

# RAYMOND® IMP™ MILL for BIOMASS

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.

## MAIN FEATURES

- Versatile and dependable.
- Available in six sizes.
- Capable of simultaneously pulverizing, classifying, and drying.
- Heavy-duty design and construction.
- Can withstand pressure up to 50 psig.

## Pulverize Wood Waste and Other Fibrous Materials

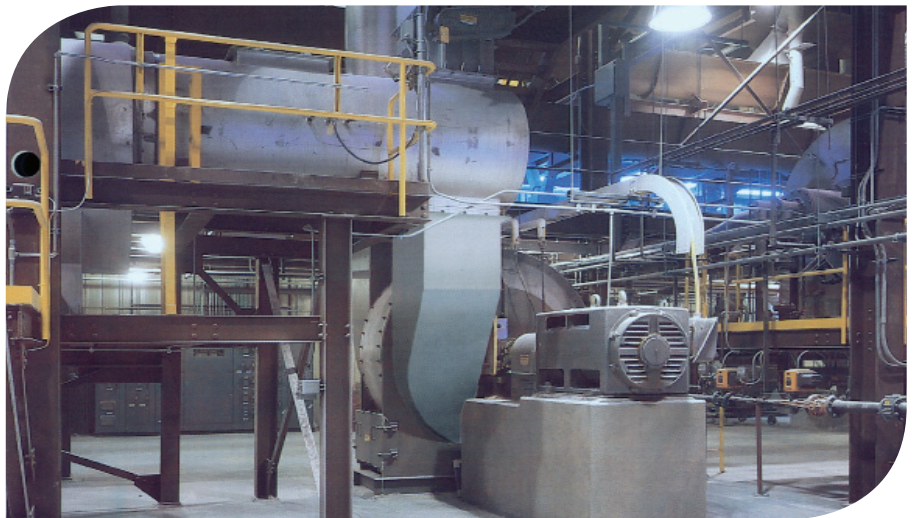
The Raymond Imp Mill System: Versatile and dependable high speed air-swept swing hammer impact mill designed for fine and medium grinding of soft non-metallic minerals, coals, various chemical compounds, food products and biomass.

With costs of conventional fuels increasing, many manufacturers are exploring alternative fuels for firing kilns, boilers, dryers and furnaces either directly or from pellets. As a result, biomass sources such as wood chips, sawdust, bark and other fibrous materials are being developed as primary fuels.

Three basic systems utilizing the capabilities of the Raymond Imp Mill with Flash Drying have been developed. These systems can pulverize sawdust, bark, wood chips, pelletized wood waste, rice hulls and seed hulls to finenesses up to 50% passing 100 mesh (50% retained on 150 micron) with capacities up to 20 tph.

The imp mill is a versatile and dependable high speed swing hammer impact mill. Raw feed, nominally one inch (25mm) or smaller in size, enters the mill grinding chamber and is impacted against the swing hammer and walls of the mill to pulverize the material. Built for heavy-duty use, the mill is generally constructed to withstand pressures up to 50 psig (3.5 bar).

The systems are effective for simultaneous grinding, drying and classifying biomass materials. After passing through the grinding chamber the particles are carried via air stream to a classifier, where oversized particles are returned to the mill for further grinding. An important feature of the system is its drying capability. Material is flash dried by introducing heated air into the mill. Final moisture levels are determined through automatic temperature controls.



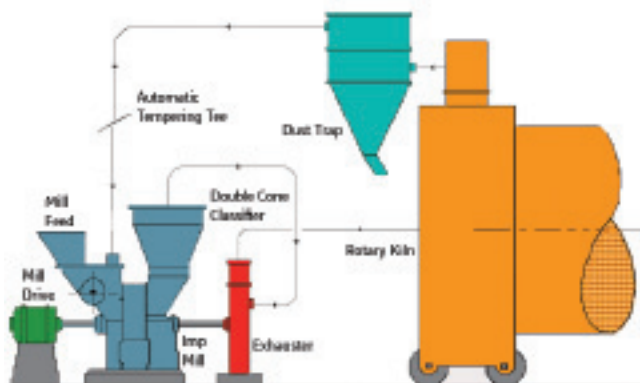
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Given the many sources of wood waste and biomass fuels currently available, any of the wide variety of mill configurations may be utilized. Shown below are typical arrangements for firing biomass fuels.

## Direct Fired System

When direct firing is desired, the pulverized material is conveyed with the spent drying gas by an exhaustor into a burner pipe, and then to the burning zone of the kiln or furnace.

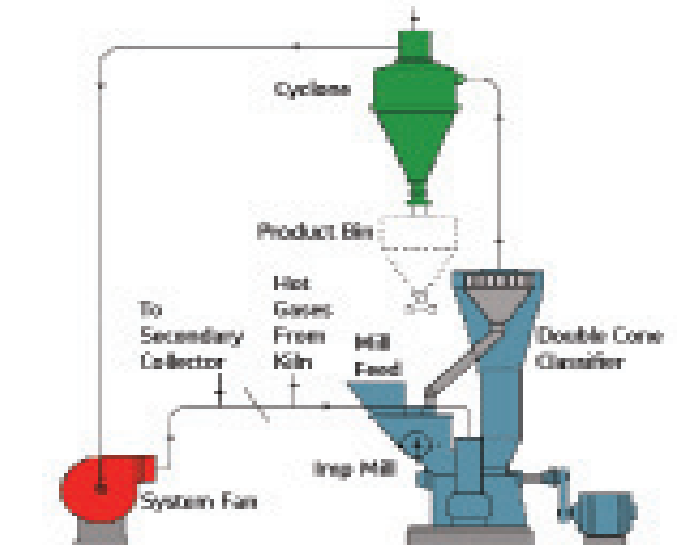
In those cases where hot drying gases from the kiln or furnace may contain abrasive materials, a dust trap is provided to reduce wear on mill parts (also available for indirect fired systems).



## Indirect Fired System - Fine Grind

An indirect fired system using biomass fuels operates similarly. The major difference is that the fuel is carried from the mill to a storage bin for later distribution to a firing system or pelletizing process. Some spent gases from the cyclone are recirculated back to the mill for temperature control of entering hot gas.

The reduced material passes through a classifier which separates the fines and returns oversize particles to the mill to be reground. Adjustable vanes on the classifier allow for a wide variety of fineness.



## Indirect Fired System - Coarse Grind

When coarsely ground biomass material is desired, an external screen is used in closed circuit with the mill in place of the double cone classifier. Properly sized product passes into product bins, and oversize particles are returned to the mill for further reduction.

