



MILLING

YOUR END PRODUCT, OUR PRIORITY!

For Lessine, the quality of your end product is a priority. We therefore make it a point of honour to give you the solution that mills your material at the desired level in an optimum way.



FIELDS OF APPLICATION

- Environment and recycling
- Fuels
- Minerals, fertiliser, mineralogical chemistry
- Food, pharmacy, fine chemistry
- Metals



ANALYSIS OF YOUR NEEDS AND SPECIFICITIES

So you can benefit from the milling solution best adapted to your situation, we examine a number of factors, including:

- the **machine's admission capacity**, i.e. the size of the biggest blocks that has to be treated
- the **optimum reduction ratio**: ratio between the size of the pieces on exit and on entry
- the **granulometric distribution** desired on exit
- the **type of material** to mill: glass, plastic, stone...
- and their **sensitivity** to milling: hardness, friability, abrasiveness...



A TECHNIQUE FOR EACH NEED

TECHNIQUE	FINAL PARTICLE SIZE OF THE MATERIAL			
	Ultrafine 10 μm	Fine 100 μm	Medium 1 mm	Coarse 10 mm
SHEARING				Cutting mill and shredder
			Delumper	
PERCUSSION	Pin Mill			
				Percussion mill
			Hammer-cylinder mill	
			Hammer mill	
CRUSHING	Ball mill			
				Jaw crusher
			Roller mill	



LESSINE
TAILORED BULK TECHNOLOGIES

LESSINE BENEFITS

TAILOR-MADE SOLUTIONS:

- ACCORDING TO THE SPECIFICITIES OF YOUR PROJECT: TECHNOLOGY, DIMENSIONS, INVESTMENT, COST, CONSTRUCTION...
- ACCORDING TO ON YOUR NEED: TRANSPORT, AUTOMATION, INSTALLATION, COMMISSIONING, SPARE PARTS...
- FROM THE CONCEPTION STAGE > R&D, DEVELOPMENT, TEST AND FEASIBILITY.



THE MILLING TECHNIQUE ADAPTED TO THE REQUIRED RESULT



BY CUTTING AND SHEARING

- **Cutting mill: precise and silent**

The product is cut between knives mounted on a quick rotating shaft and a row of fixed knives.

- **Shredder: intensive loading work**

The product is shred between two stacks of knives fixed on two slow rotating shafts.

- **Delumper: economic and robust**

Discs equipped with rotors or fingers feed the product, which passes through a comb whose space between the teeth fixes the particle size, then possibly through a perforated screen at the exit.



BY PERCUSSION

- **Pin Mill: finesse and flexibility**

Under the effect of the inertial force created by the quick rotation of the horizontal rotor, the product is projected towards the periphery. The milling is generated by the percussion of the product against the milling elements of the rotor and/or stator.

- **Percussion mill: good cubicity of the product on exit**

The product is struck by beaters against impact plates, pre-ground in a first chamber and reduced in the second. The particle size depends on the space between the impact plates and the beaters.

- **Hammer mill: robustness and simplicity**

Pendular hammers strike the product against impact plates. They are mounted on a rotor turning at medium or high speed thus favouring the suction of the product by the mill. The product is then ground on a sieve whose perforation determines the final particle size.

- **Hammer-cylinder mill: for sticky products**

Pendular hammers mounted on a rotor turning at average speed strike and project the product against a rotating cylinder. A scraper is installed to keep the cylinder clean.



BY CRUSHING

- **Roller mill: abrasive products and low amount of fines generated**

The material is crushed between two cylinders, smooth, grooved or teethed, depending on the nature of the product and the aimed at milling. A narrow particle size with little amount of fines is generated.

- **Jaw crusher: good calibration**

A mobile jaw supported by an eccentric shaft crushes the product. The elliptical movement of the lower end of the jaw ensures a regular crushed product with little amount of fines. The final particle size depends on the space between the mobile and fixed jaws.

- **Ball mill: great finesse for hard and abrasive products**

Balls are placed with the product into a rotating drum. The milling results from the friction and the impact created by dropping the balls against the product and the collision of particles between themselves.



When the use of one single technique is not enough to achieve the desired end product, we combine the different required technologies.



MILLING



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DRYING



SEPARATION



HANDLING

www.lessine.com