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Cryogenic Grinding Plants With Whirl Mill UTM

Grinding with liquid nitrogen cooling is the sophisticated process for many applications:

- Rubber powder
- Spices (minimized loss of aromatic substances)
- All fatty and greasy natural products
- Thermoplastic powders
- Textile printing powders
- Hot melt adhesives
- Waxes

Principle of Function:

The material is fed constantly into the cryogenic cooling screw. Inside this screw the material stays in a bath of liquid nitrogen and gets slowly fluidized and moved towards the outlet. This assures that the material gets deeply frozen and comes very near to the temperature of the liquid nitrogen.

From the cryogenic screw the material is passed into the whirl mill UTM

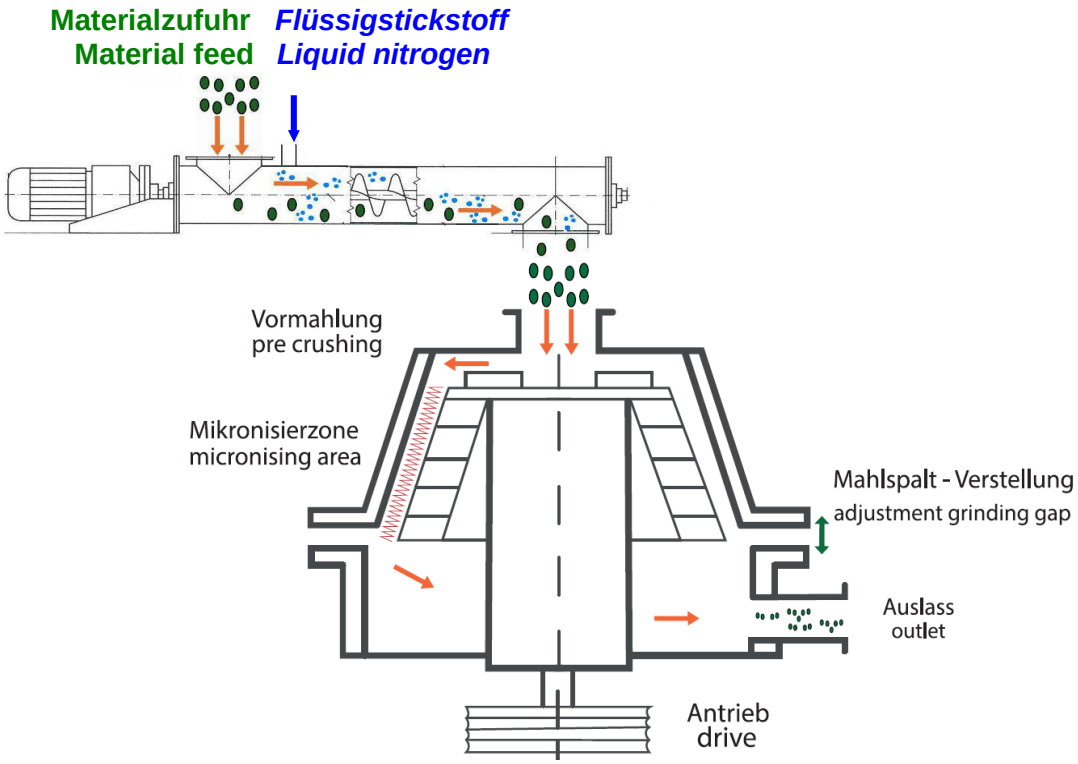
In the whirl mill the size reduction is effected by a combination of impact effects between the particles and the grinding rotor as well as shear and impact effects between particles and grinding track. Furthermore there are shear effects between rotor and grinding track.
But besides these mechanical effects there are also grinding effects caused by collision between the particles. This so called jet-mill-effect happens due the high speed air whirls which happen inside the grinding zone of the mill, caused by the special design of the grinding tools.
This additional effect is the main difference between the whirl mill and a conventional mechanical impact mill.

Consequences of this combination of grinding effects:

- better efficiency
- less heating up of the product
- higher fineness.
- less wear.

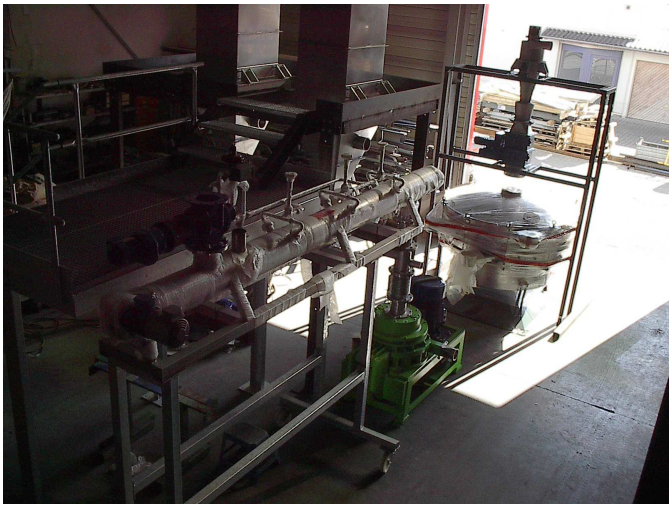
The fineness is adjusted by changing the grinding gap between rotor and liner.

The discharge is at the bottom of the grinding chamber, where the material is sucked out into a filter. Filter and the downstream material storage devices are closed and insulated to avoid coming up of condensation water.

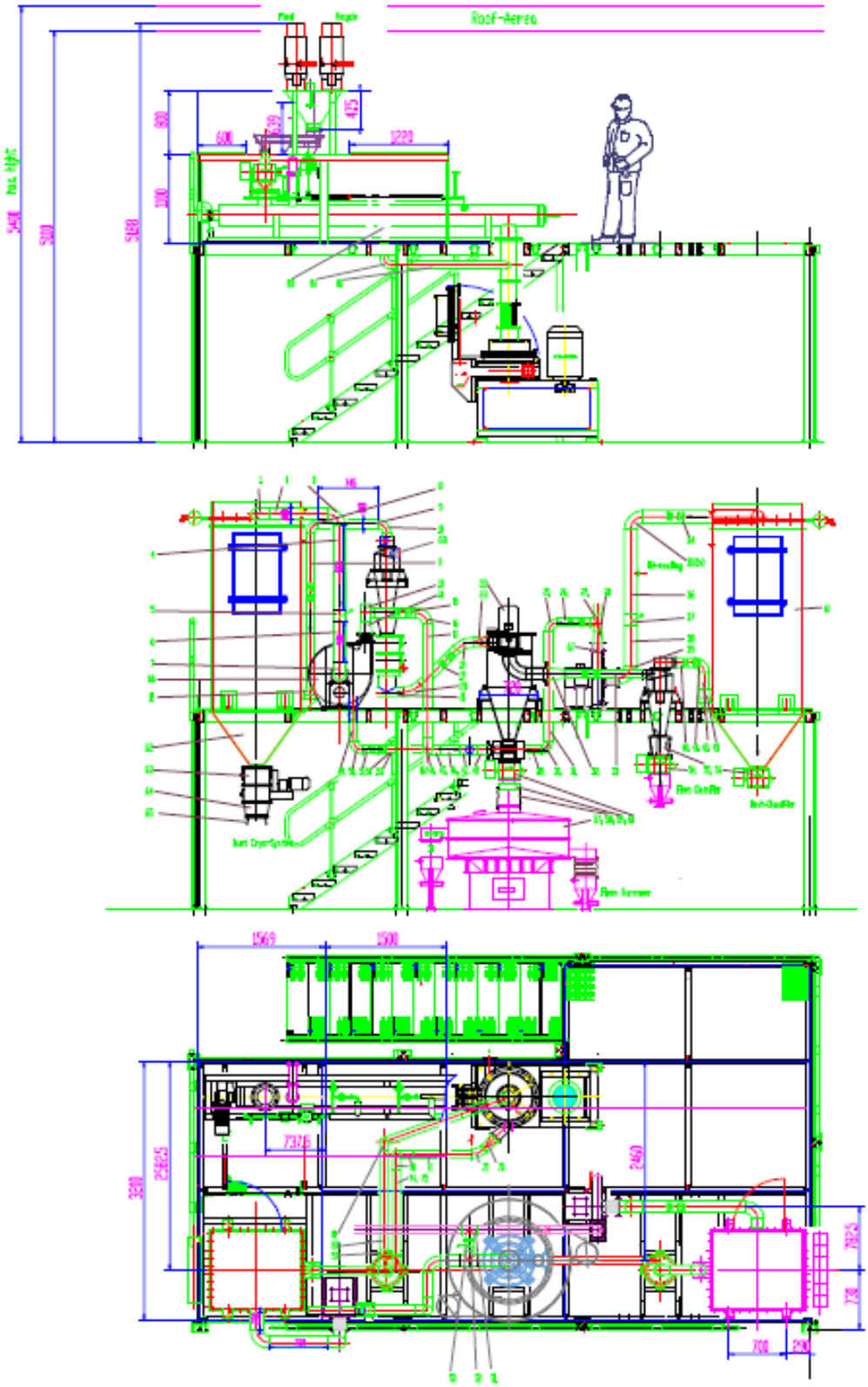


UTM 400 Plant in our custom grinding installation

UTM 400-Plant during pre-installation for testruns:



UTM 400 Cryogenic installation for thermoplastic powders

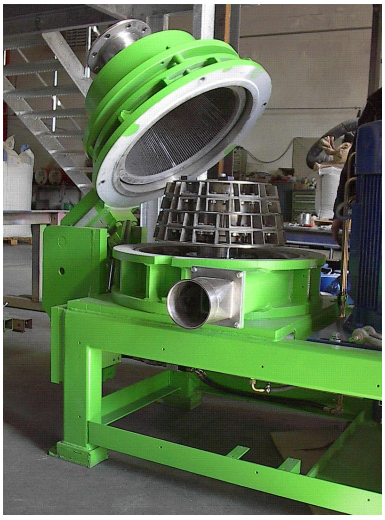


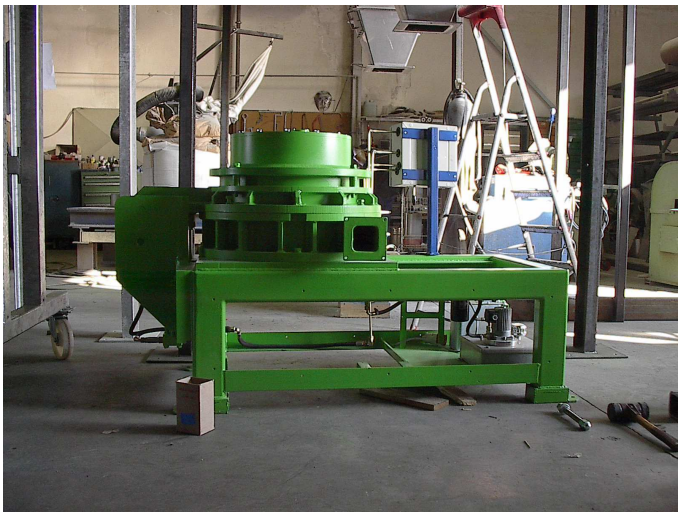
One of the largest Cryogenic Grinding units worldwide:

UTM 1200 for production of rubber-powder from tyre-recycling

UTM 400-Plant for Spices

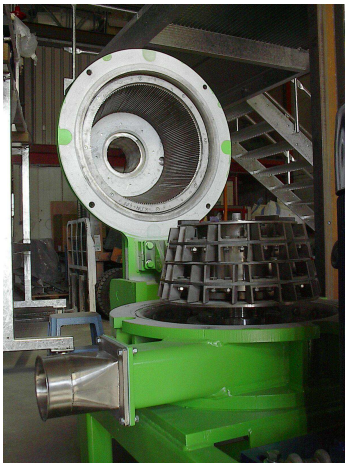
General information about UTM-Mill

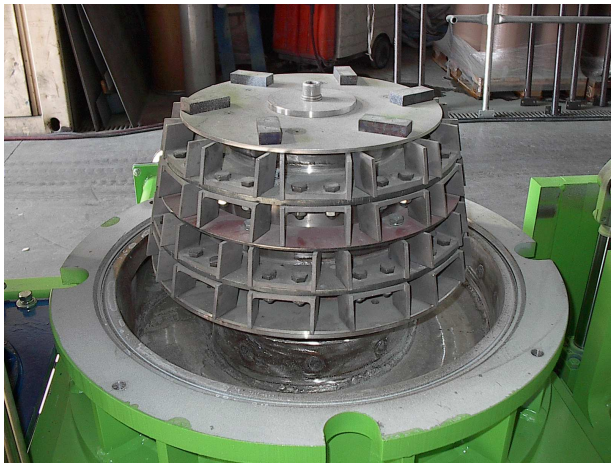




Patent: Mill opening device for easy access for cleaning and maintenance

Due to the design with only 1 drive and the compact grinding chamber the cleaning of the mill chamber is very easy.
The whole mill top section can be lifted mechanically by means of the patented mill opening device.
After opening you have full access to the grinding chamber and the rotor for cleaning and maintenance





For every application the right mill

Smallest production mill:
UTM 200

biggest production mill:
UTM 1600

Laboratory mill UTM 100

UTM 400 in stainless steel

Technical data:

The whirl mill is available in several size with grinding chamber diameters from 100 mm to 1600 mm. In Stainless steel for cryogenic grinding we have available:
UTM 200 UTM 400 and UTM 1200. Other sizes also can be delivered but with extended delivery times

Whirl Mill UTM, technical data							
Model		**UTM 100**	**UTM 200**	**UTM 400**	**UTM 800**	**UTM 1200**	**UTM 1600**
Diameter Rotor	mm	100	200	400	800	1200	1600
Mill Drive	KW	3 -5	11-18,5	22-45	55-90	110-160	160-250
Rotor Speed	Rpm max	22.000	12.000	6.000	3.000	2.000	1.500
Air Flow	m3/h	180	800	1.800	3.600	7.000	10.000
Scale-Up Factor		0,25	1	2,5	6	8,8	13
Opening Device		manual		hydraulical (EU Patent)			
Weight	kg	300	700	1.500	4.500	8.500	12.500
Length	mm	650	1.250	1.410	1.900	2.490	3.100
Width	mm	300	500	710	1.010	1.430	2.150
Height	mm	350	700	950	1.260	1.395	1.850