

DESIGN SYSTEMS, INC.

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MANUFACTURING ENGINEERING & CONSULTING



Aerospace / Defense



Automotive



Food / Beverage



Heavy Equipment



Parcel Handling



Mechanical / Conveyor Engineering

Concept Engineering

- System Layouts
 - High and Low Volume Facilities
- Capital Appropriation Layouts
 - Investment Analysis
- Phasing Layouts / Migration Planning
- Conveyor / Equipment Selection

Bid Package Engineering

- Conveyor Systems
- Process Equipment
- Equipment and Tool Installation
- Project Estimating
- Specialized Equipment Design

Detail Engineering

- End-of-Arm Tooling Assist Devices
- Carriers
- Shop Fabrication Engineering
- Bill of Materials
- FEA's
- 2D and 3D Software

Digital Design and Engineering

- 3D Laser Scanning
- Capture As-Built Conditions
- Develop 3D Layouts

Field Engineering

- Infrared Surveys
- Conveyor Equipment Health Survey
- Chain Pulls / Drive Design
- Conveyor and Equipment
- Cycle Time Analysis
- Structural Modifications (Steel / Concrete)
- Punch List Development and Tracking
- As-Built Drawings / Reverse Engineering

Material Handling Systems

- Conveyors – Overhead and Floor
- Air-Bi-Dip / Pendulum
- Skid and Pallet Systems
- Skillet Systems
- Transfers
- Bridges and Hoists
- Automatic Storage and Retrieval Systems (AS/RS)
- AGV's
- Automated Monorail System (AMS)
- Baggage Systems

Structural Engineering

- PE Certified
- Structural Analysis
- Structural Header Steel Design
- Structural Carrier Design Analysis
- Conveyor Support Steel Design
- Truss Kip Load Evaluations
- Structural Inspection

Mechanical / Conveyor Engineering

Supply Chain Solutions



Lean Operations

- Distribution Design
- Warehouse Layout
- Inbound / Outbound Network Design
- Supplier Performance and Improvement
- Material Flow Analysis

Supply Chain Strategy Development

- Competitive Design Aligned to Business Goals
- Sustainability Improvement
- Measuring Performance

Distribution, Warehousing and Logistics

- Contingency Planning
- Multi-Threaded Inventory Optimization

Network Capacity Planning

- Network Configuration
- Transportation Design
- Sales and Operations Planning

Military / Defense Support

- Benchmarking Best Practices
- Lean Quality Assurance
- Integrated Logistics Support
- Supply Chain Consultation

Supply Chain Event Management

- Monitoring
- Measuring
- Notification
- Control
- Simulation
- Staffing

Supply Chain Solutions

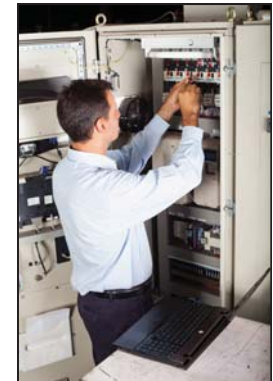
Electrical / Controls Engineering

Design Engineering and Start-Up

- Control System Architecture Design
- Control System Concept Development
- Information Systems Networking
- Power Distribution and Load Planning
- PLC Hardware and Software Design
- Emulation (Pre-Installation Verification of PLC Software)
- Electrical Schematic Design and CAD
- PLC Programming
- Pneumatic and Hydraulic System Design
- Vendor Shop Testing
- Production Support and Training
- Error Proofing Systems
- Plant Monitoring Systems Integration
- On-Site Control System Debug and Testing
- On-Site Installation Coordination
- Drawing Review

Bid Package Engineering

- Conveyor Design
- Equipment Design
- Factory Information Systems
- Quality Alert System



Facilities Support Services

- Facility Networking and Data Acquisition
- Andon / Quality Alert System
- Power Distribution Studies
- Load Planning
- Control Room Design
- Building Lighting
- Weld Water Systems
- Energy Management
- Arc Flash Training
- Contract Monitoring
- Punch List Development / Tracking
- Panel Modeling
- Thermal Imaging

Advanced Engineering Services

- Man-Machine Interface (MMI) Design
- Factory Information Systems
- Facility Optimization
- RFID System Design
- Vehicle Routing / Tracking Systems

Electrical / Controls Engineering

ENGINEERING SERVICES

Manufacturing / Industrial Engineering

Industrial Engineering Services

- Facility Launch Readiness
- Master Planning Process
- Labor Studies
- Process Development
- Improve Manufacturing Process
- Downtime Analysis
- Material Flow Planning and Analysis
- Plan For Every Part (PFEP)
- Operational Assessments
- Work Cell and Station Layouts
- Value Stream Analysis
- 5S Station Organization
- Process Mapping
- World Class Manufacturing Analysis (WCM)
- Failure Mode and Effects Analysis (FMEA)
- Error Proofing
- Six Sigma
- Standardized Work
- Certified MOST, MODAPTS, Proplanner

Warehousing / Distribution

- Racks
- Lift Trucks
- Stretch Wrappers
- Unitizing
- Sortation
- Scales

Process Driven Operation Planning

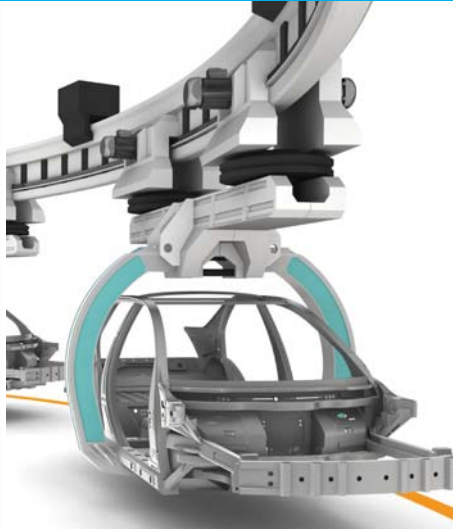
- Visual Station Integration and Launch Readiness
 - Hierarchical
 - Multi-Dimensional
 - Flexible
- Design Fixtures for Hand and Power Tools
- Station Layout with Parts and Production Aids
- Design Material Racks and Configurations
- Develop Plan for Indirect Materials and Supplies

Product / Process Design

- Develop Process Documentation
- Process Tools and Equipment
 - Work Elements
 - Time Standards
 - Product Complexity
 - Subassembly Operation
- Define Material Usage
- Complexity of Product Build

Ergonomic Engineering

- Risk Factor Assessment
- Musculoskeletal Stress Survey
- Injury / Illness Survey
- Redesign of Work Cells



Containerization

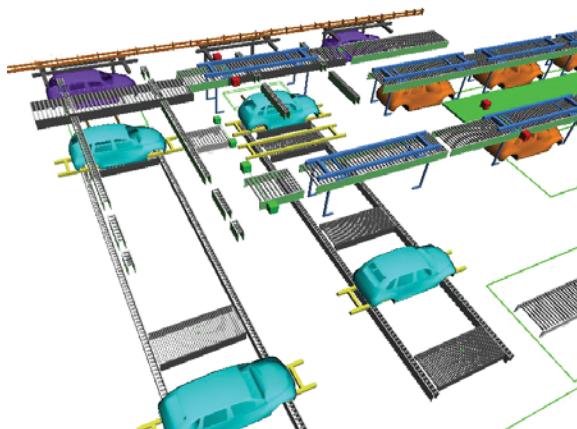
- Container Logistics
- Develop Container Requirements
- Define Type and Quantity

Torque Validation Surveys

- Torque Testing Prior to Launch
- Repeatability Testing
- Dynamic Torque Measuring

Simulation Engineering

- Design Throughput Validation
- Visual Animation of Concept
- System Sensitivity Analysis
- Carrier / Skid / Vehicle Analysis
- Model Mix Experimentation
- Material Flow / Logistics Analysis
- Manpower Determination
- Conveyor Control Validation
- Material Handling Design Analysis
- Equipment Uptime Analysis
- Simulation Software
 - AutoMod
 - Witness
 - Simul8
- Client Model Training



Manufacturing / Industrial Engineering

Process / Paint Engineering

Process Engineering

- Conceptual Layout Development
- Coordination with Architect
- Coordination with Authorities
- Define Preferred Processes
 - Equipment / Materials
- Evaluate Projected Life Span of Equipment
- Complete Design / Engineering
 - Paint Shop
 - Utility Systems
 - Environmental Systems
- Waste Handling Systems
- Pre-Treatment Systems
- Waste Consolidation / Reduction
- Post-Treatment for Recycling
- Sustainable Engineering
- Energy Management
- Environmental Compliance
- Environmental Systems
- HVAC Design and Coordination
- Asbestos Abatement



Paint Shop Services

- Overall Paint Shop Development
- Bid Package Development
 - Pre-Treatment
 - Spray Booths
 - Ovens
 - Paint Circulation
 - VOC Abatement
 - Sludge Management
 - Ancillary Equipment
- Engineering Calculations
- Performance Specifications
- Material Usage Analysis
- Utilities Analysis
- Waste Generation Analysis
 - VOC / Particulate Emissions
 - Paint / Industrial Waste Sludge
 - Environmental Engineering

Process / Paint Engineering

CONCEPT THROUGH COMMISSION

Program Management Services

Phase I – Preliminary Engineering / Planning

- Gather / Organize Product, Process and Production Assumptions
- Define Project Implementation Plan
- Develop Conceptual Facilities Layouts
 - Develop Conveyance Methodology
 - Develop Macro Scroll
 - Develop Process Footprint
 - Develop Conveyor Path Layout
 - Develop Material Handling Requirements
 - Perform Material Flow Analysis
 - Perform Throughput Analysis
- Develop Utility Loading Studies
- Develop Program Cost Roll-Ups
- Develop Macro Level Project Timing Schedule
- Master Layout Development / Coordination

Phase II – Design / Detail Engineering

- Project / Contract Management
- Initiate Project Control System
- Develop Detailed Level Project Timing Schedule
- Define Schedule Change procedure
- Perform Emulation Studies to Validate PLC Programs
- Skilled Trades and Production Operator Training
- Set-Up Procedures for Layout Control (FTP Site)
- Detailed Scroll and Layout Development
- 3D Carrier Development and Modeling
- Supplier Selection
- Develop Bid Package for Contractor Procurement
- Bid Review and Contract Award
- Prepare and Issue Facilities Requisitions
- Engineering Drawing Review and Approval

Phase III - Installation Coordination

- Site Logistics
- Resource Planning
- Site Safety Standardization
 - Tracking and Reporting System
 - Increase Safety Awareness
 - Safety Video Development and Implementation
- Initiate and Manage Site Safety Program
- Coordinate and Monitor Equipment Tear Down and Ship
- Coordinate, Chair and Document Contractor Progress Meetings
- Monitor Adherence to Specifications for Construction, Installation and Schedule
- Provide Cost Control – Bulletins and Field Order Procedures
- Manage Detailed Level Project Timing Schedule

- Provide Contractor Supervision
- Coordinate Conveyor and Equipment Construction Activities
- Develop, Coordinate and Approve Construction Contractor Punch Lists
- Assist Equipment Conveyor Debug Activities
- Assist / Document Equipment Validation
- Work Station Optimization for the Production Operator
- Coordinate / Manage System Acceptance Testing

Phase IV – Start-Up Commissioning

- Coordinate / Assist with Pilot Program
- Provide Post Launch Support
- Re-Scroll / Man Assignment Adjustments
- Document and Track Launch Issues
- Burst Build and Downtime Tracking
- Continuous Improvement
- Receive, Review and Approve As-Built Layouts
- Receive, Review and Approve Maintenance Manuals
- Coordinate Spare Parts Program
- Closeout Contracts
- Construction Site Decommissioning

Phase V - Project Close Out

- Coordinate Spare Parts Program
- Coordinate Training Program
- Receive, Review, Approve, and Distribute Final Documentation (As-Built Drawings, Spare Parts List, Preventive Maintenance and Repair Manuals)
- Document Lessons Learned
- De-Mobilization of Construction Site
- Close Out Open Contracts



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