CREATIVE ENGINEERING CONSULTANTS, INC.

dba MICRO GRINDING SYSTEMS
1823 East 17th Street, Little Rock, AR 72202 USA
Office 501-374-8402 – Fax 501-374-0671
Website www.microgrind.com
Email microgrinding@att.net

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ENERGY SAVING MICROGRINDING SYSTEM

This is a different and more powerful method of
size reduction from a dry solid to a slurry!
How would you like to grind your product
to 44 microns for less than $.003/#
or have a finished product of
100% below 0.3 microns?

GET A VKE MILL!

The vibratory kinetic energy mill (VKE 2080) is the result of years of development. The maximum force 19,700# is generated by our 9hp electric vibrator motor. This allows us to grind either wet or dry. This motor is equipped with adjustable weights so that the grinding energy can be optimized to further reduce the kw required.

The mills construction consists of a very sturdy frame in which the grinding tube is suspended on 18 radially positioned springs. When the vibrating motor (attached to the bottom side of the tube) is energized this causes each grinding media (balls, rods or cylinders) inside the tube into an elliptical orbit of 3/16", thus creating a grinding action within the tube.

THIS CAUSES CONTINOUS GRINDING

The VKE mill with 9hp capacity only uses 6hp and can produce
material finer and at a higher rate than a 60hp ball mill.

AN ADDITIONAL ENERGY SAVING FEATURE

By pre-tensioning the grinding tube support springs the orbiting force applied to a spring allows the opposite spring to release its stored energy. This action results in reducing the operating hp from 9 to 6, an energy savings of 44%, thus reducing the OPERATING cost to less than $.003/# on the hardest materials. Due to improvements in the spring formula in 2009, the energy usage is cut in half for the mill power requirements.

We have developed a simple package of equipment to automatically grind to a specific particle size that consists of a feeder, VKE 1040 Pilot Mill, an adjustable air classifier, product collector, and a pneumatic transport system. This can be automated by electronic PID program to control the feed rate to the VKE Mill. With a system total of 17.5hp, 440V @ 22a.

The cost to grind using package of equipment in Arkansas kw = VApf1.732/1000 = 440V (22) (.9) (1.732)/ 1000 = 16.52kw/hr in Arkansas the power cost is = $0.1029/kwhr. The average mill system production rate to 44 microns is 500#/hr. Thus the operating cost /hr = $.0129 (16.52) = $1.70/hr. Assume the normal production rate of %00#/hr. = 1.70/500 = $.003/# cost to grind any material to 44 microns with a wide capacity to grind down to 100% less than 0.3 micron.

WE HAVE COMPLETE LAB EQUIPMENT to analyze your material both before and after grinding. We will prepare & process your raw material to required specified condition & give you a complete list of equipment needed to grind your product. The cost for the lab work is $400.00/day with a two-day minimum cost, which will be deducted from a mill purchase.

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The VibroKinetic Energy (VKE) Mill is designed to fill the need for a fine to ultrafine grinding mill which is both low cost and economical to operate. Optional features include air classification while dry grinding, which greatly improves the efficiency of the mill. Wet grinding with hydro cyclone recycle for accurate sizing, and use of vibratory table for concentration of ore values is also available.

The VKE mill is the most efficient fine grinding mill available. Extremely fast and very energy efficient, the VKE mill is very versatile and can be operated either wet or dry. The air injection system provided with the dry mills can be used to elutriate the material during the grind to pull sized fines out of the mill and allow the mill to grind only oversize material.

The VKE mill is available in four sizes:

Model 624, with a 6" x 26" tube, is a 1/2 hp laboratory size mill of table top dimensions. It is ideal for small scale continuous or batch test grinds.

Model 1040 is a 2 1/2hp pilot mill with a capacity to produce around 300 lbs per hour of fine material from 1/4" feed. This size is ideal for pilot plants, small mining operations, pigments and cosmetic applications. It is of modular design and can be used in multiples, if desired.

Model 2080 is the standard production mill, equipped with a 9hp or a heavy duty 12hp motor, can produce one ton per hour of fine material from hard 1/4" feed material.

Model 30120 is the newest and largest production mill and can be configured as dual mills or a single mill. The VKE 3080 mill uses two 9hp motors and with 1/4" and under feed material is capable of as much as 3 tons per hour production.

Any of the VKE mills can be run wet or dry, and configured in multiples with a rod equipped rougher mill feeding two fine grind mills equipped with steel balls, ceramic or any type of media that can be used to grind material down to sub-micron particle size.

Our VibroKinetic Energy Mill is designed for ultra-fine pulverization of minerals and metallic ores to release and concentrate maximum values. The mill is simple, low cost and practically maintenance free. Energy savings of 50-85% or more over other types of mills is attained by:

- The unique energy saving spring-suspended grinding chamber which retains all of the energy applied except that used directly in grinding.
- Use of a high speed type vibratory motor which increases grinding impact rate, resulting in faster grinding.
- Directly attaching the vibratory motor to the mill, eliminating the need for complex mechanical drive components

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624 Mill

1040 Mill (alongside two 2080 mills)

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2080 Mill with one 9hp motor and auger feeder; a mill system when classification is not needed.

Dual 2080 Mills, Adjustable Air Cyclone Classifiers, Modified 6 Filter Dust Collector, Vibratory Feeders, and Stainless Steel Piping

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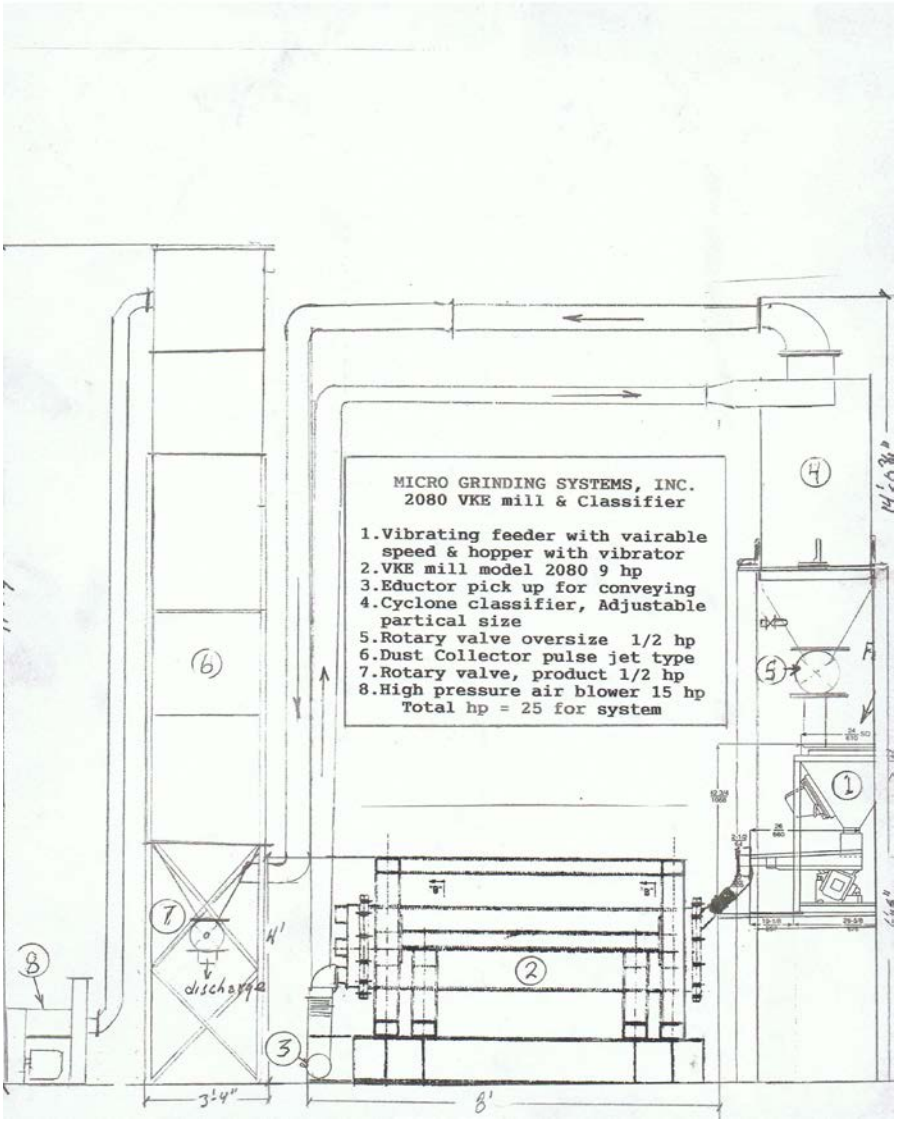
2080 VKE Mill & Classifier



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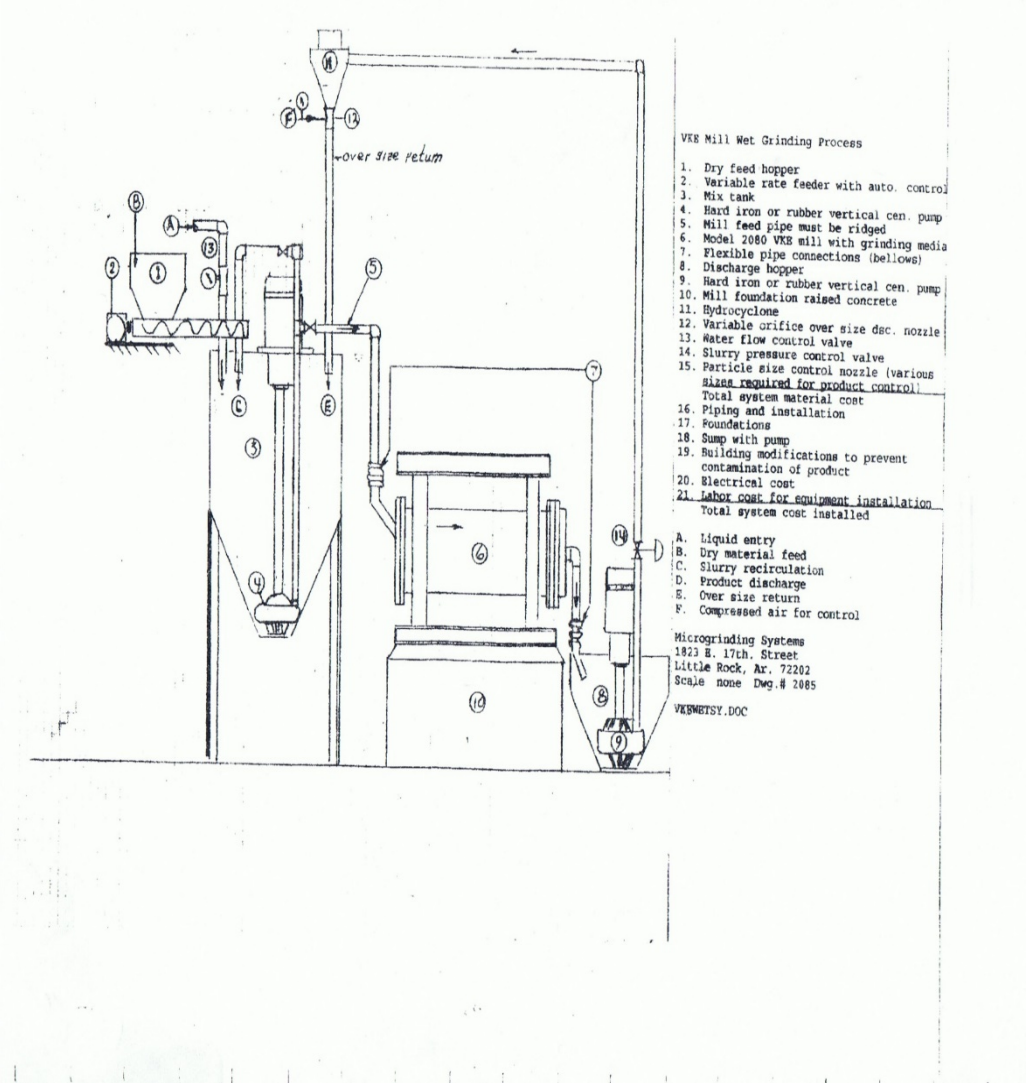
VKE MILL WET GRINDING PROCESS



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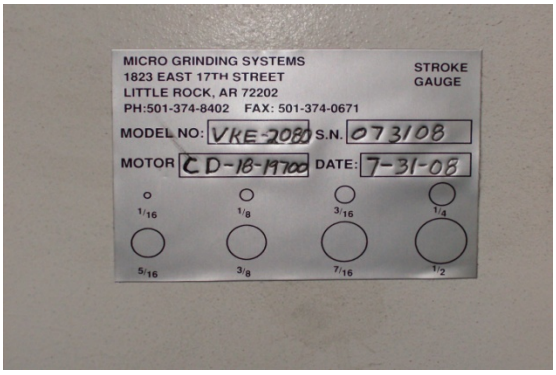

Our VKE Mills have 1,800 rpm motors and between 1/8" and 3/16" amplitude depending on motor adjustment and weight of grinding media.

Amount and weight of grinding media differ with type.

Rod Loads:
624 Mill – 125 lbs
1040 Mill – 350 lbs
2080 Mil 9hp motor – 2,500 lbs
2080 Mill 12hp HD – 3,000 lbs
30120 Mill – 6,000 lbs

Multiple mills can be stair-stepped or as in this photo stacked one on top of another if multiple passes are required.

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GRINDING MEDIA

Steel Balls or Cylinders

Ceramic Balls or Cylinders

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WEAR LINERS

Rubber

Steel or Stainless Steel

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TEST GRINDING PRICES

- All testing prices include particle analysis information.
- All testing fees will be deducted from any new equipment purchases within six month of testing date.

624 / 1040 Mill Dry Grinds

44um and larger	$400.00/day
Each additional material or media change	$200.00
44um and smaller (including classification)	$800.00/day
Each Additional material or media change	$400.00

624 / 1040 Mill Wet Grinds

Wet Grinds	$800.00/day

2080 Mill Dry Grinds

44um and larger	$1,500.00/day
44um and smaller (including classification)	$2,000.00/1st day
Each additional material or media change	$1,000.00/addtl days

2080 Wet Grinds

Wet grinds	$2,000.00/day