



VIPER[®] Mill

Technology For DSI Systems

The VIPER[®] Mill from United Conveyor Corporation (UCC) is a proven, reliable technology that significantly reduces operating cost and improves emissions control of dry sorbent injection (DSI) systems. VIPER Mill technology reduces sorbent particle size to enhance removal of SO₂, SO₃ and HCl.

The VIPER Mill is capable of processing up to 7 tons per hour of sorbent on a 24/7 basis. In a typical SO₂ removal application, the VIPER Mill can reduce sorbent usage by 30-50%. In SO₃ removal applications, the ultra-small sorbent particle size helps to achieve strict emissions targets while reducing usage up to 50%. A single VIPER Mill can reduce sorbent costs significantly compared to other DSI Systems.

Industry leading UCC DSI technology, including the new VIPER Mill, provides utilities with an efficient and economical method to meet current and future emission limits and regulations.

VIPER[®] Mill
Technology



Plug 'n Play
Mill Skids



FEATURES

- Sorbent: Proven with Trona and Coarse Sodium Bicarbonate (SBC)
- Two Sizes Available
- Capacity: 0,5 – 7 t/h
- Median Particle Size: 9-15 µm (Trona), 15-19 µm (Sodium Bicarbonate)
- Pneumatic Conveying In-line Milling Process
- Automated Cleaning System
- Filtered and Cooled Oil Lubrication System for Long Bearing Life
- Easy Access for Preventative Maintenance and Life Cycle Rebuilds

ADVANTAGES

- **Greatest Sorbent Savings In the Industry**
 - › Smaller particle size leads to lower sorbent quantity consumed
 - 30-50% less sorbent used in SO₂ application
 - 50% less sorbent used in a SO₃ application
 - › Fast return on capital investment
 - › Saves utilities millions of euros in operating costs over the life of the system

VIPER
Mill

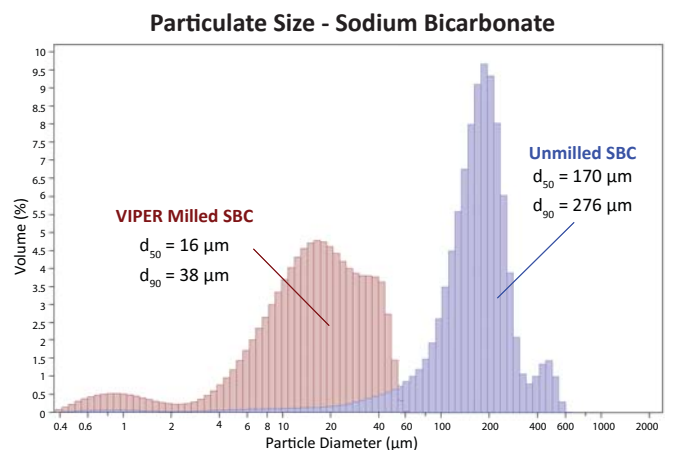
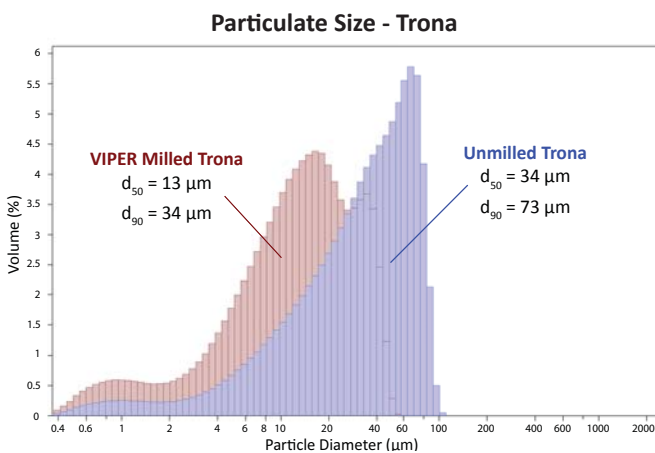
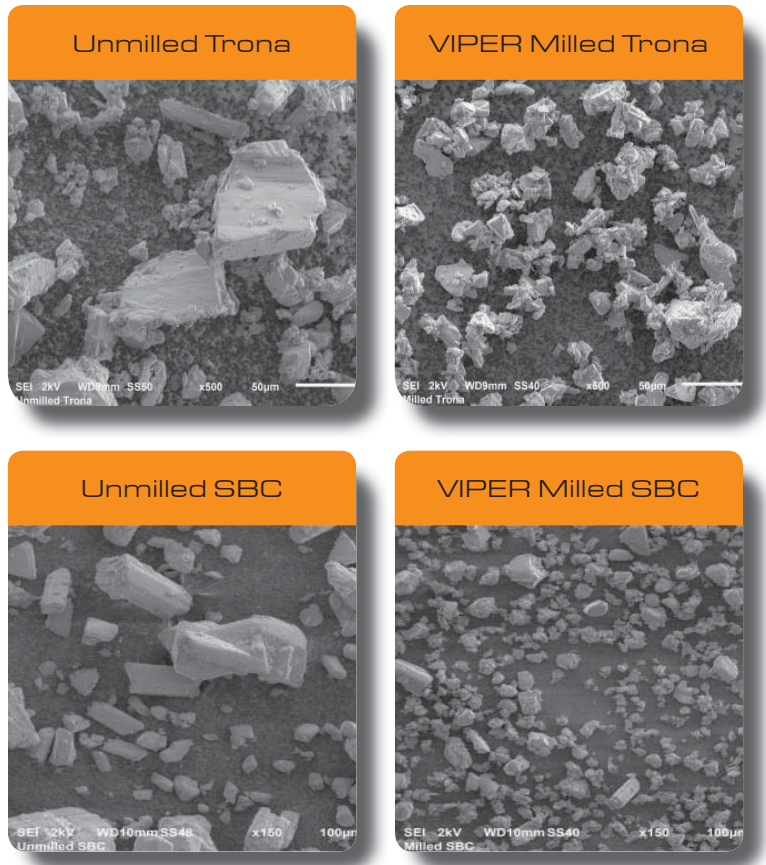
UNITED CONVEYOR
CORPORATION

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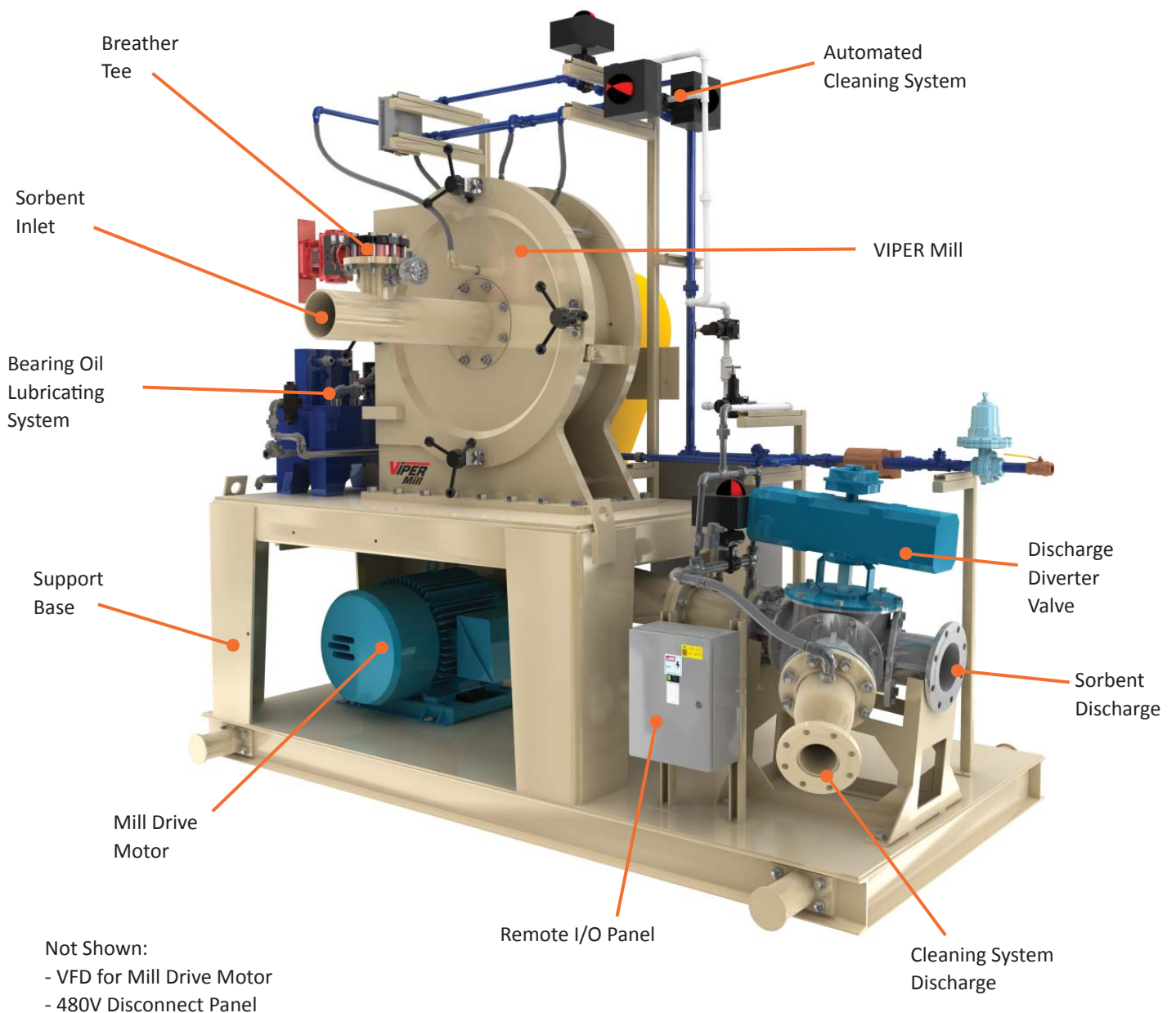
ADVANTAGES (cont.)

- **Proven Performance**
 - › Patent-pending in-line automated cleaning system minimizes sorbent build-up
 - › Design proven for 24/7 milling operation in a DSI application
 - › Wear components are in stock and available for immediate shipment
- **Simple Installation and Integration into DSI Systems**
 - › Fully pre-piped and pre-wired mill skids for quick installation and lower installed cost
 - › No secondary downstream sorbent storage required
 - › Access to all moving parts for easy inspection and maintenance
 - › Configurable inlet and discharge to easily accommodate existing line sizes
 - › The small VIPER Mill is configured for 0,5 - 2 t/h, and the larger one is for 2 - 7 t/h throughput



TYPICAL PLUG 'N PLAY SKID LAYOUT

- The VIPER Mill skid is available in standard and custom design configurations



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Technical Data Sheet
TDS11-407

SO₂ Economics

Low Sulfur Coal - Coarse Milled SBC vs. VIPER Milled SBC

Unit (MW)	% Sulfur	SO ₂ Reduction (% Removal)	Unmilled (kg/h)	VIPER Mill Fine Milled (kg/h)	Annual Savings* (€)
100	0,45	60	900	800	20.000
250	0,45	60	2300	2000	590.000
500	0,45	60	4400	3800	1.150.000

* Based on SBC at € 250 per ton

SO₃ Economics

Unmilled Trona vs. VIPER Milled Trona

Unit (MW)	SO ₃ PPM	SO ₃ Reduction (% Removal)	Unmilled (kg/h)	VIPER Mill Fine Milled (kg/h)	Annual Savings* (€)
700	25	90	635	363	320.000
700	35	90	907	454	533.000
700	50	90	1179	544	747.000

* Based on Trona at € 150 per ton

KEY DIMENSIONS

Model	Power (kW)	Throughput (t/h)	Conveying Line Size	Airflow (m ³ /min)	Trona Particle Size* (µm)		Sodium Bicarbonate Particle Size* (µm)	
					Median	d90	Median	d90
150VR	75 or 110	2 - 7	DN150 & DN200	34 - 68	≤15	≤40	≤19	≤45
100VR	75	0,5 - 2	DN80 & DN100	8 - 17	≤15	≤40	≤19	≤45

*Particle size is measured by a Bechman Coulter laser analyzer

ORDERING INFORMATION

Please reference UCC Drawing #5-6500-2 for 150VR or #5-6500-3 for 100VR for current product information.

UNITED CONVEYOR CORPORATION

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