

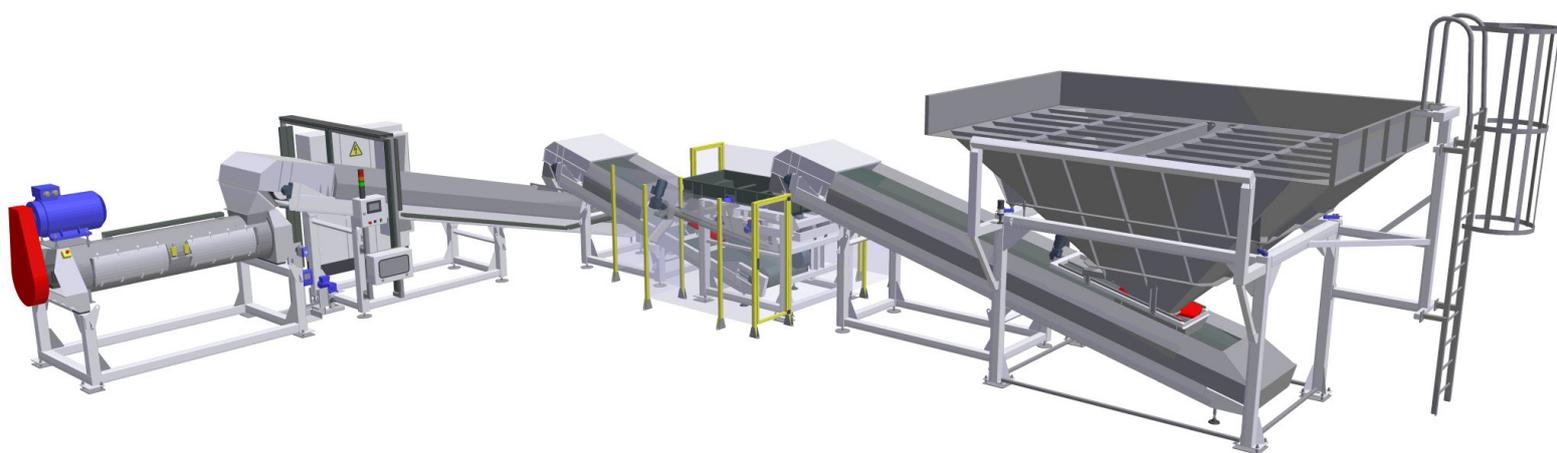


## Fertilizer Stabilization and Blending Systems

# Fertilizer Stabilization and Blending Systems

Kinematik has developed a unique system to gently handle granular fertilizer such as UREA or NPKs and apply with great precision various liquid inhibitors.

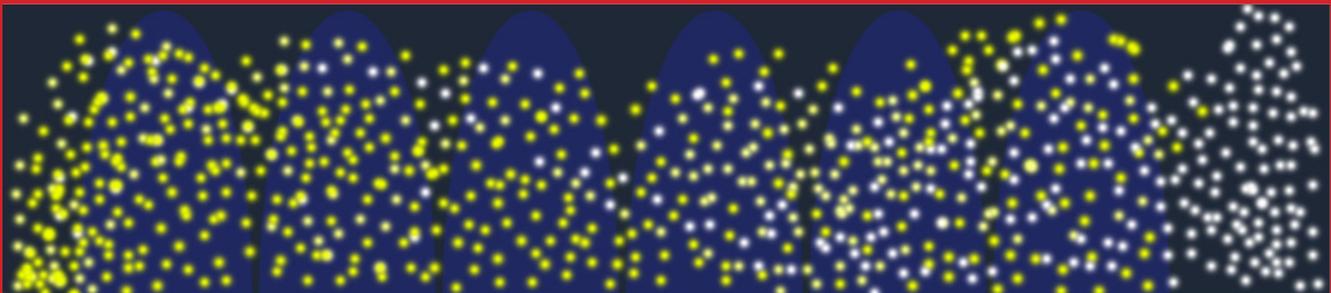
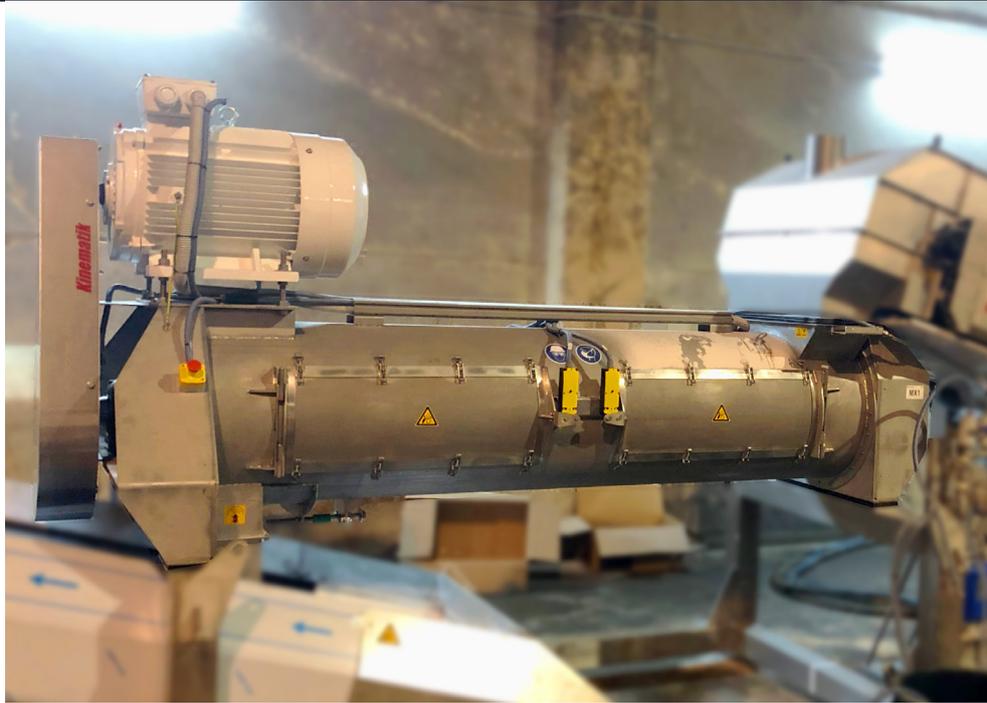
Fertilizer coating process is handled by a specially designed continuous flow mixer.



# Mixer Technology

In contrast to various other alternatives, the Kinematik mixer technology allows continuous flow, with gentle material handling and homogeneous final product with minimized footprint.

Inside the mixer, paddles create opposite direction flows without damaging the granules, prolonging the coating application. These opposite flows save length from the layout and allow better results as each granule travels back and forth inside the mixer.



Schematic representation of Kinematik mixer internal mixing process

## Comparison with other technologies

Standard technologies such as screw conveyor mixer achieve continuous flows, but fail to gently handle each granule. This leads to crushing a significant percentage of granules and produce lower quality final product. Moreover, the length required to achieve homogeneous product quality is significantly larger than Kinematik mixer.

Other technologies include batch productions, where a container is being filled with the granules and inhibitor in measured quantities. This method has the main disadvantage of being time consuming and not being continuous. Furthermore, production quality might be different, as for each batch new measurements of granules and inhibitor are required and may vary based on application time.

	<b>Kinematik Mixer</b>	<b>Screw Conveyor Mixer</b>	<b>Batch Mixer</b>
Continuous Flow Operation	YES	YES	NO
Gentle Handling	YES	NO	UNCERTAIN
Constant Quality	YES	YES	NO
Space requirements	LOW	MEDIUM	HIGH
Quality	HIGH	LOW	MEDIUM

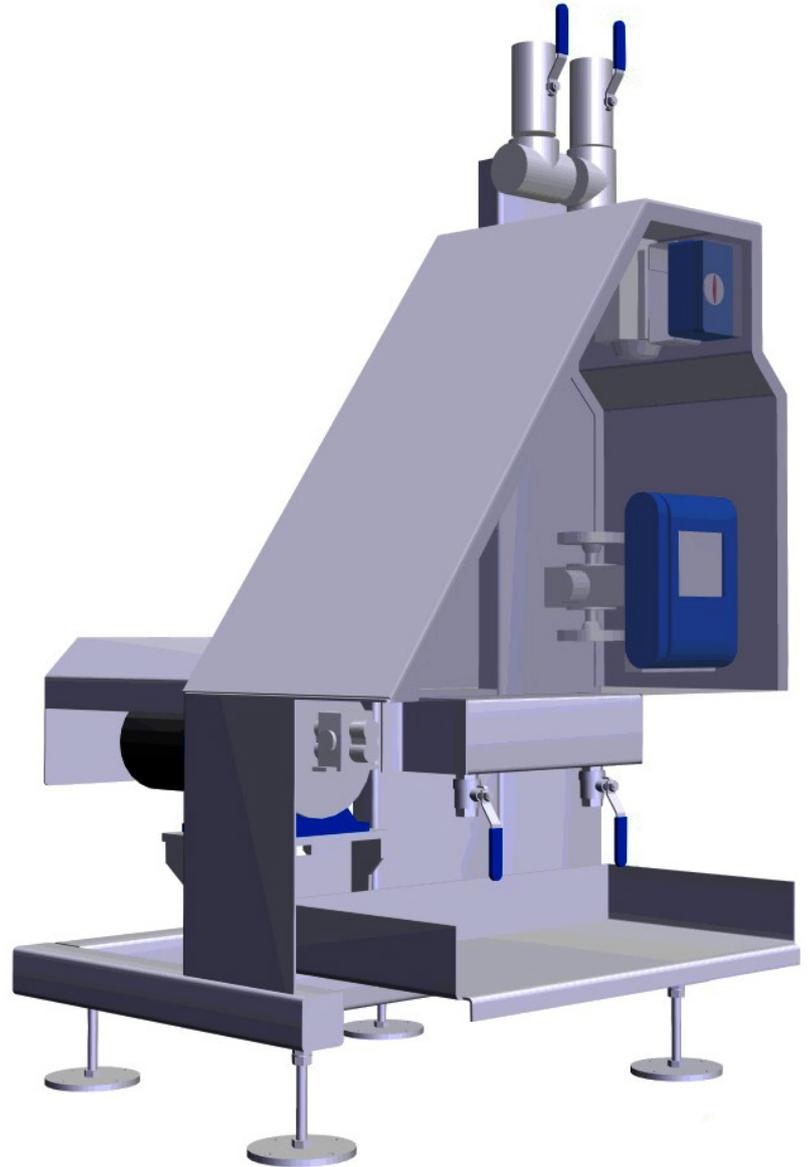
## Stabilization / Inhibitor Application Technology

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The liquid inhibitor is applied by spraying with high accuracy inside the mixer through a dosing pump.

The stabilization control is performed in real-time taking into account any changes of product flow of the granules and the coating liquid inside the mixer.

Dosing can be performed either by flowmeter or by scale.



## Silo Technology

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Silos have special octagonal form to allow increased material flow. Combining the motorized silo opening with the silo integrated scale for flow and level measurement leads to high precision handling of the material flow.

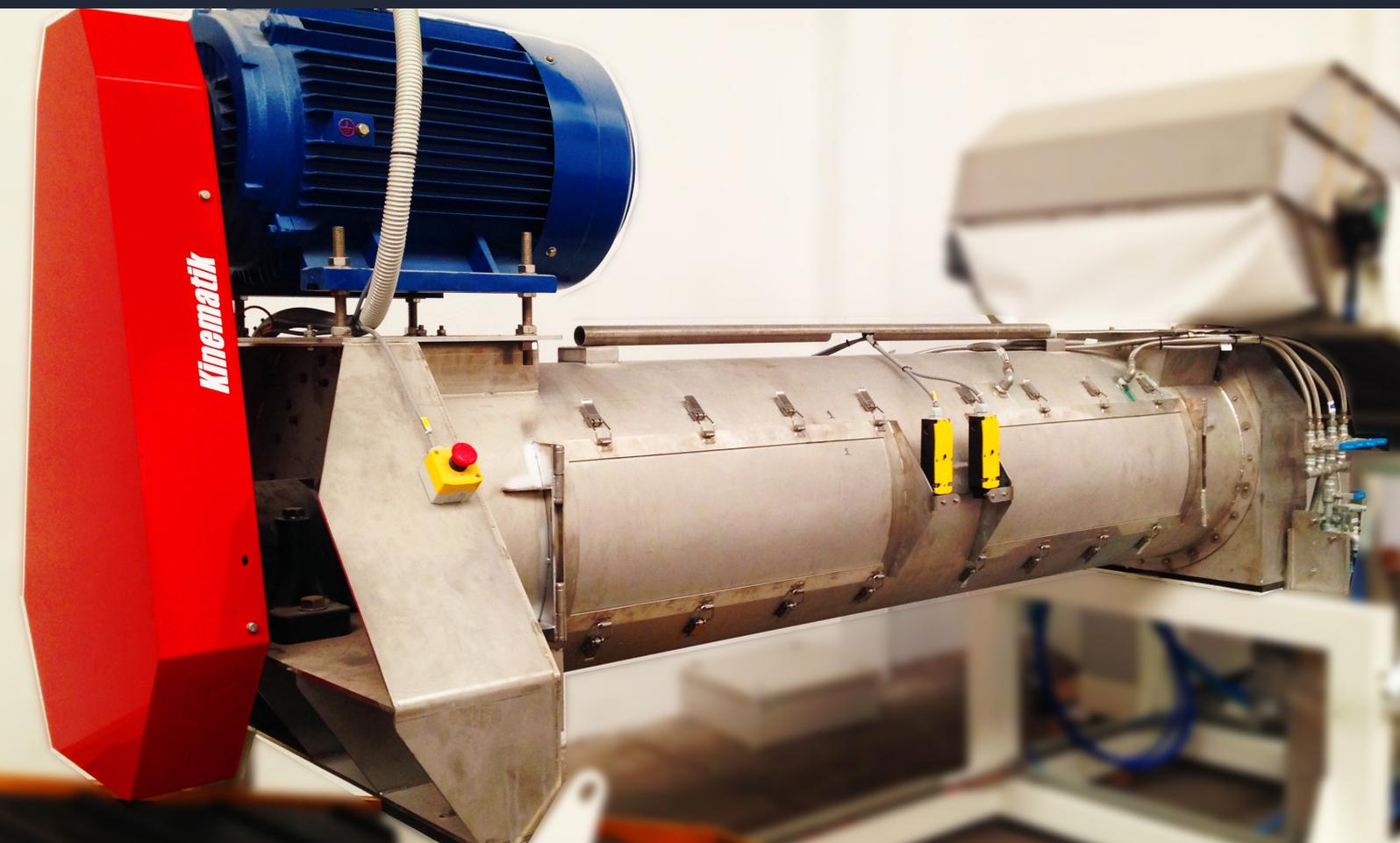




## Blending Technology

Blending from multiple silos is possible in various ratios to produce fertilizer blends. Each silo is individually real-time controlled to achieve the setpoint ratio in the blend.





## Best-In-Class Quality

As all Kinematik products, the build quality is one of the best-in-class. All parts are of the best possible quality, allowing seamless operation and increase the lifespan of the system. All modules, such as conveyors, silos, mixer, etc., are designed to allow fast access and easy cleaning. All systems are offered either in partial chemical-resistant inox and special anticorrosive epoxy paint or complete chemical-resistant inox design.

## 24/7 Support

Kinematik supports all machines and systems throughout their lifecycle. Teleservice is offered as a standard to allow instant troubleshoot and reduce possible downtimes.

## Automated Control

The complete process is fully automated. The only operator input required is the selection of the recipe. The process is monitored in real-time and flowrates are automatically adjusted to achieve the required flowrates and consequently the best quality final product from the first produced granules.

The complete operation as well as all motions and mechanisms are monitored and controlled by a touchscreen with a simple and easy to use operating system.

## Completed Projects

Kinematik has successfully completed various fertilizer stabilization and blending solutions in Greece, France, Belgium, Italy, Bulgaria, Ukraine, Russia and Turkey.

## Storage or Packaging Solution

Depending on the type of fertilizer, Kinematik offers various solutions after production to fit every need. Kinematik has realized various solutions for temporary storage till maturity of the final product or direct packaging to bags or big bags.



Telescopic and rotating conveyor for storing fertilizer.

Fertilizer is stored from front to back, so that the more mature fertilizer can be picked up earlier.

Unique big-bag filling solution with short height design to avoid increased heights and failure-prone bucket elevators. Capacity of more than 60 big-bags per hour.





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