

Penanganan Bahan Padat

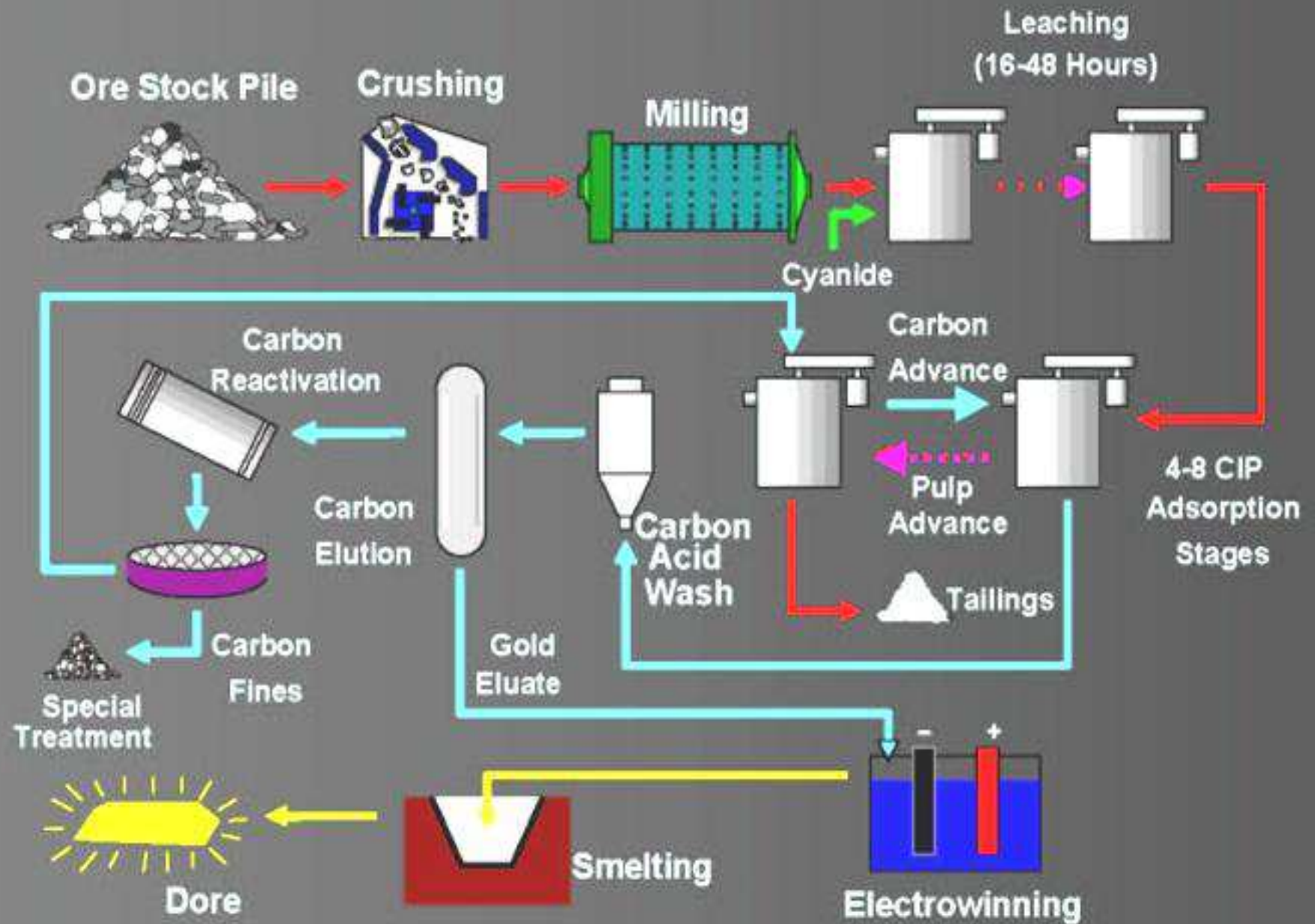
Teknik Kimia FT UNS

Sperisa distantina

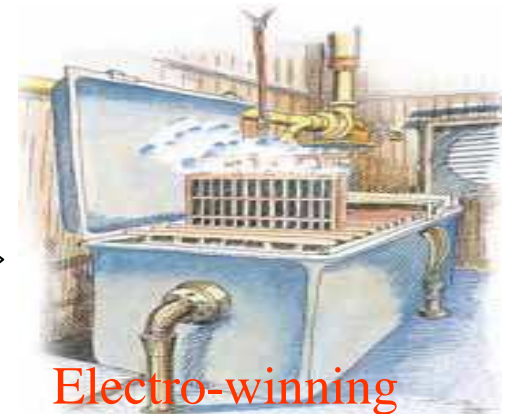
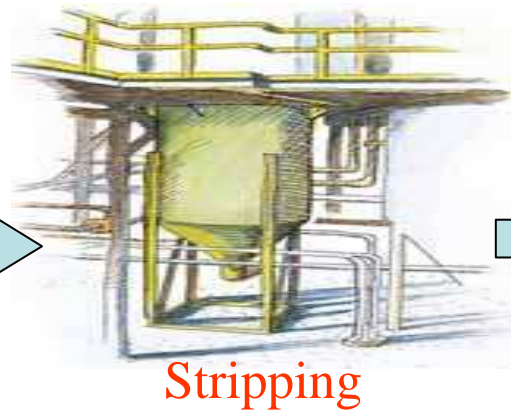
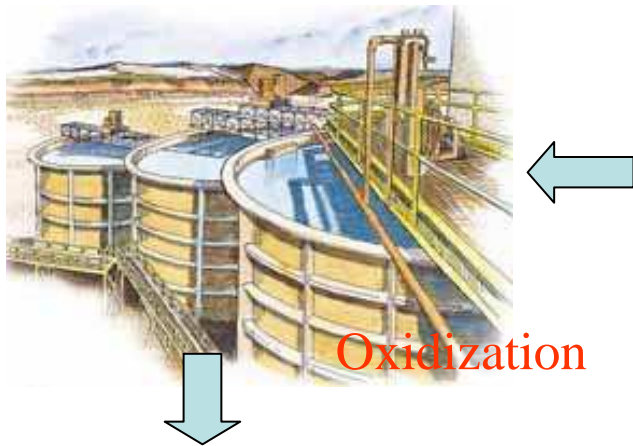
Pendahuluan (lanjutan): beberapa
proses dengan penanganan bahan
padat

Cyanide extraction for Gold

- PROCESS: Preparation
 - ground into fine powder –
 - mixed in solution of NaCN (sodium cyanide) & water
 - referred as SLURRY
- PROCESS: extraction
 - Zinc powder is added to this gold-cyanide solution – which precipitates out the gold -
 - The mixture then goes thru a filter where the precipitate sticks to a heavy canvas filter which is later cleaned to remove the gold.
 - Extreme heat is applied which burns off the Zn
- ENVIRONMENT:
 - Gold mines make sure that cyanide doesn't escape, by using containment systems and recycling the water.
 - Entire operation must be kept on the alkaline side – HCN is volatile and poisonous
- ALTERNATIVE PROCESSES
 - Gold extraction by Mercury. Elemental Hg forms an amalgam with many metals, such silver and gold.
 - Mercury boiled off, precious metals remain.
 - Practised in Central America 1570-1900, and in Brazil until now.



Gold mining



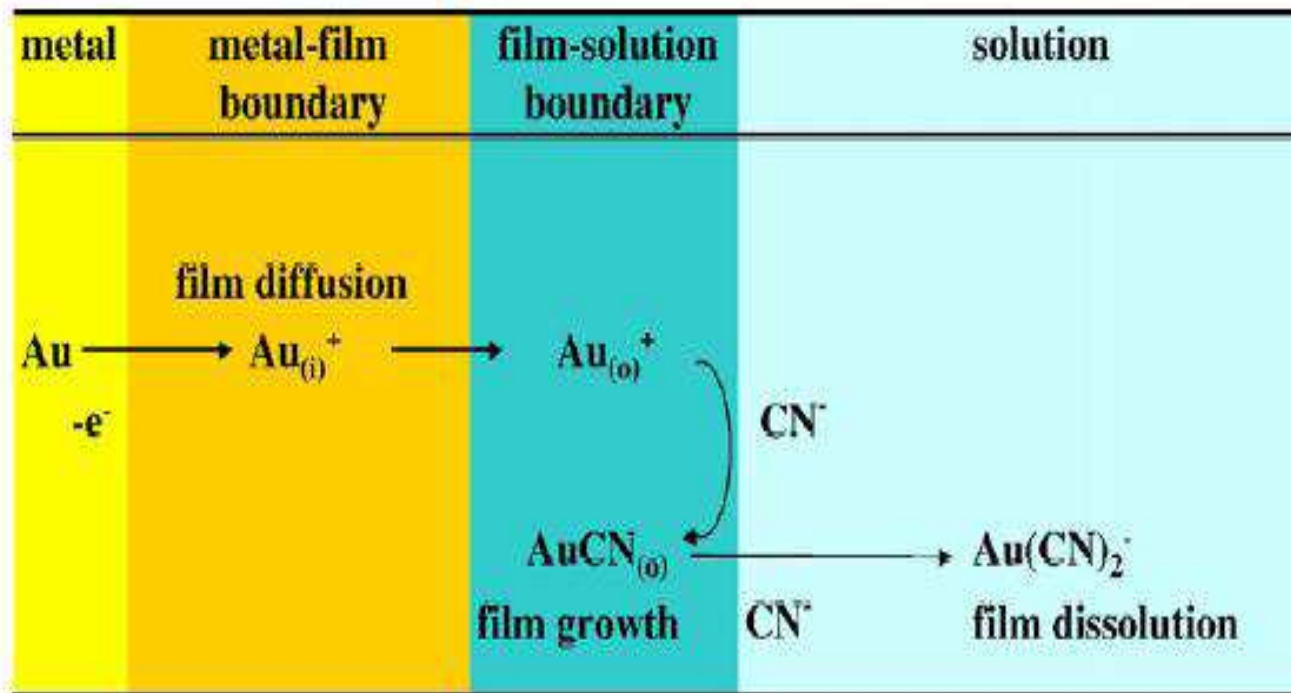
Indicative Plant Layout

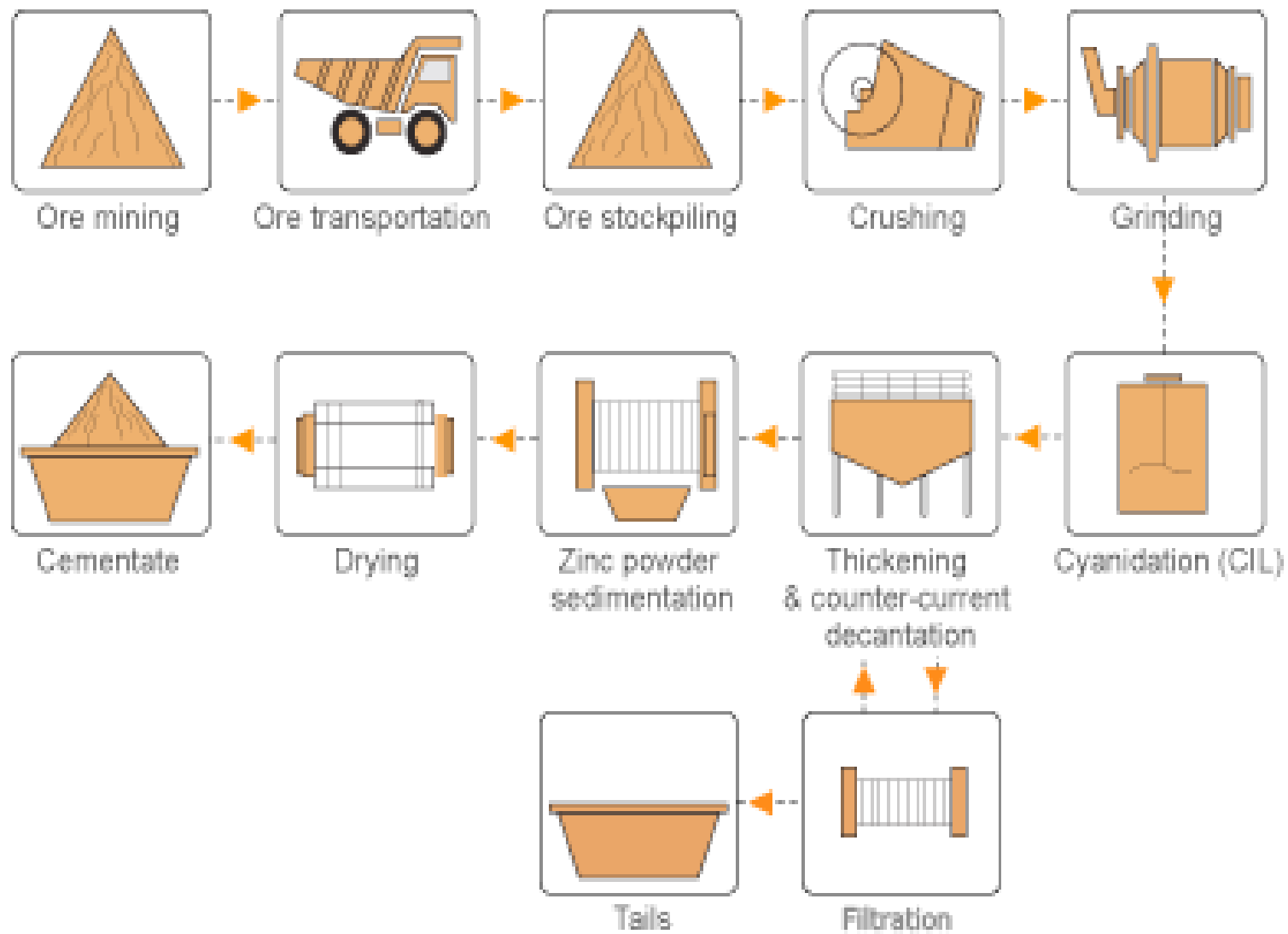


BODDINGTON
EXPANSION

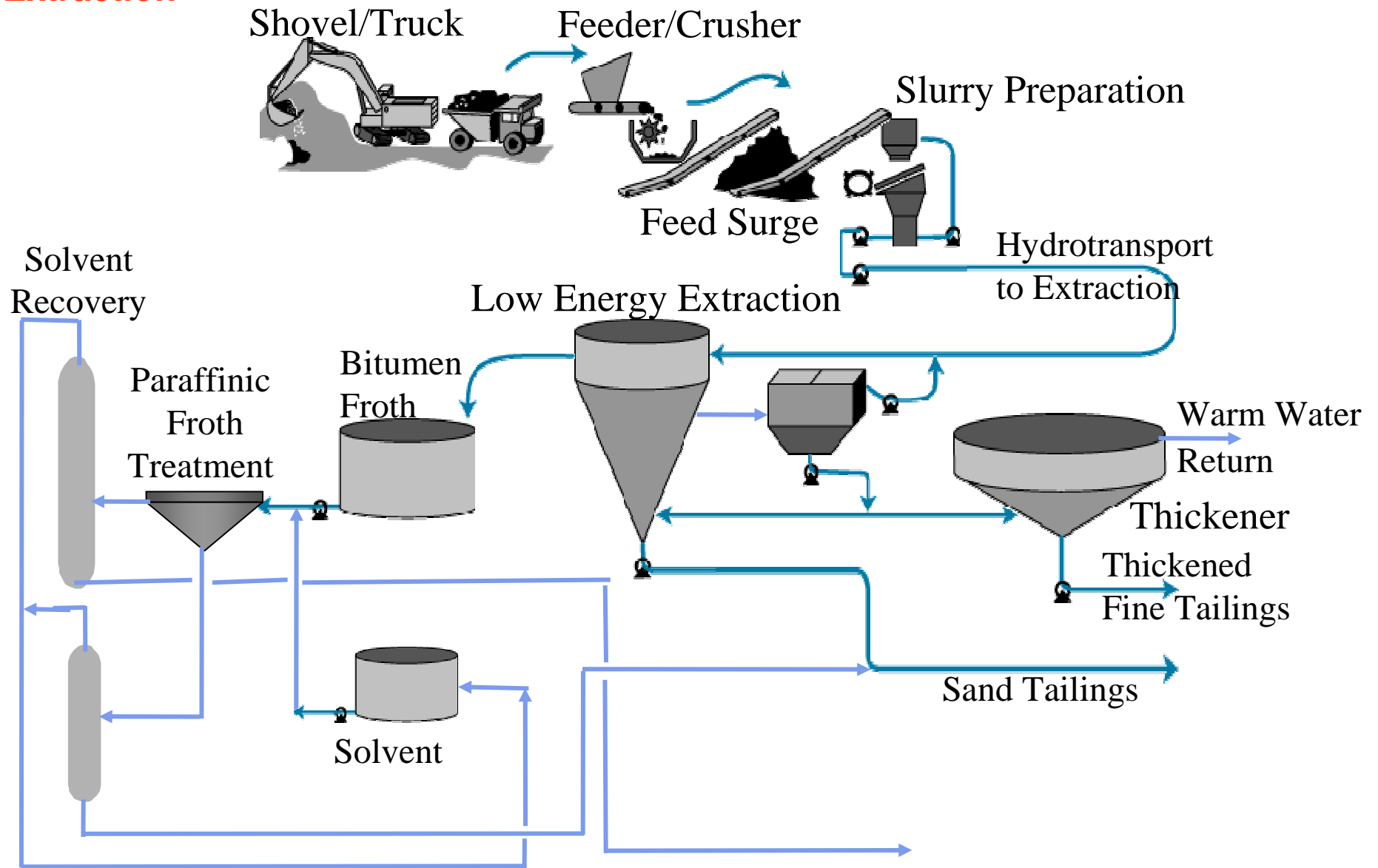
BODDINGTON EXPANSION
FEASIBILITY STUDY
PLANT AREA PERSPECTIVE

Cyanide extraction for Gold

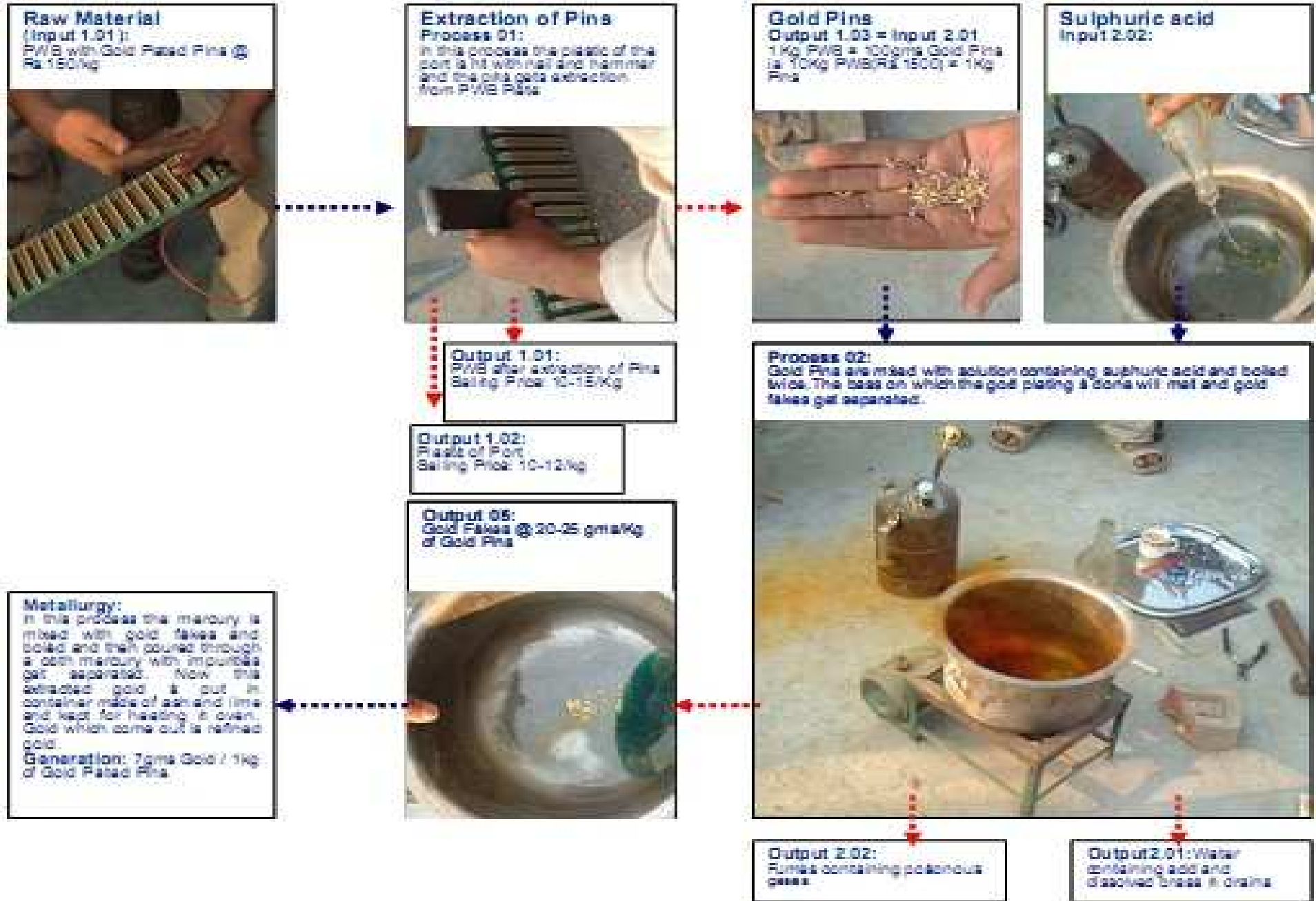




Bitumen Extraction



Gold leaching processes from PCBs (printed circuit board)



Integrated Waste Plant

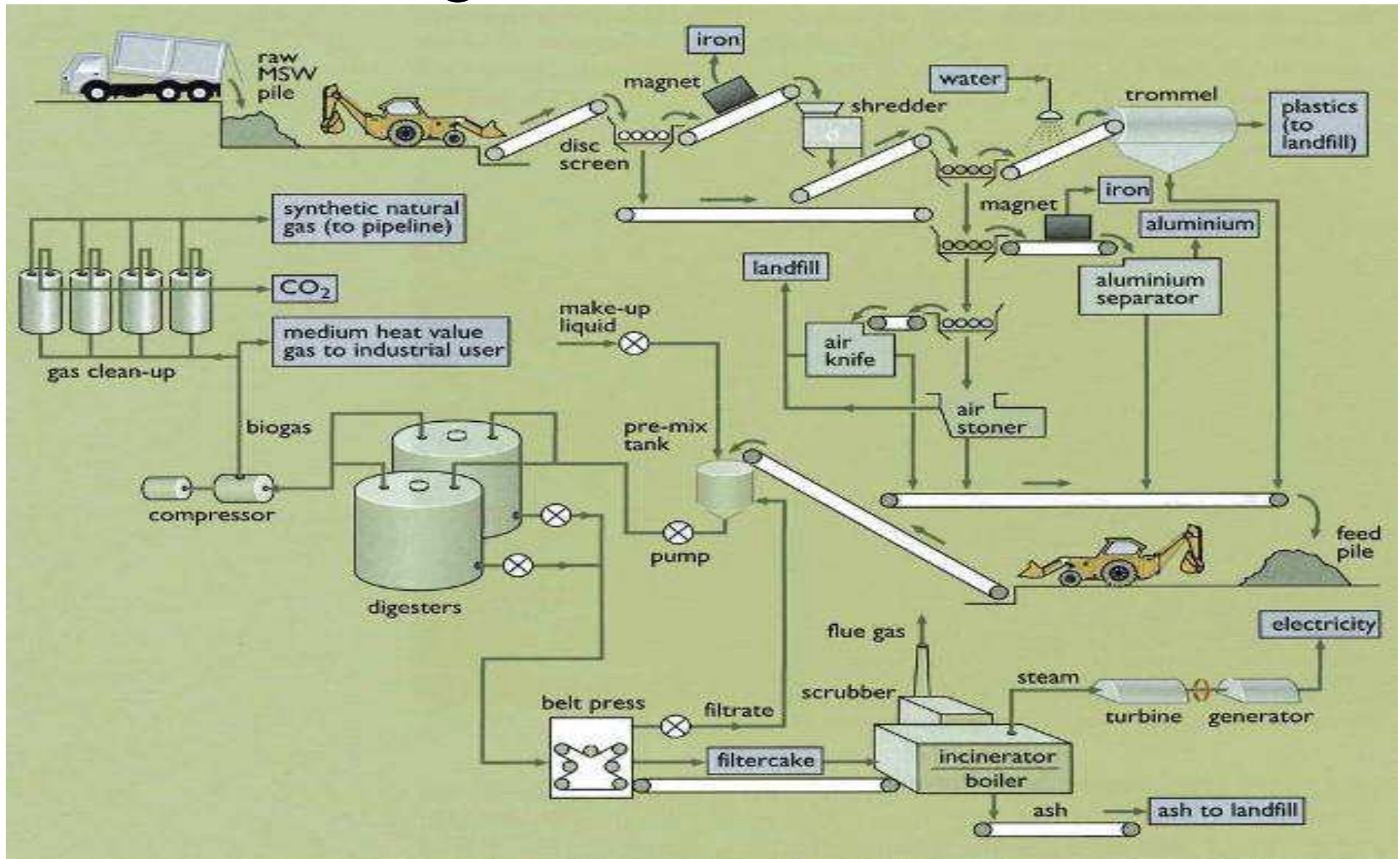
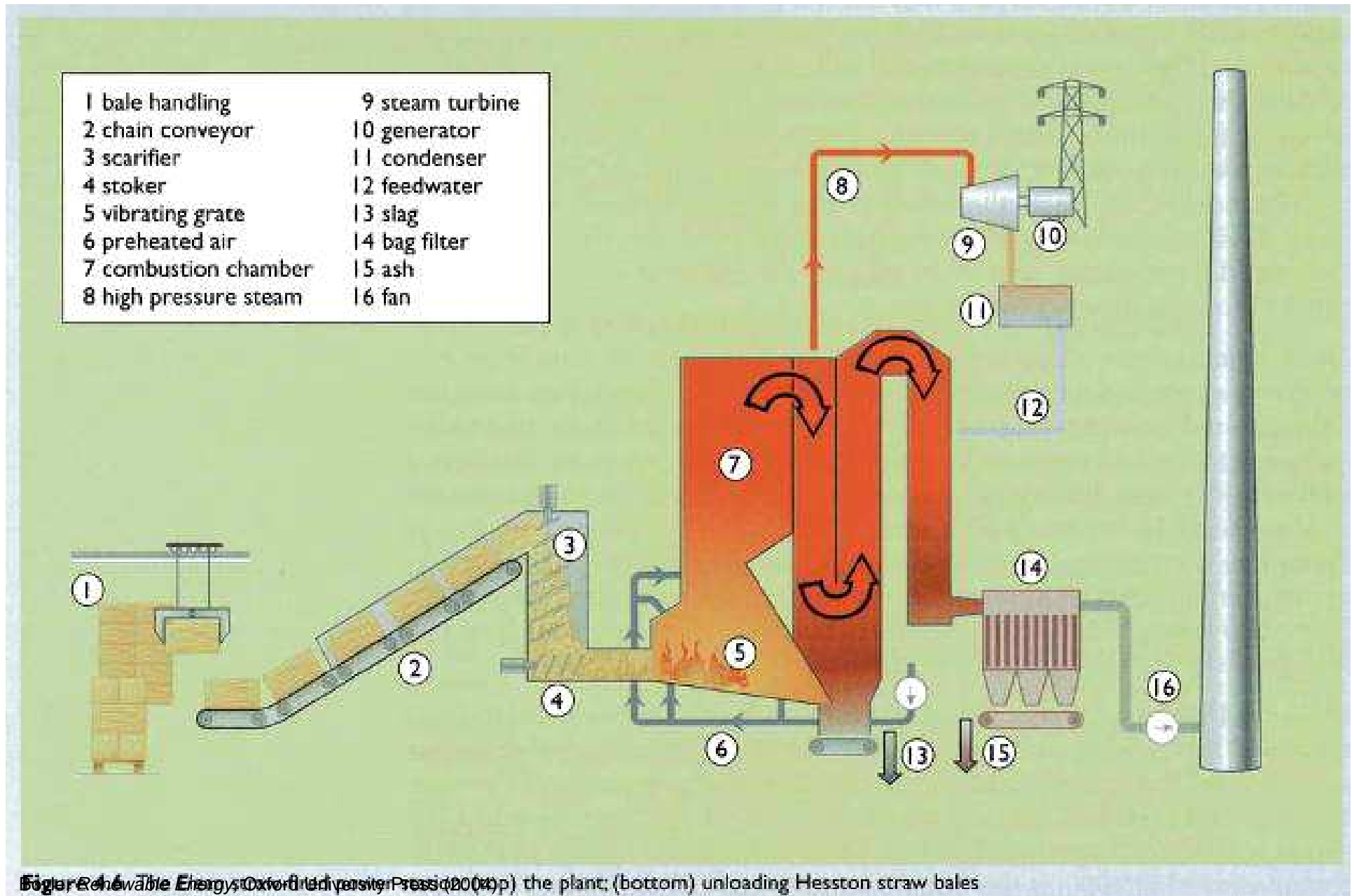


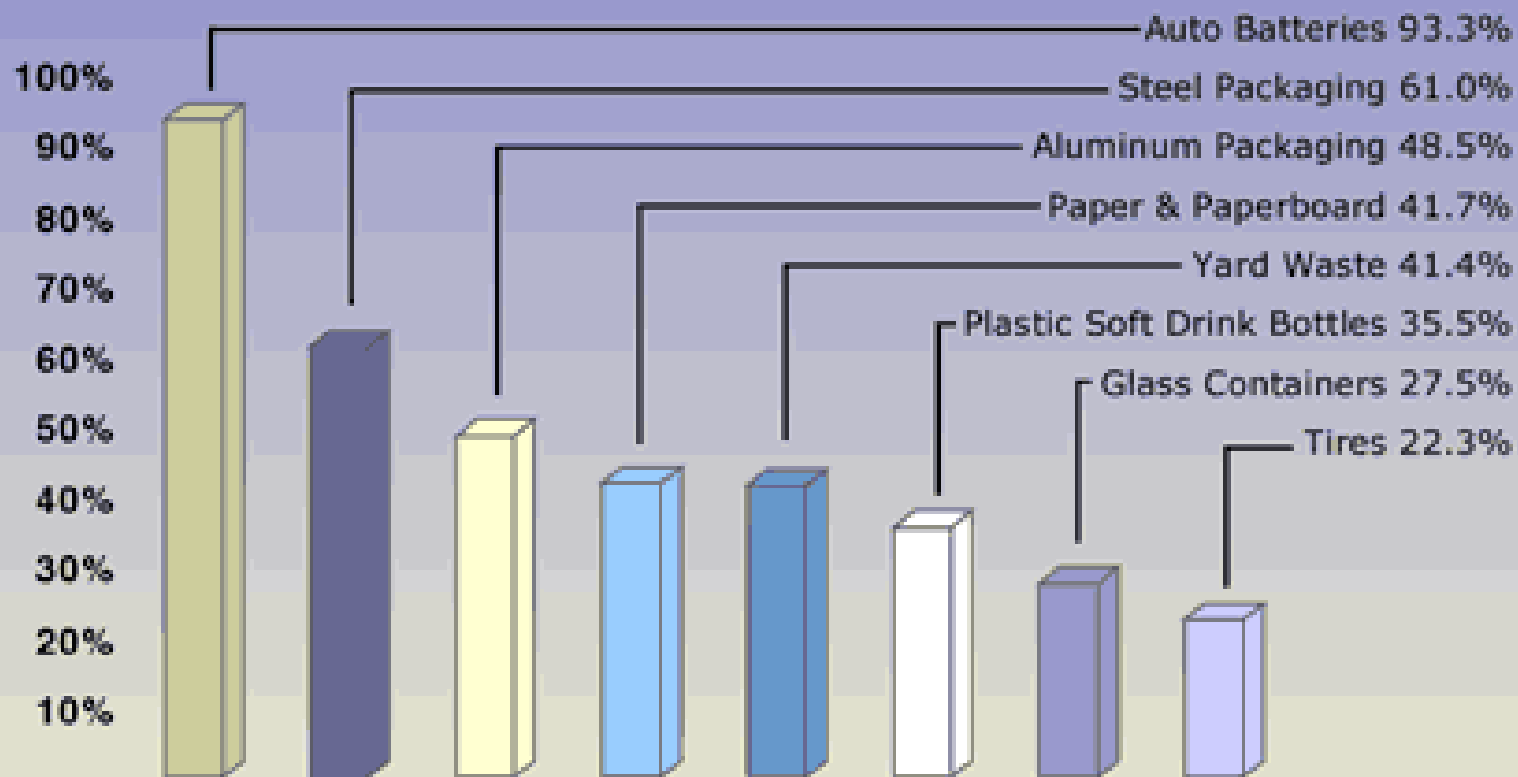
Figure 4.16 This integrated waste materials plant has facilities for recovery of metals and removal of plastics, followed by anaerobic digestion of the remainder. The solid residue from the digester serves as fuel for power production

Biomass Direct Combustion



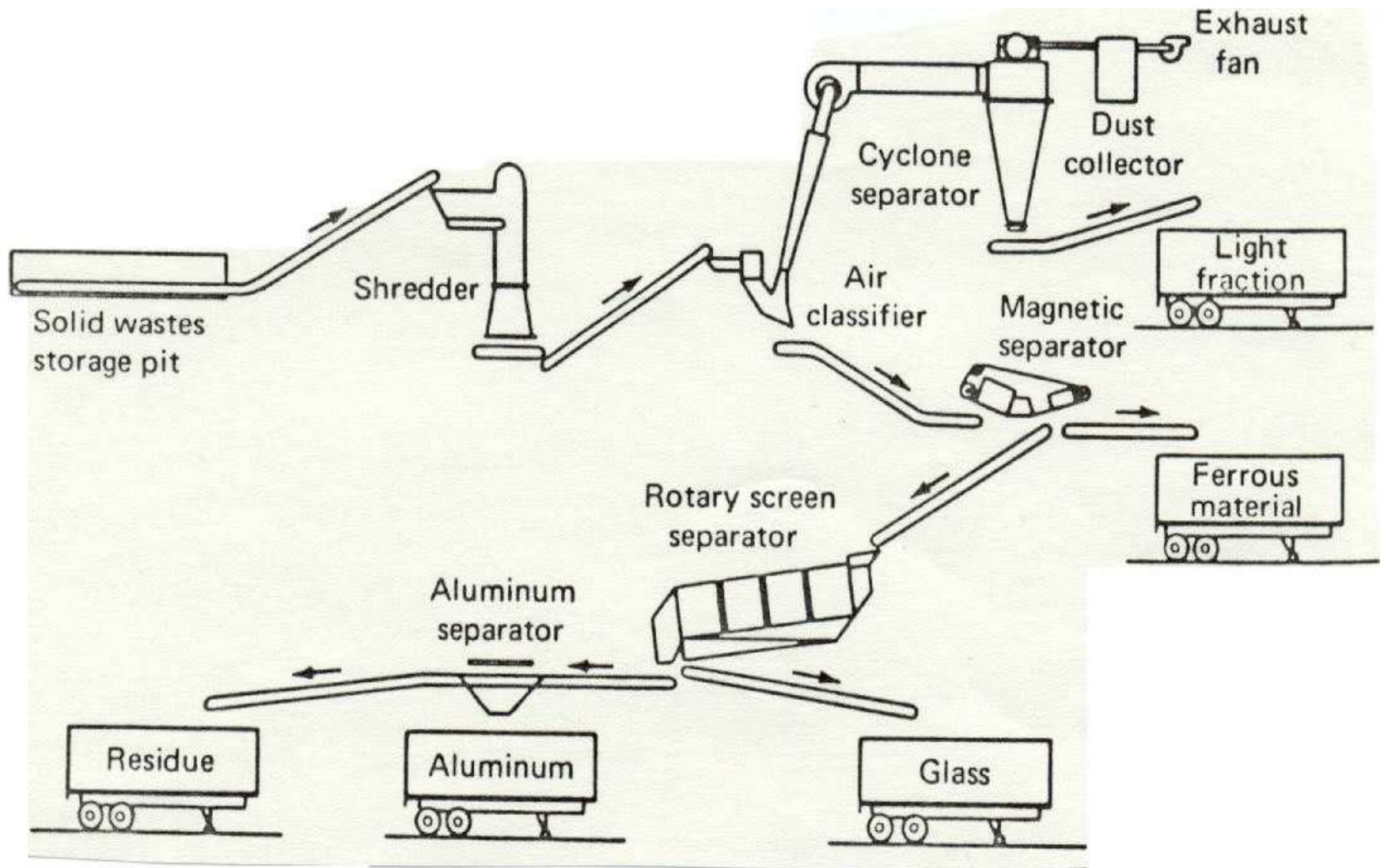
Managing Solid Wastes

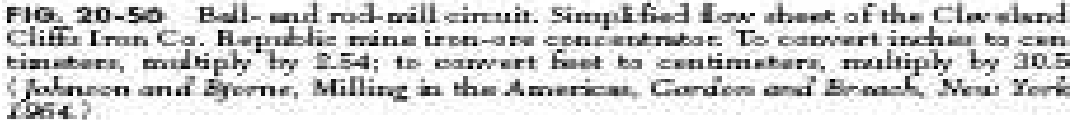
Product-Specific Recycling Rates, 1997



Source: Characterization of MSW in the U.S.:
1998 Update, U.S. EPA, Washington, DC

Centralized Recycling Flowsheet





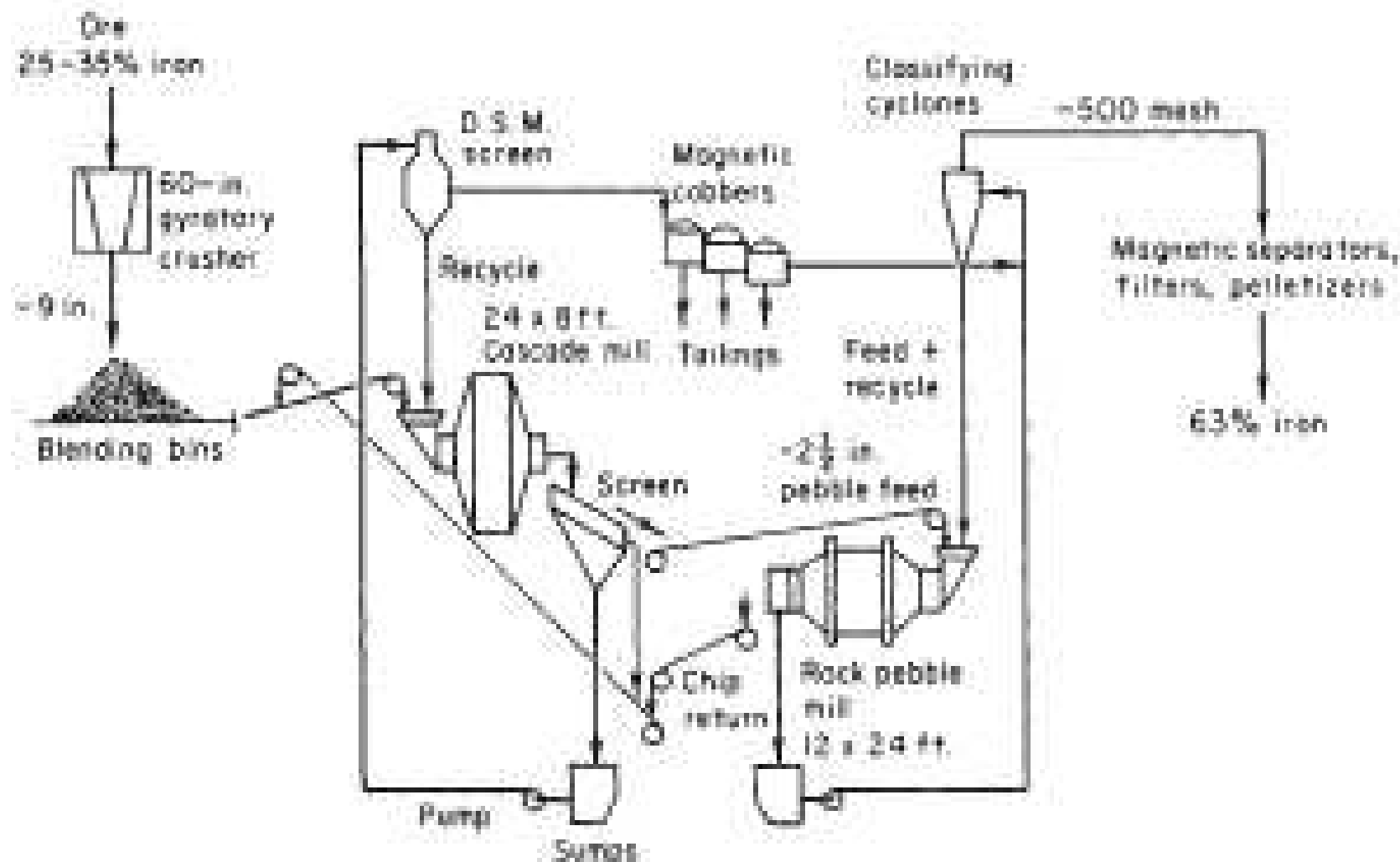


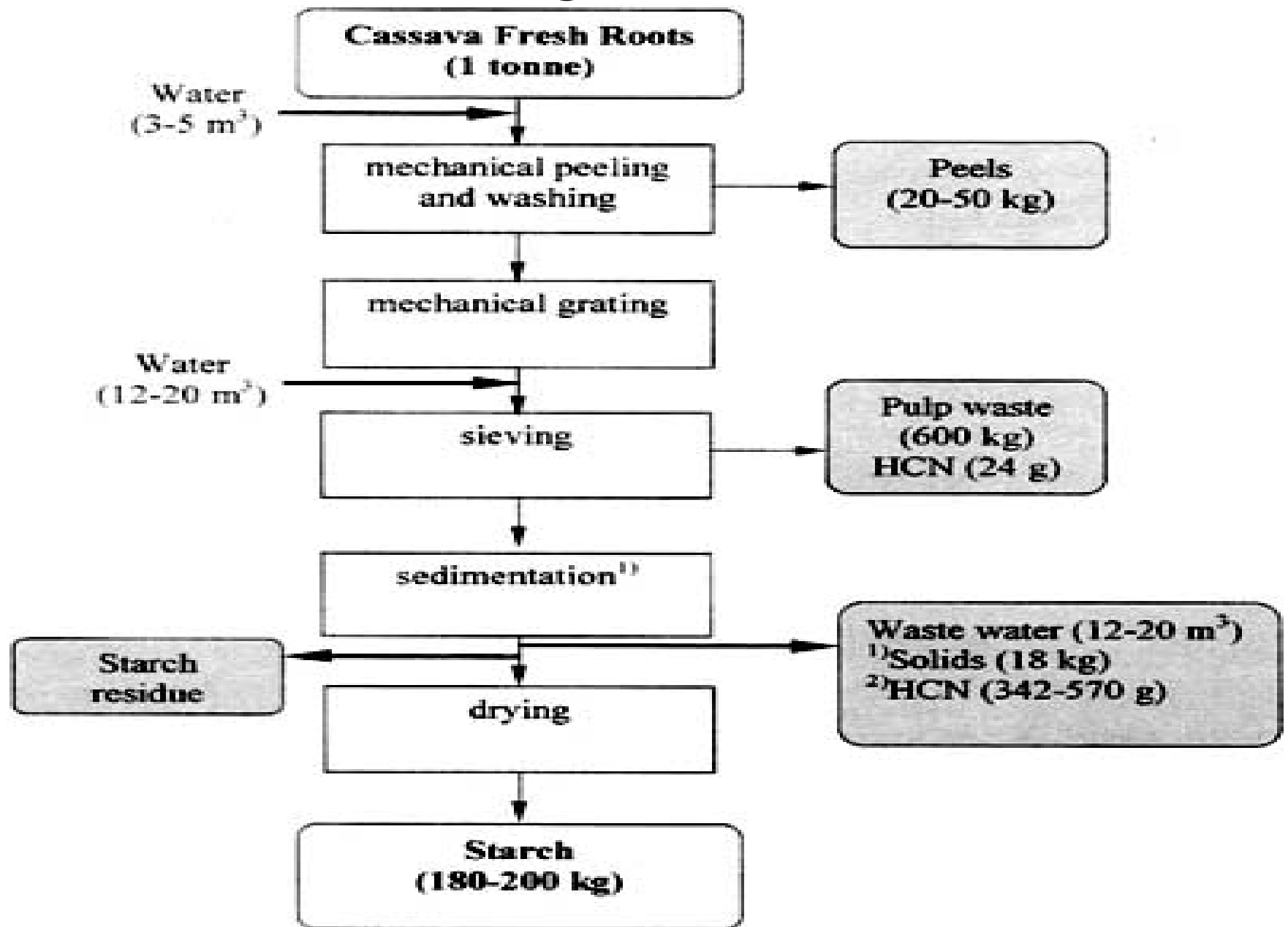
FIG. 20-57 Autogenous mill-circuit. Simplified flow diagram of the Cleveland-Cliffs Iron Co. Empire iron-mine concentrator with two autogenous wet-grinding stages. To convert inches to centimeters, multiply by 2.54; to convert feet to centimeters, multiply by 30.5.

NORTH PULAU LAUT COAL TERMINAL

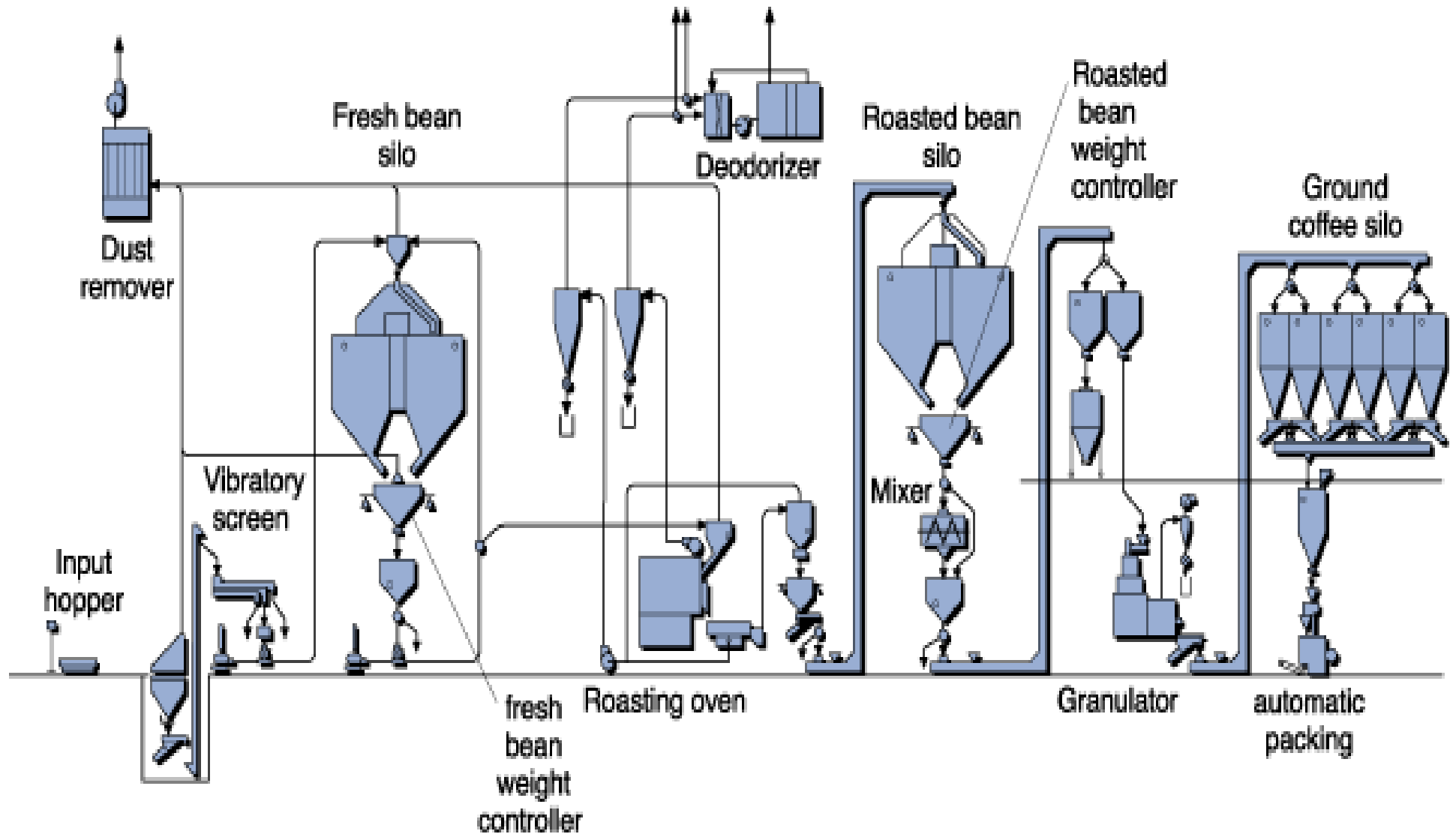
PT. ARUTMIN INDONESIA, SOUTH KALIMANTAN



Industri tepung ketela pohon



Coffee processing



Typical Coffee Roasting Operation

