

HIGH-SPEED CONTINUOUS MIXERS

The Next Generation of Continuous Mixing

Engineered for throughput, blending uniformity, liquid incorporation, and thermal conditioning.

QuantumX ELEIT Series high-speed continuous paddle mixers deliver fast, uniform, and continuous mixing of powders, granules, moist solids, fibers, sludges, and conditioned materials. Advanced paddle design, precise retention control, and optional heating, cooling, liquid addition, and retention control ensure consistent process performance and product quality.



CONTINUOUS THROUGHPUT

Steady-state operation for consistent flow and maximum productivity.



FAST UNIFORM MIXING

High-speed paddle action delivers uniformity in seconds, not minutes.



LIQUID ADDITION & COATING

Precise liquid injection for wetting, granulation, or coating with confidence.



THERMAL CONDITIONING

Heat or cool materials with jacketed design for process flexibility.



BUILT FOR RELIABILITY

Rugged construction, engineered for continuous industrial performance.

WHY CONTINUOUS PADDLE MIXING?

- » **Consistent Throughput** Maintain steady-state flow with precise control.
- » **Compact Process Footprint** High capacity in a small, efficient footprint.
- » **Controllable Residence Time** Retention and discharge control for process confidence.
- » **Adaptable Process Geometry** Flexible configurations for diverse applications.
- » **Scalable Industrial Performance** Built for demanding, continuous-duty environments.



ENGINEERED DIFFERENT. PERFORMS BETTER.

Specify the mixing action, not just the capacity.

QuantumX ELEIT Series mixers are built around the variables that truly drive performance—delivering uniformity, throughput, and reliability at scale.

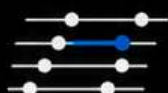


THE ENGINEERING VARIABLES THAT DRIVE PERFORMANCE



PADDLE ANGLE

Optimized paddle angle controls material fluidization, conveying, and axial flow to achieve the right balance of mixing intensity and gentle product handling.



PADDLE SPACING

Staggered, precision-spaced paddles prevent dead zones and ensure efficient material turnover for fast, uniform mixing in every batch.



SHAFT SPEED / TIP SPEED

Engineered tip speed drives the right shear and turbulence for rapid homogenization without compromising product integrity.



FILL LEVEL

Controlled fill levels optimize residence time and mixing intensity, ensuring consistent results across a wide range of formulations.



ADJUSTABLE DISCHARGE DAM / RESIDENCE CONTROL

Adjustable discharge dam and end plate configuration provide precise residence time control and dwell for process-specific outcomes.



» BUILT FOR PROCESS. DESIGNED FOR RESULTS.



CONSISTENT THROUGHPUT

Engineered for non-stop operation with steady-state flow that maintains maximum productivity.



COMPACT FOOTPRINT

High-capacity mixing in a small, efficient footprint—easier integration and lower space requirements.



CONTROLLABLE RESIDENCE TIME

Precision engineering of geometry and discharge for reliable, repeatable process control.



CUSTOM-ENGINEERED GEOMETRY

Tailored paddle angles, spacing, and shaft configurations to meet your unique material and process needs.

WHY GEOMETRY MATTERS >>>>

» FASTER UNIFORMITY

Optimized paddle design and spacing deliver rapid, repeatable mixing with fewer revolutions.

» LOWER SEGREGATION

Engineered axial flow patterns keep particles and powders suspended and evenly distributed.

» SCALABLE THROUGHPUT

Consistent performance across batch sizes and formulations—from pilot to full-scale production.

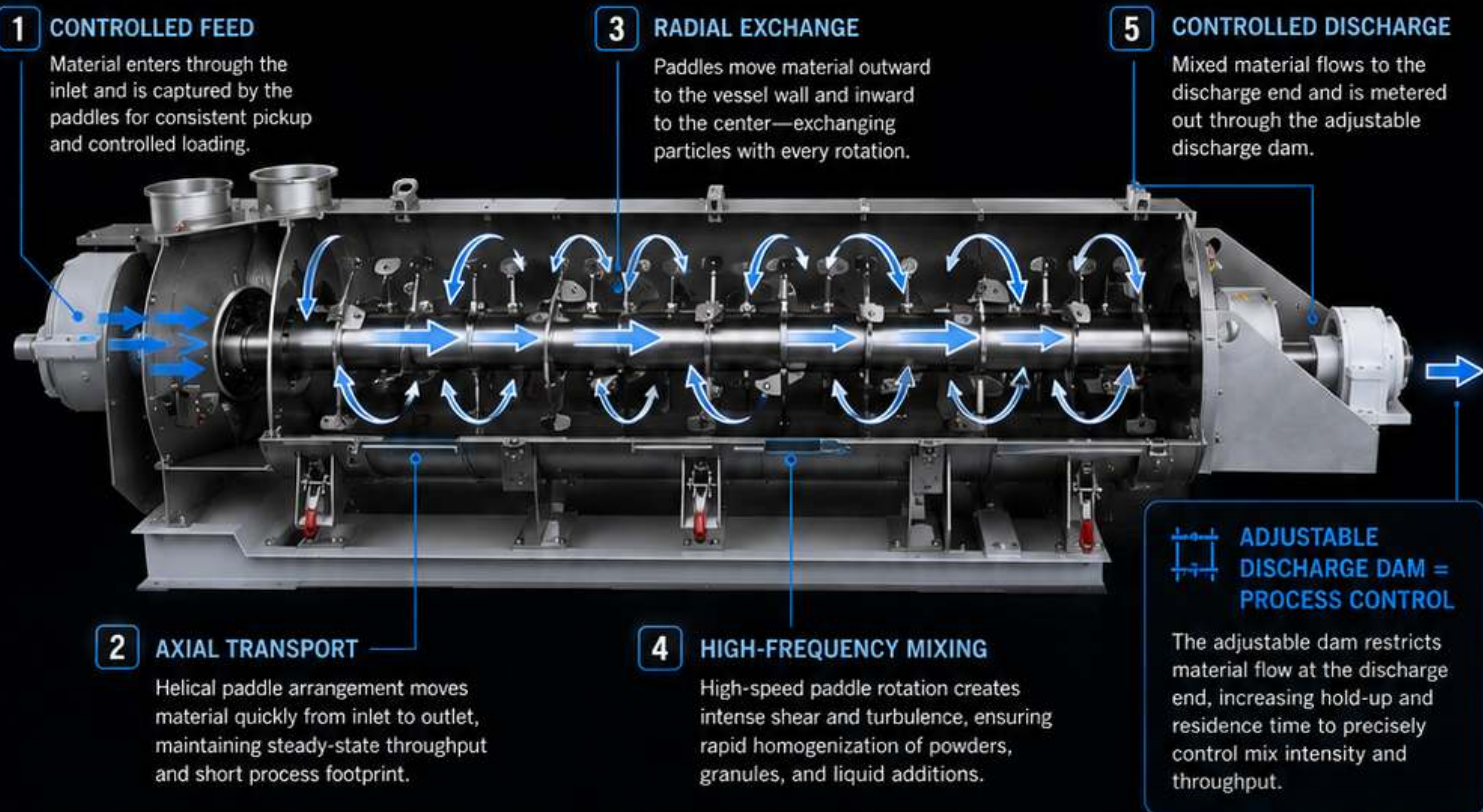
» ADAPTABLE PROCESS GEOMETRY

Configure for your material and objective—shear, blend, coat, granulate, hydrate, or condition.

HOW A HIGH-SPEED CONTINUOUS MIXER WORKS

Inside the ELEIT Series Continuous Paddle Mixer

Engineered paddle action delivers rapid axial conveying and intensive radial exchange—producing a fast, uniform, and consistent mix while maintaining precise control of retention time.



Uniformity is created by repeated particle exchange, not just by RPM.

The ELEIT Series combines high-speed paddle rotation with engineered axial transport and radial exchange to deliver consistent, repeatable results—even with challenging materials.

CONTINUOUS MIXING PROCESS AT A GLANCE



PADDLE GEOMETRY THAT DELIVERS RESULTS

Engineered Paddle Design. Predictable Performance.

In a continuous paddle mixer, paddle geometry is the driver of performance. Every angle, spacing, and speed parameter influences how materials move, mix, exchange heat, and reside in the process chamber.

QuantumX ELEIT Series mixers are engineered with precision paddle geometry to deliver consistent throughput, uniformity, and thermal performance across a wide range of materials and applications.



1 PADDLE ANGLE & ATTACK ANGLE

Set the direction and intensity of material movement.



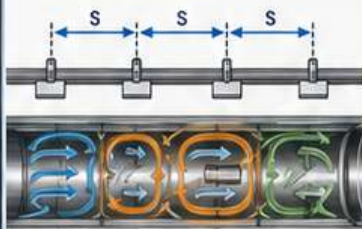
The attack angle governs how aggressively the paddle engages the material. The paddle angle controls lift and axial transport. Together, they define shear, convection, and the balance of radial to axial flow.

IMPACT

- Axial Transport**
Increases with lower attack angle
- Radial Exchange**
Increases with higher paddle angle
- Intensity (Shear)**
Increases with higher attack angle
- Blend Uniformity**
Optimized by balanced angles
- Degradation Risk**
Managed through angle tuning

2 PADDLE SPACING & MIXING ZONES

Define how material is moved, lifted, and exchanged.



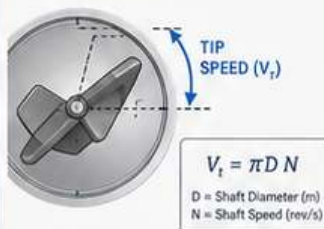
Spacing determines the size and number of mixing zones. Proper spacing creates repeating circulation zones that promote radial exchange and eliminate dead pockets.

IMPACT

- Axial Transport**
Improved with optimized spacing
- Radial Exchange**
Enhanced with more mixing cells
- Blend Uniformity**
Improved across the full cross-section
- Throughput**
Maximized without short-circuiting
- Hold-up**
Controlled by zone volume

3 SHAFT SPEED & TIP SPEED

Deliver the energy needed for the process.



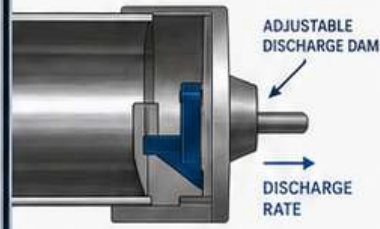
Higher tip speed increases shear and dispersion but also energy input. The right balance delivers fast, uniform mixing without unnecessary wear or degradation.

IMPACT

- Intensity (Shear)**
Increases with tip speed
- Dispersion**
Improves with higher tip speed
- Blend Uniformity**
Achieved faster at higher speeds
- Thermal Transfer**
Increases with shear and turnover
- Degradation Risk**
Increases if excessive

4 RESIDENCE CONTROL VIA DISCHARGE DAM

Dial in hold-up time with precision.



The adjustable discharge dam sets the restriction at the outlet, controlling material hold-up and residence time inside the mixer. This is key to achieving consistent quality and reaction.

IMPACT

- Residence Time**
Increases with dam height
- Blend Uniformity**
Improved with proper hold-up
- Thermal Transfer**
Enhanced with longer residence
- Throughput**
Decreases as dam height increases
- Hold-up Control**
Precise and repeatable

CONFIGURABLE PROCESS MODES



FAST CONVEYING

Low attack angle, wider spacing, higher speed for maximum throughput and minimal residence.



INTENSIVE BLENDING

Higher attack angle and optimized spacing create strong circulation for uniform blending and dispersion.



LIQUID ABSORPTION

Gentle paddle geometry and controlled residence enable efficient wetting, granulation, and coating.



THERMAL CONDITIONING

Balanced shear and extended residence maximize heat transfer for drying, heating, or cooling.

ENGINEERED TO OUTPERFORM



FEWER DEAD ZONES

Optimized geometry creates consistent flow and complete cross-section mixing.



FASTER BLENDING

Engineered mixing zones deliver uniformity in seconds, not minutes.



LOWER DEGRADATION

Controlled shear and residence protect sensitive materials.



SCALABLE DESIGN

Proven geometry scales seamlessly from lab to production.



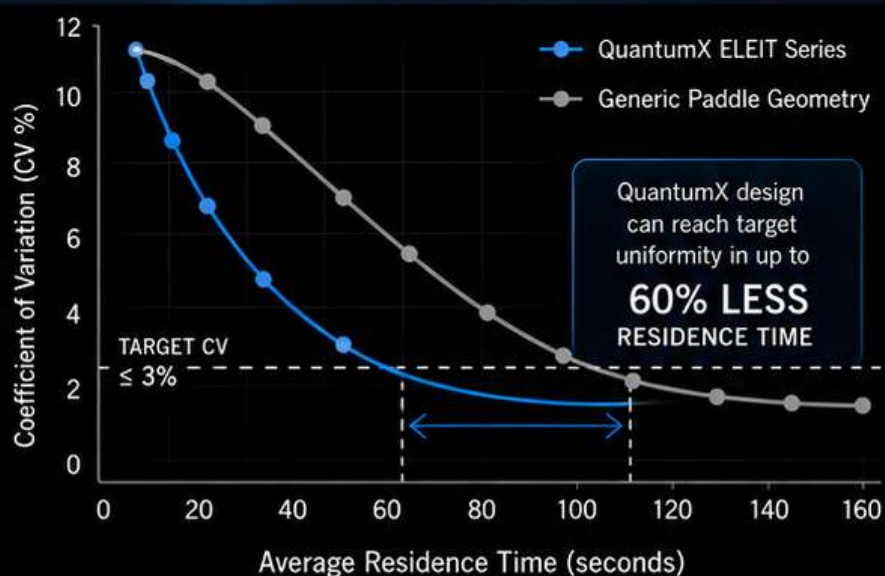
REPEATABLE RESULTS

Precision design ensures consistent performance batch after batch.

CONTINUOUS UNIFORMITY, RESIDENCE TIME & VALIDATION

Engineered to perform. Validated to prove it.

BLEND UNIFORMITY IMPROVES FASTER



ENGINEERED BENEFITS



RESIDENCE TIME DISTRIBUTION

Narrow, consistent residence time distribution for predictable mixing performance.



HOLD-UP & FILL LEVEL

Minimal hold-up and stable fill levels for consistent throughput and less waste.



SAMPLING & CV VALIDATION

Designed for easy access sampling and repeatable CV validation across operating ranges.



FEED ACCURACY MATTERS

Precise feed rates and stable flow are essential to achieve and hold target uniformity.



VALIDATION CHECKLIST

Define target CV and test method

- ☒ Verify feed accuracy and stability
- ☒ Confirm average residence time
- ☒ Measure CV at multiple operating points
- ☒ Document and trend results

TYPICAL APPLICATION

Manure solids bedding drying with powder addition and thermal conditioning



INCOMING DRY MATTER
32%



THROUGHPUT
6 tons/hr



RESIDENCE TIME
45–90 sec



TARGET DRY MATTER
 $\geq 40\%$



TARGET CV
 $\leq 3\%$



PROCESS
Thermal Conditioning

LIQUID ADDITION, COATING & AGGLOMERATION

Precision Liquid Introduction for Superior Results

The QuantumX ELEIT Series delivers precise, uniform liquid application directly into the mixing zone, enabling rapid wetting, effective coating, and controlled agglomeration for consistent, high-quality outcomes.



OPTIMIZED NOZZLE LOCATION

Strategically positioned above the mixing zone for maximum liquid distribution and contact.



CONTROLLED DROPLET SIZE

Consistent droplet formation ensures uniform coverage and reduces waste.



FAST ABSORPTION TIME

High shear mixing and paddle action accelerate liquid uptake for efficient process cycles.



WALL-BUILD PREVENTION

Even distribution and thorough mixing prevent buildup and maintain optimal flow.

INCORPORATE A WIDE RANGE OF LIQUIDS WITH CONFIDENCE



OILS & FATS



WATER & SOLUTIONS



BINDERS & POLYMERS



FLAVORS & SWEETENERS



NUTRIENTS & ENZYMES



CHEMICAL ADDITIVES

BUILT FOR DEMANDING APPLICATIONS



WETTING

Rapid and uniform wetting of powders and granules for better process efficiency.



COATING

Precise application of liquids for uniform, consistent coating of solids.



GRANULATION

Controlled liquid addition to build strong, uniform granules.



DUST CONTROL

Bind fines and reduce airborne dust for a cleaner, safer operation.

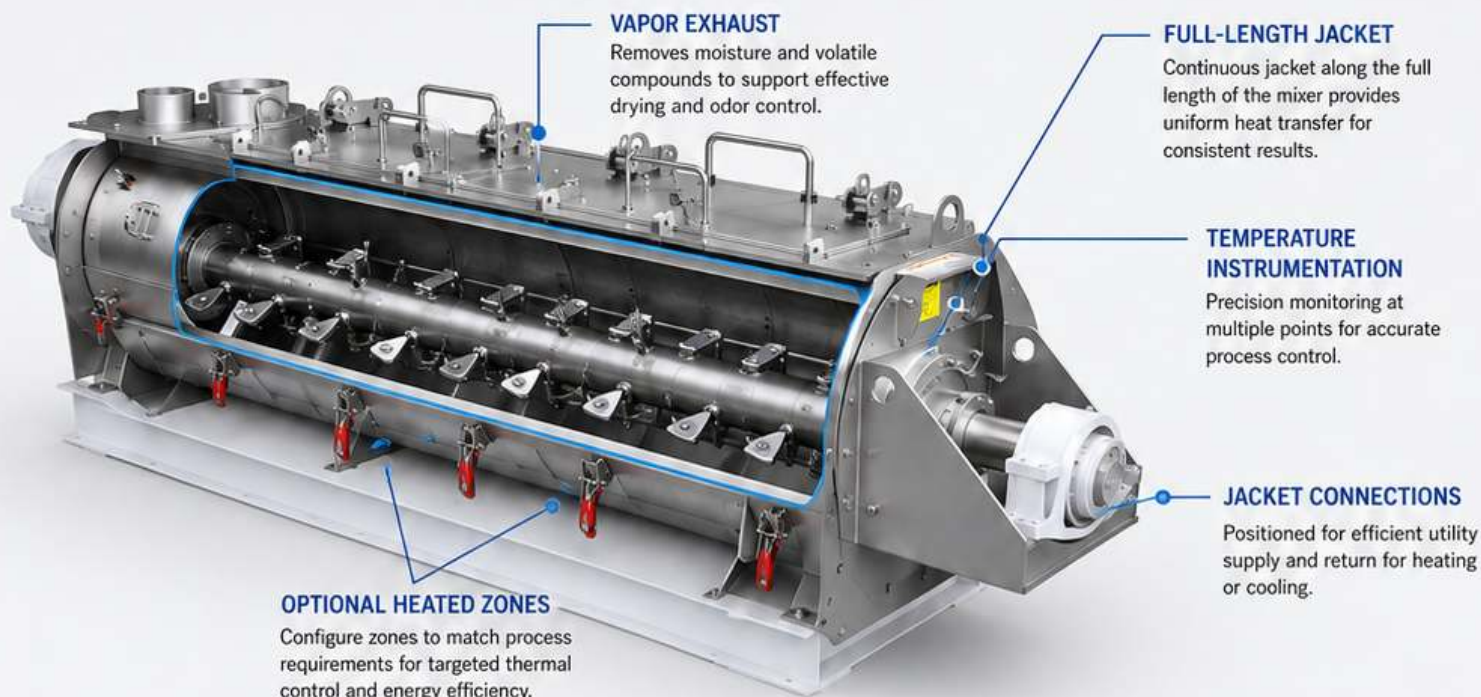


ADDITIVE INCORPORATION

Ensure even distribution of critical additives and actives.

THERMAL CONDITIONING, HEATING, COOLING & DRYING

Precise Temperature Control. Reliable Performance. Consistent Results.



FULL-LENGTH JACKET CAPABILITY

Engineered jacketed shell provides uniform temperature distribution from end to end for consistent performance.



PRODUCT TEMPERATURE CONTROL

Maintain precise product temperatures with accurate instrumentation and responsive control.



VAPOR REMOVAL & EXHAUST

Integrated vapor exhaust enables efficient moisture removal for optimal drying and emissions management.



THERMAL DUTIES

- » Heating
- » Cooling
- » Conditioning
- » Moisture Reduction



CONSISTENT QUALITY & RELIABILITY

Stable thermal conditions support repeatable results, product quality, and reliable operation.

TYPICAL APPLICATIONS



MANURE SOLIDS

Dry and condition manure solids for handling, transport, and reuse.



BIOMASS

Dry biomass and organic fibers to improve handling and energy content.



FEED INGREDIENTS

Condition grains and by-products to control moisture and enhance flowability and shelf life.



CHEMICALS

Dry, cool, or condition powders and granules to meet process and quality specifications.



ORGANICS

Reduce moisture and stabilize organics for composting, disposal, or land application.

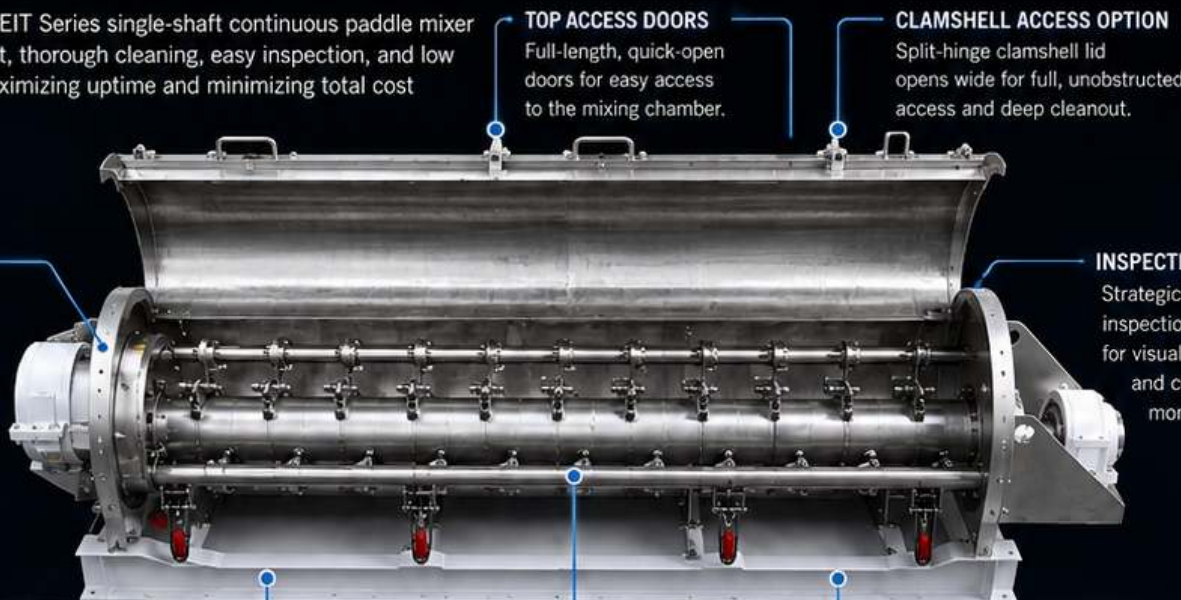


NOTE: Thermal performance depends on product properties, utilities, and target residence time.

ACCESS, CLEANING & MAINTAINABILITY

Serviceability Engineered Into Every Detail

The QuantumX ELEIT Series single-shaft continuous paddle mixer is designed for fast, thorough cleaning, easy inspection, and low maintenance—maximizing uptime and minimizing total cost of ownership.



ACCESSIBLE SHAFT SEALS

External seal access for inspection and replacement without removing the mixer.

TOP ACCESS DOORS

Full-length, quick-open doors for easy access to the mixing chamber.

CLAMSHELL ACCESS OPTION

Split-hinge clamshell lid opens wide for full, unobstructed access and deep cleanout.

INSPECTION POINTS

Strategically placed inspection ports for visual checks and condition monitoring.

DRAINABLE DESIGN

Slight slope to drain ports for complete material evacuation and cleanout.

REPLACEABLE PADDLES

Precision paddles are bolt-on for quick removal and replacement.

SPRAY BARS / WASHDOWN OPTION

Integrated spray bars provide full internal washdown coverage.



BUILT FOR ACCESS



- » Full-length top access doors for fast entry
- » Large handles and robust cam latches
- » Optional clamshell lid for complete exposure
- » Ergonomic design reduces service time and effort



ENGINEERED WEAR COMPONENTS



- » Bolt-on, reversible, or replaceable paddles
- » Hardened tips and wear-edge options
- » Replace one paddle, not the shaft
- » Lower wear rates and longer service life



SEAL & BEARING OPTIONS



- » Multiple shaft seal configurations
- » Outboard bearing options for heavy-duty service
- » Easy access for inspection and replacement
- » Protects product quality and extends uptime



DESIGNED FOR UPTIME



- » Drainable chamber and smooth, crevice-minimized surfaces
- » Washdown-ready with spray bar option
- » Quick clean, quick back in production
- » Engineered for maximum reliability and availability

SERVICEABLE BY DESIGN



REDUCED DOWNTIME

Fast access and simple service get you back online quickly.



FASTER CLEANOUT

Drainable design and washdown options minimize clean time.



EASIER INSPECTION

Inspection points and accessible components simplify routine checks.



LOWER MAINTENANCE BURDEN

Replace only what's needed. Fewer parts. Lower cost.



BUILT YOUR WAY

Configurations and options to match your process and facility needs.



MAXIMIZE UPTIME

Serviceability engineered into every detail for consistent performance.

BATCH VS. CONTINUOUS MIXING

A Decision Guide for Modern Processing

Choosing the right mixing approach can have a major impact on productivity, product quality, and total cost of ownership. See how QuantumX continuous mixing outperforms traditional batch systems across key performance drivers.



	BATCH MIXING Traditional Approach	VS.	QUANTUMX CONTINUOUS MIXING ELEIT Series High-Speed Paddle Mixer
 THROUGHPUT	Intermittent production; idle time between batches limits output.		✓ Steady-state, high throughput with continuous material flow and minimal downtime.
 PRODUCT CHANGEOVER	Time-consuming cleanout and restart required.		✓ Fast transitions with minimal product hold-up and easy cleanout options.
 RESIDENCE-TIME CONTROL	Variable; difficult to maintain consistent residence time.		✓ Precise and consistent residence time for predictable results and superior process control.
 LABOR PER TON	Higher labor requirements for charging, discharging, and equipment oversight.		✓ Lower labor per ton with automated, continuous operation and reduced manual handling.
 FOOTPRINT	Larger footprint due to surge bins, batch mixers, and holding capacity.		✓ Compact footprint—single unit handles mixing, heating/cooling, and conveying.
 INTEGRATION WITH UPSTREAM/DOWNSTREAM LINES	Requires buffers and sequencing; interrupts continuous flow.		✓ Seamlessly integrates with upstream and downstream equipment for true continuous manufacturing.
 BEST-FIT APPLICATIONS	Low-volume, infrequent runs, or products requiring long hold times.		✓ High-throughput, steady-state processes with tight control of residence time and thermal conditioning.



CONTINUOUS MIXING IS THE **PREFERRED SOLUTION** FOR STEADY-STATE, HIGH-THROUGHPUT PROCESSES WITH TIGHT PROCESS CONTROL REQUIREMENTS.

WHEN TO CHOOSE QUANTUMX CONTINUOUS MIXING



You need maximum throughput and consistent production output.



You need precise control of residence time and thermal conditioning.



You want to reduce labor, downtime, and overall operating costs.



You are integrating into a continuous production line.



You are handling powders, granules, moist solids, or conditioned materials.

BUILT FOR REAL-WORLD APPLICATIONS

One Mixer. Countless Solutions.

QuantumX ELEIT Series Continuous Paddle Mixers are engineered to deliver uniform, high-quality mixing of powders, granules, fibers, sludges, and more—while integrating thermal conditioning and retention control for superior results in any application.



INTERIOR VIEW – SINGLE-SHAFT PADDLE DESIGN



EXTERIOR VIEW – BUILT FOR PERFORMANCE



WHY QUANTUMX OUTPERFORMS CONVENTIONAL HIGH-SPEED BLENDERS



Controllable Residence Time

Adjust retention time to optimize mixing, conditioning, and quality.



Thermal Integration That Works

Heated jacket options for effective moisture control and pathogen reduction.



Custom Engineered Solutions

Application-specific designs to meet your process, materials, and goals.



Robust. Reliable. Built to Last.

Heavy-duty stainless steel construction built for continuous, demanding duty.



Serviceability by Design

Accessible components for simplified maintenance and minimal downtime.



Tested. Proven. Trusted.

Engineered, tested, and trusted to deliver consistent performance.

DESIGNED FOR DIVERSE MATERIALS. DELIVERED FOR REAL RESULTS.



ANIMAL FEED

Achieve uniform nutrient distribution, moisture addition, and heat conditioning for optimal feed quality.



FERTILIZERS

Blend ingredients evenly and condition for improved granulation and handling.



BIOMASS

Homogeneous mixing of biomass materials for consistent energy and process performance.



ORGANICS

Condition organics for composting, stabilization, or other sustainable processing.



MINERALS

Uniform blending of dry minerals and additives for quality and reliability.



CHEMICALS

Precise blending of powders and additives for process and product consistency.



SLUDGE / BIOSOLIDS

Condition and homogenize sludges and biosolids for improved handling and treatment outcomes.



FOOD & SPECIALTY MATERIALS

Gentle yet effective mixing designed to protect quality in food and specialty ingredient applications.

**NOT JUST A MIXER.
A BETTER WAY TO PROCESS.**



READY TO GET STARTED?

Contact your QuantumX representative today.