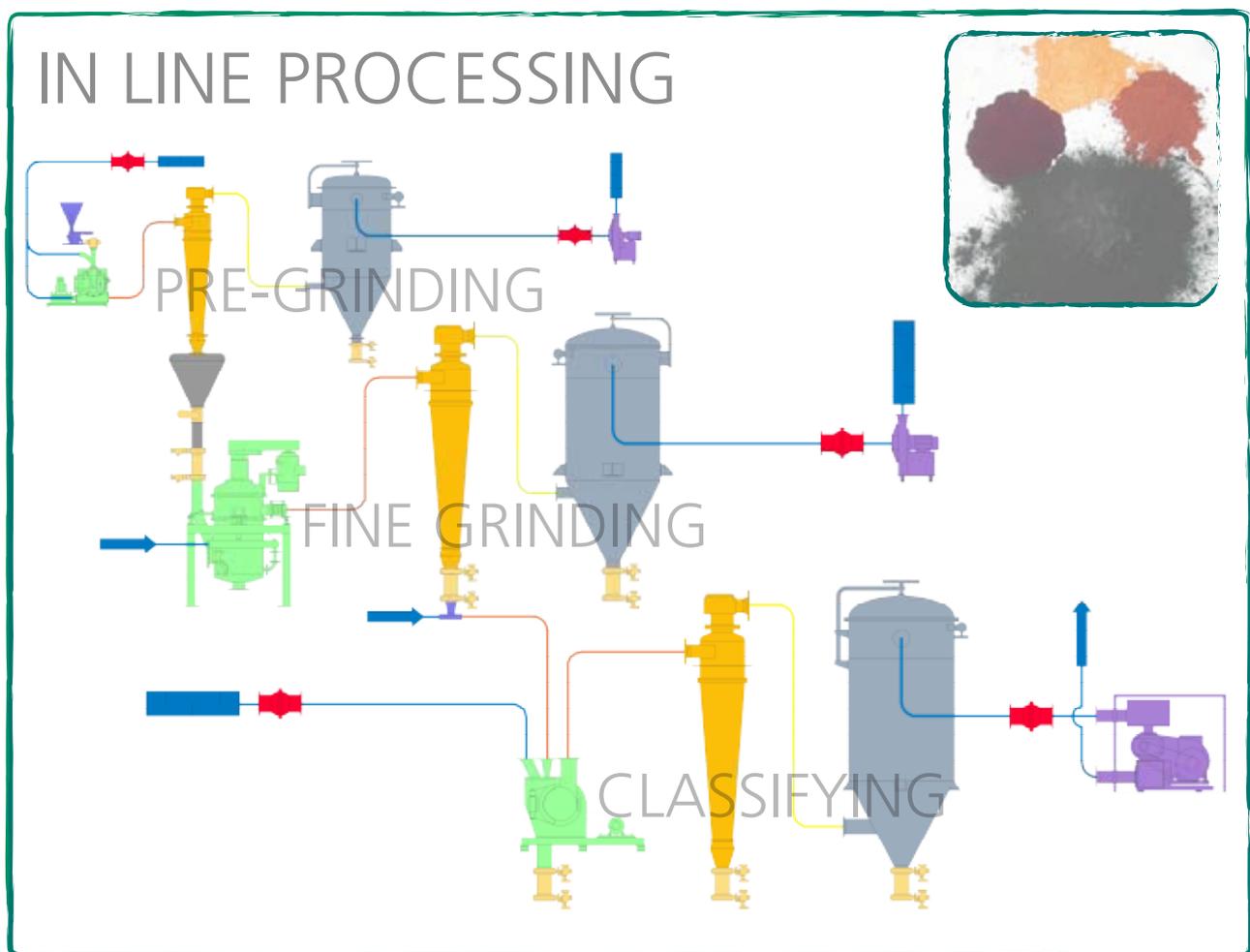


Toner Processing Technology by NETZSCH-CONDUX

Toner: Finely ground electrostatic powder used in copiers and laser printers to create images. Toner is heat, pressure and moisture sensitive, cohesive and must have a steep particle size distribution. Typical toner products have a D50 in the range of $5\mu - 7\mu$. NETZSCH-CONDUX entered the field of toner processing with the development of the CGS Jet Mill in the 1990's followed by the CFS/HD-S High Dispersion Air Classifier a few years later. Since that time, we have held a strong position in that market with continuous improvement and innovative technical solutions.

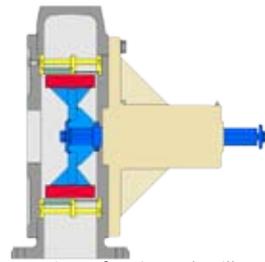


High quality equipment is only one part of successful material processing. NETZSCH-CONDUX finds the optimum process conditions for every material, investigating pre-grinding, grinding parameters such as grinding pressure and nozzle design to provide the highest quality product at high process yields assuring maximum profits for our customers.

NETZSCH

Pre-Grinding

Toner raw material is either in pellet or flake form following the extrusion process. Using a mechanical impact mill in this preliminary process improves grinding efficiency in the jet mill and reduces overall processing time and energy consumption.



Function of Universal Mill CUM with wing beater

A CUM Universal Mill by NETZSCH-CONDUX is the perfect solution for low energy processing with easy cleaning and low maintenance. The air conveying design promotes cooling. Typical particle size following pre-grinding will be in the range of $D_{50} = 50 - 100\mu$.



Universal Mill CUM 250

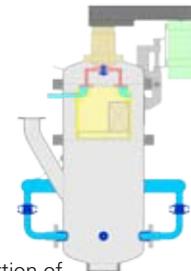
Fine Grinding

Fine grinding: Jet mills are preferred for the final size reduction of toner powder. High velocity gas jets accelerate the particles to over 500 m/sec resulting in size reduction. An internal air classifier controls the particle size by allowing only particles of a pre-set fineness to exit the mill. The high cooling effect of the expanding air controls the temperature of the process. NETZSCH-CONDUX offers two jet mills for toner processing.

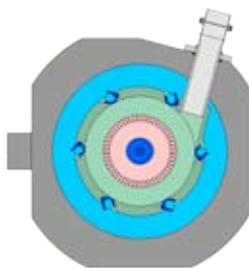


Fluidized bed jet mill CGS 71

For conventional black toner the CGS Fluidized Bed Jet Mill provides the state of the art technology. All NETZSCH-CONDUX Jet Mills employ a single high efficiency air classifier wheel regardless of the required particle size.



Function of Fluidized bed jet mill CGS



Function of High Density bed jet mill ConJet

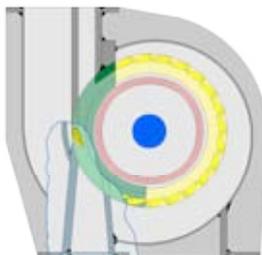
The revolutionary ConJet High Density Bed Jet Mill is similar to a conventional spiral jet mill but includes the same internal classifier. The ConJet is perfectly suited to high value color toner products where easy cleaning and minimal residual material are desired.



High Density bed jet mill ConJet 32

Classifying

The particle size distribution from milling process results in a certain amount of fine particles. It is desirable to remove these fines from the PSD. An air classifier is used to remove fines by dispersing the particles in air and then separating this fraction from the product. A high energy classifier reduces waste and increases profits.



Function of High Dispersion Air Classifier CFS/HD-S

NETZSCH-CONDUX offers the highest efficiency classifier for toner processing. The CFS/HD-S High Dispersion Air Classifier has exceeded the performance of all other designs and is truly the leader in toner classification.



High Dispersion Air Classifier CFS 170/HD-S

NETZSCH

NETZSCH-CONDUX
Mahltechnik GmbH
Rodenbacher Chaussee 1
D-63457 Hanau

Tel.: ++49 (0)6181-50601
Fax: ++49 (0)6181-571270
<http://www.netzsch-condux.de>
info@ncx.netzsch.com