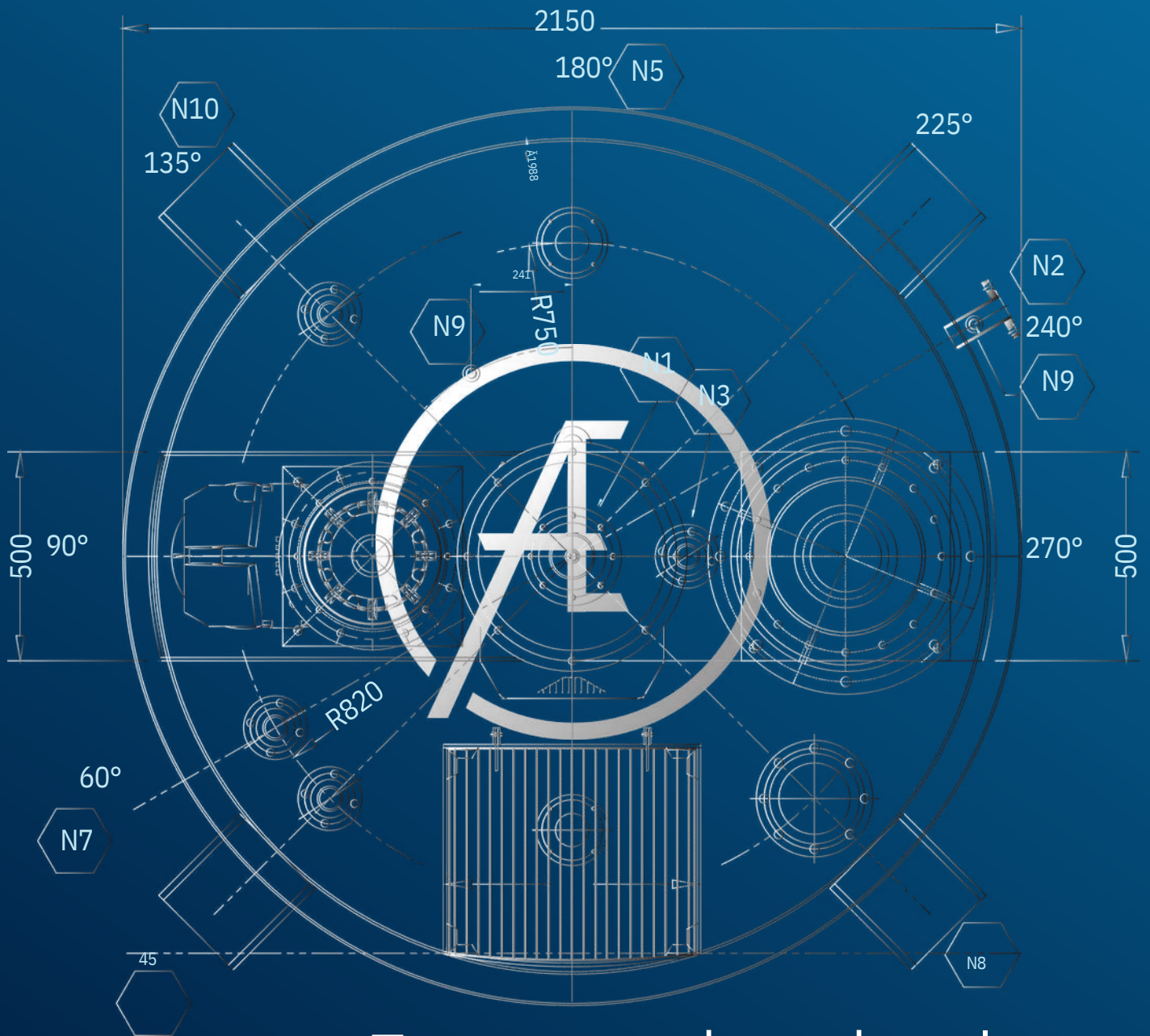




From Individual Machines to Turnkey Manufacturing Systems

A man's heart deviseth his way: but the Lord directeth his steps.

PROVERBS 16:09

ABIGAIL ENTERPRISES

Abigail Enterprises designs and manufactures high-performance process equipment and integrated manufacturing systems for industries where consistency, control, and reliability are critical. Founded in 1993, we combine deep process understanding with precision engineering to deliver solutions that meet global performance benchmarks while remaining practical and reliable in real production environments.

WHAT WE DO

- TURNKEY PROCESS PLANTS – CONCEPT TO COMMISSIONING
- DISPERSION, GRINDING, MIXING & KNEADING SYSTEMS
- STORAGE, REACTION & AGITATED VESSELS
- POWDER HANDLING & MATERIAL TRANSFER SYSTEMS
- AUTOMATION, CONTROL & PLANT INTEGRATION

WHY ABIGAIL ?

■ Collaborative Consultation & Optimization

We believe the perfect machine starts with a conversation. Our process begins with a series of in-depth consultations to understand your unique manufacturing goals, parameters, and site-specific constraints. We analyze your volumes, capacities, and utilities to recommend an optimized solution that integrates seamlessly into your existing systems.

■ Precision Design & Process Integration

Our designers and engineers utilize advanced planning tools to create a definitive Process Flow Diagram (PFD) and detailed site plans for your facility. Whether it is a single mixer or a complex automated line, we ensure every component fits your larger manufacturing ecosystem, paying close attention to spatial layouts and instrumentation.

■ "Zero Error" Fabrication Strategy

Quality is not an afterthought; it is built into every step. We maintain a strict "zero error from stage one" policy, where machines undergo rigorous testing during each phase of fabrication. From liquid handling systems to manufacturing platforms, we test components individually to ensure they operate at the highest efficiency before final assembly.

■ Comprehensive Turnkey Solutions

For clients requiring a total solution, we offer "A-Z" Turnkey services that cover the entire lifecycle of process design. Beyond just the core machinery, we identify and deliver critical ancillary solutions—including storage, transport, dosage systems, and automation—ensuring your operation runs smoothly from raw material to finished product.

■ Rigorous Commissioning & Monitoring

Our commitment extends well beyond installation. We conduct a series of onsite tests, including "Dry Tests" and "Wet Tests," to verify that the machine functions exactly as required. Following installation, we implement a multi-month monitoring and analysis model to fine-tune performance and ensure sustained operational excellence.

SINGLE SHAFT DISSOLVER

High-Speed Dispersion for Low to Medium Viscosity Products

OVERVIEW

Abigail Single Shaft Dissolvers are high-speed dispersers designed for efficient mixing and dispersion of low to medium viscosity products. Widely used for premixing and mill-base preparation, these machines generate strong vortex flow and high shear at the dispersion disc to rapidly wet, deagglomerate, and disperse solids into liquids.

Available in both floor-mounted and platform-mounted configurations, the system offers flexibility across laboratory, pilot, and large-scale production environments.

KEY PROCESS ADVANTAGE

High peripheral disc speeds combined with controlled vertical movement ensure rapid dispersion, consistent particle wetting, and efficient energy transfer—ideal for mill-base preparation and low-to-medium viscosity formulations.



BLADE DESIGN

TYPICAL APPLICATIONS

- Paints and coatings
- Printing inks
- Pigment and filler dispersions
- Adhesives and sealants (low–medium viscosity)
- Construction chemical premixes

DESIGN & CONSTRUCTION

BATCH CAPACITY: 50 – 1,500 L (floor-mounted) | max 10,000 L (platform-mounted)
DRIVE SYSTEMS: High-speed motor with VFD control | Motor power max 75 HP (floor-mounted) | Motor power up to 335 HP (platform-mounted)
MIXING SYSTEM: Single high-speed disperser shaft with dispersion disc
LIFTING MECHANISM: Hydraulic lift for impeller height adjustment during operation
MATERIALS OF CONSTRUCTION: All wetted parts in SS-304



TWIN SHAFT DISSOLVER

High-Performance Mixing for Medium to High Viscosity Materials

OVERVIEW

Abigail Twin Shaft Dissolvers, also known as Coaxial Mixers, are designed for efficient dispersion and mixing of medium to high viscosity materials. The system combines a high-speed disperser shaft with a slow-speed anchor scraper arranged coaxially within a fixed vessel. This configuration ensures continuous movement of material from the vessel walls into the high-shear dispersion zone, resulting in faster dispersion, improved temperature control, and uniform batch quality.

KEY PROCESS ADVANTAGE

The coaxial action of disperser and anchor scraper eliminates stagnant boundary layers, enabling consistent dispersion even in highly viscous formulations and reducing overall batch cycle time.



BLADE DESIGN

TYPICAL APPLICATIONS

- High-viscosity paints and coatings
- Adhesives and sealants
- Construction chemicals
- Pigment concentrates and mill bases
- Specialty chemical formulations

DESIGN & CONSTRUCTION

BATCH CAPACITY: 100 – 10,000 L

MIXING SYSTEM: High-speed disperser shaft | Low-speed anchor scraper (coaxial arrangement)

DRIVE SYSTEMS: Motors from 10 HP to 335 HP | Independent drives with VFD control

TANK CONFIGURATION: Fixed vessel, platform or leg-mounted

MATERIAL OF CONSTRUCTION: Stainless steel construction with optional jacketing



TRI SHAFT DISSOLVER

Triple-Agitator Systems for Very High Viscosity & Ultra-Fast Dispersion

OVERVIEW

Abigail Tri Shaft Mixers are heavy-duty, multifunctional mixing systems designed for processing medium to extremely high viscosity products with demanding dispersion requirements. The mixer integrates three independent agitators within a single vessel, delivering exceptional mixing efficiency, rapid dispersion, and superior batch consistency.

This configuration is ideal for applications where single or twin-shaft systems reach their performance limits.

CONFIGURATION TYPES

TYPE A: High-speed dissolver shaft, Helical / screw conveyor blade, Anchor scraper

TYPE B: Dual off-centre high-speed dissolver shafts, Central anchor scraper



TYPE B - BLADE DESIGN

TYPE A



TYPICAL APPLICATIONS

- High-viscosity paints and coatings
- Adhesives, sealants, and mastics
- Construction chemicals
- Polymer & specialty chemical compounds
- High-solids and filled formulations

DESIGN & CONSTRUCTION

BATCH CAPACITY: Up to 15,000 L

MIXING SYSTEM: Triple-shaft configuration (dissolver + anchor + helix / dual dissolvers)

DRIVE SYSTEM: Dissolver motors max 375 HP | Independent drives for anchor & helical shafts

TANK CONFIGURATION : Fixed vessel on platform

DISPENSER ORIENTATION : 0° or 5° shaft tilt options

HORIZONTAL MILL

Continuous Fine Grinding for Production-Scale Dispersion

OVERVIEW

Abigail Horizontal Mills are production-grade grinding systems engineered for consistent dispersion and fine grinding of pigments and fillers in solvent- and water-based formulations. Using a high-energy, media-filled horizontal chamber, the mill delivers uniform shear and controlled energy input to achieve reproducible particle size reduction, including sub-micron ranges.

These mills are designed for continuous or recirculation operation where throughput, reliability, and ease of maintenance are critical.

KEY PROCESS ADVANTAGE

High energy density within a temperature-controlled horizontal chamber ensures efficient deagglomeration, narrow particle size distribution, and stable product quality at industrial production rates.



BLADE DESIGN

TYPICAL APPLICATIONS

- Paints and coatings
- Printing inks and colorants
- Pigments and dispersions
- Agrochemicals and specialty slurries

DESIGN & CONSTRUCTION

MODEL RANGE: ABG-HBM Series (Lab to production models)

CHAMBER VOLUME: 5 L – 100 L (custom sizes available)

MATERIALS OF CONSTRUCTION : SS-304 / SS-316 with alloy steel or ceramic wear zones

GRINDING MEDIA SIZE : 0.5 mm – 3.0 mm (steel, zirconia, ceramics)

GRINDING SYSTEM: Horizontal chamber with media separation

ROTOR TYPE: Disc type



BASKET MILL

High-Energy Grinding & Dispersion in a Single Vessel

OVERVIEW

The Abigail Basket Mill is a high-performance wet grinding and dispersion system that combines premixing and milling in a single vessel. A submersible perforated basket filled with grinding media delivers rapid particle size reduction, high color strength, and uniform dispersion within short batch cycles.

Basket mills are ideally suited for flexible production environments requiring fine grinding, frequent color changes, compact layouts, and consistent dispersion quality.

KEY PROCESS ADVANTAGE

Integrated grinding and dispersion eliminate the need for separate premixing and milling stages, reducing batch time, energy consumption, and product handling losses while ensuring uniform and repeatable results.



BLADE DESIGN

TYPICAL APPLICATIONS

- Decorative and industrial paints
- Printing inks (offset, flexo, gravure)
- Pigment concentrates and dispersions
- Adhesives, sealants, and construction chemicals

DESIGN & CONSTRUCTION

BATCH CAPACITY: 1L–1,000 L

DRIVE SYSTEMS: High-speed motor with VFD control

GRINDING SYSTEM: Submersible perforated basket with ceramic grinding media

TEMPERATURE CONTROL: Optional cooling jacket with temperature sensors

BASKET DESIGN: Replaceable wear-resistant screen for easy maintenance

MATERIALS OF CONSTRUCTION: All wetted parts in SS-304



RIBBON BLENDER HORIZONTAL TYPE

Uniform & Gentle Mixing for Powders and Dry Blends

OVERVIEW

Abigail Horizontal Ribbon Blenders are designed for uniform, gentle mixing of powders, granules, and dry blends. The U-shaped trough and double-helical ribbon agitator create a balanced convective flow, ensuring consistent blending without product degradation.

The outer ribbon moves material inward while the inner ribbon moves it outward, achieving thorough mixing with low energy input.

KEY PROCESS ADVANTAGE

Gentle counter-current ribbon motion delivers high homogeneity while preserving fragile ingredients and minimizing attrition.



TYPICAL APPLICATIONS

- Pharmaceutical and nutraceutical powders
- Food ingredients and seasoning blends
- Cosmetic powders
- Pigments, additives, and specialty chemicals
- Detergents and construction chemicals

DESIGN & CONSTRUCTION

BATCH CAPACITY: Custom-built as per application

MIXING SYSTEM: Double helical ribbon agitator in U-shaped trough

DRIVE SYSTEM: 10 HP to 100 HP Heavy-duty motor with gearbox and optional VFD

CONSTRUCTION: MS, SS-304, or SS-316

FINISH: Smooth internal finish for hygienic applications



BLADE DESIGN

PLOUGH SHEAR MIXER

High-Intensity Mixing for Powders, Pastes & Slurries

OVERVIEW

The Abigail Plough Shear Mixer is a high-intensity horizontal mixer designed for rapid, uniform mixing of powders, granules, semi-wet materials, and pastes. A central shaft fitted with plough-shaped mixing elements creates a mechanically fluidized bed, suspending material momentarily and ensuring complete three-dimensional mixing.

Optional high-speed choppers provide localized shear to break agglomerates, making the system suitable for demanding formulations that require both mixing and de-lumping.

KEY PROCESS ADVANTAGE

Mechanical fluidization combined with controlled shear ensures fast cycle times, excellent homogeneity, and flexibility to handle dry powders, wet masses, and powder-liquid blends within the same mixer.



BLADE DESIGN

TYPICAL APPLICATIONS

- Pigments, fillers, minerals, detergents
- Construction chemicals and dry mortars
- Adhesives, putty, sealants, dough, slurries
- Agrochemicals, food coatings, flavour
- blends Ceramics and specialty powders

DESIGN & CONSTRUCTION

BATCH CAPACITY: 100 L – 10,000 L

DRIVE OPTIONS: Horizontal cylindrical vessel with plough-shaped agitators

DRIVE SYSTEM: 25 HP to 150 HP Heavy-duty motor with high-torque gearbox and VFD

CHOPPERS: Optional side-mounted high-speed cutters

SEALING: Mechanical or air-purged shaft seals

MATERIALS OF CONSTRUCTION: MS, SS-304, SS-316



BUTTERFLY MIXER HIGH SHEAR MIXER

High-Torque Mixing for Ultra-High Viscosity & Thixotropic Products

OVERVIEW

The Abigail Butterfly Mixer is a high-torque, high-shear mixing system designed for processing ultra-high viscosity and thixotropic materials. The mixer combines a slow-speed butterfly blade with a high-speed disperser shaft, delivering intensive bulk movement along with localized shear for efficient dispersion.

This configuration is especially suited for products that demand strong wall wiping, controlled shear, and consistent batch quality.

KEY PROCESS ADVANTAGE

The combination of butterfly blade action with high-speed dispersion ensures continuous movement of material from the vessel walls into the shear zone, enabling efficient processing of highly viscous and non-Newtonian products.



BLADE DESIGN

TYPICAL APPLICATIONS

- Printing inks
- Body fillers and putty
- Pastes and mastics
- Construction chemicals
- High-viscosity adhesive formulations

DESIGN & CONSTRUCTION

BATCH CAPACITY: 100 – 1,500 litres

MIXING SYSTEM: Butterfly blade with PTFE (Teflon) scrapers | High-speed disperser shaft

DRIVE SYSTEMS: Butterfly shaft: 20 HP – 200 HP | Disperser shaft: 10 HP – 50 HP

INSTALLATION: Floor-mounted with movable mixing containers

LIFTING MECHANISM: Hydraulic lift for impeller height adjustment during operation

MATERIAL OF CONSTRUCTION: SS-304 / SS-316 wetted parts



PLANETARY MIXER

High-Torque Planetary Mixing for Viscous & Thixotropic Materials

OVERVIEW

The Abigail Planetary Mixer is a high-torque mixer featuring twin mixing impellers operating in a planetary motion. This configuration ensures complete coverage of the mixing vessel, providing uniform mixing and strong shear suitable for high-viscosity and thixotropic products. Planetary mixers are ideal for applications requiring thorough mixing, controlled shear, and excellent repeatability.

KEY PROCESS ADVANTAGE

Planetary motion ensures continuous material transfer across the entire vessel volume, eliminating dead zones and delivering consistent mixing even at very high viscosities.



BLADE DESIGN

TYPICAL APPLICATIONS

- Printing inks
- Body fillers and putty
- Pastes and mastics
- Construction chemicals
- Specialty chemical formulations

DESIGN & CONSTRUCTION

BATCH CAPACITY: 100 – 3000 L

MIXING SYSTEM: Twin planetary mixing impellers

DRIVE SYSTEM: : 20 HP – 200 HP motor with high-torque gearbox

INSTALLATION: Floor-mounted with movable mixing containers

LIFTING MECHANISM : Hydraulic lift for impeller height adjustment

MATERIAL OF CONSTRUCTION: SS-304 / SS-316 wetted parts

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PUG/PADDLE/QUARTZ MIXER

High-Torque Mixers for Viscous, Thixotropic & Paste-Type Products

OVERVIEW

Engineered by Abigail Enterprises, the Paddle / Pug / Quartz Mixer Series is designed for intensive, high-torque mixing of viscous, thixotropic, and paste-type materials. The mixer employs specially designed paddles operating in a horizontal trough to deliver uniform blending, rapid mixing cycles, and consistent batch quality even with demanding formulations. Available in Single-Trough (Single-Shaft) and Double-Trough (Twin-Shaft) configurations, these mixers are well suited for continuous industrial operation with high reliability and ease of maintenance.

KEY PROCESS ADVANTAGE

Optimized paddle geometry ensures complete wall wiping and strong axial movement of material, eliminating dead zones and delivering homogeneous mixing with reduced cycle time and controlled power consumption.



TYPICAL APPLICATIONS

- Acrylic putty and wall putty
- Construction chemicals and tile adhesives
- Mastics, distempers, and sealants
- Adhesives and paste-type coatings



BLADE DESIGN

DESIGN & CONSTRUCTION

BATCH CAPACITY: 100 kg – 15,000 kg

DRIVE OPTIONS: Direct drive or VFD-controlled variable speed

DRIVE SYSTEM: 10 HP – 250 HP motors with high-torque industrial gearbox

CONSTRUCTION: MS structure with SS contact parts / Full SS-304 / SS-316 construction

MAINTENANCE: User-serviceable paddles & easy-access panels for cleaning and service

SIGMA KNEADER DOUBLE-ARM Z-BLADE

Heavy-Duty Kneading & Compounding for Extreme Viscosity Materials

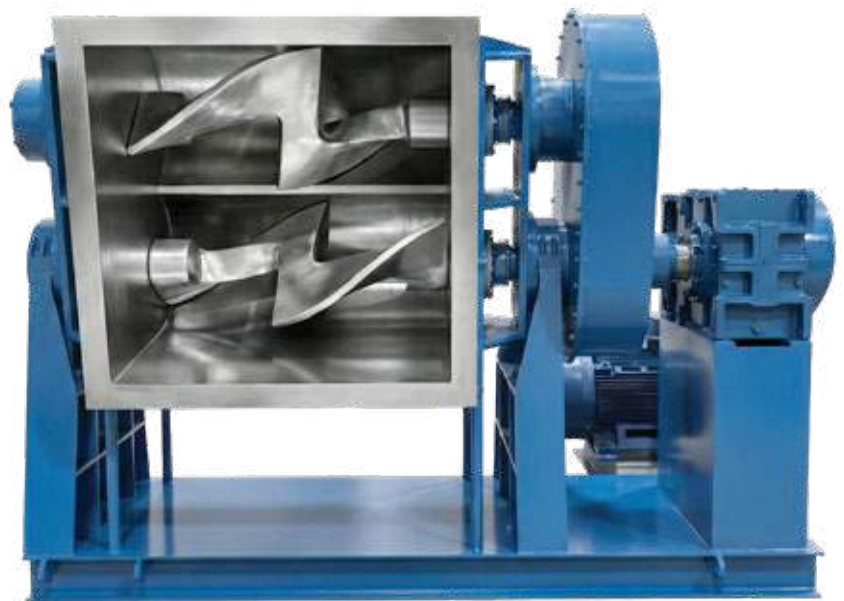
OVERVIEW

Abigail Sigma Kneader Mixers are built for applications where viscosity, stickiness, and plasticity exceed the limits of conventional mixers. Two counter-rotating sigma (Z-shaped) blades operate inside a W-shaped trough, generating intense shear, compression, and folding action to knead materials into a uniform mass.

These mixers are ideal for ultra-high-viscosity and non-flowing products requiring controlled energy input and repeatable batch performance.

KEY PROCESS ADVANTAGE

Differential blade speeds create a continuous self-wiping action, forcing material from the trough walls into the high-shear mixing zone. This ensures maximum energy transfer, minimal dead zones, and effective processing of materials beyond the capability of ribbon or planetary mixers.



TYPICAL APPLICATIONS

- Sealants, mastics, and adhesive compounds
- Epoxy putties and silicone rubber
- Hot-melt and pressure-sensitive adhesives
- Chewing gum, dough-based and food pastes
- Pigment pastes, ceramic and metal compounds



BLADE DESIGN

DESIGN & CONSTRUCTION

BATCH CAPACITY: 50 kg – 2,500 kg

MIXING SYSTEM: Twin sigma (Z-blade) arms in W-shaped trough

DRIVE SYSTEM: 25 HP – 250 HP motors with high-torque industrial gearbox

DISCHARGE OPTIONS: Tilting bowl (manual/electric/hydraulic) or Bottom discharge valve

MATERIAL OF CONSTRUCTION: SS-304 / SS-316

REACTORS

Complete Solutions for Solvent & Water-Based Polymer Production

OVERVIEW

Abigail Enterprises designs and supplies complete resin manufacturing systems—from individual reactors to fully automated turnkey resin plants. These systems are engineered for precise control, consistent product quality, and scalable production across solvent-based and water-based polymer technologies.

WATER-BASED RESIN SYSTEMS

APPLICATIONS

Acrylic emulsions, PU dispersions, hybrid polymers

DESIGN FEATURES

- SS-304 / SS-316 reactors
- Anchor, turbine, or dual agitator systems
- Pre-emulsion and high-shear mixers
- Inline dosing, neutralization, and filtration

SOLVENT-BASED RESIN SYSTEMS

APPLICATIONS

Alkyd, Acrylic, Epoxy, Polyester Resins

DESIGN FEATURES

- Jacketed or limpet coil reactors
- Condensers, columns, and heat exchangers
- Vacuum dehydration and solvent recovery
- Product filtration and transfer systems

KEY PROCESS ADVANTAGE

Integrated design of reactors, heat transfer systems, material handling, and automation ensures repeatable polymerization, efficient energy usage, and seamless scale-up from pilot to production.

FABRICATION & CUSTOM ENGINEERING

- Reactors with internal or external limpet coils
- Multiple agitator designs (anchor, turbine, paddle, helical)
- Integrated weighing and dosing systems
- Solid and liquid handling modules
- Product filtration and heat exchanger systems



SLOW-SPEED MIXER

Gentle Mixing, Homogenisation & Let-Down Applications

OVERVIEW

Abigail Slow-Speed Mixers are designed for gentle mixing, homogenisation, and let-down operations in liquid and low-viscosity formulations. These mixers are commonly used as let-down tanks, blending tanks, or homogenisation vessels where controlled agitation is required without excessive shear.

KEY PROCESS ADVANTAGE

Low-speed agitation with optimized impeller selection ensures uniform mixing, minimal air entrainment, and stable product properties.



BLADE DESIGN

TYPICAL APPLICATIONS

- Let-down tanks for paints and coatings
- Thinners and hardeners
- Liquid resins and additives
- Homogenisation and storage mixing

DESIGN & CONSTRUCTION

BATCH CAPACITY: 100 – 25,000 L

MIXING ELEMENTS: Pitch-blade turbines | Flat or curved blade turbines | Anchor agitators
Custom impeller designs as required

DRIVE SYSTEM: 1 HP – 100 HP motor with high-performance gearbox

INSTALLATION: Platform-mounted or standalone design

MATERIALS OF CONSTRUCTION: MS, SS-304, SS-316

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STORAGE TANKS & SILOS

For Resins | Polymers | Oils | Solvents | Powders

OVERVIEW

Abigail Storage Tanks and Silos are designed for safe, reliable storage of liquids and powders across chemical, polymer, and construction-chemical industries. Built for long service life, these systems support integration with automated process lines, weighing systems, and plant-wide control architectures.

Both above-ground and underground configurations are offered to suit plant layout and regulatory requirements.

KEY PROCESS ADVANTAGE

Modular tank construction and flexible instrumentation options allow seamless integration into manual, semi-automatic, or fully automated process plants while ensuring safety, accuracy, and compliance.



TYPICAL APPLICATIONS

- Resin and polymer manufacturing lines
- Oil, Solvent storage and day tanks
- Emulsion and dispersion storage
- Powder silos with pneumatic conveying
- Underground storage for hazardous liquids



DESIGN & CONSTRUCTION

BATCH CAPACITY: 1,000 L – 100,000 L

CONFIGURATION: Vertical or horizontal cylindrical tanks | Flat, conical, or dish bottom
| Above-ground or underground installation

MATERIALS OF CONSTRUCTION:

DISCHARGE OPTIONS: Mild Steel | SS 304 / 316 | Special alloy options

PROTECTION: Internal and external anti-corrosion coatings

POWDER TRANSFER SYSTEMS

Precision. Cleanliness. Control.

OVERVIEW

Modern powder processing leaves zero room for leaks, dust, or guesswork. Abigail's Powder Handling Systems deliver controlled, dust-free conveying, dosing, and batching of powders, granules, and flakes—from raw material intake to final mixing or packaging.

Designed to handle everything from ultra-fine pigments and abrasive fillers to fragile and hygroscopic powders, our systems preserve product integrity, reduce losses, and integrate seamlessly into automated production lines.

SYSTEM OPTIONS



LEAN PHASE PNEUMATIC CONVEYING (PRESSURE / VACUUM)

Designed for free-flowing powders and granules conveyed in a fully suspended state.

- Suitable for short to medium distances and multiple discharge points
- Compact layout with easy integration into mixers, blenders, and reactors
- Available in pressure or vacuum configurations



DENSE PHASE PNEUMATIC CONVEYING

Engineered for fine, cohesive, abrasive, or fragile materials conveyed at low velocity.

- Gentle handling with minimal attrition and segregation
- Ideal for TiO₂, silica, carbon black, and mineral fillers
- Energy-efficient long-distance conveying with reduced wear



VACUUM TRANSFER SYSTEMS

Clean, contained transfer directly from bags, bulk containers, or drums.

- Dust-free operation with inward air flow for maximum containment
- Modular construction for quick dismantling and cleaning
- Ideal for fine powders and high-value materials



MECHANICAL CONVEYING SOLUTIONS

Robust alternatives where pneumatic conveying is not optimal.

- Flexible screw conveyors for short, adaptable transfers
- Aero-mechanical conveyors for gentle, high-rate movement
- Bucket elevators for vertical or high-throughput applications

TYPICAL APPLICATIONS

- Resin and polymer manufacturing lines
- Oil, Solvent storage and day tanks
- Emulsion and dispersion storage
- Powder silos with pneumatic conveying
- Underground storage for hazardous liquids

DESIGN & CONSTRUCTION

- Bag unloading and bulk bag discharge stations
- Screw feeders, weighing and batching hoppers
- Integrated dust collection and filtration
- Wear-resistant bends, liners, and elbows for abrasive service

ENGINEERING DESIGN & TECHNICAL SERVICES

From Concept to Commissioning

OVERVIEW

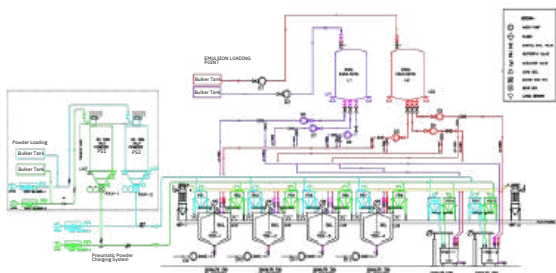
At Abigail Enterprises, engineering is the backbone of every successful project. Our multidisciplinary engineering services span the complete lifecycle of industrial plants—translating process requirements into efficient, safe, and scalable systems that perform reliably in real operating conditions.

Our approach combines technical precision with practical execution, ensuring seamless integration across process, mechanical, piping, electrical, and control disciplines.

COMPREHENSIVE ENGINEERING SUPPORT

Integrated design. Practical execution

We deliver coordinated engineering solutions that eliminate silos between disciplines, reduce rework, and ensure smooth project execution from concept to commissioning.



PROCESS ENGINEERING

- Process Flow Diagrams (PFDs) and P&IDs
- Equipment sizing, process optimization, and debottlenecking
- Mass balance, heat balance, and safety analysis
- New plant design and revamp of existing systems

MECHANICAL & LAYOUT ENGINEERING

- Process and utility piping design
- Flow, pressure drop, and velocity calculations
- Material selection, stress analysis, and support detailing
- Thermal systems and utility integration

ENGINEERING DESIGN & TECHNICAL SERVICES



PIPING & UTILITIES ENGINEERING

- Process Flow Diagrams (PFDs) and P&IDs
- Equipment sizing, process optimization, and debottlenecking
- Mass balance, heat balance, and safety analysis
- New plant design and revamp of existing systems



ELECTRICAL & CONTROL ENGINEERING

- Load lists and power distribution design
- Control panels, MCCs, and electrical layouts
- Instrumentation layouts and wiring diagrams
- PLC, HMI, and SCADA system engineering

ENGINEERING THAT WORKS

Abigail combines engineering rigor with manufacturing insight to deliver solutions that perform not just on paper, but on the production floor. Our focus is simple: engineering that is practical, reliable, and built for long-term success.

AUTOMATION & CONTROL SYSTEMS

Intelligent Process Control for Consistent Manufacturing

OVERVIEW

At Abigail Enterprises, automation is not an add-on—it is core to process performance, quality consistency, and operational efficiency. Our Automation & Control Systems convert manual and semi-automatic operations into intelligent, data-driven production environments with real-time visibility and precise control.

From raw material handling and batching to mixing, dispersion, filling, and packaging, we deliver fully integrated automation solutions that help plants operate smarter, faster, and more reliably.



KEY ADVANTAGE

Process-driven automation logic ensures repeatability, traceability, and adaptive control across varying formulations, batch sizes, and production demands.

SYSTEM ARCHITECTURE

- Modular PLC-based control systems with scalable I/O
- HMI and SCADA platforms for centralized monitoring and control
- Compatibility with Siemens, Allen-Bradley, Mitsubishi, Schneider Electric etc.

BENEFITS

- Consistent product quality and repeatability
- Reduced operator dependency and downtime
- Full batch traceability and audit readiness
- Faster troubleshooting and predictive maintenance
- Scalable architecture for future expansion

CORE CAPABILITIES

- Recipe management and batch control
- PID loop design and tuning for temperature, speed, pressure, and flow
- Data logging, trending, and performance analysis
- Alarm management, safety interlocks, and fault diagnostics
- Remote monitoring and supervisory control

AUTOMATION SCOPE

- Powder handling, material transfer, weighing, and batching
- Mixing, dispersion, milling, and processing systems
- Filling, packing, utilities, and auxiliary equipment
- Plant-wide monitoring and integration

LABORATORY & PILOT PLANT MACHINES

Scalable Process Validation from Lab to Production

OVERVIEW

Abigail Enterprises' **Laboratory & Pilot Plant Machines** are engineered to bridge the critical gap between R&D and full-scale manufacturing. Designed for formulation development, dispersion trials, process optimization, and scale-up validation, these systems deliver production-representative results in compact, flexible laboratory formats.

EQUIPMENT RANGE

- Horizontal Bead Mills: 0.3 & 1.4 L
- Basket Mills: 0.5 to 2 L
- Vertical Bead Mills: 1 to 10 L
- Lab Ribbon Blenders: 2 to 10 kg
- Lab Dissolvers: 1 to 10 L
- Pug Mills and Sigma Kneaders (laboratory and pilot configurations)

CUSTOM & SPECIAL CONFIGURATIONS

- Multiple shaft and agitator options
- Heating / cooling jackets
- Vacuum and inert gas operation
- Batch and continuous lab setups

DESIGN & CONSTRUCTION

- Robust, vibration-free frames for stable operation
- Precision-machined wetted parts
- Variable speed drives for accurate shear control
- Easy dismantling for cleaning and product changeover
- Materials of construction in MS, SS-304, SS-316

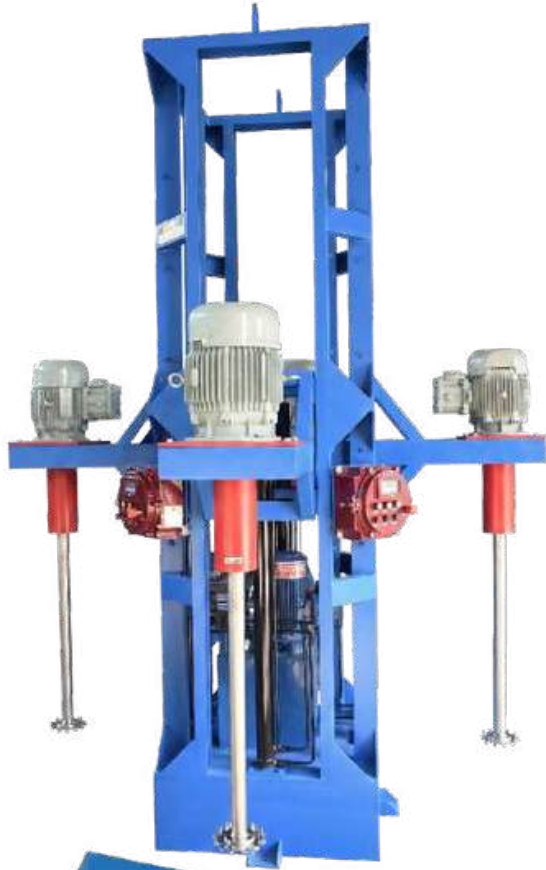
APPLICATIONS

- Paints, coatings, inks, and pigments
- Construction chemicals and adhesives
- Polymers, resins, and specialty chemicals
- R&D labs, pilot plants, and process development centers



MISC. MACHINES

MULTI-SHAFT MIXING STATION



BAILOUT PRESS



ATTRITOR

BAG FILTER





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Customized solutions can be offered to suit specific application requirements.

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