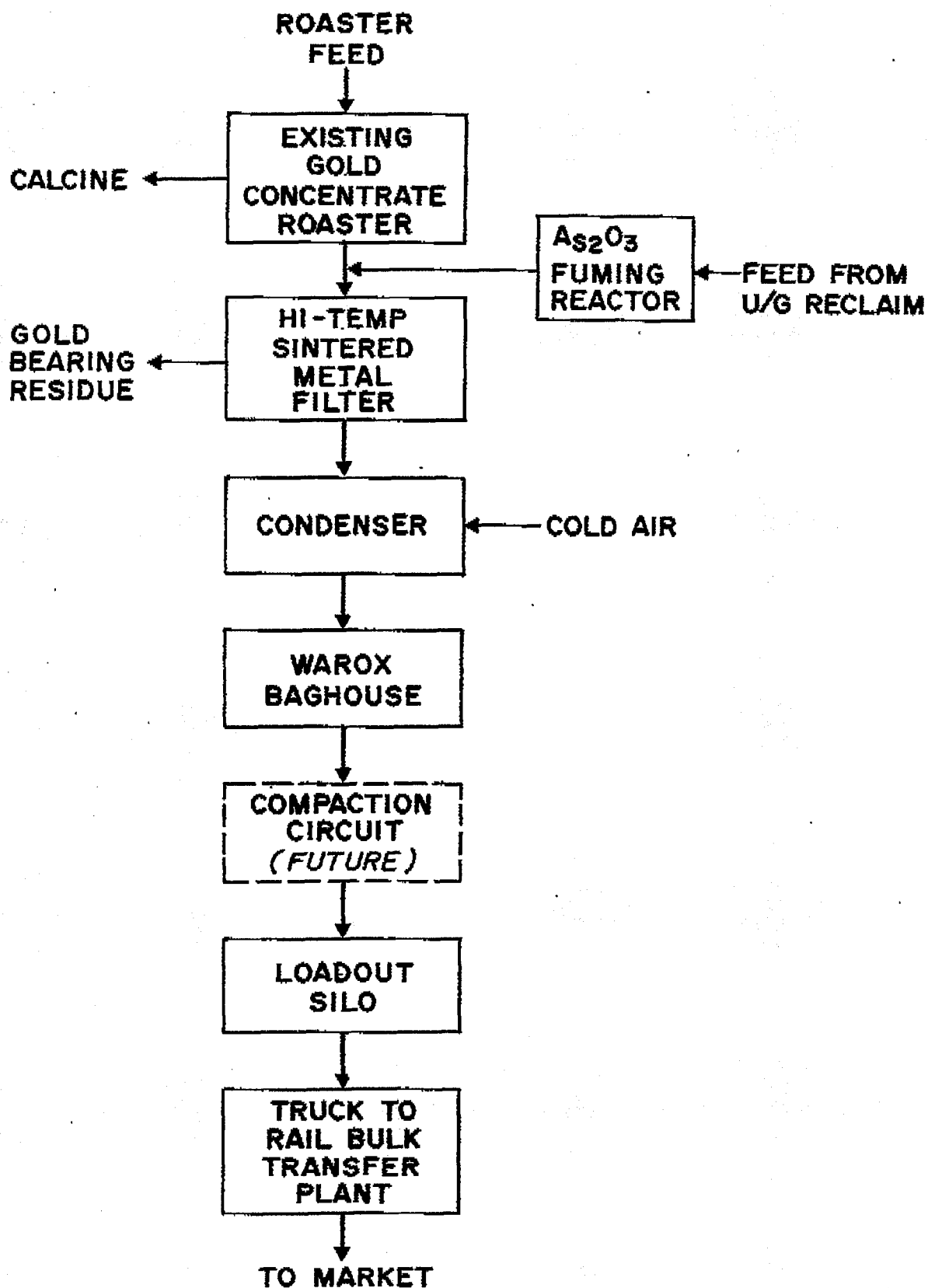


WAROX PROCESS FLOWSHEET



GIANT YELLOWKNIFE MINES LIMITED

The WAROX Process

Toxic arsenical byproducts are a fact of life for many mines and smelters throughout the world, and for these companies, toxic waste disposal is a large part of the cost of doing business. Add to this the public concern about proliferation of toxic waste storage sites, and there are strong economic and environmental incentives for smelter operators to find better ways of dealing with these materials.

Fortunately, arsenic trioxide, the most common arsenical component of smelter byproducts, has a variety of uses, the most important as a major constituent of waterborne arsenical wood preservatives. In tests of widely used chemical wood preservatives, EPA studies gave only wood treated with arsenicals a clean bill of health. When one considers that treated wood has a useful life up to ten times that of untreated wood, there are obviously sound reasons for the consumer, as well as the smelter operator to make better use of arsenicals.

Too, there is a growing public concern about depletion of forests caused by the demand for wood products, and reforestation programs have some way to go before they will be able to keep pace with the demand. Use of wood preservatives maximizes the useful life of wood structures, reducing the need for replacement and slowing the rate of depletion of forest reserves. Another good argument in favour of greater use of environmentally friendly arsenical wood preservatives..

Giant Yellowknife Mines Limited has developed a process that will economically convert crude arsenical smelter wastes to a highly refined, dust free arsenic trioxide product that can be used directly by the wood preservative manufacturing industry. Depending upon the impurities originally contained in the crude material, it may be found that other valuable constituents, such as gold or antimony oxide, can also be profitably recovered from the process residues. The refined arsenic produced by this process is known as WAROX[®], an acronym for White ARsenic OXide, which is a common name for arsenic trioxide.

Giant's process is environmentally clean, collecting 100% of the WAROX produced. The WAROX process converts crude arsenic to a high purity fine white powder that is subsequently compacted to produce dense, dust free granules. The high bulk density of the WAROX product reduces packaging, shipping and storage costs, and the dust free feature is particularly appreciated by customers who have to store and handle the material.

For more information about Giant's WAROX process, or about WAROX products, contact S. McAlpine, Mine Manager at (403) 873 6301, fax 403 873 2980 or write Giant Yellowknife Mines Limited, Bag 3000, Yellowknife, NWT. X1A 2M2.

GIANT YELLOWKNIFE MINES LIMITED

Fluosolids Roasting

Treatment of refractory gold ores has confounded metallurgists for decades and today the mineral industry has still only made small progress towards finding an effective means of liberating gold when it is locked up in sulphide or carbonate ores. In fact there are only a very few processes that have wide acceptance, no one of which is suitable for all refractory ore types. Of these processes, which include fine grinding, pressure leaching, and roasting, the latter two are more likely to be successful in achieving acceptable gold recoveries. Roasting is generally considered to be lower in capital and operating cost, and simpler to operate.

Giant's two stage fluosolids roasting process has been in operation for over 30 years now, and except for refinements related to gas handling, it is still the standard against which other roasting plants are measured. During the period that Giant's roaster has been in operation, the company has established a reputation for expertise in roasting technology and is now often consulted by engineering firms and mining companies for assistance in design and operation of roasting plants.

Giant's roasting process is completely autogenous, using only sulphur in the feed as fuel to sustain the reactions. Controlled temperature and oxygen conditions in each stage results in the volatile elements, chiefly arsenic and sulphur, being carried off in the gas stream, leaving behind a porous calcine particle from which gold can be extracted by cyanidation. The arsenic oxide is collected in a baghouse filter and many plants operating roasters are able to market this byproduct. Sulphur dioxide can be scrubbed from the gas stream using lime scrubbers or, if a local market exists, the sulphur dioxide can be readily converted and recovered as sulphuric acid. Solid residues and liquid effluents from roasting processes are similar to those from conventional cyanidation plants, and waste streams can be treated effectively using common waste treatment technology.

In summary, the well proven fluosolids roasting process continues to play a major role in the treatment of refractory gold ores around the world, and Giant Yellowknife Mines Limited is acknowledged as a leader in the advancement of roasting technology. The company provides consulting services and roaster startup assistance to the gold mining industry and is pleased to answer any enquiries.

For more information about Giant Yellowknife's fluosolids roasting expertise, please contact S. McAlpine, Mine Manager at (403) 873 6301, fax (403) 873 2980, or write Giant Yellowknife Mines Limited, Bag 3000, Yellowknife, NWT.. X1A 2M2