

RAYMOND®

HP BOWL MILLS

With a 130 years of experience, Raymond is a leader in the design and manufacture of industrial milling equipment and has set the standard in size reduction.

DESIGNED AND BUILT FOR FLEXIBILITY

Raymond Bowl Mills: With over 5,000 units in place worldwide, the bowl mill is considered by many to be the finest machine available for pulverizing coal and pet coke as primary fuel for firing kilns, air heaters and other process equipment. It provides a safe, efficient means of uniformly pulverizing and drying these fuels. The HP mill, the latest in the series, continues to redefine the standards of coal grinding.

Reliable Solutions

BOWL MILL SYSTEM

The typical Raymond bowl mill system is designed to simultaneously dry, pulverize, and classify solid fuels to 95% passing 200 mesh ($<5\%R75\mu$) with a wide range of capacities from 24 to 150 stph.

COST EFFICIENCY

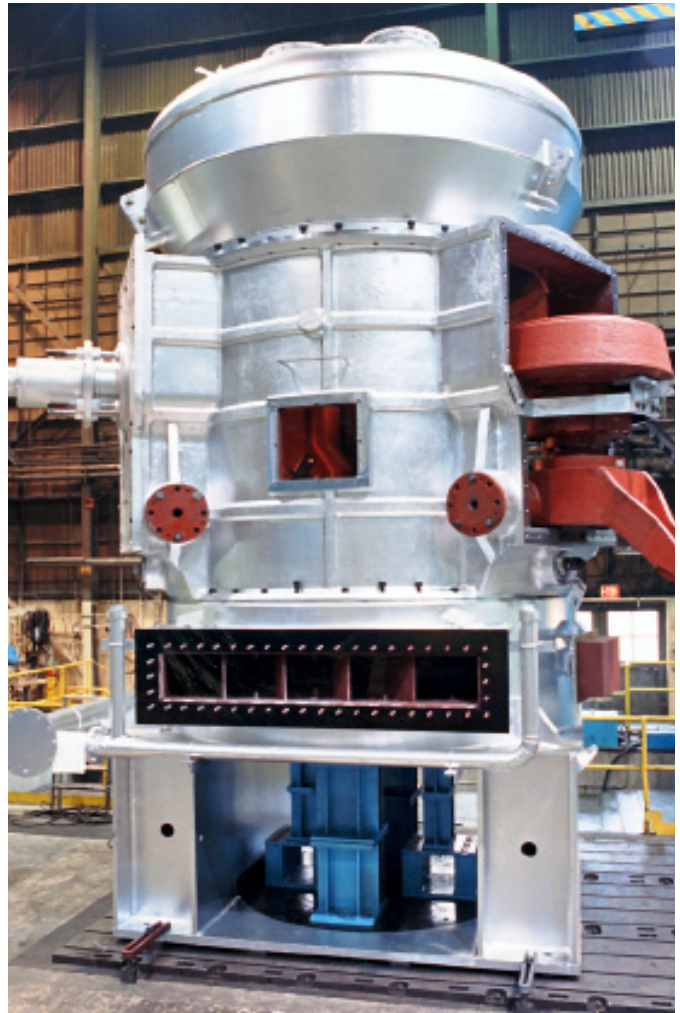
The Raymond bowl mill can reduce your operating cost while enhancing overall process control and plant efficiency. The simple, effective design translates to a pulverizer that is simple to erect, simple to operate and easy to maintain while providing the flexibility necessary for today's sophisticated process system.

CUSTOM ENGINEERED SYSTEMS

Each bowl mill system is custom designed to achieve the best solution for the processing application. The mill, feeder, classifier, fan, cyclone, dust collector and other system components are selected to meet the requirements and characteristics of the material processed.

EXPERIENCE

Raymond pulverizing and classification equipment has been setting the standards in size reduction since 1887, serving many types of mineral processing industries. Our portfolio includes not only the Raymond Bowl Mill but the Raymond Roller Mill, Raymond Imp Mill, Raymond Vertical Mill, Raymond Ultra Fine Mill and others.



**RAYMOND
BARTLETT SNOW**

Providing Full Scope of Services to Our Customers

Raymond is known for its reliable size reduction and classification equipment by customers worldwide. Our product line is supported by our engineering and field service departments to ensure the highest level of customer satisfaction, while delivering the reliability and high level of performance that today's industrial applications require.

BOWL MILL SYSTEM

The HP mill, the newest in the series of Raymond bowl mills, continues to redefine the standards in coal grinding. These designs feature engineered attributes that lower initial cost, enhance operations, assure maximum availability and facilitate maintenance.

Utilizing our latest dynamic turbine classifiers, pulverized solid fuel can be generated possessing a steeper particle size distribution and reduced top size. This yields a more homogeneous product for better combustion.

APPLICATIONS

The Raymond bowl mill has played an important part in the conversion to solid fuel by a number of industries. As energy costs continue to rise, and the differential between coal and other petroleum-based fuels continue to increase, more industries are learning that converting to pulverized coal firing can be economically feasible. Raymond bowl mills are now operating in such diverse applications as cement kilns, lime kilns, coal gasification plants, taconite kilns, industrial air heaters and furnaces, and coal/oil mixture-fired boilers.

PERFORMANCE FEATURES

- Wide range of capabilities - nine sizes provide base capabilities from 24 to 150 tph.
- Quiet, smooth operation - design insures no metal-to-metal contact between grinding rolls and ring, fuel grinds on fuel...results in smooth, vibration-free operation with low noise levels.
- Handles variety of fuels - accepts bituminous, sub-bituminous and lignite coals and petroleum coke with initial moisture content as high as 40% for lignites.
- Flexibility - available with both dynamic and static classifier, spring or hydraulic journal loading, the bowl mill is designed to operation efficiently in direct and indirect solid fuel firing systems.

EASE OF MAINTENANCE

- Raymond Bowl Mills are made to operate dependably and consistently. Replacement of critical grinding elements can be accomplished in a minimum of time with its easy maintenance features.
- Easily replaced journals and journal rolls - journal is removed through its own integral door. Design incorporates lift-out feature for easy access, no need to dismantle journal loading mechanism.
 - Segmented grinding rings to facilitate replacement - wear surface on bowl is segmented into small pieces, no special tools or handling fixtures required.
 - Simple preventative maintenance procedure - check the level and condition of oil in journals and gear reducer on a regular basis.



DESIGN FEATURES

Externally adjustable classifier - static or dynamic, selection of fineness from 70% to 95% through 200 mesh (75 microns) without stopping the system.

High turndown ratio - system allows safe, instantaneous adjustment of capacity without affecting fineness, with a turndown ratio up to 5 to 1.

Rolls - tapered grinding rolls are mounted in individual pivoting journal assemblies that are supported independently by pulverizer.

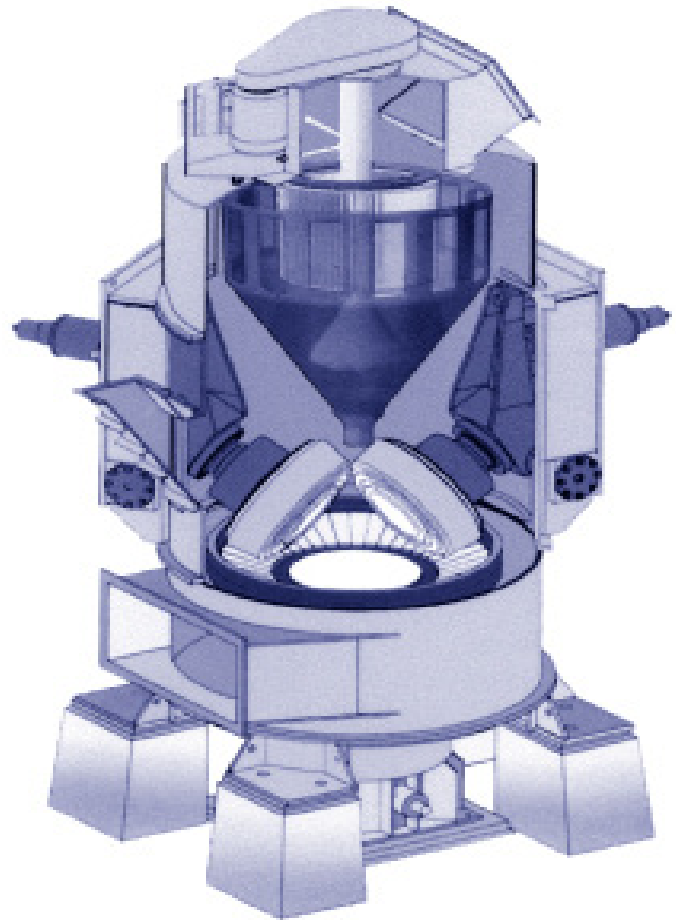
Journal loading - spring loading is available for maximum simplicity or hydraulic loading for flexibility.

Gear reducer - independent right angle reducer with external lubrication.

Low pressure drop - mill housing and bowl geometry provides minimum pressure drop (nominal 10 in. wg or 25 mm wg through mill) means fan power savings.

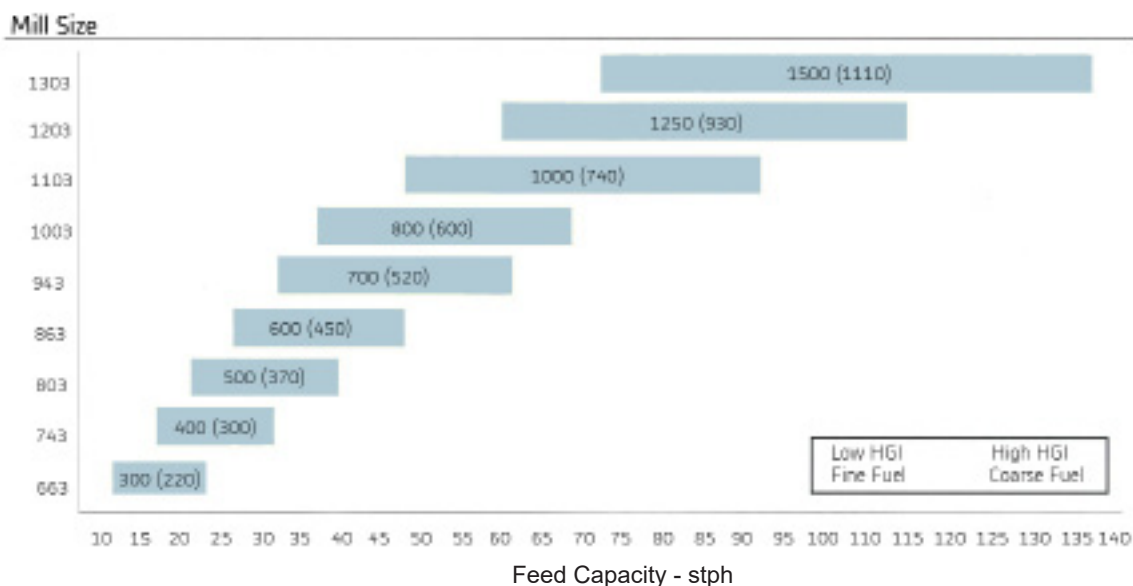
Efficient rejection of impurities - designed to reject up to 25% of inorganic pyritic sulphur, as well as other impurities and tramp iron.

Complies with NFPA - all bowl mills are constructed to comply with NFPA (National Fire Protection Association) Code 85.



CAPACITY RANGES FOR RAYMOND BOWL MILLS

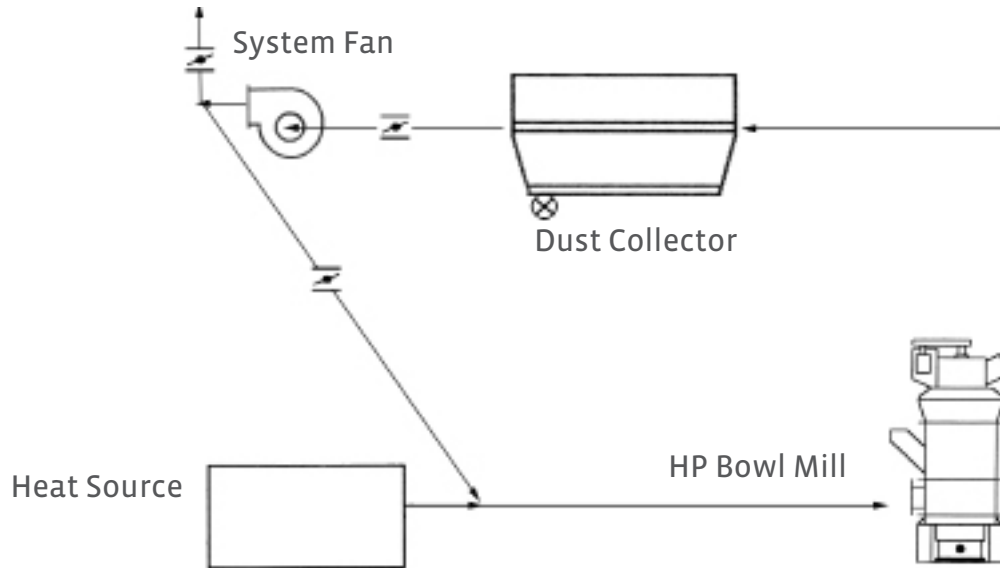
Maximum connected mill power in hp (kW) is indicated below for each mill size. Hardgrove grindability index (HGI) and pulverized fuel size determines feed capacity in stph.



RAYMOND® HP BOWL MILLS

SYSTEM ARRANGEMENT

Like its predecessor, the HP bowl mill is readily adaptable to a wide variety of applications and firing circuit designs. From alternatives such as using “once-through” air handling with hot air from a cement cooler or “recirculation” utilizing drying gas from a preheater discharge, our engineers can assist you in designing a firing circuit appropriate for your application and fuel source, for coarse or fine grinds and from low to a high moisture coals, petroleum or shot cokes.



AIRFLOW AND POWER REQUIREMENTS

Mill Size	Mill Power		Nominal Air Flow		Turbine Classifier	
	hp	kW	ft ³ /min	m ³ /hr	hp	kW
663	300	220	20,000	34,000	25	18
743	400	300	28,000	48,000	30	22
803	500	370	36,000	61,000	40	30
863	600	450	42,000	71,000	50	37
943	700	520	54,000	92,000	60	45
1003	800	600	62,000	105,000	75	55
1103	1000	740	82,000	140,000	100	75
1203	1250	930	100,000	170,000	125	90
1303	1500	1100	120,000	204,000	150	110