCONCA Phase II Loudon, TN



Design Innovation Architects

Architect

I. C. Thomasson Associates

Mechanical, Electrical,
Plumbing and Fire Protection
Design

The addition consists of approximately 110,000 SF of manufacturing and warehouse space. The scope of the project includes the addition of equipment. The addition increases the building by 100'-0" in width and is the entire length of the building. The bay heights are the same as Phase I, extended for 100' more. The raw material areas include the concrete push walls up to 20'-0" high, a CMU wainscot wall to match the existing, and initially metal panel and translucent panels.



DELCONCA USA

New Porcelain Stoneware Tile Plant

Loudon, TN

Plant - 320,000 SF
Office - 10,000 SF



Design Innovation Architects

Architect

I. C. Thomasson Associates

Subconsultant to Electrical
Contractor

DelConca, an Italian tile manufacturer with an international client base, constructed a new facility in the United States in order to better accommodate their growing distribution needs. Not only was DIA an integral part of the team instrumental in DelConca's decision to choose Loudon County, DIA was a member of the team selected to design and construct this manufacturing facility. DelConca was able to procure the best-suited location in East Tennessee, due to the availability of the proper raw materials needed to produce the quality of tile their clients expect. The facility consists of separate buildings to house a show room for product display, office space, and manufacturing. The manufacturing facility requires specialized features such as highbay spaces for silos, complex equipment process and foundations, warehouse and distribution. Considerations were made for a future expansion of 100,000 SF.



Ardagh Metal Packaging Facility Roanoke, VA



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

I. C. Thomasson Associates
Mechanical, Electrical, and
Fire Protection Design

The renovation of an existing 525,000 SF building on an industrial site included improvements for use as a food-grade steel can stamping, manufacturing and warehouse operation.

TIS provided structural, mechanical (HVAC), electrical power and lighting, low-voltage (rough-in) systems, fire protection and piping / plumbing design engineering services.

The structural scope of work included design and construction documents for the new 75,000 SF mezzanine, incorporation of the new mezzanine into the existing building structure for lateral resistance, localized reinforcement of the existing roof structure



Ardagh Metal Packaging Facility Roanoke, VA



for new heavy duct and process piping loads, and the process equipment foundations and trenches.

Mechanical work includes the HVAC and Plumbing design for office and support areas for comfort air conditioning and heating and ventilation including building pressurization control in the manufacturing, hazardous storage, and warehouse areas and containment for tank filling and storage.

Fire Protection work included the design of a sprinkler system for the manufacturing area and palletized storage and a wet pipe foam fire suppression system for hazardous storage.

Electrical work includes upgrade to the site electrical service (working in coordination with

the local utility provider), site lighting and interior lighting upgrades, general building power, and power for HVAC equipment.

Post-Design phase services included shop drawings and submittals reviews and construction observation services.



Hankook Tire Manufacturing Plant Phase 2 Clarksville, TN



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

Design Innovation Architects
Architect

Manous Design
Planning and Architectural
Design

I. C. Thomasson Associates
Process Utilities, Mechanical,
Electrical, and Fire Protection
Design

Full A/E Services were provided by the Thomasson planning and design team, teaming with a Construction Management firm, acting as Owner's Representative / Project Manager for the Phase 2 expansion design-build contract of the 1,060,000 SF main plant and ancillary buildings. The Project Management team developed the RFP and Design Bridging Documents used to secure final Design-Build proposals from select, invited bidders.

Project on hold



Mercedes Benz Body Shop Expansion Vance, AL



I. C. Thomasson Associates

Mechanical, Plumbing,
Electrical, and IT Design

Construction Cost

\$205 million

Design-Build

The project is a 1,588,454 SF addition to an existing automotive plant bringing the overall size of the plant to approximately 7,000,000 million SF. The project consisted of renovation and equipment additions of two new, approximately 2,500 ton duplex centrifugal chillers in a series arrangement in the Energy Center along with corresponding pumping and cooling tower addition. An older smaller boiler was replaced with a new larger approximately 28 MW boiler for hot water generation. The project consisted of a Wiring Harness addition, and addition to logistics space on the north side of the facility. The East Assembly expansion involves the marriage process of the drive train to the chassis. The 1,200,000 SF body shop expansion on the west side of the plant involves relocation of the free trade zone (FTZ) fencing as well as relocation of underground utilities. Design involved coordination with corporate office facility design/plant engineering as well as vendor (conveyor and robotic) coordination.

Project included chilled water, hot water, weld water condenser water system, compressed air, argon, nitrogen, natural gas, electrical service upgrade, telecommunications, dust collection systems, custom rooftop chilled water air handlers, displacement ventilation system with "dissolved column", and main service rerouting with switch over during scheduled plant shutdown.



Zinc Oxide, LLC Dickson, TN



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

I. C. Thomasson Associates
Mechanical and Electrical
Design

TIS provided site/civil, architectural, structural, mechanical and electrical design and related bidding and construction phase services for a new 33,000 sf high-bay addition to an existing 128,000 SF facility which will produce zinc oxide for multiple market sectors. The building addition included new collector and packaging areas and new central power and compressed air utilities plant.

Project services included architectural, structural, mechanical and electrical design services in a large portion of the existing facility to be renovated, to include new offices, conference and employee lockers, restrooms and break areas, and ventilation and lighting improvements for the overall Furnace Room and Warehouse areas; and main utilities headers for the melt furnaces and related support requirements.

Zinc oxide grades will be produced designed for rubber, tire, chemical, pharmaceutical, cosmetic, oil additives, ceramics, electronics, glass, plastics, latex, paint and coatings, tape and adhesives, fertilizer markets, and other market sectors.



Nissan North America Compressed Air and Chilled Water Plant Canton, MS



I. C. Thomasson Associates

Mechanical, Electrical,
Plumbing, and Controls Design

Construction Cost

\$20.8 million



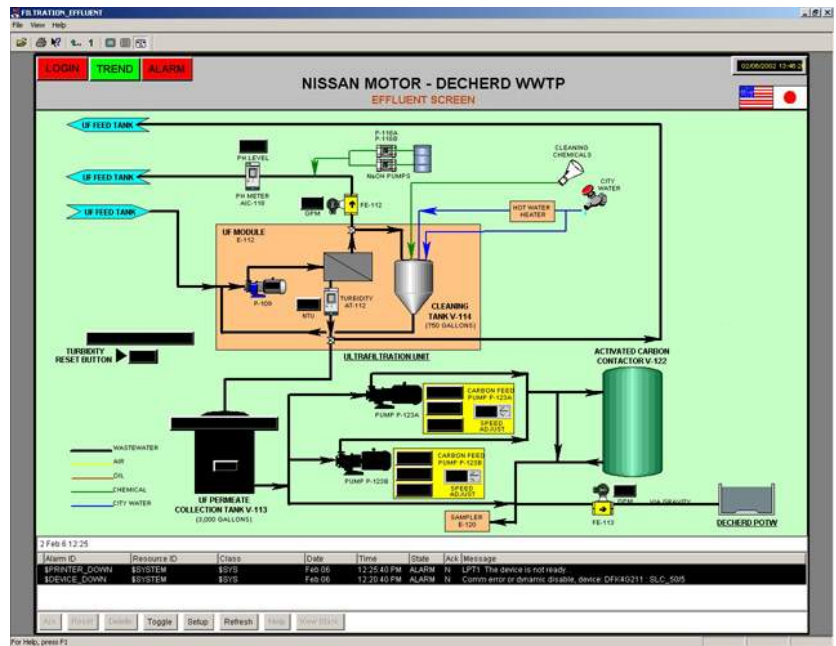
ICT designed a complete Central Utility Plant that serves the needs of a new two million SF automotive plant. The plant has a capacity of 250,000 vehicles a year producing full-sized pickup trucks, full-sized sport utility vehicles, and the next generation mini-van.



- 31,000 tons of 41° F chilled water
- 25,000 scfm of 100 psig compressed air
- 36,000 scfm of 110 psig compressed air
- All required auxiliaries including: cooling towers, pumps, dryers, automated computer controls, and bridge cranes



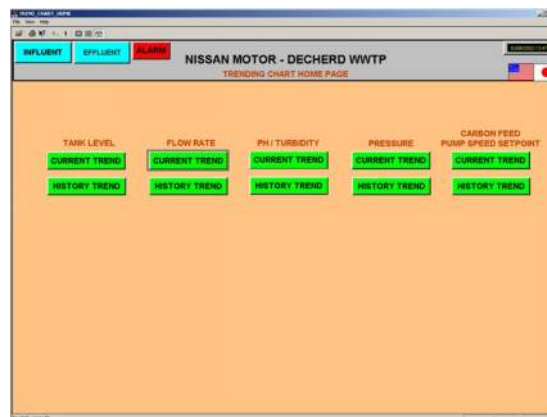
Nissan North America Waste Water Pretreatment Station Decherd, TN



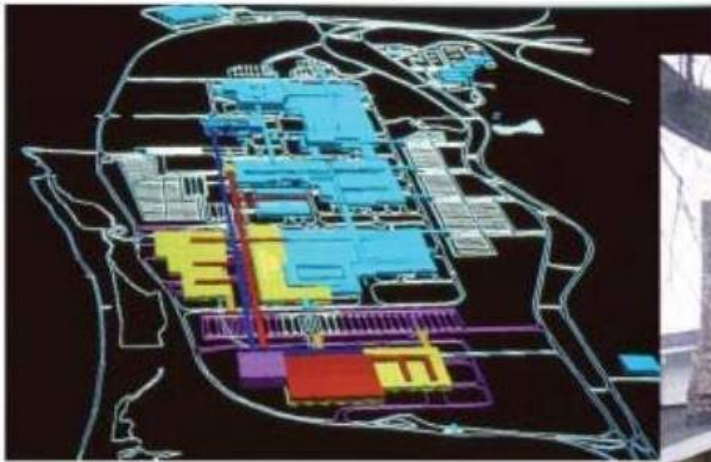
I. C. Thomasson Associates
Mechanical, Electrical, and
Controls Design

Construction Cost
\$1.44 million

ICT provided engineering services and the control system for a new waste water treatment station at the new Nissan facility. The Allen-Bradley PLC system furnished by ICT was delivered on schedule, and all programming was completed. Start-up commenced after all wiring and piping was complete.



General Motors
Saturn Spring Hill
Spring Hill, TN



GM / Saturn Welcome Center

Carpenter Wright Engineers
a division of Bennett & Pless
Structural

Manous Design
Architect

Architectural and structural planning and design for renovation and conversion of historic circa 1929 walking horse barn at the Haynes Haven Plantation to a Visitor's Center for the GM / Saturn manufacturing plant. Analyzed three options including a partial renovation / addition to the Northfield Office Complex.





General Motors
Saturn Spring Hill
Spring Hill, TN

Saturn Service Parts Organization (SSPO) II

Manous Design

Architect

Manous Design was the lead architect for the Saturn Service Parts Organization, Phase II. The project entailed nearly 200,000 SF of customized automotive parts distribution and an office and employee amenity complex addition.

Saturn Body Fabrication Shop and General Assembly Additions

Manous Design

Architect

Manous Design was the lead architect for the production area expansions.

GM / Saturn Manufacturing Plant Expansions and Upgrades

Manous Design

Architect

- 7,000 ton press foundation and installation
- 220,000 SF Service parts warehouse addition
- 10,000 SF General assembly addition
- 21,000 SF Bodysides addition
- General assembly overhead door additions
- Body fabrication overhead door additions
- Elevated connector conveyor relocation study
- Pedestrian walkway modifications study for deicing
- Air handling units emergency motor changeout
- Polymer tanks access platforms
- Bodysides catwalks addition
- Truck marshalling yard expansion
- Car marshalling yard redesign
- Hazardous material containment study / detention pond retrofit
- Hoist rail addition at CMM
- Screen guard modifications for conveyor system



Bridgestone Americas Tire Operations 9,400 Tire-Per-Day Building Expansion Morrison, TN

Carpenter Wright Engineers
a division of Bennett & Pless

Structural

Design Innovation Architects

Architect

I. C. Thomasson Associates

Mechanical and Electrical
Design



Full Architectural, Design, and Engineering services to include drawings and specifications, bid document preparation, and bid/construction phase assistance were required to expand the existing plant footprint by a total of 31,892 SF.

Architectural, Structural, Fire Protection and Electrical design were provided for the 5,712 SF Stock Prep building and includes two bays, 42' x 68', and associated site work.

Architectural, Structural, Electrical and Fire Protection design were provided for the 26,180 SF Tireroom / Green Tire ASRS building and included two full bays, 68' x 70' and seven half bays, 34' x 70' and associated site work.

Six (6) new curing press locations were retrofitted into the existing Curing Area. Work included all new structural concrete/deep foundations design, stairs, hand rail/guard rail, new fume draft curtains, new exhaust ventilation system, power and lighting.

The existing parking lot was expanded west to add 46 parking spaces and new site lighting.



Bridgestone Firestone Warren Plant

1,250,000 SF
Morrison, TN

Carpenter Wright Engineers provided structural design services of buildings and equipment foundations for a 1.2 million square foot grass-roots tire manufacturing facility. Design included an 80-foot tall, four-story rubber mixing facility with a floor load of 350 psf, plus a tank farm, rail unloading facility, overhead long-span pipe bridge, and a deep-underground concrete utility tunnel.

Carpenter Wright Engineers
a division of Bennett & Pless

Structural

Manous Design

Architect



- Tank farm
- Carbon black unloading and storage facility
- Plant services building
- Banbury process building
- Cement house (concrete package and equipment foundations)
- Calendering building (concrete package and equipment foundations)
- Creel building (concrete package and equipment foundations)
- Receiving building (concrete package)
- Stock prep building (concrete package)
- Tire assembly building (concrete package)
- Curing building
- Final inspection building
- ASRS building - automatic storage and retrieval system
- Powerhouse building
- Pumphouse building
- Process building and process piping support
- Oil pumphouse and oil storage
- Dust collection facility
- Employee services building
- Temporary warehouse for equipment staging and testing



Bridgestone Tire Manufacturing USA Passenger Tire Curing Expansion LaVergne, TN



Carpenter Wright Engineers
a division of Bennett & Pless

Structural

I. C. Thomasson Associates

Mechanical and Electrical Design

Initial installation of a concrete trench was sized to install seven curing presses on each row (L & M) in back-to-back configuration with accommodations for future presses including all piping, conveyors, and utilities.



Bridgestone Tire Manufacturing USA Process Cooling Tower Upgrades LaVergne, TN

I. C. Thomasson Associates
Mechanical and Electrical
Design

ICT provided design to refurbish and replace existing cooling towers. Project included extending existing fire protection line to new cooling towers.

Bridgestone Tire Manufacturing USA Passenger Tire Plant LaVergne, TN

Carpenter Wright Engineers
a division of Bennett & Pless
Structural Design and Support
Manous Design
Architect

- Extruder building modifications
- Curing press modifications
- Customer service area modifications
- Sanitary sewer modifications
- QCT trench modifications
- Roof truss and bracing revisions for A/C implementation
- PSR expansion
- Miscellaneous engineering support tasks
- Line L&M curing trench modification from PSR to TBR



Bridgestone Firestone Warren Plant 9,000 Tire Per Day (TPD) Expansion Morrison, TN



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

I. C. Thomasson Associates
Mechanical, Plumbing, Fire
Protection, Electrical and
Instrumentation and Controls
Design

Manous Design
Architect

ICT provided project design management including coordination for architectural, civil, structural design subcontractors as well as materials testing engineers.

ICT provided mechanical, electrical, and fire protection design, and construction administration for tire production equipment additions. Additions included new rubber extrusion area with structural concrete pit, extension of existing cure press trench and multiple utility pipes for installation of new presses, and 1,200 SF of new building to increase production operations.

Carpenter Wright Engineers provided structural design services to expand the BEI Extruder pit, the Stock Prep area, and the construction of a new Curing Trench for 16 new curing presses to increase the capacity of the existing tire plant by 9,000 tires per day. The excavation area for the curing trench included four existing major building columns and their footings. Working with the geotechnical engineer, CWE developed a unique shoring technique using micro-piles to support the existing footings and columns in place as the excavation advanced to the proper elevation. The technique saved time, and reduced construction costs significantly.



Bridgestone Americas Off Road Radial (ORR) Tire Facility Aiken, SC

I. C. Thomasson Associates

Mechanical, Electrical and Technology Design

ICT provided electrical, mechanical and technology design for the two-phase Bridgestone Off Road Radial Tire Plant located in Aiken, SC. The facility is approximately 1.4 million square feet under roof. ICT designed the Building Automation System (BAS) for over 100 Air Handling Units. The BAS Design included all hardware and wiring to support the owner's sequences of operation. The BAS was designed to allow for space occupant control or could be overridden at the BAS workstation to maximize building efficiency. The design incorporated building and room energy monitoring to facilitate energy savings through temperature setbacks during time of peak energy use. This type of design can be used on a single building or incorporated in a campus style layout, existing or new.

Bridgestone PSR Facility Aiken, SC

I. C. Thomasson Associates

Mechanical, Electrical and Plumbing and Fire Protection Design

- Powerhouse equipment - New facility consulting
- Cable splice guard project
- Boiler - Alternatives feasibility project

Bridgestone Additional Experience

I. C. Thomasson Associates

Mechanical, Electrical and Plumbing and Fire Protection Design

- ORR - Cement house process and fire protection
- ORR - Low voltage systems
- Banbury addition hydronic system analysis
- Joliette Facility - boiler plant condensate return system



Freudenberg Filtration Quality Control Lab Hopkinsville, KY

Carpenter Wright Engineers

a division of Bennett & Pless

Structural

I. C. Thomasson Associates

Process Utilities, Mechanical, Electrical, and Fire
Protection Design

TIS provided architectural, structural, mechanical, electrical, plumbing and fire protection design services for a new 1,400 SF Quality & Testing Lab to be constructed on an existing mezzanine located within an existing pre-engineered metal building.

The architectural services included the planning assistance related to the Owner's Concept and the design development and final design of new walls, ceiling, doors/air lock vestibule and other architectural features, including layout of lab space for Owner-furnished test and lab equipment. The lab envelope had to be carefully designed to provide both a structurally independent ceiling cap and an adequate perimeter vapor permeable barrier to accommodate a very narrow humidity design range for humidity control during testing.

The structural services included the assessment of the structural capacity of the existing mezzanine to support the loads imposed by the new laboratory, and to allow the removal of existing bracing; and the design of new supplemental steel grillage to support new overhead ceiling loads and wall penetrations framing.

The focus of the mechanical design consisted of providing HVAC support to implement an air conditioning, humidification and make-up air system that provides temperature, humidity and pressurization control of the lab space. Other mechanical scope included the design of the required laboratory plumbing utilities (water & sanitary/venting; lab air coordination) and fire protection requirements. Electrical services included lighting design and power support to HVAC and owner furnished testing equipment.

Services included submittals review, RFI responses, and limited construction observation assistance.



Denso Manufacturing Tennessee, Inc. Building 801, Phases I and II Athens, TN



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

I. C. Thomasson Associates
Mechanical, Electrical,
Plumbing and Fire Protection

Phase I 52,800 SF
Phase II 25,000 SF

ICT provided mechanical, electrical, plumbing and fire protection design and construction administration for development of Denso's Athens facility, which manufactures catalytic converters for automotive companies such as GM, Mazda, Chrysler, Toyota, and Harley Davidson.

ICT worked directly with Denso's Japanese and American facilities engineers to develop conceptual designs, budget estimates and schedules, supervised preparation of drawings and specifications, and provided construction management and inspection oversight. All projects have been completed on time and within budget.



Denso Manufacturing Tennessee, Inc. Building 701 Plant Expansion Athens, TN



Carpenter Wright Engineers
a division of Bennett & Pless

Structural

I. C. Thomasson Associates

Mechanical, Electrical,

Plumbing and Fire Protection

This project doubled the existing 701 Plant from 180,000 SF to over 400,000 SF to manufacture a patented direct fuel injector system for automobiles. The project includes a new 2400 ton chiller plant, steam boilers for humidification, hot water boilers for heating, process water cooling for four 400 hp centrifugal air compressors, a new web based DDC control system designed to integrate/upgrade existing controls serving the entire campus and process utilities. ICT provided mechanical, electrical, plumbing and fire protection design for the new facility. ICT provided HVAC and electrical design for the Quality Assurance Labs and clean rooms in Building 701.



Denso Manufacturing Tennessee, Inc.
Building 500, Cafeteria and Office Addition
Athens, TN

Carpenter Wright Engineers

a division of Bennett & Pless

Structural

I. C. Thomasson Associates

Mechanical, Electrical,

Plumbing and Fire Protection

- Office addition
- Full service kitchen and cafeteria seating 220 people
- 12,000 SF

Denso Manufacturing Tennessee, Inc.
Building 601, Stick Coil, Phase II
Athens, TN

I. C. Thomasson Associates

Mechanical, Electrical, and

Plumbing

This project upgraded facilities equipment and infrastructure to support the installation of the Stick Coil Phase 2 production line.



Denso Manufacturing Tennessee, Inc.
Building 201, Print Room
Maryville, TN

Carpenter Wright Engineers
a division of Bennett & Pless

Structural

I. C. Thomasson Associates

Mechanical, Electrical,

Plumbing and Fire Protection

ICT provided mechanical, plumbing, electrical and fire protection design and construction administration for Denso's 8,000 SF printing facility.

The ventilation and filtration system was upgraded to make it a Class 10,000 clean room.

Denso manufactures instrument clusters for automobiles. The silk screen covers for these instrument clusters are made in this facility. ICT provided fire protection design for installation of a fire suppression system of a self-contained paint booth in Building 201.

Denso Manufacturing Tennessee, Inc.
Building 101, Data Center
Maryville, TN

I. C. Thomasson Associates

Mechanical, Electrical,

Plumbing and Fire Protection

ICT provided an HVAC study, as well as mechanical design, for an upgrade of units in the data center.



Denso 101
Clean Room CRG Assembly Room
Maryville, TN



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

I. C. Thomasson Associates
Process Utilities, Mechanical,
Electrical, and Fire Protection
Design

ICT provided a mechanical assessment and CWE provided a structural assessment for the Clean Room at Denso's Maryville Plant. Project included an Environmental Conditions Report and HVAC upgrade.



KIA Motors Manufacturing West Point, GA



Bennett & Pless
Structural

Originally designed in South Korea, B&P became the Structural Engineer of Record for the 2 million square foot facility. As the EOR B&P provided review and redesign of the assembly plant, welding and stamp buildings. The facility is the first manufacturing site in North America for KIA Motors. With an annual capacity of more than 340,000 vehicles, this facility represents a \$1.1 billion investment on 2,200 acres.



Stowers Machinery
Knoxville, TN



Design Innovation Architects
Architect

The 20,000 SF addition contains 5,500 SF of two-story offices, training and locker rooms. The remaining area is for seven service bays for heavy “CAT” equipment. Due to the limited schedule for completion, DIA teamed up with the general contractor through a design-build process, and the team was able to meet Stowers' requirements.



HP Pelzer Manufacturing Athens, TN



Design Innovation Architects
Architect

HP Pelzer's design meets the needs for the manufacturing of automotive parts. The facility serves as a state of the art manufacturing facility and the North American Corporate Headquarters for HP Pelzer. The building has been designed for specific equipment, warehouse and distribution, and plans for significant future expansion.



GE Aviation Structure and Machining Plant Auburn University, West Technology Park Auburn, AL

I. C. Thomasson Associates

Mechanical, Electrical, Plumbing, Fire Protection, IT and Security Design

Construction Cost

\$50 million



The new 300,000 SF advanced manufacturing plant produces precision, super-alloy machined parts for GE jet engines. Features included 280,000 SF shell production space, 24,000 SF two-story office space, utility/process piping and equipment, centralized compressed air system, and a centralized cooling tower system.

LEED NC Silver: An energy model for LEED was performed showing over 28% energy savings above ASHRAE 90.1.

GE Aviation Project Badge Huntsville, AL

I. C. Thomasson Associates

Mechanical, Electrical, Plumbing, Fire Protection, IT and Security Design

Construction Cost

\$85 million



ICT provided design drawings and specifications to assist the general contractor in constructing the building shell and internal infrastructure to support the owner's process requirements. The project included two separated compressed air plants joined by a connecting office totaling approximately 400,000 SF that serviced the tow-tape and fiber facilities respectively.



Golden Dragon USA Precise Copper Tube Facility Pine Hill, AL



I. C. Thomasson Associates
Mechanical, Electrical,
Plumbing and Fire Protection
Design

Phases I and II of the project are a 500,000 SF facility including high-bay manufacturing workshops and storage areas, central plant, nitrogen production station, loading docks, control rooms and offices. The facility is located on a 100 acre site which will include roadways, fences and gates and miscellaneous outlying structures.

Phases I and II

- Workshop #1
- Mechanical building
- Electrical building
- N2 building
- Wastewater building
- Guardhouse
- Fluid handling building



Carpenter Technologies, Inc.
Forge Building 7510, New Specialty Alloys Mill
Athens, AL



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

I. C. Thomasson Associates
Mechanical, Plumbing, Fire
Protection, Electrical and
Instrumentation and Controls
Design

S&ME
Civil

ICT provided mechanical, instrumentation and controls, plumbing and fire protection design and construction administration for a new specialty alloys mill consisting of seven major production buildings. ICT's primary responsibility was for utilities and interfaces with production equipment in the Forge and Forge Finishing buildings (265,000 SF). ICT coordinated production equipment and utility equipment arrangements. ICT designed, specified and arranged support equipment and piping such as cooling tower and dust collection equipment.



Carpenter Technologies, Inc. New Specialty Alloys Mill Athens, AL



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

As a member on the design team, CWE was responsible for the structural design of 406,000 SF of the total project of 530,000 SF project. CWE was responsible for the structural design of the Radial Press Forge building, the Forge Finish building, and the Re-melt building. The total project cost was \$540 million. The structural systems utilized both structural steel and pre-engineered steel framing, and the foundations included conventional, mat and deep foundations.



Reemay Compressed Air Plant Old Hickory, TN



I. C. Thomasson Associates
Mechanical and Electrical
Design

New 30,000 cfm compressed air plant includes six (6) 5,000 cfm compressors, a new building and cooling water systems. Electrical design included 11.4 kV primary electrical service, double-ended unit substations feeding compressors at 4160 volts.



Nichiha USA New Manufacturing Facility Macon, GA



I. C. Thomasson Associates

Mechanical, Plumbing, and
Electrical Design

- Four 160-foot long autoclaves
- Rail conveying systems
- Pneumatic raw material conveying systems
- Storage silos
- Heavy duty conveyors
- Coating systems
- 5,000 ton press
- Integration of proprietary process equipment
- Wastewater handling piping, boilers and ancillaries to serve autoclaves



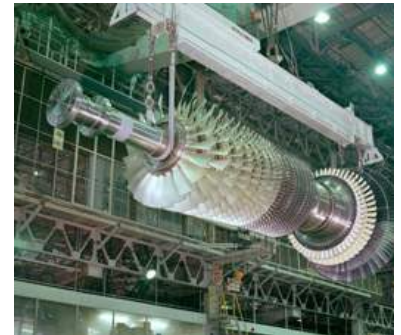
ICT provided MPE design for an ISO 9001 certified facility which manufactures fiber cement.

Nichiha USA is a subsidiary of Nichiha Corporation, a Nagoya, Japan-based company started in 1956. The company is a leader in the worldwide fiber cement industry with technological advances in materials development and manufacturing processes.

The Macon facility manufactures fiber cement and represents the company's first plant constructed in the United States. The plant occupies 60 acres and employs 100 personnel.



Mitsubishi-Hitachi Power Systems Pooler, GA

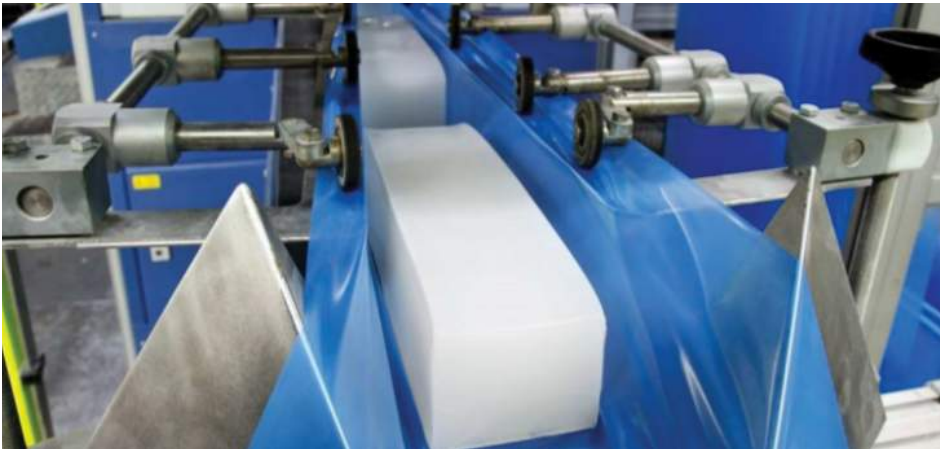


Bennett & Pless
Structural

B&P provided the structural design of the 440,000 SF facility including a 381,000 SF manufacturing/ refurbish turbine parts building, a 20,000 SF bunker/ turbine balancing facility with a 61,000 cubic foot vacuum chamber, a 17,000 SF conference center and a 10,000 SF maintenance building. The manufacturing buildings were designed with 60-90 foot clear span heights for overhead heavy bridge cranes and hook heights that reach up to 60 feet.



Wacker Polysilicon Charleston, TN



Bennett & Pless
Structural

B&P provided peer review for the original plant design. Over the past 8 years we have provided ongoing consulting and design services for the plant. This included structural analysis, review, seismic review, peer reviews and design modifications for new equipment, electrical cable supports, various pipe supports, multiple platforms and ladders, reactor rigging, cooler towers and racks, hoist beams, crane supports, vessel framing and supports, and numerous lifts.



Bethlehem Steel Cold Mill Sparrows Point, MD



Carpenter Wright Engineers
a division of Bennett & Pless
Structural

The 850,000 square foot complex has an annual cold rolled capacity of 1.5 million tons, and is capable of pickling 1.7 million tons annually.

The facility was constructed using a “hybrid” structural system, utilizing laced columns fabricated from conventional steel shapes up to the crane runway height, and then placing a “cap” structure on top consisting of fabricated three-plate columns and the Varco-Pruden Open Web Truss system to provide an economical building enclosure.

The use of the conventional steel columns allowed the tight lateral deflection requirements to be met. The facility houses a dozen overhead cranes ranging from 40 to 170 tons, with bridge spans from 70' to 120'. The use of the hybrid structural system saved approximately \$7 million in construction costs.



Carpenter Technology Specialty Alloys Mill Athens, AL



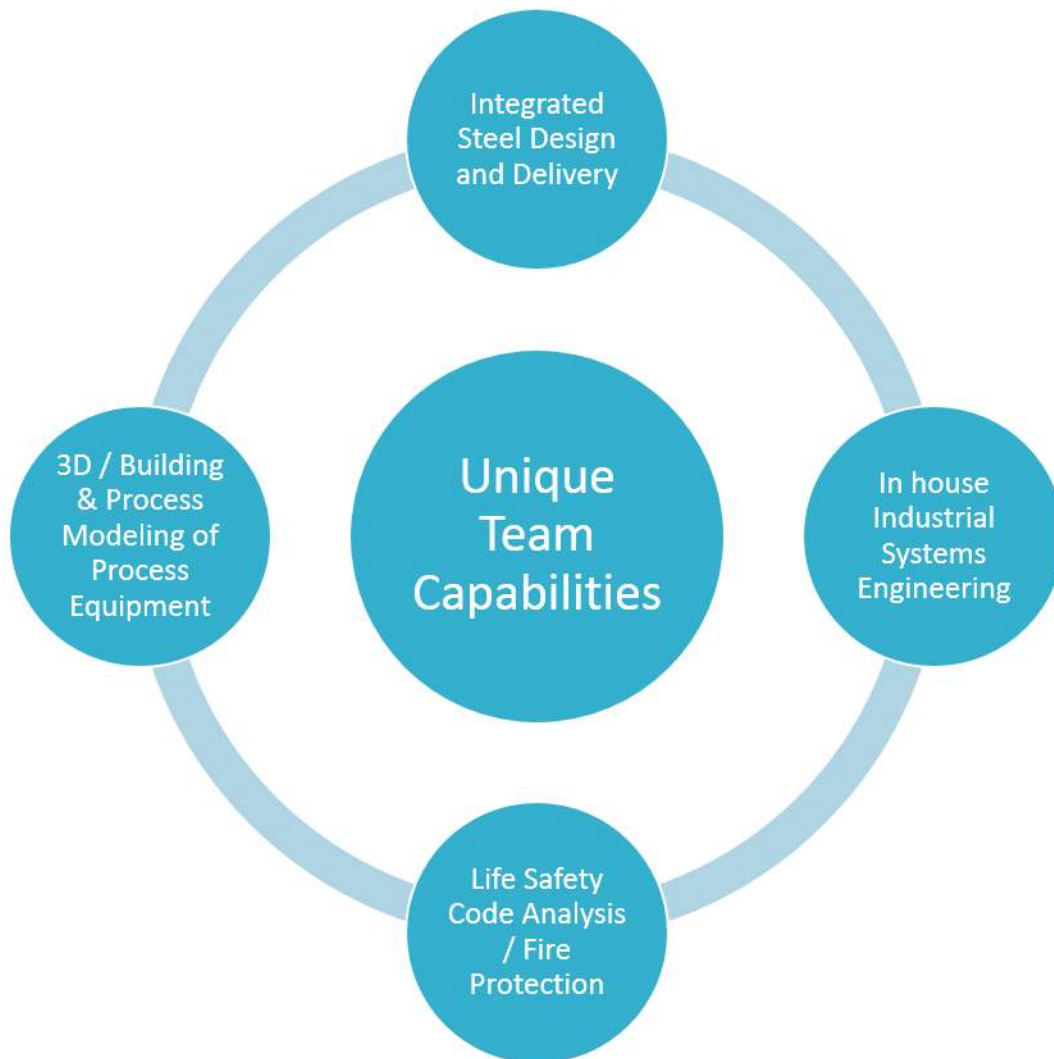
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Unique Team Capabilities



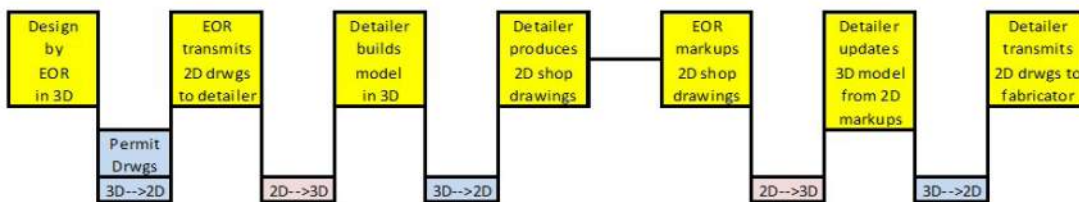
Unique Team Capabilities

Integrated Steel Design and Delivery

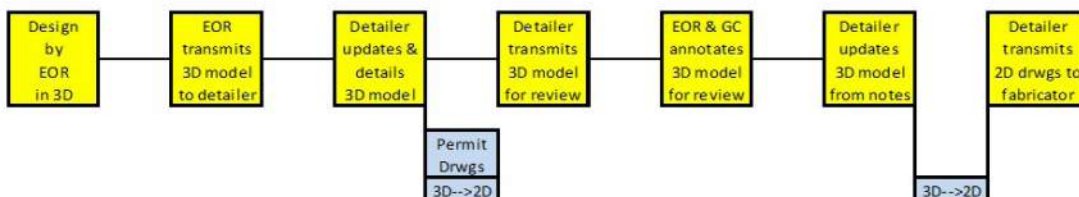


- CWE builds the 3D BIM model to use in analysis and design of structure.
- As sections of the structure are completed, the BIM model is shared with our steel detailing partner and imported into Tekla Structures.
- Review of steel detailing is expedited using on-screen review available to the entire team (Owner, General Contractors or CM's, Sub-Contractors, Erector, Architect and Engineers).
- Eliminates multiple printings of the 2D drawings for review. Usually only printed for submission for Permit, and final record drawings.
- Connection design for both erection transfer forces and final forces performed by both CWE and detailing partner.
- Erection sheets (E-Sheets) and detail sheets produced by detailing partner are stamped by EOR (CWE), and submitted for permitting.
- Steel detailing services can also include material lists, material tracking, CNC coding, fabrication shop and jobsite observations, and steel brokerage

Conventional Delivery:



Collaborative Delivery:



Unique Team Capabilities



Industrial Systems Engineering

Facilities Planning & Layout
Work Cell / Station Design
Automation

Warehouse Optimization

- Racking Design and Layout
- Floor Space Maximization
- Logistics
- Inventory Planning and Capacity Studies

Operations Research & Simulation Modeling
Process Design and Optimization

Preventative Maintenance

Ergonomics & Safety
Time Studies / Methods Analysis

Value Added Engineering
Cost / Benefit Analysis
Continuous Improvement

- Cost and Cash Flow Improvements
- Error Proofing (Poke Yoke)
- Just-In-Time Inventory Systems (JIT)
- Lean Construction & Design
- Material Flow Analysis
- Process Improvement
- Model Determination
- Pull Production System(Kanban)
- Single Minute Exchange of Dies
- Six Sigma Improvements



Unique Team Capabilities



Life Safety Code Analysis | Fire Protection



Life Safety Codes Analysis

Means of Egress

Fire Protection

- Protection Analysis
- Design Management
- Fire Science Human Behavior
- Explosion Protection and Prevention



Unique Team Capabilities



3D / Building & Process Modeling

Building Information Modeling

Software Platforms

- Revit
- CAD Works
- Navis Works

Construction Aids

- Spool Piece Drawings
- Bill of Materials

Benefits

- Coordination
- Clash Detection

Refinery Expansion

Bunge North America, Decatur, AL



I. C. Thomasson Associates, Inc.

